

R. FARLEY.
Press for Cotton and other Substances.

No. 217,520.

Patented July 15, 1879

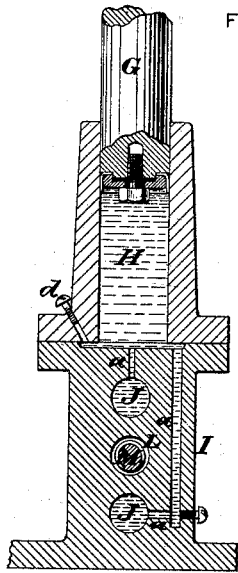


FIG. 3.

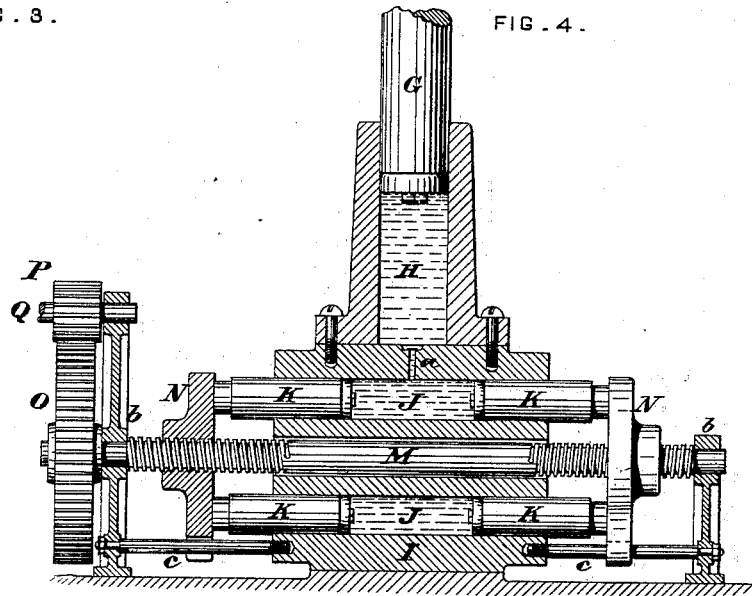
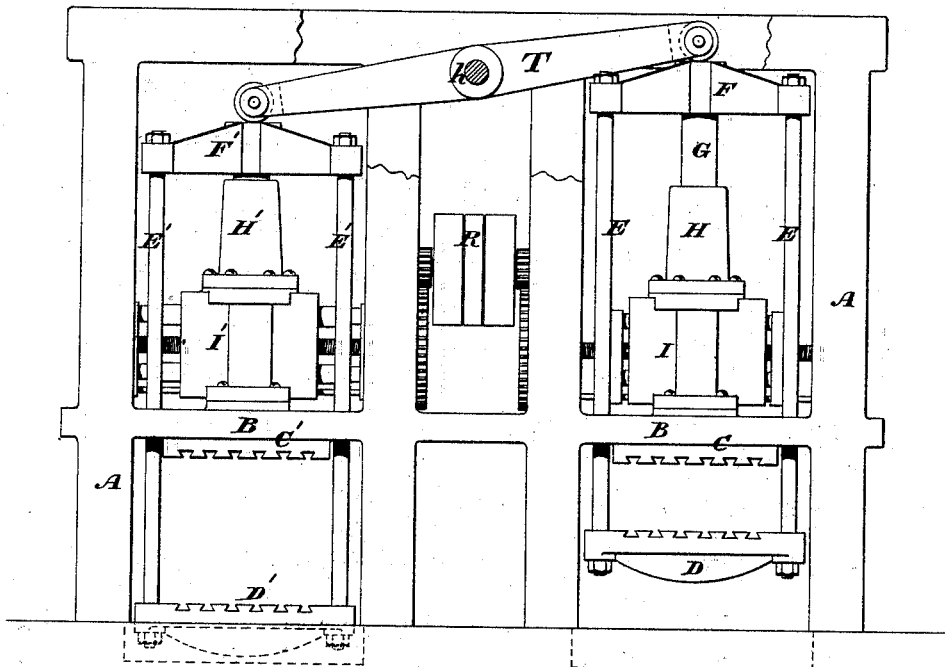


FIG. 4.

FIG. 5.



ATTEST:

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IMPROVEMENT IN PRESSES FOR COTTON AND OTHER SUBSTANCES.

Specification forming part of Letters Patent No. **217,520**, dated July 15, 1879; application filed April 30, 1879.

