PRESCOTT PUMPING MACHINERY

FRED. M. PRESCOTT STEAM PUMP CO.
MILWAUKEE, WIS., U.S.A.

PRESCOTT PUMPING MACHINERY

CATALOGUE

Nº 22.

PRESCOTT

PUMPING ENGINES
STEAM·POWER·ELECTRIC·
CONDENSING APPARATUS

CABLE ADDRESS
PRESCOTT
MILWAUKEE

FRED. M. PRESCOTT
STEAM PUMP CO.
MILWAUKEE, WIS.

INTRODUCTORY

IN issuing this Catalogue, we have endeavored to present in exact illustration, a sufficient number of our different types of Pumps and Pumping Engines to give prospective purchasers a comprehensive idea of the nature and extensiveness of our manufacture, and at the same time desire that it serve to assist them in a general way, toward securing the machinery best adapted to their requirements.

As on other occasions, we wish here to reaffirm that in the construction of our Pumps no effort whatever is made to save cost from competitive motives, but to supply only the very best of material and workmanship money can secure.

The rapid extension of our designs to meet all services, and the necessary change of proportions and combinations required to secure satisfactory results in individual instances, make it impractical to embody in one book everything that we build. This is particularly true of the higher class of Corliss and Direct Acting Pumping Engines, as much of their efficiency and economic result depends upon their being designed and built to meet certain existing conditions of service.

We would, therefore, appreciate it if you would communicate with us relative to the purposes you wish to accomplish, and feel that our long and varied experience in the exclusive building of Pumping Machinery will be of material assistance in determining upon the equipment best suited to your individual needs.

TO CORRESPONDENTS

When ordering, or considering the purchase of a pump, please answer the following questions, and, as nearly as possible, give us complete information regarding the requirements which the pump will have to meet in operation.

FIRST. For what service is the pump to be used?

SECOND. Is the liquid to be pumped hot or cold? If the former, and so hot as to vaporize when the atmospheric pressure is removed, it should be arranged to flow into the pump chamber by gravity and submerge the valves.

THIRD. Is the liquid to be pumped gritty, clear, acid, salt or fresh?

FOURTH. To what height is the water to be raised by suction? What is the general arrangement, approximate length and diameter of the suction pipe and how many Tees and Elbows does it contain? If possible send us a sketch of this pipe.

FIFTH. From what source is the supply to be taken?

SIXTH. What is the greatest quantity of water needed per minute, per hour or per day of 24 hours?

SEVENTH. To what head or against what pressure is the water to be forced?

EIGHTH. What is the length and diameter of the discharge pipe?

NINTH. What is the steam pressure at the pump? If unknown, give boiler pressure and length of steam pipe.

TENTH. How does the pump exhaust, into atmosphere, condenser or against back pressure? If the latter, how much?

To designate the sizes of Prescott pumps, use their code names. If you cannot find a code name for your pump in the catalogue, give the diameters of the steam and water cylinders and length of stroke.

In case you are referring to a pump already in use, it is necessary that the SHOP NUMBER also be given.

IN ORDERING REPAIR PARTS, it is absolutely necessary that both size and shop number, which will be found stamped on the name plate of every pump, be given. Unless this is done, we cannot furnish an exact duplication of the part required.

Also be particular to state the name of the part desired, together with number corresponding to same, as listed in the latter part of this catalogue.

To avoid all trouble and unnecessary expense note carefully instructions also given later for installing and operating Prescott Steam Pumps.

MINE PUMPS

MINE PUMPING

The ordinary wet mine presents a greater variety of problems to pump men than any other place in the world. Either on surface or underground, they have every condition to contend with known to pump builders. They use all kinds of pumps, from boiler feeds to triple expansion and high duty Corliss pumping engines, covering the field of low and high service, light and heavy pressures, condensing, circulating, forking, shambling, sinking and station work. The water is cold, hot, sometimes acidulous, dirty, gritty and aerated. Aside from the surface equipment, everything has to be done under ground in the darkness, wet, cramped space and sometimes heat.

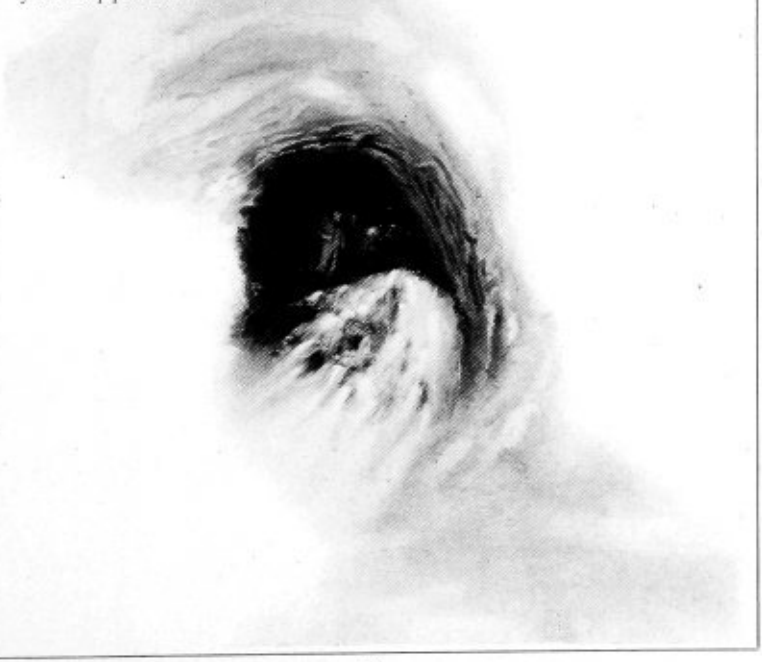
To be located in a remote region, isolated from base of supplies, with conditions requiring operation of the pumps 24 hours a day and 365 days a year, or else "drown the mine," with incalculable consequential damage and losses, is a strenuous situation.

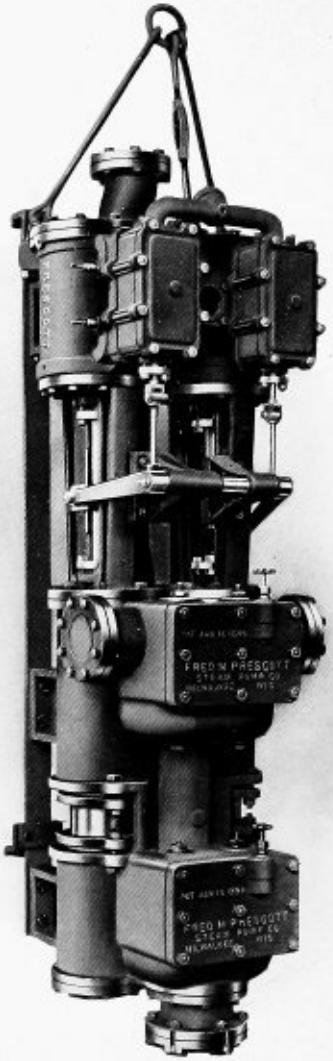
In times of trouble every energy must be conserved to keep the pumps going, not only requiring competency and skill, but nerve and courage as well. Is it any wonder that they want good pumps for such arduous service?

With fuel scarce and high and the pumping cost the largest element of their per ton cost, is it at all surprising that they want not only good pumps, but steam savers as well?

With conditions like these, an office knowledge of pumps will not do. The builder must be intimately acquainted with under-ground practice and the difficulties attending that kind of work.

The production of the Prescott Mine Pump is the result of years of practical experience under just such trying circumstances, and in offering our pumps for your consideration, we feel confident that they will meet with your approbation.





Cut 169

The Prescott Sinker

Patented

The Prescott Sinker

Patented

The work that a sinking pump is called upon to do is the most severe and under the hardest and least favorable conditions of all underground pumping. The limited shaft space, the difficulty of providing proper supports and facilities for lowering quickly, combined with the necessity of continuous operation, present problems that have caused more anxiety, worry and cost to the men who are called upon to move large volumes of water quickly, than any other phase of mine pumping.

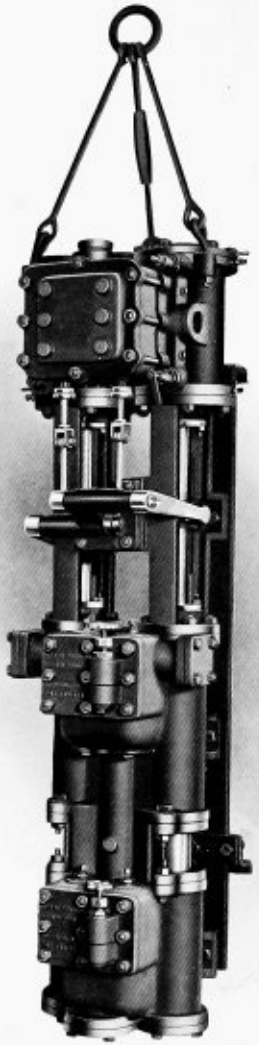
Practical experience with such adverse conditions has enabled us to produce the Prescott Sinker, which combines all the elements necessary to success. Its design is such that it will deliver the greatest possible amount of water while occupying the least possible amount of shaft space. It possesses maximum strength and minimum weight; being duplex, its discharge is uniform with constant velocity, thereby doing away with the necessity of air chambers, reducing shocks and jars and the tendency of the sinker to jump, giving it a steadiness of action that cannot even be approached by any single sinking pump.

The danger of jumping, and consequent shaking loose of pipe lines and timbers being eliminated, permits of simpler, easier and much more proper settings than can be given any single sinking pump of equal capacity, thus reducing to a minimum the most serious matters connected with sinking.

Unwatering or sinking is distinctly emergency work; the unexpected often happens; the danger of running in fork is continuous and great; sudden and unexpected inflows of water usually occur in connection with other distracting things. The successful sinker must respond to these emergency calls. It must run under water, go in fork without disaster to itself, or run as fast as you have steam to drive it. Our sinkers have many times demonstrated their ability to accomplish all these results, and record-breaking time has been made in unwatering flooded mines, and sinking wet shafts with them.

These sinkers are self-contained, and while we do not recommend that any sinker be used for over 300 feet head, they are strong enough for a head of 500 feet, if you have sufficient steam pressure to drive them.

They are the biggest thing for their size yet produced.



Cut 27

The Prescott Sinker

Patented

Prescott Sinkers

Patented

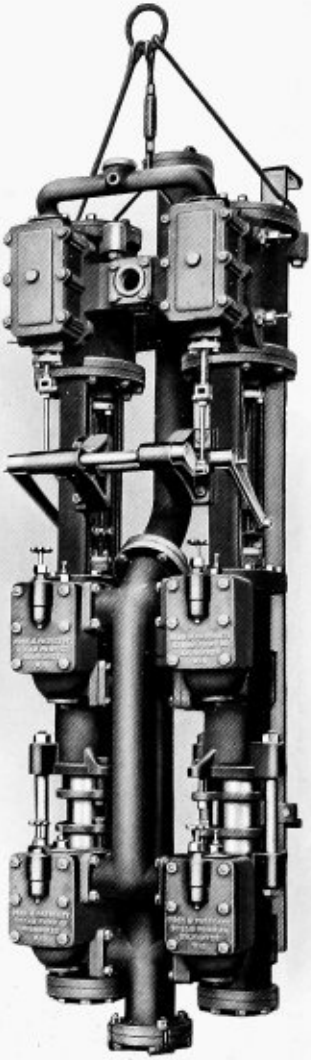
Illustrations 169 and 27 give a comprehensive idea of the construction and design of our Mine Sinking Pumps. They have double acting outside center packed plungers with steel glands and removable bronze linings in the stuffing box throats; the water cylinder heads are flattened to rest on timbers; by-pass valves are provided for priming or keeping suction valves submerged; unusually large valve and water passage area is provided, which, in combination with the positive as well as variable cushions in the steam cylinders, permits of high speeds. There are three discharge openings, one on each side and one straight up through the center on the large sizes to facilitate connections in cramped quarters and the suction opening looks down on all sizes.

The two smaller sizes have discharge openings on both sides, but no central discharge as have all larger sizes.

They are the embodiment of simplicity, strength, accessibility and durability; and will pump more water for their size and space required than anything built.

Cut No.	Code	Size Inches			Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings				Space Required in Shaft. Inches	Length of Pump. Feet and Inches
		Steam Cyl.	Water Plunger	Stroke			Steam	Exhaust	Suction	Disch.		
27	Zander	6	3	8	122	60	1	1 ½	2 ½	2	18 x 16	6 0 ¼
27	Zany	7	3 ½	10	120	100	1 ¼	2	3	2 ½	22 ½ x 19 ¼	6 11 ½
169	Zeal	10	5	12	123	250	2	2 ½	5	4	29 x 26 ½	9 6
169	Zealot	12	6	12	120	350	2	3	6	5	32 x 29	9 8
169	Zealous	13	7	12	125	500	2 ½	3 ½	7	5	34 x 29 ½	9 10
169	Zenith	14	8	12	125	650	2 ½	3 ½	8	6	36 x 34	10 2 ½
169	Zero	17 ½	10	18	82	1000	. . .	. . .	. . .	. . .	. . . . .	. . . . .

If wanted Brass Fitted add Code Word "Braft".
An additional charge is made for Brass Fitted Pumps.



Cut 251

Prescott "Sectionalized" Mine Sinking Pump

Patented

Prescott "Sectionalized" Sinkers

The preliminary work on a mine, owing to location and lack of ordinary facilities, is nearly always conducted under the greatest difficulties, particularly so in the metalliferous mines located in mountainous country. Being frequently several miles from the nearest source of supplies and lines of transportation, it is imperative that machinery sent into such new territory be not only readily adapted to the crudest means of conveyance, but very simple in design and construction, in order to permit of handling by the cheapest and most unskilled labor.

Our Sectionalized Sinker, shown on opposite page, is built to meet the above conditions. Its design permits of separation or sectionalizing into a number of smaller parts, convenient for any method of transportation, down to mule-back, the weight of the heaviest piece in any of the three sizes listed below not exceeding 350 lbs., which is very light for machines of the duplex type.

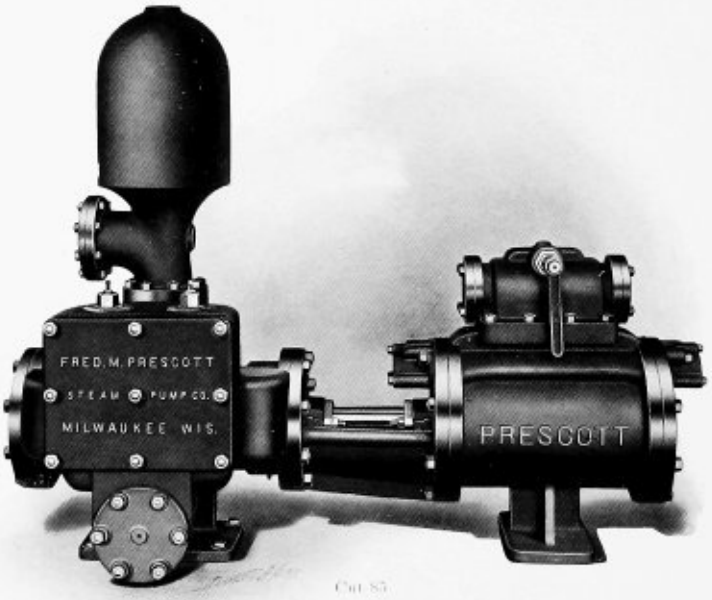
The pump is extremely simple in construction, and of unusual strength so as to withstand rough usage, and all kinds of abuse. It embodies all the good points of our regular duplex Sinker, and the added advantage of permitting disassembling, allowing it to be transported in small pieces, to locations otherwise inaccessible.

The sizes listed are regularly built in the sectionalized form.

Cut No.	Code	Size Inches			Strokes per Minute	Cap. in Gals. per Minute	Dia. of Pipe Openings				Space Required in Shaft Inches	Length of Pump Feet and Inches
		Steam Cyl.	Water Plunger	Stroke			Steam	Exhaust	Suction	Disch.		
251	Zest	7	3½	10	120	100	1¼	2	3	2½	22½x19¼	6 11½
251	Zeus	10	5	12	123	250	2	2½	5	4	34 x26½	9 4¼
251	Zibet	12	6	12	120	350	2	3	6	5	39 x35	9 5

If wanted Brass Fitted add Code Word "Braft".
An additional charge is made for Brass Fitted Pumps.

NOTE—The 6x3x8 sinker while not sectionalized as the above sizes are, is yet composed of sufficiently small parts to bring the largest under 400 lbs. in weight.



Cut 85

Prescott Straight Mine Pump

Prescott Straight Mine Pumps

This is strictly a mine pump, good for any service on the location, but designed particularly for shaft work or any underground situation where space is limited and severe service encountered. It is short, strong, compact and will run anywhere you put it and can be operated by steam or compressed air.

The valves are steam thrown, with no outside valve gear and no arms or levers to get knocked off; it automatically controls its stroke and will run in fork or at any speed.

The water end is of the piston pattern, with fibrous packing, and with the suction valves located at side of pistons, allowing immediate access to all valves by removal of side plate.

On services requiring the handling of hard, gritty and acidulous water, we usually recommend the Inter-Mountain Pattern, as illustrated on the following page. As the latter type in corresponding sizes is of somewhat greater length, we can, in situations where space is limited, furnish the Straight Pump with removable bronze composition water cylinder bushing and Tobin bronze piston rod, thus adapting it to such services.

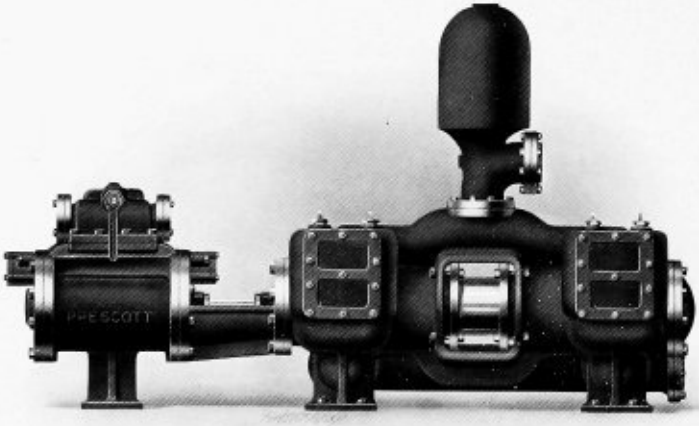
Our design embodies the most modern steam pump practice, with greatly increased valve and water passage areas, correct proportions, material and workmanship.

Where pumps are required to handle water containing a large percentage of acid the pump end can be made of acid resisting metal.

Cut No.	Code	Size No.	Size Inches			Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings				Space Occupied Feet and Inches	
			Steam Cyl.	Water Piston	Stroke			Steam	Exhaust	Suction	Disch.	Length	Width
85	Talent	5	7	3½	12	100	50	1	1½	3	2½	4 9⅛	15⅜
85	Tame	7	10	5	12	100	100	1½	2	4	3	5 6	18
85	Tardy	9	12	7	12	100	200	1½	2½	5	4	5 6½	22⅝
85	Tattle	10	14	9	18	67	330	2	3	6	5	6 9¼	26⅞

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for pumps having removable water cylinders linings, or for brass fitted.



Cut 232

Prescott Inter-Mountain Mine Pump

Prescott Inter-Mountain Mine Pump

For 500 Feet Head Maximum

The Prescott Inter-Mountain Pattern Mine Pump was designed to meet the demand for a small Station Mine Pump for handling gritty water and can be operated by steam or compressed air.

It has no outside valve gear, and the plunger is of the outside packed pattern, having the stuffing boxes centrally located, bronze lined and unusually deep to insure tightness without undue friction.

The water valves are conveniently located above the bottom of the working barrel, thereby submerging the plunger and rendering the machine suitable for long suction lifts. It can be depended upon to safely operate in fork.

By the removal of two cover plates every water valve in the pump is made accessible for inspection or repairs. The valve area is exceedingly large, reducing the friction and cutting action of the water. All parts are designed for the rough usage to which they are necessarily subjected in mine service.

These pumps are good for a maximum head of 500 feet.

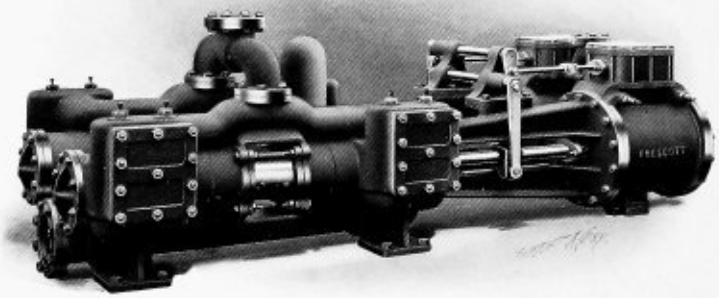
Numerous other sizes and combinations than those listed below can be furnished.

Where pumps are required to handle water containing a large percentage of acid the pump end can be made of acid resisting metal.

Cut No.	Code	Size Inches			Strokes per Minute	Gallons per Minute	Dia. of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyl.	Water Plunger	Stroke			Steam	Exhaust	Suction	Disch.	Length	Width
232	Ugly	10	5	12	100	102	1 1/2	2	4	3	7 8 1/2	2 3 1/8
232	Ulterior	12	5	12	100	102	1 1/2	2 1/2	4	3	7 8 1/2	2 3 1/8
232	Ultimate	10	6	12	100	146	1 1/2	2	5	4	7 8 1/2	2 6 1/4
232	Umbrage	12	6	12	100	146	1 1/2	2 1/2	5	4	7 8 1/2	2 6 1/4
232	Umpire	10	7	12	100	199	1 1/2	2	5	4	8 1 1/2	2 6 1/2
232	Unadvised	12	7	12	100	199	1 1/2	2 1/2	5	4	8 1 1/2	2 6 1/2
232	Unaffected	14	8	18	67	262	2	3	6	5	9 8 3/8	2 8 3/4
232	Unalterable	14	9	18	67	330	2	3	6	5	9 10 1/2	2 10 3/4

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for Brass Fitted Pumps.



Cut 37

Prescott Duplex Mine Pump

Chandler Pattern

Prescott Duplex Mine Pumps

Chandler Pattern

For 500 Feet Head Maximum

The illustration on the opposite page represents our Duplex Mine Pump, having the "Chandler Pattern" water end.

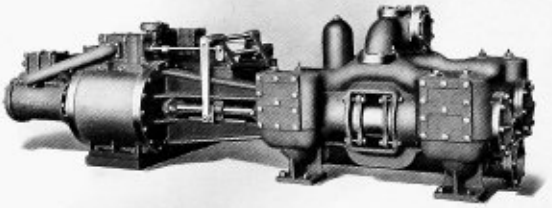
This style of mine pump is designed to meet the demands for a medium priced machine, something between the ordinary sinking and "forking over" pumps and the higher priced "Pot Form" machines, and is highly recommended for mine work where the pressures do not exceed 500 ft. The arrangement of water valves is entirely original for a Duplex Pump, but mining men will see at a glance their utility and how easy of access are the valves and how readily cared for. The plungers are double acting and the outside stuffing boxes centrally located.

While these pumps are especially designed for mine service, they will be found a superior machine for any other situation where the work is severe.

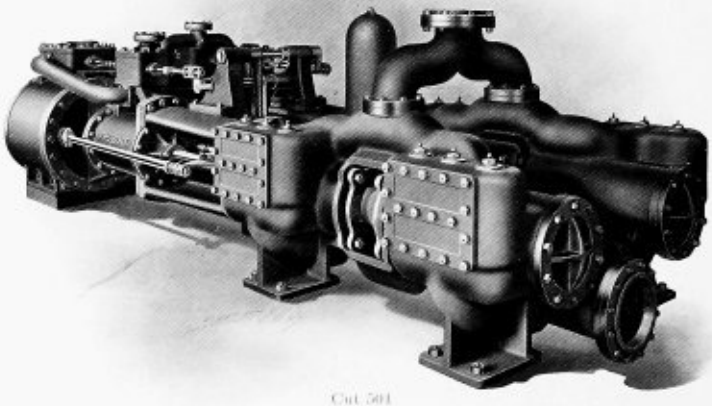
The list below includes only a few of our standard sizes; other combinations can be made to meet given conditions.

Cut No.	Code	Size Inches			Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyl.	Water Plunger	Stroke			Steam	Exhaust	Suction	Disch.	Length	Width
37	Obedient	8	5	12	100	204	1½	2	5	4	8 2½	3 7¼
37	Object	10	5	12	100	204	2	2½	5	4	8 3¼	3 7¼
37	Obstruct	12	5	12	100	204	2	3	5	4	8 3½	3 7¼
37	Oblige	10	6	12	100	294	2	2½	6	5	8 4	3 10¼
37	Obscure	12	6	12	100	294	2	3	6	5	8 3½	3 10¾
37	Observe	10	7	12	100	398	2	2½	6	5	8 8	4 0¼
37	Obstacle	12	7	12	100	398	2	3	6	5	8 8¼	4 0¼
37	Obtain	14	7	12	100	398	2½	3½	6	5	8 11½	4 0¼
37	Occult	14	8	18	75	587	2½	3½	8	6	11 0½	4 4
37	Offend	16	8	18	75	587	2½	3½	8	6	11 2½	4 4
37	Offender	18	8	18	75	587	3	4	8	6	11 2⅞	4 9
37	Offer	14	9	18	75	745	2½	3½	10	8	11 3	5 1
37	Officer	16	9	18	75	745	2½	3½	10	8	11 4½	5 1
37	Onward	18	9	18	75	745	3	4	10	8	11 5	5 1
37	Ornate	18	10	18	75	918	3	4	10	8	11 5	5 1
37	Outline	20	10	18	75	918	4	5	10	8	11 10	5 1
37	Outward	20	12	24	62½	1469	4	5	12	10	14 1	6 1

If wanted Brass Fitted add Code Word "Braft".
An additional charge is made for Brass Fitted Pumps.



Cut 26



Cut 501

Prescott Compound Duplex Mine Pumps

Chandler Pattern

Prescott Compound Duplex Mine Pumps

Chandler Pattern

For 500 Feet Head Maximum

These illustrations show our Compound Duplex "Chandler" Pattern Mine Pumps with plain slide valves, designed to operate either condensing or non-condensing against heads not exceeding 500 feet.

Cut 26 illustrates the smaller sizes of these pumps, in which the high pressure steam cylinders are placed outboard and cut 501 showing the larger sizes in which the high pressure steam cylinders are placed inboard, or next to the water end, and the low pressure steam cylinders outboard.

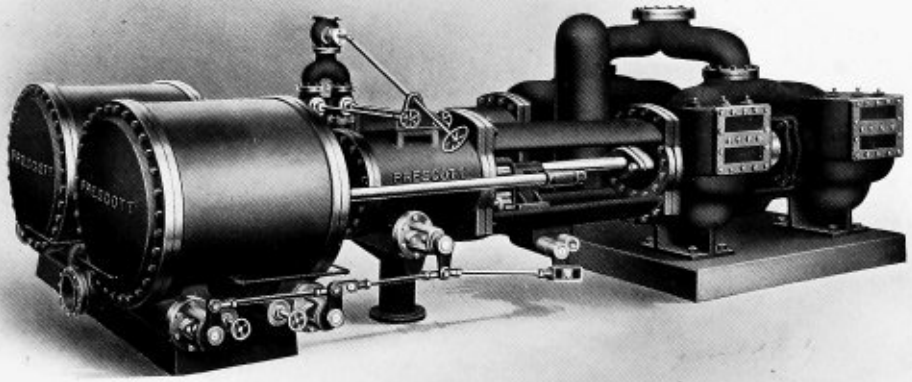
The water end is of our "Chandler" pattern, original with us as applied to duplex pumps. The arrangement of water valves is such that by the removal of one cover plate on each quarter of the pump, access is given to all the suction and discharge valves. The water valves are of bronze, leather faced, for situations where the temperature of the water will permit, and rubber faced for warm or hot water. These leather and rubber facings are removable and renewable.

The valve seats are of the best composition bronze, heavily ribbed, and pressed into the valve decks on a smooth taper, and held firmly in position by through valve spindles. Each of these spindles passes through a discharge valve seat, with a shoulder fit on the seat and projects into a suction valve seat, thereby preventing either seat from accidentally coming out of the valve decks.

Each pump is furnished with a large suction air chamber to insure its quiet and smooth operation at high speeds.

These pumps are built in such a great variety of sizes and combinations to meet any and all conditions of service that it would be impossible to list them in this publication, but we will be pleased to submit proposals and detail specifications for given conditions of service.

On page 28, Cut 235, this same pattern of pump is shown with steam valves of the Semi-Corliss type.



Cut 235

Prescott Compound Duplex Mine Pump—Semi-Corliss Valves

Chandler Pattern

Prescott Compound Duplex Mine Pump

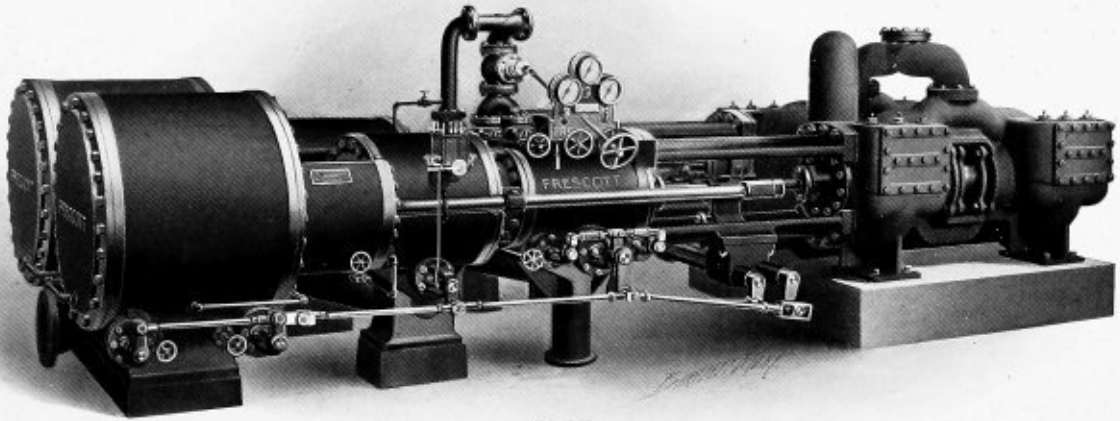
Chandler Pattern

Semi-Corliss Valves

The Semi Corliss Steam Valve Gear now offered on Compound Pumping Engines is a development brought about by constant effort to improve the working mechanism of these machines. Its advantages lie in the lines of greater efficiency—better drainage and accessibility. Rotating as it does instead of sliding, the problem of lubrication and unbalanced area is solved to a great extent and the objections raised against the plain slide valve on these points are satisfactorily met.

The location of the Semi Corliss Valve with reference to the cylinder admits of shorter ports and closer clearances thus increasing the efficiency of the machine to say nothing of the important item of thorough and quick cylinder drainage so desirable on the wet steam used in most mines and caused by long and more or less unprotected steam lines.

In accessibility and ease of repair and replacement it is a most satisfactory valve to the operator and where circumstances will permit of a little increased expenditure we recommend its use as against the old style slide valve. On our larger compounds we are using it exclusively as we are also on the Triple Expansion Pumping Engines shown in succeeding pages.



Cut 237

Prescott Triple Expansion Mine Pumping Engine

Chandler Pattern

Prescott Triple Expansion Mine Pumping Engines

Chandler Pattern

Patented

For 500 Feet Head Maximum

For a saving in fuel cost, the high efficiency of this pump makes it an ideal one for station work where the head is not more than 500 feet and the capacities required do not exceed 1500 gallons per minute. The saving is so marked that in many instances the Prescott Triple has saved the entire cost of the installation within a few months.

The steam valves are of the inverted semi-Corliss type, connected with a strong and heavy gear directly to the piston rod crosshead. This arrangement, besides effecting better drainage, greater accessibility, and more convenience to the operating engineer, enables our placing the valves close to the ends of the steam cylinders, reducing thereby the amount of clearance to the lowest practical limit, and obtaining a high economy and mechanical efficiency.

As these pumps are always run condensing, Air Pumps and Condensers of any desired type are furnished with them.

