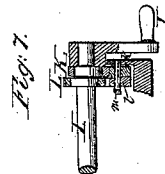
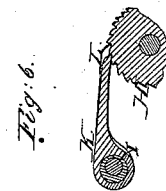
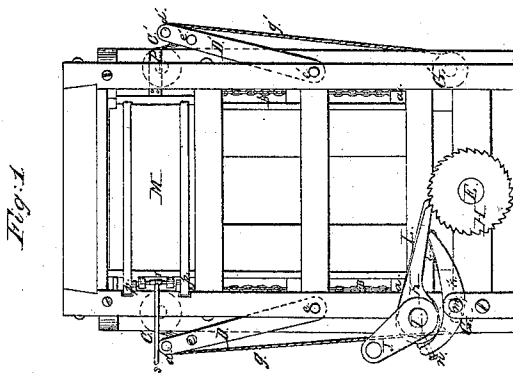
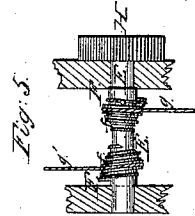
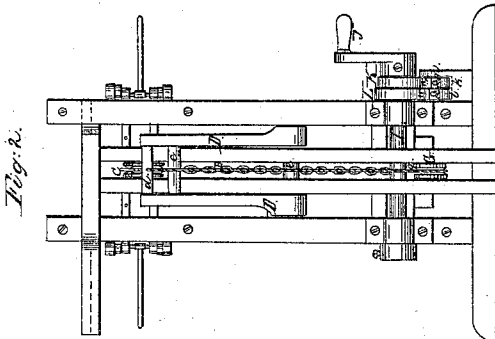
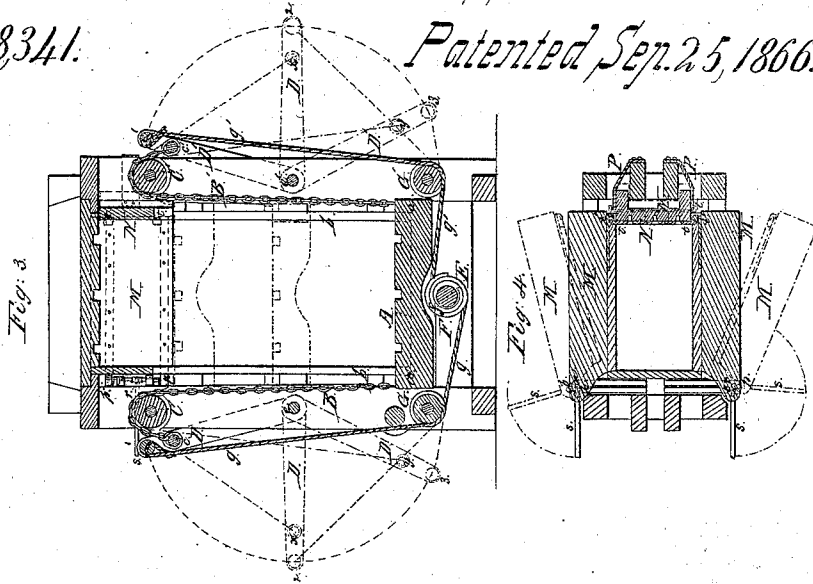


# Goodsell & Frisbie,

## Cotton Press.

N<sup>o</sup> 58341.

Patented, Sep. 25, 1866.



Inventors,  
Saml. C. Goodsell & Dennis Frisbie  
By A. Pollock  
their atty.

# UNITED STATES PATENT OFFICE

SAML. C. GOODSSELL AND DENNIS FRISBIE, OF NEW HAVEN, CONNECTICUT,  
ASSIGNORS TO THEMSELVES AND D. P. CALHOUN.

## IMPROVEMENT IN COTTON AND HAY PRESSES.

Specification forming part of Letters Patent No. 58,311, dated September 25, 1866.

*To all whom it may concern:*

Be it known that we, SAMUEL C. GOODSSELL and DENNIS FRISBIE, both of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Cotton and Hay Presses; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a press constructed in accordance with our invention. Fig. 2 is an end elevation. Fig. 3 is a longitudinal vertical section on the line  $xx$ , Fig. 2. Fig. 4 is a horizontal section on the line  $yy$ , Fig. 1; and Figs. 5, 6, and 7 represent, in section and in plan, detached parts.

Our invention principally relates to that part of the mechanism of a cotton, hay, or other baling press which is employed to actuate the platen or follower, and its object is to move the platen against the substance to be compressed with a greater degree of power in proportion to the resistance offered than can be attained in the ordinary press.

Our invention, therefore, mainly consists in combining the platen with its actuating levers, and the levers with a differential drum, under such an arrangement that the said platen, by the combined action of the levers and differential drum, shall move with a power highly increased in proportion to the resistance offered, and at a speed inversely proportionate to such resistance, in accordance with the well-known mechanical law which forbids any increase in power without a corresponding decrease in velocity.

