

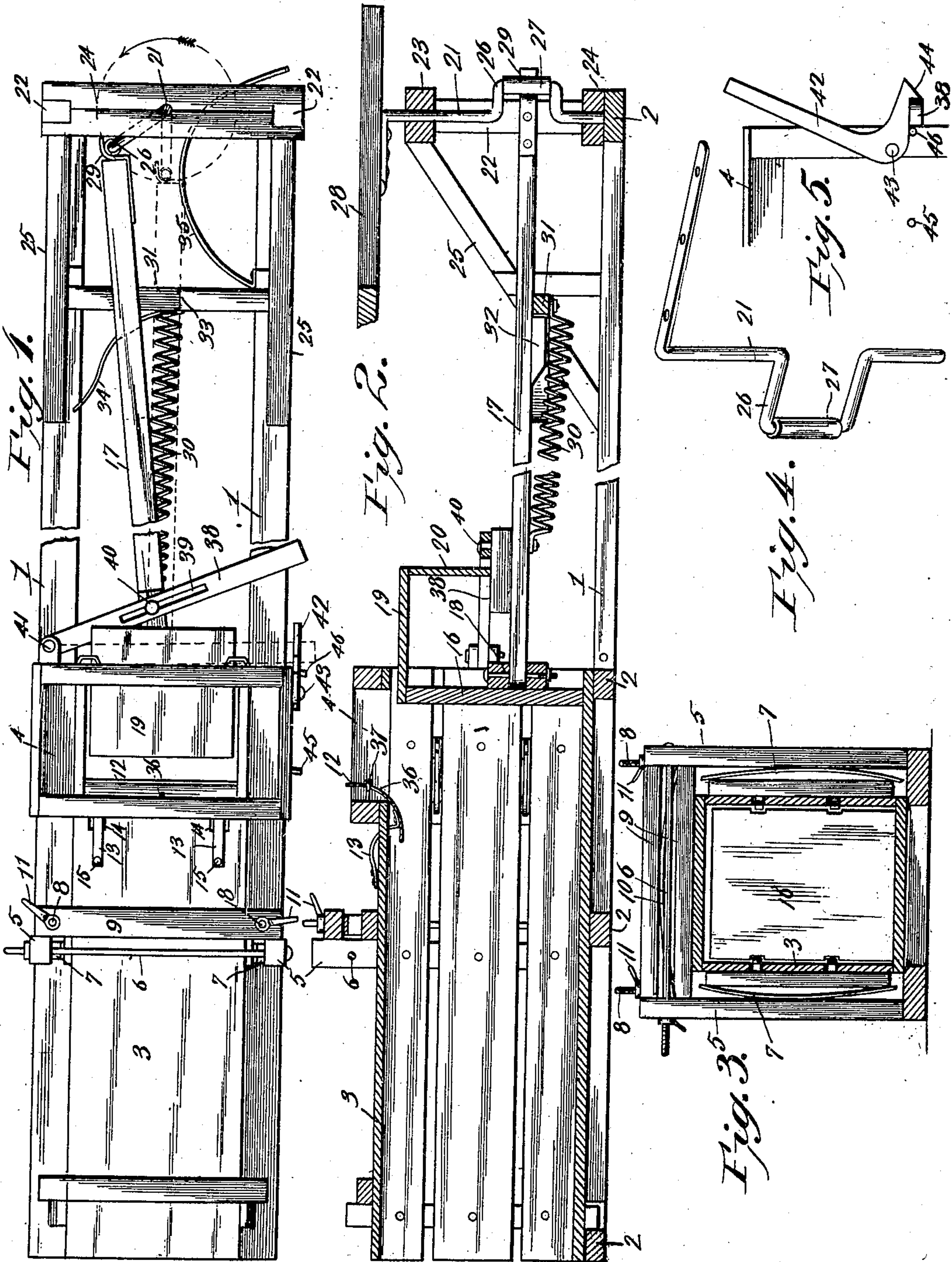
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Patented Aug. 13, 1901.

