

SHAW & EISENHARDT'S,

Hydraulic Jack

No. 122,539.

Patented Jan. 9, 1872.

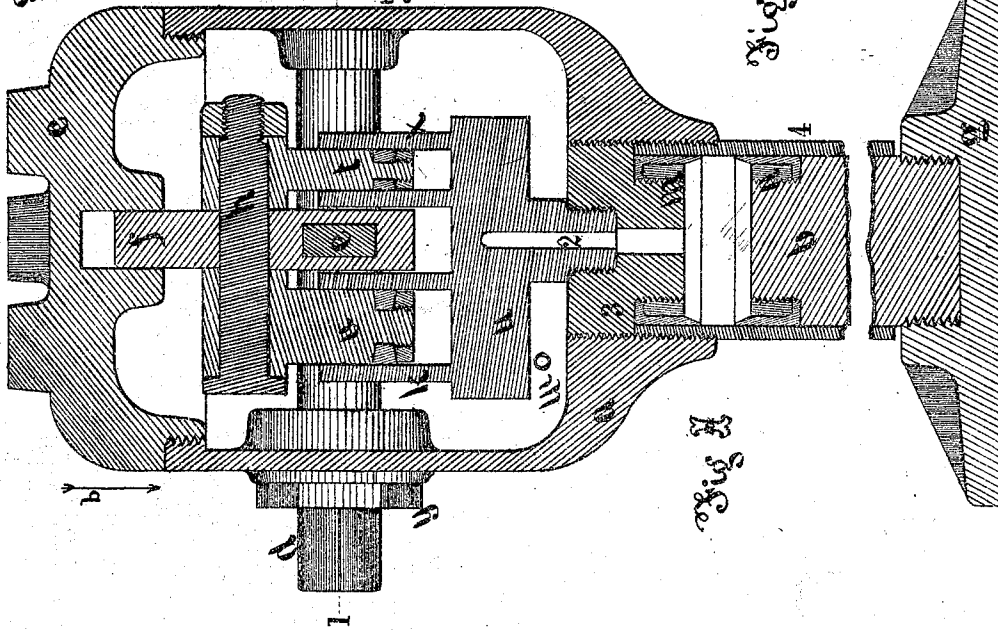


Fig. 1

a

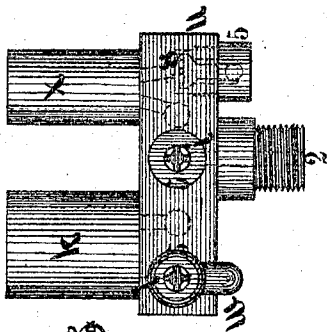


Fig. 2

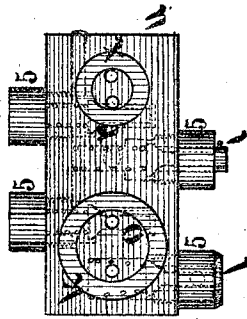


Fig. 3

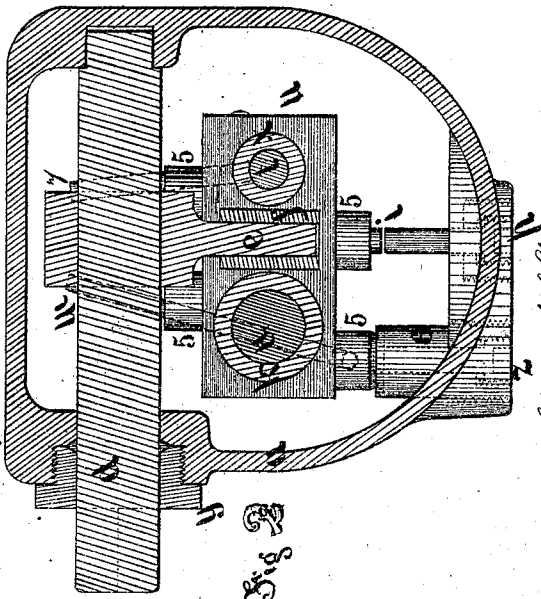


Fig. 4

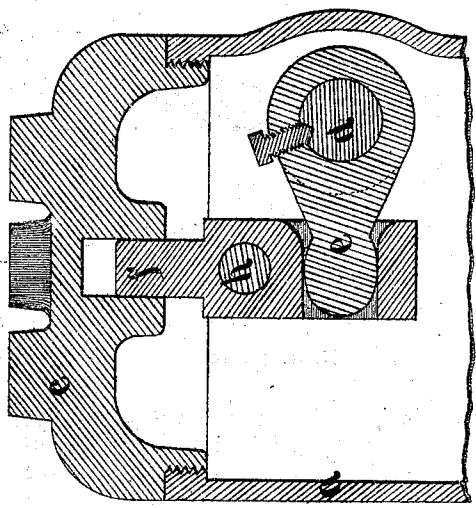


Fig. 5

Witness
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ELIAS J. SHAW AND GEORGE F. EISENHARDT, OF PHILADELPHIA, PA.