Cut 523

Prescott Compound Duplex Mine Pump

Missabe Pattern

Prescott Compound Duplex Mine Pumps

Missabe Pattern

For 500 Feet Head Maximum

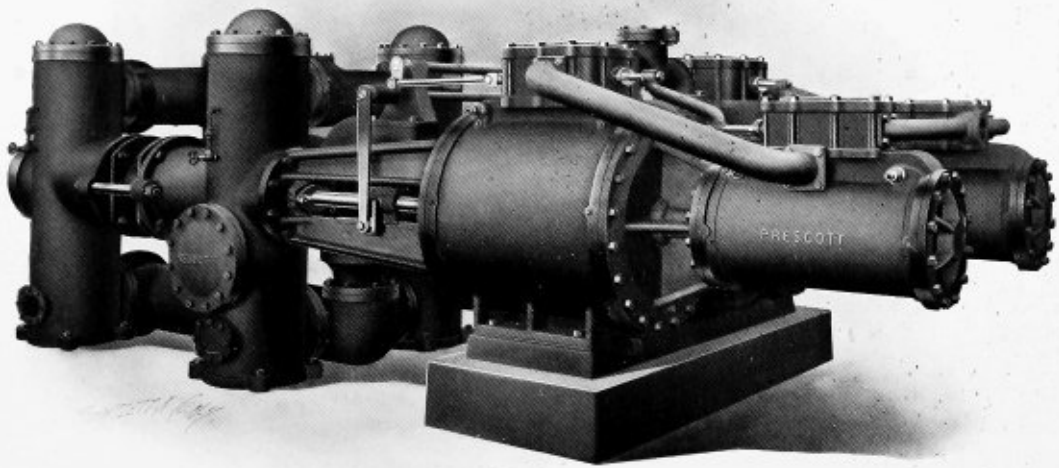
The Missabe Pattern Pump is of special construction and designed for use in mines where the flow of water is excessive. They are regularly built in sizes ranging from 1200 gallons to 6000 gallons per minute, and for any head up to 500 feet.

The water ends are practically cylindrical in form, and highly efficient by reason of their large valve area, straight water passages and consequent small frictional loss. Our special valve not only reduces the slip, but diminishes the number of working parts to a minimum, making this pump most economical from a repair or replacement standpoint.

Owing to this improved water valve construction, large volumes of water can be kept moving at an uninterrupted velocity and uniform shape is maintained while traveling in the direction of the discharge.

Cut No. 521 illustrates the smaller sizes of these pumps, having the high pressure steam cylinders placed outboard, and Cut No. 523 the larger sizes with plain slide valves, in which the high pressure steam cylinders are placed inboard, or next to the water end, and the low pressure cylinders outboard. Cut No. 234 illustrates the larger machines equipped with semi-Corliss steam valves.

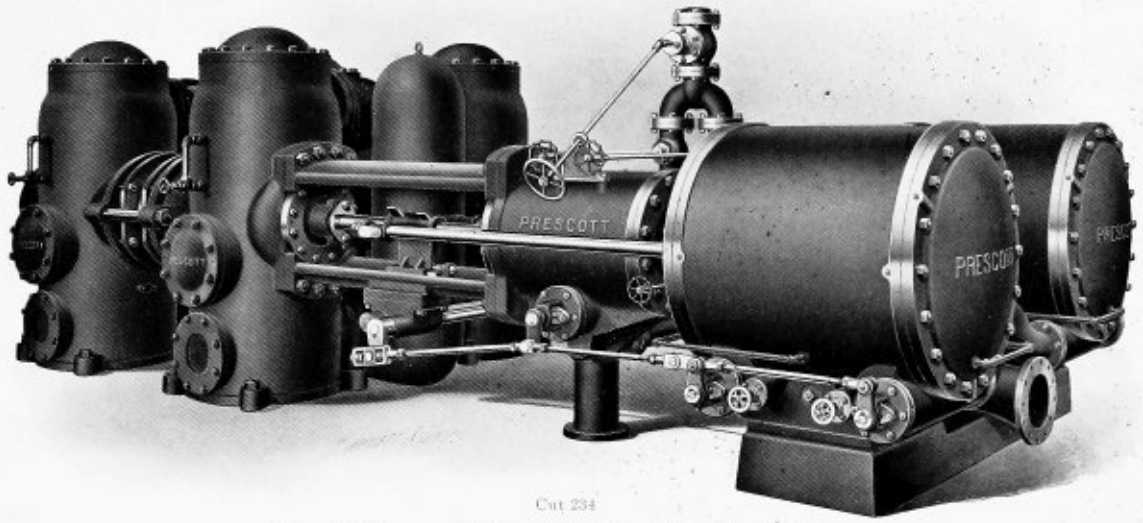
As these pumps are nearly always run condensing, we are prepared to furnish them with any type of condensing apparatus desired.



Cut 521

Prescott Compound Duplex Mine Pump

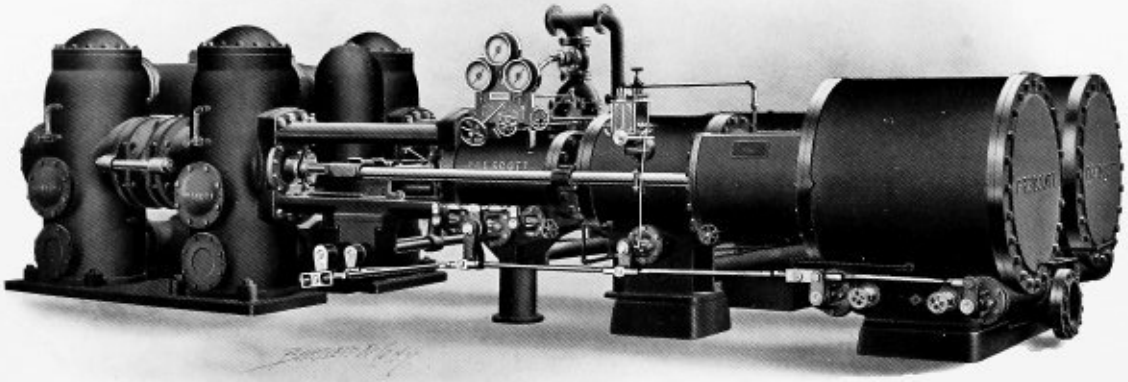
Missabe Pattern



Cut 234

Prescott Compound Duplex Mine Pump—Semi-Corliss Valves

Missabe Pattern



Cut 564

Prescott Triple Expansion Mine Pumping Engine

Missabe Pattern

Patented

Prescott Triple Expansion Mine Pumping Engines

Missabe Pattern

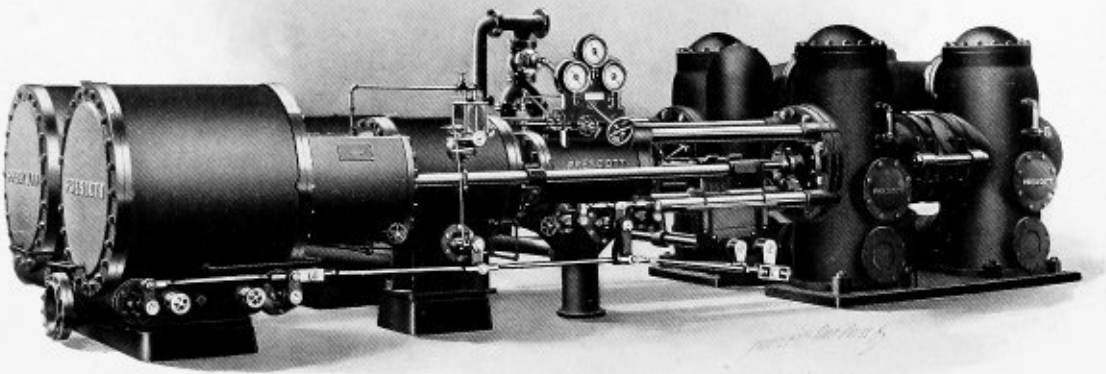
Patented

For 500 Feet Head Maximum

Where the requirements demand a discharge exceeding 1,200 gallons per minute, these pumps will deliver it to surface against a pressure due to any head up to 500 feet, with surprisingly little coal.

In their construction we have departed radically from old time pump practice and are able to offer engines much more simple, yet possessing a higher degree of efficiency and of greater economic performance than ever before attained by direct acting machines.

These pumping engines are always run condensing, and Air Pumps and Condensers of approved design are supplied with them.

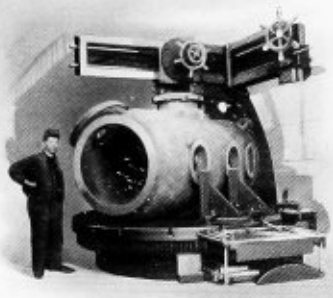


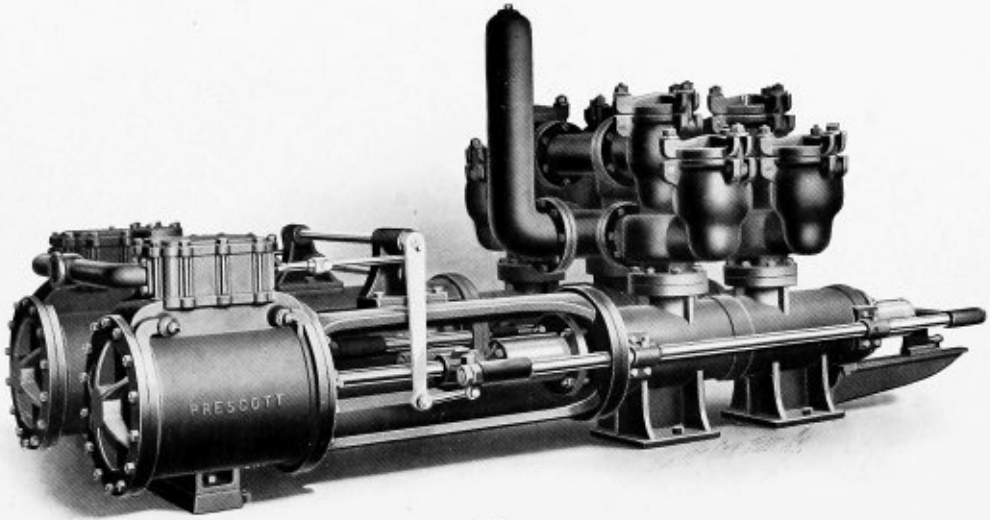
Cut 1048

Prescott Triple Expansion Mine Pumping Engine

Missabe Pattern

Patented





Cut 55

Prescott Duplex Mine Pump

Pot Form

Prescott Duplex Mine Pumps

Pot Form

For Heavy Pressures—Any Head Above 500 Feet

To meet the requirements of deep mines having but a moderate flow of water, we build our Pot Form Pump with simple steam cylinders.

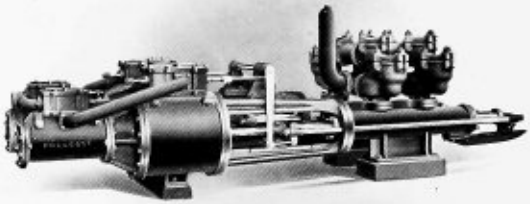
Its construction not only adapts it to the hardest service, but insures a minimum of annoyance resultant from the handling of bad or gritty water, and the undue wear to which such severe service subjects the ordinary pump. The plungers are of semi-steel, operated by heavy steel crossheads which are provided with extension bearings having adjustable bronze gibs, in machines of strokes above 12 inches. This secures perfect alignment and relieves the stuffing boxes from the weight of the plungers when extended. All stuffing boxes are located at the outer end of the plunger barrels and provided with both brass lined glands and throats on 10 inch plungers or larger.

Each suction and discharge valve is in a separate chamber located over and above the working barrels, thus insuring the submerging of the suction valves at all times and the constant priming of the pump. All discharge passages are straight and direct.

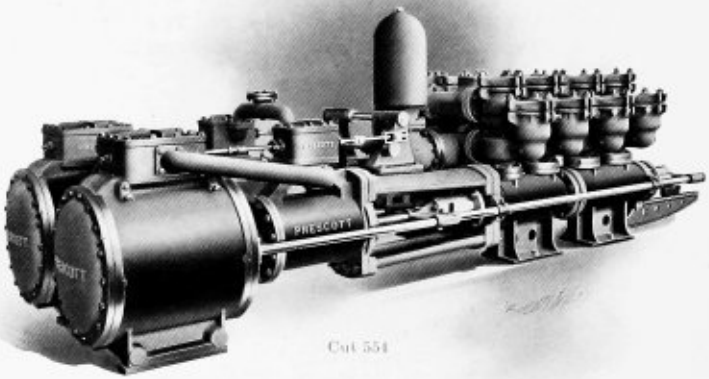
By the loosening of the swing bolts securing the valve pot covers, immediate access is had to either suction or dicharge valves, facilitating inspection and renewals.

Numerous sizes and combinations to suit varying heads and steam pressures can be furnished.

For greater economy in operation consideration is invited for the designs shown on succeeding pages.



Cut 91



Cut 554

Prescott Compound Duplex Mine Pumps

Pot Form

Prescott Compound Duplex Mine Pumps

Pot Form

For Heavy Pressures—Any Head Above 500 Feet

Cut No. 91 shows our Compound Duplex Pot Form Pump in the smaller sizes with the low pressure steam cylinders inboard or next to the water end. Cut No. 554 shows the construction in the larger sizes having the high pressure steam cylinders inboard, and the low pressure cylinders outboard.

In both instances the steam cylinders, are fitted with plain slide valves; the large size machines are also built with semi-Corliss valves, as shown in Cut No. 233, Page 45.

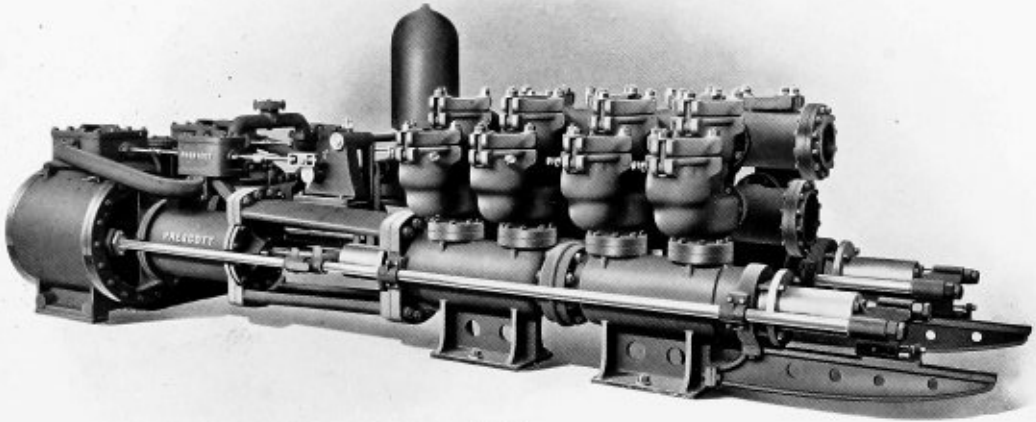
The water end is of our "Pot Form", having four single acting outside packed water plungers, connected together by heavy steel tie rods outside of the plunger barrels. The plungers and the rods are properly supported and guided to relieve the stuffing boxes of their weight.

Each suction and discharge water valve is enclosed in a separate valve chamber of our "Pot Form", permitting the use of large openings, combined with great strength.

The water valve seats are made of the best composition bronze, and pressed into the valve decks on a smooth taper. The water valves are of our "Helical Wing" type, made of best composition bronze, and fitted with leather facings, where the temperature of the water will permit, and rubber facings for warm or hot water. These facings are removable and renewable. Each valve is properly guided in its seat by the "helical wings", always maintaining the face of the valve parallel with the face of the valve seat.

Each valve has a separate valve pot cover, held in position by drop forged steel swing bolts, which renders them extremely accessible for inspection, repairs or renewals.

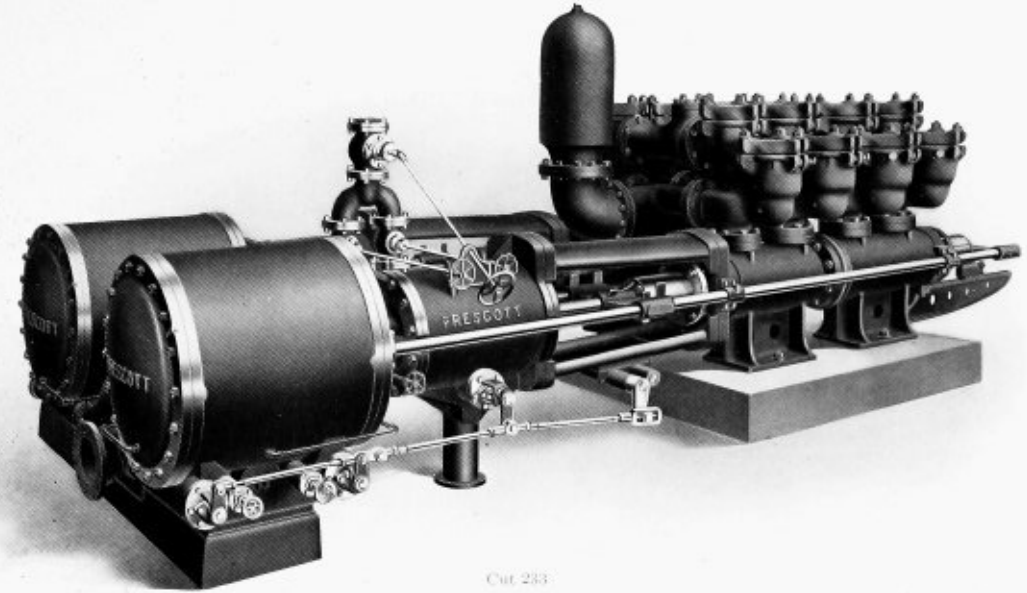
These pumps are built in such a great variety of sizes and combinations, both condensing and non-condensing, to meet any and all conditions of service that it would be impossible to list them here, but we will be pleased to submit proposals and detail specifications for given conditions of service.



Cut 553

Prescott Compound Duplex Mine Pump

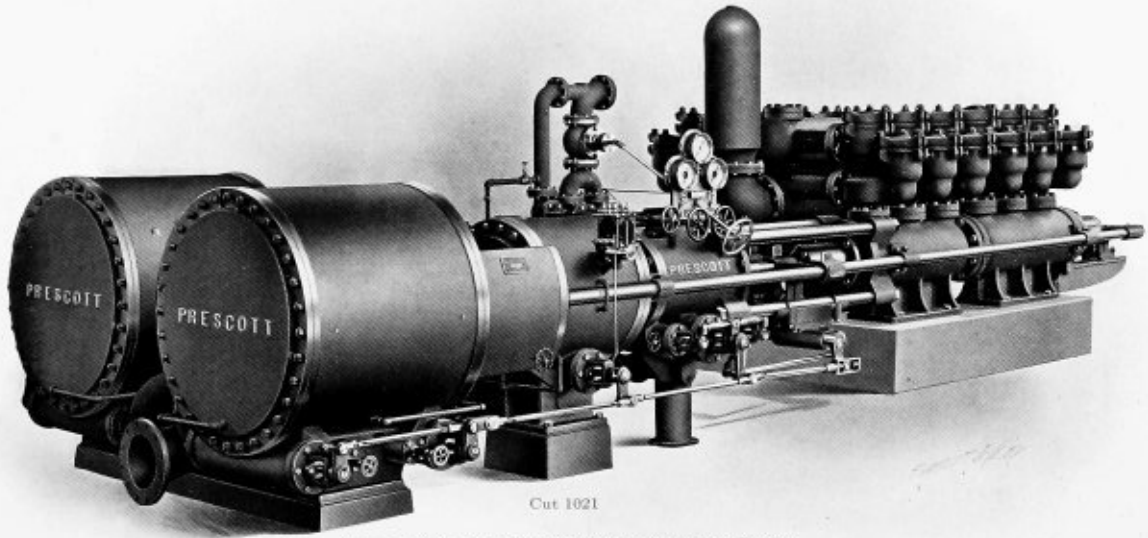
Pot Form



Cut 233

Prescott Compound Duplex Mine Pump—Semi-Corliss Valves

Pot Form



Cut 1021

Prescott Triple Expansion Mine Pumping Engine

Pot Form

Patented

Prescott Triple Expansion Mine Pumping Engines

Pot Form

Patented

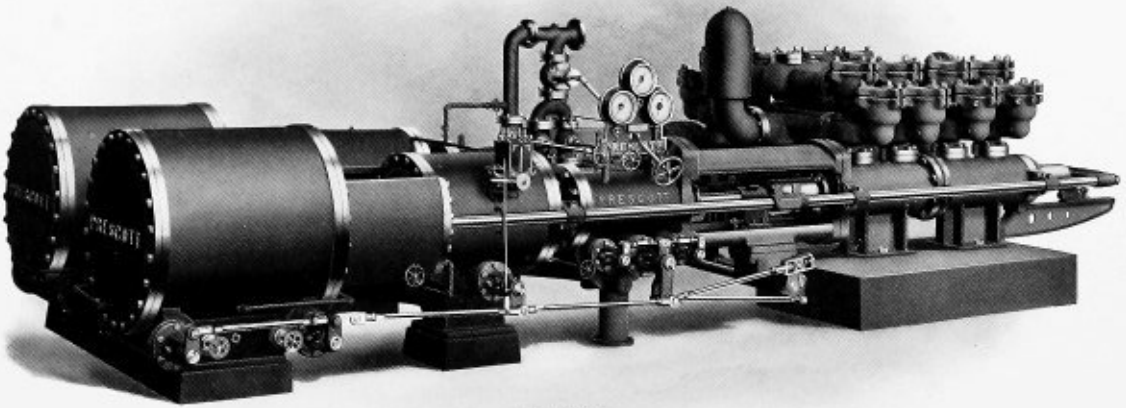
For Heavy Pressures—Any Head Above 500 Feet

For economy in steam and fuel comsumption, these engines represent the most modern and highest developments of Direct Acting construction.

They are distinctly station pumps, designed with special reference to the conditions governing deep mine operations, and embodying such refinements as go to give efficiency, eliminate resistance, and retain strength, simplicity, accessibility and life.

These pumping engines are always run condensing and are therefore equipped with any form of condensing apparatus best suited to the local conditions.

Full data will be furnished upon request accompanied by details of service, as these engines are built specially to suit certain requirements and are not in any sense stock or trade machines.

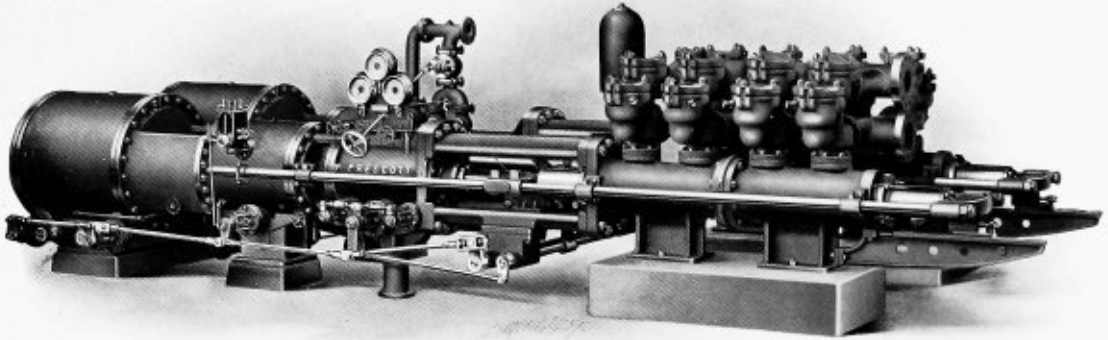


Cut 1023

Prescott Triple Expansion Mine Pumping Engine

Pot Form

Patented

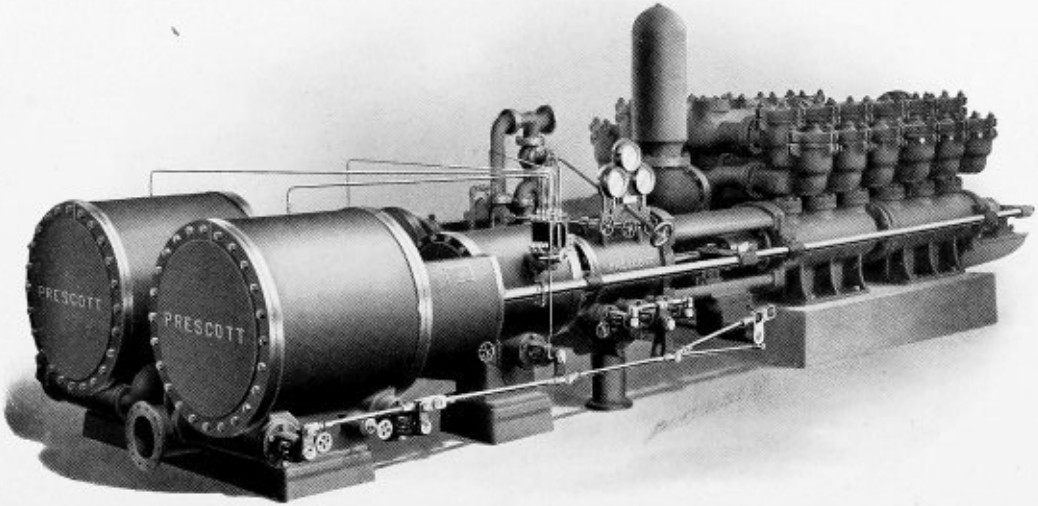


Cut 1024

Prescott Triple Expansion Mine Pumping Engine

Pot Form

Patented

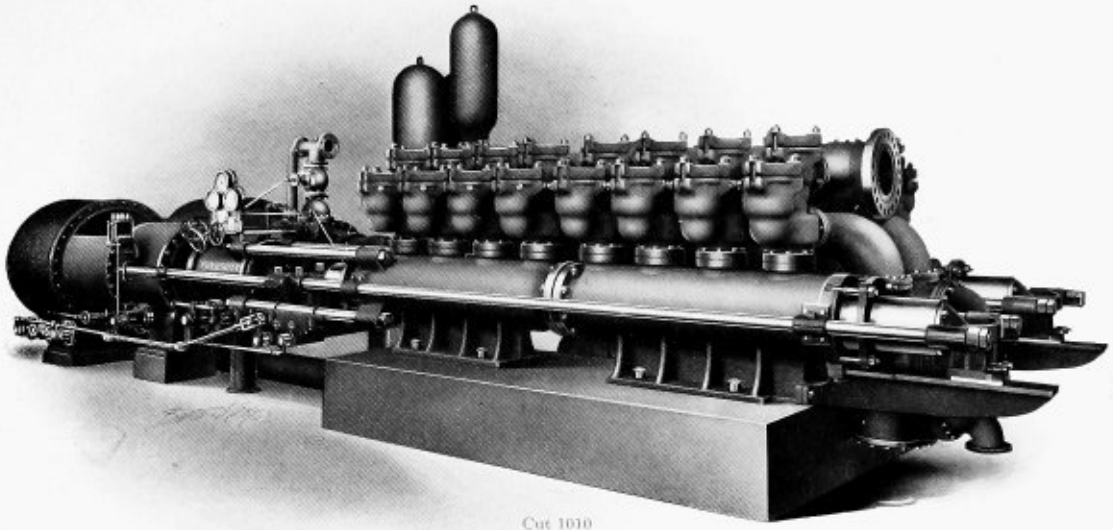


Cut 1042

Prescott Triple Expansion Mine Pumping Engine

Pot Form

Patented



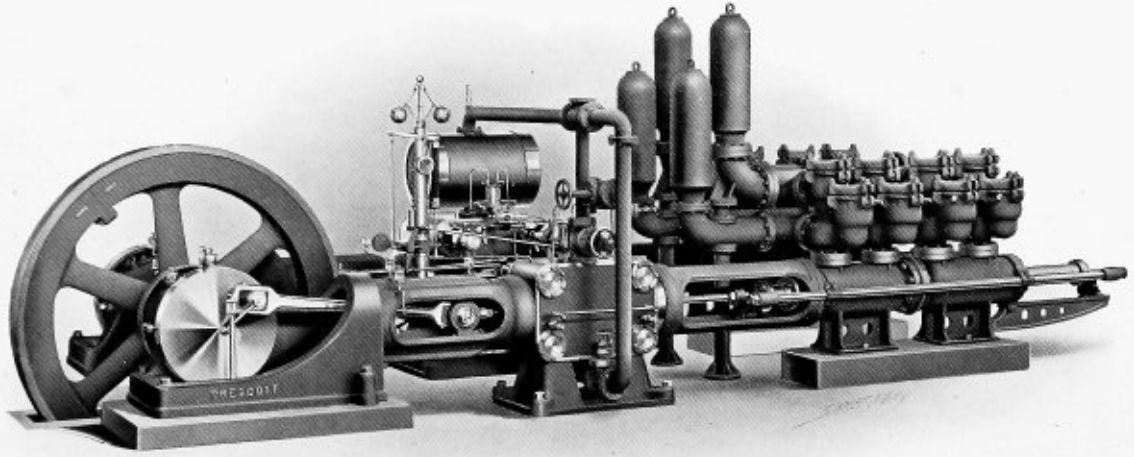
Cut 1010

Prescott Triple Expansion Mine Pumping Engine

Pot Form

Patented

MILWAUKEE ~ WISCONSIN



Cut 1030

Prescott Corliss Cross Compound High Duty Mine Pumping Engine

Pot Form

Prescott Corliss High Duty Mine Pumping Engines

Built For Any Head

At mines where the cost of fuel is exceedingly high, or where the known conditions as to gallonage and head give evidence of remaining constant long enough to warrant the increased first cost, it often becomes highly desirable to install pumping engines of still higher duty than those described in the preceding pages.

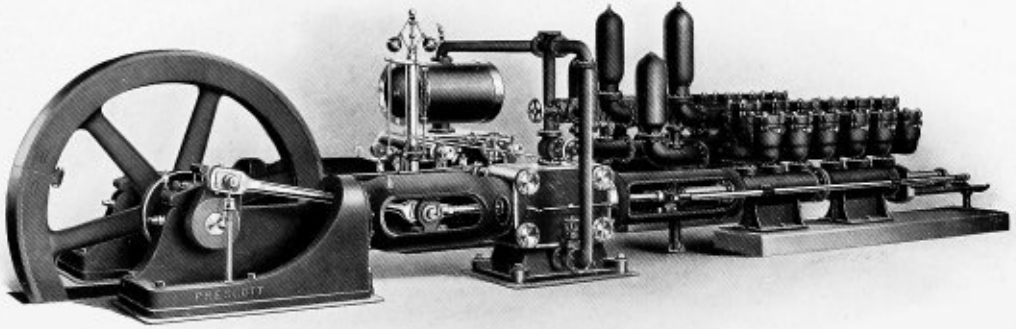
To meet these requirements, we build a complete line of Cross Compound, Three Cylinder Compound and Triple Expansion High Duty Corliss Engines to operate any of our various types of water ends that might be best adapted to the intended service.

These engines are not the ordinary commercial engine, but stand for the highest expression of engineering skill and practical experience that can be embodied in a strictly pumping engine.

When considering the succeeding illustrations of these engines, kindly bear in mind that the Missabe Patterns are intended for heads of 500 feet and less, while the Pot Forms are for the heavier pressures.

Where compartments or shafts are too small to permit the lowering of cross compounds or triples, the three cylinder compounds can be substituted.

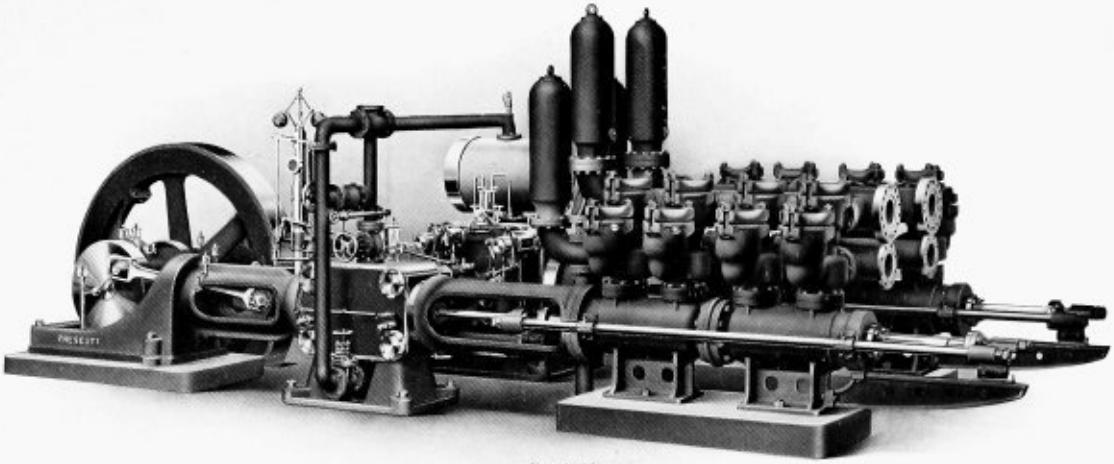
Running condensing, these engines are equipped with any form of condensing apparatus best suited for the service.