F. H. DENNIS.
BALING PRESS.

(Application filed Dec. 8, 1900.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

FELIX HENRY DENNIS, OF MERKEL, TEXAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 680,410, dated August 13, 1901.

Application filed December 8, 1900. Serial No. 39,192. (No model.)

To all whom it may concern:

Be it known that I, FELIX HENRY DENNIS, a citizen of the United States, residing at Merkel, in the county of Taylor and State of Texas, have invented a new and useful Baling-Press, of which the following is a specification.

This invention relates to baling-presses, and has for its object to provide an improved rebounding plunger-press in which the common and sudden removal of strain from the sweep is prevented when the plunger-actuating part is tripped out of engagement with the plunger-rod to permit of the latter rebounding from the depressed bale, and the draft strain is gradually decreased, whereby the draft upon the sweep is continuous and uninterrupted by jerks, as heretofore. It is furthermore designed to insure the reengagement of the sweep-actuated part with the plunger-rod, so that there may be no skip nor alternation in the operation of the plunger, and finally to provide for guiding the hay or other material being baled from the hopper into the baling-box, so as to prevent said material from being jammed or wedged between the plunger and the hopper.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a top plan view of a baling-press constructed in accordance with the present invention, the operating-sweep being removed. Fig. 2 is a central longitudinal sectional view thereof with the sweep in position. Fig. 3 is a transverse sectional view taken through the baling-box. Fig. 4 is a detail perspective view of the plunger-operating device carried by the operating-sweep. Fig. 5 is a detail side elevation of the means for locking the plunger during the tying of a bale.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

The frame structure of the present device comprises the opposite longitudinal base-sills 1, which are connected by the end and intermediate cross-bars 2 to form a solid foundation for the press. At the rear end of this base-frame there is provided the usual slatted press-box 3, having the hopper 4 located at the front end thereof and opening downwardly into the box. The front and rear ends of the box are open, as usual, for the entrance of the plunger and the removal of the compressed bale. About midway between the ends of the press-box are the opposite uprights or posts 5, which rise from the respective base-sills and project a suitable distance above the press-box, their upper ends being connected by an adjustable tie-rod or brace 6. Between each post and the adjacent side of the press-box there is provided a bowed leaf-spring 7, so as to permit of a slight expansion of the intermediate portion of the box during the formation of the bale. Immediately in front of the posts are the opposite rods 8, which rise from the sills and project above the top of the box, so as to extend loosely through corresponding perforations in a pair of superposed cross heads or bars 9, between which is interposed a bowed spring 10. The upper extremities of the rods are screw-threaded and provided with suitable handled nuts 11 for the purpose of adjusting the tension of the cross-heads, and thereby permit of a slight expansion of the top of the press-box.

Located within the back portion of the hopper is a tucker 12, as best shown in Fig. 2 of the drawings. This tucker is formed from a single blank of metal, which is bowed so as to curve upwardly and rearwardly across the rear inner side of the hopper and downwardly and rearwardly into the press-box, the intermediate portion of the plate extending across the bottom rear edge of the hopper. The plate is yieldingly supported by means of a pair of bowed leaf-springs 13, each of which has its front end secured to the rear top or concaved portion of the tucker-plate and then passed rearwardly and upwardly through an opening 14 in the top of the press-box and immediately in rear of the hopper, the rear end of the spring being secured to the top of the box, as indicated at 15. As best indicated

in Fig. 2, it will be seen that the tucker-plate is normally held below and out of contact with the rear bottom edge of the hopper or the top of the box, so as to yield under the pressure of the advancing plunger 16, thereby guiding the hay or other material into the press-box and also preventing the same from jamming or binding upon the rear bottom edge of the hopper.

