

No. 664,701.

Patented Dec. 25, 1900.

C. S. WILLIAMSON.

BALING PRESS.

(Application filed May 19, 1900.)

(No Model.)

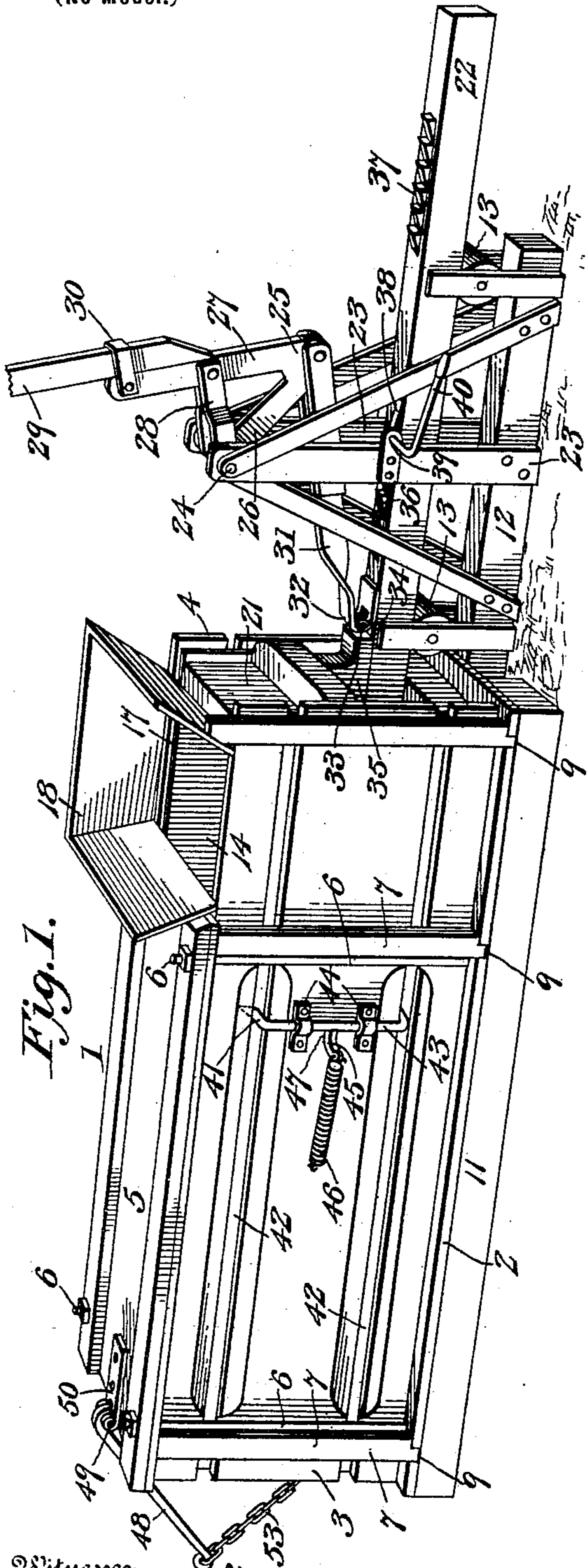


Fig. 1.