Our invention also consists in the improved construction and arrangement of the doors in the sides of the press, which are mounted eccentrically upon lever-crank hinges, so that they may be moved laterally to become engaged with or disengaged from the end plate, as hereinafter described, the object being to have doors which, though opened easily, will, when closed, resist effectually the pressure or strain to which they are subjected.

Our invention further consists in the combination, with the eccentric pawls for actuating the ratchet-wheel mounted on the end

of the shaft which carries the differential drum, of rocking trips pivoted to the frame in such manner that they shall be actuated by the eccentrics, upon which the pawls are secured.

Having thus indicated in general terms the scope of our invention, in order that others skilled in the art may be enabled to understand and use the same, we will now proceed to describe it by reference to the accompanying drawings.

The platen or follower  $A$  moves, for purposes of compression, up from the bottom of the press toward the top. A tongue,  $a$ , is formed on each of its ends, which runs in a corresponding way or groove,  $b$ , made in each end of the press. To the end of this platen are secured chains  $B B'$ , which extend upward, and, passing out over pulleys  $C C'$ , secured in the ends of the press opposite each other, are attached to rods or cross-bars  $c c'$ , which respectively unite the two levers  $D D' D' D'$  a little below their outer ends. The levers  $D D'$ , on the same end of the press, are pivoted to the press, so that their common fulcrum  $e$  shall be about midway between the top and bottom of the press. The levers  $D' D'$  are pivoted in like manner at  $e'$ . The effect of this arrangement upon the movement of the platen is clearly shown in Fig. 3, where the levers  $D D'$  are represented in three positions. When the lever  $D$  moves from the position numbered 1 to the second position it will have described an arc of ninety degrees, or thereabout, while in the meantime the chain  $B$  will have traveled a distance equal to the line  $c x$  in position 1 and 2; but moving from the second position to the third, while the lever again describes an arc of nearly ninety degrees, the chain only travels the distance which is the difference between the line  $c x$  and  $c y$ , or, in other words, a little more than half the length of the line  $c x$ .

It will be seen that even when the levers move at a uniform speed the speed of the chains and the platen to which they are attached will diminish in proportion as the levers move from the pulleys  $C$ , over which the chains pass, and that thus a corresponding increase of power is gained, for the same motor-

power which is employed to move the platen over a distance equal to  $cx$  is also employed to move it over a distance equal to a little more than half of  $cx$ , as just explained.

In order, however, to still further increase the power, we make use of a differential drum, (shown in plan in Fig. 5, and in section in Fig. 3,) by means of which the levers  $D D'$  themselves are made to travel with less speed as the resistance becomes greater. This drum consists of a shaft,  $E$ , supported horizontally in suitable bearings in the sides of the press. Upon that part of the shaft within the frame are formed two conical barrels,  $F$ , one on each side of the shaft  $E$ , their bases being contiguous to the sides of the frame, and thence tapering toward the middle of the shaft.

Upon the peripheries or surfaces of the barrels  $F$  are formed spiral grooves  $ff$ . The levers  $D D'$  are connected with this drum by means of ropes or chains  $g' g'$ , which are secured, respectively, to the cross bars or rods  $d d'$  at the extreme outer ends of the levers, and thence extend downward, passing under the pulleys  $G G'$  until they meet the drum.

The end of the rope or chain  $g$  is secured to one spiral barrel,  $F$ , at or near the point where the diameter of the cone is the greatest, and in such manner that when the levers  $D$  are in the position shown in black lines in Fig. 3 the rope or chain may be quite removed from the spiral groove  $f$ . The other chain,  $g'$ , is secured in a similar manner to the other spiral barrel.

If the shaft  $E$  be revolved the ropes or chains  $g g'$ , being fastened to it, as above specified, must follow its movement, and they are therefore moved around the shaft as it revolves, following the spiral grooves  $ff$ , in which they are placed, and drawing down the levers  $D D'$ , to which they are secured.

As the grooves  $ff$  approach the middle of the shaft the diameter of the conical barrels decreases gradually, so that as the chains following the grooves approach the center of the shaft the speed imparted to the levers is reduced by degrees until one revolution of the shaft will suffice to move the levers only half or one-third as far as the same revolution would have done at the start. Of course this reduction of speed is communicated from the levers to the platen, which is thus made to move toward the matter to be compressed with a constantly-diminishing velocity and increasing power due to the combined action of the levers and differential drum.

In order to communicate motion from the motor-power to the drum I employ the following means: Upon one end of the shaft  $E$ , which extends through and outside of the frame of the press, we secure a ratchet-wheel,  $H$ , Figs. 1 and 6. At a suitable point in the press-frame a shaft,  $I$ , revolved directly by the motor-power by means of a crank,  $J$ , or other suitable device, has its bearings. It extends out from the frame on the same side on which the ratch-

et-wheel is placed, and to this extended end, as just said, the crank  $J$  is attached. Upon that part of the shaft between the crank and the side of the frame are mounted eccentrically to the shaft and to each other two pawls,  $K L$ , whose arrangement and construction are shown more particularly in Figs. 6 and 7. This combination of eccentrically-mounted pawls with a ratchet or toothed wheel has been described in Letters Patent heretofore issued to us on the 1st of May, 1866, and the description need not be repeated here further than to say that by the revolution of the shaft  $I$  the pawls are made to act alternately upon the ratchet-wheel, becoming engaged successively with the teeth of the said wheel, and causing its revolution and the consequent movement of the spiral drum, levers, and platen, as above specified.

