

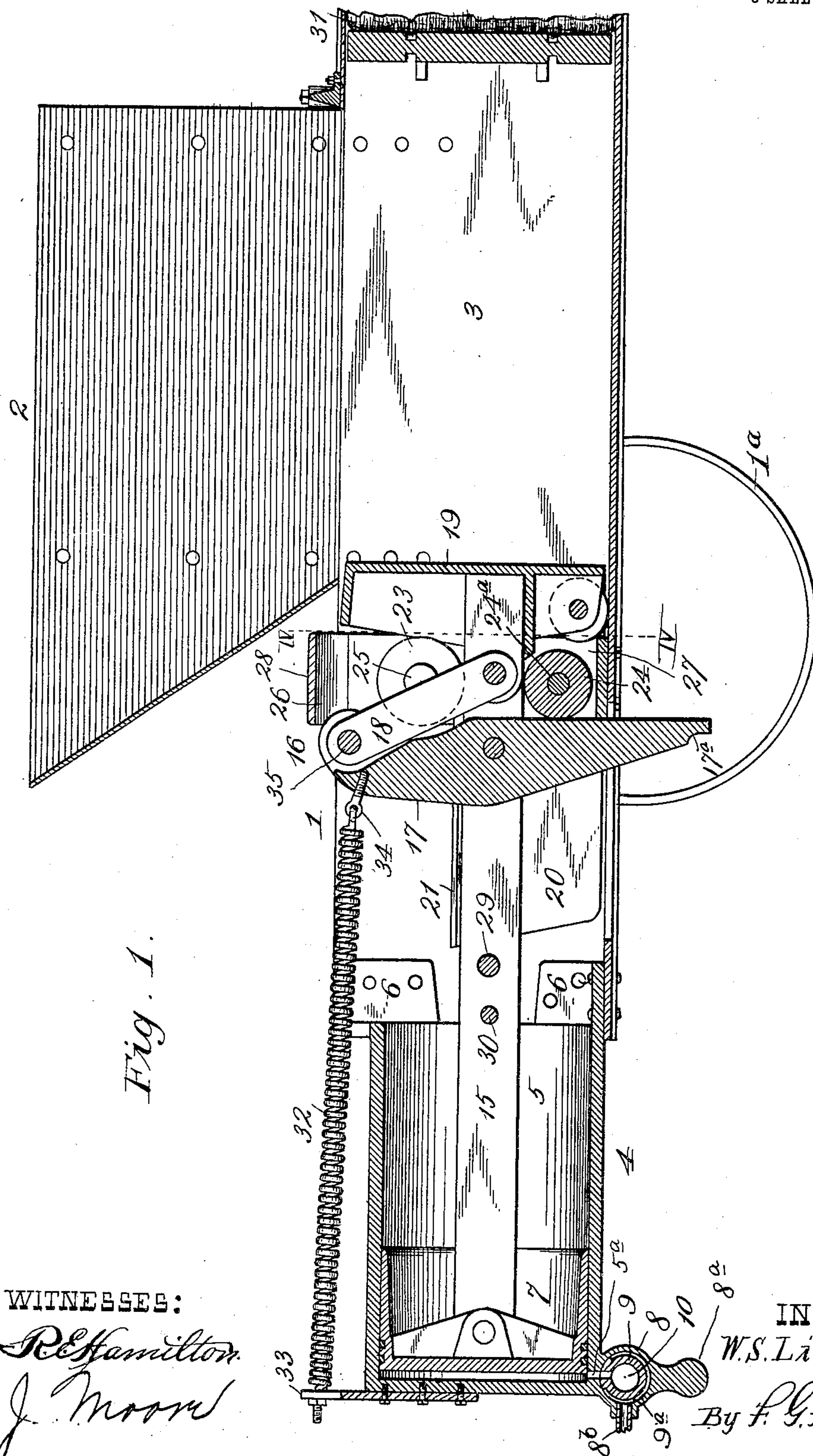
No. 808,996.

PATENTED JAN. 2, 1906.

W. S. LIVENGOOD.  
BALING PRESS.

APPLICATION FILED DEC. 27, 1904.

