(No Model.) 2 Sheets—Sheet 1.

W. J. PEARCE.

BALING PRESS.

No. 574,817. Patented Jan. 5, 1897.

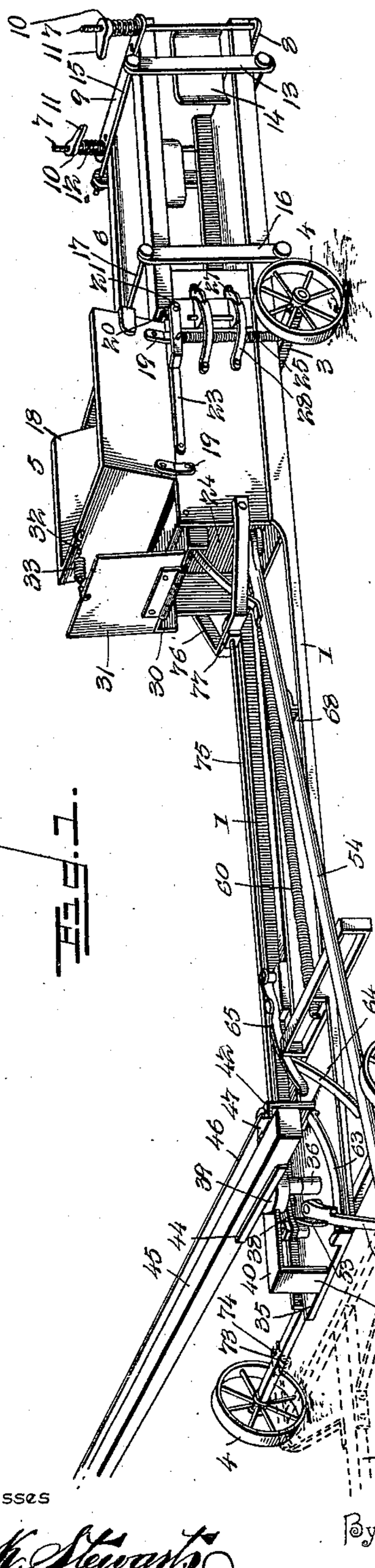

FIG. 1.

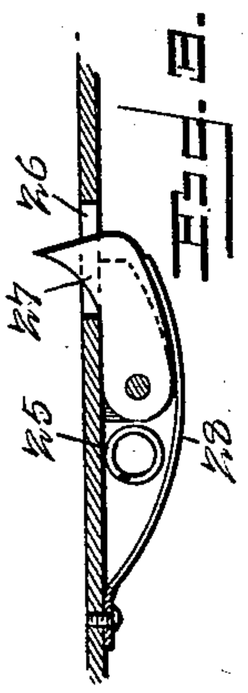

FIG. 2.