The plunger works in opposite directions through the front open end of the press-box and is provided with a plunger-rod 17, which is pivoted or hinged to the front side of the plunger, as indicated at 18, so as to have a lateral swing for the purpose of compensating for the lateral movement of the sweep-operating part, as will be hereinafter described. Extending forwardly from the top of the plunger is a transverse plate 19, which is supported at its outer or front end by means of a pendent brace 20, having its lower end supported upon the plunger-rod. This plate is also designed to form a bottom closure for the hopper when the plunger is being forced into the press-box, thereby preventing the insertion of hay into the box during the inward movement of the plunger.

For the operation of the plunger there is provided an upright sweep-operated shaft 21, which is mounted at the forward end of the base-sills in a frame structure comprising opposite posts 22, top and bottom cross-bars 23 and 24, respectively, connecting the posts, and the rearwardly and downwardly inclined braces 25, extending from the tops of the posts to the adjacent sills. The shaft 21 is journaled in the opposite cross-bars 23 and 24 and located midway between the opposite sills and is also provided with a cam formed by an intermediate laterally-bowed portion or double crank 26, the intermediate portion of which is incased by an antifriction sleeve or roller 27.

A suitable sweep 28 is connected to the upper projecting end of the shaft and is designed to be operated by draft-animals or other suitable power. The free end of the plunger-rod is provided with a cam or notch formed by an angular metallic plate 29 and is located in the path of the inward swing of the shaft-cam, as indicated by the dotted circle in Fig. 1 of the drawings, so that the inward swing of the cam 26 strikes the end of the plunger-rod and forces the same and the plunger rearwardly into the press-box, the cam automatically disengaging itself from the plunger-rod just after it passes the longitudinal center of the press and then continuing in its circular path for another operation of the plunger. The plunger-rod is automatically rebounded or shot forwardly by means of a coiled spring 30, which is located longitudinally beneath the plunger-rod and has its opposite ends connected, respectively, to the rod and a cross-bar 31, connecting the opposite inclined braces 25. The rebounding forward movement of the plunger is limited by means of a stop-shoulder 32, carried by the under side of the

plunger-rod and arranged to strike the adjacent side of the cross-bar 31, so as to prevent the plunger-rod from being thrown too far forwardly, as it might be brought into the path of the operating-animals.

To insure a proper tripping of the actuating-cam from the end of the plunger-rod, a lateral stop-shoulder 33 is provided upon the top of the cross-bar 31 and arranged to be in engagement with the adjacent side of the plunger-rod when the latter is in the longitudinal axis of the press, whereby the lateral movement of the plunger is limited in one direction, and as the actuating-cam continues to travel transversely across the rod it automatically disengages therefrom. When the actuating-cam first engages the plunger-rod, as indicated in Fig. 2, there is a lateral as well as an inward movement imparted to the rod, and in order that the rod may not be merely pushed aside by the cam there is provided a yieldable stop device in the form of a bowed leaf-spring 34, which has its inner end secured to the rear side of the cross-bar 31 and inclines transversely and rearwardly across the base-frame in a direction from the stop-shoulder 33 and in the path of the lateral movement of the stop-shoulder 32, carried by the under side of the plunger. By this arrangement the plunger is permitted to move laterally under the influence of the actuating-cam and is also held in yieldable engagement therewith, so as to prevent lateral separation thereof. Thus the actuating-cam is automatically tripped from the plunger-rod just at the proper time to permit of the rebounding of the plunger, the rebounding movement of the latter is properly limited, and the free end of the plunger-rod is maintained in proper relation for engagement by the actuating-cam as it travels in its circular path.

As will be best understood by reference to Fig. 1, it will be observed that when the actuating-cam disengages from the plunger-rod all tension is removed from the cam, and consequently the sweep will be swung with increased velocity until the cam again engages with the plunger-rod, thereby causing a jerky and interrupted operation of the device, with great annoyance to the animals employed to operate the sweep. To overcome this objection, there is provided a yieldable buffer 35, formed by a bowed leaf-spring having its outer end free and its inner end connected to the adjacent inclined brace 25, whereby the convex side of the spring is located in that portion of the path of the actuating-cam where the latter leaves the plunger-rod, so that the cam strikes the buffer just as it leaves the plunger, whereby the tension upon the operating means is gradually diminished instead of being suddenly and entirely removed. Thus the operation of the sweep is continuous and uninterrupted.

