

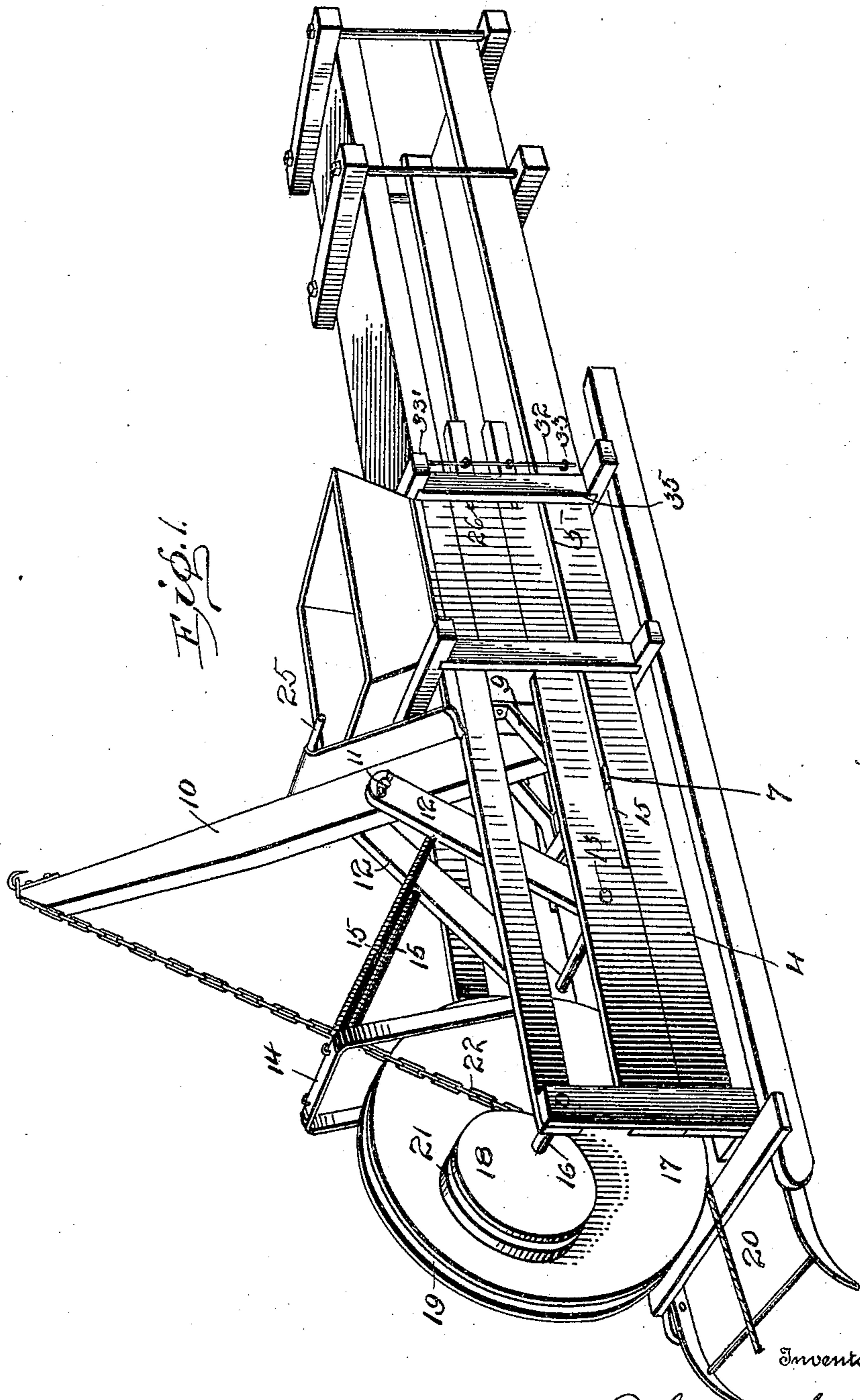
No. 824,600.

PATENTED JUNE 26, 1906.

J. J. STOPPLE.
BALING PRESS.

APPLICATION FILED DEC. 23, 1904.

