

(No Model.)

2 Sheets—Sheet 1.

E. BEADLE.
BALING PRESS.

No. 399,472.

Patented Mar. 12, 1889.

Fig. 1.

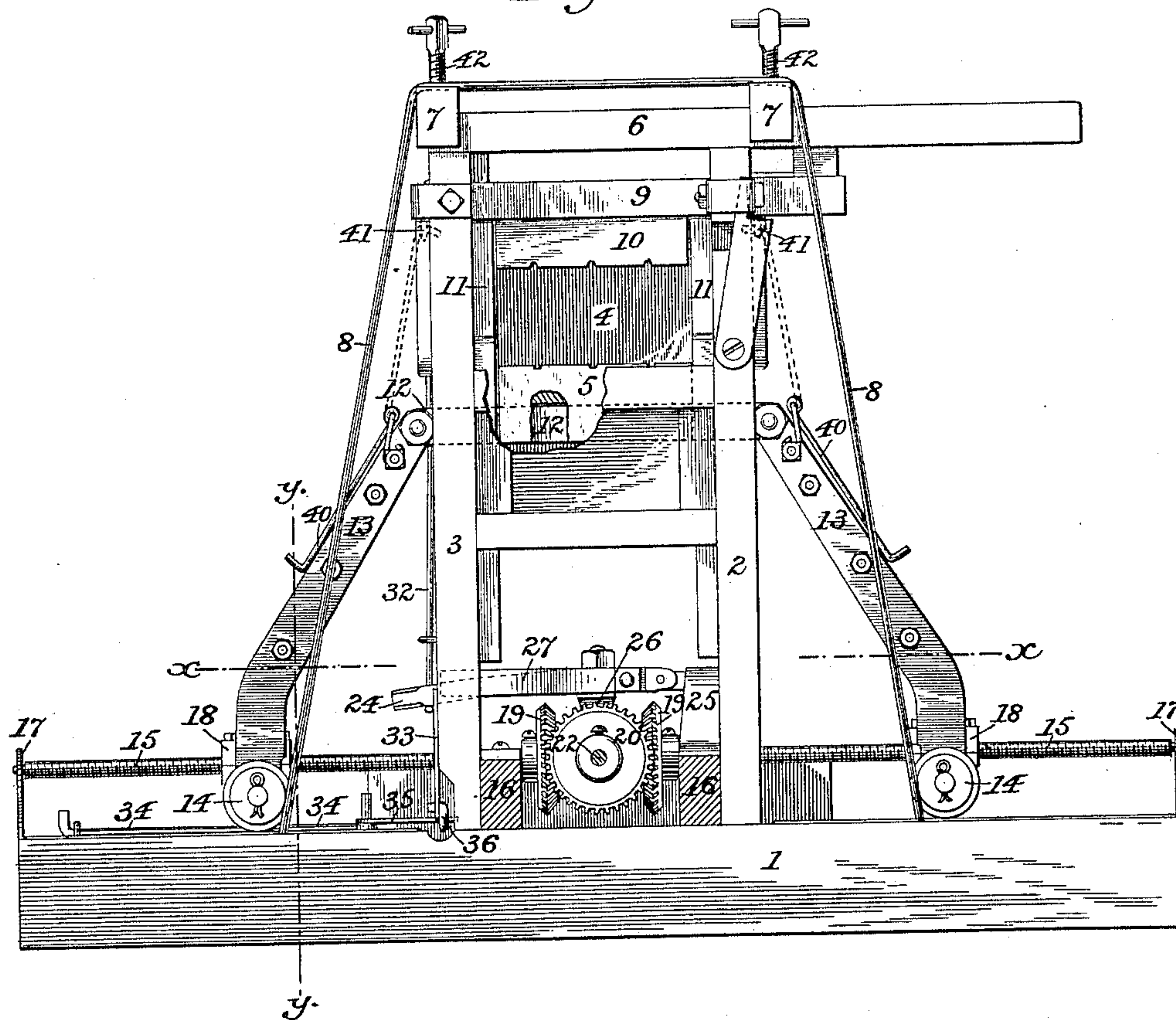
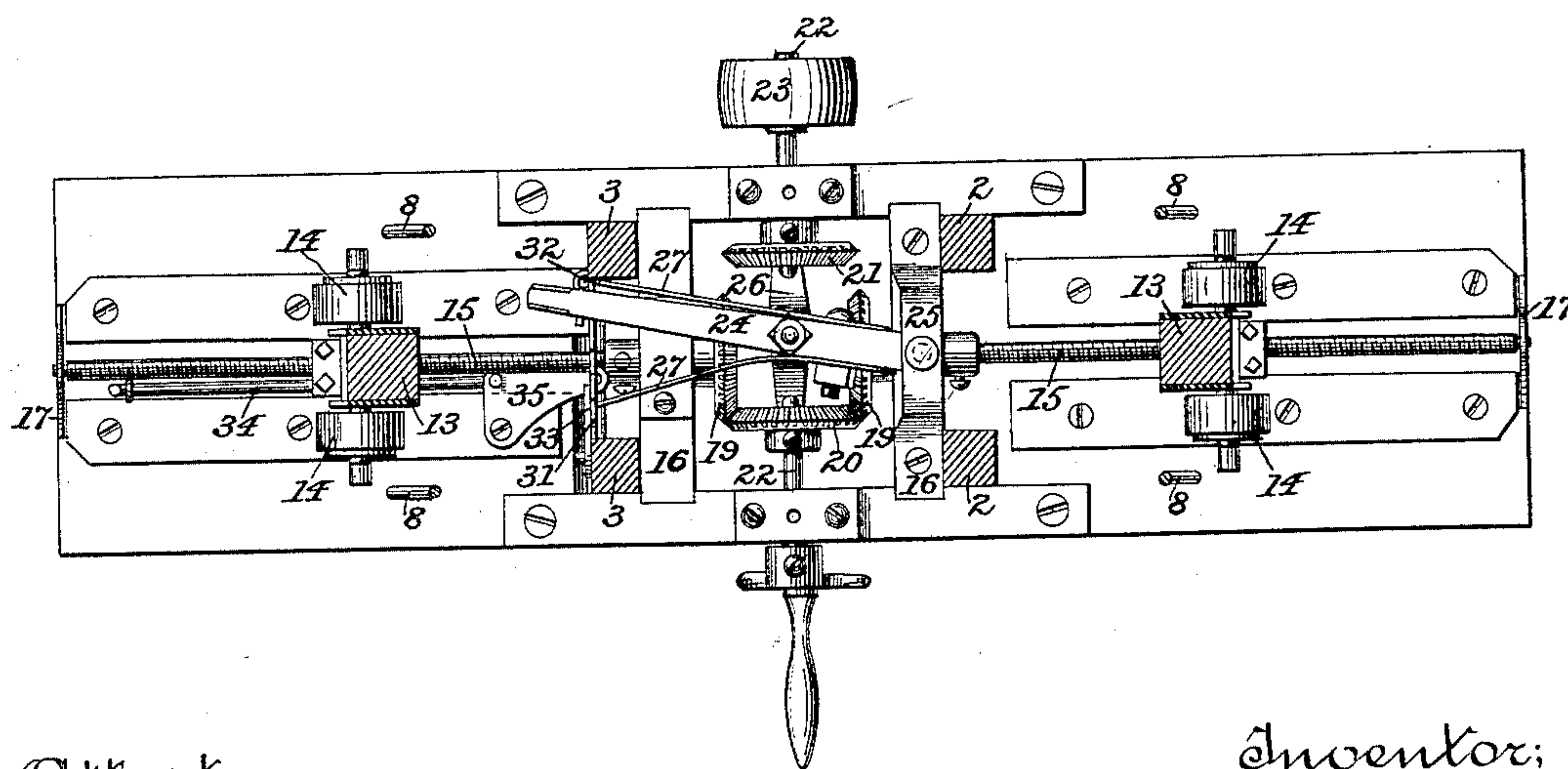