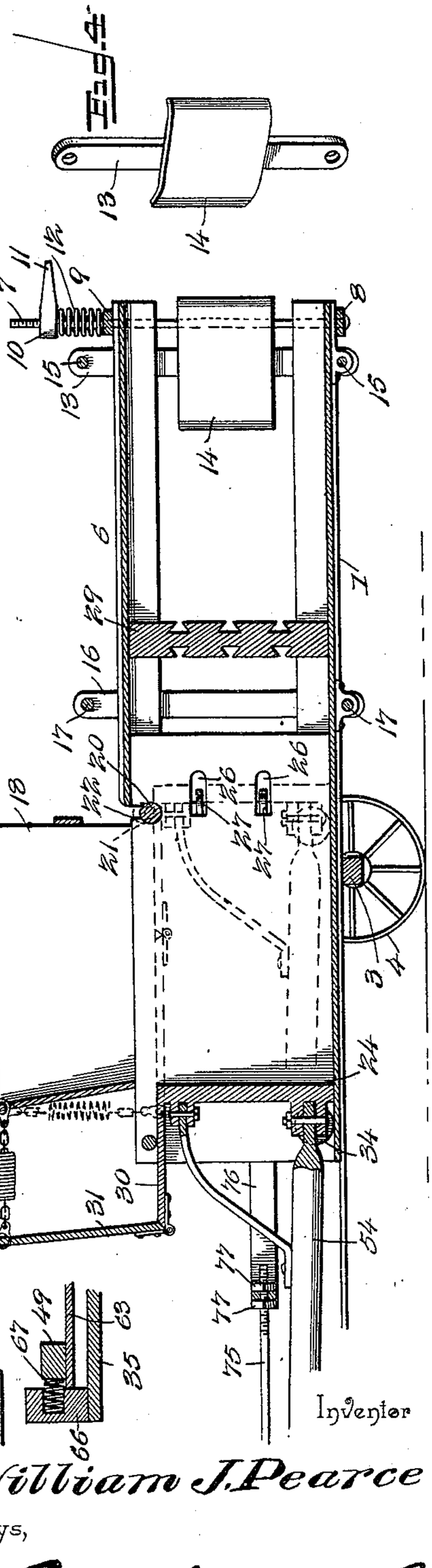

FIG. 3.

FIG. 4.

Witnesses

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Fig. 5.

