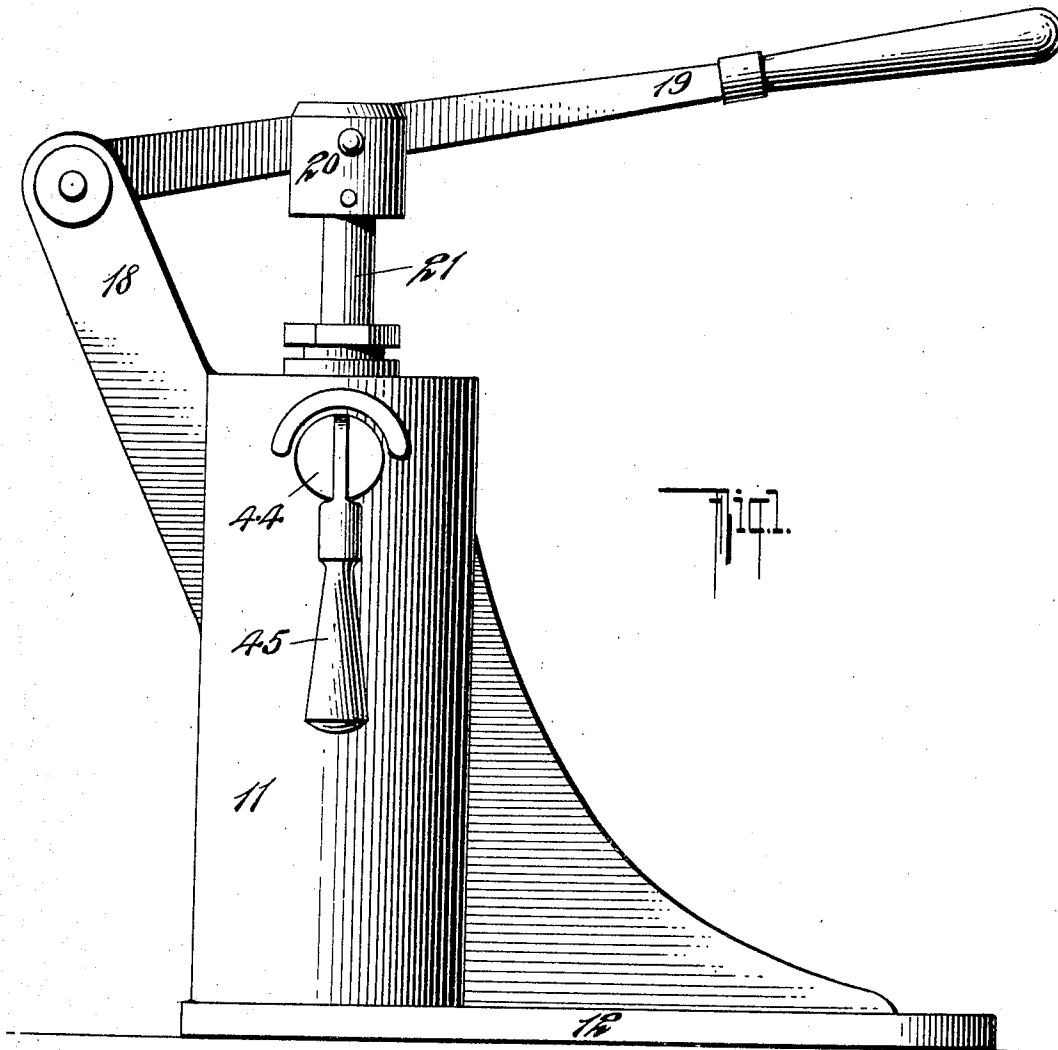


No. 895,666.

PATENTED AUG. 11, 1908.