3 SHEETS—SHEET 1.



WITNESSES:

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 J. Moore

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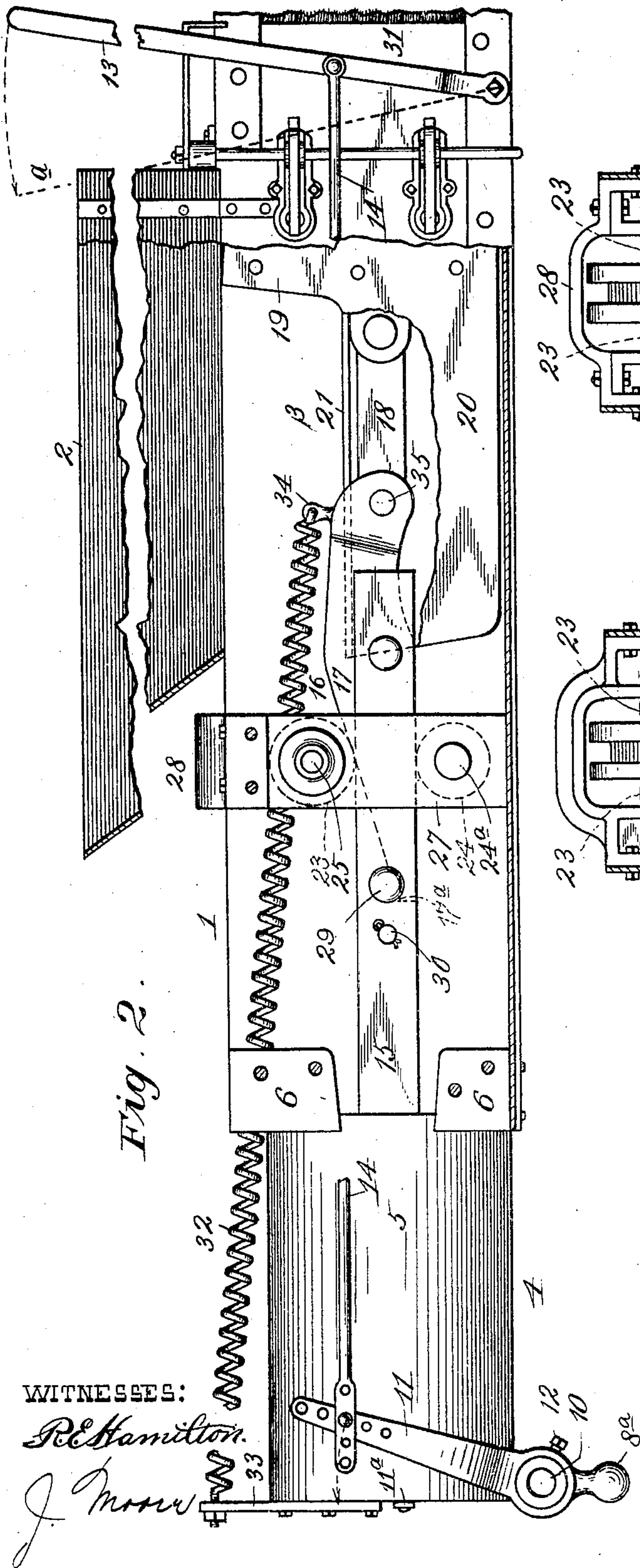


Fig. 2.

