M. Hittinger,

Hydraulic Press,

No. 43,912, Patented Aug. 23, 1864.

Fig. 5

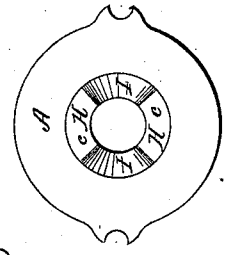


Fig. 3

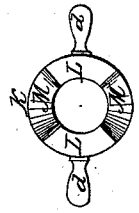


Fig. 4.

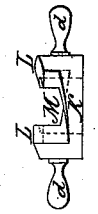


Fig. 1

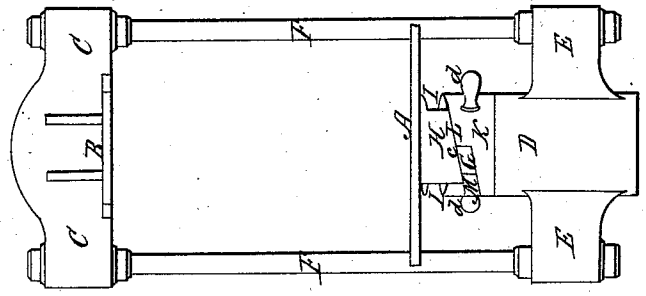
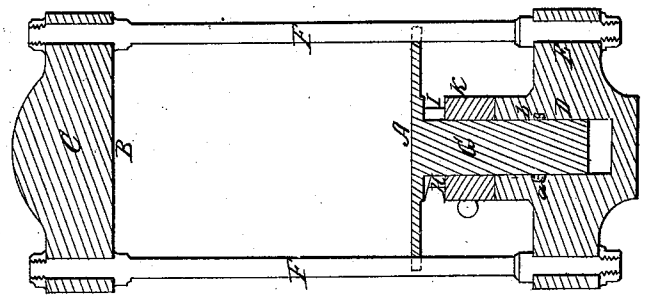


Fig. 2



Witnesses;
F. P. Hale Jr.
Frederick Curtis

Inventor;
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by his attorney
R. H. Eddy

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UNITED STATES PATENT OFFICE.

MICHAEL HITTINGER, OF CHARLESTOWN, MASSACHUSETTS.

IMPROVEMENT IN HYDRAULIC PRESSES.

Specification forming part of Letters Patent No. **43,912**, dated August 23, 1864.

To all whom it may concern:

Be it known that I, MICHAEL HITTINGER, a resident of Charlestown, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in the Hydraulic Press; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a front elevation of a hydraulic press provided with my invention; Fig. 2, a vertical section of it. Fig. 3 is a top view, and Fig. 4 a side view, of the rotary-cam annulus, to be hereinafter described. Fig. 5 is an under side view of the platen and piston and the stationary cams and cam-recesses thereof.

My invention or improvement has reference to the retaining-power mechanism of a hydraulic press. With powerful hydraulic presses it is often difficult to prevent more or less leakage of water from the cylinder, such leakage whenever occurring operating to diminish the pressure of the piston and platen. To retain the pressure of the platen mechanism separate from that which produces the pressure has been employed and combined with the piston, such mechanism being a screw and nut, the screw having been formed on an elongation of the piston extending above the cylinder. The screw-nut applied to the screw so as to be capable of freely revolving on it rested on the head or upper end of the cylinder. This screw retaining-power mechanism is exhibited in a patent numbered 38,606, and granted on the 13th day of May, A. D. 1863, to Christopher E. Rymes. It having been found in practice with the screw and nut so applied and used that the powerful reacting-pressure of the material compressed will often strip or break the screw-threads, either from the piston or from the nut, my invention has been devised by me as a preventive of such breakage of or injury to the screw-threads, or, in other words, to dispense with such screw-threads.

In carrying out my invention I dispense not only with the male screw cut or having its thread on the piston-rod, but with the screw-nut to screw on the piston-rod, and in lieu of them I make use of a certain arrangement and combination of two sets of cammed projections and receiving-recesses, one set of the cammed projections being stationary relatively to the piston and platen, and the other set being formed on a rotary annulus encompassing the piston and applied to it, so as to be capable of being freely slid longitudinally or up and down on it.

In the drawings, A denotes the platen, and B the bed-plate, the latter forming part of the upper cross-bar, *c*, of the frame. The hydraulic cylinder is shown at D as making part of the lower cross-bar E, which is connected with the bar C by two rods, F F. The platen is applied directly to the upper end of the piston G, which enters the cylinder and plays within an annular stuffing, *a*, arranged within a groove, *b*, made in the cylinder. The cammed projections H H, arranged with recesses I I between them, are extended from the lower side of the platen and on opposite sides of the piston, the lower edges of these projections being inclined planes or cams, as shown at *c c*. A cylindrical annulus, K, provided with two handles, *d d*, and similar cammed projections, L L, and recesses M M, encircles the piston and rests on the head of the cylinder.

While the recesses of the annulus are of a size to receive the cammed projections of the piston, the recesses between the cammed projections of the piston are similarly adapted to receive the cammed projections of the annulus —that is, during the rise and fall of the piston the cammed projections extend into and move in their fellow recesses, the projections being deeper than their cams.

After the platen may have been elevated so as to raise its cams a sufficient distance to enable the annulns to be rotated, such annulus may be turned on the piston so as to bring the inclined surfaces of such cams to bear against the inclined surfaces of the cams of the piston. Thus the cams of the piston will rest on the cams of the annulus and support the platen against the reacting pressure of the material compressed between the platen and bed. In consequence of the piston being capable of freely sliding up and down within the annulus, the latter will not be elevated with the piston, but whenever the platen may be so elevated as to carry its cams so much above those of the annulus, when the latter may be resting on the head of the cylinder, as to cause them to be out of the way of being

acted on by the said cams of the annulus, such annulus may be raised up and upheld by ring-blocks placed underneath it.

I do not claim the combination of a retaining screw and nut with the platen, piston, and cylinder of a hydraulic press, the same being as described in the patent, to which reference has hereinbefore been made. Nor do I claim rotary cams and stationary fellow cams, combined and used with a press-platen and for the purpose of moving it.

I claim as my invention or improvement—

The combination of the stationary cammed projections and recesses applied to the platen with the rotary annulus provided with fellow cammed projections and recesses and applied to the piston, and so as to operate thereon and on the cylinder, substantially as specified.

MICHAEL HITTINGER.

Witnesses:

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F. P. HALE, Jr.