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

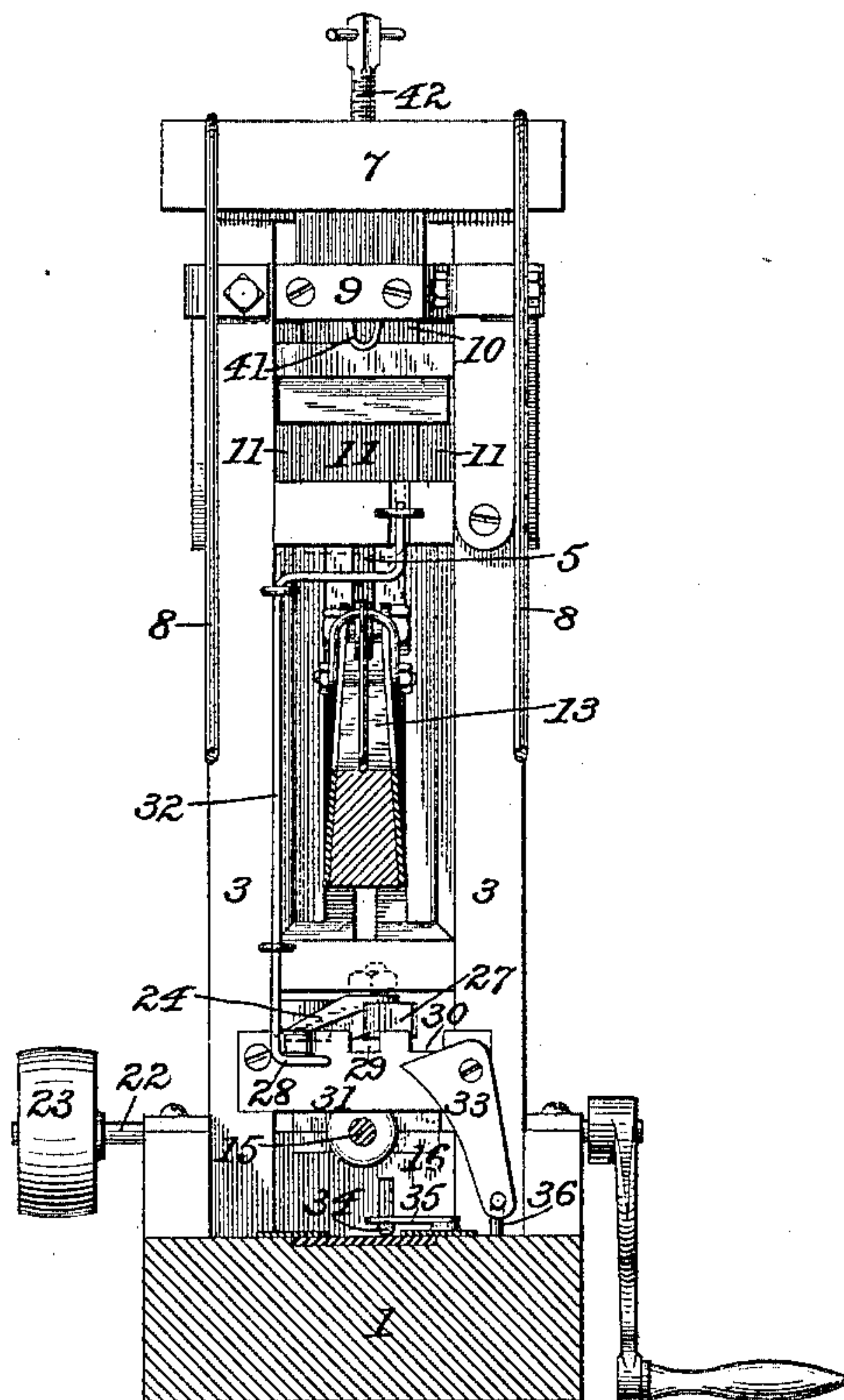
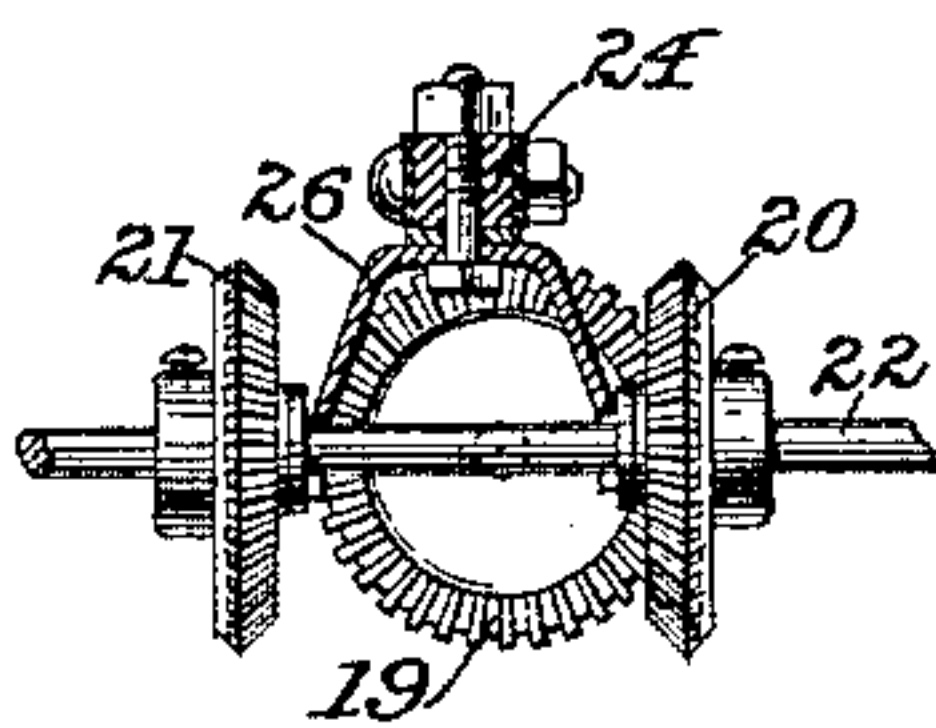