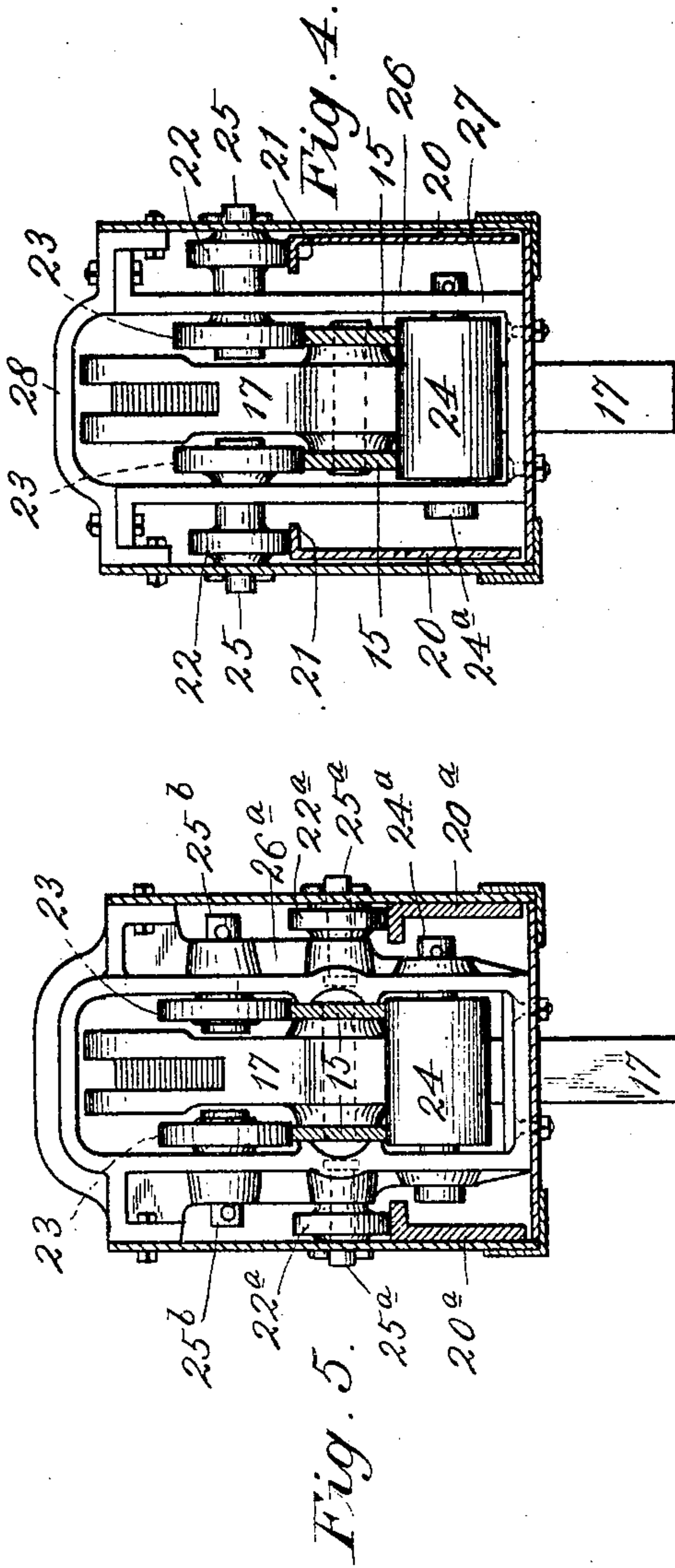


Fig. 5.

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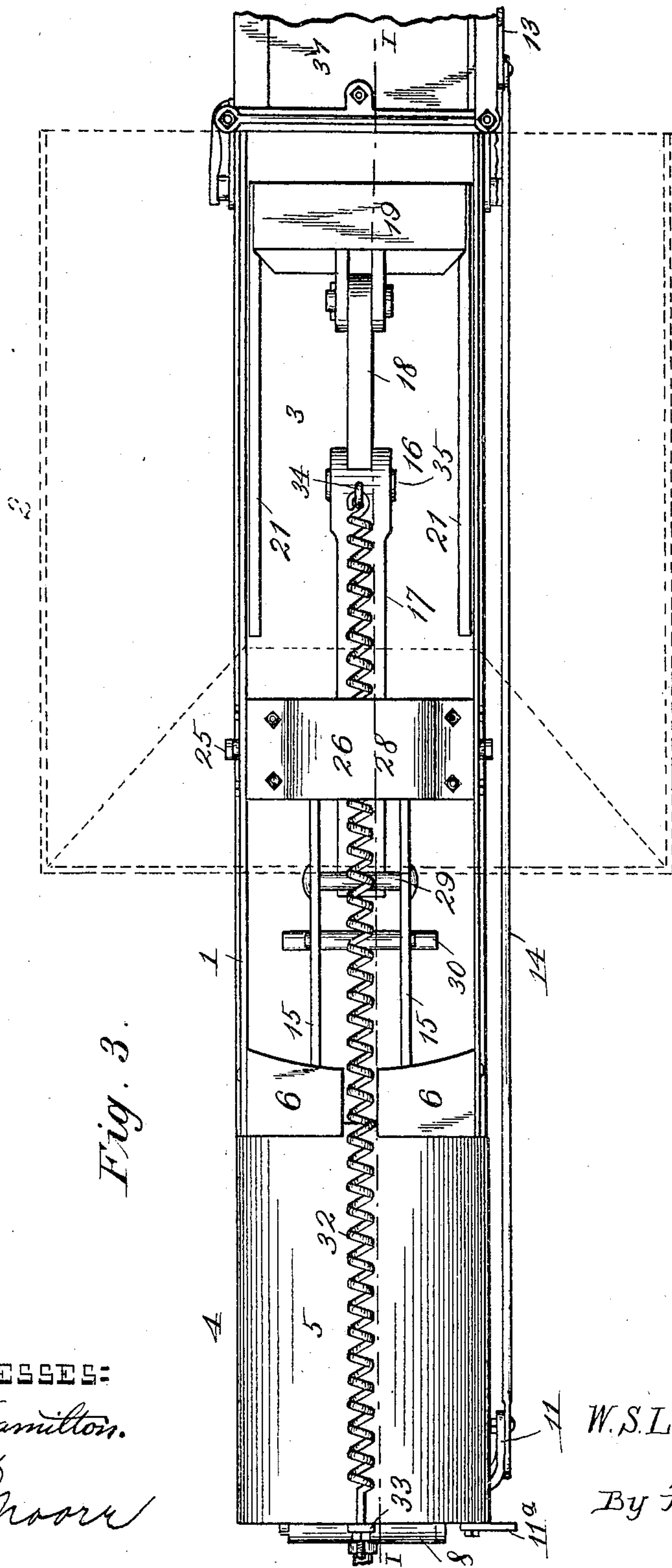


