(No Model.) 2 Sheets—Sheet 1.

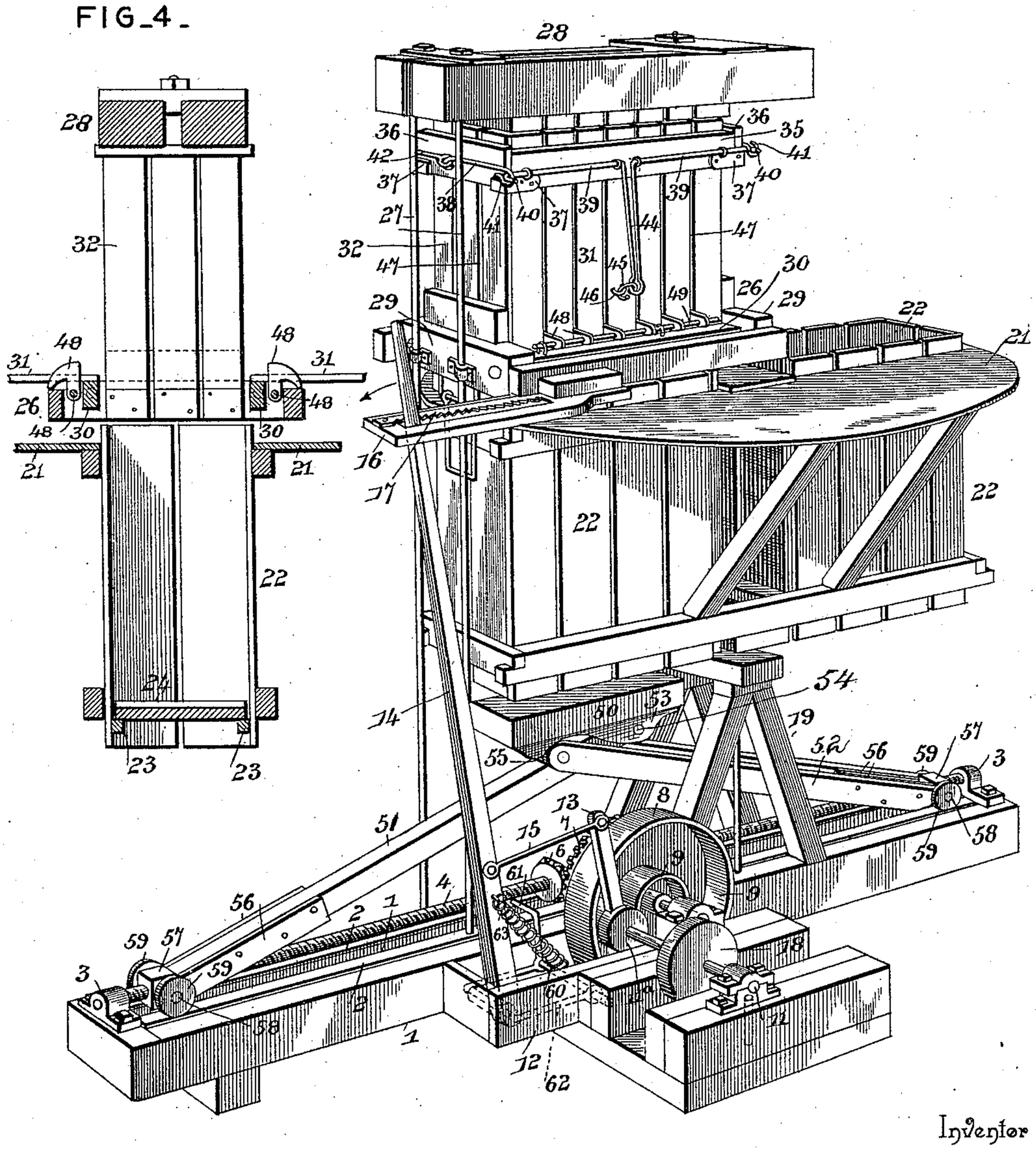
A. E. ANDERSON.

BALING PRESS.

No. 574,771. Patented Jan. 5, 1897.

FIG_1_

FIG_4_



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Witnesses
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By his Attorneys,
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(No Model.) 2 Sheets—Sheet 2.

