

No. 865,186.

PATENTED SEPT. 3, 1907.

J. KING.  
BALING PRESS.

APPLICATION FILED APR. 17, 1907.

3 SHEETS—SHEET 1.

Fig. 11.

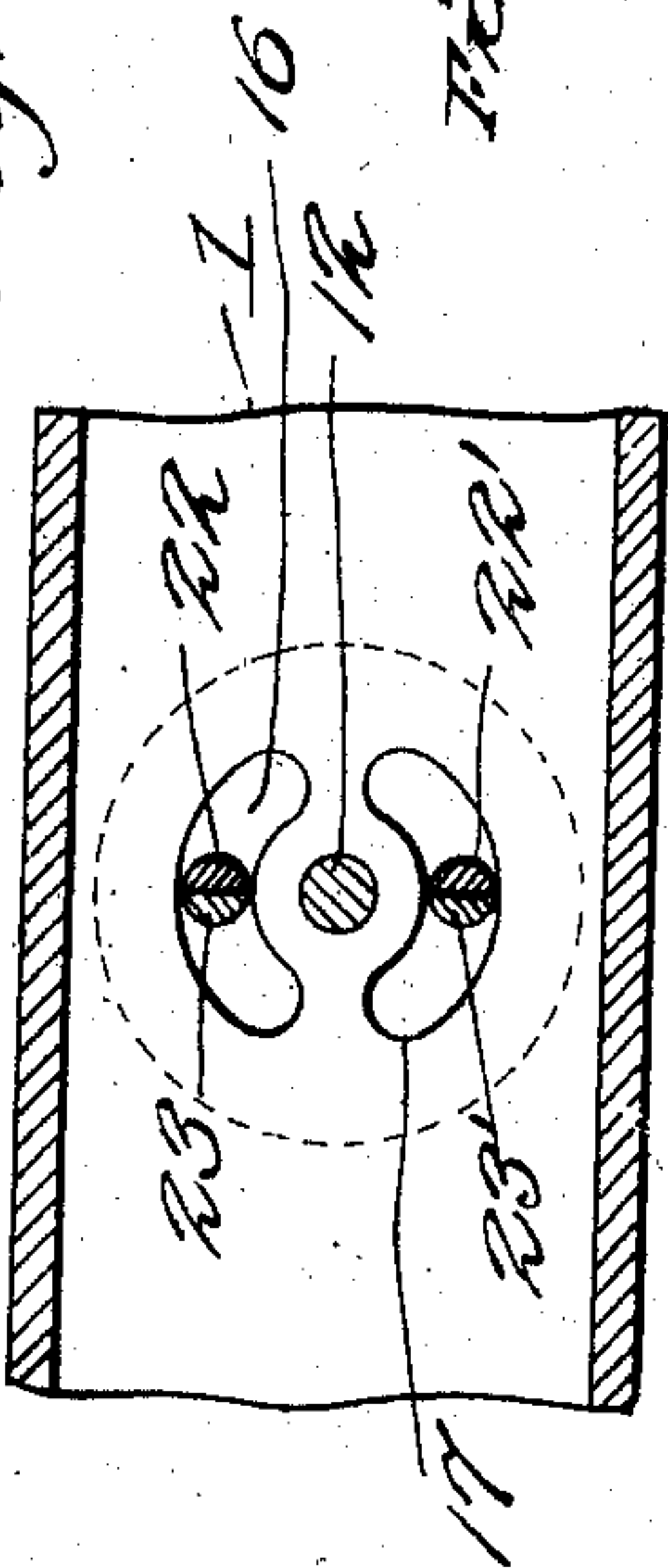


Fig. 1.