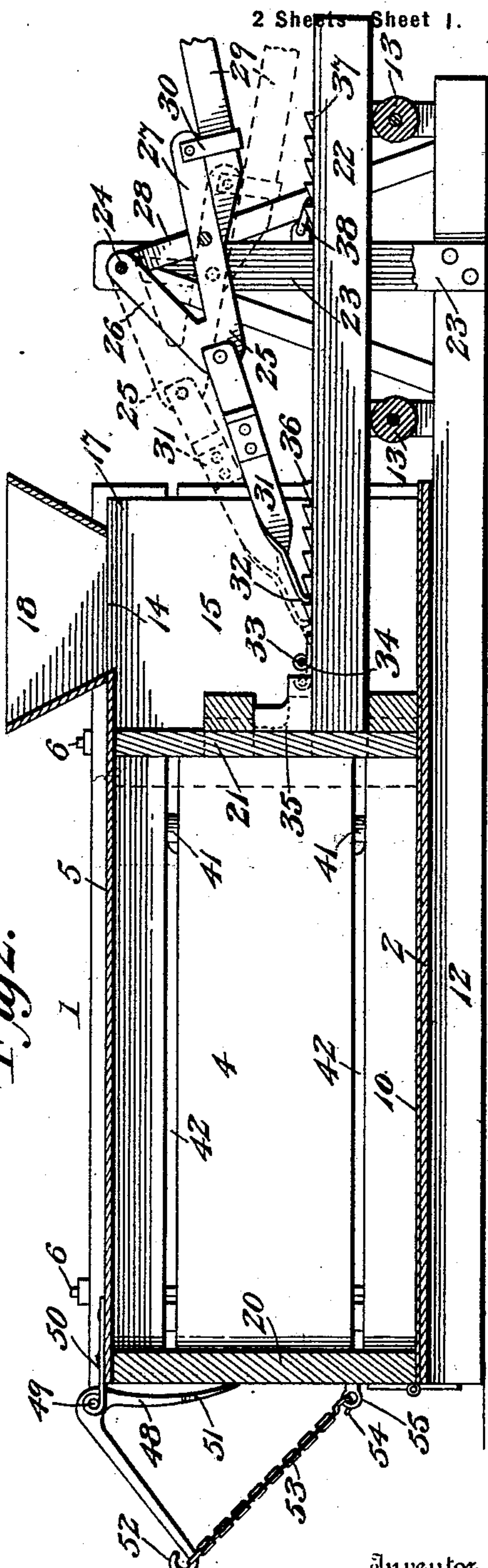


Fig. 2.