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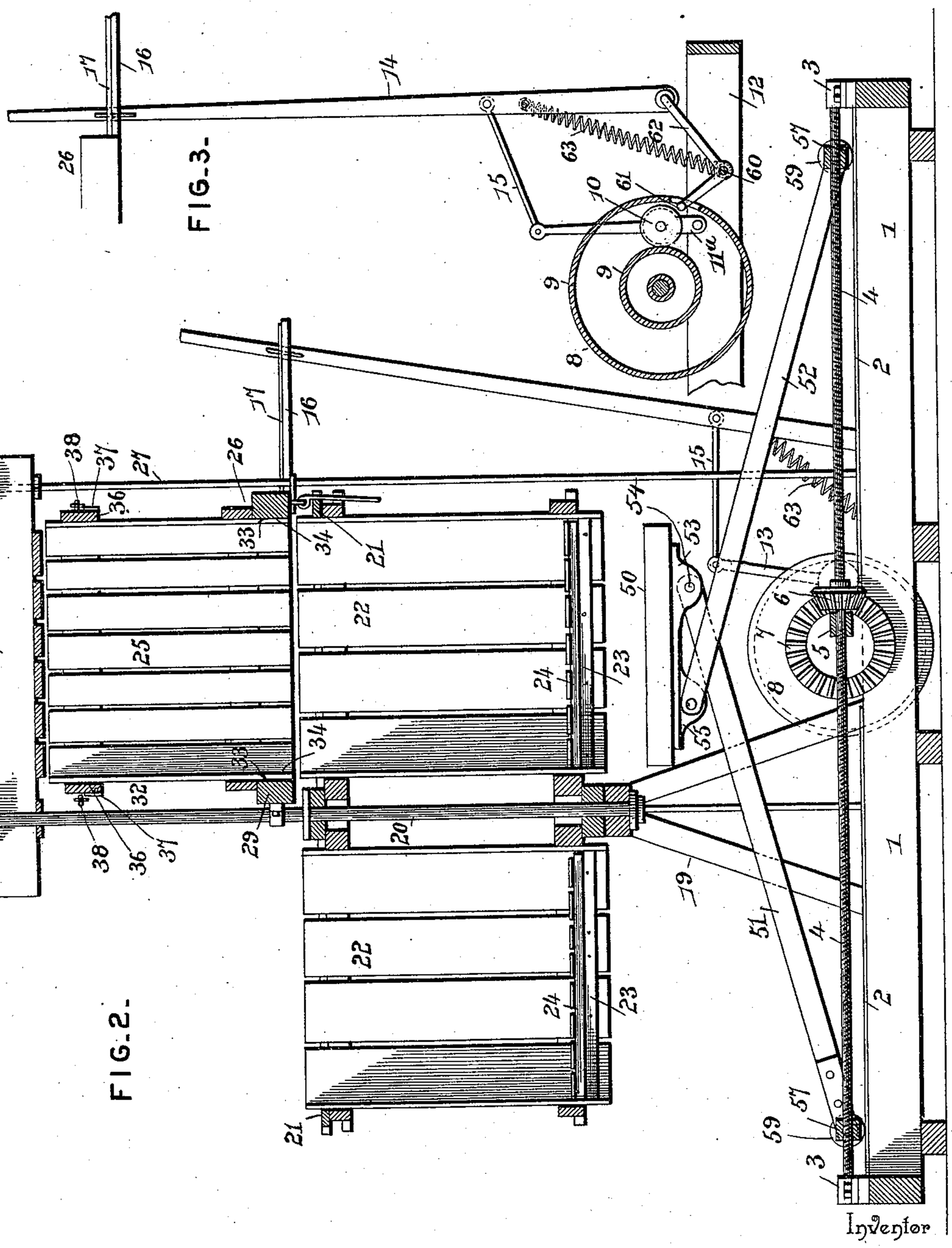

FIG. 3.

FIG. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

ALVA E. ANDERSON, OF CLARKSVILLE, TEXAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 574,771, dated January 5, 1897.

Application filed September 30, 1895. Serial No. 564,184. (No model.)

To all whom it may concern:

Be it known that I, ALVA E. ANDERSON, a citizen of the United States, residing at Clarksville, in the county of Red River and State of Texas, have invented a new and useful Baling-Press, of which the following is a specification.