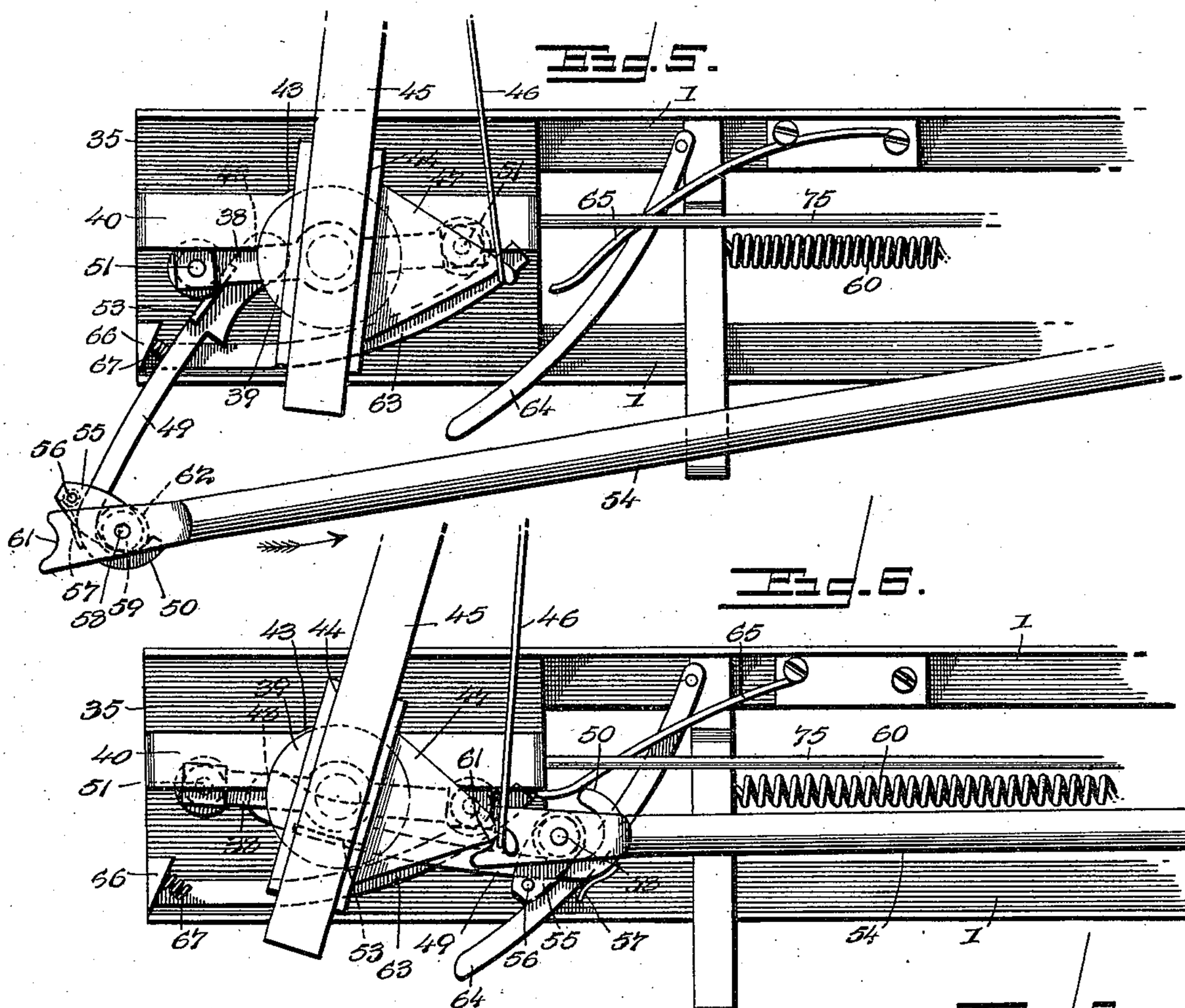

Fig. 6.

