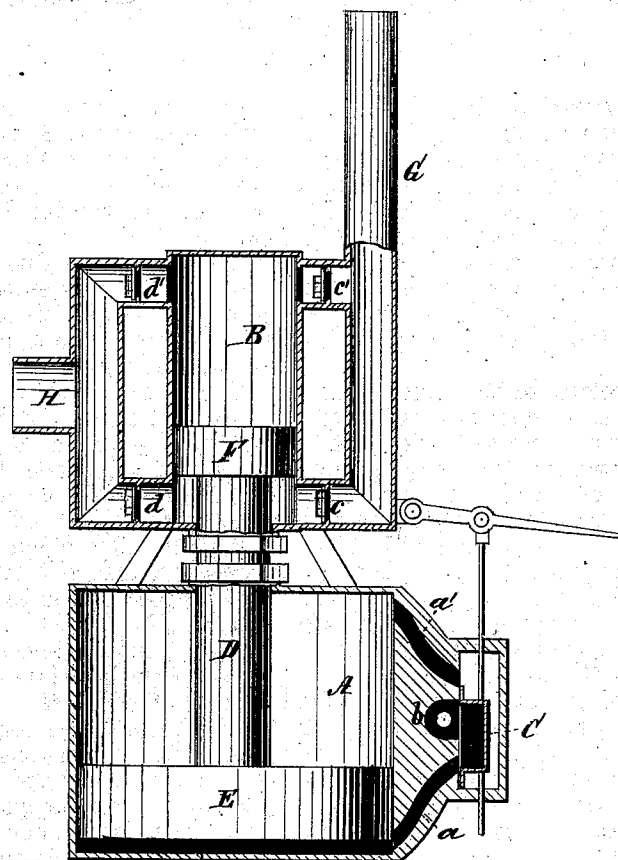


H. THALHEIM & J. GORDON.
Pumps for Hydraulic Presses.

No. 155,773.

Patented Oct. 6, 1874.



WITNESSES:

John A. Kemmer
Edw. V. Benton

INVENTOR:

H. Thalheim
J. Gordon
BY *Wm. B.*

ATTORNEYS.

UNITED STATES PATENT OFFICE

HERMANN THALHEIM AND JOSEPH GORDON, OF ATLANTA, GEORGIA.

IMPROVEMENT IN PUMPS FOR HYDRAULIC PRESSES.

Specification forming part of Letters Patent No. **155,773**, dated October 6, 1874; application filed June 11, 1874.

To all whom it may concern:

Be it known that we, HERMANN THALHEIM and JOSEPH GORDON, of Atlanta, in the county of Fulton and State of Georgia, have invented a new and Improved Pump for Hydraulic Press; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which the figure shows a vertical section.

This invention relates to that class of double-acting force-pumps, which are used in connection with hydraulic presses; and consists in a peculiar construction and arrangement of parts, by means of which an alternate high pressure and low pressure stroke is obtained.

In the drawing, A represents the steam-cylinder, and B the pump-cylinder. Said cylinder A is provided with an ordinary slide-valve, C, operated by suitable mechanism, and sliding over and connecting alternately induction-ports *a a* with the exhaust-pipe *b*. D is the piston-rod, having attached at one end the steam-piston E, and at the other the smaller pump-piston F. At the extremities of the pump-cylinder on one side are the inlet-valves *c c'*, communicating with a feed-pipe, G, and at the extremities of the said cylinder, on the opposite side, are the outlet-valves *d d'*, communicating with a pipe, H, that leads to the press.

The operation of this pump is as follows: When steam is admitted through port *a* the piston E rises, carrying with it rod D and piston F, creating in cylinder B, beneath piston F, a partial vacuum, which is filled by the water passing through inlet-valve *c* from feed-pipe G. At the completion of the upward stroke the position of the slide-valve C is reversed, and steam admitted through the port *a'*, which brings the pistons E and F and rod D down again. The result of this stroke is to close the inlet-valve *c* and force the water

below the piston F out through the outlet-valve *d* into pipe H, and at the same time to close the valve *d'* against the return of the water, and fill the top of the cylinder with water through the inlet-valve *c'* from the feed-pipe G.

The pump is by this means rendered double-acting in its operation, and a continuous stream of water forced into the press. The passage of the water, however, is not uniform, the upward stroke being a low-pressure stroke, and the downward a high-pressure stroke, which will readily be understood by observing that the volume of water below the piston F is much smaller than the volume above, the difference being the displacement equal to the solidity of the rod D. By reason of this fact the smaller amount of water below the piston is forced out much more rapidly and under a greater degree of pressure than the larger bulk above.

I know that double-acting pumps are common, and therefore do not claim the arrangement of the valves. What I do claim, however, is the relative construction and arrangement of the two pistons, in combination with the rod, whereby the piston-rod is made to displace a sufficient quantity of water on one side of the small piston as to make the strokes of the said small piston alternately high and low pressure.

Having thus described our invention, what we claim as new, is—

The combination of the small piston F of the water-cylinder, with the large piston-rod D of the steam-cylinder, for the purpose of producing alternately a high and low pressure stroke in the pump, substantially as described.

HERMANN THALHEIM.
JOSEPH GORDON.

Witnesses to both signatures:

JOHN D. BRÖCKMAN,
A. C. RUNYAN.