J. W. NELSON.
HYDRAULIC PRESSURE PUMP.
APPLICATION FILED JULY 8, 1907.

2 SHEETS—SHEET 1.



WITNESSES
Julius H. [Signature]
James P. Duhamel,

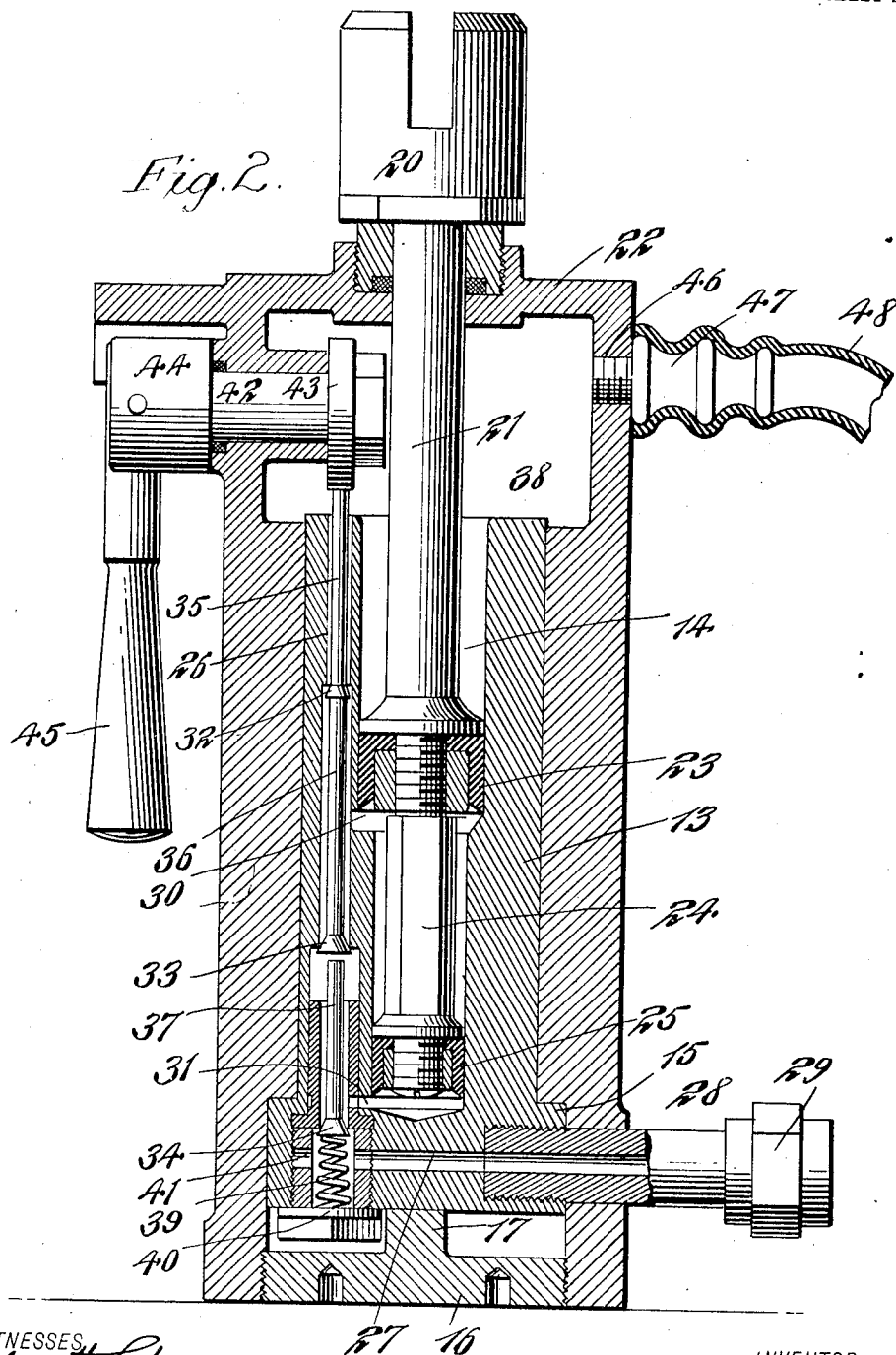
INVENTOR
James W. Nelson
BY
Frederick H. Roversock
ATTORNEY

No. 895,666.

PATENTED AUG. 11, 1908.

J. W. NELSON.
HYDRAULIC PRESSURE PUMP.
APPLICATION FILED JULY 8, 1907.

2 SHEETS—SHEET 2.



WITNESSES
Julius H. Intz
James F. Duhamel

INVENTOR
James W. Nelson
BY
Geo. A. Bowersock
ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES W. NELSON, OF NEW YORK, N. Y.

HYDRAULIC-PRESSURE PUMP.

No. 895,666.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed July 8, 1907. Serial No. 382,566.

To all whom it may concern:

Be it known that I, JAMES W. NELSON, a citizen of the United States, and resident of New York city, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Hydraulic-Pressure Pumps, of which the following is a specification.