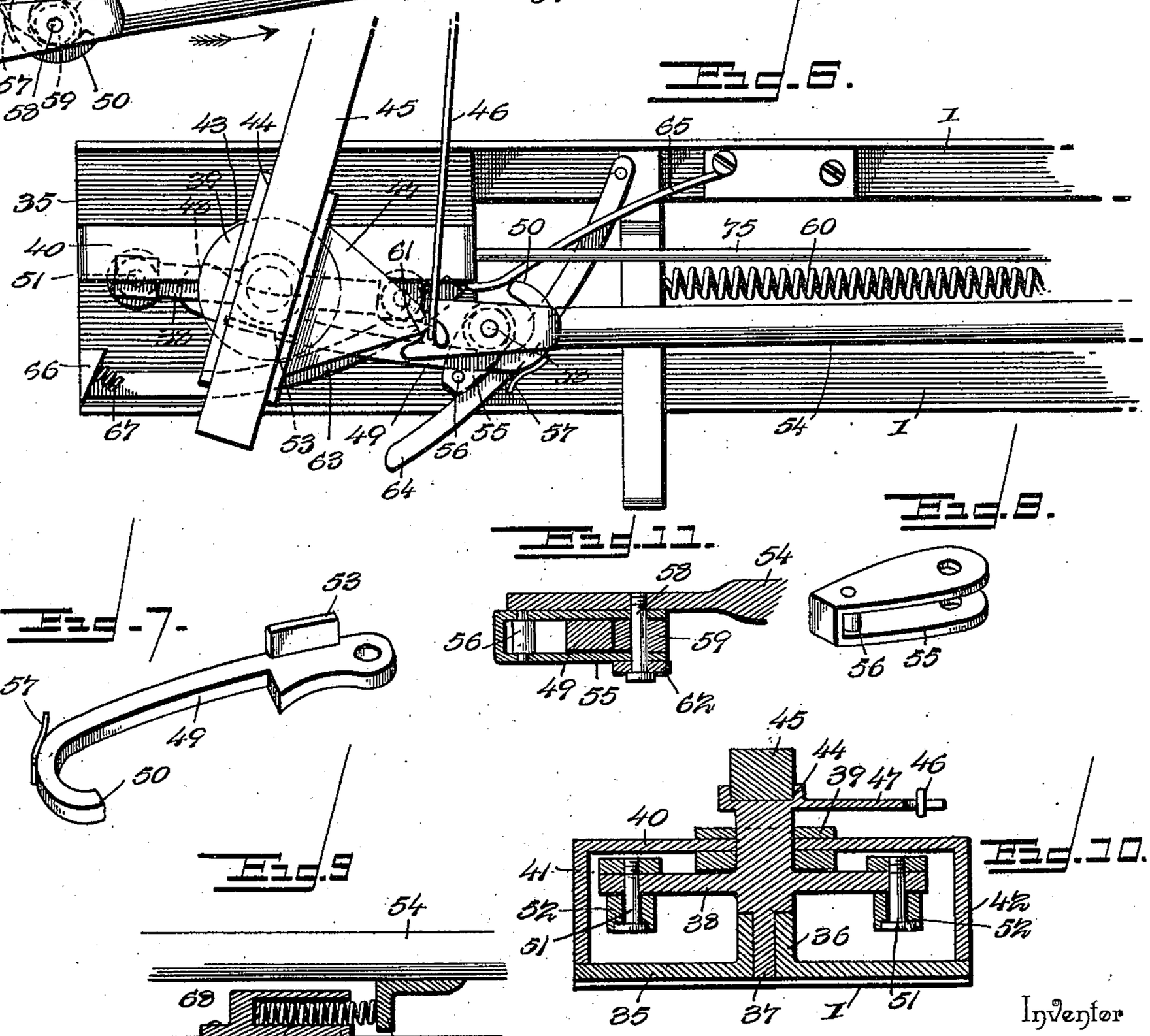

Fig. 7.

Fig. 11.

Fig. 8.

Fig. 9.

Fig. 10.

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UNITED STATES PATENT OFFICE.

WILLIAM J. PEARCE, OF PILOT POINT, TEXAS, ASSIGNOR TO THE W. J. PEARCE HAY PRESS COMPANY, OF DALLAS, TEXAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 574,817, dated January 5, 1897.

Application filed April 23, 1896. Serial No. 588,752. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. PEARCE, a citizen of the United States, residing at Pilot Point, in the county of Denton 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 that class wherein motion is communicated to the plunger from a sweep operated by horse or similar power, and the object in view is to improve the construction of the baling-chamber and attachments, and, furthermore, to provide a simple and efficient construction of plunger-operating mechanism.

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 longitudinal section of the baling-chamber, showing in dotted lines the position of the plunger at the limit of its advance movement. Fig. 3 is a partial horizontal section of the baling-chamber to show the construction and manner of mounting the detents. Fig. 4 is a detail view of one of the side binders detached. Fig. 5 is a plan view of the plunger-operating mechanism, showing the parts in the positions which they occupy at the beginning of a stroke. Fig. 6 is a similar view showing the parts in the positions which they occupy at the limit of the advance movement of the plunger and just before the plunger-stem is tripped. Fig. 7 is a detail view of the swinging arm detached. Fig. 8 is a similar view of the swinging yoke which travels upon the swinging arm. Fig. 9 is a detail sectional view to show the cushion whereby the rearward movement of the plunger-stem is checked. Fig. 10 is a vertical section of the plunger-operating mechanism. Fig. 11 is a detail sectional view of the yoke and contiguous parts. Fig. 12 is a detail sectional view of the cushion of the swinging arm.

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

1 designates parallel side sills, which are preferably flanged, as shown in the drawings, and may consist of cross-sectionally angular beams mounted upon front and rear axles 2 and 3, having supporting-wheels 4. The baling-chamber is arranged upon the rear portions of the sills, and consists of the front portion or feed-chamber 5 and the rear portion or guide 6, said guide being open-sided and having flanged top and bottom plates between which the bale is compressed. Inasmuch as the top and bottom plates are independent of each other at their rear ends, it will be seen that by adjusting the same toward and from each other the vertical pressure upon a bale may be varied, and the means which I preferably employ for accomplishing this adjustment consist of tension-rods 7, engaged at their lower ends in the projecting extremities and a bottom cross-bar 8 and extending at their upper threaded ends through the extremities of a top cross-bar 9 and engaged above the plane of said top cross-bar by adjusting-nuts 10, preferably provided with handles 11. Coiled springs 12 are interposed between said adjusting-nuts and the upper surface of the top cross-bar to cause a yielding pressure upon the top guide-plate, whereby under excessive strain due to resistance of the bale the guide-plates are adapted to yield sufficiently to avoid injury to the mechanism.

In connection with the rear portion of the baling-chamber I employ side binders 13, provided at intermediate points between the planes of the top and bottom guide-plates with side pressure-plates 14, which are curved or deflected outwardly at their front ends and are held in place by transverse tension-bolts 15, engaging the upper and lower extremities of the bars forming the body portions of said side binders. An additional pair of side binders 16 is preferably arranged at the front end of the guide, the same being constructed as above described in connection with the main side binders and being connected at their upper and lower extremities by similar tension-bolts 17.