Fig. 3.

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# UNITED STATES PATENT OFFICE.

WINFIELD S. LIVENGOD, OF KANSAS CITY, MISSOURI, ASSIGNOR TO  
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## BALING-PRESS.

No. 808,996.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed December 27, 1904. Serial No. 238,275.

*To all whom it may concern:*

Be it known that I, WINFIELD S. LIVENGOD, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification.

My invention relates to improvements in baling-presses, and relates to that class of machines wherein the material is fed into the feed-chamber, compressed into bales, and finally discharged from the rear end of the baling-case of the press.

One of my objects is to obtain a maximum stroke of the head-block in order to obtain a large feed-opening, with a short stroke of a piston, whereby power is applied to said head-block.

A further object is to obtain direct action of the power upon the head-block as the latter approaches the end of its forward movement.

The principal feature of the invention resides in the combination of a baling-case, a head-block reciprocally arranged therein, a cylinder, a piston-head reciprocally arranged in the cylinder, and means connecting said head-block to said piston-head, whereby the former is caused to advance about triple the distance of said piston-head.

The invention further consists in the novel construction, combination, and arrangement of parts hereinafter described, and pointed out in the claims; and in order that it may be fully understood reference will now be made to the accompanying drawings, in which—

Figure 1 represents a vertical longitudinal sectional view taken on line I I of Fig. 3 of a baling-press embodying my improvements with the head-block at the end of its backward movement. Fig. 2 is a vertical longitudinal section of same with the head-block near the end of its forward movement. Fig. 3 is a plan view of same. Fig. 4 is a vertical cross-section of the baling-case, taken on line IV IV, showing a yoke with rollers journaled thereon employed in carrying out the invention; and Fig. 5 is a modification of same.

In said drawings, 1 designates a baling-case of any ordinary or preferred construction provided with a hopper 2, through which material is fed into the feed-chamber 3. Said baling-case is mounted upon a pair of carry-

ing-wheels 1<sup>a</sup> in order that it may be readily transported from place to place.

4 designates a single-acting engine comprising a horizontal cylinder 5, provided near its closed end with a port 5<sup>a</sup> and at its open end with right-angled portions 6, whereby it is secured to the forward end of the baling-case; a piston-head 7, reciprocally arranged in said cylinder; a valve-casing 8, having an inlet 8<sup>b</sup>, and a balanced valve 9, having inlet and exhaust ports 9<sup>a</sup> 10, which alternately register with port 5<sup>a</sup>, and thus control the ingress and egress of the motive fluid to and from the cylinder. Valve-casing 8 is provided with a centrally-disposed depending knob 8<sup>a</sup>, adapted to be swiveled to a vehicle employed in drawing the press from place to place.

11 designates a valve-lever secured to one end of valve 9 by a set-screw 12.

13 designates a hand-lever fulcrumed at its lower end to the lower portion of the baling-case and extending upwardly in the rear of hopper 2 within convenient reach of the workman employed in placing hay into the feed-chamber 3.

14 designates a connecting-rod pivotally secured at its ends to levers 11 and 13, respectively.