2 Sheets Sheet 1.

Witnesses  
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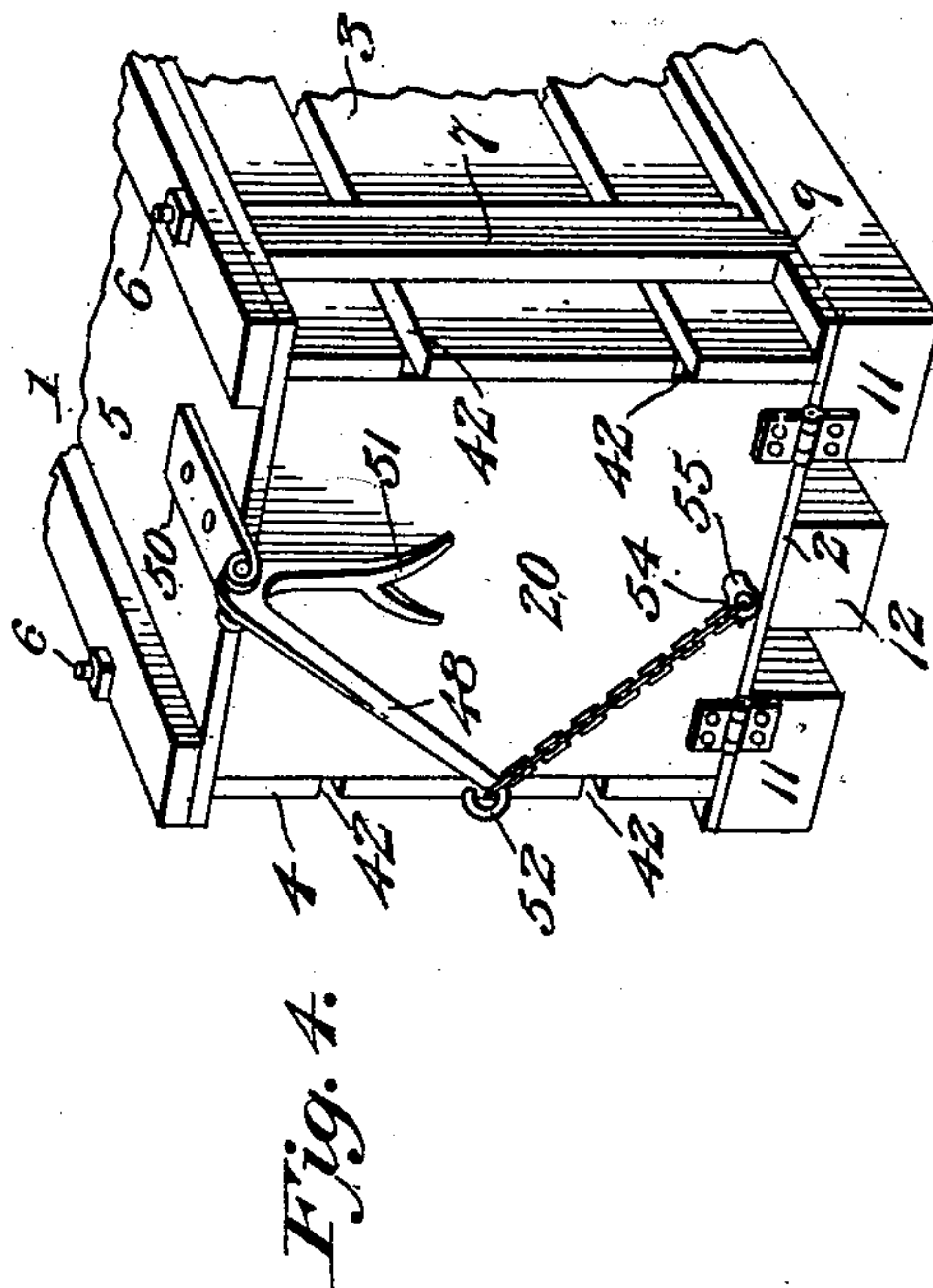
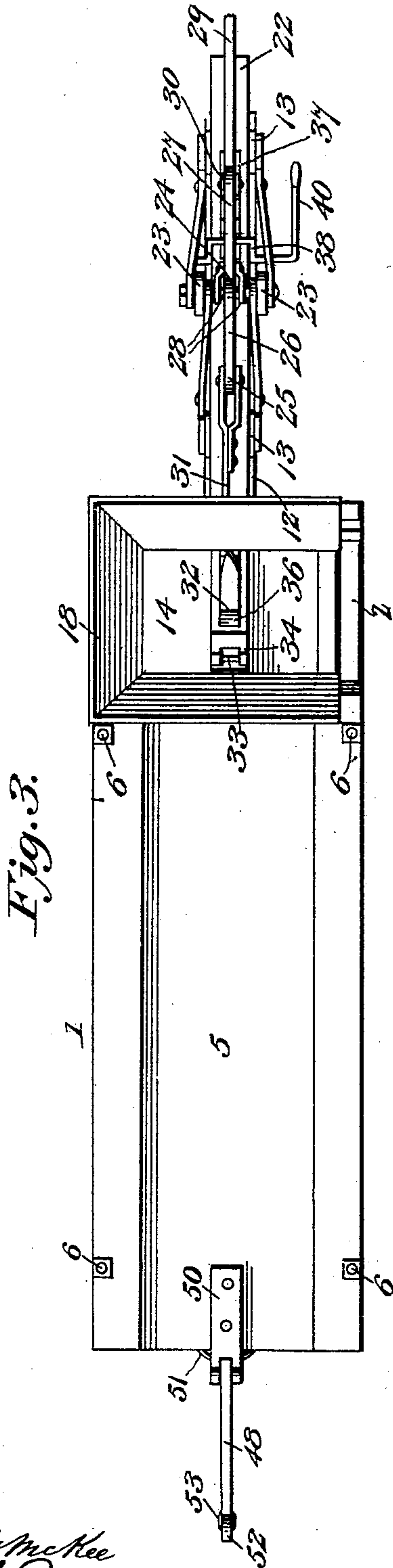
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# UNITED STATES PATENT OFFICE

CHARLES SAMUEL WILLIAMSON, OF GOLIAD, TEXAS.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 664,701, dated December 25, 1900.

Application filed May 19, 1900. Serial No. 17,308. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES SAMUEL WILLIAMSON, a citizen of the United States, residing at Goliad, in the county of Goliad and State of Texas, have invented a new and useful Baling-Press, of which the following is a specification.

My present invention relates to improvements in baling-presses of that type which are distinguished by a hand-lever designed to be manually actuated to operate the baling mechanism.

The objects of the invention are numerous; but those which are primary are to provide a sectional press which can be quickly and conveniently taken apart for storage or transportation, to provide a durable plunger-actuating device by means of which a progressively-increasing leverage may be exerted upon the plunger, to provide means comprising a part of such actuating mechanism which will permit the plunger to be given a full regular sweep for a portion of its stroke and to permit thereafter a step-by-step progression of the plunger under the impulse of the actuating mechanism when the latter is in position to exert its maximum power, to provide improved bale-checks for retaining the charge of hay during the retraction of the plunger, and to eliminate the necessity for the employment of a detachable head for the bale-chamber by providing the latter at its outer extremity with a hinged door retained by simple and effective locking mechanism.