To all whom it may concern:

Be it known that I, ROBERT FARLEY, of the city, county, and State of New York, have invented certain new and useful Improvements in Presses for Cotton and other Substances, of which the following is a specification.

My invention relates to mechanism adapted for compressing cotton and other similar bales, materials, and substances, in which the lever, screw, and hydraulic jack or press are combined and arranged to operate in an economical and effective manner.

The press, as constructed, is essentially double, and so arranged that the moving platens travel in opposite directions simultaneously, being actuated from the same motor-shaft; but by disconnecting them each press may be operated independently.

In the drawings which illustrate my invention, Figure 1 is a front elevation of the press, the frame-work at the right being removed, the better to show the mechanism. Fig. 2 is an end elevation of the press. Fig. 3 is an enlarged transverse mid-section through the jack-cylinders, showing the interior of the jack. Fig. 4 is a longitudinal mid-section through the jack and its attached mechanism. Fig. 5 is a side elevation, showing a modification of Fig. 1.

A represents a supporting frame for the press mechanism, which may be of any character best adapted for the purpose, and B is a platform upon which the jacks rest.

As before stated, the press is essentially double, and each half is constructed substantially like its counterpart. Therefore I will confine my description of the details to one part, except in the case of connecting parts and mechanism.

C is the fixed platen of the press, (referring to that on the right,) secured to the under side of the platform B, and grooved in the usual way to receive the bale-bands. D is the moving platen, constructed and provided in a similar manner, and attached to four suspension-rods, E E. These rods are rigidly secured above to a cross-head, F, which rests upon and may be attached to a piston, G, which plays in a jack-cylinder, H, arranged

vertically upon a chambered chest, I, which is mounted on the platform B.

Referring especially to Figs. 3 and 4, which show the interior of the jack-cylinder and chest, it will be seen that the chest has two horizontally-arranged cylindrical bores, J J, in which play four plungers or pistons, K K, two entering at each end. The bores J J do not communicate with each other, but both communicate with the cylinder H by means of bores or channels *a a*.

Between the bores J J, and centrally arranged in the chest I, is a bore or opening, L, through which passes a shaft, M, on one end of which is cut a right-handed screw-thread, and on the other a left-handed screw-thread. This shaft has bearings at *b b* in suitable supports fixed to the platform or frame.

N N are traveling heads or nuts, screw-threaded to fit the threads on the shaft M, and arranged to abut against the ends of the plungers K K, as shown in Fig. 4. They may or may not be attached to the plungers. The heads N are provided with suitable guides or guide-rods *c c* to prevent them from turning when the shaft M is rotated.

O is a spur-wheel, keyed or otherwise secured to the inner end of the shaft M, and arranged to mesh with a pinion, P, on a shaft, Q, which also bears a pulley or pulleys, R, which receives motion, by means of a belt, from a prime mover. (Not shown.)

For convenience in describing the operation of my compound or double press, I have adopted the same letters of reference for like parts of each press, but have added prime-marks to those on the left.

Some liquid—oil, by preference—is inserted in the bores J J between the inner ends of the plungers K K. This may be done by removing the screw-plug *d*. (Shown in Fig. 3.)

We will assume that, in starting the press, the platen D is down and the platen D' raised. A bale of cotton to be compressed is rolled upon the platen D, and the machinery set in motion. The pulley R sets the shaft Q in motion, and with it the pinions P P'. These impart motion to the spurs O O', and through them to the shafts M M'. These shafts are so

arranged that, while rotating in the same direction, the heads *N N* are driven inward or toward each other, and the heads *N' N'* are driven outward or from each other, simultaneously, and vice versa. As the heads *N N* move inward they force in the plungers *K K*, which force the oil from the bores *J J*, through the passages *a a*, into the cylinder *H*. This raises the piston *G*, which, in rising, bears with it the cross-head *F*, suspension-rods *E E*, and platen *D*, thus compressing the bale between the platens *C D*. In the meantime the rotation of the shaft *M'* of the other press has driven outward the heads *N' N'*, and left the plungers *K' K'* free to withdraw from their bores, and the piston *G'* free to descend with its attached parts—viz., the cross-head *F'*, suspension-rods *E' E'*, and moving platen *D'*.