3 SHEETS—SHEET 1.



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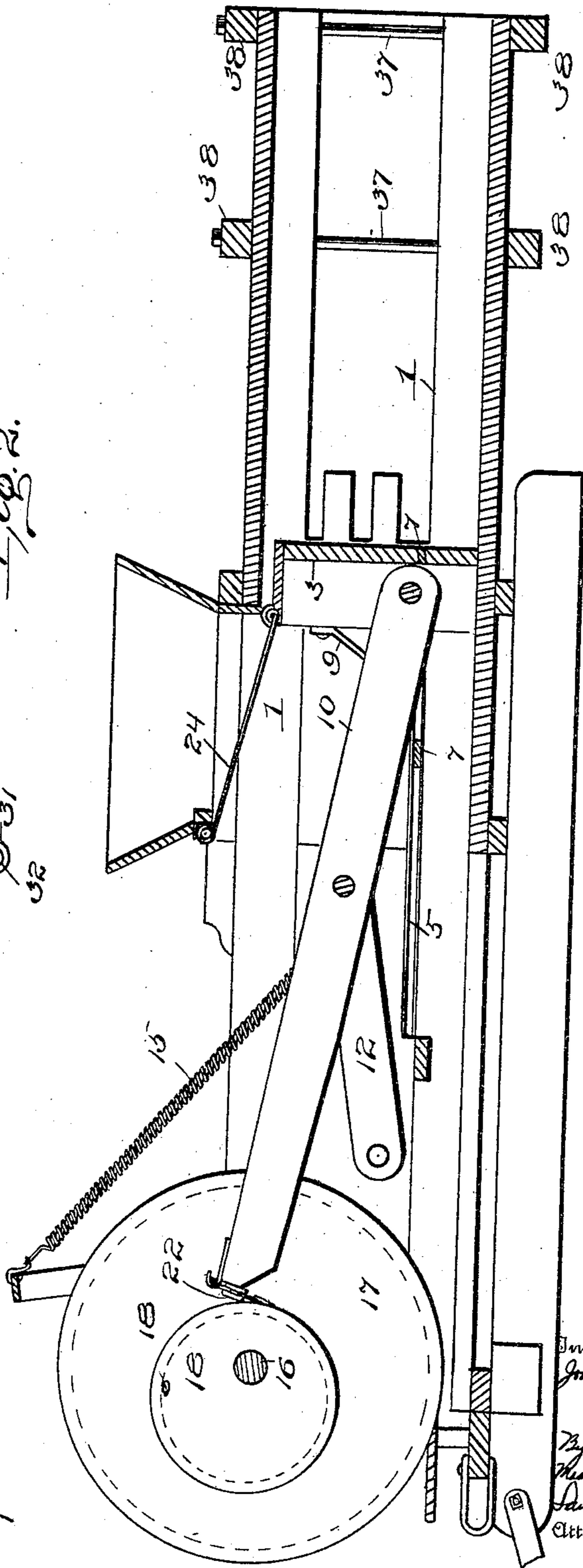
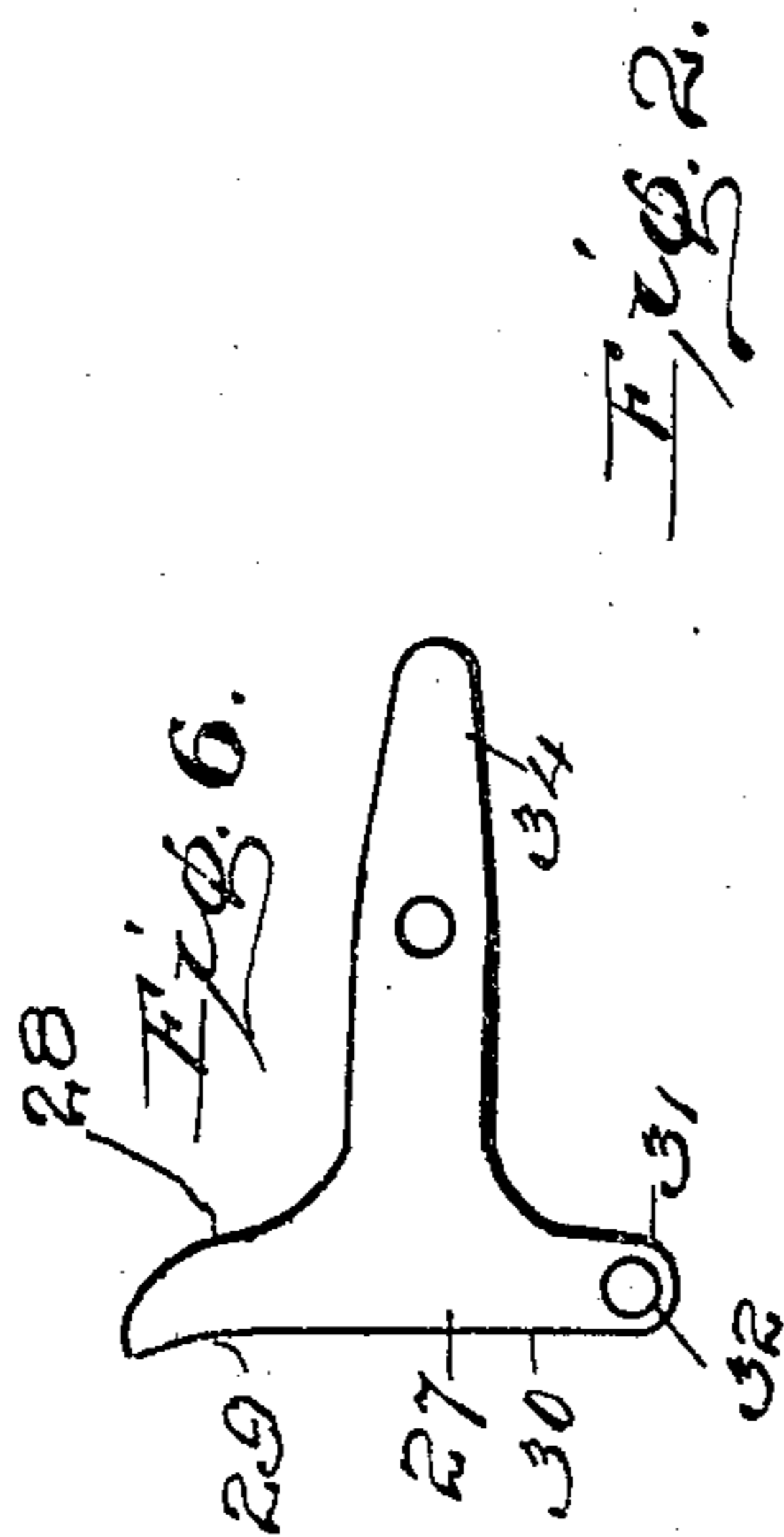
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