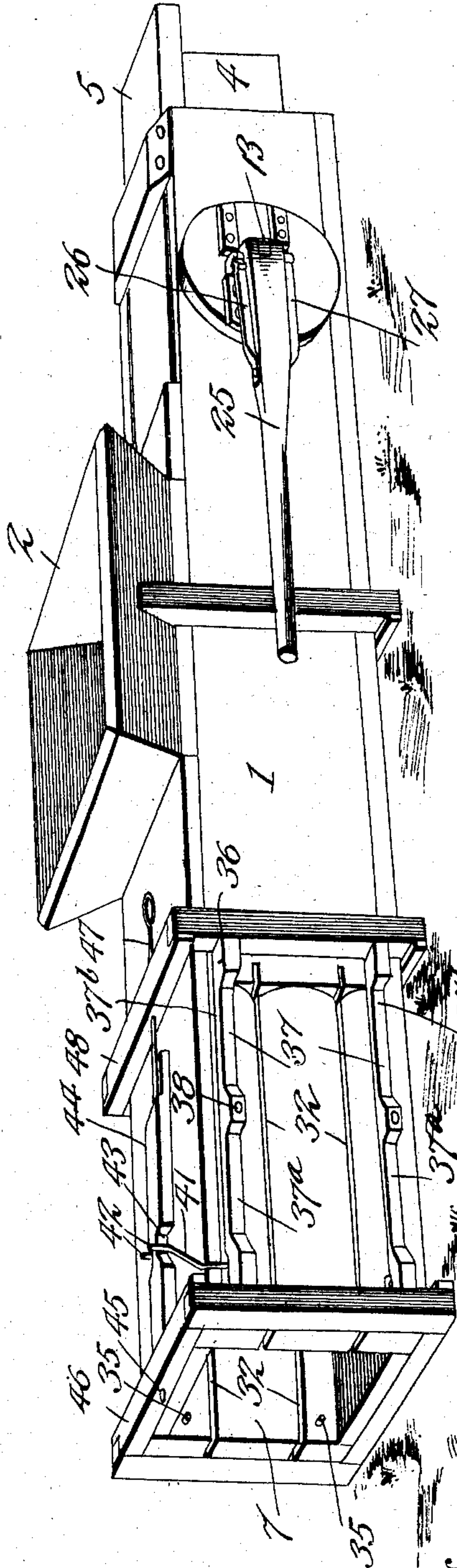
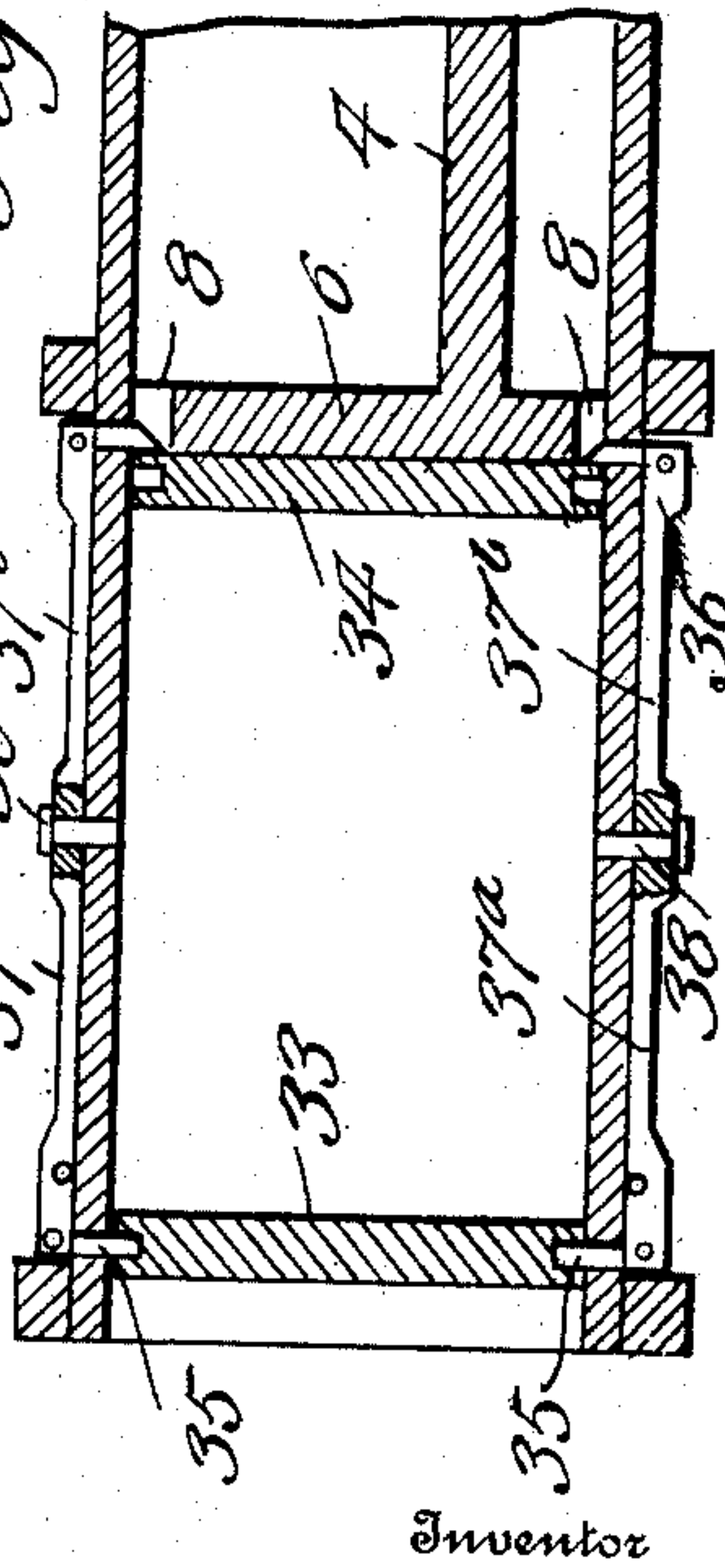


Fig. 6.