Cut 1029

Prescott Corliss Cross Compound High Duty Mine Pumping Engine

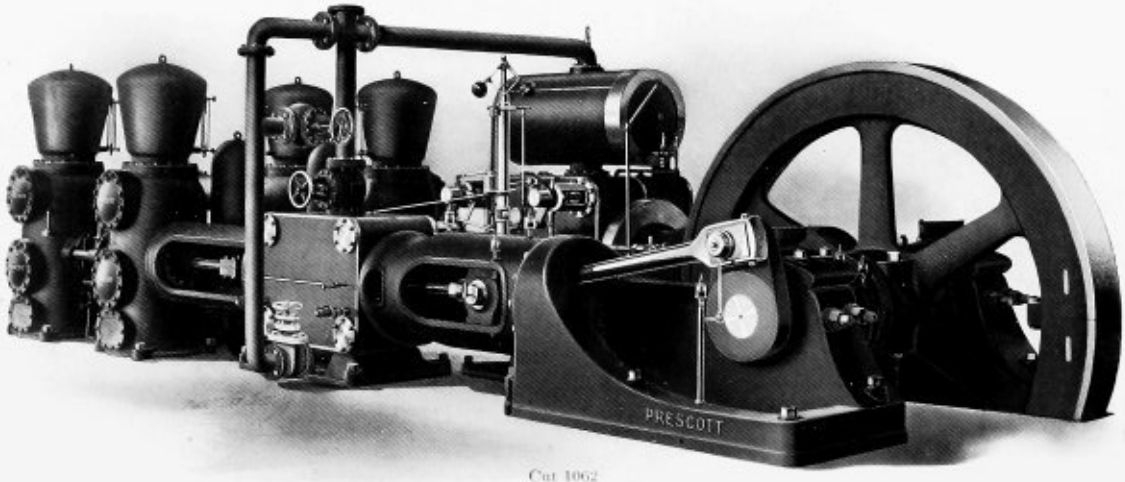
Pot Form



Cut 1031

Prescott Corliss Cross Compound High Duty Mine Pumping Engine

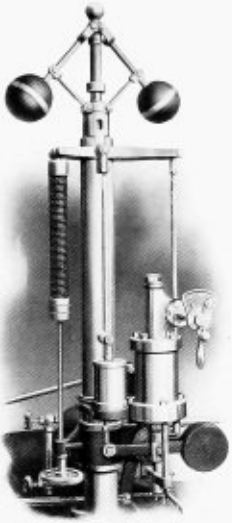
Pot Form



Cut 1062

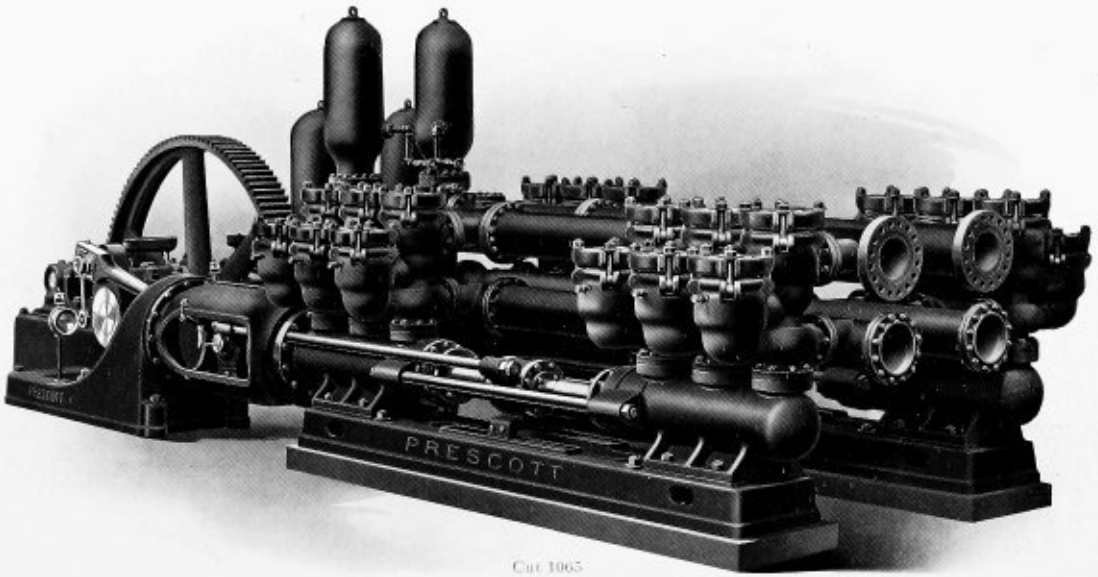
Prescott Corliss Cross Compound High Duty Mine Pumping Engine

Missabe Pattern



Cut 570

Prescott Corliss Speed and Pressure Governor



Cut 1065

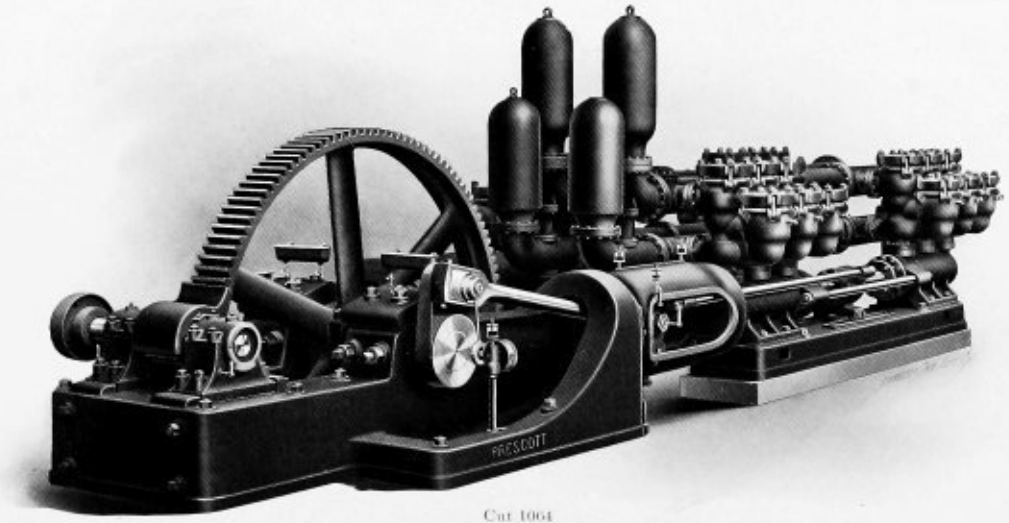
Duplex Geared Power Driven Pump

Pot Form

Prescott Power Driven Mine Pumps

The constantly increasing use of electricity in and about mines and its cheapness in many localities, as against steam power has called for the development of a line of power pumps embodying the same reliable features, in the water end construction as our steam machines. Cut No. 1065 illustrates a geared power pump for 1000 gallons per minute against 1000 feet head, and we are prepared to build in duplex designs a full line of power driven machines to cover the entire line of mining pump requirements. These machines can be belt or gear driven and some of the latest and largest designs are motor driven with rotor mounted directly on the shaft, thus eliminating gears and increasing efficiency.

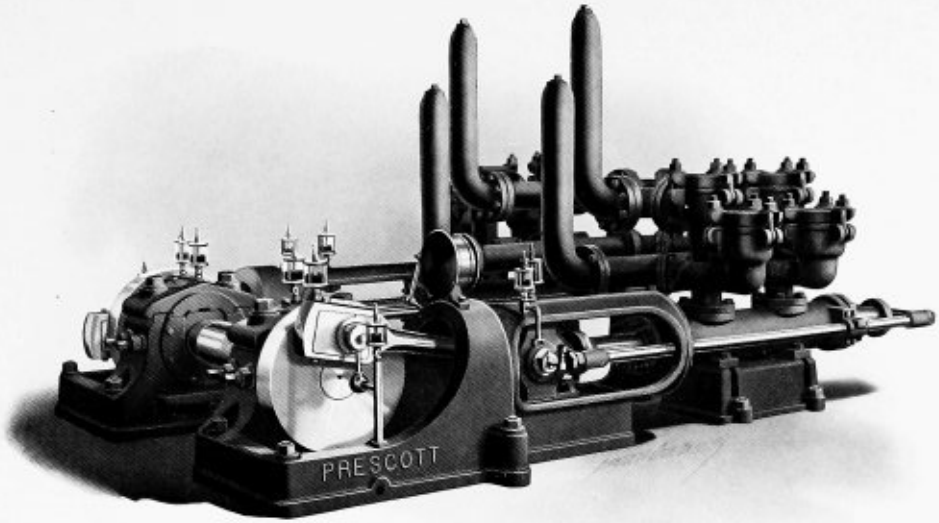
We build these power pumps in the Chandler, Missabe and Pot Form water end patterns, all of which are the results of years of experiment and experience. The Pot Form end shown opposite has centrally packed plungers and is arranged with a hollow crosshead, so that quick repair or change in plungers may be made as the stuffing boxes are also removable. We respectfully request an opportunity of figuring on anything in the power driven pump line that may come up, as our range of patterns and designs puts us in a position to give the very best of service in the working out of difficult power pumping propositions for mines.



Cut 1064

Duplex Geared Power Driven Pump

Pot Form



Cut 576

Duplex Power Driven Pump

Pot Form

Cut 1066

Prescott Multi-Stage Turbine Pump Motor Driven

Prescott Multi-Stage Turbine Pumps

For mine service where the water is comparatively clear and a cheap fuel or electric rate is available, the multi-stage turbine pump direct connected to an electric motor offers an attractive pumping unit.

Recommending this type of pump are its low first cost, small space occupied, variable discharge control, uniform velocity of water in the column pipe and ease of transfer on account of low weight. The last advantage is especially valuable on mining service where the deposits are variable in horizontal extent only and not in depth.

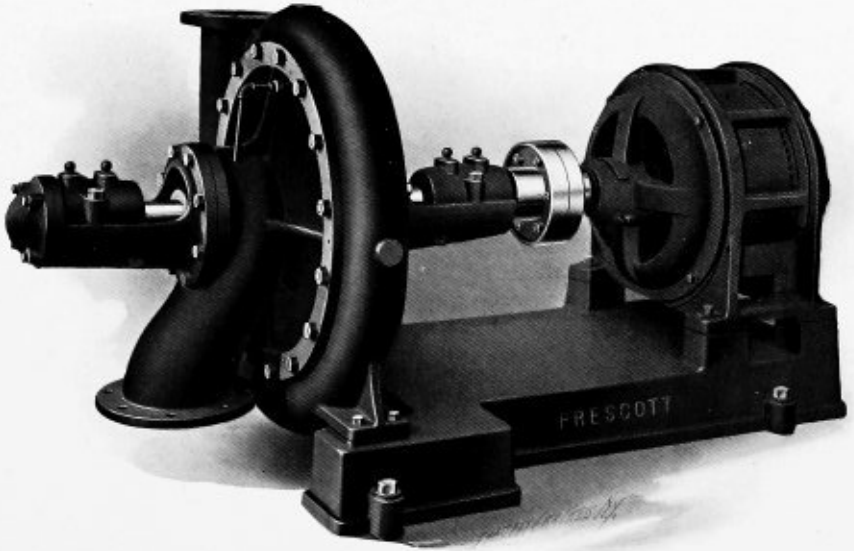
The Prescott multi-stage turbine pump has been designed after a careful and thorough study of every detail of construction involved in a machine of this type. It is constructed along lines distinctly different from any other now on the market. Each stage is built separately and in the complete pump are externally bolted together. This feature permits of the increasing or decreasing of the number of stages at any time when a radical change in the operating conditions is found necessary, without necessitating the purchase of a new pump. It further permits stocking of these segments insuring quicker delivery on either the new pump or repair parts.

Some of the important individual features of the Prescott construction are enclosed impellers, solid and removable diffusion vanes, labyrinth wearing rings, lined and renewable internal water bearings, ring oiling bearings of liberal proportions entirely separate from the pump case and unusually deep brass lined stuffing boxes.

The Prescott Company, manufacturing primarily every type of pumping machinery for mining service is in the unique position of being able to offer some type of pump especially suited for any peculiar set of conditions.

Inquiry should give the following data:—

Gallons per minute required.
Discharge and suction lifts (vertical).
Diameter and length of suction and discharge pipe.
Electric characteristics; voltage, phase, frequency.



Cut 247

Prescott Volute Centrifugal Pump

Motor Driven

Prescott "Volute" Centrifugal Pumps

For Heads up to 100 Feet

The pump shown on opposite page has been specially designed for heads up to and including 100 feet. On account of its low first cost and its adaptability for direct connection to steam turbine, high speed engine, or electric motor, this type has grown rapidly in favor. It is especially suited for circulating water for all types of condensers, and general supply for mining locations.

In design, we have radically departed from the old line practice in this type, and incorporated in our machines the latest features essential to durability and high efficiency. Each pump is a special engineering problem and the impellers or revolving blades are particularly proportioned to afford maximum economy for individual conditions.

The casings or spiral shells are proportioned according to hydraulic laws, insuring smooth operation and anti-shock conditions. The main bearings are entirely separated from the casing, which feature combined with ring oiled lubrication insures the best mechanical efficiency. An internal water balance eliminates dangerous axial thrusts. However to provide for the taking up of any slight unbalanced conditions and to retain the impeller in line, a lubricated thrust bearing is furnished. The interior is accessible by removing either the back or front side plates, which permits rapid inspection or cleaning. All internal revolving wetted surfaces are machined and polished, reducing the friction losses to a minimum. The stuffing boxes are deep, and furnished with water seals to insure tightness without undue pressure being exerted by the glands. A substantial bed plate is furnished for supporting both the pump and driving mechanism.

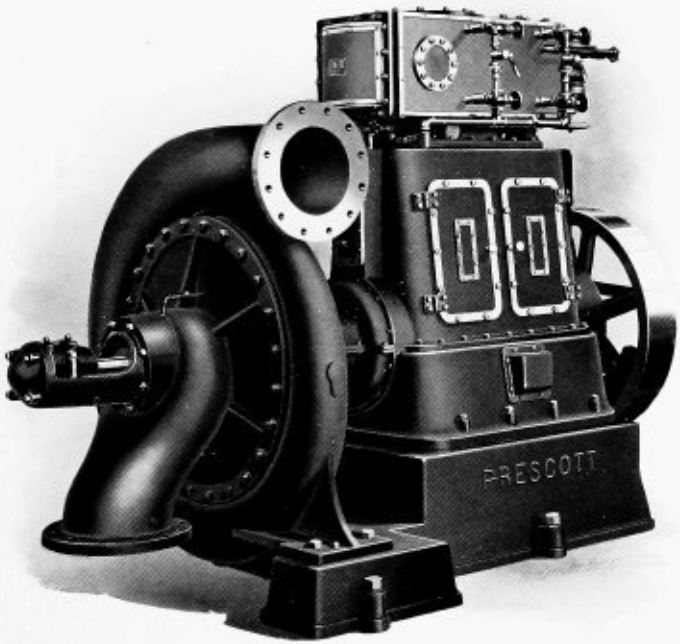
We can supply these pumps arranged for direct connection to driving units or arranged with outboard bearings and pulley suitable for belt drive.

Inquirer should give full details as to exact head, gallonage and method of driving desired, with speed obtainable.

Cut 250

Prescott Volute Centrifugal Pump

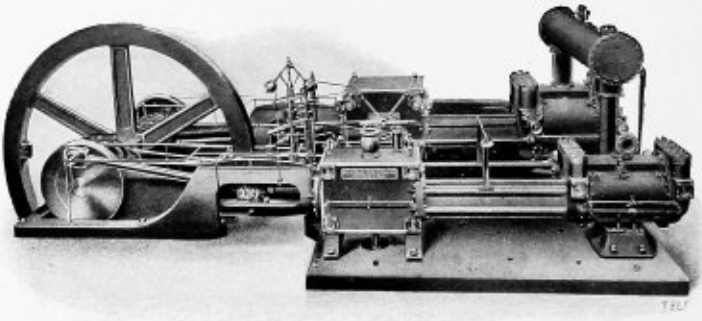
Engine Driven



Cut 572

Prescott Volute Centrifugal Pump

Engine Driven

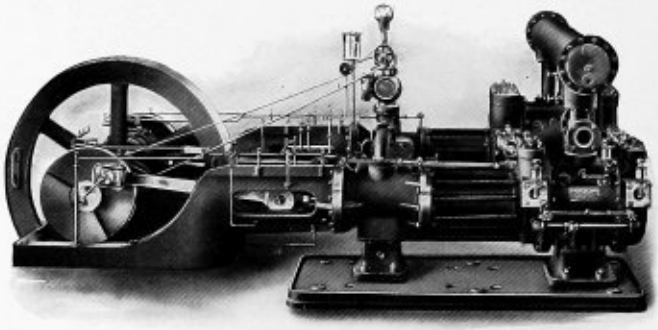


Cross Compound Two Stage Cincinnati Air Compressor

With Corliss Steam Valve Gear

Class XE-2

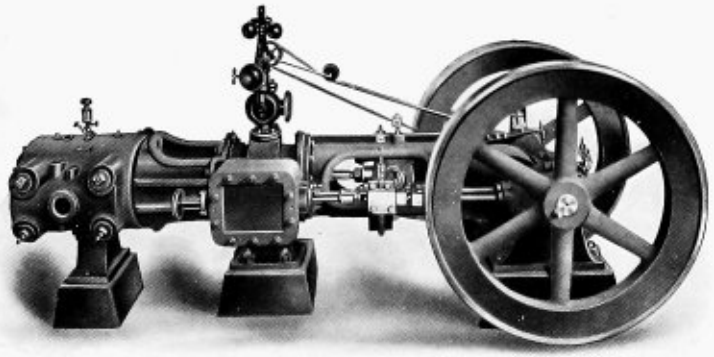
Rolling Mill Frame



Duplex Two-Stage Cincinnati Air Compressor

Class 11

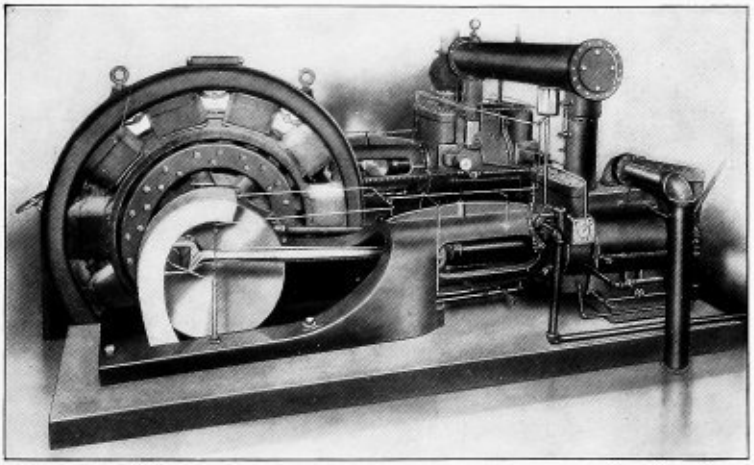
Rolling Mill Frame, Meyer Steam Valve Gear



Single Steam Driven Climax Air Compressor

CLASS 1B

Fork Frame, Diagonal Box Bearing, Meyer Gear



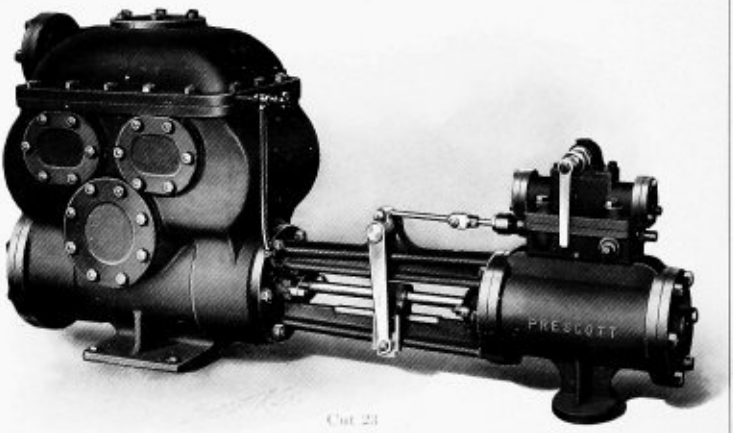
Duplex Two Stage, Power Driven Air Compressor

CLASS 18

Rolling Mill Frame, Cincinnati Air Valve Gear.
Motor Mounted on Crank Shaft.

POWER HOUSE EQUIPMENT

CONDENSING APPARATUS



Cut 23

Prescott Independent Single Vacuum Pump

Patented

Prescott Independent Single Vacuum Pumps

Patented

Direct Acting Type—Packed-Piston Pattern

The illustration on the opposite page shows the Prescott Direct Acting Vacuum Pump.

These pumps can be used on either a wet or dry vacuum system, also in connection with Keel and Surface Condensers, Vacuum Pans, Stills, Multiple Effect Apparatus, Heating Systems, and Cyanide Process plants in gold mines.

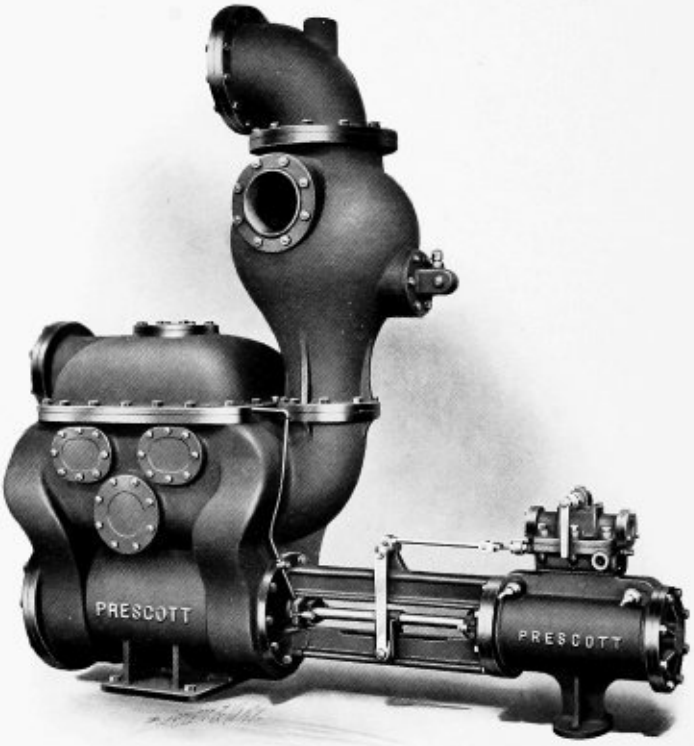
In design this pump contains the latest improvements. It is simple, reliable, smooth and efficient in action. When used for the Dry Vacuum System a small amount of water is required to seal the valves and also for lubrication of the cylinder.

The list below includes our standard sizes; other combinations can be made to meet given conditions.

Cut No.	Code	Size			Strokes per Minute	Speed per Minute, Feet	Cubic Feet Disp. per Minute	Dia of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyl.	Water Piston	Stroke				Steam	Exhaust	Suction	Disch.	Length	Width
23	Madden	5 ½	7	8	75	50	13.3	¾	1 ¼	Openings arranged to suit conditions	3 ½	4 5	1 4 ¼
23	Magie	6	8	10	75	62 ½	21.8	¾	1 ¼		4	4 11	1 9 ½
23	Magnate	7	10	12	75	75	41.0	1	1 ½		5	6 0 ¾	1 9 ½
23	Maid	7	12	12	75	75	58.8	1	1 ½		6	6 1	2 0 ½
23	Majesty	10	14	16	60	80	85.2	1 ¼	2		6	7 4 ½	2 2
23	Malady	10	16	18	55	82 ½	115.0	1 ¼	2		8	8 5	2 2
23	Malaria	12	16	18	55	82 ½	115.0	1 ½	2 ½		8	8 5 ¼	2 2
23	Mandate	10	18	18	55	82 ½	145.5	1 ¼	2		10	8 7 ¼	2 6
23	Mandolin	12	18	18	55	82 ½	145.5	1 ½	2 ½		10	8 7 ½	2 6
23	Manifest	12	20	18	55	82 ½	180.0	1 ½	2 ½		10	8 9 ¼	2 6
23	Manifold	14	22	18	55	82 ½	217.0	2	3		12	9 3 ¼	3 2
23	Manikin	14	22	24	50	100	263.0	2	3		12	10 7 ¼	3 2
23	Mantle	16	24	24	50	100	313.0	2	3		12	10 9	3 0

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for Brass Fitted Pumps.



Cut 21

Prescott Single Independent Air Pump and Condenser

Patented

The Prescott Single Independent Air Pump and Condenser

Patented

Cut No. 21 illustrates a very efficient condenser, being simple in construction, accessible in all its parts and requiring the least possible amount of water to produce complete condensation of the steam. It will maintain a constant and uniform vacuum of as many inches as is consistent with temperatures and altitude. Being independent, it can always be adjusted to the varying requirements or started before the engine is set in motion, thereby removing the atmospheric pressure and assisting the engine in picking up its load.

Its use will save from 20 to 40 per cent of steam and fuel consumption, or increase the Horse Power of the engine from 25 to 50 per cent with the same consumption according to local conditions.

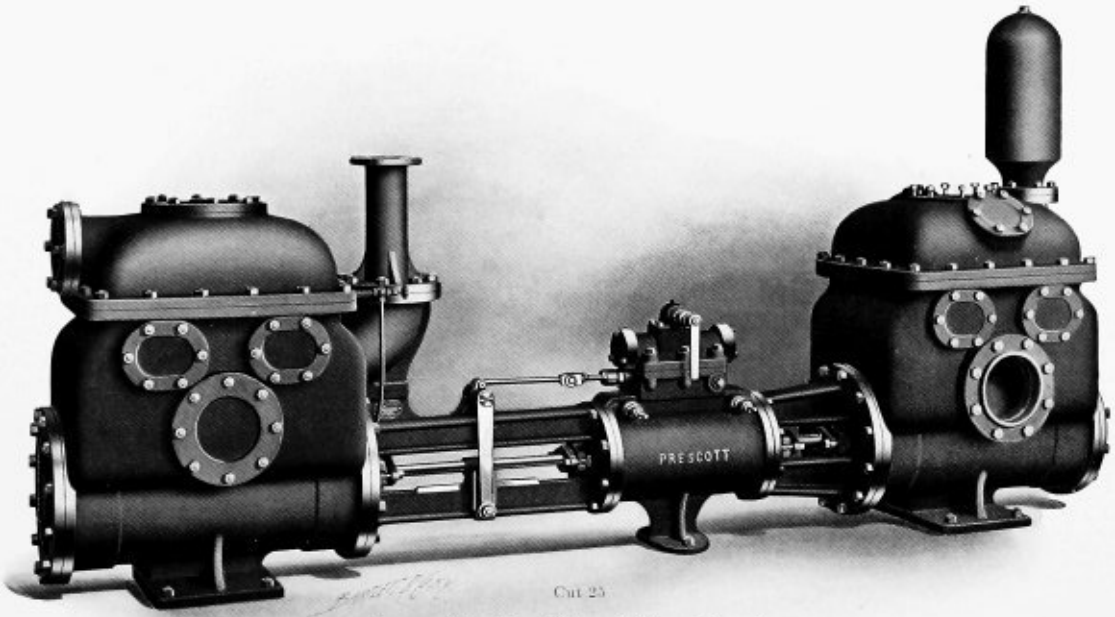
A special feature of this condenser is an automatic air relief valve, or vacuum breaker, which opens instantly to the atmosphere in case of danger, thus preventing flooding of the engine cylinders.

The list below includes our standard sizes; other combinations can be made to meet given conditions.

Cut No.	Code	Size			Lbs. Steam condensed per hour with Injection Water 70°	Strokes per Minute	Speed per Minute	Dia. of Pipe Openings				Main Engine Exhaust	Space Occupied Feet and Inches	
		Steam Cyl.	Water Piston	Stroke				Steam	Exhaust	Suction	Disch.		Length	Width
21	Lace	5 ½	7	8	900	75	50	¾	1 ¼	2 ½	3 ½	6	4 5	1 3 ¾
21	Lading	6	8	10	1480	75	62 ½	¾	1 ¼	3	4	6	5 0 ½	1 9 ¼
21	Lake	7	10	12	2800	75	75	1	1 ½	3 ½	5	6	6 0 ¾	1 9 ¼
21	Lament	7	12	12	4040	75	75	1	1 ½	4	6	8	6 1 ¼	1 11 ¼
21	Lapse	10	14	16	6050	60	80	1 ¼	2	5	6	8	7 4 ½	2 3 ½
21	Lass	10	16	18	7930	55	82 ½	1 ¼	2	6	8	8–10	8 5	2 3 ¾
21	Last	12	16	18	7930	55	82 ½	1 ½	2 ½	6	8	8–10	8 5 ¼	2 3 ¾
21	Latter	10	18	18	10000	55	82 ½	1 ¼	2	8	10	12–14	8 7 ¼	2 8
21	Lathe	12	18	18	10000	55	82 ½	1 ½	2 ½	8	10	12–14	8 7 ½	2 8
21	Ledge	12	20	18	12300	55	82 ½	1 ½	2 ½	8	10	12–14	8 9 ¼	2 8
21	Lessen	14	22	18	14900	55	82 ½	2	3	8	12	12–14	9 3 ¼	3 2
21	Lethal	14	22	24	18000	50	100	2	3	8	12	12–14	10 7 ¼	3 2
21	Link	16	24	24	21500	50	100	2	3	10	12	16–16	10 9 ¾	3 0

If wanted Brass Fitted add Code Word "Braft".

The air cylinders are regularly fitted with bronze linings. Should other parts be required of bronze, a slight additional charge is made.



Cut 25

Prescott Combined Air and Circulating Pump

Patented

Prescott Combined Air and Circulating Pumps

Patented

The Combined Air and Circulating Pump illustrated on the opposite page is designed especially for use in connection with surface condensers.

The steam, air and water cylinders are arranged in tandem, with the steam cylinder between, and rigidly connected by heavy cast iron intermediates. This pump is of the single type. The steam cylinder is fitted with our improved valve motion, which is particularly well adapted for operating pumps of this type, as it insures a full and positive stroke.

The air and water cylinders are lined with cast bronze removable linings, the pistons are hollow and provided for adjustable flexible packing.

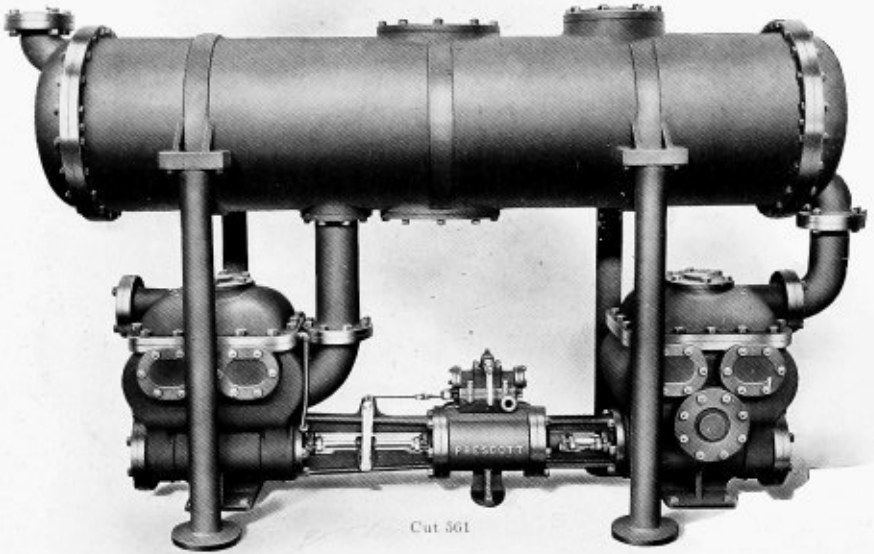
The valves are made of the best composition rubber of suitable texture for the given conditions of service. The valve seats are made of the best composition bronze and firmly screwed into the valve decks on a taper thread. The valve guards are of composition bronze and especially designed to prevent the valves from curling when handling water of a high temperature. The springs are of special spring brass and securely held in place by the valve guards.

Other combinations and sizes than those listed below can be furnished for special conditions of service.