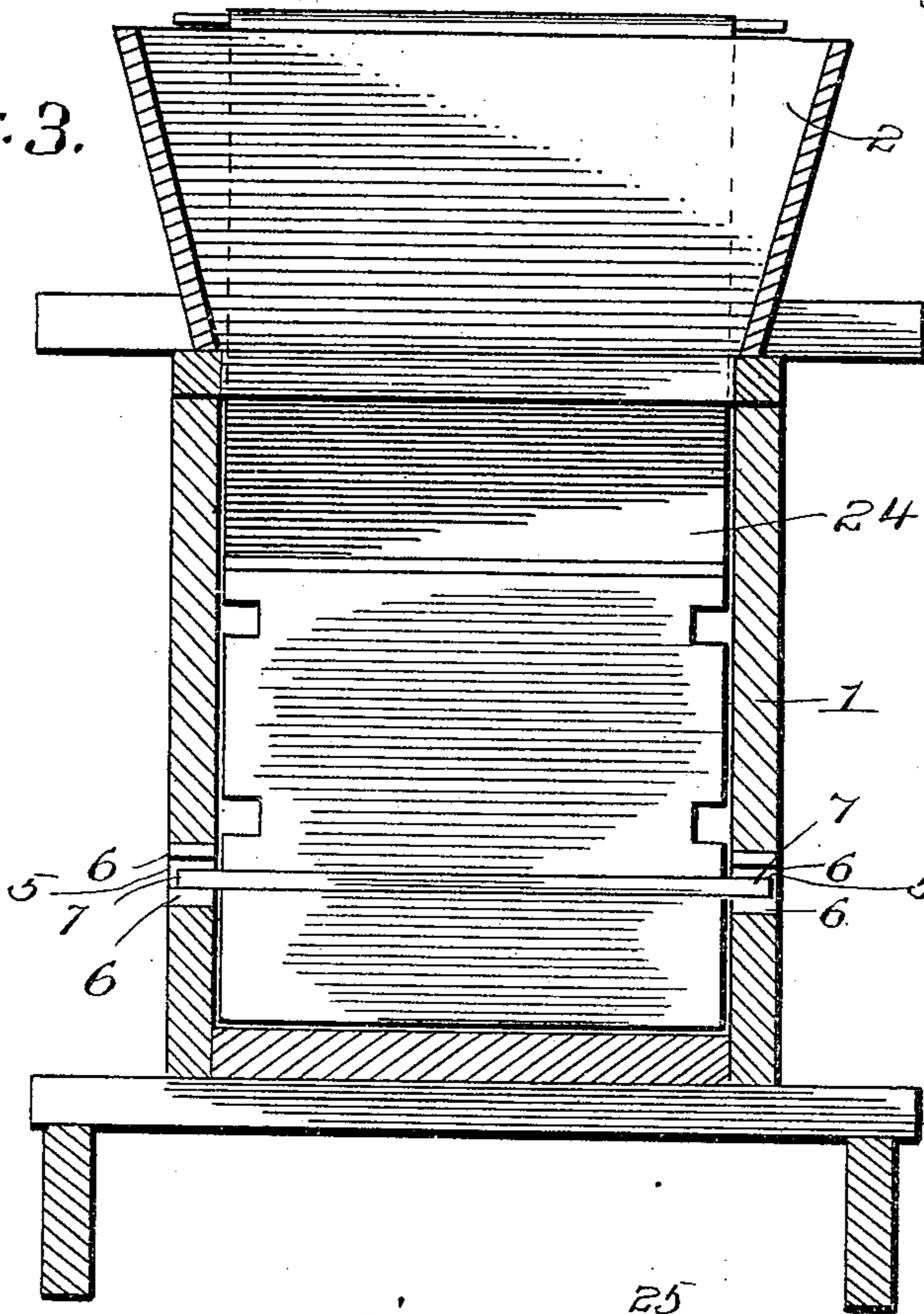


Fig. 5.