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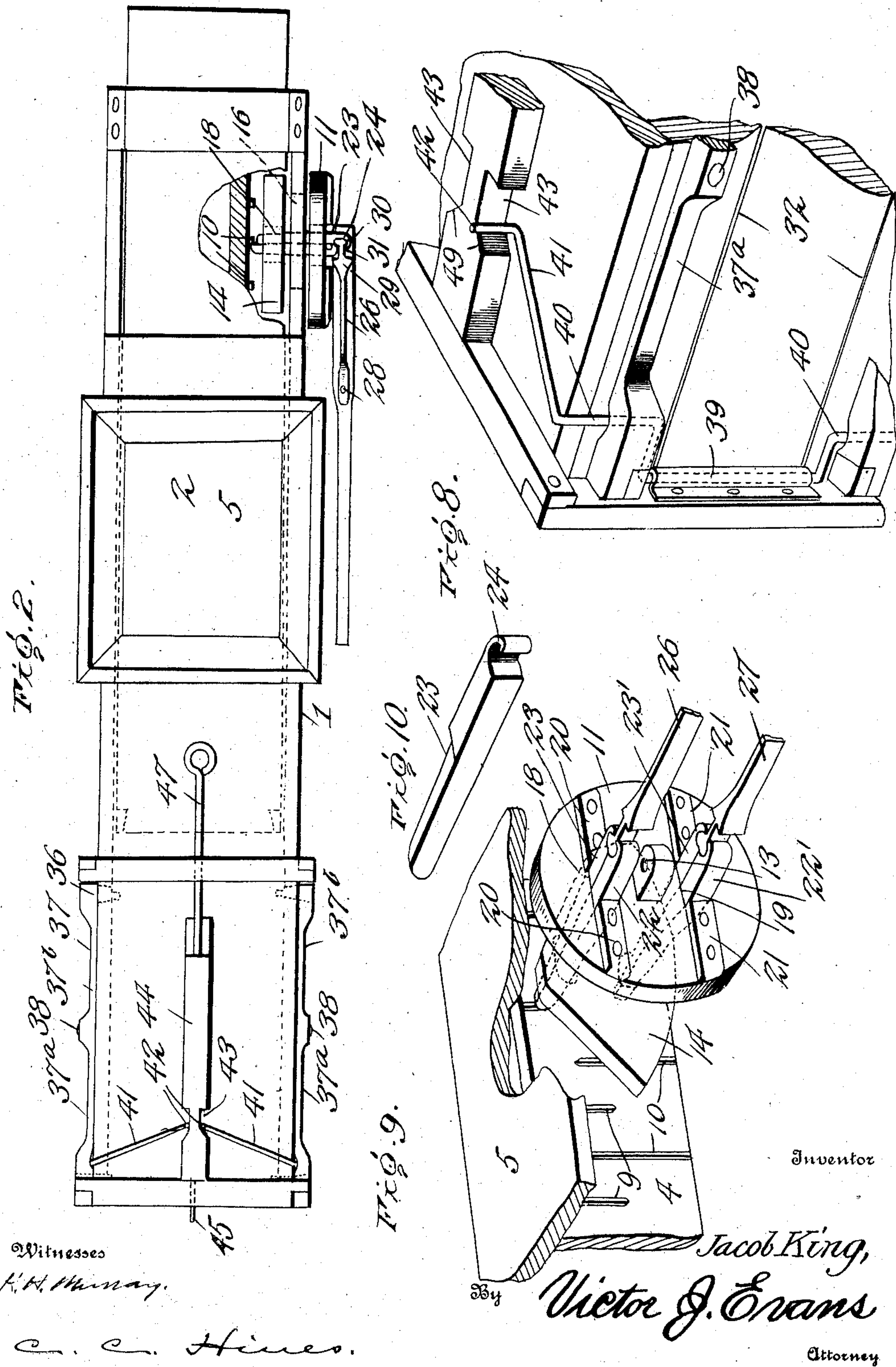
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3 SHEETS—SHEET 2.





