

A. CAMERON.
Lever-Presses.

No. 168,449.

Patented Oct. 5, 1875.

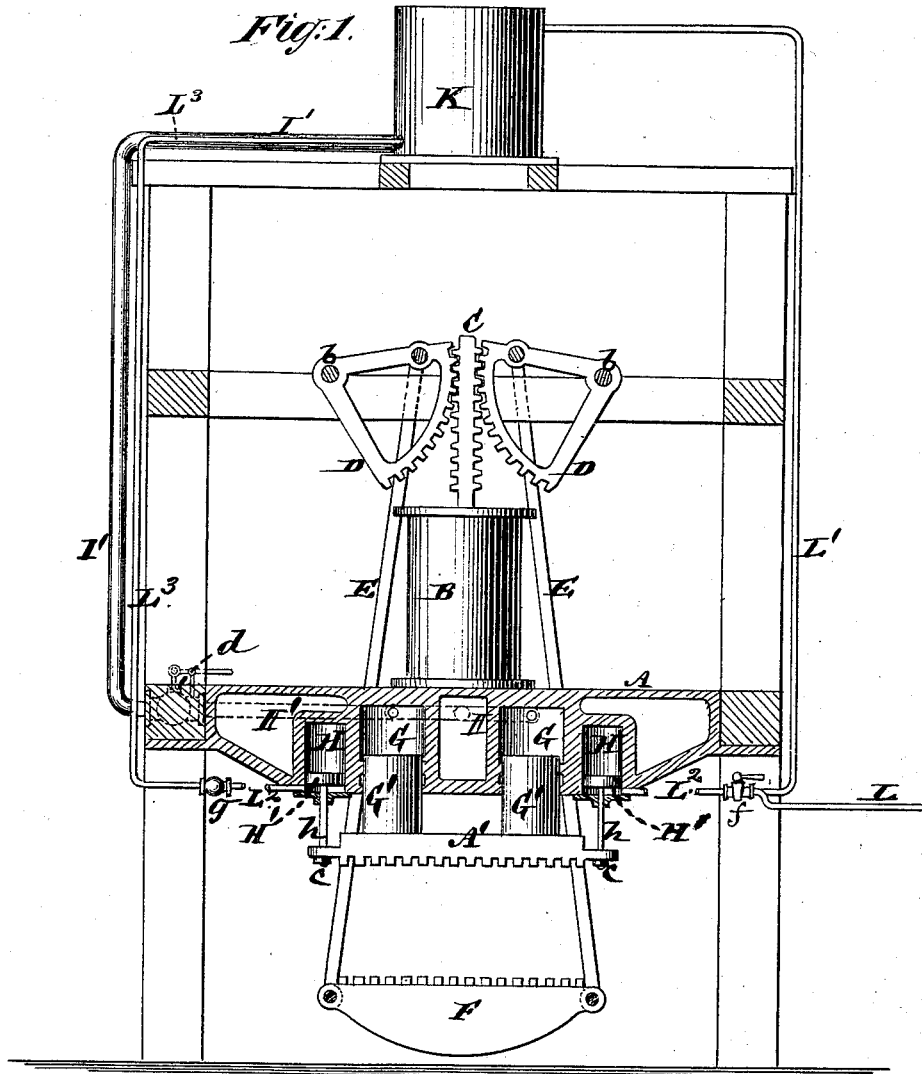
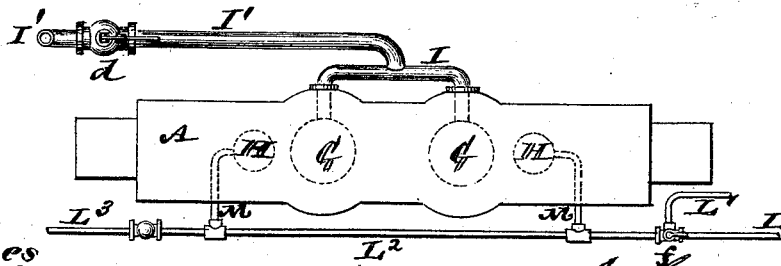


Fig. 2.



Witnesses
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IMPROVEMENT IN LEVER-PRESSES.

Specification forming part of Letters Patent No. **168,449**, dated October 5, 1875; application filed July 24, 1875.

To all whom it may concern:

Be it known that I, ARCHIBALD CAMERON, of the city and county of Charleston, in the State of South Carolina, have invented certain new and useful Improvements in Lever-Presses for operation by steam or otherwise; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms a part of this specification.