15 designates a pair of piston-bars pivotally secured at their ends to piston-head 7 and the rear member of a toggle 16, comprising two links 17 18, respectively. Link 18 is pivotally secured at its forward end to head-block 19, which latter is provided at its opposite sides with a pair of longitudinal flanges 20, the upper edges 21 of which are turned inwardly to form a broad surface for rollers 22, against which said intumed portions bear during a part of the forward stroke of the head-block, and thus prevent the latter from tipping forward while condensing the loose material in the feed-chamber.

23 designates a pair of guide-rollers arranged at opposite sides of the toggle and bearing upon the upper surfaces of the piston-bars.

24 designates a long guide-roller which bears against the under sides of the piston-bars and in conjunction with rollers 23 maintains said piston-bars in a horizontal plane as they move on their forward and backward strokes.

Rollers 22 and 23 are journaled upon



transverse shafts 25, extending through the sides of the baling-case and the sides of a yoke 26, which latter comprises a U-shaped member 27, bolted at its lower side to the bottom of the baling-case, and an arched transverse member 28, secured to the upper portion of the baling-case and the upper ends of said U-shaped member 27. Guide-roller 24 is journaled upon a transverse shaft 24<sup>a</sup>, extending through the lower portion of the yoke. One side of link 17 also bears against roller 24, and thus causes the toggle to straighten out to the position shown in Fig. 2 when the piston-head advances. After said toggle attains the position above referred to it is prevented from accidentally folding while advancing by means of roller 24 and a pin 29, which latter is engaged by the notched end 17<sup>a</sup> of link 17. Pin 29 extends transversely through the piston-bars to which it is riveted in order to brace said bars and prevent them from springing laterally while pressure is exerted thereon when making a forward stroke.

The forward strokes of the piston-head are ordinarily limited by drawing hand-lever 13 to the position shown by dotted line *a*, Fig. 2, and thereby cutting off the flow of motive fluid into the cylinder; but in order to guard against said piston-head being forced out of the open end of the cylinder through failure of the workman to operate the hand-lever at the proper time I provide a positive stop in the form of a pin 30, extending transversely through the piston-bars, from the outer sides of which latter it projects in order that said projecting ends may contact with the rear side of yoke 26. The backward movement of hand-lever 13 is limited by valve-lever 11, contacting with a stop 11<sup>a</sup>, projecting laterally from the closed end of the cylinder, and when the valve-lever is in contact with said stop exhaust-port 10 is in coincidence with port 5<sup>a</sup>, so the motive fluid may exhaust from the cylinder and permit the piston-head to move backwardly. After the head-block has reached the end of its forward stroke and the supply of motive fluid has been cut off from the cylinder said head-block is returned to the end of its backward stroke by means of the expansive force of the material in baling-chamber 31 and the retractile spring 32, which latter is secured at its ends to a vertical arm 33 on the closed end of the cylinder, and a screw-eye 34, secured to link 17 near the toggle-joint 35.

In the modification Fig. 5 yoke 26<sup>a</sup> is composed of a single casting and rollers 22<sup>a</sup> are mounted upon shafts 25<sup>a</sup>, located beneath shafts 25<sup>b</sup>, carrying guide-rollers 23, that bear upon flanges 20<sup>a</sup>, which latter are of less height than flanges 20 and are preferably formed integral with the head-block instead of being riveted thereto, as are said flanges 20.

The following is a brief description of the

operation of the baling-press: After a charge of hay has been placed in feed-chamber 3 the workman standing upon the baling-case draws hand-lever 13 to the position shown by full lines, Fig. 2. This movement of the hand-lever opens the valve and permits the motive fluid to flow into the cylinder and force the piston-head forwardly. As the piston-bars advance link 17 is pushed over roller 24, and thus quickly unfolds the toggle, which advances the head-block at about triple the speed to that traveled by the piston-head until said toggle is fully extended, when it, the head-block, and the piston-head all move at the same rate of speed. After the toggle has become fully extended direct pressure of the motive fluid upon the piston-head is transmitted to the head-block during the remainder of the stroke. When the piston-head has completed a forward stroke, the flow of motive fluid into the cylinder is shut off, so that the head-block may be immediately returned to its starting-point through the recoil of the compressed hay in baling-chamber 31 and the retractile spring 32, and as the piston-head moves backwardly toward the closed end of the cylinder it will be stopped before striking said closed end by the escaping motive fluid, which acts as a cushion between said piston-head and the closed end of the cylinder. As the piston-head nears the closed end of the cylinder the exhaust of the motive fluid through port 9 is retarded by the piston-head partly overlapping said port, and thus temporarily reducing its area, as shown in Fig. 1.

