H. N. REID.

Cotton and Hay Press.

No. 215,296. Patented May 13, 1879.

Fig. 1.

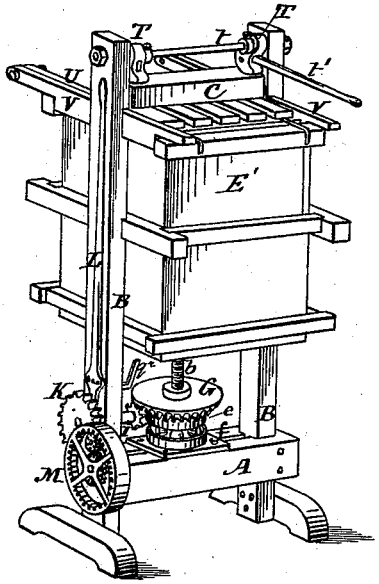
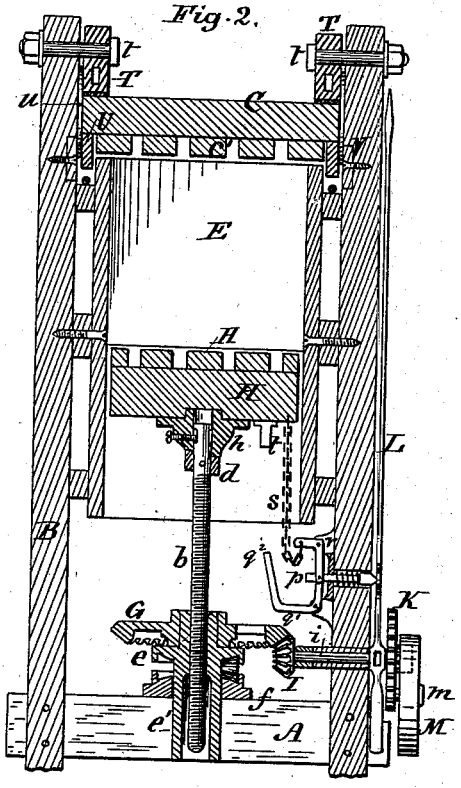


Fig. 2.



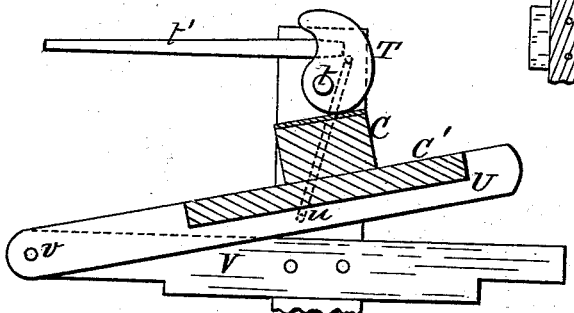


Fig. 3.

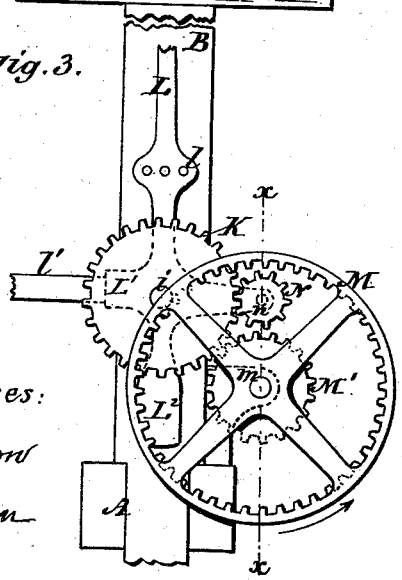
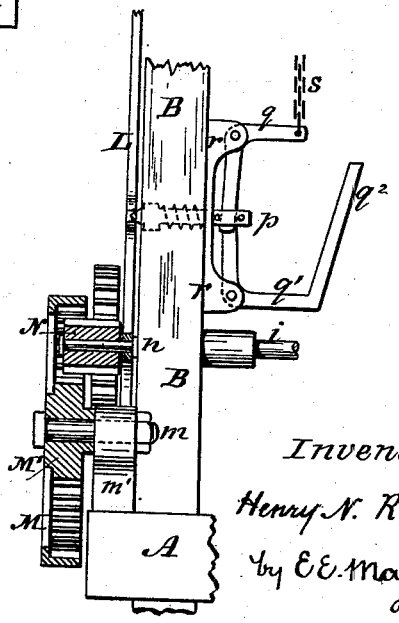


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY N. REID, OF AUGUSTA, GEORGIA.

IMPROVEMENT IN COTTON AND HAY PRESSES.

Specification forming part of Letters Patent No. **215,296**, dated May 13, 1879; application filed February 7, 1879.