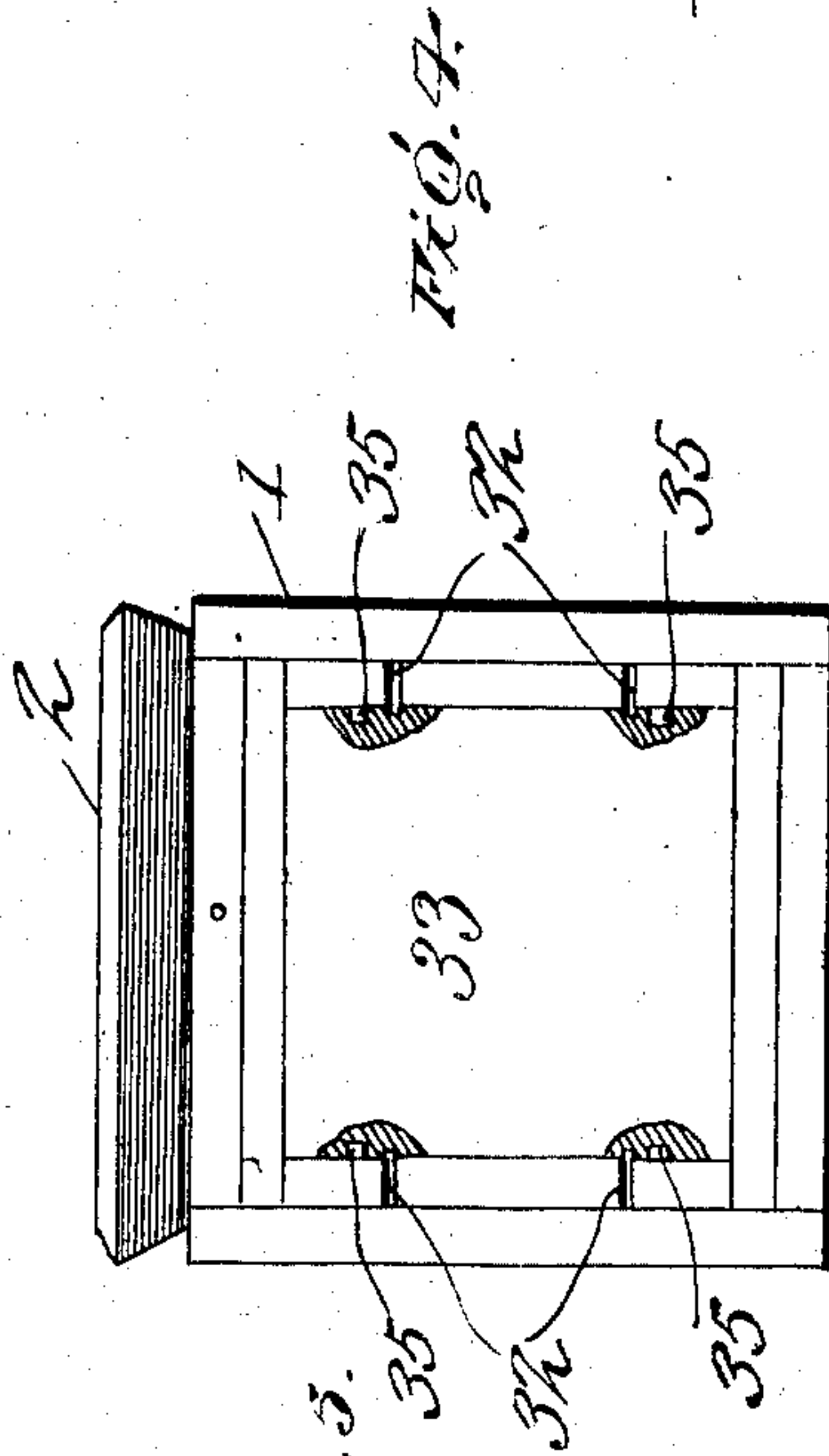
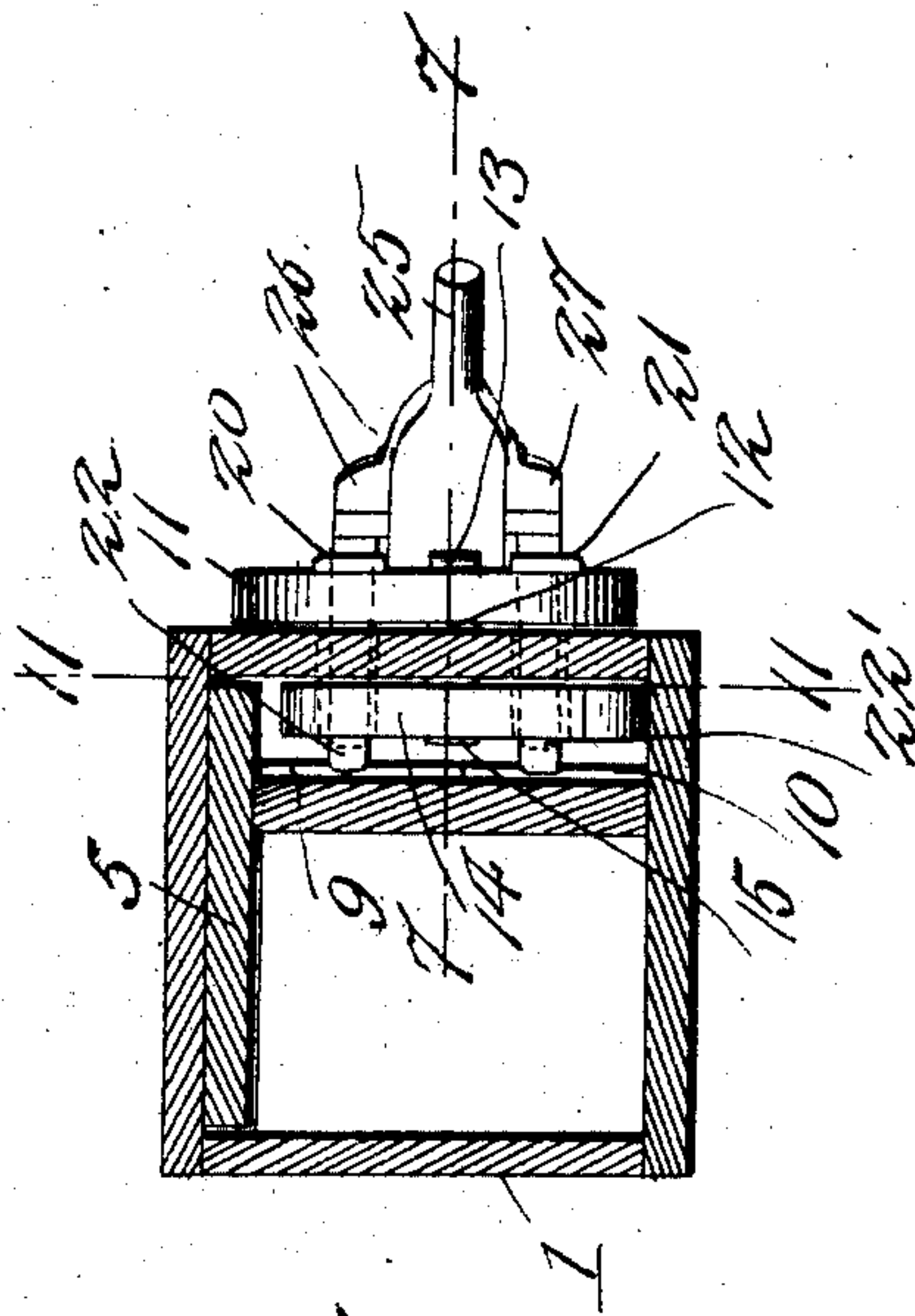