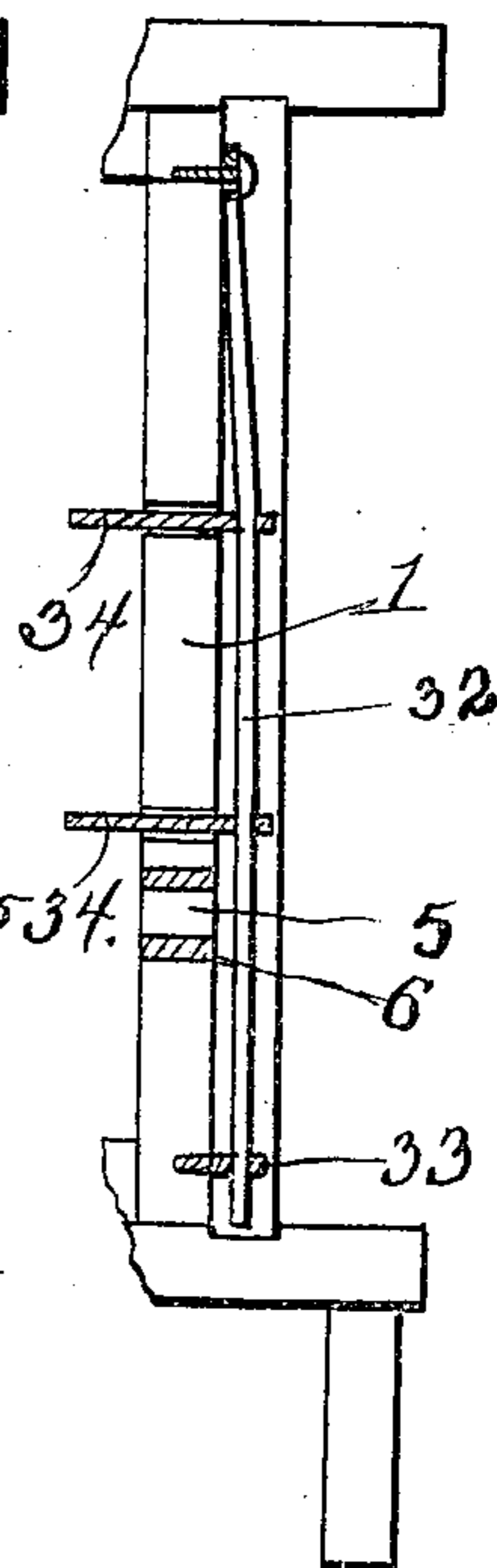
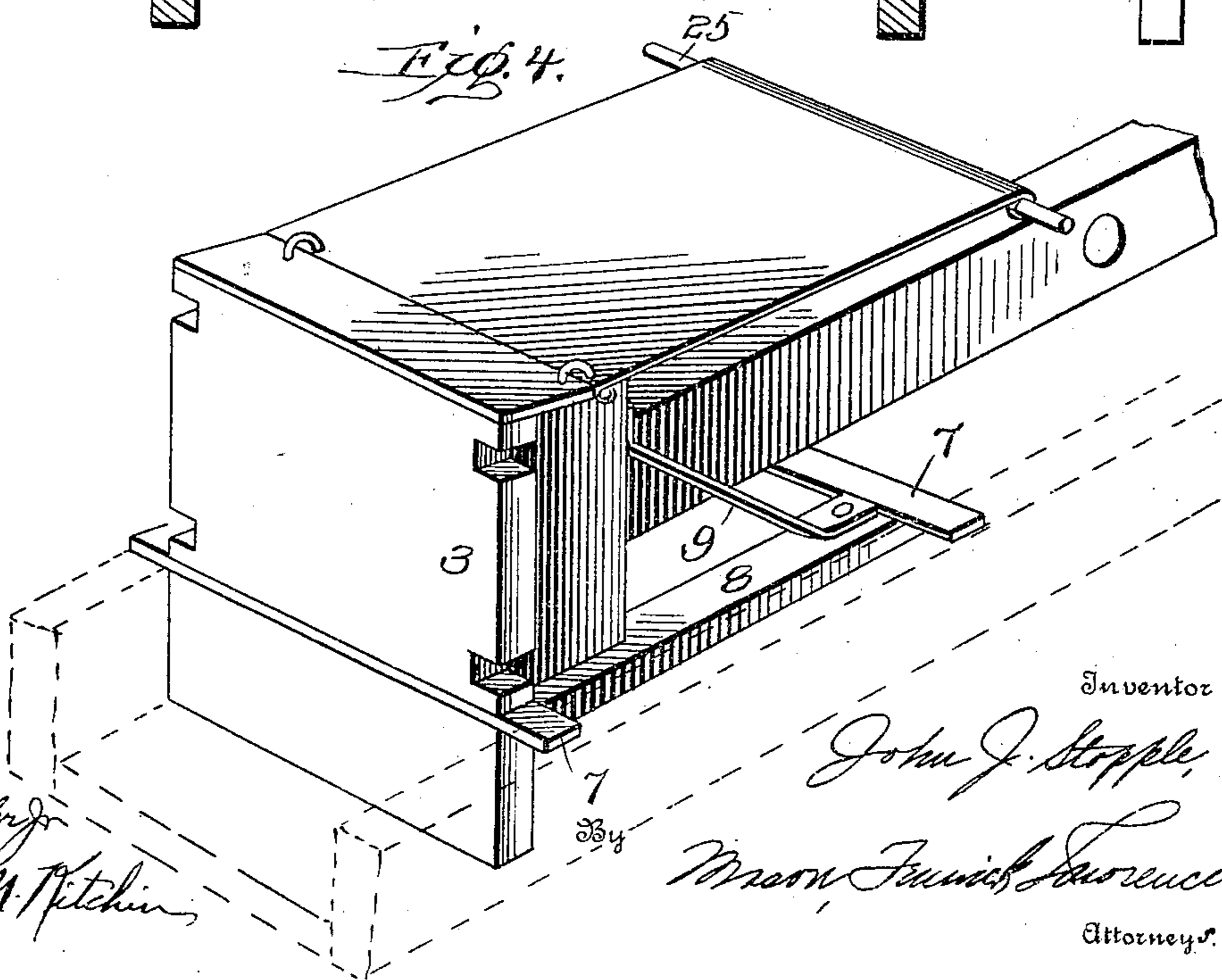


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN J. STOPPLE, OF DALLAS, TEXAS.

BALING-PRESS.

No. 824,600.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed December 23, 1904. Serial No. 238,125.

To all whom it may concern:

Be it known that I, JOHN J. STOPPLE, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Baling-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in baling-presses, and particularly to the lever-actuated plunger type.

Among the several objects in view are the securing of a maximum amount of leverage, the elimination of friction, and the guiding of the compressor-plunger, and these and further objects are attained by the employment of certain novel constructions, such as will be hereinafter fully specified.

In the accompanying drawing, Figure 1 represents a perspective view of a baling-press embodying the features of the present invention. Fig. 2 represents a similar view of the same in its projected condition. Fig. 3 represents a transverse vertical section taken on the plane of line 4 4 of Fig. 2 and looking in the direction of the arrow. Fig. 4 represents an enlarged detail perspective view of the plunger detached. Fig. 5 represents a vertical section through one of the sides of the press, showing the division-block detents in detail. Fig. 6 represents a detail top plan view of one of the division-block detents.