Cut No.	Code	Size				Strokes per Minute	Speed per Minute Feet	Gallons Circulating Water per Minute	Dia. of Pipe Openings	
		Diam. of Steam Cyl.	Diam. of Air Cyl.	Diam. of Water Cyl.	Stroke				Steam	Exhaust
25	Nation	5 ½	7	7	8	75	50	100	¾	1 ¼
25	Native	7	8	8	10	75	62 ½	163	1	1 ½
25	Natural	7	10	10	12	75	75	306	1	1 ½
25	Naval	8	12	12	12	75	75	440	1	1 ½
25	Neat	10	14	14	16	60	80	640	1 ¼	2
25	Nebulus	12	16	16	18	55	82 ½	860	1 ½	2 ½
25	Nibble	12	18	18	18	55	82 ½	1090	1 ½	2 ½
25	Nimble	14	20	20	18	55	82 ½	1345	2	3
25	Notable	16	22	22	18	55	82 ½	1625	2	3
25	Notably	16	22	22	24	50	100	1970	2	3
25	Notary	16	24	24	24	50	100	2350	2	3
25	Novice	18	24	24	24	50	100	2350	2 ½	3 ½
25	Noway	20	24	24	24	50	100	2350	2 ½	3 ½

If wanted Brass Fitted add Code Word "Braft".

The air and water cylinders are regularly fitted with bronze linings; should other parts be required of bronze, a slight additional charge is made.



Cut 561

Prescott Surface Condenser with Combined Air and Circulating Pumps

Patented

Prescott Surface Condensers with Combined Air and Circulating Pumps

Patented

The illustration on the opposite page shows our standard cylindrical shell surface condenser mounted directly over the combined air and circulating pumps, and properly connected thereto by suitable piping. These condensers are also built with rectangular shells. This combination, as will be seen, is a very complete and compact condensing apparatus, and is suitable for use in connection with small and medium sized engines.

The shell is made of hard close grained cast iron, strongly ribbed and braced to withstand the collapsing pressure. Suitable exhaust, drain and circulating openings are provided, as well as conveniently placed hand holes for cleaning and inspection.

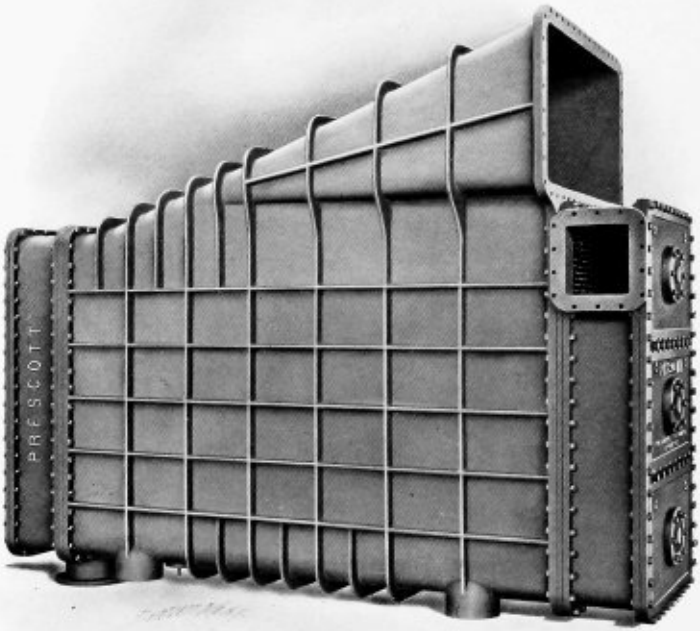
The tubes are of seamless drawn brass, of the best quality for the purpose, consisting of straight lengths, and packed at each end. Our method of packing the tubes insures an air and water tight joint, and at the same time permits the necessary expansion and contraction of the tubes.

The tube heads are carefully spaced and drilled to receive the tubes and packing.

A suitable baffle plate is provided in each condenser, for properly distributing the entering exhaust steam and to relieve the tubes from its impact. The larger sizes of condensers have supporting plates to prevent vibration of the tubes and carry their weight at the center.

The Air and Circulating pumps used in connection with this apparatus are fully described on page 77 of this catalogue.

For special High Vacuums these condensers can be furnished with Independent or Centrifugal Circulating Pumps and Rotative Dry Vacuum Pumps. In connection with the latter can be used Independent or Centrifugal Wet Vacuum Pumps.



Cut 151

Prescott Surface Condenser with Rectangular Shell

Prescott Surface Condensers

Illustration 181 on the opposite page shows a 4000 square feet Prescott Surface Condenser with rectangular shell and special exhaust inlet, particularly designed for use in connection with steam turbines driving electric generators for street railway and lighting service.

The rapid development of the steam turbine in the last few years has necessarily carried with it a high development of the condensing apparatus required, as the economic utilization of the energy of the steam in a turbine requires its expansion to the very lowest pressure possible. In reciprocating engine practice about 26" vacuum is considered satisfactory, but with a steam turbine every inch of vacuum above 26" will increase the economy from 4 to 6 per cent, therefore making it a matter of vital importance that the highest vacuum possible should be maintained at the turbine.

While either the Surface, Barometric or Independent Condenser may be used for turbine work, it is often desirable to save the water of condensation, and in the case of the turbine this is an especially desirable point, since the steam is free from oil or impurities and the surface condenser accomplishes this saving.

Prescott turbine condensing plants, both Surface and Barometric, now in successful operation in some of the most representative plants in the country, have demonstrated their efficiency, low cost of operation and maintenance to be unequaled.

For removing the air and non- condensable vapors from surface condensers on turbine work, we furnish the Prescott Positive Rotative Dry Vacuum Pump, as shown and described on pages 84 and 85 of this catalogue.

For removing the water of condensation from the surface condensers, we furnish either electrically driven centrifugal pumps or steam driven pumps, as illustrated and described elsewhere in this catalogue.

We shall be pleased to furnish, upon application, specifications, drawings and estimates on turbine condensing apparatus for any capacity and condition of service.

Cut 566

Prescott Barometric Condenser

Patented

The Prescott Barometric Condenser

Patented

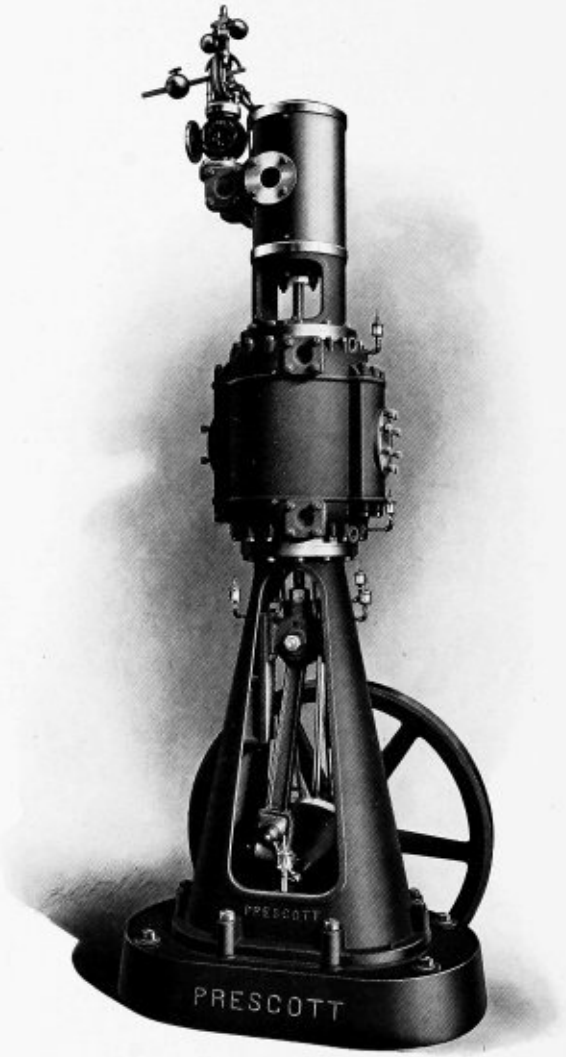
Cut 566 shows in section the Prescott Barometric Condenser, which in the essential features differs radically from others, and is fully covered by letters patent.

It consists primarily of a condensing chamber, fully equipped with steam and water cones; paralleling diffusion and radiating vanes; contracted throat nozzle and two tail pipes.

The entering steam is directed by the steam cone into a hollow cone of injection water, thus bringing it into intimate contact with the cooling water. This arrangement utilizes the whole kinetic energy of the incoming steam to increase the velocity of the water at the lower end of the water cone. Directly below, but separate therefrom, is the throat piece, which is attached to the inner tail pipe. The water passing through this throat at high velocity carries the air and non-condensable vapors with it down into the hot well. The space at the top of the throat provides an overflow through the outer tail pipe into the hot well, should the injection water ever become excessive through accident or design, thus entirely preventing flooding of the engines. By this method great overloads can also be taken care of and a uniform vacuum maintained under varying conditions.

We have Barometrics in daily operation, maintaining unusually high vacuum without dry vacuum pumps. For ordinary conditions these condensers will operate without the use of a dry vacuum pump, thereby reducing the number of auxiliaries to look after and power to run them.

Our Barometric is particularly well adapted to central condensing plants where there are a number of units exhausting into the same condensing system, and for vertical reciprocating engines it has no equal. It can be bolted direct to the engine exhaust opening, taking the minimum amount of space, and producing the highest vacuum exactly where it is wanted—in the low pressure cylinder.



Cut 552

Prescott Rotative Dry Vacuum Pump

The Prescott Rotative Dry Vacuum Pump

Illustration opposite shows our Rotative Dry Vacuum Pump.

This pump is of the vertical type, very heavy and substantial. These dry vacuum pumps are designed to produce the highest possible vacuum in connection with surface and barometric condensers used with Steam Turbines or Reciprocating Engines. The air inlet valves are mechanically operated and placed in the air cylinder heads, which reduces the clearance at the end of each stroke to the lowest possible limit. The air outlet valves are voluntary and are placed in the heads to reduce clearances. On Steam Turbines high vacuum is of the greatest importance and the Prescott Dry Vacuum Pump is well adapted to this class of apparatus, either in connection with surface condensers or for situations where Barometric Condensers can be applied to this class of Engine.

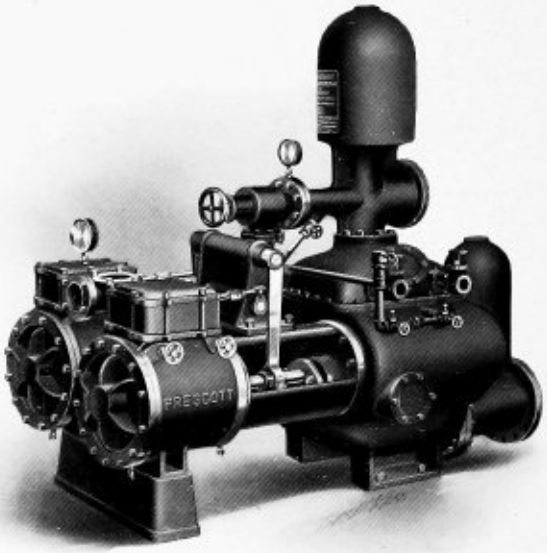
On the reciprocating engine, in the past, high vacuum was not looked upon as being of prime importance but the development of high vacuum apparatus for the Steam Turbine has led to its application to the reciprocating engine with very satisfactory results. The Prescott dry vacuum pump can be applied to all dry vacuum systems where high vacuums are necessary or desirable.

These pumps are also suitable for removing the air from long suction lines and other similar services.

By removal of the steam cylinder and the substitution of the band wheel or gear in place of flywheel, this pump can be equipped for either belt or motor drive.

The Prescott Rotative Dry Vacuum Pump is built in all sizes and capacities.

POWER HOUSE EQUIPMENT, BOILER FEEDS, FIRE AND GENERAL SERVICE



Cut 231

Prescott Underwriter Fire Pump

Patented

Prescott Underwriter Fire Pumps

"National Standard"

The Underwriter Steam Fire Pump is of the duplex type, with certain improvements exacted by the Board of Fire Underwriters, to more safely meet the demands of fire service.

By reason of the fact that pumps used exclusively for fire service are idle or not in operation weeks and months at a time and then required to start instantly and run at full speed by persons excited and perhaps unskilled, the following changes in specifications over the ordinary duplex pump are demanded:

As a protection against rust and enabling the pump to start instantly, the piston rods, valve rods and rock shaft bearings are made of Tobin bronze; likewise the plungers and bushings are made of bronze castings.

Its steam ports, water passages, and air chamber are made much larger than in ordinary trade pumps, insuring higher speed and the delivery of a larger volume of water in an emergency without water hammer or injury to the pump.

The Prescott Pumps can be run at highest speed; they are tested at a pressure of 300 pounds per square inch, while expected to operate against a pressure of only 100 pounds per square inch, leaving an ample factor of safety to withstand all unexpected shocks and jars.

The Prescott Underwriter Fire Pumps are built in strict conformity with the Underwriter Steam Fire Pump specifications and have been approved and accepted by the Inspection Departments of the Associated Factory Mutual Fire Insurance Companies, the National Board of Fire Underwriters, and the National Protective Association.

The following necessary fittings or attachments are included in the price and regularly furnished with Prescott Underwriter Fire Pumps.

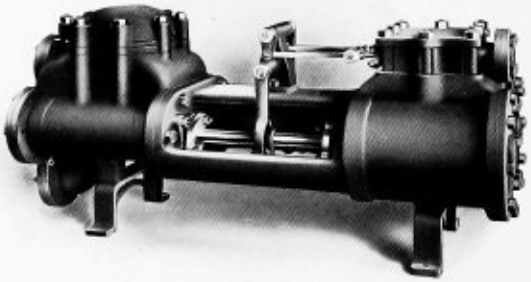
A capacity plate.
Air and Vacuum chambers
A water relief valve of proper capacity.
A set of brass priming pipes and special priming valves.
A single sight feed lubricator, connected above the throttle.
Two stroke gauges.
Two best quality pressure gauges.
A cast iron water relief valve discharge cone.
From two to six hose valves.
A one-pint oil pump, connected below the throttle.

Cut No.	Code	Normal Capacity in Gallons per Minute	No. of 1⅛" Streams	Size			Size of Pipes for normal conditions, to be increased for long lengths				Space Occupied Feet and Inches	
				Diam. St'm Cyl.	Dia. Wat. Pistons	Length of Stroke	Steam	Exhaust	Suction	Disch'rge	Length	Width
231	Kidnap	500	2	14	7	12	3	4	8	6	8 3	3 10
231	Kindly	750	3	16	9	12	3 ½	4	10	8	8 9	4 2
231	Kirtle	1000	4	18	10	12	4	5	12	8	9 3½	4 6
231	Knuckle	1500	6	20	12	16	5	6	14	10	11 1½	4 9

The plunger and bushing construction will be furnished unless otherwise specified. Packed pistons working in bronze sleeves will be furnished if so ordered, at a slight additional cost.

Cut 150

Cut 151



Cut 152

Prescott Standard Duplex Piston Pattern Boiler Feed Pumps

Prescott Standard Duplex Piston Pattern Boiler Feed Pumps

For 150 Pounds Working Pressure

The cuts on the opposite page illustrate Pumps of the Piston Pattern, designed for boiler feeding and general service where the water pressure does not exceed 150 pounds. This pattern should be used where the liquid to be pumped contains small quantities of grit or foreign material, or where there is an unusually long or high suction lift and a foot valve cannot be used.

The water cylinders are composition lined and have adjustable, packed pistons. The water valves are so arranged that the water pistons are at all times submerged. The valve areas and water passages are large, and special care has been taken to have all the parts easily accessible for inspection or repair.

They are regularly fitted with steel piston rods and cast iron water pistons, but Bronze rods and Brass water pistons will be furnished at an additional charge.

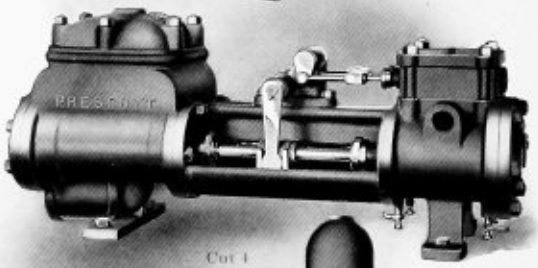
When hot water is to be pumped the difficulty of lifting it increases with its temperature. It should, therefore, always be arranged to flow into the pump from sufficient head to submerge the valves, if so warm as to vaporize when the atmospheric pressure is removed.

Larger sizes of Piston Pattern Boiler Feed Pumps for 150 pounds pressure are listed on page 101.

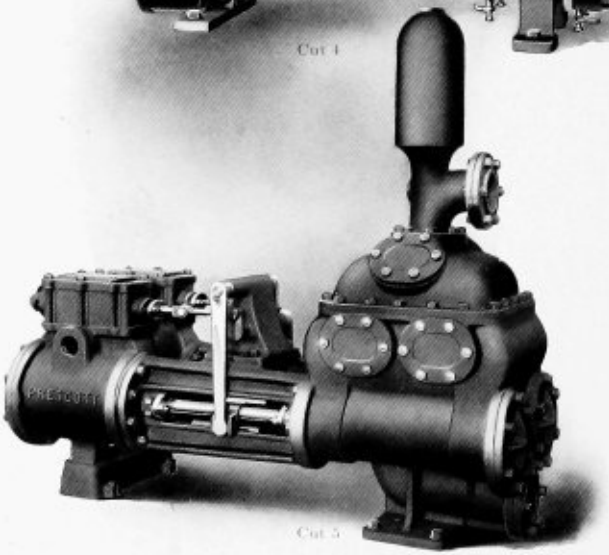
Cut No.	Code	Size			H.P. Boiler, Pump will Feed, based on 30 lbs. per H. P. Hour	Dia. of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyls.	Water Pist'ns	Stroke		Steam	Exhaust	Suction	Disch.	Length	Width
150	Fable	2	1¼	2¾	15	⅜	½	1	¾	1 9¼	0 7
151	Fabric	3	2	3	40	⅜	½	1¼	1	2 0	0 9
152	Facet	3½	2¼	4	60	⅜	¾	1½	1¼	1 9½	0 9
152	Fact	4½	2¾	4	100	½	¾	2	1½	2 9	1 1
152	Faction	5¼	3½	5	200	¾	1¼	2½	1½	3 5	1 4
152	Fagot	6	4	6	300	1	1½	3	2	3 7	1 5
152	Fain	7½	5	6	500	1½	2	4	3	3 9	1 10
152	Faithful	7½	4½	10	600	1½	2	4	3	4 11	1 10
152	Falcon	9	5¼	10	800	2	2½	4	3	5 0	1 11
152	Fallible	10	6	10	1000	2	2½	5	4	5 1	2 2

If wanted Brass Fitted add Code Word "Braft".

Cut 1



Cut 4



Cut 5

Prescott Regular Duplex Piston Pattern Boiler Feed Pumps

Prescott Regular Duplex Piston Pattern Boiler Feed Pumps

For 200 Pounds Working Pressure

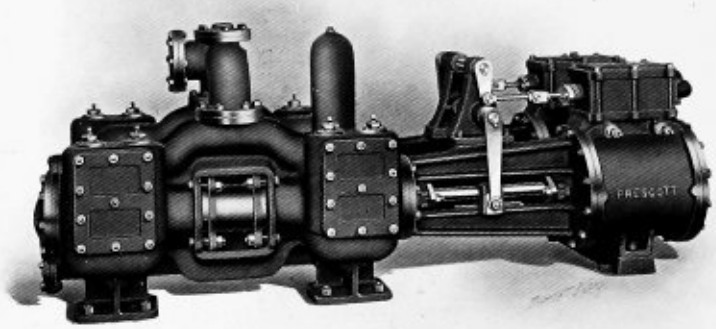
The increasing use of Boilers carrying high pressures requires a boiler feed pump of the piston pattern, much stronger than the ordinary type. The pumps, represented by illustrations on opposite page, are fitted with packed water pistons, operating in removable and renewable water cylinder linings. They are suitable for either hot or cold water.

When hot water is to be pumped, the difficulty of lifting it by suction increases with the temperatures. It should, therefore, be arranged to flow into the pump chamber, if so hot as to vaporize when the atmospheric pressure is removed.

Cut No.	Code	Size			H.P. Boiler Pump will feed, based on 30 lbs. per H. P. Hour	Dia. of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyls.	Water Pistn's	Stroke		Steam	Exh'st	Suction	Disch.	Length	Width
1	Baffle	3½	2	3	40	½	¾	1½	1	2 2	10¼
4	Balmy	4½	2¾	4	100	¾	1	2	1½	2 9½	13
4	Bandit	5¼	3½	5	200	¾	1¼	2½	2	3 3¼	15¼
4	Banner	6	4	6	300	1	1½	3	2	3 9	16½
4	Beach	7	4¾	8	500	1¼	2	4	3	4 5½	22½
4	Blithe	7	4½	10	600	1¼	2	4	3	5 0	22½
5	Blossom	8	5	10	700	1½	2	5	4	5 9¾	26
5	Bower	10	6	10	1000	2	2½	5	4	5 10	28

If wanted Brass Fitted add Code Word "Braft".

These pumps are regularly fitted with cast iron linings and steel piston rods. For these parts of bronze an additional charge is made.



Cut 189

Prescott Duplex Center-Packed Plunger Pump

Boiler Feed and General Service

Prescott Duplex Center-Packed Plunger Pump

For Boiler Feeding and General Service

For 250 Pounds Working Pressure

These pumps are designed for boiler feeding and general service against working pressures as high as 250 pounds per square inch. They have two double acting outside center packed water plungers.

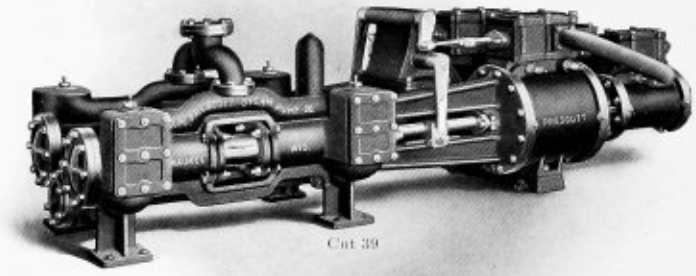
The valves are designed for hot or cold water, so arranged as to be readily accessible.

Special attention has been given to the design of this pump for boiler feeding purposes. All water passages are large and direct; all pockets where air or vapor could lodge have been eliminated. The plunger stuffing boxes are very deep and the throats are fitted with a removable brass ring which can be replaced when worn.

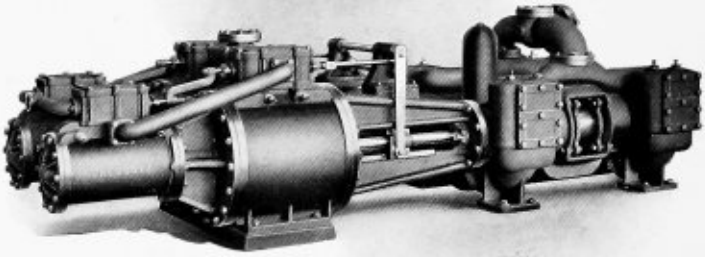
Cut No.	Code	Size			H.P. Boiler, Pump will feed, based on 30 lbs. per H. P. Hour	Dia. of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyls.	Water Plungers	Stroke		Steam	Exhaust	Suction	Disch.	Length	Width
189	Candor	8	5	12	800	1 ½	2	5	4	8 2 ½	3 7 ¼
189	Caress	10	6	12	1200	2	2 ½	6	5	8 3 ¼	3 11 ¾
189	Chafe	10	7	12	2000	2	2 ½	6	5	8 8	4 0 ¼
189	Change	12	7	12	2000	2	3	6	5	8 8 ¼	4 0 ¼
189	Chaplet	14	8	12	2600	2 ½	3 ½	8	6	9 4 ¼	4 4
189	Chide	14	8	18	4300	2 ½	3 ½	8	6	10 11 ¾	4 4
189	Chink	14	9	18	5500	2 ½	3 ½	10	8	11 3	5 1
189	Cogent	16	9	18	5500	2 ½	3 ½	10	8	11 4 ½	5 1
189	Clever	14	10	18	6850	2 ½	3 ½	10	8	11 3	5 1
189	Coma	16	10	18	6850	2 ½	3 ½	10	8	11 4 ½	5 1
189	Comb	18	10	18	6850	3	4	10	8	11 4 ¾	5 1

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for Brass Fitted Pumps.



Cut 39



Cut 42

Prescott Compound Duplex Center-Packed Plunger Pumps

Boiler Feeds and General Service

Prescott Compound Duplex Center-Packed Plunger Pumps

For Boiler Feeding and General Service

For 250 Pounds Working Pressure

These pumps, as illustrated on the opposite page, are adapted for boiler feeding and general service under heavy pressures and are of the same general design as those described on page 95, with the exception of the steam end, which is compounded.

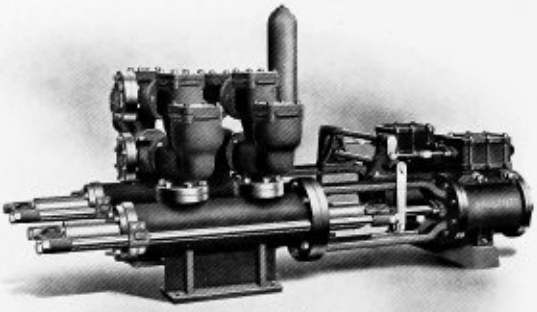
Boiler feed pumps with compound steam ends are an advantage when used in large units in power plants, particularly where the service is continuous, as the expansion of the steam is utilized with the result that about one-third of the fuel consumption required for a simple duplex pump is saved.

The list below includes only our standard sizes; other combinations can be made to meet given conditions.

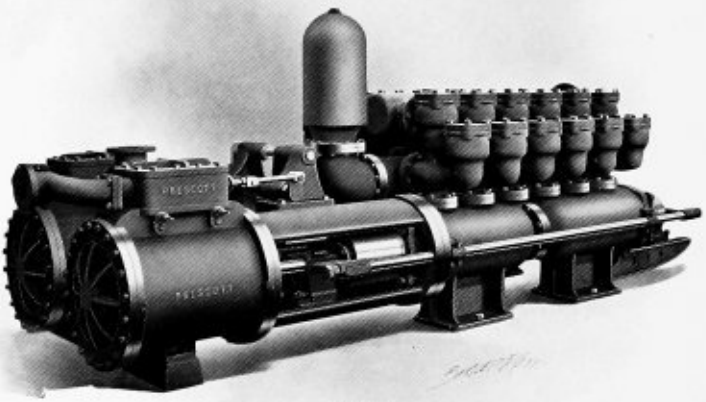
Cut No.	Code	Size			H.P. Boiler. Pump will feed, based on 30 lbs. per H. P. Hour	Dia. of Pipe Openings				Space Occupied Feet and Inches			
		Steam Cyls.	Water Plungers	Stroke		Steam	Exhaust	Suction	Disch.	Length		Width	
39	Dabble	7 & 10	5	12	800	1 ½	2 ½	5	4	10	5 ¼	3	7 ¼
39	Daft	7 & 10	6	12	1200	1 ½	2 ½	6	5	10	5 ¼	3	11 ¾
42	Dale	8 & 12	7	12	2000	1 ½	3	6	5	10	11 ¼	4	0 ¼
42	Dash	9 & 14	7	12	2000	2	3 ½	6	5	11	1	4	0 ¼
42	Dawn	9 & 14	8	12	2600	2	3 ½	8	6	11	5 ¾	4	4
42	Debar	10 & 16	8	12	2600	2	3 ½	8	6	11	5 ¾	4	4
42	Debate	10 & 16	8	18	4300	2 ½	3 ½	8	6	13	9	4	4
42	Defend	12 & 18	9	18	5500	2 ½	4	10	8	14	2	5	1
42	Define	12 & 18	10	18	6850	2 ½	4	10	8	14	2	5	1

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for Brass Fitted Pumps.



Cut 214



Cut 560

Prescott Duplex Outside-Packed Plunger Boiler Feed Pumps

Pot Form

Prescott Duplex Outside-Packed Plunger Pot Form Boiler Feed Pumps

For 300 Pounds Working Pressure

The illustrations show a type of pump specially designed for boiler feeding against working pressures up to 300 pounds.

The water ends are of the "Pot Form" and have four single acting outside packed water plungers. The water valves are designed for either hot or cold water and arranged so as to be readily accessible. All water passages are large and direct. Each suction and discharge valve is enclosed in a separate chamber, permitting the use of large openings, combined with great strength.

The plunger stuffing boxes are very deep and fitted at the bottom with a removable brass ring which can be replaced when worn.

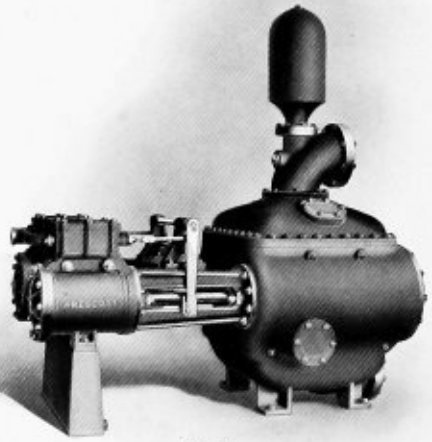
These pumps are especially adapted for boiler feeding service in electric lighting and railway stations or in other plants where high pressures are carried.

Cut No.	Code	Size			H.P. Boiler, Pump will feed, based on 30 lbs. per H. P. Hour	Dia. of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyls.	Water Plungers	Stroke		Steam	Exhaust	Suction	Disch.	Length	Width
214	Eager	8	4	12	500	1 ½	2	3 ½	3	9 9¼	4 6 ½
214	Early	10	5	12	800	2	2 ½	4	3 ½	10 2 ½	4 6 ½
214	Earnest	12	6	12	1200	2	3	6	5	10 2¾	4 3¼
214	Elegant	12	7	12	2000	2	3	6	5	10 2¾	4 3¼
560	Enchant	14	8	18	4300	2 ½	3 ½	7	6	14 3	4 3
560	Ensign	16	10	18	6850	2 ½	3 ½	8	6	14 5 ½	4 1 ½
560	Ensue	18	10	18	6850	3	4	8	6	14 7 ½	4 1 ½
560	Ensuing	20	12	24	15000	4	5	10	8	17 0	5 10
560	Entangle	24	14	24	25000	5	6	12	10	19 0¾	5 11¾
560	Entangling	26	17	24	35000	5	6	16	12	22 3	7 3

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for Brass Fitted Pumps.

Cut 8



Cut 12

Prescott Regular Duplex Piston Pattern Pumps

Boiler Feeds and General Service

The Prescott Regular Duplex Piston Pattern Pumps

For Boiler Feeding and General Service

For 150 Pounds Working Pressure

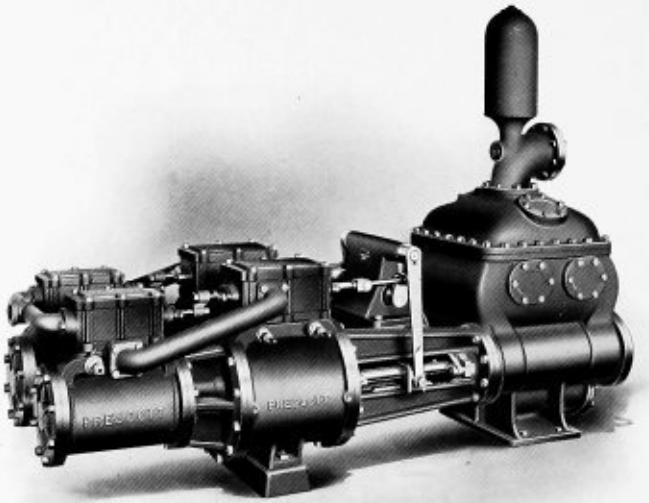
The Prescott Regular Piston Pattern Pump is designed for Boiler Feeding, Hydraulic Elevator, or any condition of service where the water pressure does not exceed 150 pounds. The pumps have double acting water pistons, packed with square fibrous packing. The water cylinders are fitted with removable and renewable linings, either of cast iron or of bronze.

In pumps shown in Cut 8 both the suction and discharge valves are located above the water pistons and in Cut 12 the suction valves are located below and the discharge valves above the pistons.