To all whom it may concern:

Be it known that I, HENRY N. REID, of Augusta, in the county of Richmond and State of Georgia, have invented certain new and useful Improvements in Cotton and Hay Presses; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a perspective view of the press. Fig. 2 represents a vertical central section of the same. Fig. 3 represents a front view of the driving mechanism by which the press is operated. Fig. 4 represents a vertical section of the same on line *x x* of Fig. 3.

My invention relates to that class of presses in which the platen or follower that supports the cotton to be pressed and baled is elevated from below by means of a screw operated by a revolving nut. Heretofore this nut has been rotated either with one or more long sweeps or bars rotated by hand or horse power, requiring much time in its operation; or, if operated by steam, the mechanism or press has been too expensive to be readily introduced, and too complicated for unskilled laborers.

The object of my invention is to produce a press in which a cotton-bale can be released of pressure by mechanism independent of the baling power, and that can be operated by steam-power to raise the platen slowly by revolving the main screw-nut in one direction, and lower it promptly by revolving said nut in the opposite direction, without producing any jar in changing the direction of motion by simple mechanism, with a single pulley and belt connecting it to a steam-engine.

My invention consists in combining, with the uprights of the frame, the upper cross-bars, guideways, upper beam, and platen of a cotton-press having a movable under platen, pressure-retaining eccentrics pivoted to said uprights and resting upon the beam to secure it immovably.

It consists, also, in the combination of the uprights, cross-bars, and eccentrics with guideways and straps connected to said eccentrics.

It consists, also, in combining, with the operating screw and nut of a cotton-press, a bevel-gear attached to the operating-nut, a bevel-pinion meshing with said bevel-gear, and attached to a shaft carrying also a gear-wheel, and a lever controlling a movable pinion, meshing alternately with an internal gear-wheel or the central pinion within the latter.

It consists, also, in combining, with the operating screw and nut, a bevel-gear upon said screw, a bevel-pinion meshing with said bevel-gear, and a gear-wheel upon the shaft of the latter pinion, a movable pinion upon the end of a lever, a gear-wheel having internal cogs, and a central pinion, for the purpose hereinafter described.

It consists, also, in combining, with a gear-wheel having internal cogs and a central pinion, a second pinion, to engage singly either with the internal cogs or the central pinion, with little jar in starting the press mechanism in either direction, by moving said second pinion a few cogs (with a lever) upon the periphery of a stationary gear-wheel, while making the connection with either the cogs on the central pinion or the internal gears.

It consists, also, in mechanism for stopping the motion of the follower at the top and bottom of its course, and in mechanism for locking the movable pinion in and out of gear.

In the drawings, A represents the bottom beam or sill of the frame; B, the uprights, and C the upper transverse beam. These parts are strongly united to resist the strain exerted in pressing cotton; but the latter is removable. Within this frame is placed the box E, in which the cotton is packed. It is connected to and held suspended by the uprights B, and provided with the ordinary slotted top C′, attached to the beam C, and hinged doors E′. The slotted platen or follower H is sustained and elevated by the screw *b*. For this purpose the platen is provided with a socket-plate, *h*, having projections upon its lower end, to engage with corresponding depressions in the top of a double clutch, *d*, attached to the screw *b* near its top, so as to remain in clutch and keep the screw from rotating while elevating the platen by means of the revolving nut *e*. This nut is provided with a long extension, *e′*, passing through the beam A. It is supported by a plate, *f*, fastened to the top of the beam A. The nut *e* and plate *f* are recessed to receive between them balls, rollers, or other anti-friction devices. To this

nut is secured a bevel-gear wheel, G, to which motion is transmitted by a bevel-pinion, I, upon a shaft, *i*, passing through one of the uprights B, and upon the outer end of this shaft is placed the gear-wheel K. In close proximity to this gear-wheel is mounted upon a short shaft, *m*, a gear-wheel, M, having internal cogs within its periphery, and a central pinion, M′. The shaft *m* is mounted in suitable bearings in a bracket, *m′*, attached to one of the uprights B or to the beam A. Forward or backward motion is transmitted from the wheel M or pinion M′ to the gear wheel K by means of a pinion, N, revolving upon a stud, *n*, attached to one end of the lever L. The diameter of the pinion N is smaller than the space between the cogs of the wheels M and M′, so that it can remain stationary while these wheels are continuously rotating, or be thrown into gear with either one by means of the lever L. The length or face of the cogs of the pinion N is more than twice the length of those on the gear K, so that while one end of the pinion is constantly in gear with said wheel K, the other end can be made to mesh with either of the wheels M or M′. While shifting the pinion N from its central position to either wheel M or M′, or from the wheel M to the wheel M′, being still in gear with the wheel K, it will revolve a few cogs around its periphery in the right direction to mesh with either cog-wheels with little jar or concussion. In this manner I can accomplish better results with a single pulley, M, and belt than with two or more pulleys and belts arranged in the customary way.