Communicating with the open top of the feed-chamber is a removable hopper 18, secured in place by means of fastening straps

or clips 19, and arranged at the rear end of the hopper and projecting below the plane of the top of the baling-chamber is a tucker-roll 20. The reduced extremities or trunnions 21 of this tucker-roll are fitted in vertical guide-slots 22 in the sides of the feed-chamber and are mounted in bearings at the free extremities of pivotal supporting-arms 23, fulcrumed upon the sides of the feed-chamber. The tucker-roll is held in its operative position and is drawn down after the retraction of the plunger 24 by means of actuating-springs 25, which in the drawings are shown attached at their lower extremities to the rear axle.

Mounted upon the sides of the feed-chamber and projecting at their extremities through slots 26 therein are detents 27, provided with actuating plate-springs 28. The usual head-block or separating-block 29 is employed in connection with the plunger to separate the bales.

The plunger is provided with a sectional top or guard plate consisting of the fixed member 30 and the pivotal or hinged member 31, the free front edge of the latter being flexibly connected, as by a chain 32, with the front wall of the hopper, whereby as the plunger is retracted the front edge of said hinged leaf or member is elevated to occupy the position shown in Fig. 1 and in full lines in Fig. 2, whereas when the plunger is advanced said movable member folds down into a plane with the fixed member and combines with the latter to close the throat of the hopper to prevent the material in the hopper from descending in front of the plunger. In the construction illustrated a spring 33 is introduced in said flexible connection or chain at an intermediate point, the same being adapted to yield as the plunger is advanced and hold the upper side of the hinged leaf or member of the guard-plate in contact with the lower edge of the hopper. The plunger is provided with bearing-rollers 34, which travel upon the floor of the feed chamber.

Connecting the front ends of the sills is a base-plate 35 for the operating mechanism, and rising therefrom is a socket 36, in which is mounted a spindle on the hub 37 of a sweep-head 38. An additional bearing 39 for the hub of the sweep-head above the plane of said head is supported by a horizontal bar 40, attached to the upper extremities of front and rear standards 41 and 42, the intermediate portion of the bar 40 being enlarged concentrically with the axis of the sweep-head to form a bearing-plate 43. A seat 44 is formed at the upper end of the sweep-head hub, in which is fitted the inner extremity of the sweep or lever 45, a brace-rod 46 extending from the outer extremity of said sweep and a lateral arm 47 on the seat.

The arbor upon which the sweep-head is mounted is arranged slightly to one side of a line extending through the longitudinal center of the baling-chamber, and arranged upon the base-plate in front and slightly to one side of said arbor is a journal 48, upon which is mounted a swinging arm 49, provided at its free outer end with a rearwardly-turned hook 50. The sweep-head is provided with depending studs 51, preferably fitted with antifriction-rolls 52, which coöperate with a bearing-ear 53 near the inner extremity of the swinging arm to communicate motion from the sweep head to the arm, and the plunger-stem 54, which is pivotally connected at its rear bifurcated end to the plunger, has a sliding connection with said swinging arm, whereby as the swinging arm is moved in the direction of the arrow in Fig. 5 to advance the plunger, or move the latter in its operative direction, the front extremity of the plunger-stem moves inwardly or toward the axis of the sweep-head to shorten the leverage.

The means which I have shown in the drawings for connecting the front end of the plunger-stem with the swinging arm include a pivotal yoke or stirrup 55, mounted upon the stem and embracing the swinging arm, said stirrup being provided at its free end with an antifriction-roll 56 to bear against the front or outer side of the swinging arm and being checked in its outward movement toward the extremity of said arm by a stop 57. The vertical bolt or spindle 58, upon which the stirrup is swiveled, also forms the center for a bearing-roll 59, which is arranged between the arms of the stirrup and is adapted to traverse the inner or rear side of the swinging arm, the outward movement thereof being checked by the rearwardly-turned hook at the extremity of said arm. When the sweep is turned to communicate motion to the swinging arm in the direction indicated by said arrow in Fig. 5, the arm, by its pressure against the bearing-roll 59, advances or moves the plunger in its operative direction until said arm inclines rearwardly beyond a transverse line, when the resistance produced by the material in the baling-chamber and the rebounding spring 60 causes the front end of the plunger-stem to move inwardly toward the axis of the swinging arm, thus shortening the leverage and increasing the power of the sweep. The continued movement of the sweep brings one of the depending studs of the sweep-head into engagement with an open-sided notch 61 in the front end of the stem, whereby the subsequent motion is communicated to the plunger directly by the sweep-head.