This invention relates to hydraulic pressure generators, with particular reference to high-pressure pumps of the same general character as the one shown and described by me in an earlier application, filed May 21, 1906, Ser. No. 317,865. In this earlier application, aforesaid, I described a pump as applied to a self-contained hydraulic jack. As is well known, the pressure generated by such a device is usually directly applied, the jack being itself interposed between a suitable abutment and the load to be raised or moved and the work being directly done by means of the expansion of the jack-parts under the hydraulic pressure.

It is, of course, frequently necessary to apply pressure at points so located as to render it impossible or impracticable to directly adjust the jack thereto. It is furthermore frequently desirable to employ hydraulic pressure for other purposes than the raising or moving of heavy bodies—such as, for instance, the testing of boilers, pipes, and other forms of containers and conveyers which are to be subjected to internal high pressures. For such purposes, also, it is not always possible to provide a reservoir within the device itself of sufficient capacity to contain and supply the necessary volume of liquid. For this and other reasons I have modified the construction shown and described in the co-pending application, aforesaid, to adapt the same to the above and other uses and purposes.

The objects of the present invention, therefore, may be said to be the provision of an exceedingly simple and compact hydraulic pump, of great power, portable, adapted to apply the pressure at a selective point or points at a distance from the device itself, and which will possess all of the advantages of the pump described in connection with the jack shown in the co-pending application aforesaid and in my application filed contemporaneously herewith, Serial No. 382,565.

My invention will be more readily understood by reference to the accompanying

drawings, forming a part of this specification, in which

Figure 1 is a side elevation of a device embodying my invention, and Fig. 2 is an enlarged, central, transverse section thereof.

Referring now to the drawings in detail, numeral 11 refers to a cylindrical body or shell, closed at its upper end and preferably mounted upon a suitable base plate 12.

Mounted and snugly fitting within the cylinder 11 is the cylindrical pump-block 13, provided with a longitudinal and preferably central pump-bore 14. This pump-block 13 is provided with an annular shoulder 15 engaging a corresponding shoulder within the cylinder 11, the pump-block being thus firmly and rigidly held within the said cylinder by means of the screw-cap 16, which is provided with a boss 17 adapted to impinge against the base of said pump-block.

Projecting rearwardly from said cylinder 11 is the heavy bracket 18, fulcrumed in the end of which is the pump-lever 19. This pump-lever is suitably pivoted within the head 20 of the piston-rod 21, which extends downwardly through a suitable aperture in the top plate 22 of said cylinder and into the bore 14 of the pump-block. Upon the piston-rod 21 is mounted a piston 23, from which projects an extension 24 of said rod which terminates in a piston 25 of preferably one-half the effective area of the piston 23. The construction and arrangement of these pistons is preferably identical to that shown and described by me in my co-pending application, aforesaid, the bore 14 being of two different diameters to correspond with the diameters of the two pistons.

Located laterally of the pump-bore 14 is a smaller bore 26, open at the top and closed at the bottom (in a manner hereinafter described) and communicating with a lateral bore 27, in the base of the pump-block, leading to the pipe or plug 28, secured within said pump-block in any suitable manner, at the end of which is mounted the coupling 29. The bore 26 communicates with the bore 14 by means of the duct 30, leading to the chamber below the upper and larger piston, and the duct 31, leading to the chamber below the lower and smaller piston. Within the bore 26 are located the three valves 32, 33 and 34, provided with upwardly projecting stems 35, 36, and 37, respectively, the diameter of the bore 26 being increased at the

location of each valve, providing a shoulder which forms a valve-seat. Each of said stems is slightly less in diameter than the diameter of that portion of the bore within which it is located, whereby a passage is left therearound for the flow of liquid. When these valves are seated, the stem 37 of the lower valve 34 projects upwardly to a point a slight distance below the valve 33; similarly, the stem 36 of the valve 33 projects upwardly to a point just short of contact with the valve 32, and the stem 35 of the valve 32 projects upwardly into the small chamber 38 above the pump-block. The valve 34 alone is normally pressed into its seat by means of the spring 39 in compression between said valve and the head 40 of the screw-cap 41 which closes the lower end of the bore 26.

Suitably journaled in the wall of the cylinder 11, and projecting into the chamber 38, is the short shaft 42, mounted upon which, at its inner end, is the cam 43, so located and adjusted as to operate against the upper end of the stem 35 of the valve 32. Exteriously, this shaft is provided with a head 44 which has a groove within which is pivoted the end of the shaft-operating handle or lever 45.