To insure the descent of the platen *D'* and its parts in its turn, I provide a device not before described, but clearly shown in Fig. 1. *S* is a wire rope, a chain, or other suitable flexible connection, the ends of which are attached to the moving platens, as at *ee*. This rope is passed around suitable fixed guide-shears *g g*, arranged to give a proper direction to the rope. By means of this arrangement the upward movement of one platen compels the descent of the other.

While the bale-bands are being arranged and tied on the bale compressed between the platens *C D*, another bale is being placed on the platen *D'*, and when all is ready the motion is reversed and the platen *D'* run up, which draws the platen *D* down and releases the compressed bale. This operation may be repeated indefinitely.

As a modification of the device shown in Fig. 1, consisting of the rope or chain *S*, for drawing down one platen by the upward movement of the other, I have shown in Fig. 5 a rocking beam, *T*, arranged to oscillate on lugs having bearings in the main frame at *h*. The ends of this beam rest on the cross-heads *F F'*, and when one of the pistons *G G'* rises it is obvious that the other must be forced down. This arrangement may be preferable to the connection *S* in some cases.

In the arrangement of the single pulley *R*, as shown in Fig. 1, I contemplate reversing the engine when the operation of the press is to be reversed; but I may employ two loose pulleys in addition to the central tight pulley, as shown in Fig. 5, and employ a straight and a cross belt, in a manner well known to mechanics, whereby the press may be run in either direction or stopped by merely shifting the belt, and without stopping or reversing the engine.

It will be seen that the strain in compressing the bale is not upon the frame *A*, but tends to pull the rods *E E* in two, and the same is true of the shafts *M*.

By the arrangement of two sets of pistons *K K*, to be driven in simultaneously from opposite ends of the chest *I* by one screw-shaft,

M, all reactionary pressure at the bearings *b b* is avoided.

Any leakage of oil may be made good by injecting oil at the inlet *d* to replace it.

To equalize the pressure I have arranged the shaft *M* centrally, and placed a piston or plunger, *K*, on each side of it; but two or more plungers may be employed, arranged in some equivalent manner, without departing materially from my invention.

My press is especially designed for repressing baled cotton; but it may also be employed for other purposes as well.

I have described the chest *I* as having bores *J J* to receive the plungers *K K*; but it is obvious that the said chest may be considered as a cluster of cylinders secured together.

Instead of bores in a rectangular chest, the chest *I* may be as well called a cylinder.

I claim—

1. In a press, a cylinder, *H*, provided with a piston, *G*, a chest or cylinder, *I*, provided with two pistons, *K K*, arranged to play in opposite ends of the same, and a shaft, *M*, provided with right and left screw-threads and suitable traveling-heads, all combined and arranged to operate substantially as set forth.

2. In a press, the combination of the jack-cylinder *H* and piston *G*, the chest or cylinder *I*, provided with bores *J J*, the plungers *K K*, the screw-shaft *M*, and the heads *N N*, all arranged to operate substantially as set forth.

3. In a press, the combination of the chest or cylinder *I*, provided with bores *J J* and a central opening, *L*, and the cylinder *H*, the said bores being connected with the cylinder *H* by means of suitable channels *a a*, and all provided with suitable pistons, plungers, and operating-screws, substantially as set forth.

4. In a compound press employing hydrostatic and screw power, the combination of two jacks provided with cylinders and plungers with a rotating screw shaft or shafts arranged to withdraw the lesser piston *K* in one and force in the lesser piston *K'* in the other simultaneously, substantially as set forth.

5. The combination of the moving platens *D D'* and their operative mechanism with the flexible connection *S* or its equivalent, as set forth.

6. In a compound press, the combination of the two jacks, with their moving and fixed platens, the spur-wheels *O O'*, pinions *P P'*, shaft *Q*, and pulley or pulleys *R*, and the flexible connector *S* or its equivalent when the plungers *K* of one jack are arranged to be forced in and the others, *K'*, to be withdrawn or forced out simultaneously, substantially as set forth.

7. In a jack or press, the lesser pistons, *K K'*, arranged to be driven in opposite directions in the same bore simultaneously by means of a single screw-shaft, *M*, substantially as and for the purposes set forth.

8. The combination, in a compound press,

of the shaft Q, pinions P P', spurs O O', screw-shafts M M', traveling heads N N', plungers K K', chests or cylinders I I', cylinders H H', pistons G G', rods and cross-heads E E' F F', and platens C O' D D', all arranged to operate substantially as set forth, and for the purposes specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ROBERT FARLEY.

Witnesses:

HENRY CONNETT,
ARTHUR C. FRASER.