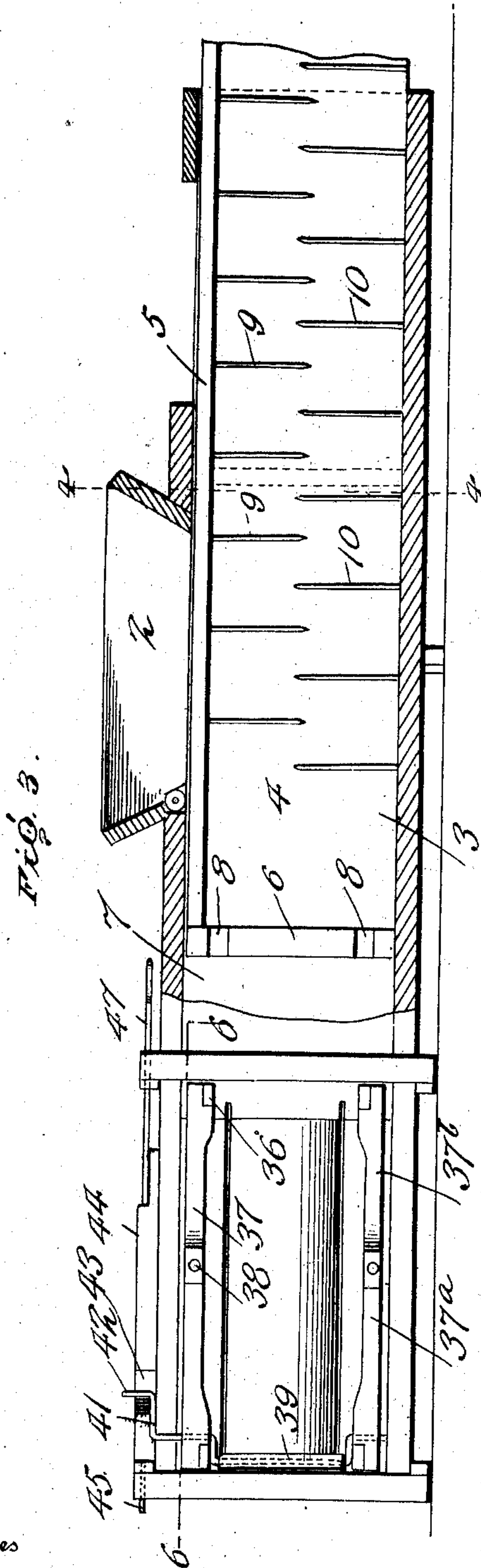
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