My invention relates to baling-presses of the class especially adapted for baling cotton, the object in view being to provide improved operating mechanism whereby the power as applied to the plunger is increased in proportion to the resistance offered by the material being baled and whereby the forward movement of the plunger is automatically checked at the limit of its path and is returned to its initial position without effort upon the part of the operator or attendant.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a baling-press constructed in accordance with my invention. Fig. 2 is a vertical central section of the same. Fig. 3 is a partial longitudinal vertical section showing the positions occupied by the parts when the trip is operated to change the direction of rotation of the feed-screw. Fig. 4 is a vertical transverse section of the baling-chamber and the subjacent feed-chamber.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The frame of the improved press includes parallel longitudinal sills 1, upon which are arranged tracks 2, and mounted in bearings 3 at the extremities of the sills is a feed-screw 4, which is thus disposed in a plane between the tracks. An intermediate bearing 5 is arranged approximately at the center of the longitudinal sills, and contiguous thereto is a bevel-pinion 6, with which meshes a bevel-gear 7 on the spindle of the friction-wheel 8. This friction-wheel is provided with concentric inner and outer friction surfaces or flanges 9, in contact with either of which is adapted to be arranged a friction-pulley 10, carried by the drive-shaft 11. This drive-shaft is mounted at one end in a movable bearing 11^a, the movement of which is radial with relation to the friction-wheel and which is pivoted to a side beam 12, arranged parallel with the sills 1. Connected to the movable bearing is an arm 13, and the extremity of this arm is in turn connected with an operating-lever 14 by means of an interposed link 15, said lever being pivoted at its lower end and operating at its upper end in a guide 16, having ratchet-teeth 17 for engagement by an elongated detent on the lever. Said ratchet-teeth are arranged in series and the teeth in the two series are inclined in opposite directions, whereby the lever may be locked at either end or contiguous to either end of the guide from movement in the opposite direction or toward the opposite end of the guide. A driving-pulley 18 is fixed to the drive-shaft and is adapted to receive motion by any suitable means. (Not shown.)

Rising from the sills forming the base of the frame is a tower 19, supporting a vertical spindle 20, and mounted upon said spindle and resting upon the upper end of the tower is a rotary table 21, carrying a plurality of feed-chambers 22, said chambers extending vertically downward to a point contiguous to the upper end of the tower and being provided at their lower ends with interior strips 23, forming stops to limit the downward movement of follower-blocks 24, said blocks being arranged in the feed-chambers to close the lower ends thereof while the material to be baled is introduced at their upper ends.

Supported above the plane of the rotary table is the vertical baling-chamber 25, the base or frame 26 of said chamber being supported at one end by the spindle 20 and at the other end by uprights 27, rising from the sills, and the top of said chamber is supported by a cross-head 28, secured to the upper ends of said spindle and uprights. The base or frame of the baling-chamber is wider than the chamber, and mounted in bearings in the end bars 29 thereof are trunnions on the extremities of the lower cross-bars 30 of the sides 31 of the chamber. Said cross-bars are arranged in contact with the outer surfaces of the sides of the chamber, whereby when the sides are lowered to the horizontal position indicated in Fig. 4 they are arranged in a position to form suitable platforms upon which the completed bale may be supported in

the act of removing the same from the baling-chamber. The ends 32 of the baling-chamber are removable, the same being stepped at their lower ends upon the horizontal frame and interlocked at their upper ends with the sides when the latter are in their vertical or normal position.

In the construction illustrated in the drawings the lower extremities of the ends of the chamber are beveled, as shown at 33, to fit the beveled seats 34, formed by shoulders on the inner sides of the ends of the horizontal frame. The interlocking connection between the contiguous edges of the sides and ends of the baling-chamber are formed by halving the upper cross-bars 35 and 36 of said sides and ends, respectively, and extending said halved ends beyond the edges of the walls of the chamber, the extremities of the cross-bars 35 being provided with angle-plates 37, which engage the outer surfaces of the cross-bars 36 of the ends. One of the sides of the chamber, as the rear side, is provided at its extremities with arms 38, which extend forward contiguous to the outer surfaces of the ends of the chamber, and mounted upon the outer surface of the other side or the front side is a rock-shaft 39, provided with terminal hooks 40 to engage eyes 41 on the contiguous extremities of said arms 38, said arms being preferably sectional in construction and comprising the fixed sections 42 and the loose sections or loops 43. The eyes above mentioned are formed in the extremities of the loose sections or links, and when they are engaged by the hooks on the extremities of the rock-shaft the partial rotation of the rock-shaft causes the sectional arms to be strained and thus firmly secure the walls of the baling-chamber in their operative positions. The rock-shaft is provided at an intermediate point with a lever 44, having a terminal hook 45 to engage a staple 46 on the side of the chamber.