It will be apparent that when in its normal position, with the reduced portion of the cam 43 contiguous to the end of the valve-stem 35, all of the valves in the bore 26 are operative and will seat themselves under an excess of pressure from below. It will be furthermore apparent that by turning the handle 45, in a direction to operate the cam 43, through a certain arc, said cam will act upon the stem 35 to unseat the valve 32 only and hold the same off its seat. Such operation, obviously, renders the larger of the two pumps inoperative; for, when the valve 32 is held off its seat, the liquid under pressure of the piston 23 will not be forced past the valve 33, inasmuch as the pressure under said valve 33 is greater than that above. Therefore, as said pumps are operated with said valve 32 held open, the liquid in the chamber under the piston 23 will, upon the down-stroke of said piston, be forced past said unseated valve 32 and back into the chamber 38.

It will be noted that further rotation of the shaft 42, by means of the handle 45, will, through said cam 43, further depress the valve stem 33 until the valve 32 impinges against the valve stem 36, unseating the valve 33 which, in turn, similarly operates, through the stem 37, to unseat the valve 34. In this position all of the valves in said bore 26 have been unseated and are held off their seats—this for the purpose of relieving pressure, after the work has been done, in order to remove the device.

As hereinbefore suggested, this device is not intended to be self-contained, for the sake of compactness the chamber 38 being sufficient in capacity to contain the volume

of liquid which it would doubtless be necessary or desirable to employ. I therefore provide the cylinder 11 with a suitable orifice or aperture 46 into which is screwed the plug 47, which is a common and well known form of connection adapted to receive and retain the end of a rubber or other flexible hose 48. The other end of this hose may be placed in a tank, barrel, or even a pail of water, from which, upon operation of the pump, the water is drawn into the chamber 38. Similarly, the coupling 29 may serve to connect the pipe or plug 28 with a rubber or other flexible hose 49, so that the pressure generated by the pump may be transmitted and directed at selective points without moving the device.

It will be noted that the base plate 12 projects forwardly, in a direction opposite to that in which the bracket 18 projects in order to insure the stability of the device when operated.

Having thus described a device embodying my invention, I claim as new and desire to secure by Letters Patent:

1. An hydraulic pump having a fluid-passage not including the pump-bore and providing the only means of communication between the initial inlet and final outlet ports of the device, and means for continuously delivering liquid to said inlet port and directing the discharge of liquid from said outlet port.

2. In an hydraulic pump having a passage for the flow of liquid not including the pump-bore but communicating therewith and having all valves located in said passage, the combination of means for continuously delivering liquid to said passage and controlling the discharge of liquid therefrom, and means for positively unseating all of said valves.

3. In a double-plunger hydraulic pump having a passage for the flow of liquid not including the pump chambers but communicating therewith and having all valves in said passage, the combination of means for continuously delivering liquid to said passage and directing the discharge of liquid therefrom, and means for positively unseating the first of said valves only or all thereof.

4. In a multiple-plunger hydraulic pump having a fluid-passage not including the pump chambers and providing the only means of communication between the initial inlet and final outlet ports of the device, the combination, with valves in said passage, of means for continuously delivering liquid through said inlet port and directing discharge through said outlet port, and means for successively unseating said valves in order.

5. In an hydraulic pump, the combination, with double plungers and a pump-block having corresponding pump chambers, said

5 pump-block being further provided with a
separate bore providing a passage from ini-
tial inlet to final outlet ports of the device
and separately communicating with each
10 pump chamber, of a series of valves in said
bore, means for holding one of said valves off
its seat, said means being further operable
to unseat all of said valves, and means for con-
tinuously supplying liquid through said inlet
15 port and directing discharge from said outlet
port.

6. In an hydraulic pump, the combination,
with a plurality of plungers and a pump-
block having corresponding pump chambers,
15 said pump-block being further provided with

a separate bore providing a passage from ini-
tial inlet to final outlet ports of the device and
separately communicating with each pump
chamber, of a series of valves in said bore,
means for successively unseating said valves 20
in order, and means for continuously supply-
ing liquid through said inlet port and direct-
ing discharge from said outlet port.

In testimony of the foregoing, I have here-
unto set my hand in the presence of two 25
witnesses.

JAMES W. NELSON.

Witnesses:

JOS. F. O'BRIEN,
FREDERICK P. RANDOLPH.