In order, however, to enable the pawls to so act upon the wheel that it may be revolved in both directions, and thus cause either the raising or lowering of the platen, we employ the following arrangement: In a frame just under the pawls we secure trips  $kl$ , Figs. 1, 2, and 7. These trips are of a segmental shape, and are placed in the frame in such position that their concave surface is contiguous to the pawls. The pivot or fulcrum  $m$ , upon which they are hung, divides each trip into two unequal parts, the front end being the heavier, so that when not actuated in any way it will drop by its own weight. The rear ends of the trips  $k$  and  $l$  are thus raised high enough to be struck and forced down alternately by the eccentrics of their corresponding pawls, and when forced down in this manner the said rear ends act as lever-arms, alternately throwing up the front ends of the trips, which are thus brought against their respective pawls, disengaging them alternately from the ratchet-teeth. The ratchet-wheel can thus be revolved in either direction, as the eccentrics operate in the same manner upon the rear ends of the rocking trips whether the shaft  $I$  be revolved in one direction or the other.

In order to insure the perfect working of the trips a screw,  $n$ , or other suitable device, may be placed in the rear end of each trip, so that the end of the screw shall meet the eccentric. By this means the height to which the front end of the trip is to be raised can be perfectly regulated by turning the screw so as to advance or retire its end, according as it is required to increase or lessen the play of the trip.

In the upper part of the sides of the press are placed two doors,  $M M$ , which, when the platen has reached the position shown in red lines in Fig. 3, are opened to admit of the compressed hay, cotton, or other material being bound, baled, and taken out. These doors must naturally be subjected to a severe lateral strain while the material is being compressed by the platen, and the object of the arrangement we are about to describe is to enable

them to withstand this strain successfully and yet at the same time to be opened readily and without trouble.

In order to effect this object we take each door M and mount it upon hinges of peculiar construction, so arranged that the parts *p*, which form the upper and lower hinges upon which the door is suspended, shall be eccentric to the rod *r*, which connects the hinges, and upon which the other part, *p'*, of the hinge which holds the door to the frame is placed in such manner as to allow the rod *r* to revolve freely.

A lever-handle, *s*, is attached to the rod *r*, by means of which the rod may be rotated. As the rod *r*, which is held firmly to the frame, is eccentric to the hinges upon which the door is hung, it follows that when the rod is revolved by the lever-handle *s* the door M is made to have a lateral motion, as fully shown in Fig. 4, where the position of the door when the lever-handle is thrown forward is shown in red lines, and the position occupied by the same when the handle is drawn back is shown in black lines.

On the end of the press adjoining the swinging end of the door are placed two or more hooks, *t t*, which, when the doors are closed, engage with corresponding hooks *t' t'*, or other suitable devices, on the ends of the doors. That part of the press to which the hooks *t t*, or other similar device, are secured may be either stationary, forming part of the press, as shown at N, Fig. 3, or it may be a plate held in position by yielding bands of vulcanized rubber, leather, or other suitable material, P, as shown at N, Fig. 4. The position occupied under this latter arrangement by the plate, when the hooks *t t* are not engaged with the hooks of the doors, is shown in red lines, the inner face of the plate N being drawn a little outwardly from the inner surface of the press. When, however, the lever-handle *s* is thrown forward, and the door M is moved laterally, as shown in red lines in Fig. 4, and then closed, and when the handle *s* is then moved back, it draws back with it the door, whose hooks

*t' t'* engage the hooks *t t* of the plate N and thus hold the two firmly together. The hooks *t t* and *t' t'* may be disengaged in a manner similar to that by which they are engaged.

We have now described the various improvements which are made the subject of this application. Many modifications of the same, however, can readily be made without departing from the principle of our invention, and we do not wish to be understood as limiting ourselves to the precise arrangement herein described; but

What we claim, and desire to secure by Letters Patent, is—

1. In cotton, hay, and other like presses, the combination, with a movable platen operated by levers, as described, of a differential drum or shaft for imparting motion to the levers at a speed inversely proportionate to the resistance, as herein shown and set forth.

2. In a cotton, hay, or other like press, the combination of the following elements: first, a movable platen; second, levers to operate the platen; third, a differential drum to operate the levers.

3. In combination with the pawls for actuating the ratchet-wheel, the oscillating or rocking trips for disengaging the pawl from the wheel under the arrangement shown and described, so as to be operated by the eccentrics upon which the said pawls are mounted.

4. In combination with a stationary or inwardly-yielding end plate, as described, a door or doors mounted eccentrically upon hinges in such manner that they may be moved laterally to become engaged with or disengaged from the said end plate, substantially as herein shown and described.

In testimony whereof we have signed our names to this specification before two subscribing witnesses.

SAMUEL C. GOODSSELL.  
DENNIS FRISBIE.

Witnesses:

DE WITT C. SPRAGUE.  
HENRY E. PARDEE.