Further and subordinate objects of the invention will hereinafter appear as the necessity for their accomplishment is developed in the succeeding description, which is directed to that structure illustrated in the accompanying drawings and succinctly defined in the appended claims.

In the drawings, Figure 1 is a perspective view of my press complete, the plunger being shown at the beginning of its stroke. Fig. 2 is a longitudinal section showing the plunger-actuating pawl in engagement with one of the teeth on the plunger-beam and showing in dotted lines the position of the plunger-actuating mechanism at the end of each step movement of the plunger. Fig. 3 is a top plan view of the subject-matter of Fig.

1. Fig. 4 is a detail perspective view of the discharge end of the bale-chamber or press-box, showing the manner of mounting and locking the door or end-gate.

Referring to the numerals of reference employed to designate corresponding parts in the several views, 1 indicates the press-box, which is composed of separable sections, which may be designated as the floor or bottom section 2, the side sections 3 and 4, and the top section 5, the top and bottom sections being bolted together by assembling-bolts 6, which pass along the outer surfaces of the side sections to retain the latter intermediate of the top and bottom sections when the latter are clamped into fixed relation by the bolt. As an additional security, the vertical slats 7 of the side sections may have reduced ends engaging recesses 9 in the floor or bottom section 2. The floor-section 2 comprises the floor 10 and a series of longitudinal sills 11, the middle sill 12 being extended beyond the front end of the press-box to constitute a support for the antifrictional roller-bearings 13 and for the plunger-actuating mechanism to be described. The top section 3 of the press-box is somewhat shorter than the latter to form a feed-opening 14 above the charge-chamber 15, which is preferably provided with a suitable lining 17 and is surmounted by a feed-hopper 18, through which the hay to be baled is deposited until a sufficient charge has been accumulated within the charge-chamber and is ready to be forced into the baling-chamber defined by that space within the press-box located between the charge-chamber and the end-gate 20, hinged at the opposite end of the press-box.

21 indicates the plunger, movable within the press-box and to which is rigidly connected the plunger-beam 22, extending rearwardly and supported upon the antifrictional roller-bearings 13 in order that the reciprocatory movement of the plunger as it is urged forwardly to compress the bale will be accompanied by the least possible friction. Upon the extended end of the sill 12, at a point intermediate of the bearings 13, are secured a pair of standards 23, which extend upon opposite sides of the plunger-beam and support at their upper ends a transverse shaft 24, located a proper distance above the beam,



and which pivotally supports one extremity of a bell-crank lever 25, the arms 26 and 27 of which have acute angular relation. The lever is suitably braced, as by arms 28, rigidly connected to the arm 27 of the lever and swinging from the shaft 24 at opposite sides of the arm 26.

29 indicates the operating-lever, which is connected to the arm 27 of the bell-crank lever 25, as by a strap-loop 30, which permits the lever to be adjusted longitudinally, but causes its lower end to impinge against the side of the arm 27 in order to retain the lever and arm in proper rigid relation when the former is urged laterally for the purpose of swinging the bell-crank lever from the shaft 24. The purpose of this swinging movement under the influence of the operating-lever is to effect the actuation of what may be termed the "plunger-actuating pawl" 31, which is pivotally connected at its rear end to the angle of the bell-crank lever, and is provided at its forward free end with a hook 32, engaging a transverse pin 33, carried by a pair of upstanding ears 34 upon the plunger-beam immediately in advance of an abutment-block 35 in proximity to the plunger. The pawl 31 is constructed in a manner to permit of its disengagement from the bar 33 and the abutment-block 35 for the purpose of causing the extremity of the hook 31 to be engaged with one of a series of teeth 36, formed upon the upper side of the plunger-beam in any suitable manner—as, for instance, by securing to the latter a toothed plate sunk into the face thereof and secured by screws.