From the above description it is obvious that I have produced a baling-press wherein a long travel of the head-block is obtained with a comparatively short stroke of the piston-head, and although the initial forward movement of said head-block will be rapid and attended with but little power the final part of said forward movement will be accomplished with direct pressure of the motive fluid.

While I have shown and described the preferred construction of my baling-press, I of course reserve the right to make such changes as properly fall within the scope of the appended claims.

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

1. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a toggle connected to the head-block and adapted to move back and forth therewith, means for operating said toggle, and means interposed in the path of one end of the toggle to prevent said end from moving forwardly until the toggle has become extended or partly extended.

2. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a toggle



connected to the head-block and adapted to move back and forth therewith, means for operating said toggle, means interposed in the path of one end of the toggle to prevent said end from moving forwardly until the toggle has become extended or partly extended, and means for folding said toggle when it moves backwardly.

3. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a cylinder secured to said baling-case, a piston-head reciprocally arranged in said cylinder, a toggle connected to the head-block and suitably connected to the piston-head and adapted to move back and forth therewith, and means interposed in the path of one end of the toggle to prevent said end from moving forward until the toggle has become extended or partly extended.

4. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a toggle connected to the head-block and adapted to move back and forth therewith, means for operating said toggle, and means for preventing the toggle from folding when moving forwardly.

5. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a cylinder secured to said baling-case, a piston-head reciprocally arranged in said cylinder, a toggle connected to the head-block and suitably connected to the piston-head and adapted to move back and forth therewith, a roller interposed in the path of one end of the toggle to prevent said end from moving forward until the toggle has become extended or partly extended, and means for preventing said toggle from folding when moving forwardly.

6. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a cylinder secured to said baling-case, a piston-head reciprocally arranged in said cylinder, a piston-bar suitably secured to the head-block and said piston-head, a yoke secured in the baling-case, and a stop-pin extending transversely through the piston-bar adapted to contact with said yoke.

7. In a baling-press, a baling-case, a head-block arranged to travel therein, longitudinal flanges secured to said head-block, and guides in the baling-case beneath which said flanges travel.

8. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a cylinder secured to said baling-case, a piston-head reciprocally arranged in said cylinder, piston-bars suitably secured to the head-block and said piston-head, a yoke secured in the baling-case, and guide-rollers jour-

naled in the yoke between which the piston-bars operate.

9. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a cylinder secured to said baling-case, a piston-head reciprocally arranged in said cylinder, piston-bars suitably secured to the head-block and said piston-head, a yoke secured in the baling-case, guide-rollers journaled in the yoke between which the piston-bars operate, and a stop-pin extending transversely through said piston-bars adapted to contact with said yoke.

10. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a cylinder secured to said baling-case, a piston-head reciprocally arranged in the cylinder, piston-bars secured to said piston-head, a toggle pivotally secured to the head-block and said piston-bars, and a roller against which said toggle contacts.

11. In a baling-press, a baling-case, a head-block reciprocally arranged therein, a cylinder secured to said baling-case, a piston-head reciprocally arranged in the cylinder, piston-bars secured to said piston-head, a transverse pin riveted to said piston-bars, a toggle pivotally secured to the head-block and said piston-bars the rear end of which contacts with pin 29 when said toggle is extended, a roller with which the toggle contacts and whereby said toggle is assisted in unfolding, and means for assisting the toggle to fold.

12. In a baling-press, a baling-case, a head-block arranged to travel therein, longitudinal flanges secured to said head-block, and rollers mounted in the baling-case beneath which said flanges travel.

13. In a baling-press, a baling-case, a head-block arranged to travel therein, longitudinal flanges secured to said head-block having inturned upper edges, and a pair of rollers journaled in the baling-case beneath which said flanges travel.

14. In a baling-press, a baling-case, a yoke secured therein, and rollers journaled in said yoke.

15. In a baling-press, a baling-case, a yoke secured therein composed of a U-shaped portion and a transverse portion secured to the upper terminals of said U-shaped portion, and guide-rollers journaled in said yoke.

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

WINFIELD S. LIVENGOD.

Witnesses:

J. W. BOLING,  
F. G. FISCHER.