Fig. 4.



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UNITED STATES PATENT OFFICE.

ELWOOD BEADLE, OF CENTRE STAR, ALABAMA.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 399,472, dated March 12, 1889.

Application filed August 4, 1888. Serial No. 281,971. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD BEADLE, of Centre Star, in the county of Lauderdale and State of Alabama, have invented certain new and useful Improvements in Presses for Compressing and Baling Cotton, Hay, &c., and for other purposes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is an elevation of my improved cotton-press with the front of the press-box opened by the removal of the front board, and a portion of the front broken out to illustrate the working of the follower therein; Fig. 2, a horizontal section in line *x x* of Fig. 1; Fig. 3, a vertical section in line *y y* of same figure; Fig. 4, a sectional detail of the shifting bevel-gear, whereby the action of the lever-screws is automatically actuated or reversed.

Similar numerals indicate like parts in all of the figures.

My invention relates to an improvement in presses for baling cotton and hay, and has for its object to facilitate the movements of the press and to render the same automatic.

In the accompanying drawings, 1 represents the bed of the press, made, as usual, strong and solid.

2 2 3 3 are the standards for the upright frame in which the press-box 4 is formed.

5 is the follower for the press, made to work upward into the press-box or bale-box 4, between the four standards 2 2 3 3.

6 6 are the upper beams extending parallel with the base, and 7 7 the cross-beams on top of the press.

8 8 are iron tie-rods led from the base 1 up over the ends of the cross-beams 7 7, to clamp and secure the press and insure the requisite strength in its construction.

9 is an upper press-bar or top plate fitted above the press-box, and which carries a heavy block or plunger, 10, adapted to drop into the press-box when required. This upper press-bar, 9, admits, when elevated, of being moved out endwise upon the upper beams, which are extended for the purpose, to thereby uncover and open fully the top of the

press-box in manner as has heretofore been practiced.

