Harbottle & Fowler,

Hydraulic Ram.

No. 33,585. Patented Oct. 29, 1861.

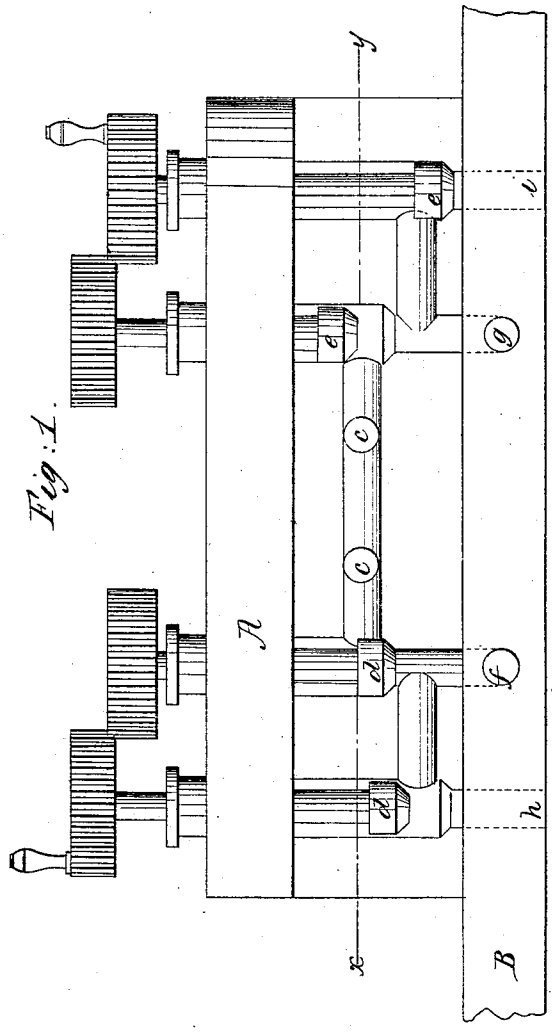


Fig. 1.

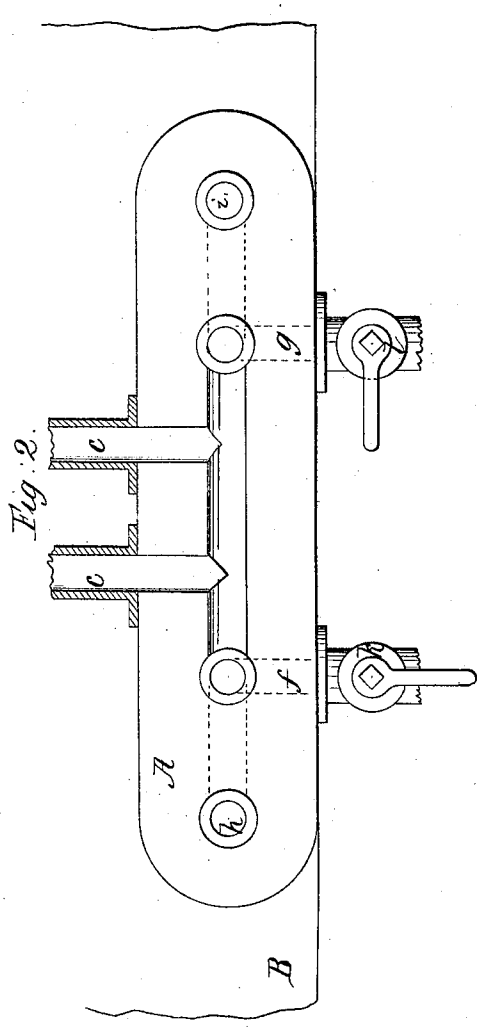


Fig. 2.

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THOMAS HARBOTTLE AND M. FIELD FOWLER, OF NEW YORK, N. Y.

IMPROVED APPARATUS FOR DIRECTING WATER TO AND MAINTAINING CONTINUOUS PRESSURE UPON HYDRAULIC RAMS.

Specification forming part of Letters Patent No. **33,585**, dated October 29, 1861.

To all whom it may concern:

Be it known that we, THOMAS HARBOTTLE and M. FIELD FOWLER, of the city, county, and State of New York, have invented a certain new and useful Improvement in Apparatus for Maintaining Continuous Pressure upon Hydraulic Rams; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the annexed drawings, making a part of this specification, which is fully described herein, and in which similar letters indicate similar parts throughout the figures.

Our invention is an improvement in the construction and manner of working the hydraulic press, whereby a considerably increased effect is obtained without requiring any additional power and with but a trifling increase in the first cost of the apparatus.

The most approved press as hitherto constructed consists of two hydraulic rams operated alternately by one set of forcing-pumps. One of these rams is brought up and made to press, say, upon a tier of bags, the pressure being continued by continuing the action of the pump for about six minutes. The pressure is then allowed to run down, because the pump is to be then employed in bringing up and maintaining the pressure of the second ram upon another tier of bags for a like period of time. Thus while each ram is operated, say, once in twelve minutes, yet a pressure is maintained upon its tier of bags only half that time, although but a small portion of the remaining half is required for the necessary changing of the bags.

The present improvement consists in a method of so operating the press that the pressure may be continued on each of the tiers of bags, not only while the pump is actually employed upon its ram, but also during nearly the whole of the time the pump is engaged upon the ram of the other tier.

In the annexed drawings the manner of arranging the connection between the set of pumps and the two rams is exhibited.

Figure I is an elevation of the usual box in which the pipes and valves to effect the changes are contained, being shown as if the front were partly removed to display interior construction. Fig. II is a horizontal section on the line $x\ y$ of Fig. I, the valves being removed.

This box A is fitted upon or forms part of the cover of the reservoir of water or other fluid employed to operate the rams, and from which the pumps take it.

At c are the tubes leading from the pumps, and at d and e are cone-valves of ordinary construction, geared together in pairs, by which the operations of the pump are directed to either of the rams, as desired, the pipes leading to those being shown at f and g.

At h and i are the passages to the reservoir for the returning fluid when the rams are let down. As thus far described, this is the usual form. We attach, however, to each of the pipes f and g, which lead to the rams, a close-fitting cock or valve k and l, and the operation may then be as follows: The valves $d\ d$ are shown as in the positions which allow the ram attached by the pipe f to be run down. The valves $e\ e$ are in position to direct the flow from the pumps through g to the other ram, and when that has been continued, say, for six minutes and the tier of bags has reached the greatest degree of compression, instead of letting it then run down, as in the old method, we close the cock l, thereby maintaining the pressure on that tier. The relative positions of the valves $d\ d$ are now to be changed, and this turns the flow from the pumps to the ram on f, and which is continued, as before, on g for a period of, say, six minutes, and as only about one minute is requisite for the operation of running down a ram and changing the bags it will be obvious that each of the tiers of bags will be under pressure during about eleven minutes instead of six, as by the old method, and it is found that during this additional time a considerable quantity of expressed liquid is run off which otherwise would have remained.

Instead of using only two rams with one set of pumps, three, four, or more may be employed with advantage, since with the same power and the same number of hands to operate them the tier of bags containing the material on each could be kept so much longer under the pressure.

We claim—

Interposing between the pump and each of the rams of the series the herein-described apparatus to effect the maintenance of the pressure upon either of the said rams, while the pump is acting upon others of the series of rams, in the manner and for the purposes set forth.

In testimony whereof we have hereunto subscribed our names.

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M. FIELD FOWLER.

Witnesses:
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