The shaft *i* is used as a pivot for the lever L. This lever extends upward to the top of the press, from which it can be operated. It is provided with a socket, L^1, in which a lever, *l′*, can be placed to control the gearing from the lower part of the press, and to balance the arm carrying the pinion N. To retain the lever L in a vertical position and the pinion N out of gear, this lever can have a weight, L^2, suspended under its pivot *i*. The lever L is locked with its pinion N out of gear or in gear with either wheel M or M′ by a spring-catch, *p*, located in one of the uprights of the frame, entering one of the three recesses *l* in the lever. This spring-catch is operated automatically by the follower-block when the latter reaches the end of its course up or down, as follows: Above and under the spring-catch is placed a bell-crank lever, *q* and q^1, pivoted to brackets *r*, attached to the upright. The bell-crank *q* is connected by a chain, *s*, with the platen H, so that when the latter has reached the top of its course in pressing a bale of cotton it will pull on the spring-catch, releasing the lever L, which will return the pinion N in its first position out of gear. When the operation is reversed and the platen is run down, its motion will also be arrested by the bracket *t*, projecting from the under part of said platen, striking against the end q^2 of the lever q^1, releasing the spring-catch *p*, lever L, and pinion N. But before lowering the platen H the bale must be hooped and removed from the box E. For this purpose the doors E′ are opened, the bagging adjusted, and the hoops or bands passed around it through the openings between the slats of the top and bottom platen, and the ends secured. It has been customary, previous to my invention, to then start the mechanism to lower the bottom platen a few inches, and thus release the bale. This operation requires much power, and if the press is worked by steam a great strain is exerted to overcome the inertitude of the mechanism and the expansive force of the compressed cotton.

By the construction shown I am enabled to release and remove the bale without operating the compressing mechanism or lowering the platen H, by simply releasing the top platen. For this purpose the transverse beam C is held down over the box of the press by two eccentrics, T, secured to the uprights B by bolts *t*, on which they can be revolved by means of a lever, *t′*, connected to the hub or passing through the eccentric. The two eccentrics may be placed on the same bolt, and secured thereto, as shown in Fig. 1, so that one lever will operate both at the same time. These eccentrics are connected, by rods or straps *u*, with guideways U, pivoted at *v* to cross-bars V, attached to the inside of the uprights B. These guideways U may be united by transverse rods at each end to retain them constantly parallel. During the operation of pressing a bale, the top platen, beam C, and eccentrics are over the box of the press, as shown in Figs. 1 and 2. After the bale has been pressed the eccentrics are turned, with the lever *t′*, into the position shown in Fig. 3, in which the guideways U are represented as retained in an inclined position by the straps *u*, in a good position to slide the top platen, C C′, off the top of the press on the ways U, until arrested by stops at *v* to remove the bale, after which the platen H is lowered to the bottom of its course, the box closed and filled again with cotton, the top replaced, and the eccentrics turned down, as shown in Figs. 1 and 2, and the operation is repeated.

Having now fully described my invention, I claim—

1. The combination of the uprights B, cross-bars V, guideways U, and upper beam and platen of a cotton-press having a movable under platen, with pressure-retaining eccentrics pivoted to said uprights, and resting upon the beam to secure it immovably, substantially as and for the purpose described.

2. In combination with the uprights B, cross-bars V, and eccentrics T, the guideways U and straps *u*, connected to said eccentrics, substantially as and for the purpose described.

3. In combination with the operating screw and nut of a cotton-press, the combination of the following elements: a bevel-gear attached to the operating-nut, a bevel-pinion meshing with said bevel-gear, and attached to a shaft

carrying also a gear-wheel, K, and a lever controlling a movable pinion, meshing alternately with the internal gear-wheel, M, or the central pinion, M′, substantially as and for the purpose described.

4. In combination with the operating screw and nut of a cotton-press, the gear-wheels G I K, the gear-wheel M, having a set of internal cogs, and pinion M′, having a continuous motion on shaft *m* in one direction, and the pinion N, for transmitting said motion to the press mechanism to advance or retract the follower, substantially as and for the purpose described.

5. In combination with a gear-wheel, M, having internal cogs, and a central pinion, M′, a movable pinion, N, to engage with either the internal cogs or the central pinion, for starting the press mechanism in either direction by rotating the movable pinion upon the periphery of the gear-wheel K by means of a lever, substantially as and for the purpose described.

6. In combination with the follower of a cotton-press and the lever L, carrying a movable pinion and having recesses *l*, the spring-catch *p*, operated by levers, substantially as shown, and for the purpose described.

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