JACOB KING, OF CORINTH, MISSISSIPPI.

## BALING-PRESS.

No. 865,186.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed April 17, 1907. Serial No. 368,709.

*To all whom it may concern:*

Be it known that I, JACOB KING, a citizen of the United States of America, residing at Corinth, in the county of Alcorn and State of Mississippi, have invented new and useful Improvements in Baling-Presses, of which the following is a specification.

This invention relates to improvements in presses for baling cotton, hay, straw and similar materials, the object of the invention being to provide a simple, compact, strong, durable and reliable apparatus of this character wherein a novel construction and arrangement of retaining dogs is employed to hold the division boards or follower blocks in operative position in the bale-forming operations, and wherein an improved construction of plunger-operating mechanism is also employed, said mechanism being reversible for moving the plunger by a step-by-step motion in either direction, whereby increased convenience is afforded in the use of the apparatus.

With the above and other objects in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a perspective view of a baling apparatus embodying my invention. Fig. 2 is a top plan view thereof. Fig. 3 is a view partially in side elevation and partially in vertical longitudinal section. Fig. 4 is a vertical cross section on line 4—4 of Fig. 3. Fig. 5 is a front end elevation. Fig. 6 is a horizontal section on line 6—6 of Fig. 3. Fig. 7 is a similar section on line 7—7 of Fig. 4. Fig. 8 is a perspective view illustrating in part the construction of the mechanism for controlling the outer set of retaining dogs. Fig. 9 is a perspective view of the plunger feed mechanism and a portion of the plunger. Fig. 10 is a perspective view of one of the feed pawls. Fig. 11 is a section on line 11—11 of Fig. 4.

Referring to the drawings, the numeral 1 designates a baling box or chamber, which may be of the ordinary or any approved form of construction and either secured to a stationary foundation or mounted upon a wheeled frame for ready transportation from place to place. The top of the box is provided at some suitable point in rear of the pressure chamber therein with an inlet or hopper 2 for the introduction of the cotton or other material to be baled. Mounted for sliding movement in the box is a plunger 3, which may also be of any preferred form and construction, but preferably comprises a T-shaped body providing a vertical plate or web 4 and an upper horizontal plate or web 5, the lower edge of the vertical plate resting on the bottom of the box, while the horizontal plate 5 slides in contact with the upper wall of the box, thus guiding and staying the plunger in its movements. A head 6 is formed or provided upon the forward ends of the

plates 4 and 5 and operates to compress the material in the compression chamber 7 formed by that portion of the box arranged in advance of the inlet 2. The sides of the head 6 are notched to provide recesses 8 to permit the same to clear the retaining dogs, hereinafter described, in the chamber 7, which dogs operate to hold the followers or division boards in place during the operation of forming a bale. The plate 4 of the plunger is provided on one side with upper and lower vertical longitudinal rows of ribs or teeth 9 and 10, alternating in arrangement or arranged on lines between each other, as clearly shown in Fig. 3.

The feed mechanism for operating the plunger is mounted upon one side of the box in rear of the inlet and comprises an outer supporting head or disk 11 through which passes a transverse bolt 12 provided at its outer end with an eye 13. The bolt is journaled for rotation in the adjacent side wall of the box and carries at its inner end a second guide or supporting head 14 of any convenient form. The heads 11 and 14 are fixed upon the bolt in any suitable manner to turn therewith, preferably by forming the bolt with angular portions engaging angular openings therein, so that the two heads may be turned in unison. The outer head is held from outward movement by the eye-member 13, while the inner end is retained in position by a securing nut 15.

Formed in the wall of the box are upper and lower longitudinal slots 16 and 17, and formed in the heads 11 and 14 are registering sets of upper and lower guide openings 18 and 19 which register with said slots, the head 11 being provided on opposite sides of the said guide openings therein with guide strips or members 20 and 21. Pawls 22 and 23 are slidably mounted in the guide openings 18, and coöperating pawls 22' and 23' are slidably mounted in the openings 19. The pawls of each set are disposed side by side and in sliding contact with one another and are stayed and guided by the walls of the openings and the guide strips 20 and 21, and are provided at their outer ends with hooked portions 24 coacting to provide a socket. The pawls 23 and 23' are provided to act upon the plunger ribs or teeth to feed the plunger forward, while the pawls 22 and 22' are designed to operate upon the teeth to feed the plunger backward. The inner ends of said pawls are accordingly suitably beveled, so that the pawls 23 and 23' will engage the teeth in their proper direction of operating movement and slip over the teeth in the reverse direction.