The side walls or pivotal gates of the baling-chamber are vertically slotted, as in the ordinary construction, as shown at 47, and in said slots, near their lower extremities, are arranged pivotal detents 48, mounted upon pivot-pins 49, supported by the lower cross-bars.

The follower-head 50, which operates in the feed-chambers and forces the material to be baled upward into the baling-chamber, is pivotally connected to the upper crossed extremities of the toggle-operating arms 51 and 52, the upper extremity of the arm 51 being arranged between spaced depending ears 53 on the follower-head upon a transverse pivot 54, while the arms 52, which are in duplicate, are arranged upon opposite sides of the plane of the arm 51 and correspondingly upon opposite sides of and in contact with a single depending ear 55 at the opposite end of the follower-head. The arms 52 thus pass under the ears to which the upper extremity of the arm 51 is pivoted and are pivotally connected to the opposite end of the head, whereby the head is balanced upon the extremities of the arms and is thereby adapted to yield slightly to inequalities of pressure or irregularity of the advance movement of the arms without straining or disarranging the parts. The lower extremities of the operating or toggle arms are pivotally connected by means of hinge-plates 56 to opposite sides of feed-nuts 57, threaded upon the feed-screw, said feed-nuts being provided with lateral pivots 58 for engagement by said hinge-plates and also adapted to support the rollers 59, which traverse the parallel tracks on the sills 1. The function of the rolls is to reduce the frictional contact of the feed-nuts with the tracks, and the function of the tracks is to prevent the turning of the feed-nuts with the feed-screw without applying a torsional strain to the toggle-arms.

From the above description it will be seen that the manner of mounting the follower-head upon the upper extremities of the toggle-arms enables said head to be depressed by means of the arms to a point adjacent to the plane of the feed-screw, whereby the feed-chambers may be extended to a point nearer the plane of the sills than in the ordinary construction to increase the capacity of the chambers. When the friction-pulley is in contact with the exterior or larger friction-surface of the friction-wheel, the rotation of the drive-shaft causes the feed-screw to communicate advance or inward motion to the feed-nuts, whereby the follower-head is elevated and caused to traverse the feed-chamber which is in alinement with the baling-chamber and force the material contained in the feed-chamber into the baling-chamber, where it is engaged and supported by the detents.

It is desirable, in connection with the mechanism employed for accomplishing the above operation, to provide means whereby the upward movement of the follower-head is checked when it reaches the limit of its upward movement without necessitating any effort and attention upon the part of an attendant which would be necessary in order to prevent said follower-head from passing said predetermined point, and for this purpose I employ a reversing device embodying a rock-shaft 60, provided with a trip-arm 61 in the path of one of the feed-nuts or an equivalent moving part of the baling mechanism. This trip-arm is thus engaged at the limit of the forward movement of the feed-nuts, and its movement is communicated by intermediate connections to the arm on the movable bearing of the drive-shaft to shift the friction-pulley into contact with the inner and smaller frictional surface of the friction-wheel. Said rock-shaft, which forms a member of the shifting device, is provided with a bail or arm 62, upon the end of which is mounted the lower extremity of the operating or hand lever, and a contractile spring 63 connects said rock-shaft to an intermediate point of the operat-

ing or hand lever, whereby when said lever is released at its upper end from the locking device or ratchet said spring returns it to the position in which the friction-pulley is in contact with said inner friction-surface. Thus when the operator moves the hand-lever in the direction indicated by the arrow in Fig. 1 and locks it at the desired adjustment the motion communicated by the drive-shaft to the feed-screw is such as to cause the ascent of the follower-head, and when the trip-arm is engaged by the moving part of the baling mechanism in the path of which it is arranged the rock-shaft receives a partial rotation and thereby elevates the hand-lever and disengages it from the ratchet or locking device. The release of the hand-lever allows the contractile spring which is attached thereto to move it in the direction opposite to that indicated by the said arrow and thus bring the friction-pulley into contact with the inner frictional surface, whereby the mechanism operates in the opposite direction to that before described, and thus causes the follower-head to descend until it reaches a point below the lower ends of the feed-chambers. As soon as the follower-head has been withdrawn from the feed-chamber then in alinement with the baling-chamber the rotary table is turned to bring a filled feed-chamber in alinement with the baling-chamber and the operation is reversed by the above-described adjustment of the hand-lever to cause the ascent of the follower-head.