Adjacent to the outer extremity of the plunger-beam is a second series of teeth 37, designed for engagement with a swinging dog 38, which is simply a loop pivoted, as indicated at 39, and designed to be swung into or out of engagement with the teeth 37 by a handle 40. The novel form of retainers for retaining the charge of hay preparatory to the actuation of the plunger and for retarding the expansion of the bale when the plunger is retracted for successive charges is shown in Fig. 1 of the drawings. The retainers 41 extend inwardly through the wire-slots 42, formed between the longitudinal slats of the press-box, and are carried at the opposite ends of the retainer-shafts 43, mounted in suitable bearings 44 on the outside of the box, each having a medial laterally-extending or horizontal arm 45, connected to a retainer-spring 46 for normally urging the retainers to their obstructing positions, the arms 45 being provided with offsets 47, which impinge against the sides of the press-box to limit the movements of the retainers under the impulse of the springs. Any suitable means for locking the end-gate or door in a manner to facilitate its opening when necessary to remove the bale may be employed; but I prefer to utilize a substantially V-shaped locking-lever 48, pivotally mounted at its angle upon a pintle 49, carried by a bracket 50, screwed to the top of

the press-box. The extremity of the locking-lever adjacent to the end-gate is spread or forked, as indicated at 51, and the opposite end of the locking-lever, which is sufficiently heavy to constitute a counterweight for the spread end, is formed with a terminal eye 52, connected to one end of a flexible piece or chain 53, the opposite extremity of which is designed to be detachably connected, as by an open link 54, with an eyelet 55, extending from the end-gate immediately above its hinge. By this arrangement it will appear that the pressure exerted upon the end-gate by the bale during the compression of the latter will tend to swing the spread end of the locking-lever rearwardly, which movement will be resisted, however, by the chain connected to its opposite end.

Assuming the elements of the press to be related and positioned as illustrated in Fig. 1 of the drawings and the charge-chamber to have been filled with hay, the lever 29 is drawn down to swing the bell-crank lever and urge the plunger forwardly through the interposition of the pawl 31. This movement is continued until the charge of hay has been forced from the charge-chamber into the bale-chamber, the leverage exerted during the latter portion of the movement being increased by reason of the travel of the pivotal connection between the pawl and bell-crank lever in a direction substantially transverse to the movement of the beam. The charge-chamber having been emptied, the operating-lever is swung upwardly to cause the retraction of the pawl, which by reason of the engagement of its hook 31 with the cross-bar 32 will effect the retraction of the plunger to its original position. Successive charges of hay are fed forward in a similar manner until the bale is formed and it is desired to exert great compression for the purpose of reducing the size of the bale to a minimum.

The leverage gained during the entire sweep of the operating-lever from the position shown in Fig. 1 of the drawings to the position shown in full lines in Fig. 2 is sufficient for the purpose of forming the bale; but as the leverage gained during the greater part of this stroke is not the maximum leverage of the apparatus I have provided means for utilizing such maximum leverage exclusively during the final compression of the bale. For this purpose I have arranged the pawl 31 for detachment from the bar 32 in order to effect an engagement with the teeth 35 successively to urge the plunger forward step by step under the impulse of the plunger-actuating mechanism operating only to that limited extent wherein the greatest leverage is obtained. Supposing, then, that the bale has been formed and it is desired to effect its compression, the dog 38 is dropped into engagement with one of the teeth 37 to prevent the retractile movement of the plunger under the expansion of the bale. The hook 32 of the pawl 31 is then released from the cross-beam 33 and is en-



gaged with the adjacent tooth 35. The parts are now in the position illustrated in full lines in Fig. 3, and the arm 26 and pawl 31 constitute in effect a toggle, to the knuckle of which the operating-lever is connected. The depression of the free end of the operating-lever will operate the toggle thus formed to exert great leverage upon the plunger, which will be advanced the distance of one tooth and will be retained by the engagement of the dog 38 with the next succeeding tooth 37. The lever 29 will again be elevated to the position shown in full lines in Fig. 3 to cause the engagement of the pawl 31 with the next succeeding tooth, when the preceding operation will be repeated to advance the plunger another step. This step-by-step progression of the plunger is continued until the bale has been properly compressed. The bale is then tied and the usual bale-block is inserted after the end-gate has been opened to permit the formation of the succeeding bale to force the tied bale from the bale-chamber. The hook 32 of the pawl is then reengaged by the cross-bar 33, and the formation of another bale is commenced. As soon as the new bale has progressed a sufficient distance to effect the discharge of the tied bale the end-gate is closed and the foregoing operation is repeated. It is obvious that, if desired, I may employ spur-pinions in place of the rollers 13, in which event a spur-rack would necessarily be mounted upon the under side of the beam 22.

From the foregoing it will be observed that I have invented a simple, durable, and highly-efficient baling-press embodying novel features which effectually accomplish the several objects stated; but while the present embodiment of my invention appears at this time to be preferable, I do not wish to limit myself to the structural details defined, but reserve the right to effect such changes, modifications, and variations as may come properly within the scope of the protection prayed.