This invention is mainly designed to be applied to presses for pressing cotton, and other substances, in which steam or fluid pressure, acting upon one or more pistons, is indirectly applied, through the intervention of levers, to the follower of the press for the purpose of producing the necessary compression. In the ordinary operation of such presses, unless the piston reaches the end of its compressing-stroke the full effect of the leverage is not obtained, nor, unless the bulk and yielding capacity of the mass under operation bear a fixed relation to the stroke of the press, can the necessary compression be effected, even if the piston works its full stroke. Numerous expedients, temporary and otherwise, have been proposed to meet this difficulty; and my invention, in which is used a compound bed or platen, made adjustable by hydraulic means when the pressure is on a bale, or other substance to be pressed, without the necessity of operating the follower, consists in a certain combination of supplementary cylinders or chambers and pistons therein with the fixed bed-plate of the press, and a movable plate for operation in connection with the follower and working reservoir of the press; and the invention furthermore consists in a combination of one or more of said supplementary cylinders and their pistons with an adjustable pressing-plate controlled by said pistons. By these means increased facilities are afforded for working and adjusting the press free from the difficulties hereinbefore cited.

Figure 1 represents a vertical and mainly sectional view of a press having my invention applied, and Fig. 2 a plan of the adjustable bed or platen.

A is the bed-plate, on which a steam-cylinder, B, is arranged, said cylinder being provided with a piston which carries a double

rack, C, that gears with toothed sectors D D, having their fulcrums at *b b*. These sectors form the working-levers of the press, and are connected, by rods E E, with the follower F below. In the bed-plate A are two cylindrical openings, G G, and outside of these again in said plate two smaller cylindrical openings, H H. G' G' are plungers, made to closely fit the cylindrical openings G G, and connected below with a plate, A', which forms the adjustable portion of the bed or platen, the two plates A A' making up the entire bed. The two smaller cylindrical openings H H are fitted with pistons H' H', having rods *h h*, which project downward, and are secured to the ends of the plate A' at *c c*. I is a pipe, connecting the cylindrical openings or chambers G G, and I' a fluid-supply pipe, connecting the pipe I with the water or other fluid reservoir K above, and provided with a valve, *d*. L L' L² L³ are also water or fluid pipes, and M M branches connecting the pipe L² with the cylindrical chambers H H. A three-way cock, *f*, is applied to the pipes L L' L² at their junction with each other, and a check-valve, *g*, to the pipes L² L³ at their junction. The pipe L leads to a pump of any of any suitable kind, and the pipe L' connects with the upper portion of the reservoir K, while the pipe L³ connects with the lower end thereof.

Steam is admitted to or exhausted from the steam-cylinder B in the ordinary or any suitable manner, and a gage, controlled by the fluid which is brought to bear upon the plate A', may be applied to the press, if desired, to indicate the pressure upon the bale or mass under compression. Under no circumstances will it be necessary to exhaust the steam from the cylinder B for the purpose of adjusting the platen when the press is in action.

The operation is as follows: Turn the handle of the three-way cock *f* so that the fluid from the pump can flow through the pipes L L' to the top of the reservoir K. Then start the pump and fill the reservoir K with water, or whatever adjusting-liquid the fluid may be. When the reservoir K is full, turn the handle of the cock *f* so that liquid will flow through the pipe L² and branches M M, and enter the cylinders H H. This will cause the pistons H' H' to be forced upward, and to raise the

plate A', by means of the piston-rods *h h*. When the plate A' is raised to the desired height, a bale or mass of the material to be compressed is placed upon the follower F. Steam is then admitted to the cylinder B, so that the piston therein will be caused to ascend, and by means of the sectors D D cause the rods E and follower F to rise and compress the bale between the follower F and the plate A'. If the piston in the cylinder B stops before reaching the end of its compressing-stroke, and so fails, as regards its operation of the levers or sectors D D, to get the full effect of the leverage, and to exert the full power of the press on the bale or mass under compression, the valve *d* is opened, and a portion of the liquid from the chambers G G allowed to escape, which causes the piston in the cylinder B to still further ascend, and thereby cause the sectors D D to give out a more effective leverage on the bale or mass under compression. The operation of opening the valve *d* and allowing a portion of the liquid to escape from the cylinders G G may be repeated as often as necessary, or until the plate A' assumes such a position as will allow of the sectors D D assuming such a position that their leverage will reach the point at which the power of the press is fully exerted upon the mass under compression, without loss of time or waste of steam.

The plate A' may be raised, if desired, at any time when the press is not in operation by pumping liquid through the pipe L, cock *f*, pipe L², and branches M into the cylinder or chambers H H, and forcing up the pistons H' H'. This adjustment may be regulated by the cock *f*, which allows the liquid to enter the cylinder H H, or to escape therefrom, as required.

The check-valve *g* allows the liquid to enter the cylinders H H from the reservoir K whenever necessary, and should the cock *f* be shut off; but all escape of liquid from the cylinders H H must be regulated by the cock *f*.

I claim—

1. The combination of the supplementary cylinders or chambers H H and their pistons H' H' with the fixed bed-plate A and the movable plate A', for operation in relation with the follower F and reservoir K, essentially as described.

2. The combination, with an adjustable pressing-plate, of one or more pistons, H', and cylinders H, for controlling said plate, substantially as specified.

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Witnesses:

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