The open sides of the press or bale box 4 are closed, in the usual manner, by heavy detachable plates or boards 11 11, fitted and confined within and between the standards 2 2 and 3 3, so as to permit the follower 5 to work up from below and the plunger 10 to move down from above into the space inclosed thereby, and within which the cotton, hay, or other material to be baled is compressed.

The follower 5 is mounted upon a cross-bar, 12, whose projecting ends are hinged to the upper ends of the compressing arms or levers 13 13. The lower ends of the compressing-arms are severally mounted, each upon an axle fitted with wheels 14 14. The lower end of each lever is forked, and the bearings for the axle are formed in the arms of the fork, while a screw-threaded shaft or endless screw, 15, is extended horizontally between the arms of the fork of each lever to rotate in bearings formed at one end on a cross-beam, 16, resting on the base within the standards 2 2 and 3 3, and at the other in a suitable pedestal or upright bearing-plate, 17, mounted at the end of the base 1, as shown in Fig. 1.

A suitable nut, 18, formed in two divisions to be bolted together upon the endless screw 15, is fastened securely upon each axle so as to be firmly united thereto, and a rotation of the screw in the one direction or the other will operate to work the nut back or forth upon the screw, and thereby draw the lower end of the compressing-arm 13 to or carry it from the standards 2 and 3. As the lower end of the compressing-arms 13 13 are drawn toward the standards, their upper ends are forced upward, carrying with them the follower 5, which will thus be moved up with great power into the press-box 4 to compress the material therein. As the lower ends of the compressing-arms are supported upon the wheels 14 14, the operative screws 15 are relieved from all pressure transversely to their length, while the wheels facilitate an easy movement of the arms under the action of the screws. The two endless screws 15 15 are geared together by means of beveled gear-wheels 19 19, fitted upon their inner ends, and similar beveled wheels, 20 21, upon the ends of

a counter-shaft, 22, mounted in suitable bearings centrally between the standards 2 and 3, at a right angle to the screws 15. This counter-shaft 22 is adapted to have longitudinal
 5 play in its bearings, and the bevel-wheels 20 21 thereon are so adjusted that when either one is brought into gear with the two bevel-wheels 19 19 on the ends of the screws the other shall be out of gear, the distance between the
 10 two wheels being sufficient to permit both to stand out of gear with the wheels 19 19 when desired.

The counter-shaft 22 is fitted with a driving-pulley, 23, to receive a belt from the engine
 15 or motor, by which it is kept in constant rotation during the operation of the press, and by a simple longitudinal movement of the counter-shaft 22 in its bearings the rotation of the endless screws 15 15 may, without stop-
 20 ping the rotation of the counter-shaft, be reversed at will, by causing either the one wheel, 20, or the other, 21, thereon to engage the two wheels 19 19 on the screws, or the movement of the screws may be arrested by throwing
 25 both of the wheels 20 and 21 out of gear therewith.

The longitudinal movement of the counter-shaft to arrest or reverse the movements of the endless screws is produced automatically
 30 by means of a horizontal reversing-lever or shifting-bar, 24, (see Fig. 2,) pivoted at one end in a suitable bracket, 25, over the inner bearing of one of the endless screws 15, and which is extended thence over and beyond
 35 the inner bearing of the opposite screw. This reversing-lever 24 is coupled to the counter-shaft 22 by means of a yoke, 26, (see Fig. 4,) pivoted to the under side of the lever, and whose two ends embrace the shaft, as shown
 40 in Fig. 4, so that by swinging the lever 24 upon its pivot to the one side or the other the one bevel-wheel, 20, or the other, 21, will be thrown into gear with the bevel-wheels 19 of the screws, while by placing the reversing-le-
 45 ver in line with said screws, midway between the standards, both wheels will be thrown out of gear. The lever is normally held in this central position by means of two lateral springs, 27 27, (see Fig. 2,) which are respect-
 50 ively brought into play by a lateral movement of the lever in either direction.