In Fig. 2 of the drawings it will be noted that the upper portion of the tucker-plate is

provided with a longitudinal slot 36 for the reception of a pin 37, projected forwardly from the rear inner edge of the hopper, so as to guide the plate in its yieldable movement and to prevent accidental displacement thereof.

It is desirable to maintain a pressure upon a bale while it is being tied, and to accomplish this object I provide a transverse locking-bar 38, which is located in front of the press-box and extends transversely across the top of the plunger-rod. A longitudinal slot 39 is formed in the intermediate part of the bar for the reception of a guide pin or stud 40, projecting upwardly from the plunger-rod. As indicated at 41, one end of the locking-bar is pivoted or hinged to the front of the press-box at that side of the machine toward which the plunger-rod has its initial lateral swing. By this arrangement the locking-rod swings horizontally toward and away from the press-box during the corresponding movements of the plunger-rod, and the free end of the bar projects beyond the opposite side of the box when the bar is at its inner limit and lying against the front of the box, so as to automatically engage a gravity latch or detent 42, pivoted to the adjacent side of the box, as indicated at 43 in Fig. 5 of the drawings. This latch is substantially L-shaped or angular, with its members extending vertically and horizontally, respectively, the vertical member forming a handle to throw the latch into and out of operation, while the free extremity of the horizontal member has a pendent catch head or shoulder 44, which is beveled upon its outer or front side, so that the free extremity of the locking-bar may swing against said beveled portion, thereby automatically raising the latch, which finally drops by gravity and locks the bar and the plunger-rod at their inner limit. A suitable stop 45 projects laterally outward from the side of the press-box and in rear of the pivot of the latch to support the handle of the latch when it is thrown rearwardly into its inoperative position, as shown by dotted lines in Fig. 5, while a similar stop 46 is located slightly in advance of the pivot and below the same, so as to engage the horizontal member of the latch, and thereby support the latter in its operative position. Normally the latch is in its inoperative position, so as not to interfere with the continuous operation of the plunger; but when it is desired to tie a bale the latch, is thrown into its operative position, and when the plunger-rod is thrust inwardly the locking-bar becomes engaged with the latch, thereby locking the plunger and holding the same firmly against the bale to maintain pressure thereon.

It will of course be understood that the locking of the plunger-rod at its inner limit does not interfere with the continuous movement of the operating-head, as the plunger-rod is locked at the point of its inward movement where the operating-head disengages

from the rod and comes in contact with the yieldable buffer or spring 35, whereby the locking of the plunger-rod does not interfere with the operating means therefor. It will here be noted that the outer free portion of the buffer-spring 35 is located at the inner side of the post 22, which latter limits the outward movement of the spring under the pressure of the operating-head.

What is claimed is—

1. In a baling-press, a rebounding plunger having a laterally-swinging plunger-rod, an automatically-disengageable operating device therefor, a cross-bar loosely supporting the free portion of the plunger-rod, a laterally-engaging stop-shoulder carried by the cross-bar and at one side of the plunger-rod, a pendent cross-bar-engaging stop-shoulder carried by the plunger-rod and in rear of the cross-bar, and a bowed spring stop device arranged in the path of the initial lateral swing of the pendent stop-shoulder and opposite the shoulder upon the cross-bar.