In the baling of hay and other similar materials it is of course desirable to eliminate friction of the parts of the press to the greatest degree possible and to secure a maximum leverage, and in order to attain these results I propose to employ means for guiding the plunger of a baling-press for preventing any lateral play thereof or any frictional contact between the plunger and the surrounding chamber and to utilize in conjunction with such plunger a lever fulcrumed to pivoted links in such manner as to attain a relatively high degree of leverage and to combine with such lever a cam for actuating the same, whereby a maximum degree of leverage may be secured. In addition to these main features of construction employed certain novel details will be hereinafter mentioned.

The preferred embodiment of the present

invention may be understood by reference to the accompanying drawings, in which—

1 indicates a compression-chamber provided with any suitable hopper 2 through which the material is adapted to be fed, a plunger 3 being disposed for moving longitudinally of the chamber 1 across the opening of the hopper 2. In the rear of the baling-chamber 1 is a suitable framework 4, formed integral with or suitably secured to said chamber 1, and a longitudinal slot 5 is formed in each wall of the chamber 1 and extends rearwardly into the framework 4. Each slot 5, as best seen in Fig. 4, is preferably lined with suitable strips 6 6 of metal or other material constituting wearing-surfaces for laterally-projecting guiding-bars 7 7, extending from the plunger 3 and from rearwardly-extending plates 8, projecting from said plunger. Each of the plates 8 is braced by a stay 9, fixed to the plunger 3 at one end near the upper edge of the plunger and at the other end to the respective plate 8 near the rear end thereof. The laterally-projecting bars 7 7 extend into the slots 5 and support the plunger 3 in its movement, each of the bars 7 being preferably flat for preventing tilting of the plunger, and said bars serve to support the plunger out of contact with the surrounding walls of the compression-chamber 1, as will be observed by reference to Fig. 4.

Of course the plunger 3 is adapted to be reciprocated within the compression-chamber, and for the purpose of effecting such reciprocation I pivot thereto an actuating-lever 10, said lever being fulcrumed intermediate its length, as at 11, upon links 12 12, pivoted, as at 13, to the framework 4. A yoke-shaped bracket or other suitable support 14 is fixed to and supported by the framework 4 in the rear of the links 12, and a spring 15 connects each of said links with said bracket 14 for normally supporting the links 12 in a raised condition. Journaled in the framework 4 in the rear of the links 12 is a shaft 16, carrying an operating-wheel 17, to which is fixed an eccentric 18. The wheel 17 is preferably formed with an annular groove 19 in its periphery, designed to receive an actuating belt or cable 20, fixed at a suitable point to the periphery of said wheel and wrapped about the wheel for imparting a rotary movement to said wheel when the cable 20 is moved longitudinally. The eccen-

tric disk 18 is similarly grooved, as at 21, for receiving a chain or other suitable flexible connecting means 22, extending to the lever 10, which chain is fixed to the periphery of the eccentric 18 at a point preferably approximately half-way between the point where the periphery of the eccentric approaches most nearly to the pivot of the eccentric and the point where the periphery of the eccentric lies farthest from the pivot thereof, as shown at 18', so that in operation the leverage of the eccentric will be slightly decreased upon the starting of a stroke until the same has made a part revolution and the first point of contact between the chain and the eccentric is at the greatest distance from the pivot of the eccentric, whereupon the leverage power of the eccentric begins to increase, and it is to be noted that this increase of leverage-power is manifested just at the point where the same is needed, owing to the fact that the latter part of the stroke of the plunger is against greater resistance than the first part of the stroke thereof. The chain or other flexible connecting means 22, as above suggested, engages the lever 10 and is connected therewith preferably at its end, a hook or other suitable connecting means 23 being provided on the lever 10 for receiving the chain 22, said hook facilitating the shortening or lengthening of the chain and the taking up of wear thereof.

Pivoted to the plunger 3 on the upper edge thereof is a door or plate 24, adapted in operation to close the opening of the hopper 2 when the plunger 3 is in its forward position, the said plate 24 when the plunger is retracted resting upon the lever 10, as indicated in Fig. 2. Arranged transversely of and secured to the rear end of the plate or door 24 is a rod 25, which extends beyond the edges of said door and beyond the sides of the framework 4, so that when the plunger moves forwardly the projecting ends of said rod will engage the upper edge of said framing 4 and prevent the plate 24 from dropping with the lever 10. The engagement of the projecting ends of rod 25 with the edges of the framework 4 also serves to keep the plate 24 in a taut condition when the plunger is projected forwardly for preventing feeding of material in the rear of the plunger.