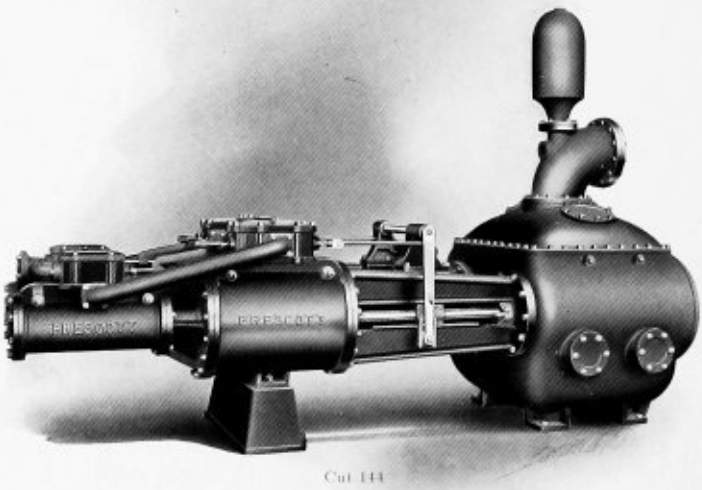
Cut No.	Code	Size			Gallons per Stroke, One Piston	Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings				Space Occupied Feet and Inches			
		Steam Cyls.	Water Pistons	Stroke				Steam	Exh'st	Suction	Disch.	Length		Width	
8	Falter	10	7	12	1.99	100	398	2	2½	7	5	6	6	2	8
8	Fame	12	7	12	1.99	100	398	2	3	7	5	6	6	2	10
8	Familiar	14	7	12	1.99	100	398	2½	3½	7	5	6	9½	3	0
8	Famous	12	8	12	2.61	100	522	2	3	8	6	6	10½	3	2¼
8	Fancy	14	8	12	2.61	100	522	2½	3½	8	6	7	2	3	2
8	Fanciful	16	8	12	2.61	100	522	2½	3½	8	6	7	3½	3	4
8	Framer	14	9	12	3.30	100	660	2½	3½	10	8	7	4½	3	7
8	Fasten	16	9	12	3.30	100	660	2½	3½	10	8	7	6	3	9
8	Fastener	18	9	12	3.30	100	660	3	4	10	8	7	7¼	4	0
8	Faultless	14	10	12	4.08	100	816	2½	3½	10	8	7	4½	3	7
8	Favor	16	10	12	4.08	100	816	2½	3½	10	8	7	6	3	9
8	Fenny	18	10	12	4.08	100	816	3	4	10	8	7	7¼	4	0
8	Ferment	20	10	12	4.08	100	816	4	5	10	8	8	3½	4	6
12	Festal	14	12	12	5.87	100	1174	2½	3½	12	10	7	7¼	4	6
12	Fetter	16	12	12	5.87	100	1174	2½	3½	12	10	7	8¼	4	6
12	Fidelity	18	12	12	5.87	100	1174	3	4	12	10	7	9½	4	6
12	Filter	20	12	12	5.87	100	1174	4	5	12	10	8	3½	4	6
12	Finely	16	14	12	7.99	100	1598	2½	3½	12	10	8	1½	5	2¾
12	Flash	18	14	12	7.99	100	1598	3	4	12	10	8	2½	5	2¾
12	Fleet	20	14	12	7.99	100	1598	4	5	12	10	8	8½	5	2¾

If wanted Brass Fitted add Code Word "Braft".

These pumps are regularly fitted with steel piston rods and cast iron linings. Should these parts be required of bronze an additional charge is made.



Cut 15



Cut 144

Prescott Compound Regular Duplex Piston Pattern Pumps

General Service

Prescott Compound Regular Duplex Piston Pattern Pumps

For General Service

For 150 Pounds Working Pressure

The machines illustrated on the opposite page are provided with compound steam cylinders, by which the advantage of the expansion of steam is realized, with the result that about one-third of the fuel necessary to run a plain duplex pump is saved, and consequently, that much less boiler capacity is required. Any of the ordinary forms of the Prescott steam pumps can be compounded and proportioned to best suit any required service.

The water ends are the same as those described on the preceding page.

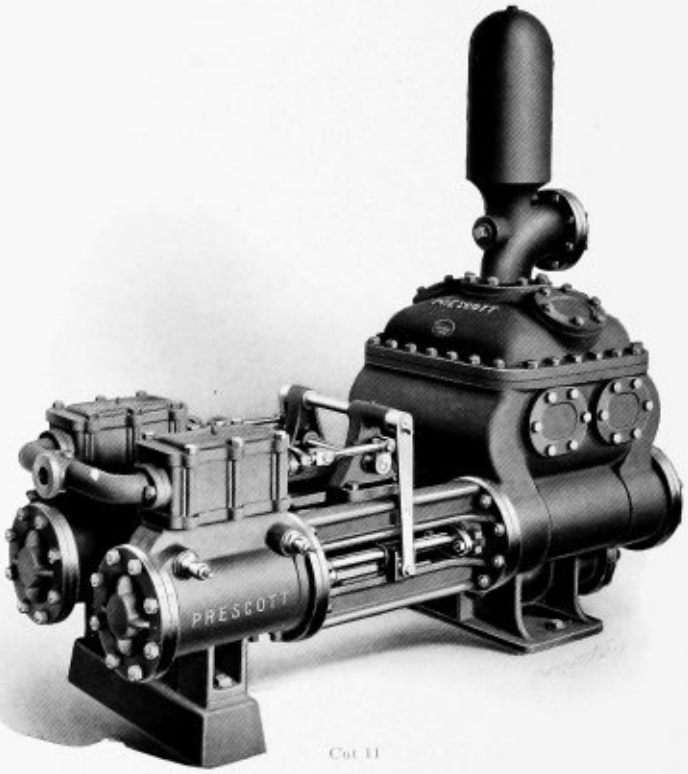
These pumps are particularly desirable for hydraulic elevators, general service and water works for small cities and towns. They are also built in the proper proportion to run Condensing, which secures still greater economical results.

The list below includes our standard sizes; other combinations can be made to meet given conditions.

Cut No.	Code	Size			Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings				Space Occupied Feet and Inches			
		Steam Cyls.	Water Pistons	Stroke			Steam	Exhaust	Suction	Discb.	Length		Width	
15	Gabble	7& 10	6	12	100	294	1½	2½	7	5	8	7¾	3	5½
15	Gablet	7& 10	7	12	100	398	1½	2½	7	5	8	7½	3	5½
15	Gain	8& 12	7	12	100	398	1½	3	7	5	8	9	3	4¾
15	Galaxy	9& 14	7	12	100	398	2	3½	7	5	8	10¾	3	5½
15	Gainful	8& 12	8	12	100	522	1½	3	8	6	9	1½	3	6¼
15	Gallant	9& 14	8	12	100	522	2	3½	8	6	9	3¼	3	7½
15	Gambol	10& 16	8	12	100	522	2	3½	8	6	9	3⅛	3	5
15	Gambrel	8& 12	9	12	100	660	1½	3	10	8	9	4¼	3	7¼
15	Gander	9& 14	9	12	100	660	2	3½	10	8	9	6	3	7
15	Garland	10& 16	9	12	100	660	2	3½	10	8	9	6	3	10
15	Gem	12& 18	9	12	100	660	2½	4	10	8	9	9¾	4	3¼
15	Gemara	9& 14	10	12	100	816	2	3½	10	8	9	6	3	7
15	Gemma	10& 16	10	12	100	816	2	3½	10	8	9	6	3	10
15	General	12& 18	10	12	100	816	2½	4	10	8	9	9¾	4	3¼
15	Generate	14& 22	10	12	100	816	2½	5	10	8	10	2½	4	5¾
144	Generous	10& 16	12	12	100	1174	2	3½	12	10	9	8	4	6
144	Genius	12& 18	12	12	100	1174	2½	4	12	10	10	1¼	4	6
144	Genoese	14& 22	12	12	100	1174	2½	5	12	10	10	2½	4	6
144	Genteel	12& 18	14	12	100	1598	2½	4	12	10	10	6¼	5	3
144	Gentian	14& 22	14	12	100	1598	2½	5	12	10	10	7½	5	3

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for Brass Fitted Pumps. An extra charge is also made for Bed Plates and lagging the Steam Cylinders.



Cut 11

Prescott Regular Duplex Piston Pattern Pump

Low Service

Prescott Regular Duplex Piston Pattern Pumps

For Low Service

Twin Water Cylinders—For 75 Pounds Working Pressure

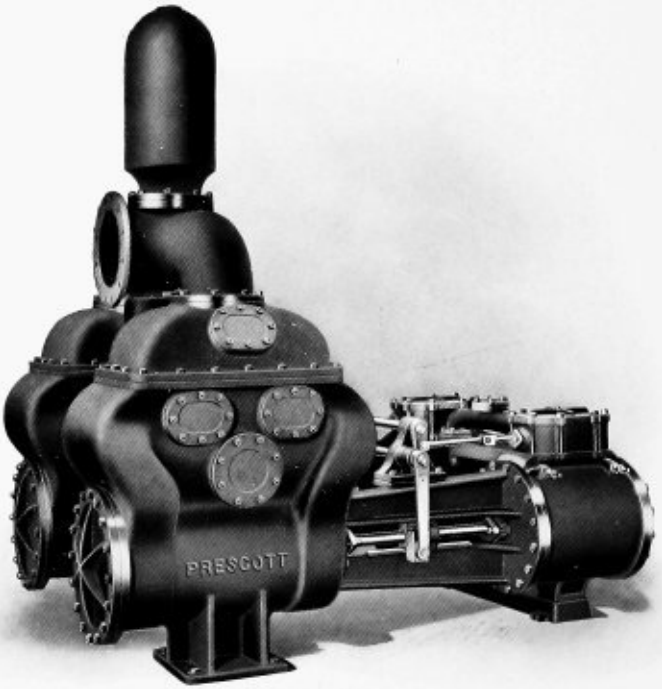
This pump is designed for low pressure or tank service where it is intended to raise clear liquids to a moderate height with ordinary steam pressure. The water cylinders are of the Twin Pattern.

In general construction they are the same as our Regular Pattern Pump, except that the relative proportion of the water and steam pistons is less.

Cut No.	Code	Size			Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings				Space Occupied Feet and Inches	
		Steam Cyls.	Water Pistons	Stroke			Steam	Exhaust	Suction	Disch.	Length	Width
..	Hackle	4 1/2	3 3/4	4	160	61	3/4	1	2 1/2	2	3 1	1 3
..	Hail	5 1/4	4 3/4	5	150	115	3/4	1 1/4	3	2	3 5	1 4 1/2
..	Halcyon	6	5 3/4	6	140	189	1	1 1/2	4	3	3 10	1 6
..	Hallow	7	7	8	140	321	1 1/4	2	5	4	4 4	1 9
11	Hammer	8	6	10	110	270	1 1/2	2	5	4	5 10 1/2	2 2
11	Handle	8	7	12	100	398	1 1/2	2	7	5	6 5 1/2	2 9 1/2
11	Harbor	8	8	12	100	522	1 1/2	2	8	6	6 9 1/2	3 0 1/2
11	Harden	8	9	12	100	660	1 1/2	2	10	8	6 9 1/2	3 5 1/2
11	Hardly	8	10	12	100	816	1 1/2	2	10	8	7 0	3 5 1/2
11	Harrow	10	10	12	100	816	2	2 1/2	10	8	7 1	3 5 1/2

If wanted Brass Fitted add Code Word "Braft".

An additional charge is made for Brass Fitted Pumps.



Cut 143

Prescott Duplex Piston Pattern Pump, Separate Water Cylinders

Low Service

Prescott Duplex Piston Pattern Pumps

For Low Service

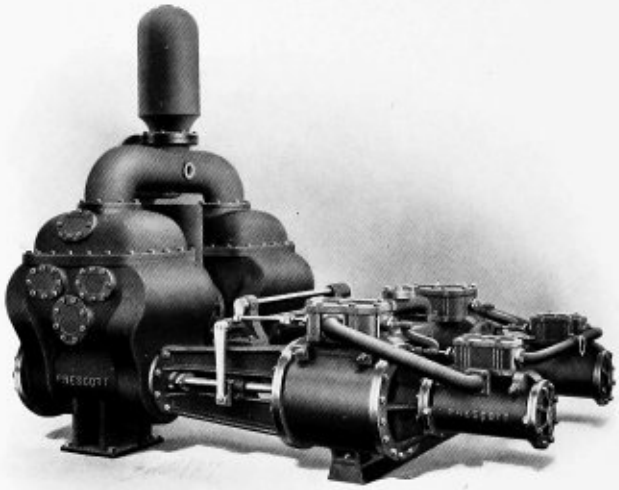
Separate Water Cylinders—For 45 Pounds Working Pressure

Cut 143 represents our Duplex Piston Pattern Pump, with separate water cylinders, as adapted for low pressure or tank service, where it is intended to raise clear liquids to a moderate height with ordinary steam pressure. In the larger sizes of low service pumps, such as are listed on this and the following page, the water cylinders of our pumps are built separate; this construction not only adds very materially to the strength of the machine, particularly in the very largest sizes, but also adds to the accessibility of the pump and its parts in case of repairs.

All of the valves are located above the water pistons.

Cut No.	Code	Size			Gallons per Stroke One Piston	Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings			
		Steam Cyls.	Water Pistons	Stroke				Steam	Exhaust	Suction	Disch.
143	Jabber	7	8	10	2.17	110	468	1½	2	7	5
143	Jade	8	8	10	2.17	110	468	1½	2	7	5
143	Jagged	8	10	12	4.08	95	775	1½	2	8	6
143	Jar	10	10	12	4.08	95	775	2	2½	8	6
143	Jaunt	8	12	12	5.87	85	1000	1½	2	10	8
143	Jealous	10	12	12	5.87	85	1000	2	2½	10	8
143	Jeer	12	12	12	5.87	85	1000	2	3	10	8
143	Jeopard	10	14	12	7.99	75	1200	2	2½	12	10
143	Jerk	12	14	12	7.99	75	1200	2	3	12	10
143	Jest	14	14	12	7.99	75	1200	2½	3½	12	10
143	Jester	12	16	18	15.66	50	1550	2	3	14	12
143	Jewel	14	16	18	15.66	50	1550	2½	3½	14	12
143	Jilt	16	16	18	15.66	50	1550	2½	3½	14	12
143	Jingle	12	18	18	19.83	58	2300	2	3	16	14
143	Jocose	14	18	18	19.83	58	2300	2½	3½	16	14
143	Jog	16	18	18	19.83	58	2300	2½	3½	16	14
143	Join	18	18	18	19.83	58	2300	3	4	16	14
143	Joint	14	20	18	24.48	51	2500	2½	3½	16	14
143	Joke	16	20	18	24.48	51	2500	2½	3½	16	14
143	Jolly	18	20	18	24.48	51	2500	3	4	16	14
143	Jostle	20	20	18	24.48	51	2500	4	5	16	14
143	Jot	16	22	18	29.62	52½	3100	2½	3½	18	16
143	Journal	18	22	18	29.62	52½	3100	3	4	18	16
143	Journey	20	22	18	29.62	52½	3100	4	5	18	16
143	Joust	22	22	18	29.62	52½	3100	4	5	18	16
143	Jovial	20	22	24	39.50	44½	3500	4	5	20	18
143	Joy	22	22	24	39.50	44½	3500	4	5	20	18
143	Joyful	20	23	24	43.16	40½	3500	4	5	20	18
143	Joyous	22	23	24	43.16	40½	3500	4	5	20	18
143	Jubilant	24	23	24	43.16	40½	3500	5	6	20	18
. . .	Jumble	24	24	24	47.00	40½	4800	5	6	20	18

If wanted Brass Fitted add Code Word "Braft".
An additional charge is made for Brass Fitted Pumps.



Cut 156

Prescott Compound Duplex Piston Pattern Pump, Separate Water Cylinders

Low Service

Prescott Compound Duplex Piston Pattern Pumps

For Low Service

Separate Water Cylinders For 45 Pounds Working Pressure

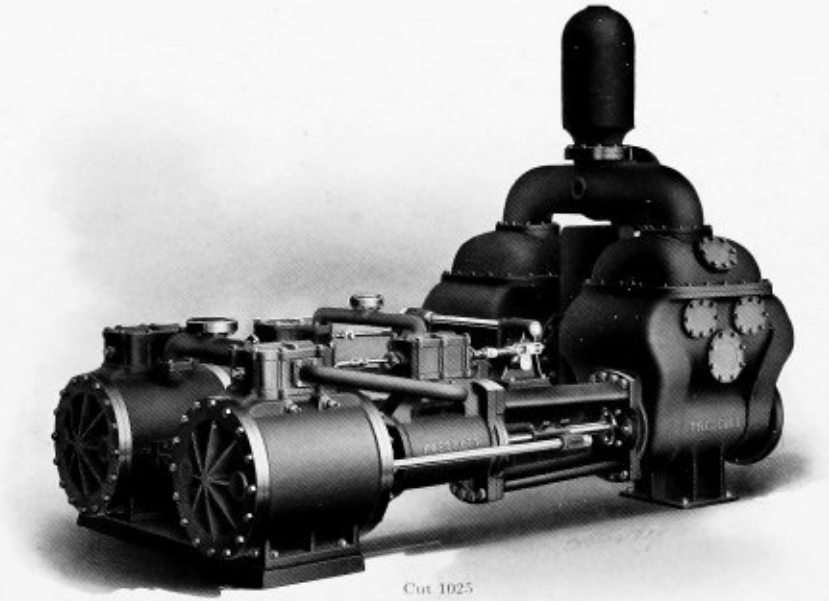
These pumps are designed for use in situations where it is desired to force water, or other clear liquids, short distances, or lift it to a moderate height with ordinary steam pressures. They are eminently suited for circulating or bilge purposes and for use in smelters, furnaces, sugar refineries, oil and gas works, tanneries, distilleries, breweries and other manufacturing plants.

The illustration opposite shows a compound pump, built for running either High Pressure or Condensing. When desirable these pumps are constructed with the low pressure cylinders placed outboard, as shown in views on the following pages; also built with triple expansion steam cylinders as illustrated on page 111.

The list below includes our standard sizes; other combinations can be made to meet given conditions.

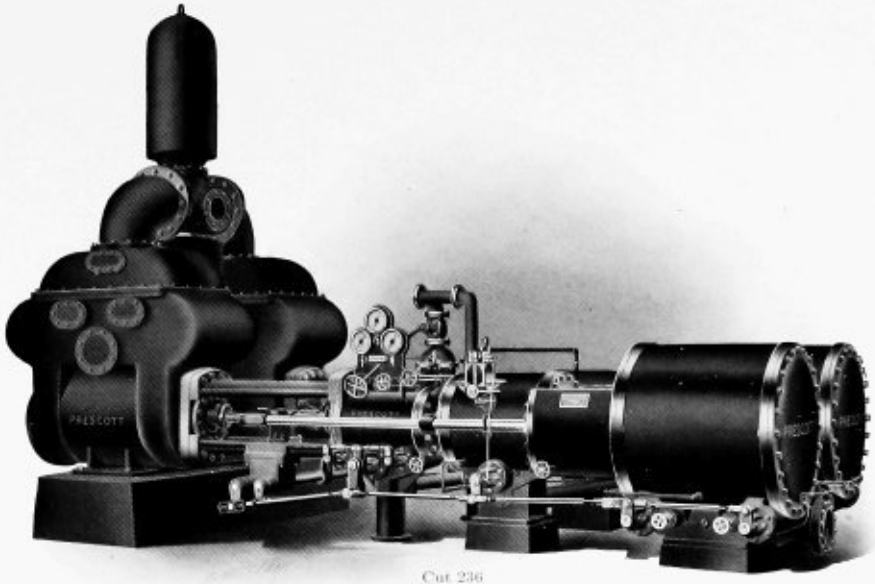
Cut No.	Code	Size			Gallons per Stroke One Piston	Strokes per Minute	Capacity in Gallons per Minute	Dia. of Pipe Openings			
		Steam Cyls.	Water Pistons	Stroke				Steam	Exhaust	Suction	Disch.
156	Vacancy	7 & 10	8	10	2.17	110	468	1 ½	2 ½	7	5
156	Vacant	7 & 10	10	12	4.08	95	775	1 ½	2 ½	8	6
156	Vagrant	8 & 12	10	12	4.08	95	775	1 ½	3	8	6
156	Vague	8 & 12	12	12	5.87	85	1000	1 ½	3	10	8
156	Vain	9 & 14	12	12	5.87	85	1000	2	3 ½	10	8
156	Valiant	10 & 16	12	12	5.87	85	1000	2	3 ½	10	8
156	Valid	8 & 12	14	12	7.99	75	1200	1 ½	3	12	10
156	Valor	9 & 14	14	12	7.99	75	1200	2	3 ½	12	10
156	Valuable	10 & 16	14	12	7.99	75	1200	2	3 ½	12	10
156	Value	12 & 18	14	12	7.99	75	1200	2 ½	4	12	10
156	Vanish	10 & 16	16	18	15.66	50	1550	2 ½	3 ½	14	12
156	Vanity	12 & 18	16	18	15.66	50	1550	2 ½	4	14	12
156	Vapid	14 & 20	16	18	15.66	50	1550	3	5	14	12
156	Vapor	10 & 16	18	18	19.83	58	2300	2 ½	3 ½	16	14
156	Vary	12 & 18	18	18	19.83	58	2300	2 ½	4	16	14
156	Vast	14 & 20	18	18	19.83	58	2300	3	5	16	14
156	Vaunt	12 & 18	20	18	24.48	51	2500	2 ½	4	16	14
156	Veil	14 & 20	20	18	24.48	51	2500	3	5	16	14
156	Vend	12 & 18	22	18	29.62	52 ½	3100	2 ½	4	18	16
156	Venial	14 & 20	22	18	29.62	52 ½	3100	3	5	18	16
156	Venom	15 & 26	22	18	29.62	52 ½	3100	3	6	18	16
156	Vent	12 & 18	22	24	39.50	44 ½	3500	2 ½	4	20	18
156	Venture	14 & 20	22	24	39.50	44 ½	3500	3	5	20	18
156	Verbal	15 & 26	22	24	39.50	44 ½	3500	3	6	20	18
156	Verdict	12 & 18	23	24	43.16	40 ½	3500	2 ½	4	20	18
156	Verge	14 & 20	23	24	43.16	40 ½	3500	3	5	20	18
156	Versed	15 & 26	23	24	43.16	40 ½	3500	3	6	20	18
...	Victim	15 & 26	24	24	47.00	40 ½	4800	3	6	20	18

If wanted Brass Fitted add Code Word "Braft".
An additional charge is made for Brass Fitted Pumps.



Cut 1025

Prescott Compound Duplex Low Service Pump, Separate Water Cylinders



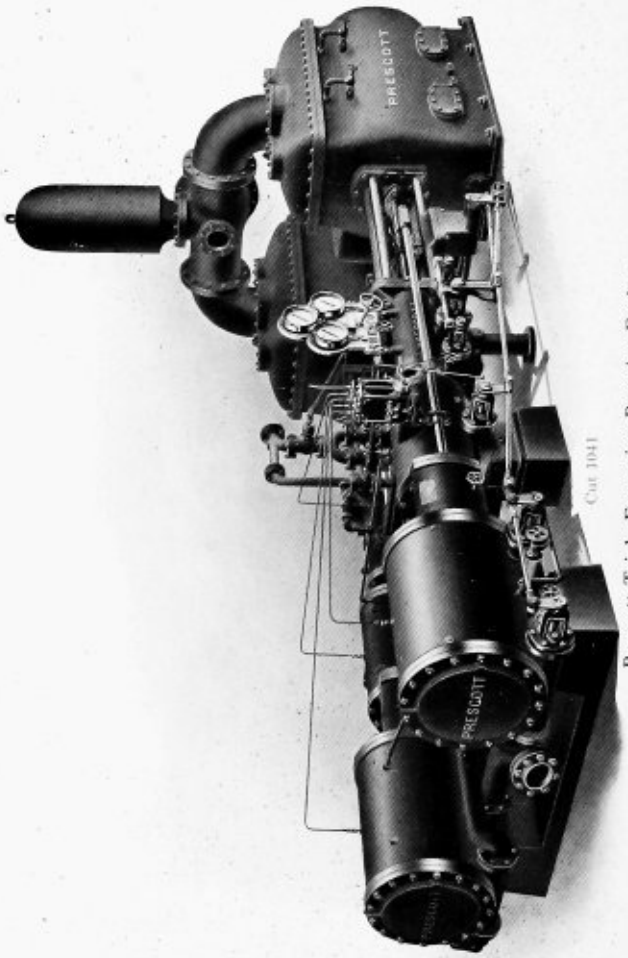
Cut 236

Prescott Triple Expansion Low Service Pumping Engine

Separate Water Cylinders

Patented

See following pages



Cut 1041

Prescott Triple Expansion Pumping Engine
Low Service Pattern
Patented

Prescott Triple Expansion Low Service Pumps

Patented

Separate Water Cylinders—For 45 Pounds Working Pressure

This is the pump to use when it is desired to handle the water for the least money.

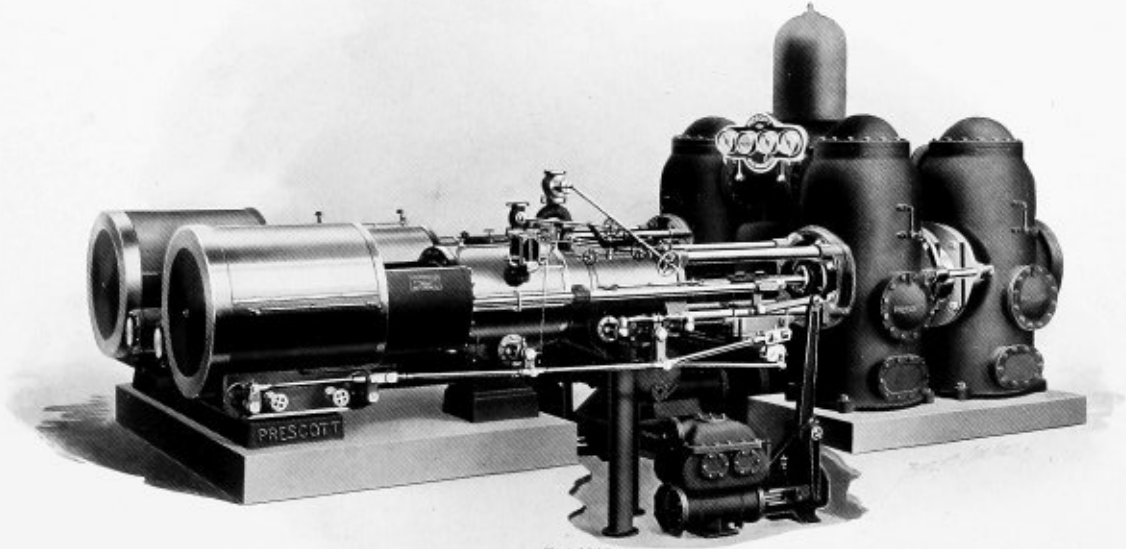
It is the Prescott Triple steam end in combination with the Low Service water end, and this means great economy, low steam consumption and saving at the coal pile.

To secure the best results, these pumps should run condensing and be equipped with some form of our condensing apparatus proper for the situation.

These machines are made with both the submerged and also the straightway water pistons or plungers as shown on second page preceding in No. 236 (submerged) and No. 1041 opposite (straightway) to cover different conditions as to pressure, suction lift and accessibility.

They are especially designed for use in Water Works for raising the "raw water" to the Filter Basins.

WATER WORKS
AND
GENERAL PUMPING



Cut 1049

Prescott Triple Expansion Waterworks Pumping Engine

Missabe Pattern

Patented

Prescott Direct Acting Pumping Engines

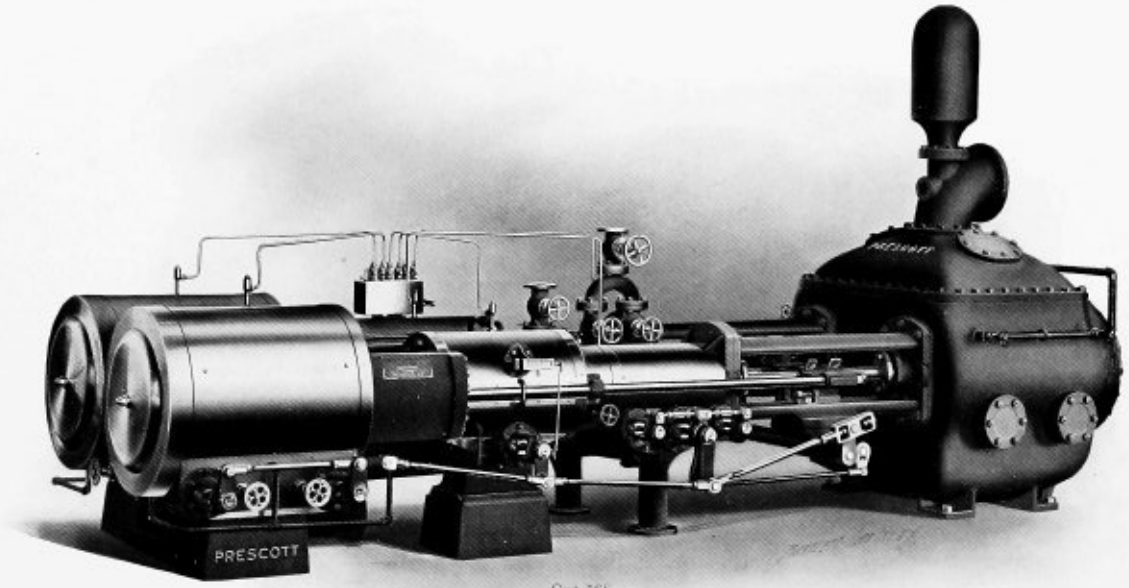
We submit in the following illustrations several Pumping Engine installations of the Direct Acting construction, now in use under various conditions of service.

They represent the very highest development of the Direct Acting machine, embodying in their design the most modern construction of valve mechanism, resultant in the lowest amount of clearance, and by a patented arrangement of cylinders affording the greatest convenience and accessibility for the care and inspection of all parts without the necessity of dismantling any of the larger or heavier pieces.

Our Triple Expansion Condensing Engines have given in official tests the highest duty for pumps of the Direct Acting type. The different water chambers show the wide adaptability to the various requirements of Water Works or Fire service; in fact, any conceivable form of pumping where water is wanted in quantities and under pressure.

Usually these engines are run condensing, in which event they are equipped with the form of condensing apparatus best calculated to meet the local conditions.

We invite careful consideration of our designs, and would greatly appreciate the opportunity of submitting our recommendations and specifications.

