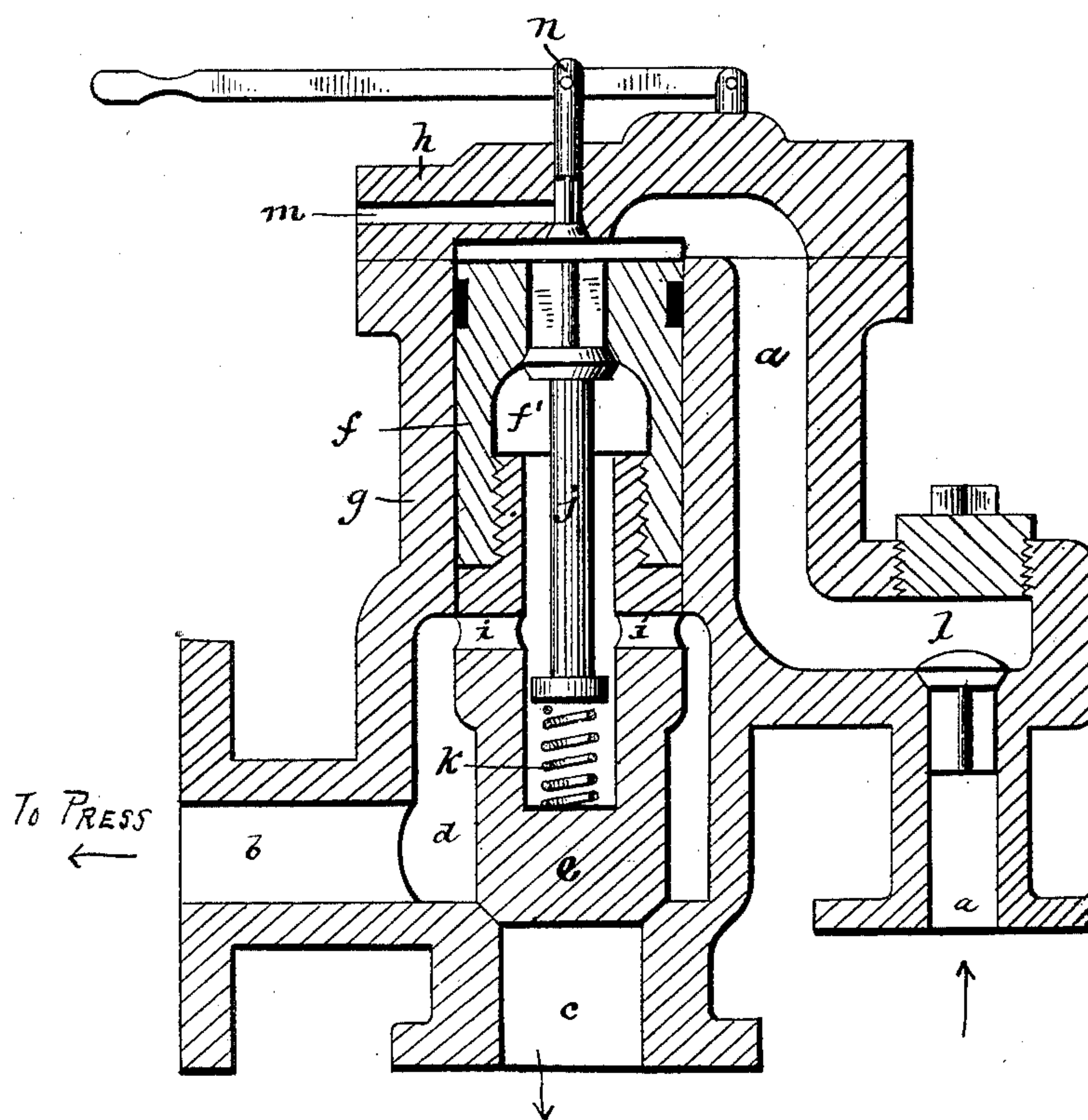


(No Model.)