The side walls of the compression-chamber 1 are formed with longitudinal horizontal slots 26 26, within each of which is pivoted a division-plate detent or dog 27, each of said dogs having a nose 28 projecting into the compression-chamber and beveled rearwardly, as at 29, and formed with a straight flat shoulder 30 at its front end, so that in operation a division-plate and of course the material being operated upon may be pressed past the said dogs by contact with the beveled surface 29, the dogs swinging upon their pivots to permit such passage, but

being thrown back to their normal position after such passage by means of suitable springs. Each of the dogs 27 is formed with an ear 31, extending outwardly beyond the outer face of the respective side wall of the compression-chamber, and each of said ears is apertured and a spring-rod 32 extended therethrough. One of the spring-rods 32 is arranged upon each side of the compression-chamber and is fixed at its upper end, as at 33', to the wall of the compression-chamber and extends downwardly through the ears 31 of the pair of dogs upon the respective side of the compression-chamber and extends farther downwardly through an eye 33, secured to the side wall of said compression-chamber, so when the dogs 27 are pressed outwardly by contact of a division-plate with the beveled surface 29 the spring-rods 32 may give outwardly by longitudinal movement through the eye 33, the said rods being bowed by such movement of the dogs and readily returning the dogs to their normal position as soon as the same are free. The spring-rods 32 are of such a character as to ordinarily return the dogs with considerable force, and in order to prevent the springs from striking against the sides of the compression-chamber each of the said dogs is formed with an extended arm 34, projecting beyond its pivot and normally lying within the respective slot 26 in position for being limited in its outward movement by brace-plates 35 35, arranged on the outside of the compression-chamber, whereby when the dogs are pressed out of their normal position the arms 34 swing inwardly and when the dogs are released and returned to their normal position by the springs 32 the said arms swing outwardly and come in contact with the brace-plates 35 and prevent further inward movement of the springs and inward movement of the noses of the dogs.

In operation the usual division-plates, such as are disclosed at 36, are employed, and in starting the press usually a supply of hay or other material to be baled is introduced into the hopper 2 and falls down in front of the plunger 3. After the material has assumed this position the cable 20 is moved longitudinally, preferably by a draft-animal connected with the free end of said cable, and the wheel 17 is caused to rotate, producing corresponding rotation of the eccentric 18, and thereby effecting a downward movement of the free end of lever 10, which movement of course produces an inward movement of the plunger 3, the links 12 giving way under the action of the eccentric 18 and swinging to a lowered position, as indicated in Fig. 3. Of course as the links 12 descend the springs 15 are elongated, and as soon as the lever 10 has reached its lowermost position the draft-animal is permitted to back toward the press and the springs 15

retract the links 12 and restore the parts to their former position, the said springs 15 serving to some extent in guiding the draft-animal in returning to its starting-point. It is to be noted here that the springs 15 alone serve to restore the parts to their position out of operation as contrasted with the use of a multiplicity of springs in other devices as heretofore constructed, which result is attained by the employment of the guiding-plates 7, preventing sticking of the plunger and obviating the necessity for a direct draft upon the plunger for retracting the same. It is to be noted that in my own former application, Serial No. 179,832, a spring is employed for directly retracting the plunger; but by the use of the guiding and supporting means mentioned the necessity for such a spring in the present improved press is obviated. As soon as the parts have been restored to their former position a second supply of material is introduced into the hopper 2 and the operation continued. This operation is continued until what is known as "dummy bale" is produced, which simply consists of a bale of loose material within the compression-chamber 1. This dummy bale is not intended to be tied out, but simply serves as a resistance for the first real bale. The tension upon the dummy bale and upon the bales which succeed it is governed by the use of rods 37 37, extending vertically across the sides of the compression-chamber near the front end thereof and engaging transverse stays 38 38, connected with the upper and lower walls of said compression-chamber. Suitable nuts are threaded onto the rods 37 and may be moved up and down thereon to the required extent for securing the desired compression upon the contained material, whereby the required compactness of bale may be attained. As soon as the dummy bale has been completed and a sufficient resistance within the compression-chamber is afforded thereby a division-plate, such as is seen at 36, is introduced through the hopper 2 in the rear of the dummy bale, and then further material is introduced through the hopper, and the operation of the plunger 3 is continued until the required length of bale has been produced, the compression of the real bale forcing the division-plate longitudinally of the compression-chamber and producing a gradual discharge of the dummy bale therefrom. As soon as the required length of bale is secured a second division-plate 36 is introduced, and the compression of a second bale is continued while the tie-wires for the first bale are introduced through the transverse, preferably dovetailed, grooves formed in the division-plates 36. Each bale is of course tied out before being discharged and serves as a resistance to the next succeeding bale, and the operation may be continued as described.