Mounted coaxially with the bearing-roller 59 and below the plane of the lower end of the stirrup is a guide-roller 62, which is adapted, when the front end of the plunger-stem reaches said position contiguous to the axis of the swinging arm, to come in contact with a curved horizontal guide 63, which is arranged eccentrically with relation to the swinging arm and sweep-head and serves to direct the movement of the front end of the plunger-stem until the notch in the latter is

engaged by the depending stud on the sweep-head. This guide 63 I will term the "inner guide," in contradistinction to a similar outer guide 64, between which and the inner guide the guide-roller 62 passes after the engagement of the sweep-head with the notch in the front end of the stem, and said outer guide not only serves to direct the movement of the front end of the plunger-stem during the remainder of the advance movement of the plunger, but prevents lateral deflection or displacement thereof when released and returning under the action of the rebounding spring. The tripping of the plunger-stem from the sweep-head is accomplished by means of a stop, which, in the construction illustrated, consists of the rear standard 42, and in connection with this stop I preferably employ a releasing-spring 65, arranged at its free end in the path of the free end of the swinging arm, and adapted, when the plunger-stem is disengaged from the sweep-head, to impart a positive outward movement to the swinging arm, whereby the plunger-stem is carried beyond the dead-center, or a line connecting its point of connection with the plunger and the axis of the swinging arm. In other words, the first movement of retraction is imparted to the swinging arm by means of the releasing-spring, after which the rebounding spring throws the parts from the tripping position illustrated in Fig. 6 to the retracted position shown in Fig. 5. The stop 66 is arranged in the path of the return movement of the swinging arm, and is provided with a cushion consisting, in the construction illustrated, of a spring 67, seated in the stop and illustrated in Fig. 9, and the plunger and stem are relieved of jar at the limit of their return movement by means of a fixed stop 68, arranged on one of the sills in the path of the movable stop 69 on the stem, said fixed stop being provided with a similar cushion-spring 70. A transverse horizontal supporting-guide 71 is preferably provided at an intermediate point, upon which the plunger-stem rests to relieve the swinging arm of the weight thereof.

In Fig. 1 I have illustrated in dotted lines the position of a pole or tongue 72, applied to the front pivotal axle, and adapted, when the press is in operation, to be removed, for which purpose the clips 73 are removably secured to the axle by means of bolts 74. I also preferably arrange a tie-rod 75 between the rear standard 42 of the operating mechanism and a yoke 76, which is bolted at its extremities to the sides of the feed-chamber, twin nuts 77 being threaded upon said rod upon opposite sides of the yoke at its point of connection therewith, whereby the tension-rod may be adjusted.

The object of using the tractile spring 33 in the flexible connection between the movable member of the guard-plate and the hopper or other fixed part of the press is that when the guard is in its operative position, as shown by the dotted lines in Fig. 2, with said spring under tension or extended, the pivotal member of the guard is held firmly in contact with the guide, by which said pivotal section is depressed during the forward movement of the plunger. I have found in practice that this arrangement avoids rattling due to looseness and at the same time avoids straining of the parts in operation. The spring exerts a constant strain upon the pivotal section, and hence avoids the jamming of the parts due to the backward movement of the plunger. It is obvious that by reason of the constant upward strain applied to the pivotal section of the guard its rear extremity will begin to rise as soon as the rearward movement of the plunger commences, and hence the movement of the rear edge or extremity of the pivotal section will be continuous and uniform throughout the movement of the plunger.