L. MILLER & J. H. B. BRYAN.
HYDRAULIC VALVE.

No. 424,718.

Patented Apr. 1, 1890.



Witnesses
C. W. Conroy.
C. O. Davis.

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UNITED STATES PATENT OFFICE.

LEWIS MILLER AND JOHN H. B. BRYAN, OF PHILADELPHIA, PENNSYLVANIA.

HYDRAULIC VALVE.

SPECIFICATION forming part of Letters Patent No. 424,718, dated April 1, 1890.

Application filed October 17, 1889. Serial No. 327,259. (No model.)

To all whom it may concern:

Be it known that we, LEWIS MILLER and JOHN H. B. BRYAN, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Valves, of which the following is a specification, reference being had therein to the accompanying drawing, in which is represented a vertical sectional view of our valve complete.

The nature of our invention will fully appear in the course of the following specification.

In the drawing, *a* designates the inlet-passage, and *b c* the two main outlet-passages, the two latter passages leading directly into a valve-chamber *d*, in which works a valve *e*, seated over and normally closing the outlet-passage *c*. The valve *e* has connected to or formed integral with it a piston *f*, which works in a vertical cylinder *g*, located above and communicating with the valve-chamber *d*, the upper end of this cylinder being closed by a head or gland *h*. The piston is somewhat larger in diameter than the valve to which it is connected, and is elongated and provided with a vertical central passage *f'*, which communicates with the valve-chamber *d* by means of a suitable number of side passages *i*. Closing the upper end of the passage *f'* is an inwardly-opening valve *j*, which is kept normally pressed up to its seat by means of a spring *k* in the bottom of the passage *f'*. In order that the valve *j* may be removed whenever desired, the piston is made in two sections and screwed together, as shown.

The main inlet-passage is provided with an automatic check-valve *l* and leads into the top of the cylinder, the passage being preferably formed integral with the cylinder.

Leading from the top of cylinder *g* is a small passage *m*, which is closed by a small inwardly-opening valve *n*, the stem of which passes out through the head *h* and is connected to an operating-lever.

In operation liquid is forced by means of a ram or pump or other apparatus up into the passage *a*, past the check-valve *l*, into the upper end of the cylinder *g*, and from thence down past the valve *j*, through the passage *f' i* and

valve-chamber *d*, and, finally, out through the outlet-passage *b*, which latter may lead to a hydraulic press of any description. As soon as the required pressure is attained in the press and the flow of liquid through the valve is stopped the check-valves *l* and *j*, as is evident, will immediately close and hold the liquid under the pressure attained. While thus under pressure the valves *e* and *n* will be pressed firmly to their seats by the liquid. When it is desired to relieve the pressure and run the liquid off through the passage *c*, (which may lead to a tank or other vessel,) it is simply necessary to force the small valve inwardly, whereupon the pressure of liquid upon the under side of the piston (the piston being larger than valve *e*) will lift the same and thereby open the valve *e*, the small quantity of liquid above the piston being of course forced off through the passage *m* to a tank. Before the valve *n* is opened the piston will be prevented from rising by the liquid confined between the top of the same and the check-valve *l*. The valve may be employed in hydraulic apparatus of all sorts, but is particularly designed for use in cotton-presses.

Having thus described our invention, what we claim is—

The combination of the outlet-passages *b* and *c*, communicating with the valve-chamber *d*, a cylinder *g*, communicating with the valve-chamber *d* and closed at its upper end, a valve *e*, closing the passage *c*, a hollow piston connected to the said valve *e* and working in the cylinder *g*, the piston being larger in diameter than valve *e*, the interior of this piston communicating with the valve-chamber by passage *i*, an automatic valve in this piston, a valved passage *m*, leading from the upper portion of the said cylinder, and a valved passage or conduit leading into the top of said cylinder, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

LEWIS MILLER.
JOHN H. B. BRYAN.

Witnesses:
C. D. DAVIS,
HILLYARD SWENEY.