The means for operating and controlling the pawls comprises an oscillating lever 25 pivotally mounted upon the eye 13 to swing horizontally in opposite directions parallel with the box to throw one set or the other of the pawls into operative position and adapted to be vertically moved to operate the pawls. Arranged upon the upper and lower surfaces of the pivoted end of the



lever are spring arms 26 and 27, which are fixed at their outer ends to the lever, as at 28, and are formed at their inner or free ends with arrow-shaped heads 29 and knuckles 30 connected with said heads by narrow vertical necks 31, said necks providing receiving recesses between the heads and knuckles. The knuckles of the respective spring arms engage the hooked ends of the upper and lower sets of pawls and are held in interlocking engagement therewith, thus pivotally connecting said arms with the pawls, so that the arms will swing with the lever. The construction is also such that upon the movement of the lever to a forward position shown in Figs. 1 and 2 the knuckles and necks will act in the nature of cams to force the pawls 22 and 22' inward to operative position and simultaneously draw the pawls 23 and 23' outward to an inoperative position. When, on the other hand, the lever is swung rearwardly to a position parallel with the box, the reverse action will take place, that is to say, the pawls 23 and 23' will be projected inwardly for use, while the pawls 22 and 22' will be retracted, the pawls in these operations sliding in the guide openings in the heads. Assuming that the parts are in the position shown in Figs. 1, 2 and 3 it will be understood that when the lever 25 is oscillated up and down the pawls 22 and 22' will alternately engage the teeth 9 and 10 and feed the plunger backward, one pawl operating on the upward and the other on the downward movement, and that on the backward movement of each pawl the beveled face thereof will slide over the adjacent tooth coming into operative position. In such sliding movement of the beveled face of the pawl upon the tooth, the pawl slides outwardly in its guide opening to pass or clear the tooth, being permitted to operate in this manner by the yielding action of the free end of the spring controlling arm, which arm springs outwardly and then, as soon as the pawl passes the teeth, returns such pawl to normal position. When the lever is thrown in the reverse direction or to the right, and the pawls 22 and 22' are retracted and the pawls 23 and 23' projected, it will be understood that the up and down motion of the lever will cause the pawls to alternately engage the teeth 9 and 10 and feed the plunger forward, the plunger being actuated in either direction by an intermittent or step-by-step motion, as will be readily understood.

The sides of the compression chamber 7 are formed with longitudinal slots 32 for the passage of the binding wires or cords employed to bind the bale, which cords or wires are manipulated in the usual manner. In the operation of forming a bale, the material entered into the compression chamber through the inlet 2 is forced forward against a stationary division board or block 33 arranged at the outlet end of the compression chamber, and after a sufficient amount of material has been compressed to form the bale, a second division board or block 34 is inserted into the rear end of said chamber in advance of the plunger, so that the material will be held between the two division boards. The plunger is then forced forward and moves the board 34 until the material is compressed to the desired density. To hold the board 33 in position and to lock the board 34 in position against rearward movement after compression has been effected and while the binding wires are being applied, sets of retaining dogs 35 and 36 are pro-

vided. The dogs 35 and 36 are mounted upon the front and rear ends of upper and lower spring bars 37 arranged on opposite sides of the compression chamber, each of said bars being centrally secured to the side walls of the chamber, as at 38, leaving the respective front and rear ends 37<sup>a</sup> and 37<sup>b</sup> of the bars free to form spring arms. The dogs 35 are carried by the front arms 37<sup>a</sup>, while the dogs 36 are carried by the rear arms 37<sup>b</sup>, and said dogs project through openings in the sides of the compression chamber. The arrangement is such as to provide at the front and rear of the chamber a dog on each side at top and bottom thereof. The front dogs 35 are adapted to engage the outer side of the division board 33 to hold the same from outward movement but may engage the receiving recesses in the side edges thereof, while the dogs 36 have rear beveled edges to permit the rear division board 34 to pass the same, after which said dogs snap into position behind said board and hold the same from rearward movement under the resisting pressure of the material, the spring action of the arms 37<sup>b</sup> permitting such action of the dogs, as will be readily understood.

In order to control the dogs 35, operating mechanism is provided comprising a crank shaft 39 journaled on each side of the baling chamber, each shaft having upper and lower crank arms 40 engaging recesses in the inner sides of the free ends of the arms 37<sup>a</sup>, and being provided at its upper end with an arm 41 extending over the top of the compression chamber and formed with an upturned terminal finger 42. The arms 41 normally incline in a rearward direction, in which position the cranks 40 of the shaft lie at rest, leaving the dogs 35 projected. The said fingers project into notches or recesses 43 formed in the sides of a controlling bar 44, said bar being slidably mounted on the top of the compression chamber and provided at its forward end with a guide finger or tongue 45 movable in a guide opening in a front cross brace 46. An operating rod or handle 47 is fixed to the rear end of the bar and is slidably mounted in an opening in a cross brace 48, thus enabling the bar to be moved forwardly or rearwardly, as will be readily understood. The forward walls of the notches 43 are beveled or inclined to provide cam surfaces 49 so that when the bar 44 is drawn rearwardly by the rod 47 said cam surfaces will engage the fingers 42 and press the same outwardly, whereby the arms 41 of the crank shaft will be rocked in an outward direction, thereby transferring motion to said shafts to force the spring arms 37<sup>a</sup> outwardly, by which the dogs 35 are retracted, leaving the board 33 free for removal. The shafts and bar are retained in such position by the engagement of the fingers 42 with the sides of the bar in advance of the cam surfaces, against which they are held by the spring resistance of the arms 37. A forward movement of the bar will cause the fingers to again ride into the notches, by which the spring action of the arms 37<sup>a</sup> will return the shafts and dogs to normal position.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the invention will be readily understood, and it will be seen that the invention provides a novel and efficient type of feed mechanism by which, through the action of pawls controlled by a common operating device, the plunger may be inter-