The outer end of the reversing-lever 24 is adapted to drop into three several notches, 28 29 30, (see Fig. 3,) formed in the upper edge
 55 of a transverse horizontal plate, 31, fitted to the outer face of the standards 3 3, the lever engaging one of the outer notches, 28 or 30, when carried over to the one side or the other to bring the bevel-wheels into gear, or the
 60 central notch, 29, when the wheels are out of gear.

To arrest automatically the upward movement of the follower 5 of the press, a rod, 32, is fitted vertically in suitable eyes secured to
 65 one of the standards 3, (see Fig. 3,) and its lower end is bent to pass under the notch 28, while its upper end is bent to extend trans-

versely over the path of the cross-bar 12 of the follower in the press at a point where it will be struck by said cross-bar and carried
 70 upward therewith when the compressing-arms 13 13 have nearly reached the limit of their upward movement. The upward movement of the rod 32 thus produced by the cross-bar 12 will operate to lift the end of the revers-
 75 ing-lever 24 out of the notch 28, and the action of the spring 27 will automatically carry the lever over to the central notch, 29, and thereby throw the bevel-wheels 20 21 out of gear with the wheels 19 and arrest the rota-
 80 tion of the screws 15, and consequently the movement of the compressing-arms 13.

To arrest the downward movement of the follower 5, an angular lever or dog, 33, is piv-
 85 oted against the face of the standard 3 nearest to the notch 30 in position so that its upper end will extend laterally from the pivot under the notch and its lower end depend under the pivot nearly to the base 1. By
 90 swinging this lower end or arm inward the upper end will sweep upward from the bottom to the top of the notch 30 and operate to lift the end of the reversing-lever 24 out of the notch when it is resting therein. This is
 95 accomplished automatically when the follower 5 has reached its lowest position, and the lower ends of the compressing-arms 13 13 are consequently in their extreme outward positions, by means of a rod, 34, passing through eyes
 100 on the bed-plate 1 and extending from near the end of the endless screw 15 at that end of the machine next to the notched plate 31 toward said plate, where it is attached to one
 105 arm of an angular or bell-crank lever, 35, (see Fig. 2,) pivoted upon the bed-plate 1, and whose opposite end is coupled by a link, 36, to the lower end of the angular lever 33, the lever 35 being so arranged that a pull upon
 110 the rod 34 will oscillate said lever in a direction which will cause it to swing the attached end of the lever 33 inward. The outer end of the rod 34 is bent upward (see Fig. 1) in position to be struck by the nut on the axle of the compressing-arm 13 as the end of the lever, traveling outward, approaches the end of
 115 its movement.

In the use of the press the counter-shaft 22 may be kept in constant rotation in the same direction, being geared for the purpose with
 120 any suitable motor by a band upon the pulley 23, or other convenient device. After the baling or press box 4 has been filled with the cotton or other material to be baled or com-
 125 pressed it is closed by bringing the upper block, 10, into place over the top of the box. The endless screws 15 15 are then set in motion by bringing the bevel-wheel 20 on the rotating counter-shaft 22 into gear with the bevel-wheels 19 19, carried by said screws. This is accomplished by swinging the free end
 130 of the reversing-lever 24 over into the notch 28 on the plate 31. The rotation of the screws 15 15 will cause the nuts 18 to travel thereon toward the standards 2 2 and 3 3, and in so