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 having a feed-opening, of a plunger having a sectional guard-plate, one section of the guard-plate being fixed to the plunger and the other being hinged to the fixed member, a flexible connection 32 between the free end of the movable member of the guard-plate and a fixed part of the baling-chamber, said flexible connection including a contractile spring 33, and means for operating the plunger, substantially as specified.

2. In a baling-chamber, the combination with a rebounding plunger, of a swinging arm, a sliding connection between the plunger-stem and the swinging arm including a stirrup pivotally mounted upon the stem and embracing the swinging arm, means for limiting the outward movement of the stirrup upon the swinging arm, and a sweep-head having studs to engage a bearing-ear on the swinging arm and adapted at an intermediate point of each stroke to engage an open-sided notch in the front end of the plunger-stem, substantially as specified.

3. In a baling-press, the combination with a rebounding plunger, of a swinging arm provided with a terminal rearwardly-extending hook, a bearing-roller on the plunger-stem traversing the inner side of said swinging arm, a swinging stirrup pivoted upon the stem concentrically with said bearing-roller and embracing the swinging arm with an antifriction-roll to bear against the outer side thereof, and a rotary sweep-head provided with studs to engage a bearing-ear on the swinging arm and also adapted to engage the front end of the plunger-stem, substantially as specified.

4. In a baling-press, the combination with

a rebounding plunger, of a swinging arm, a sliding connection between the plunger-stem and the swinging arm, said connection including a bearing-roller traversing the inner side of the swinging arm, a curved stationary guide arranged contiguous to and eccentrically with the pivotal point of the swinging arm, a guide-roller mounted on the plunger-stem to traverse said guide, and a rotary sweep-head provided with studs to engage a bearing-ear on the swinging arm and also adapted to engage a seat in the end of the plunger-stem, substantially as specified.

5. In a baling-press, the combination with a rebounding plunger, of a swinging arm, a sliding connection between the free end of the plunger-stem and the swinging arm, inner and outer guides the former of which is eccentric, a guide-roller mounted upon the plunger-stem and adapted to operate between and in contact with the contiguous faces of said guides whereby it is moved outwardly as it advances, and a rotary sweep-head provided with studs to engage a bearing-ear on the swinging arm and also adapted to engage a seat in the contiguous end of the plunger-stem, substantially as specified.

6. In a baling-press, the combination with a rebounding plunger, of a swinging arm, sliding connections between the free end of the plunger-stem and the swinging arm, inner and outer guides, a guide-roller mounted upon the plunger-stem and adapted to operate between and in contact with the contiguous faces of the guides, a releasing-spring arranged in the path of the swinging arm and adapted to be engaged thereby as the plunger reaches the limit of its advance movement, the yielding movement of the releasing-spring being limited by a fixed stop, and a rotary sweep-head provided with studs to engage a bearing-ear on the swinging arm and also adapted to engage a seat in the contiguous extremity of the plunger-stem, substantially as specified.

7. In a baling-press, the combination with a rebounding plunger, of a swinging arm provided with a hooked extremity, a fixed stop arranged in the path of the swinging arm and provided with a cushion-spring, a sliding connection between the plunger-stem and the swinging arm, including a swinging stirrup having rollers to bear against opposite sides of the swinging arm, a stop 57 on the swinging arm to limit the outward movement of the free end of the stirrup, a releasing-spring arranged in the path of the swinging arm, and a rotary sweep-head provided with studs for engaging a bearing-ear on the swinging arm and also adapted to engage a seat in the contiguous extremity of the plunger-stem, substantially as specified.

8. In a baling-press, the combination with a rebounding plunger, of a swinging arm provided with a hooked extremity, a fixed stop arranged in the path of the swinging arm and provided with a cushion-spring, a sliding connection between the plunger-stem and the swinging arm, a releasing-spring arranged in the path of the swinging arm, a rotary sweep-head provided with studs for engaging a bearing-ear on the swinging arm and also adapted to engage a seat in the contiguous extremity of the plunger-stem, and a cushioned fixed stop 68 arranged in the path of a moving stop 69 on the plunger-stem, 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.

WILLIAM J. PEARCE.

Witnesses:
W. B. GREENLAW,
E. L. SNODGRASS.