The follower-blocks which operate in the feed-chamber are supported when the follower-head is withdrawn from the chambers by means of the shoulders or ledges arranged upon the inner surfaces of the walls of the chambers near their lower ends, as hereinbefore described, and hence said blocks form floors which support the material to be baled as it is introduced into the chambers while out of alinement with the baling-chamber. As the follower-head ascends it carries the follower-block upward until the material to be baled is engaged by the detents.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a baling-press, the combination with a baling-chamber, a follower-head, a friction-wheel operatively connected with the follower-head and having inner and outer concentric friction-surfaces, and a friction-pulley adapted to be arranged in contact with either friction-surface and rotated continuously in a uniform direction, of a movable bearing consisting of a pivoted arm 11^a carrying said pulley, a hand-lever connected to said arm, locking devices for the hand-lever, and a trip arranged in the path of a moving part of the mechanism and operatively connected with the hand-lever to move and disengage it from said locking devices, substantially as specified.

2. In a baling-press, the combination with a baling-chamber, a follower-head, a friction-wheel operatively connected with the follower-head, and a friction-pulley adapted to be arranged in contact with either friction-surface of the friction-wheel, and having a continuous rotary motion in a uniform direction, of a hand-lever operatively connected with the friction-pulley to move it from one position to the other and provided with an elongated detent, means for locking the hand-lever in one position including a rack for engagement by said detent, a contractile spring for moving the hand-lever when released in the opposite direction, a rock-shaft having an arm upon which said hand-lever is fulcrumed, the movement of said arm being parallel with and greater than the length of the detent to disengage the hand-lever from the rack, and a trip carried by the rock-shaft and arranged in the path of a moving part of the mechanism, substantially as specified.

3. In a baling-press, the combination with a baling-chamber, a follower-head, a continuously-operated friction-wheel having inner and outer friction-surfaces, operating connections between the friction-wheel and plunger, and a friction-pulley adapted to be arranged in contact with either friction-surface of the friction-wheel, of a hand-lever operatively connected with the friction-pulley to move it from one position to the other, means, consisting of a rack 17 having its teeth inclined in opposite directions from its center, for locking the hand-lever at any desired point in its movement, a contractile spring for moving the hand-lever when disengaged toward one end of the rack, a rock-shaft having an arm upon which said hand-lever is fulcrumed, the movement of said arm being adapted to impart longitudinal movement to the hand-lever to disengage it from the teeth of the rack, and a trip on the rock-shaft arranged in the path of a moving part of the mechanism, substantially as specified.

4. In a baling-press, the combination with a baling-chamber, a follower-head, toggle-arms, a feed-screw, and feed-nuts connected to the toggle-arms and engaged by the feed-screw, of a friction-wheel operatively connected with the feed-screw, a friction-pulley adapted to be arranged in contact with either friction-surface of the friction-wheel, means for communicating continuous rotary motion in a uniform direction to the friction-pulley, a hand-lever operatively connected with the friction-pulley to move it from one position to the other, means consisting of a toothed rack for locking the hand-lever at the limit of its movement in one direction, a rock-shaft having a loop or bail 62 upon which the said hand-lever is fulcrumed and adapted when

operated in one direction to elevate the hand-lever and thereby disengage it from the rack, a contractile spring connected at one end to the lever and at the other end to the axis of the rock-shaft, whereby when the hand-lever is disengaged from the rack it is drawn in the opposite direction to that in which it is moved to its locked position, and a trip secured to the rock-shaft and arranged in the path of a moving part of the mechanism, substantially as specified.

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

ALVA E. ANDERSON.

Witnesses:
R. L. McANEAR,
G. S. MOORMAN.