What I claim is—

1. In a baling-press, the combination with a press-box, plunger and plunger-beam, of an actuating-lever, a pawl carried thereby, means for detachably connecting the pawl to the plunger to effect the propulsion and retraction thereof during the formation of the bale, and a series of teeth upon the plunger-beam designed to be engaged by the pawl to impart a step-by-step progression to the plunger for the purpose of compressing the bale after said pawl is disconnected from the plunger.

2. In a baling-press, the combination with a press-box, plunger and plunger-beam, of an actuating-lever, a pawl connected to the lever and provided with a terminal hook, means carried by the plunger for engaging the hook detachably, a series of teeth upon the plunger-beam designed to be engaged by the pawl when the latter is disconnected from the plunger, and means for preventing the backward movement of the plunger.

3. In a baling-press, the combination with a press-box, plunger and plunger-beam, of an operating-lever, a pawl pivoted thereto and provided with a terminal hook, a transverse bar and an abutment-block designed for engagement with the pawl, a series of teeth upon the plunger-beam arranged for engagement with said pawl after the latter is disconnected from the plunger, a second series of teeth mounted upon the beam near its outer end, and a swinging dog engaging said last-named teeth.

4. In a baling-press, the combination with a press-box, plunger and plunger-beam, of a bell-crank lever having its arms in acute angular relation and pivotally mounted at one end above the beam, an actuating-lever extending from the opposite end of the bell-crank lever, a pawl directly pivoted at the angle of the bell-crank lever, means for operatively connecting the pawl with the plunger-beam to permit the actuation of the latter in both directions, and means for preventing the backward movement of said beam.

5. In a baling-press, the combination with a press-box, plunger and plunger-beam, of a bell-crank lever pivotally mounted at one extremity above the beam and having its arms in acute angular relation, an operating-lever connected to the other end of the bell-crank lever, a pawl pivoted at the angle of the lever and provided with a hook at its opposite extremity, a transverse bar and an abutment-block designed for detachable engagement with the hooked end of the pawl, a longitudinal series of teeth upon the beam designed for engagement with said pawl when the latter is disconnected from the beam, a series of teeth adjacent to the outer extremity of the beam, and a swinging dog designed for engagement with the last-named series of teeth.

6. In a baling-press, the combination with a press-box composed of separable sections and having an extended sill, of roller-bearings and standards mounted upon the extended end of the sill, a plunger within the press-box, a plunger-rod extending from the plunger and movable upon the roller-bearings and between the standards, a shaft mounted between the upper ends of the standards, a bell-crank lever pivotally mounted at one extremity upon the shaft and having its arms in acute angular relation, an operating-lever adjustably connected to the opposite extremity of the bell-crank lever, a pawl connected at the angle of the bell-crank lever and provided with a hooked extremity, a transverse bar and a contiguous abutment-block designed for engagement with the hooked end of the pawl, a longitudinal series of teeth upon the plunger-beam likewise designed for engagement with the pawl when the latter is disconnected from the beam, a second series of teeth mounted upon the plunger-beam adjacent to its outer end, and a swinging dog arranged for engagement with said last-named teeth.



7. In a baling-press, the combination with a press-box provided with slots, vertically-disposed retainer-shafts mounted outside of the box, each of said shafts having a medial, 5 laterally-extending horizontal arm provided with an offset designed to impinge against the side of the box, retainers extending from the opposite ends of the shaft into the slots in the press-box, and a spring connected at its op- 10 posite ends to the box and to the outer end of the medial arm to draw the offset of the latter against the side of the press-box and thereby hold the retainers yieldingly in their retaining positions.

15 8. In a baling-press, the combination with a press-box, and a hinged end-gate, of an end-gate-locking device comprising a V-shaped lever pivoted at its angle to the top of the feed-box and having one end opposed to the

end-gate, and means for retaining the opposite end of the lever. 20

9. In a baling-press, the combination with a press-box, and a hinged end-gate, of an end-gate-locking device comprising a V-shaped lever pivoted at its angle to the top of the feed- 25 box and having one end opposed to the end-gate, a flexible piece connected to the opposite end of the lever, and means for detachably connecting the flexible piece to the end-gate: 30

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

CHARLES SAMUEL WILLIAMSON.

Witnesses:

M. W. FOWLER,  
T. L. SHAPER.