2. In a baling-press, the combination with a base-frame, of a press-box at one end thereof, an upright frame structure at the opposite end thereof, a rebounding plunger, a laterally-swinging plunger-rod, a cross-bar in the upright frame structure and forming a support for the free end portion of the plunger-rod, a pendent stop-shoulder carried by the plunger-rod and in rear of the cross-bar, a plunger-rod-engaging stop-shoulder upon the cross-bar and arranged in the path of the final lateral swing of the rod, an elastically-yieldable stop device located opposite the latter stop-shoulder and formed by a bowed spring secured to the cross-bar and located in the path of the initial lateral swing of the stop on the plunger-rod, a vertical operating-shaft mounted upon the upright frame, and having a rod-engaging operating-head, and a yieldable buffer carried by the upright frame and located in that portion of the path of the head where the latter disengages from the plunger-rod.

3. A baling-press having a rebounding plunger, a rotary operating device constructed for operative engagement with the plunger during the latter half only of the rotary movement thereof, the plunger being free from the operating device during the remainder of the operation and capable of rebounding, and a yieldable bowed spring-buffer located in that part of the path of the operating device where the latter leaves the plunger.

4. In a baling-press, a press-box, having a hopper, a bowed tucker-plate having its concaved side embracing the rear bottom edge of the hopper, the upper portion of the plate bowing upwardly and rearwardly through the top of the hopper, and the bottom bowing downwardly and rearwardly into the press-box, one or more bowed springs secured to the rear portion of the plate, projected loosely upward through an opening in the top of the

box, and secured to the exterior thereof, and a guide-pin projecting from the rear side of the hopper and loosely received in a longitudinal slot in the tucker.

5 5. The combination with a baling-press, having a press-box, a plunger working therein, and a plunger-rod, of means for locking the plunger, comprising a locking-bar pivoted or hinged to the press-box, and having a slid-
10 able connection with the plunger-rod, and means for automatically locking the bar at the inner limit of the plunger.

6. The combination with a baling-press, having a press-box, a plunger working there-
15 in, and a plunger-rod, of means for locking the plunger, comprising a locking-bar pivoted or hinged to the front of the press-box, extending transversely across the plunger-rod, and having a slidable pin-and-slot connec-
20 tion therewith, and a gravity latch or detent mounted upon the front portion of the press-box and in the path of the inward swing of the locking-bar.

7. The combination with a baling-press,
25 having a press-box, a plunger working therein, and a plunger-rod, of means for locking the plunger at its inner limit, comprising a transverse locking-bar having one end pivoted or hinged to the front of the press-box,
30 extending transversely across the plunger-rod, and having a pin-and-slot connection therewith, the free end of the bar projecting beyond the opposite side of the press-box at the inner limit of the plunger, and a substan-
35 tially L-shaped gravity latch or detent pivoted to said opposite side of the box and swinging in a vertical plane, the horizontal member of the latch projecting in front of the box, and having a pendent catch-shoulder

in the path of the free end of the locking- 40 bar, the other member of the latch forming a handle to adjust the latch into its operative and inoperative positions, and stops located at opposite sides of the pivotal support of the latch, to support the latter in its opposite 45 positions.

8. In a baling-press, a press-box, a rebounding plunger therefor, a plunger-rod having a free outer end, an operating device which travels in a circular path and is constructed 50 for operative engagement with the free end of the plunger-rod during the latter half only of the inward swing of the operating device, the rod and plunger being free from the op-
55 erating device and capable of rebounding during the remainder of the swinging movement of the operating device, and a bowed spring-buffer having its convex side located in that portion of the outward swing of the operating device where the latter leaves the 60 end of the plunger-rod.

9. In a baling-press, the combination of a rebounding plunger, an operating device consisting of a rotatable shaft having an inter-
65 mediate double crank constructed for impact operative engagement with the plunger during the inward movement only of the crank, and a bowed spring-buffer having its convex side arranged in the initial part of the out-
70 ward swing of the operating device at the point where it disengages from the plunger.

In testimony that I claim the foregoing as my own I have affixed my signature in the presence of two witnesses.

FELIX HENRY DENNIS.

Witnesses:

I. S. ALLEN,
R. W. WITT.