IMPROVEMENT IN HYDRAULIC JACKS.

Specification forming part of Letters Patent No. 122,539, dated January 9, 1872.

To all whom it may concern:

Be it known that we, ELIAS J. SHAW and GEORGE F. EISENHARDT, of the city and county of Philadelphia, Pennsylvania, have invented a new and improved Hydraulic Jack; and we hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Our invention consists in the location and combination of a pumping apparatus and the peculiar construction of the same, as hereinafter described. The object of the invention is to produce a powerful movement, either quick or slow, at the will of the operator, as hereinafter described.

In order to enable others to use and practice our invention, we will proceed to describe its construction and operation.

On reference to the accompanying drawing which forms part of the specification, Figure 1 represents a vertical section through center of jack, and Fig. 2 is a section across lines 1 and 2 in the direction of arrow *b*. Fig. 3 is a vertical section in the direction of arrow *a*. Fig. 4 is a plan view of pump-barrels and base of same. Fig. 5 is a side view of said pump-barrels, all constructed of metal except the packings.

Similar letters refer to similar parts through the several views, of which—

a is the cylindrical head of jack, screwed into which is tube 4, working in which is ram *b*, the whole supported on base *g*. The inner and upper end of said ram is provided with regular hydraulic packing *n*, and similar packing *m* is provided on plug 3. Said plug is screwed into head *a*. *d* is a shaft working through stuffing-box *y*, secured to which is cam-lever *e*, the end of said lever working into slot in center of rod *f*, the upper end of said rod being guided in its movement by aperture in cap *c*. Secured to said rod *f* by means of bolt *h* are plungers *v* and *t*, provided on their lower ends with the usual packings and working in pump-barrels *k* and *x*, said barrels being cast with base *u*. Barrel *k* is provided with inlet-valve *l* and outlet-valve *o*, and barrel *x* is provided with inlet-valve *s* and outlet-valve *r*. *i* is a valve for exhausting pressure, as hereinafter described. 5 are plugs securing valves in their proper locations. The base of said pump-barrels is secured into plug 3, as shown in fig. 1. *w* and 7 are short pieces of pipe for the

purpose of conducting the fluid to pumps when the jack is worked in a horizontal position. The passage-ways to and from valves are indicated by dotted lines. The main passage-way 2, Fig. 1, has communication with ram *b*. Fig. 2 is a valve-stem provided with screw-thread, and is operated by a wrench for the purpose of forcing valve *i* from its seat when it is desirable to relieve pressure from the ram *b*. Said valve *i* has communication by passage-ways with both pump-barrels. 6 is a plug screwed into head *a* pressing hard against plug 5, as shown in Fig. 2, between which is a leather packing, and in the center of said plug 6 is valve-stem *z*, which is controlled by screw-thread and wrench for the purpose of forcing valve *l*, Figs. 4 and 5, from its seat, thus rendering the larger pump *k* inoperative, all for the purpose as hereinafter described.

The jack is put in operation by a lever-wrench placed on shaft *d*, and when vibrated causes a corresponding action in cam-lever *e* and plungers *t* and *v*, the head *a* being previously filled with fluid. The operating of pump-plungers causes the fluid to flow through the several valves described, and it is forced through passage-way 2 upon ram-head *b*, the pressure of which forces said ram *b* out of tube 4 to the extent desired. When the jack is worked under a heavy load the valve-stem *z* is screwed in so as to force valve *l* from its seat in order that pump *k* may be rendered inoperative, thereby allowing pump *x* to perform the entire work for which it is best fitted by reason of the smaller area of its plunger. It will be observed that the two pumps with their different areas will allow very rapid forcing of ram when both are in operation at same time, and that the small pump when operated alone will give the greatest power but also the slowest movement of ram, thereby rendering said jack more efficient in the varied work required of it.

What we claim and desire to secure by Letters Patent, is—

The combination of plungers *v* and *t*, of unequal sizes, with pump-barrels *k* and *x*, shaft *d*, and cam-lever *e*, when arranged with the valves described, for the purpose set forth.

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