mittently moved forwardly or rearwardly and that a simple and efficient type and arrangement of dogs for retaining the division boards in position is also employed, one set of which is automatic in operation and 5 the other set adapted to be retracted by a simple construction of controlling means so as to effect the ready removal of the outer division board for the withdrawal of the formed bale from the compression chamber. After the first bale is formed, the succeeding or rear 10 division boards are employed in turn to subserve the function of the board 33, enabling a continuous compressing action for the formation of any desired number of bales to be carried out.

Having thus described the invention, what is claimed 15 as new, is:—

1. In a baling press, the combination of a baling box, spring bars arranged on opposite sides of the baling box and providing front and rear sets of spring arms, rear retaining dogs carried by the rear spring arms, front retain- 20 ing dogs carried by the front spring arms, means acting on said arms to retract the front retaining dogs, a plunger operating in the box, and means for actuating the plunger.

2. In a baling press, the combination of a baling box, spring bars centrally secured on the sides of said box and providing front and rear sets of spring arms, rear retain- 25 ing dogs carried by the rear spring arms, front retaining dogs carried by the front spring arms, crank shafts engaging the front spring arms, means for actuating said shafts to retract the front dogs, and compression mechanism. 30

3. In a baling press, the combination of a baling box, front and rear spring arms arranged upon the sides of the box, rear retaining dogs carried by the rear arms, front retaining dogs carried by the front arms, crank shafts 35 controlling the front arms, an operating device on the top of the baling box for actuating said shafts, and compression mechanism.

4. In a baling press, the combination of a baling box, a plunger operating therein front and rear sets of spring 40 arms arranged upon the sides of the box, sets of dogs carried by said arms, the rear dogs being adapted to be forced back by the plunger, crank shafts engaging the front spring arms and provided with operating arms projecting over upon the top of the baling box, a sliding bar having 45 cam surfaces coacting with said arms to operate the rock shafts, and means for operating the bar.

5. In a baling press, the combination of a baling box, bars centrally secured to the sides of the baling box and providing front and rear sets of spring arms, rear retain-

ing dogs carried by the rear spring arms, front retaining 50 dogs carried by the front spring arms, crank shafts engaging the front spring arms and provided with operating arms terminating in fingers, a sliding controlling bar having notches receiving the fingers and provided with cam 55 surfaces to act thereon to rock the shafts, means for operating the bar, and compression mechanism.

6. In a baling press the combination of a baling box, a plunger provided with upper and lower sets of teeth alternating in arrangement, upper and lower sets of pawls to act upon said teeth, a lever for operating both sets of 60 pawls, and yielding controlling connections carried by the lever, operative upon the movement of the lever to different positions to retract one pawl of each set and project the other pawl thereof.

7. In a baling press, the combination of a baling box, a 65 plunger provided with sets of teeth, a rocking support, a lever for rocking said support, said lever being pivotally mounted on said support for movement to different operative positions, opposite sets of yielding pawls mounted on the support, and means whereby the swinging move- 70 ment of the lever will throw the pawls of each set alternately into and out of operative position.

8. In a baling press, the combination of a baling box, a plunger provided with sets of teeth, sets of pawls for acting on said teeth to reversely move the plunger, and a 75 lever for actuating said pawls, said lever being adjustable to different positions to project one set of pawls and retract the other and vice versa.

9. In a baling press, the combination of a baling box, a plunger operative therein and provided with sets of teeth, 80 a rocking support, sets of sliding pawls arranged in pairs to engage said teeth, a lever for rocking the support, said lever being pivoted thereon for movement to different positions, and means controlled by the pivotal movements of the lever for throwing the different sets of pawls into and 85 out of operative position.

10. In a baling press, the combination of a baling box, a plunger arranged therein and provided with sets of teeth, a rocking support, a lever for rocking said support, said 90 lever being pivoted for movement to different operative positions, sets of sliding pawls for engagement with the teeth to intermittently move the plunger backward or forward, and spring arms carried by the lever and engaging the sets of pawls, said arms operating in the different 95 swinging movements of the lever to slide the pawls alternately in and out of operative position.

In testimony whereof, I affix my signature in presence of two witnesses.

JACOB KING.

Witnesses:

J. R. SKILLMAN,  
G. T. SKILLMAN.