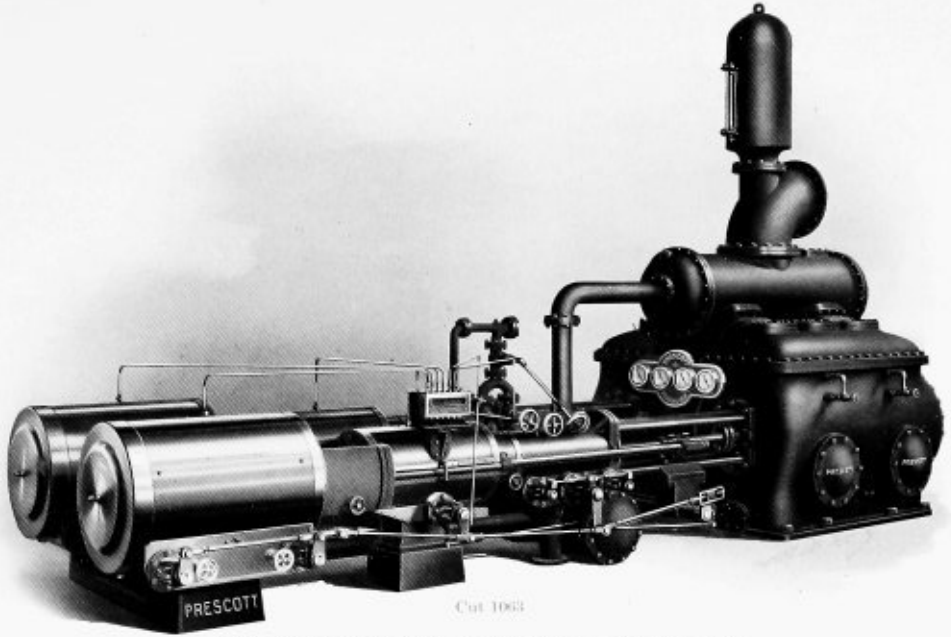


Cut 368

Prescott Triple Expansion Waterworks Pumping Engine

Straightway Piston Pattern

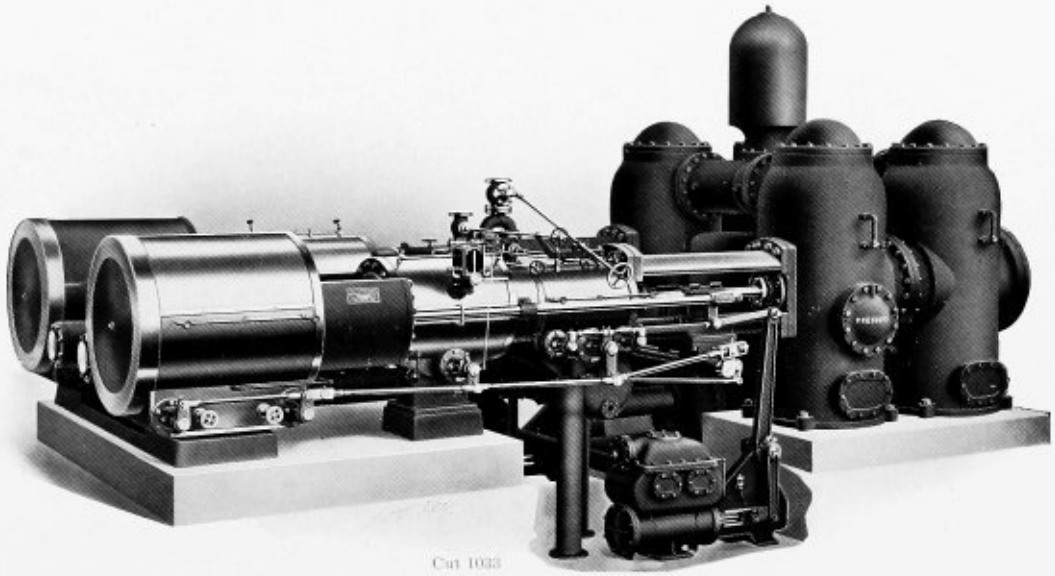
Patented



Cut 1063

Prescott Triple Expansion Low Service Pumping Engine

Straightway Piston Pattern
Patented

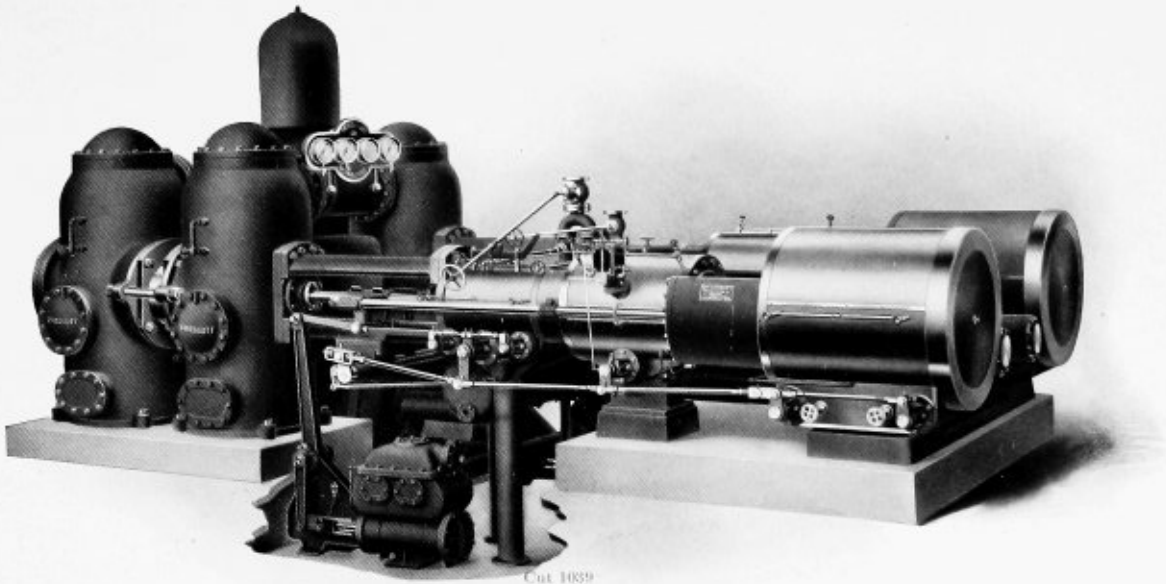


Cut 1033

Prescott Triple Expansion Condensing Waterworks Pumping Engine

Missabe Pattern

Patented



Cut 10859

Prescott Triple Expansion Waterworks Pumping Engine

Missabe Pattern

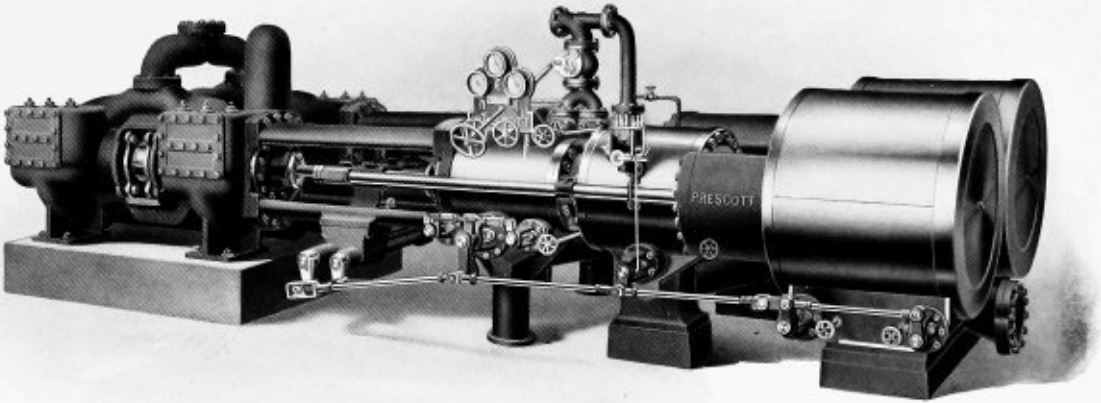
Patented

Cut 1051

Prescott High Service Triple Expansion Condensing Pumping Engine

Pot Form

Patented

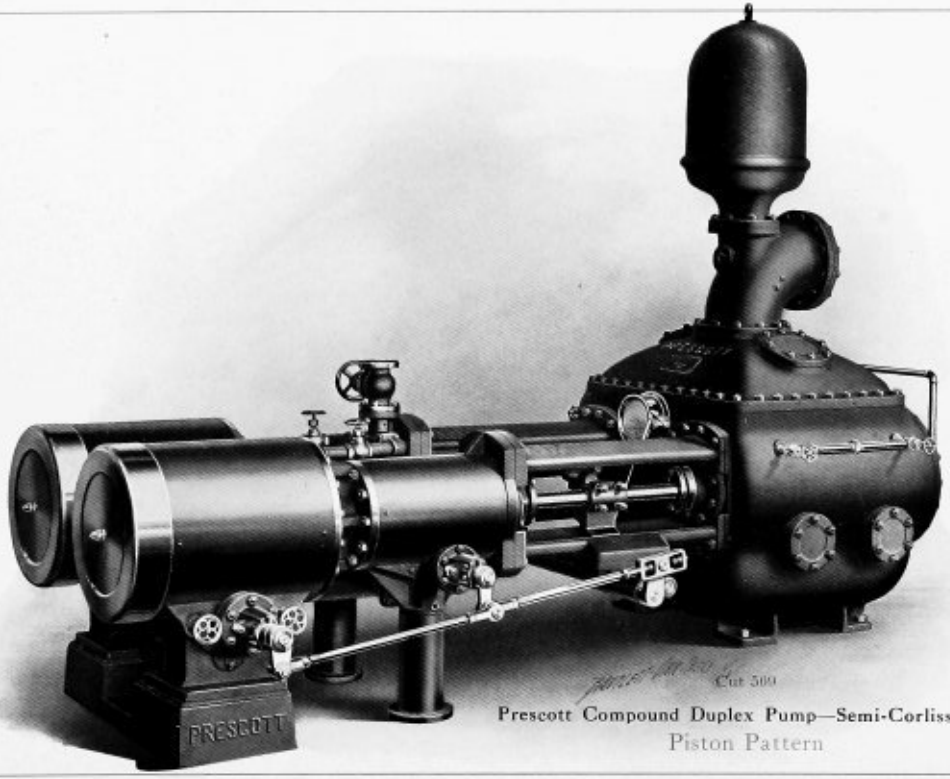


Cut 1040

Prescott Triple Expansion Waterworks Pumping Engine

Chandler Pattern

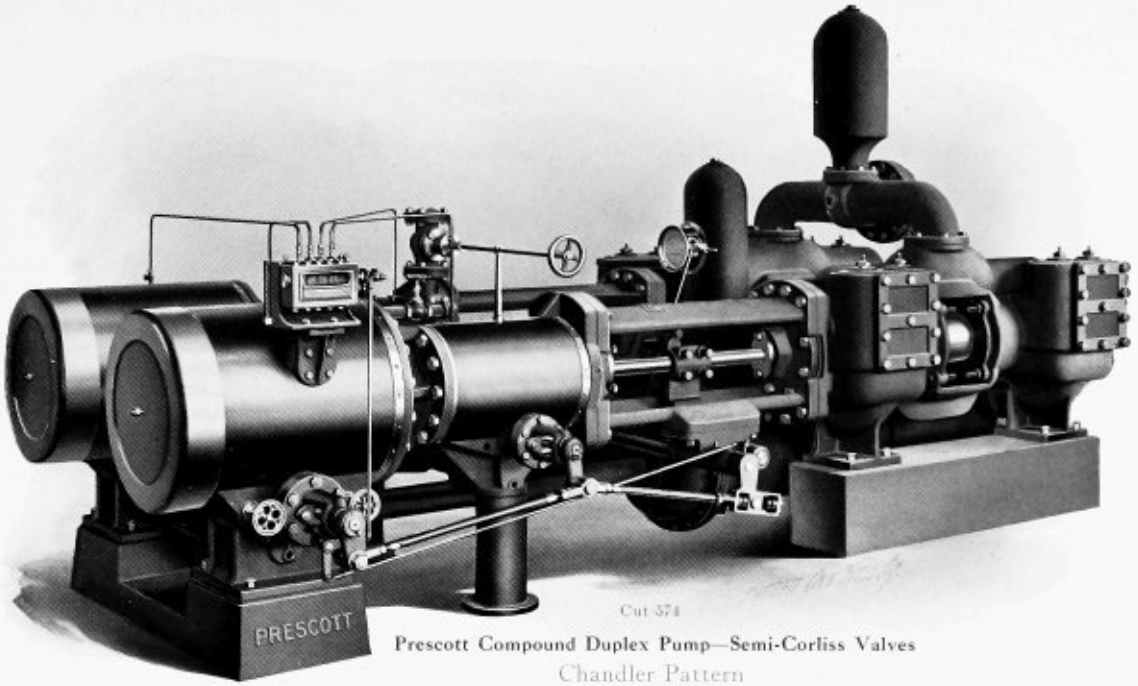
Patented



Cut 509

Prescott Compound Duplex Pump—Semi-Corliss Valves

Piston Pattern

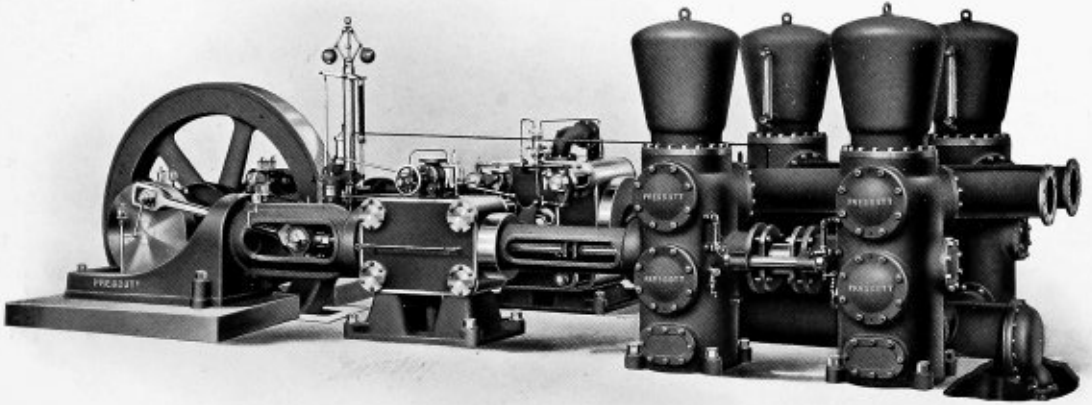


Cut 374

Prescott Compound Duplex Pump—Semi-Corliss Valves

Chandler Pattern

MILWAUKEE ~ WISCONSIN



Cut 1027

Prescott Corliss Cross Compound High Duty Pumping Engine—Tandem Design

Missabe Pattern

Prescott Corliss High Duty Pumping Engines

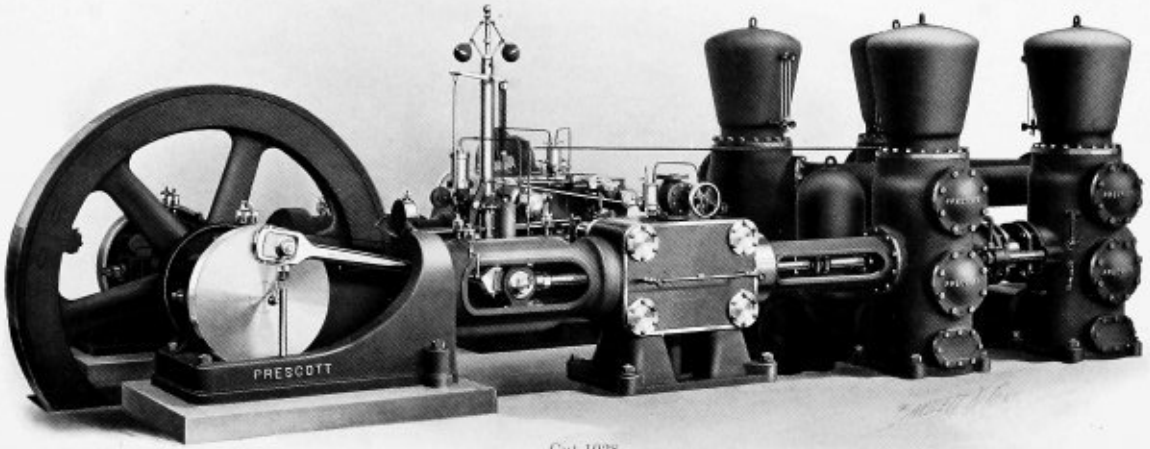
When conditions of gallonage, price of fuel and permanency of installation warrant the increased first cost, we recommend the use of the High Duty Compound Corliss Pumping Engine, as its degree of efficiency and higher duty justifies such additional expenditure.

The Prescott Corliss Engines are not the ordinary commercial engine, but stand for the highest expression of engineering skill and practical experience that can be embodied in a strictly Pumping Engine.

Built in the Compound and Triple Expansion form, the designs are varied to meet the construction best suited to the varying capacities, pressures, and other local conditions of service.

We build both the Tandem and Opposed Type and the character and reputation of this Pumping Engine should appeal to those interested in Water Works, Heavy Fire, Rolling Mill and Furnace Work, Packing House Brine Circulation, or any form of pumping service which demands a large discharge of water with the highest degree of efficiency and economy.

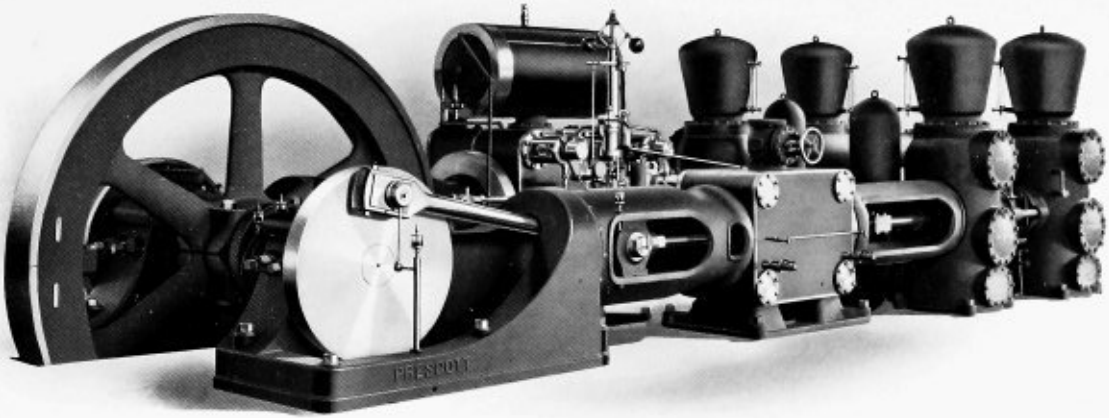
We invite the submission of your requirements, and will be pleased to forward our recommendations and complete specifications upon any equipment.



Cut 1028

Prescott Corliss Cross Compound High Duty Pumping Engine—Tandem Design

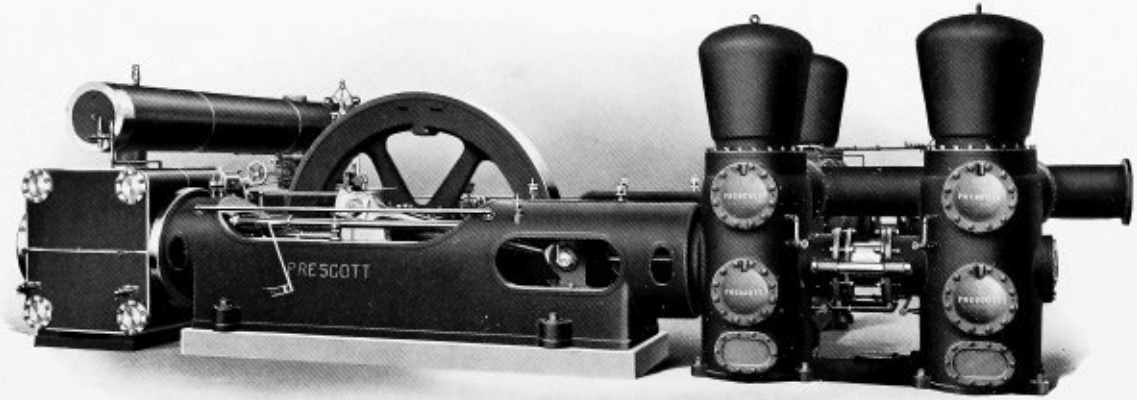
Missabe Pattern



Cut 1058

Prescott Corliss Cross Compound High Duty Pumping Engine—Tandem Design

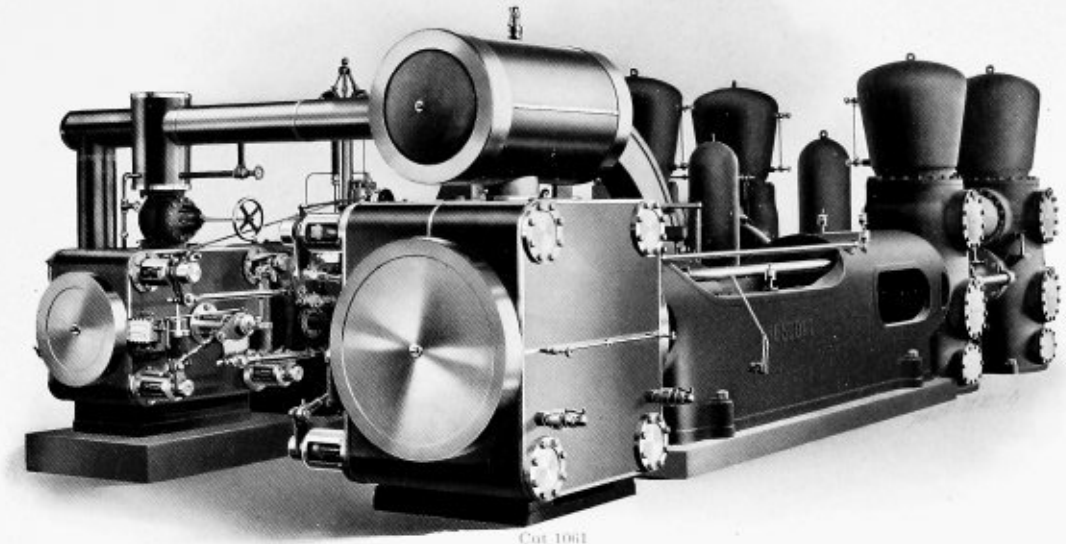
Missabe Pattern



Cut 1054

Prescott Corliss Cross Compound High Duty Waterworks Pumping Engine—Opposed Design

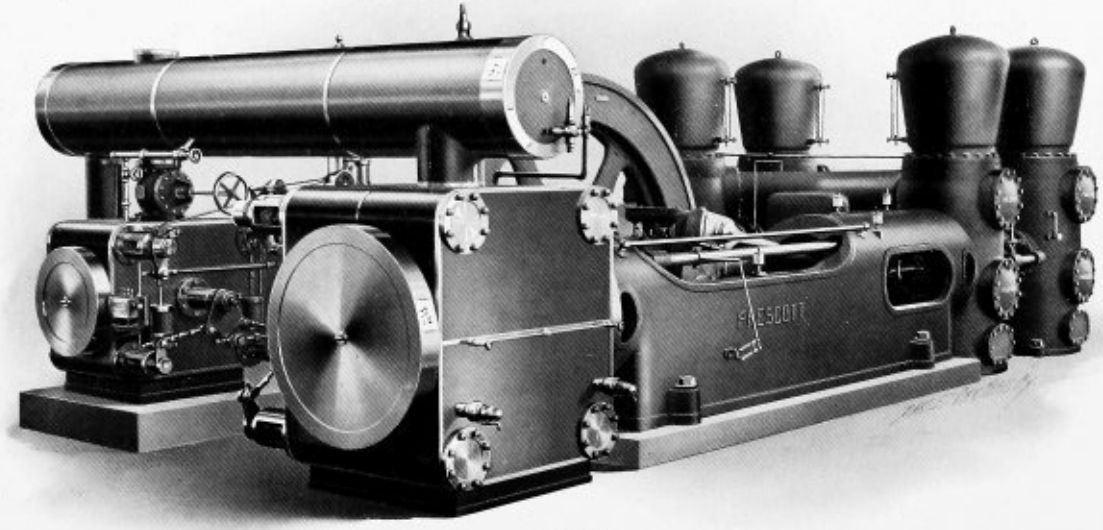
Missabe Pattern



Cut 1061

Prescott Corliss Cross Compound High Duty Waterworks Pumping Engine—Opposed Design

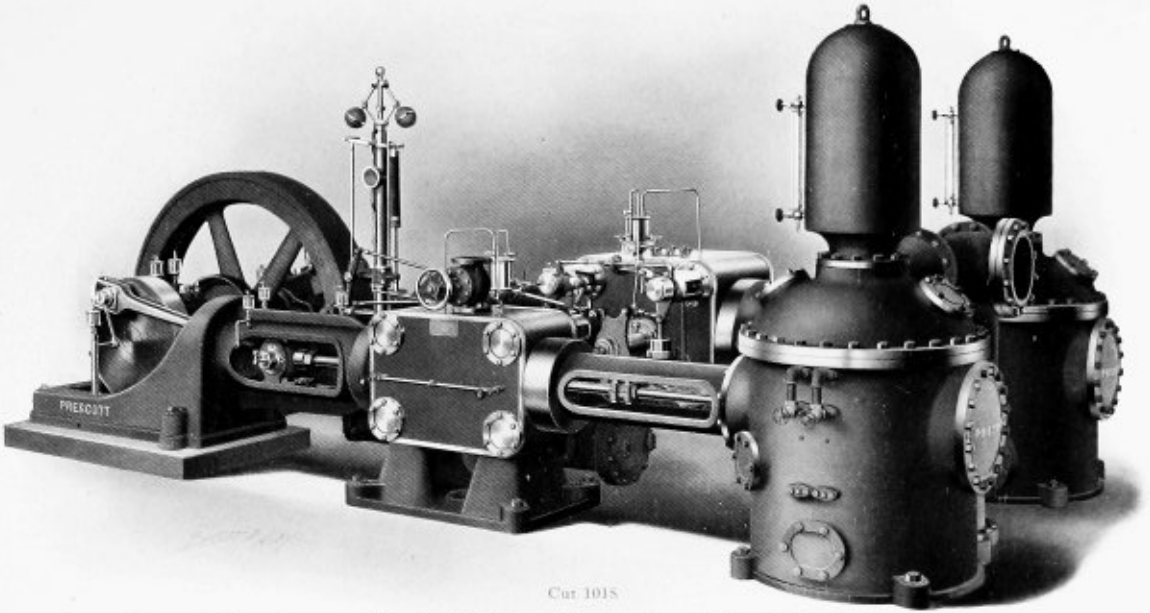
Missabe Pattern



Cut 1052

Prescott Corliss Cross Compound High Duty Waterworks Pumping Engine—Opposed Design

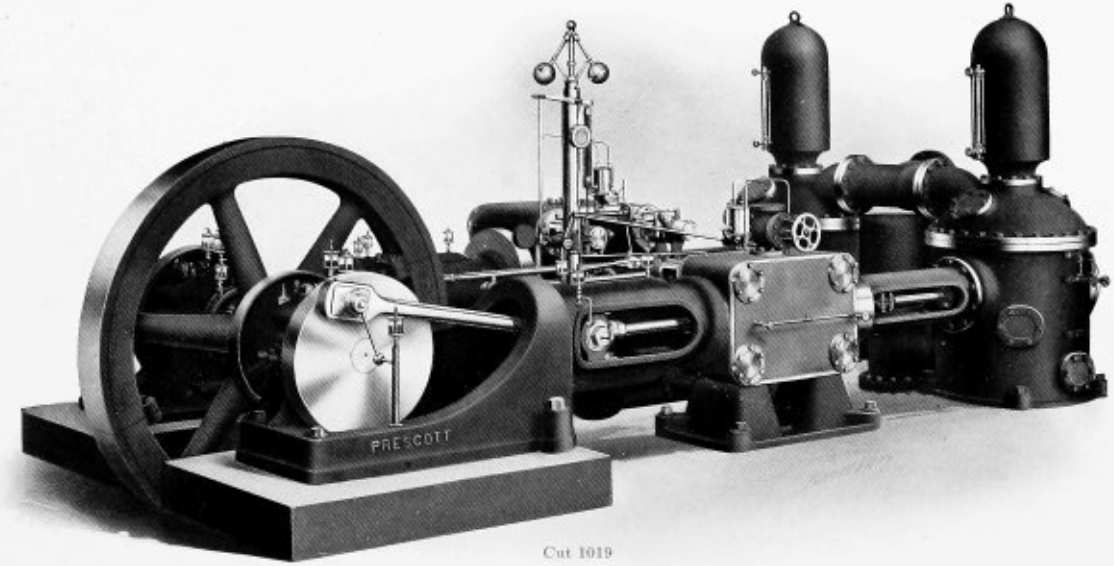
Missabe Pattern



Cut 1018

Prescott Cross Compound Corliss High Duty Waterworks and General Service Pumping Engine

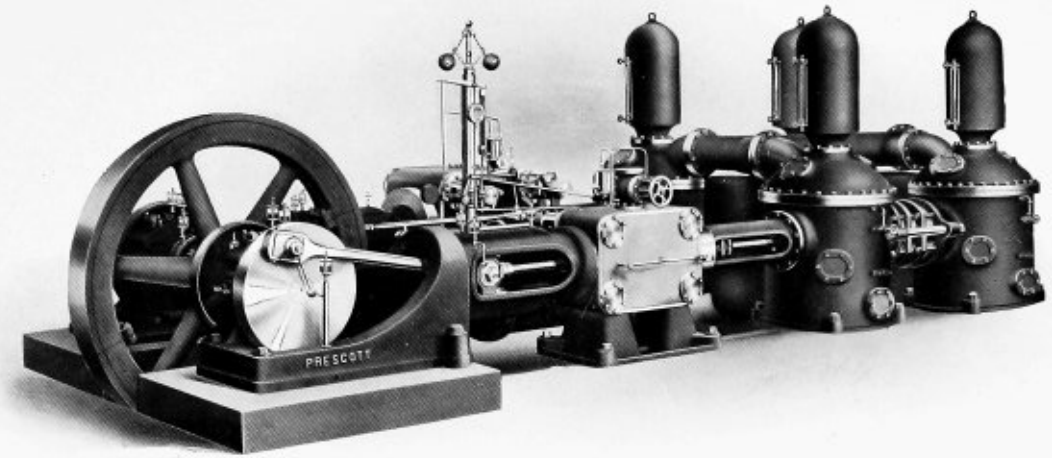
Milwaukee Pattern



Cut 1019

Prescott Corliss Cross Compound High Duty Waterworks and General Service Pumping Engine

Milwaukee Pattern



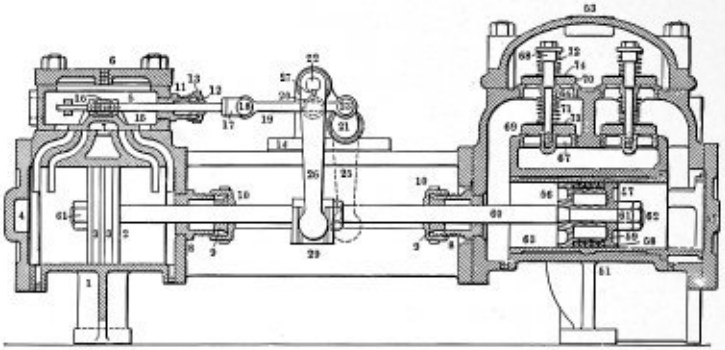
Cut 1038

Prescott Corliss Cross Compound High Duty Waterworks and General Service Pumping Engine

Milwaukee Pattern with Double Water End

PART LISTS AND INFORMATION

PART LIST 1



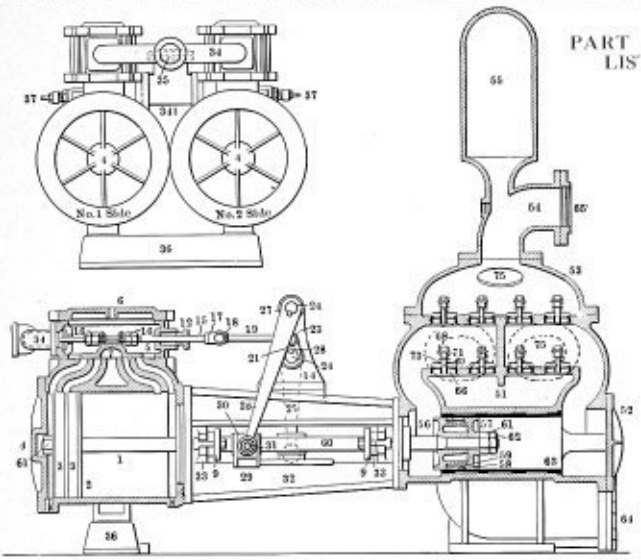
Prescott Duplex Piston Pattern Boiler Feed Pump

In ordering parts give shop number and size of pump. Also state name and number of part wanted, as shown on list.

1 Steam cylinder
2 Steam piston
3 Steam piston ring
4 Steam cylinder head
5 Steam chest
6 Steam chest cover
7 Slide valve
8 Piston rod stuffing box
9 Piston rod stuffing box gland
10 Piston rod stuffing box follower
11 Valve rod stuffing box
12 Valve rod stuffing box gland
13 Valve rod stuffing box follower
14 Cross stand
15 Valve rod
16 Valve rod nut
17 Valve rod head
18 Valve rod head pin
19 Valve rod link, long
20 Valve rod link, short
21 Short crank and rock shaft
22 Long crank and rock shaft
23 Crank pin
25 Short lever
26 Long lever
27 Lever key
29 Cross head
51 Pump body
52 Water cylinder head
53 Force chamber
56 Water piston
57 Water piston follower
58 Water piston packing
59 Water piston spring ring
60 Piston rod
61 Piston rod nut
62 Piston rod lock nut
63 Removable liner
64 Suction flange
65 Discharge flange
66 Discharge valve seat
67 Suction valve seat
68 Valve spindle
69 Suction valve
70 Discharge valve
71 Suction valve spring
72 Discharge valve spring
73 Suction valve plate
74 Discharge valve plate

Standing behind steam cylinders and looking toward water cylinders the No. 1 side is on your left and the No. 2 side on your right.

