S. BYRNES & J. A. GROSHON.

HYDRAULIC JACK.

No. 183,638. Patented Oct. 24, 1876.

Fig. 1.

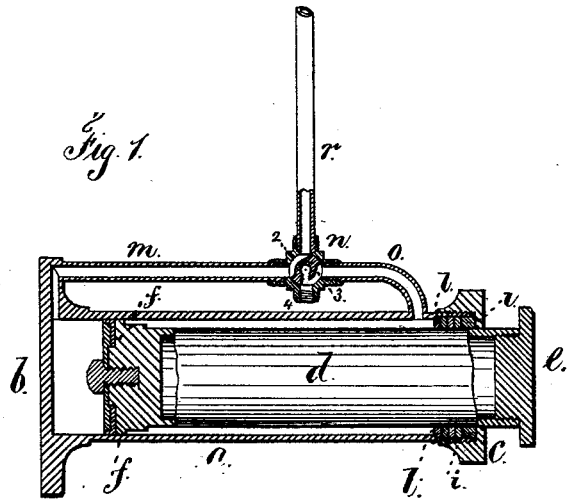


Fig. 2.

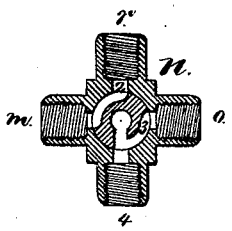
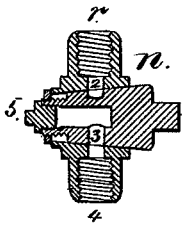


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

STEPHEN BYRNES, OF BROOKLYN, AND JOHN A. GROSHON, OF NEW YORK, N. Y.

IMPROVEMENT IN HYDRAULIC JACKS.

Specification forming part of Letters Patent No. **183,638**, dated October 24, 1876; application filed September 10, 1875.

To all whom it may concern:

Be it known that we, STEPHEN BYRNES, of Brooklyn, New York, and JOHN A. GROSHON, of the city and State of New York, have invented an Improvement in Hydraulic Jacks, of which the following is a specification:

Hydraulic jacks have heretofore been made to operate by the pressure of water from a pump, either constructed with the jack or separate from it.

Our improved jack is made especially as a portable appliance for aiding in packing closely such articles as bales and bags of cotton into vessels.

We make use of a piston within a cylinder, provided with a tubular piston-rod and head, and a peculiar packing around such tubular rod, in combination with water-ways and a three-way cock and a flexible hose to a pump, by means of which the water passing through that hose and acting in the ram serves to move the piston and tubular rod, to compress the cotton or other bales of goods in packing them into their places, and by turning the said three-way cock the water can be retained and the ram held in its extended position, and by a further turn of the three-way cock the water can be directed at the other side of the piston to draw the ram back with increased velocity. In all cases the water escaping from the opposite side of the piston is allowed to pass through the three-way cock and flow off through a flexible tube.

In the drawing, Figure 1 is a longitudinal section of the ram complete. Fig. 2 is a section of the cock transversely of the plug, and Fig. 3 is a similar view longitudinally of the plug.

The cylinder *a* is of a suitable size proportioned to the pressure of water and the amount of force required to be exerted by the ram. The cylinder *a* has a fixed head, *b*, at one end, and a screw-ring, *c*, at the other, which screw-ring surrounds the ram *d*, which is preferably hollow and tubular, so as to lessen the weight. At one end of the ram *d* is a head, *e*, and at the other end is the piston *f*, that is within the cylinder *a*, and this piston is preferably provided with reverse cup-leather packings; and there are also packing-rings or elastic material introduced at *i*, between the screw-ring *c* and a loose ring, *l*, that rests upon the shoulder turned in the cylinder, so that when the piston reaches its extreme outward movement the same, pressing upon the metal ring *l*, will tend to tighten the packing.

There is a pipe, *m*, connected with one end of the cylinder *a* and the three-way cock *u*, and another pipe, *o*, extending from the said cock to the other end of the cylinder *a*. This three-way cock is provided with an inlet-pipe, *r*, to supply water from a pump by a flexible hose, that allows the ram to be moved from place to place with facility.

The passage-ways of the three-way cock are constructed, as shown, so that when the passage 2 is between *r* and *m* or *o* the water will pass through that tube from *r* to the cylinder, and at the same time the water from the other end of the cylinder passes back through *m* or *o*, and by the passage-way 3 to the escape-pipe, that is connected to the barrel of the cock at 4, or to the end of the hollow plug at 5.

It will now be understood that when the water passes by the pipe *m* the ram is forced out by the pressure acting against its entire surface, so as to exert the power required for compressing the cotton-bales into place or for other uses.

When the three-way cock is turned to introduce the pressure around the ram the said ram will be moved rapidly back, because there is less space to fill with water between the ram and cylinder.

We claim as our invention—

1. The combination, in a hydraulic jack, of a piston, *f*, ram *d*, cylinder *a*, supply-pipes *m* and *o*, and three-way cock *n*, as and for the purposes set forth.

2. The packing for a hydraulic jack, provided with the loose ring *l* between the packing at *i* and the water-space, for the purposes and substantially as set forth.

Signed by us this 6th day of September, 1875.

STEPHEN BYRNES.
JOHN A. GROSHON.

Witnesses:
HAROLD SERRELL,
CHAS. H. SMITH.