It is to be noted that the guides for the plunger 3 serve the very essential purpose of obviating any lateral movement of the plunger and preventing frictional contact thereof with the side, bottom, and top walls of the compression-chamber. The dogs 27 also serve the very desirable purpose of preventing back pressure, while permitting the ready passage of the division-plates and material being compressed.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a baling-press, the combination with a compression-chamber and a plunger operating therein, the side walls of said compression-chamber being formed with longitudinal slots, of plates projecting laterally from said plunger through said slots, plates projecting rearwardly from said plunger, braces connected with said plunger and said last-mentioned plates, guiding means extending from said last-mentioned plates into said slots, and means for reciprocating said plunger.

2. In a baling-press, the combination with a compression-chamber and a plunger operating therein, the side walls of said chamber being slotted, of dogs pivoted in said slots, ears projecting from said dogs beyond the outer faces of the walls of said compression-chamber, springs engaging said ears for retaining said dogs in their normal position, and detent-noses projecting from said dogs into said compression-chamber.

3. In a baling-press, the combination with a compression-chamber and a plunger operating therein, of a pivotally-mounted dog arranged at each side of said compression-chamber, a spring-rod extending transversely through said dog for normally retaining the same in position, and a detent-nose projecting from said dog into the compression-chamber.

4. In a baling-press, the combination with a compression-chamber and a plunger operating therein, of a plurality of dogs pivotally mounted at each side of said chamber, a spring-rod extending through each of the dogs of each side of said chamber, means securing one end of each of said rods against movement, means retaining the other end of each of said rods against lateral play while permitting longitudinal movement thereof, and detent-noses carried by said dogs and extending into said compression-chamber.

5. In a baling-press, the combination with a compression-chamber and a plunger operating therein, of a dog pivoted at one side of said chamber, a spring-rod extending through said dog, means securing one end of said rod against movement, means retaining the other end of said rod against lateral play while permitting longitudinal movement thereof, and a detent extending from said dog into the compression-chamber.

6. In a baling-press, the combination with a compression-chamber, a plunger operating therein, and a brace-plate arranged upon opposite sides of said compression-chamber, a slot being formed in the opposite sides of said compression-chamber, of a dog pivoted in each of said slots, an arm projecting from each of said dogs in position for normally engaging the respective brace-plate, a spring engaging each of said dogs for normally retaining the same with the arm in contact with said brace-plate, and a detent-nose extending from each of said dogs into said compression-chamber adapted to be compressed to one side against the pressure of said spring.

7. In a baling-press, the combination with a framework, a compression-chamber formed in said framework, a plunger operating in said compression-chamber, of a link pivoted upon said framework, a lever fulcrumed upon said link and pivotally connected near its lower end to said plunger, a wheel carried by said framework, an eccentric disk carried by said framework and fixed against independent, rotary movement with respect to said wheel, and flexible connecting means secured to said lever and to said eccentric disk at a point upon its periphery substantially central between the points of its greatest and less radii, said lever, link, and eccentric disk constituting progressive, double-lever means for actuating said plunger.

8. In a baling-press, the combination with a framework, a compression-chamber formed in said framework, a plunger operating in said compression-chamber, of links pivoted at their lower ends upon said framework, a lever fulcrumed upon the upper ends of said

links, said lever pivotally connected near its lower end to said plunger, a shaft carried by said framework, a wheel fixed to said shaft, an eccentric disk fixed to said shaft, and flexible connecting means secured at one end to said lever and at its opposite end to said eccentric disk at a point substantially half-way between the point where the periphery of the eccentric approaches most nearly to the pivot of said eccentric and the point where the periphery of said eccentric lies farthest from the pivot thereof.

9. In a baling-press, the combination with a framework, a compression-chamber formed in said framework, a plunger operating in said compression-chamber, of a link pivoted at its lower end upon said framework, a lever pivotally mounted upon the upper end of said link, said lever pivotally connected near its lower end to said plunger, a shaft carried by said framework, a wheel fixed to said shaft, an eccentric disk fixed to said shaft, and connecting means secured to said lever and connected to said eccentric disk whereby the greatest amount of pressure is exerted upon the plunger when said plunger is near to the end of its compression-stroke, thus equalizing the power necessary to compress the charge of material from the beginning to the end, said lever, link, and eccentric disk constituting progressive, double-lever means for actuating said plunger.

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

JOHN J. STOPPLE.

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