PART LIST 2

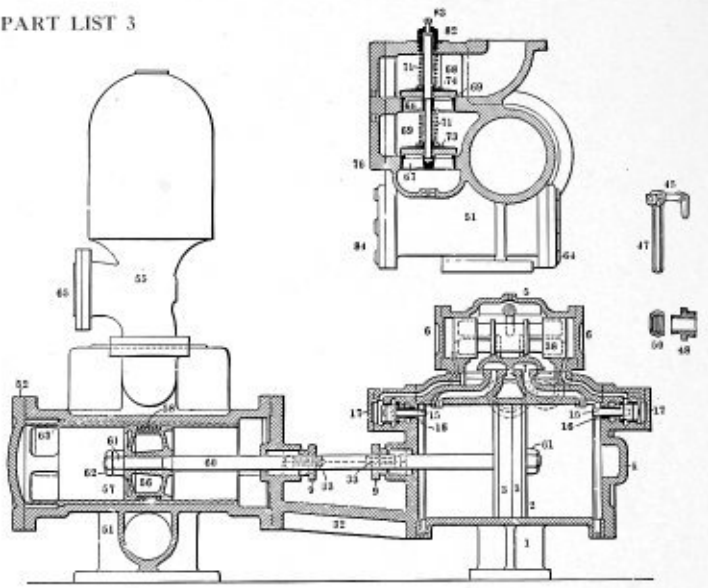


Prescott Regular Pattern Duplex Pump

1	Steam cylinder, No. 1 side	32	Intermediate, No. 1 side
1	Steam cylinder, No. 2 side	32	Intermediate, No. 2 side
2	Steam piston	33	Piston rod gland bolt
3	Steam piston ring	34	Steam pipe
4	Steam cylinder head	341	Exhaust Pipe
5	Steam chest	35	Exhaust flange
6	Steam chest cover	36	Steam cylinder base
7	Slide valve	37	Cushion valve
9	Piston rod stuffing box glands	51	Pump body
12	Valve rod stuffing box glands	52	Water cylinder head
14	Cross stand, No. 1 side	53	Force chamber
14	Cross stand, No. 2 side	54	Discharge pipe
15	Valve rod	55	Air chamber
16	Valve rod nut	56	Water piston
17	Valve rod head	57	Water piston follower
18	Valve rod pin	58	Water piston packing
19	Valve rod link	59	Water piston spring ring
21	Short crank	60	Piston rod
22	Long crank	61	Piston rod nut
23	Crank pin	62	Piston rod lock nut
24	Rock shaft, upper	63	Removable liner
24	Rock shaft, lower	64	Suction flange
25	Short lever	65	Discharge flange
26	Long lever	66	Valve seat
27	Lever key	68	Valve guard
28	Crank key	69	Valve
29	Cross head	71	Valve spring
30	Cross head block	73	Valve plate
31	Cross head pin	75	Hand hole plate

Standing behind steam cylinders and looking toward water cylinders the No. 1 side is on your left and the No. 2 side on your right.

PART LIST 3

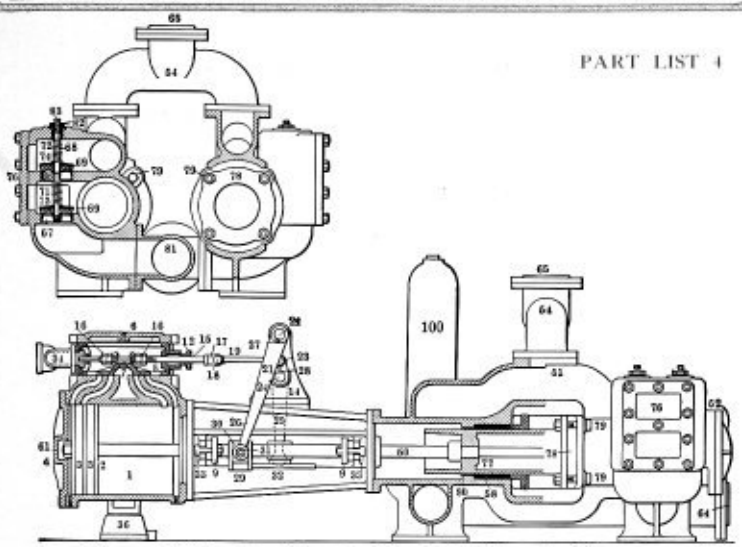


Prescott Straight Mine Pump

In ordering parts give shop number and size of pump. Also state name and number of part wanted, as shown on list.

1	Steam cylinder	55	Air chamber
2	Steam piston	56	Water piston
3	Steam piston ring	57	Water piston follower
4	Steam cylinder head	58	Water piston packing
5	Steam chest	60	Piston rod
6	Steam chest head	61	Piston rod nut
7	Slide valve	62	Piston rod lock nut
9	Piston rod stuffing box gland	63	Water cylinder liner
15	Reversing valve	64	Suction flange
16	Reversing valve bushing	65	Discharge flange
17	Reversing valve cap	66	Discharge valve seat
32	Intermediate	67	Suction valve seat
33	Piston rod gland bolt	68	Valve spindle
38	Chest piston	69	Valve
45	Starting lever	71	Valve spring
47	Starting lever handle	73	Suction valve cap
48	Starting lever stuffing box	74	Discharge valve cap
50	Starting lever stuffing box follower	76	Valve chest cover
51	Pump body	82	Valve spindle cap
52	Water cylinder head	83	Valve spindle cap screw
		84	Suction blank flange

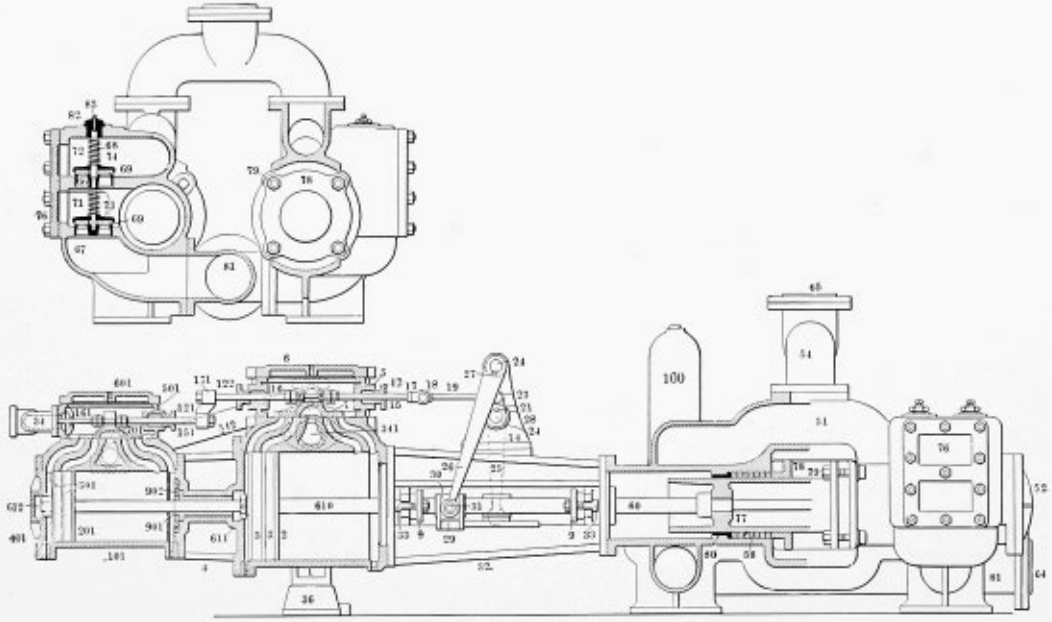
PART LIST 4



Prescott Duplex Center Packed Plunger Pump

1	Steam cylinder, No. 1 side	34	Steam pipe
1	Steam cylinder, No. 2 side	341	Exhaust pipe
2	Steam piston	35	Exhaust flange
3	Steam piston ring	36	Steam cylinder base
4	Steam cylinder head	37	Cushion valve
5	Steam chest	51	Water cylinder, No. 1 side
6	Steam chest cover	51	Water cylinder, No. 2 side
7	Slide valve	52	Water cylinder head
9	Piston rod stuffing box gland	54	Discharge pipe
12	Valve rod stuffing box gland	58	Plunger packing
14	Cross stand, No. 1 side	60	Piston rod
14	Cross stand, No. 2 side	61	Piston rod nut
15	Valve rod	62	Piston rod lock nut
16	Valve rod nut	64	Suction flange
17	Valve rod head	65	Discharge flange
18	Valve rod head pin	66	Discharge valve seat
19	Valve rod link	67	Suction valve seat
21	Short crank	68	Valve spindle
22	Long crank	69	Valve
23	Crank pin	71	Suction valve spring
24	Rock shaft, upper	72	Discharge valve spring
24	Rock shaft, lower	73	Suction valve cap
25	Short lever	74	Discharge valve cap
26	Long lever	76	Valve chest cover
27	Lever key	77	Plunger
28	Crank key	78	Plunger gland
29	Cross head	79	Plunger gland bolt
30	Cross head block	80	Throat bushing
31	Cross head pin	81	Suction pipe
32	Intermediate, No. 1 side	82	Valve spindle cap
32	Intermediate, No. 2 side	83	Valve spindle cap screw
33	Piston rod gland bolt	100	Air chamber

Standing behind steam cylinders and looking toward water cylinders the No. 1 side is on your left and the No. 2 side on your right.



Prescott Compound Duplex Center Packed Plunger Pump

PART LIST 5

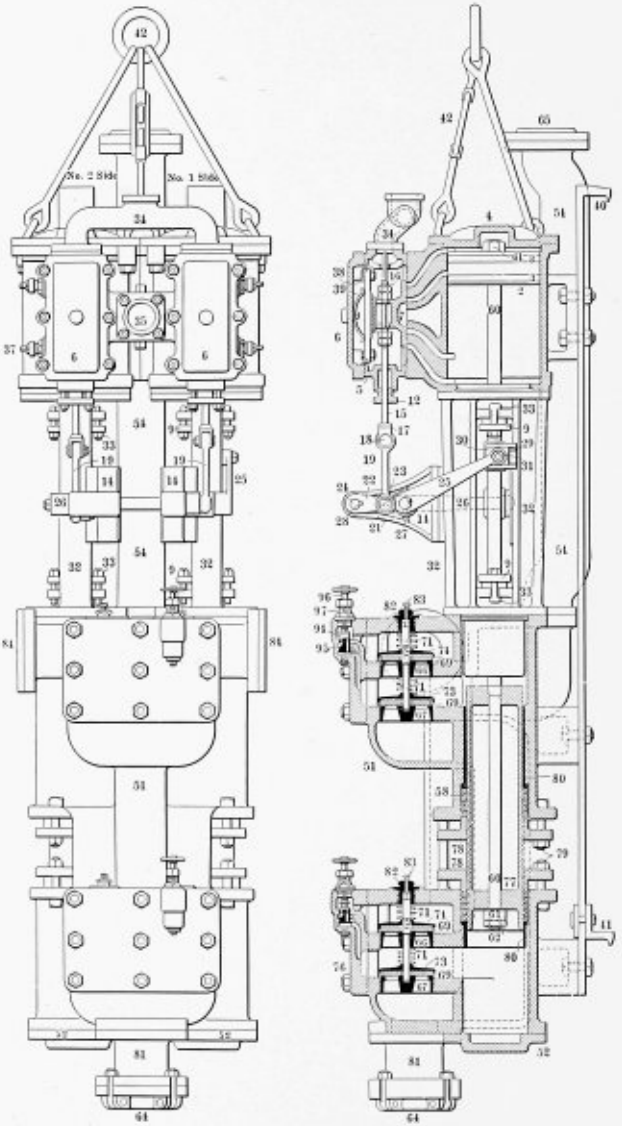
Prescott Compound Duplex Center Packed Plunger Pump

(See cut with corresponding numbered parts on page opposite)

In ordering parts give shop number and size of pump. Also state name and number of part wanted, as shown on list.

1	Low pressure steam cylinder, No. 1 side
1	Low pressure steam cylinder, No. 2 side
101	High pressure steam cylinder, No. 1 side
101	High pressure steam cylinder, No. 2 side
2	Low pressure steam piston
201	High pressure steam piston
3	Low pressure steam piston ring
301	High pressure steam piston ring
4	Intermediate head
401	High pressure cylinder head
5	Low pressure steam chest, No. 1 side
5	Low pressure steam chest, No. 2 side
501	High pressure steam chest
6	Low pressure steam chest cover
601	High pressure steam chest cover
7	Low pressure slide valve
701	High pressure slide valve
9	Piston rod stuffing box gland
901	Piston rod sleeve
902	Piston rod sleeve follower
12	Low pressure valve rod gland, large
121	High pressure valve rod gland
122	Low pressure valve rod gland, small
14	Cross stand, No. 1 side
14	Cross stand, No. 2 side
15	Low pressure valve rod
151	High pressure valve rod
16	Low pressure valve rod nuts
161	High pressure valve rod nuts
17	Valve rod head
171	Valve rod coupling
18	Valve rod head pin
19	Valve rod link, long
20	Valve rod link, short
21	Short crank
22	Long crank
23	Crank pin
24	Rock shaft, upper
24	Rock shaft, lower
25	Short lever
26	Long lever
27	Lever key
28	Crank key
29	Cross head
30	Cross head block
31	Cross head pin
32	Intermediate, No. 1 side
32	Intermediate, No. 2 side
33	Piston rod gland bolt
34	Steam pipe
341	Exhaust pipe
342	Side pipe, No. 1 side
342	Side pipe, No. 2 side
35	Exhaust flange
36	Steam cylinder base
37	Cushion valve
51	Water cylinder, No. 1 side
51	Water cylinder, No. 2 side
52	Water cylinder head
54	Discharge pipe
58	Plunger packing
60	Piston rod
60	Piston rod; water end for coupled rod
610	Piston rod; steam end for coupled rod
61	Piston rod nut water end
62	Piston rod lock nut water end
611	Piston rod nut low pressure
612	Piston rod nut high pressure
64	Suction flange
65	Discharge flange
66	Discharge valve seat
67	Suction valve seat
68	Valve spindle
69	Valve
71	Suction valve spring
72	Discharge valve spring
73	Suction valve cap
74	Discharge valve cap
76	Valve chest cover
77	Plunger
78	Plunger gland
79	Plunger gland bolt
80	Throat bushing
81	Suction pipe
82	Valve spindle cap
83	Valve spindle cap screw
100	Air chamber

Standing behind steam cylinders and looking toward water cylinders the No. 1 side is on your left and the No. 2 side on your right.



The Prescott Sinker

Patented

The Prescott Sinker

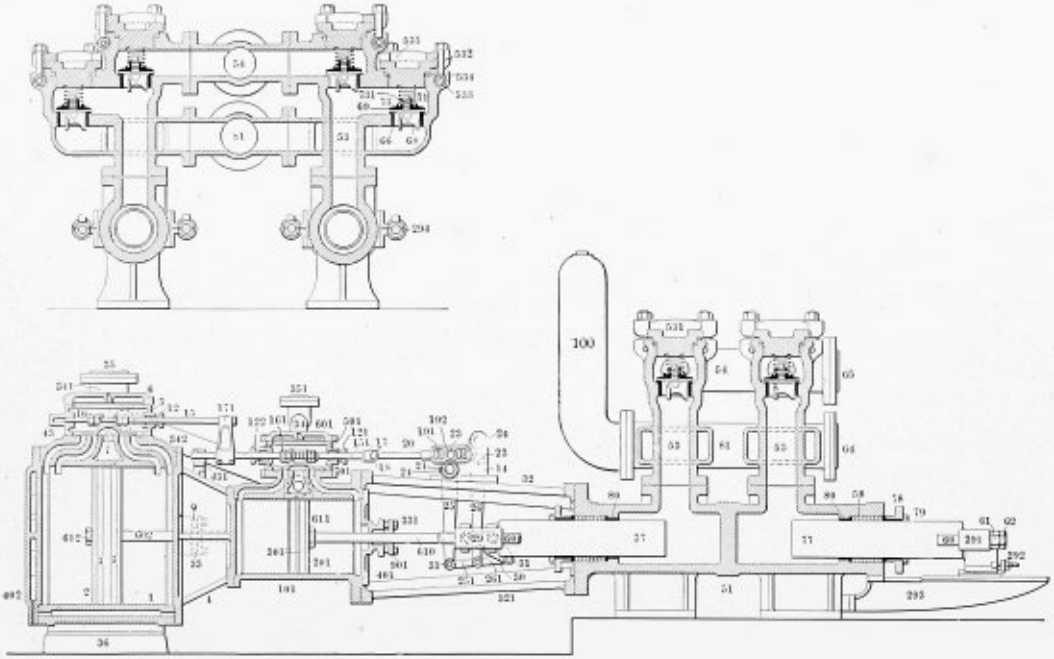
Patented

(See cut with corresponding numbered parts on page opposite)

In ordering parts give shop number and size of pump. Also state name and number of part wanted, as shown on list.

1	Steam cylinder, No. 1 side
1	Steam cylinder, No. 2 side
2	Steam piston
3	Steam piston ring
4	Steam cylinder head
5	Steam chest
6	Steam chest cover
7	Slide valve
9	Piston rod stuffing box gland
12	Valve rod stuffing box gland
14	Cross stand, No. 1 side
14	Cross stand, No. 2 side
15	Valve rod
16	Valve rod nut
17	Valve rod head
18	Valve rod head pin
19	Valve rod link
21	Short crank
22	Long crank
23	Crank pin
24	Rock shaft, upper
24	Rock shaft, lower
25	Short lever
26	Long lever
27	Lever key
28	Crank key
29	Cross head
30	Cross head block
31	Cross head pin
32	Intermediate, No. 1 side
32	Intermediate, No. 2 side
33	Piston rod gland bolt
34	Steam pipe
35	Exhaust flange
37	Cushion valve
38	Slide valve plate
39	Slide valve plate spring
40	Long dogs
41	Adjustable dogs
42	Hanger
51	Pump body
52	Water cylinder head
54	Discharge pipe
58	Plunger packing
60	Piston rod
61	Piston rod nut
62	Piston rod lock nut
64	Suction flange
65	Discharge flange
66	Discharge valve seat
67	Suction valve seat
68	Valve spindle
69	Valve
71	Valve spring
73	Suction valve cap
74	Discharge valve cap
76	Valve chest cover
77	Plunger
78	Plunger gland
79	Plunger gland bolt
80	Throat bushing
81	Suction pipe
82	Valve spindle cap
83	Valve spindle cap screw
84	Blank flange
94	Priming valve
95	Priming valve seat
96	Priming valve spindle
97	Priming valve stuffing box

Standing behind steam cylinders and looking toward water cylinders the No. 1 side is on your left and the No. 2 side on your right.



Prescott Compound Duplex Pot Form Pump

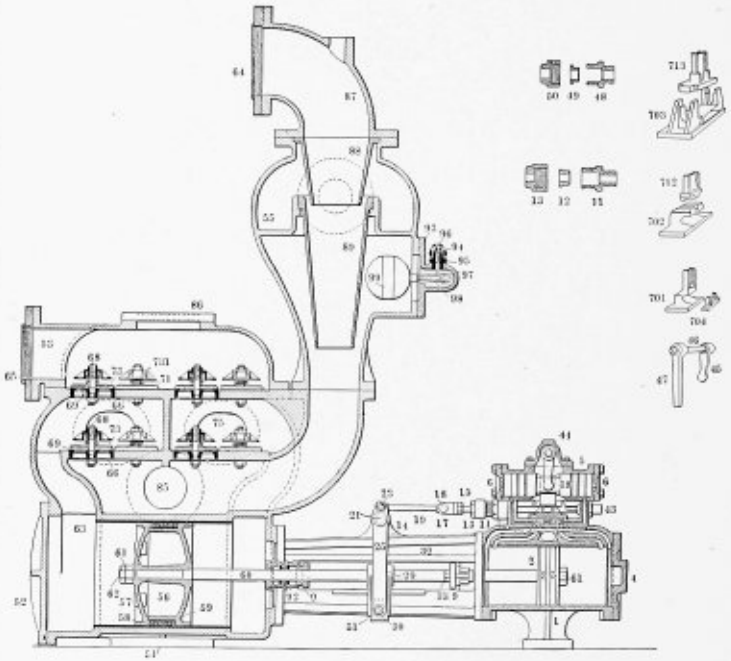
PART LIST 7

Prescott Compound Duplex Pot Form Pump

In ordering parts give shop number and size of pump. Also state name and number of part wanted, as shown on list.

1	Low pressure cylinder, No. 1 side
1	Low pressure cylinder, No. 2 side
101	High pressure cylinder, No. 1 side
101	High pressure cylinder, No. 2 side
2	Low pressure steam piston
201	High pressure steam piston
3	Low pressure steam piston ring
301	High pressure steam piston ring
4	Intermediate head
401	High pressure cylinder head
402	Low pressure cylinder head
5	Low pressure steam chest
501	High pressure steam chest
6	Low pressure steam chest cover
601	High pressure steam chest cover
7	Low pressure slide valve
701	High pressure slide valve
9	Low pressure piston rod gland
901	High pressure piston rod gland
12	Low pressure valve rod gland
121	High pressure valve rod gland, large
122	High pressure valve rod gland, small
14	Cross stand, No. 1 side
14	Cross stand, No. 2 side
15	Low pressure valve rod
151	High pressure valve rod
16	Low pressure valve rod nuts
161	High pressure valve rod nuts
17	Valve rod head
171	Valve rod coupling
18	Valve rod head pin
19	Valve rod link, long
191	Tappet and lock nut
192	Lost motion block
20	Valve rod link, short
21	Short crank
22	Long crank
23	Crank pin
24	Rock shaft, upper
24	Rock shaft, lower
25	Short lever
251	Long driving link
26	Long lever
261	Short driving link
27	Lever key
28	Crank key
29	Cross head, front
291	Cross head, back
292	Cross head shoe
293	Plunger guide
294	Side rod box
30	Driving arm
31	Cross head pin
32	Intermediates, No. 1 side
32	Intermediates, No. 2 side
321	Intermediates, lower piece
33	Low pressure piston rod gland stud
331	High pressure piston rod gland stud
34	Steam pipe
341	Exhaust pipe
342	Side pipe, No. 1 side
342	Side pipe, No. 2 side
35	Exhaust flange
351	Steam flange
36	Steam cylinder base
37	Cushion valve
43	Valve rod guide, low pressure
431	Valve rod guide, high pressure
51	Water cylinder
53	Valve pot
531	Valve pot cover
532	Swing bolt
533	Swing bolt pin
534	Packing ring
54	Discharge pipe
58	Plunger packing
60	Plunger side rod
610	High pressure piston rod
602	Low pressure piston rod
61	Plunger rod nut
62	Plunger rod lock nut
611	Piston rod nut, high pressure
612	Piston rod nut, low pressure
64	Suction flange
65	Discharge flange
66	Valve seat
68	Wing valve
69	Valve discs
71	Valve spring
73	Valve cap
731	Valve lock nut
77	Plunger
78	Plunger gland
79	Plunger gland stud
80	Throat bushing
81	Suction pipe
100	Air chamber

Standing behind steam cylinders and looking toward water cylinders the No. 1 side is on your left and the No. 2 side on your right.



Prescott Independent Air Pump and Condenser

Prescott Independent Air Pump and Condenser

(See cut with corresponding numbered parts on page opposite)

In ordering parts give shop number and size of pump. Also state name and number of part wanted, as shown on list.

1	Steam cylinder
2	Steam piston
3	Steam piston ring
4	Steam cylinder head
5	Steam chest
6	Steam chest head
701	Slide valve
702	Slide Valve
703	Slide valve
712	Slide valve lug
713	Slide valve lug
704	Auxiliary slide valve
9	Piston rod stuffing box gland
11	Valve rod stuffing box
12	Valve rod stuffing box gland
13	Valve rod stuffing box follower
14	Cross stand
15	Valve rod
17	Valve rod head
18	Valve rod head pin
19	Valve rod link
21	Lever pin
23	Crank pin
25	Lever
29	Cross head
30	Cross head block
31	Cross head pin
32	Intermediate
33	Piston rod gland bolt
37	Cushion valve
38	Chest piston
43	Valve rod guide
44	Starting lever cap
45	Starting lever
46	Starting lever spindle
47	Starting lever handle
48	Starting lever stuffing box
49	Starting lever stuffing box gland
50	Starting lever stuffing box follower
51	Pump body
52	Water cylinder head
53	Force chamber
55	Condenser chamber
56	Water piston
57	Water piston follower
58	Water piston packing
59	Water piston spring ring
60	Piston rod
61	Piston rod nut
62	Piston rod lock nut
63	Water cylinder liner
64	Exhaust inlet flange
65	Discharge flange
66	Valve seat
68	Valve spindle
69	Valve
71	Valve spring
73	Valve plate
731	Valve guard
75	Side hand hole plate
85	Suction hand hole plate
86	Discharge hand hole plate
87	Elbow
88	Steam cone
89	Water cone
90	Injection pipe flange
91	Blank flange
92	Water seal bushing
93	Air valve flange
94	Air valve
95	Air valve seat
96	Air valve cap
97	Air valve stud
98	Float arm
99	Float

Directions for Installing and Operating Prescott Steam Pumps

All of our pumps are carefully tested under steam and water pressures and operated at our works before shipment.

PLACE YOUR PUMP AS NEAR THE WATER SUPPLY AS POSSIBLE. The atmospheric pressure alone forces the water into the pump, consequently the lower or shorter the lift, the faster and with greater efficiency will the water be delivered to the pump.

WHEN VERY HOT WATER IS TO BE PUMPED, place the supply above the suction; see further reference under boiler feed pumps.

A FULL SUPPLY OF WATER should be constantly furnished the pump.

BEFORE THE STEAM PIPE IS CONNECTED TO THE PUMP, always blow the end towards the pump out thoroughly with steam pressure to remove all obstructions.

DO NOT USE PIPES OF SMALLER DIAMETER than those specified in the tables. If the pipe lines are long, make them one or two sizes larger. This is very important on the suction pipe.

RUN ALL PIPES IN AS DIRECT A LINE AS POSSIBLE, avoid all turns, as they retard the flow of water to a far greater extent than length of pipes.

THE SUCTION PIPE MUST BE ABSOLUTELY AIR TIGHT. Whenever possible, this pipe when laid should be tested to a pressure of at least 25 pounds with cold water.

The foot valve is always necessary if the suction pipe is long or the suction lift is high.

KEEP THE STUFFING BOXES FULL OF GOOD PACKING, well oiled and set tight enough to prevent leakage without excessive friction. In putting in new packing do not crowd it, but let it fit fairly loose, as it will swell or expand more or less when it becomes wet.

If your pump gives trouble, do not pull the steam end apart to see if the valves are properly set. In nearly all cases, the trouble begins in the water end of the pump or in the suction pipe connections. ALWAYS EXAMINE THE WATER END OF THE PUMP FIRST thoroughly and see that the water valves are all properly in place and tight and that the water pistons are properly packed. If there are any doubts about the suction pipe being tight, if possible, test it with cold water, as mentioned above.

IN COLD WEATHER, when the pump is not in use, see that the cylinders are well drained to prevent pump from freezing.

Pumps ordinarily should not have a piston travel of over 100 feet per minute. For continuous boiler feeding service a little less than half that speed is recommended.

IT IS A GOOD PRACTICE TO TAKE AS GOOD CARE OF YOUR PUMP AS YOU WOULD OF YOUR ENGINE and when you do, you will have as little trouble with your pump as you do with your engine or any other piece of machinery that receives proper care.

Directions for Setting Steam Slide Valves of Duplex Pumps

1. Move the piston rod towards the steam cylinder head until the steam piston strikes the head solidly.

2. Mark the piston rod at the face of the steam piston rod gland with a lead pencil or scratch awl.

3. Move the steam piston rod until the steam piston strikes the opposite end of the cylinder.

4. Mark the piston rod at the face of the steam piston rod gland with a lead pencil or scratch awl.

5. Divide the distance between these two marks exactly in the center on the piston rod and move the piston rod towards the steam cylinder head until this mark comes exactly to the face of the steam piston rod gland. The piston will then be exactly in the middle of the stroke.

6. Remove the steam chest covers and place the slide valve exactly line and line over the steam ports and place the slide valve nut exactly in the center of the slide valve jaws. (This applies to short stroke pumps which are usually built with one valve rod nut.)

7. The valve rod through the valve rod nut should then be turned until the eye of the valve rod head comes exactly in line with the hole in the valve rod link. Insert the pin and the valve is properly set.

8. When this same process is gone through with the other side of the pump, the valves are then properly set.

9. Before putting on the steam chest covers, move one of the slide valves so as to open the steam port, otherwise the pump might not start, as in setting the valves the steam ports have been covered

10. The larger pumps are furnished with lock nuts on each valve rod and these lock nuts should be set at an equal distance from the valve rod jaws, allowing some lost motion. Usually a little less than half the width of the steam port will do, although sometimes this has to be changed if it gives the pump too long or too short a stroke.

11. All steam valves are properly set before the pumps leave our shops.

USEFUL INFORMATION

STEAM

The best designed boilers, well set, with good draft, and skillful firing, will evaporate from 7 to 10 pounds of water per pound of first class coal.

In calculating horse power of Tubular or Flue boilers, consider 15 square feet of heating surface equivalent to one nominal horse power.

On one square foot of grate can be burned on an average from 10 to 12 pounds of hard coal, or 18 to 20 pounds of soft coal, per hour, with natural draft. With forced draft nearly double this amount can be burned.

Steam engines, in economy, vary from 14 to 60 pounds of feed water and from 1½ to 7 pounds of coal per hour per indicated horse power. See table below for duty of high grade engines.

Condensing engines require from 20 to 30 gallons of water, at an average low temperature, to condense the steam represented by every gallon of water evaporated in the boilers supplying engines, approximately for most engines, we say, from 1 to 1½ gallons condensing water per minute per indicated horse power.

Ratio of Vacuum to Temperature (Fahrenheit) of Feed Water

00	inches,	Vacuum	212°
11	"	"	190°
18	"	"	170°
22½	"	"	150°
25	"	"	135°
27½	"	"	112°
28½	"	"	92°
29	"	"	72°
29½	"	"	52°

TABLE OF PROPERTIES OF SATURATED STEAM

Partly from C. H. Peabody's Tables

Pressure in pounds per square inch above vacuum	Temperature in degrees Fahrenheit	Total heat in heat units from water at 32°	Heat in liquid from 32° in units	Heat of vaporization or latent heat in heat units	Density of weight of cubic ft. in pounds	Volume of one pound in cubic feet
1	101.99	1113.1	70.0	1043.0	0.00299	334.5
2	126.27	1120.5	94.4	1026.1	0.00576	173.6
3	141.62	1125.1	109.8	1015.3	0.00844	118.5
4	153.09	1128.6	121.4	1007.2	1.01107	90.33
5	162.34	1131.5	130.7	1000.8	0.01366	73.21
6	170.14	1133.8	138.6	995.2	1.01622	61.65
7	176.90	1135.9	145.4	990.5	0.01874	53.39
8	182.92	1137.7	151.5	986.2	0.02125	47.06
9	188.33	1139.4	156.9	982.5	0.02374	42.12
10	193.25	1140.9	161.9	979.0	0.02621	38.15
15	213.03	1146.9	181.8	965.1	0.03826	26.14
20	227.95	1151.5	196.9	954.6	0.05023	19.91
25	240.04	1155.1	209.1	946.0	0.06199	16.13
30	250.27	1158.3	219.4	938.9	0.07360	13.59
35	259.19	1161.0	228.4	932.6	0.08508	11.75
40	267.13	1163.4	236.4	927.0	0.09644	10.37
45	274.29	1165.6	243.6	922.0	0.1077	9.285
50	280.85	1167.6	250.2	917.4	0.1188	8.418
55	286.89	1169.4	256.3	913.1	0.1299	7.698
60	292.51	1171.2	261.9	909.3	0.1409	7.097
65	297.77	1172.7	267.2	905.5	0.1519	6.583
70	302.71	1174.3	272.2	902.1	0.1628	6.143
75	307.38	1175.7	276.9	898.8	0.1736	5.760
80	311.80	1177.0	281.4	895.6	0.1843	5.426
85	316.02	1178.3	285.8	892.5	0.1951	5.126
90	320.04	1179.6	290.0	889.6	0.2058	4.859
95	323.89	1180.7	294.0	886.7	0.2165	4.619
100	327.58	1181.9	297.9	884.0	0.2271	4.403
105	331.13	1182.9	301.6	881.3	0.2378	4.205
110	334.56	1184.0	305.2	878.8	0.2484	4.026
115	337.86	1185.0	308.7	876.3	0.2589	3.862
120	341.05	1186.0	312.0	874.0	0.2695	3.711
125	344.13	1186.9	315.2	871.7	0.2800	3.571
130	347.12	1187.8	318.4	869.4	0.2904	3.444
140	352.85	1189.5	324.4	865.1	0.3113	3.212
150	358.26	1191.2	330.0	861.2	0.3321	3.011
160	363.40	1192.8	335.4	857.4	0.3530	2.833
170	368.29	1194.3	340.5	853.8	0.3737	2.676
180	372.97	1195.7	345.4	850.3	0.3945	2.535
190	377.44	1197.1	350.1	847.0	0.4153	2.408
200	381.73	1198.4	354.6	843.8	0.4359	2.294

USEFUL INFORMATION

WATER

A gallon of water (U. S. standard) weighs 8⅓ lbs., and contains 231 cubic inches.