doing they will draw the lower ends of the compressing-arms 13 13 inward and force their upper ends upward, carrying with them the connecting cross-bar 12 and the follower 5 thereon. The upward movement of the follower 5, thus produced, will compress the contents of the press-box 4 against the block 10 in the usual manner. As the bale is compressed in the box 4, it is properly tied and secured in the customary manner by means of cords or bands, which will retain it in its condensed form. So soon as the full compression is accomplished the engagement of the cross-bar 12 with the upper end of the rod 32 (see Fig. 3) will draw upon the rod and cause it to lift the end of the reversing-lever 24 out of the notch 28, and the lever will thereupon, under the action of the spring 27, be swung over into the middle notch, 29, and in its movement will throw the bevel-wheel 20 out of gear with the wheels 19 19, and thereby arrest the movement of the screws 15 and compressing-arms 13 13. By swinging the reversing-lever 24 over into the notch 30 the bevel-wheel 21 will be brought into gear with the wheels 19 19, thereby reversing the movement of the screws so as to cause the nuts 18 to travel outward and lower the compressing-arms 13 13. When the nuts are approaching the outer ends of the screws, the engagement of one of said nuts with the upturned end of the rod 34 will draw said rod outward, and thereby operate to oscillate the angular lever 33 and throw the end of the reversing-lever 35 out of the notch, so that the compressed spring 27 will come into play to carry said lever to the middle notch and throw the counter-shaft 22 out of gear with the screws 15 15, so as to arrest their further movement. When it is desired to further re-press a bale already compressed to the utmost by the upward movement of the compressing-arms 13 13, hooks 40 40 are provided at the ends of said arms and made long enough to engage eyes 41 41 in the ends of the cross-bar 9 of the upper block, 10. By attaching said hooks to said eyes and reversing screws 15 15, so as to cause the arms 13 13 to descend, a powerful tension is brought to bear upon the upper block, 10, drawing it toward the lower block or follower, 5, in the meantime made fast in the press, and thereby compressing the interposed bale. To relieve the screws 15 15 from undue strain, because of the upward pull thus created thereon, screws 42 42 are fitted to work through the cross-beams 7 7 and bear upon the top of the cross-bar 9, and these screws are turned down in unison with the downward movement of the bar to serve as auxiliaries to the action of the screws 15 15 in compressing the bale and to relieve the latter from strain.

This improved press, although especially adapted for compressing and baling cotton, hay, &c., may also be employed, with obvious adaptations thereof to the end in view, for use as a cider or grain press, and similar purposes.

I claim as my invention—

1. The combination of the compressing-arms, the cross-bar connecting their upper ends, the follower on said cross-bar, the endless screws actuating said arms, the bevel-wheels upon the inner proximate ends of said screws, the driving counter-shaft at a right angle therewith, the interposed adjustable bevel-gear, the reversing-lever controlling said gear, the lateral springs actuating said lever, and the plate having notches engaging the free end of the lever, substantially in the manner and for the purpose herein set forth.

2. The combination of the compressing-arms, the cross-bar connecting their upper ends, the follower on said cross-bar, the endless screws actuating said arms, the bevel-wheels upon the inner proximate ends of said screws, the driving counter-shaft at a right angle therewith, the interposed adjustable bevel-gear, the reversing-lever controlling said gear, the lateral springs actuating said lever, the plate having notches engaging the free end of the lever, the vertical reciprocating rod having a bent end underlying the notch in said plate which engages the end of the lever when the counter-shaft is geared to the screws to move the follower upward, and the arm from said rod intersecting the path of the cross-arm carrying the follower, all substantially in the manner and for the purpose herein set forth.

3. The combination, in a cotton or hay press, of the compressing-arms, the horizontal cross-bar connecting their upper ends, the follower carried by said cross-bar, the endless screws actuating said compressing-arms, the bevel-wheels upon the inner proximate ends of said screws, the driving counter-shaft at a right angle therewith, the interposed adjustable bevel-gear, the reversing-lever controlling said gear, the lateral springs actuating said lever, the plate having notches engaging the free end of the lever, an angular lever pivoted to swing vertically and having one arm underlying the notch in said plate that engages the end of the lever when the counter-shaft is geared to the screws to move the follower downward, a second angular lever pivoted on the bed-plate to swing horizontally, a link coupling the two, and a rod extending from the free arm of said horizontal lever outward parallel with the proximate endless screw and terminating in an arm in position to be engaged by the lower end of the compressing-arms traversing said screw, all substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELWOOD BEADLE.

Witnesses:

A. W. PORTER,
WM. H. BRUNDIGE.