A cubic foot of water weighs 62½ lbs., and contains 1,728 cubic inches, or 7½ gallons.

Doubling the diam. of a pipe increases its capacity 4 times.

Friction of liquids in pipes increases as the square of the velocity.

To find the area of a piston, square the diameter and multiply by .7854.

To find the height of a column of water, in feet, the pressure being known multiply the pressure shown on gauge by 2.31, or divide pressure by .434.

To Find the Capacity of a Cylinder in gallons, multiply the area in inches, by the length of stroke in inches; divide this amount by 231, and quotient is the capacity in gallons.

Ordinary speed to run pumps is 100 ft. of piston speed per min.

To Find Quantity of Water elevated in one minute running at 100 feet of piston speed per minute, square the diameter of water cylinder in inches and multiply by 4. Example, capacity of a five-inch cylinder is desired. The square of the diameter (5 inches) is 25, and multiplied by 4 gives 100, which is gallons per minute (approximately).

To Find the Diameter of a Pump Cylinder to move a given quantity of water per minute (100 feet of piston being the standard of speed). Divide the number of gallons by 4; then extract the square root, and the product will be the diameter in inches of the pump cylinder.

To Find the Horse Power necessary to elevate water to a given height, multiply the total weight of column of water in pounds, by the velocity per minute in feet, and divide the product by 33,000 (an allowance of 25 per cent should be added for friction, etc.), or multiply the number of gallons per minute by the head in feet and divide the product by 3960.

The mean pressure of the atmosphere is usually estimated at 14.7 pounds per square inch, so that with a perfect vacuum it will sustain a column of mercury 29.9 inches or a column of water 33.9 feet high.

To Find the Pressure in Pounds per square inch of a column of water, multiply the height of the column in feet by .434.

The Area of the Steam Piston, multiplied by the steam pressure, gives the total amount of pressure that can be exerted. The area of the water piston, multiplied by the pressure of water per square inch, gives the resistance. A margin must be made between the power and the resistance to move the pistons at the required speed—say from 20 to 40 per cent, according to the speed and other conditions.

A "miner's inch" of water is approximately equal to a supply of 12 U. S. gallons per minute.

Specific gravity is to be the ratio of the weight of a given bulk of a substance, to the weight of the same bulk of pure water at a standard temperature.

PRESSURE OF WATER

The pressure of water in pounds per square inch for every foot in height to 262 feet; and then by intervals to 3,000 feet head. By this table, from the pounds pressure per square inch, the feet head is readily obtained; and vice versa.

Feet Head	Pressure per sq. in.	Feet Head	Pressure per sq. in.	Feet Head	Pressure per sq. in.	Feet Head	Pressure per sq. in.	Feet Head	Pressure per sq. in.
1	0.43	64	27.72	127	55.01	190	82.30	253	109.59
2	0.86	65	28.15	128	55.44	191	82.73	254	110.03
3	1.30	66	28.58	129	55.88	192	83.17	255	110.46
4	1.73	67	29.02	130	56.31	193	83.60	256	110.89
5	2.16	68	29.45	131	56.74	194	84.03	257	111.32
6	2.59	69	29.88	132	57.18	195	84.47	258	111.76
7	3.03	70	30.32	133	57.61	196	84.90	259	112.19
8	3.46	71	30.75	134	58.04	197	85.33	260	112.62
9	3.89	72	31.18	135	58.48	198	85.76	261	113.06
10	4.33	73	31.62	136	58.91	199	86.20	262	113.49
11	4.76	74	32.05	137	59.34	200	86.63	270	116.96
12	5.20	75	32.48	138	59.77	201	87.07	275	119.12
13	5.63	76	32.92	139	60.21	202	87.50	280	121.29
14	6.06	77	33.35	140	60.64	203	87.93	285	123.45
15	6.49	78	33.78	141	61.07	204	88.36	290	125.62
16	6.93	79	34.21	142	61.51	205	88.80	295	127.78
17	7.36	80	34.65	143	61.94	206	89.21	300	129.95
18	7.79	81	35.08	144	62.37	207	89.66	305	132.12
19	8.22	82	35.52	145	62.81	208	90.10	310	134.28
20	8.66	83	35.95	146	63.24	209	90.53	315	136.46
21	9.09	84	36.39	147	63.67	210	90.96	320	138.62
22	9.53	85	36.82	148	64.10	211	91.39	325	140.79
23	9.96	86	37.25	149	64.54	212	91.83	330	142.95
24	10.39	87	37.68	150	64.67	213	92.26	335	145.12
25	10.82	88	38.12	151	65.40	214	92.69	340	147.28
26	11.26	89	38.55	152	65.84	215	93.13	345	149.45
27	11.69	90	38.98	153	66.27	216	93.56	350	151.61
28	12.12	91	39.42	154	66.70	217	93.99	355	153.78
29	12.55	92	39.85	155	67.14	218	94.43	360	155.94
30	12.99	93	40.28	156	67.57	219	94.86	365	158.10
31	13.42	94	40.72	157	68.00	220	95.30	370	160.27
32	13.86	95	41.15	158	68.43	221	95.73	375	162.45
33	14.29	96	41.58	159	68.87	222	96.16	380	164.61
34	14.72	97	42.01	160	69.31	223	96.60	385	166.78
35	15.16	98	42.45	161	69.74	224	97.03	390	168.94
36	15.59	99	42.88	162	70.17	225	97.46	395	171.11
37	16.02	100	43.31	163	70.61	226	97.90	400	173.27
38	16.45	101	43.75	164	71.04	227	98.33	425	184.10
39	16.89	102	44.18	165	71.47	228	98.76	450	195.00
40	17.32	103	44.61	166	71.91	229	99.20	475	205.77
41	17.75	104	45.05	167	72.34	230	99.63	500	216.58
42	18.19	105	45.48	168	72.77	231	100.00	525	227.42
43	18.62	106	45.91	169	73.20	232	100.49	550	238.25
44	19.05	107	46.34	170	73.64	233	100.93	575	249.09
45	19.49	108	46.78	171	74.07	234	101.36	600	259.90
46	19.92	109	47.21	172	74.50	235	101.79	625	270.73
47	20.35	110	47.64	173	74.94	236	102.23	650	281.56
48	20.79	111	48.08	174	75.37	237	102.66	675	292.40
49	21.22	112	48.51	175	75.80	238	103.09	700	303.22
50	21.65	113	48.94	176	76.23	239	103.53	725	314.05
51	22.09	114	49.38	177	76.67	240	103.98	750	324.88
52	22.52	115	49.81	178	77.10	241	104.39	775	335.72
53	22.95	116	50.24	179	77.53	242	104.83	800	346.54
54	23.39	117	50.68	180	77.97	243	105.26	825	357.37
55	23.82	118	51.11	181	78.40	244	105.69	850	368.20
56	24.26	119	51.54	182	78.84	245	106.13	875	379.03
57	24.69	120	51.98	183	79.27	246	106.56	900	389.86
58	25.12	121	52.14	184	79.70	247	106.99	925	400.70
59	25.55	122	52.84	185	80.14	248	107.43	950	411.54
60	25.99	123	53.28	186	80.57	249	107.86	975	422.35
61	26.42	124	53.71	187	81.00	250	108.29	1000	433.18
62	26.85	125	54.15	188	81.43	251	108.73	1500	650.00
63	27.29	126	54.58	189	81.87	252	109.16	2000	866.50
								3000	1300.00

Hydrant and Hose Stream Data

From Tables Published by John R. Freeman, M. E.

Pressure at Nozzle	Gallons Discharged per Min.	Vertical Distance of Stream	Horizontal Distance of Stream	Pressure in pounds required at Hydrant or Pump to maintain pressure at nozzle through various lengths of 2½ inch smooth, rubber-lined hose.								
				50 ft.	100 ft.	200 ft.	300 ft.	400 ft.	500 ft.	600 ft.	800 ft.	1000 ft.
¾ INCH SMOOTH NOZZLE												
35	97	55	41	37	38	40	42	44	46	48	53	57
40	104	60	44	42	43	46	48	50	53	55	60	65
45	110	64	47	47	48	51	54	57	59	62	68	73
50	116	67	50	52	54	57	60	63	66	69	75	81
55	122	70	52	58	59	63	66	69	73	76	83	89
60	127	72	54	63	65	68	72	76	79	83	90	97
65	132	74	56	68	70	74	78	82	86	90	98	106
70	137	76	58	73	75	80	84	88	92	97	105	114
75	142	78	60	79	81	85	90	94	99	104	113	122
80	147	79	62	84	86	91	96	101	106	111	120	130
85	151	80	64	89	92	97	102	107	112	117	128	138
90	156	81	65	94	97	102	108	113	119	124	135	146
95	160	82	66	99	102	108	114	120	125	131	143	154
100	164	83	68	105	108	114	120	126	132	138	150	163
⅞ INCH SMOOTH NOZZLE												
35	133	56	46	38	40	44	48	52	56	60	68	76
40	142	62	49	43	46	50	55	59	64	69	78	87
45	150	67	52	49	51	57	62	67	72	77	87	97
50	159	71	55	54	57	63	69	74	80	86	97	108
55	166	74	58	60	63	69	75	82	88	94	107	119
60	174	77	61	65	69	75	82	89	96	103	116	130
65	181	79	64	71	74	82	89	96	104	111	126	141
70	188	81	66	76	80	88	96	104	112	120	136	152
75	194	83	68	82	86	94	103	111	120	128	145	162
80	201	85	70	87	91	101	110	119	128	137	155	173
85	207	87	72	92	97	107	116	126	136	145	165	184
90	213	88	74	98	103	113	123	134	144	154	174	195
95	219	89	75	103	109	199	130	141	152	163	184	206
100	224	90	76	109	114	126	137	148	160	171	194	216
1 INCH SMOOTH NOZZLE												
35	174	58	51	40	44	51	57	64	71	78	92	105
40	186	64	55	46	50	58	66	73	81	89	105	120
45	198	69	58	52	56	65	74	83	91	100	118	135
50	208	73	61	57	62	72	82	92	102	111	131	151
55	298	76	64	63	69	79	90	101	112	122	144	166
60	228	79	67	69	75	87	98	110	122	134	157	181
65	237	82	70	75	81	94	107	119	132	145	170	196
70	246	85	72	80	87	101	115	128	142	156	183	211
75	255	87	74	86	94	108	123	138	152	167	196	226
80	263	89	76	92	100	115	131	147	162	178	209	241
85	274	91	78	98	106	123	139	156	173	189	222	...
90	279	92	80	103	112	130	147	165	183	200	236	...
95	287	94	82	109	118	137	156	174	193	211	249	...
100	295	96	83	115	125	144	164	183	203	223	...	...

The pressures given are indicated pressures, not effective pressures. Effective pressures would be slightly greater.

Hydrant and Hose Stream Data

From Tables Published by John R. Freeman, M. E.

Pressure at Nozzle	Gallons Discharged per Min.	Vertical Discharge of Stream	Horizontal Discharge of Stream	Pressure in pounds required at Hydrant or Pump to maintain pressure at nozzle through various length of 2½ inch smooth rubber-lined hose.								
				50 ft.	100 ft.	200 ft.	300 ft.	400 ft.	500 ft.	600 ft.	800 ft.	1000 ft.
1⅛ INCH SMOOTH NOZZLE												
35	222	59	54	43	49	60	71	82	94	105	127	149
40	238	65	59	50	56	69	81	94	107	120	135	171
45	252	70	63	56	63	77	92	106	120	135	163	192
50	266	75	66	62	70	86	102	118	134	150	181	213
55	279	80	69	68	77	95	112	130	147	165	200	235
60	291	83	72	74	84	103	122	141	150	180	218	256
65	303	86	75	81	91	112	132	153	174	195	236	...
70	314	88	77	87	98	120	143	165	187	209	254	...
75	325	90	79	93	105	129	153	177	201	224	...	...
80	336	92	81	99	112	138	163	188	214	239	...	...
85	346	94	83	106	119	146	173	200	227	254	...	...
90	356	96	85	112	126	155	183	212	241	...	...	...
95	366	98	87	118	133	163	194	224	254	...	...	...
100	376	99	89	124	140	172	204	236	...	...	...	...
1¼ INCH SMOOTH NOZZLE												
35	277	60	59	48	57	74	91	109	126	142	178	212
40	296	67	63	55	65	84	104	124	144	164	203	243
45	314	72	67	62	73	95	117	140	162	184	229	...
50	331	77	70	68	81	106	130	155	180	204	254	...
55	347	81	73	75	89	116	143	170	198	225	...	...
60	363	85	76	82	97	127	156	186	216	245	...	...
65	377	88	79	89	105	137	169	201	234	...	...	...
70	392	91	81	96	113	148	182	217	252	...	...	...
75	405	93	83	103	121	158	195	232	...	...	...	...
80	419	95	85	110	129	169	208	148	...	...	...	...
85	432	97	88	116	137	179	221	...	...	...	...	...
90	444	99	90	123	145	190	234	...	...	...	...	...
95	456	100	92	130	154	201	247	...	...	...	...	...
100	468	101	93	137	162	211	261	...	...	...	...	...
1⅜ INCH SMOOTH NOZZLE												
35	340	62	62	54	67	94	120	146	172	198	250	...
40	363	69	66	62	77	107	137	166	196	226	...	...
45	385	74	70	70	87	120	154	187	221	254	...	...
50	406	79	73	78	96	134	171	208	245	...	...	...
55	426	83	76	86	106	147	188	229	270	...	...	...
60	445	87	79	93	116	160	205	250	...	...	...	...
65	463	90	82	101	125	174	222	...	...	...	...	...
70	480	92	84	109	135	187	239	...	...	...	...	...
75	497	95	86	117	145	201	256	...	...	...	...	...
80	514	97	88	124	154	214	...	...	...	...	...	...
85	529	99	90	132	164	227	...	...	...	...	...	...
90	545	100	92	140	173	240	...	...	...	...	...	...
95	560	101	94	148	183	254	...	...	...	...	...	...
100	574	103	96	156	193	...	...	...	...	...	...	...

The pressures given are indicated pressures, not effective pressures. Effective pressures would be slightly greater.

Friction Loss in Pounds Pressure Per Square Inch

For each 100 Feet of Length in different size clean Iron Pipes, discharging given quantities of Water per Minute. Also velocity of flow in Pipe, in feet per Second

Gallons Discharged per Minute	½ INCH		¾ INCH		1 INCH		1¼ INCH		1½ INCH		2 INCH		2½ INCH		3 INCH		4 INCH		6 INCH		Gallons Discharged per Minute
	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	
5	8.17	24.6	3.63	3.3	2.04	0.84	1.31	0.31	0.91	0.12	....	....	....	....	....	....	....	....	....	....	5
10	16.3	96.0	7.25	13.0	4.08	3.16	2.61	1.05	1.82	0.47	1.02	0.12	....	....	....	....	....	....	....	....	10
15	....	....	10.9	28.7	6.13	6.98	3.92	2.38	2.73	0.97	....	....	....	....	....	....	....	....	....	....	15
20	....	....	14.5	50.4	8.17	12.3	5.22	4.07	3.63	1.66	2.04	0.42	....	....	....	....	....	....	....	....	20
25	....	....	18.1	78.0	10.2	19.0	6.53	6.40	4.54	2.62	....	....	1.63	0.21	1.13	0.10	....	....	....	....	25
30	....	....	....	....	12.3	27.5	7.84	9.15	5.45	3.75	3.06	0.91	....	....	....	....	....	....	....	....	30
35	....	....	....	....	14.3	37.0	9.14	12.4	6.36	5.05	....	....	....	....	....	....	....	....	....	....	35
40	....	....	....	....	16.3	48.0	10.4	16.1	7.26	6.52	4.09	1.60	....	....	....	....	....	....	....	....	40
45	....	....	....	....	....	....	11.7	20.2	8.17	8.15	....	....	....	....	....	....	....	....	....	....	45
50	....	....	....	....	....	....	13.1	24.9	9.08	10.0	5.11	2.44	3.26	0.81	2.27	0.35	1.28	0.09	....	....	50
75	....	....	....	....	....	....	19.6	56.1	13.6	22.4	7.66	5.32	4.90	1.80	3.40	0.74	....	....	....	....	75
100	....	....	....	....	....	....	....	....	18.2	39.0	10.2	9.46	6.53	3.20	4.54	1.31	2.55	0.33	1.13	0.05	100
125	....	....	....	....	....	....	....	....	....	....	12.8	14.9	8.16	4.89	5.67	1.99	....	....	....	....	125
150	....	....	....	....	....	....	....	....	....	....	15.3	21.2	9.80	7.00	6.81	2.85	3.83	0.69	1.70	0.10	150
175	....	....	....	....	....	....	....	....	....	....	17.1	28.1	11.4	9.46	7.94	3.85	....	....	....	....	175
200	....	....	....	....	....	....	....	....	....	....	20.4	37.5	13.1	12.48	9.08	5.02	5.11	1.22	2.27	0.17	200
250	....	....	....	....	....	....	....	....	....	....	....	....	16.3	19.66	11.3	7.76	6.39	1.89	2.84	0.26	250
300	....	....	....	....	....	....	....	....	....	....	....	....	19.6	28.06	13.6	11.2	7.66	2.66	3.40	0.37	300
350	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15.9	15.2	8.94	3.65	3.97	0.50	350
400	....	....	....	....	....	....	....	....	....	....	....	....	....	....	18.2	19.5	10.2	4.73	4.54	0.65	400
450	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20.4	25.0	11.5	6.01	5.11	0.81	450
500	....	....	....	....	....	....	....	....	....	....	....	....	....	....	22.7	30.8	12.8	7.43	5.67	0.96	500

Friction Loss in Pounds Pressure Per Square Inch

For each 100 Feet of Length in different size clean Iron Pipes, discharging given quantities of Water per Minute. Also velocity of flow in Pipe, in feet per Second

Gallons Discharged per Minute	6 INCH		8 INCH		10 INCH		12 INCH		14 INCH		16 INCH		18 INCH		20 INCH		24 INCH		30 INCH		Gallons Discharged per Minute
	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	Veloc. in Pipe per Second in Feet	Friction Loss in Pounds	
250	2.84	0.26	1.59	0.07	1.02	0.03	0.71	0.01													250
500	5.67	0.98	3.19	0.25	2.04	0.09	0.42	0.04	1.04	0.017	0.80	0.009	0.63	0.005							500
750	8.51	2.21	4.79	0.53	3.06	0.18	2.13	0.08													750
1000	11.3	3.88	6.38	0.94	4.08	0.32	2.84	0.13	2.08	0.062	1.60	0.036	1.26	0.020	1.02	0.012	0.72	0.005	0.45	0.002	1000
1250			7.97	1.46	5.10	0.49	3.55	0.20													1250
1500			9.57	2.09	6.12	0.70	4.26	0.29	3.13	0.135	2.39	0.071	1.89	0.040							1500
1750					7.15	0.95	4.96	0.38													1750
2000					8.17	1.23	5.67	0.49	4.17	0.234	3.19	0.123	2.52	0.071	2.04	0.042	1.44	0.020	0.91	0.006	2000
2250							6.38	0.63													2250
2500							7.09	0.77	5.21	0.362	3.99	0.188	3.15	0.107							2500
3000							8.51	1.11	6.25	0.515	4.79	0.267	3.78	0.150	3.06	0.091	2.16	0.047	1.36	0.012	3000
3500									7.29	0.697	5.59	0.365	4.41	0.204							3500
4000									8.34	0.910	6.38	0.472	5.04	0.263	4.08	0.158	2.88	0.067	1.82	0.022	4000
4500											7.18	0.593	5.67	0.333							4500
5000											7.98	0.730	6.30	0.408	5.11	0.244	3.60	0.102	2.27	0.035	5000
6000													7.56	0.585	6.13	0.348	4.32	0.146	2.72	0.048	6000
7000															7.15	0.472	5.04	0.196	3.18	0.065	7000
8000															8.17	0.612	5.76	0.255	3.63	0.083	8000
9000																	6.47	0.323	4.08	0.105	9000
10000																	7.19	0.398	4.54	0.131	10000

Quantitative Discharge of One Piston or Plunger

Computed on piston travel of 100 feet per minute, of a double-acting piston, no allowance being made for slip

Diam. Piston	Gallons per			Diam. Piston	Gallons per		
	Minute	Hour	24 Hours		Minute	Hour	24 Hours
1	4.07	244.7	5,875	14¼	828	49,704	1,192,896
1¼	6.37	382.5	9,180	14½	858	51,468	1,235,232
1½	9.18	550.8	13,219	14¾	887	53,256	1,278,144
1¾	12.49	749	17,992	15	918	55,070	1,321,915
2	16.31	979	23,500	15¼	949	56,928	1,366,272
2¼	20.6	1,239	28,180	15½	980	58,800	1,411,200
2½	25.5	1,530	36,720	15¾	1,012	60,720	1,457,280
2¾	30.8	1,851	44,424	16	1,044	62,668	1,504,046
3	36.7	2,203	52,878	16¼	1,077	64,638	1,551,312
3¼	43.1	2,586	62,064	16½	1,110	66,642	1,599,408
3½	49.9	2,998	71,971	16¾	1,144	68,676	1,648,224
3¾	57.3	3,442	82,619	17	1,179	70,752	1,698,048
4	65.2	3,916	94,002	17¼	1,214	72,840	1,748,160
4¼	73.7	4,422	106,128	17½	1,249	74,964	1,799,136
4½	82.6	4,957	118,971	17¾	1,285	77,100	1,850,400
4¾	92	5,523	132,552	18	1,322	79,314	1,903,550
5	102	6,120	146,880	18¼	1,359	81,528	1,956,672
5¼	112	6,745	161,934	18½	1,396	83,778	2,010,672
5½	123	7,404	177,696	18¾	1,434	86,060	2,065,449
5¾	134	8,093	194,248	19	1,473	88,368	2,120,832
6	146	8,812	211,511	19¼	1,511	90,660	2,175,840
6¼	159	9,562	129,500	19½	1,552	93,120	2,234,880
6½	172	10,344	248,256	19¾	1,590	95,400	2,289,600
6¼	185	11,152	267,660	20	1,632	97,920	2,350,080
7	200	11,995	287,884	20¼	1,673	100,380	2,409,120
7¼	214	12,867	308,808	20½	1,714	102,840	2,468,150
7½	229	13,769	330,478	20¾	1,756	105,396	2,529,504
7¾	245	14,700	352,300	21	1,799	107,952	2,590,848
8	261	15,667	376,011	21¼	1,842	110,538	2,652,912
8¼	277	16,660	399,852	21½	1,886	113,154	2,715,696
8½	294	17,688	424,512	21¾	1,930	115,800	2,779,200
8¾	312	18,741	449,978	22	1,974	118,482	2,843,568
9	330	19,828	475,887	22¼	2,020	121,194	2,908,656
9¼	349	20,944	502,668	22½	2,065	123,924	2,974,176
9½	368	22,092	530,208	22¾	2,111	126,696	3,040,704
9¾	388	23,280	558,720	23	2,158	129,492	3,107,808
10	408	24,480	587,518	23¼	2,205	132,324	3,175,776
10¼	428	25,716	617,184	23½	2,253	135,186	3,244,464
10½	449	26,989	647,789	23¾	2,301	138,078	3,313,872
10¾	471	28,299	678,960	24	2,349	140,958	3,382,992
11	493	29,616	710,784	24¼	2,399	143,952	3,454,848
11¼	516	30,986	743,677	24½	2,449	146,958	3,526,992
11½	539	32,374	776,993	24¾	2,499	149,952	3,598,848
11¾	564	33,795	811,080	25	2,550	152,994	3,671,856
12	587	35,251	846,046	25¼	2,653	159,179	3,820,300
12¼	612	36,735	881,640	26	2,758	165,484	3,971 630
12½	637	38,250	918,000	26½	2,863	171,908	4,125,800
12¾	663	39,816	955,584	27	2,974	178,457	4,282,967
13	689	41,370	992,880	27½	3,085	185,130	4,443,125
13¼	716	42,972	1,031,328	28	3,199	191,922	4,606,125
13½	743	44,610	1,070,640	28½	3,314	198,838	4,772,118
13¾	771	46,278	1,110,672	29	3,431	205,876	4,841,028
14	799	47,980	1,151,536	30	3,672	220,320	5,287,675

The above figures are all U. S. gallons. To determine equivalent Imperial gallons, multiply by .833. To determine quantity discharged by two pistons (as for a duplex pump), multiply by 2. To determine quantity discharged by three single-acting plungers (as for a triplex pump), multiply by 1½. For piston speeds other than 100 feet per minute, computations may be easily made.

Areas of Circles, Advancing by Eighths

AREAS

Dia.	0	1/8	1/4	3/8	1/2	5/8	3/4	7/8	Dia.
0	.0	.0122	.0490	.1104	.1963	.3068	.4417	.6013	0
1	.7854	.9940	1.227	1.484	1.767	2.073	2.405	2.761	1
2	3.141	3.546	3.976	4.430	4.908	5.411	5.939	6.491	2
3	7.068	7.669	8.295	8.946	9.621	10.32	11.04	11.79	3
4	12.56	13.36	14.18	15.03	15.90	16.80	17.72	18.66	4
5	19.63	20.62	21.64	22.69	23.75	24.85	25.96	27.10	5
6	28.27	29.46	30.67	31.91	33.18	34.47	35.78	37.12	6
7	38.48	39.87	41.28	42.71	44.17	45.66	47.17	48.70	7
8	50.26	51.84	53.45	55.08	56.74	58.42	60.13	61.86	8
9	63.61	65.39	67.20	69.02	70.88	72.55	74.66	76.58	9
10	78.54	80.51	82.51	84.54	86.59	88.66	90.76	92.88	10
11	95.03	97.20	99.40	101.6	103.8	106.1	108.4	110.7	11
12	113.0	115.4	117.8	120.2	122.7	125.1	127.6	130.1	12
13	132.7	135.2	137.8	140.5	143.1	145.8	148.4	151.2	13
14	153.9	156.6	159.4	162.2	165.1	167.9	170.8	173.7	14
15	176.7	179.6	182.6	185.6	188.6	191.7	194.8	197.9	15
16	201.0	204.2	207.3	210.5	213.8	217.0	220.3	223.6	16
17	226.9	230.3	233.7	237.1	240.5	243.9	247.4	250.9	17
18	254.4	258.0	261.5	265.1	268.8	272.4	276.1	279.8	18
19	283.5	287.2	291.0	294.8	298.6	302.4	306.2	310.2	19
20	314.1	318.1	322.0	326.0	330.0	334.1	338.1	342.2	20
21	346.3	350.4	354.6	358.8	363.0	367.2	371.5	375.8	21
22	380.1	384.4	388.8	393.2	397.6	402.0	406.4	410.9	22
23	415.4	420.0	424.5	429.1	433.7	438.3	443.0	447.6	23
24	452.3	457.1	461.8	466.6	471.4	476.2	481.1	485.9	24
25	490.8	495.7	500.7	505.7	510.7	515.7	520.7	525.8	25
26	530.9	536.0	541.1	546.3	551.5	556.7	562.0	567.2	26
27	572.5	577.8	583.2	588.5	593.9	599.3	604.8	610.2	27
28	615.7	621.2	626.7	632.3	637.9	643.5	649.1	654.8	28
29	660.5	666.2	671.9	677.7	683.4	689.2	695.1	700.9	29
30	706.8	712.7	718.6	724.6	730.6	736.6	742.6	748.6	30
31	754.8	760.9	767.0	773.1	779.3	785.5	791.7	798.0	31
32	804.2	810.5	816.9	823.3	829.6	836.0	842.4	848.8	32
33	855.3	861.8	868.3	874.8	881.4	888.0	894.6	901.3	33
34	907.9	914.6	921.3	928.1	934.8	941.6	948.4	955.3	34
35	962.1	969.0	975.9	982.8	989.8	996.8	1003.8	1010.8	35
36	1017.9	1025.0	1032.1	1039.2	1046.4	1053.5	1060.7	1068.0	36
37	1075.2	1082.5	1089.8	1097.1	1104.5	1111.8	1119.2	1126.7	37
38	1134.1	1141.6	1149.1	1156.6	1164.2	1171.7	1179.3	1186.9	38
39	1194.6	1202.3	1210.0	1217.7	1225.4	1233.2	1241.0	1248.8	39
40	1256.6	1264.5	1272.4	1280.3	1288.3	1296.2	1304.2	1312.2	40
41	1320.3	1328.3	1336.4	1344.5	1352.7	1360.8	1369.0	1377.2	41
42	1385.4	1393.7	1402.0	1410.3	1418.6	1427.0	1435.4	1443.8	42
43	1452.2	1460.7	1469.1	1477.6	1486.2	1494.7	1503.3	1511.9	43
44	1520.5	1529.2	1537.9	1546.6	1555.3	1564.0	1572.8	1581.6	44
45	1590.4	1599.3	1608.2	1617.0	1626.9	1643.9	1643.9	1652.9	45
46	1661.9	1671.0	1680.0	1689.1	1698.2	1707.4	1716.5	1725.7	46
47	1734.9	1744.2	1753.5	1762.7	1772.1	1781.4	1790.8	1800.1	47
48	1809.6	1819.0	1828.5	1837.9	1847.5	1857.0	1866.6	1876.1	48
49	1885.7	1895.4	1905.0	1914.7	1924.4	1934.2	1943.9	1953.7	49
50	1963.5	1973.3	1983.2	1993.1	2003.0	2012.9	2022.8	2032.8	50

Wrought Iron and Steel Steam, Gas and Water Pipe

Table of Standard Dimensions

Diameter			Nominal Thickness	Circumference		Transverse Areas			Length of Pipe per Square Foot of		Length of Pipe Containing One Cu. Foot	Nominal Weight per Foot	Number of Threads per In. of Screw
Nominal Internal	Actual External	Approximate Internal Diameter		External	Internal	External	Internal	Metal	External Surface	Internal Surface			
Inches	Inches	Inches	Inches	Inches	Inches	Sq. In.	Sq. In.	Sq. In.	Feet	Feet	Feet	Pounds	
⅛	.405	.27	.068	1.272	.848	.129	.0573	.0717	9.44	14.15	2513.	.241	27
¼	.54	.364	.088	1.696	1.144	.229	.1041	.1249	7.075	10.49	1383.3	.42	18
⅜	.675	.494	.091	2.121	1.552	.358	.1917	.1663	5.657	7.73	751.2	.559	18
½	.84	.623	.109	2.639	1.957	.554	.3048	.2492	4.547	6.13	472.4	.837	14
¾	1.05	.824	.113	3.299	2.589	.866	.5333	.3327	3.637	4.635	270.	1.115	14
1	1.315	1.048	.134	4.131	3.292	1.358	.8626	.4954	2.904	3.645	166.9	1.668	11½
1¼	1.66	1.38	.14	5.215	4.335	2.164	1.496	.668	2.301	2.768	96.25	2.244	11½
1½	1.9	1.611	.145	5.969	5.061	2.835	2.038	.797	2.01	2.371	70.66	2.678	11½
2	2.375	2.067	.154	7.461	6.494	4.43	3.356	1.074	1.608	1.848	42.91	3.609	11½
2½	2.875	2.468	.204	9.032	7.753	6.492	4.784	1.708	1.328	1.547	30.1	5.739	8
3	3.5	3.067	.217	10.996	9.636	9.621	7.388	2.243	1.091	1.245	19.5	7.536	8
3½	4.	3.548	.226	12.566	11.146	12.566	9.887	2.679	.955	1.077	14.57	9.001	8
4	4.5	4.026	.237	14.137	12.648	15.904	12.73	3.174	.849	.949	11.31	10.665	8
4½	5.	4.508	.246	15.708	14.162	19.635	15.961	3.764	.764	.848	9.02	12.49	8
5	5.563	5.045	.259	17.477	15.849	24.306	19.99	4.316	.687	.757	7.2	14.502	8
6	6.625	6.065	.28	20.813	19.054	34.472	28.888	5.584	.577	.63	4.98	18.762	8
7	7.625	7.023	.301	23.955	22.063	45.664	38.738	6.926	.501	.544	3.72	23.271	8
8	8.625	7.982	.322	27.096	25.076	58.426	50.04	8.386	.443	.478	2.88	28.177	8
9	9.625	8.937	.344	30.238	28.076	72.76	62.73	10.03	.397	.427	2.29	33.701	8
10	10.75	10.019	.366	33.772	31.477	90.763	78.839	11.924	.355	.382	1.82	40.065	8
11	11.75	11.	....	36.914	34.558	108.434	95.033	13.401	.325	.347	1.51	45.028	8
12	12.75	12.	....	40.055	37.7	127.677	113.098	14.759	.299	.319	1.27	48.985	8

General Index

Index to Code Words

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