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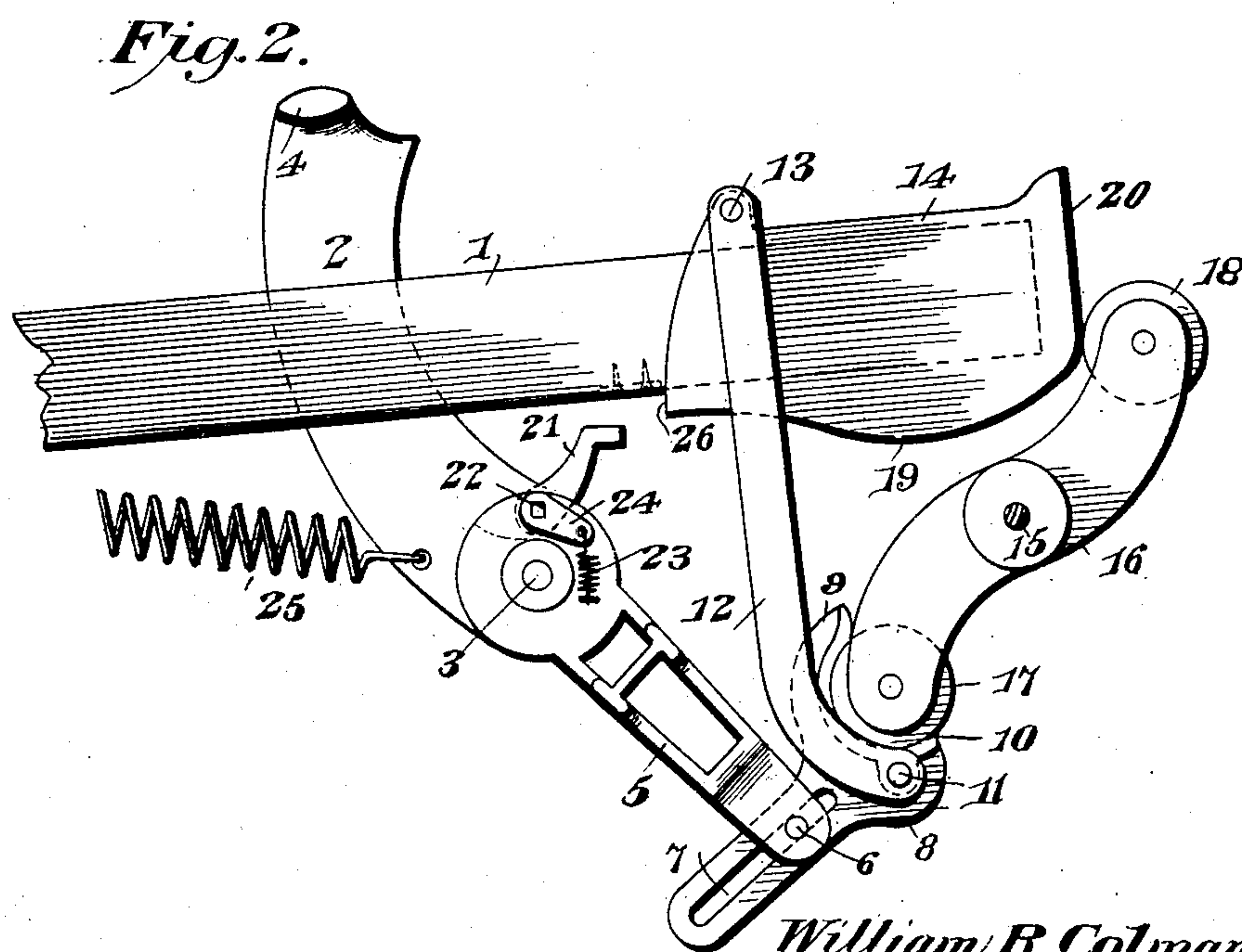
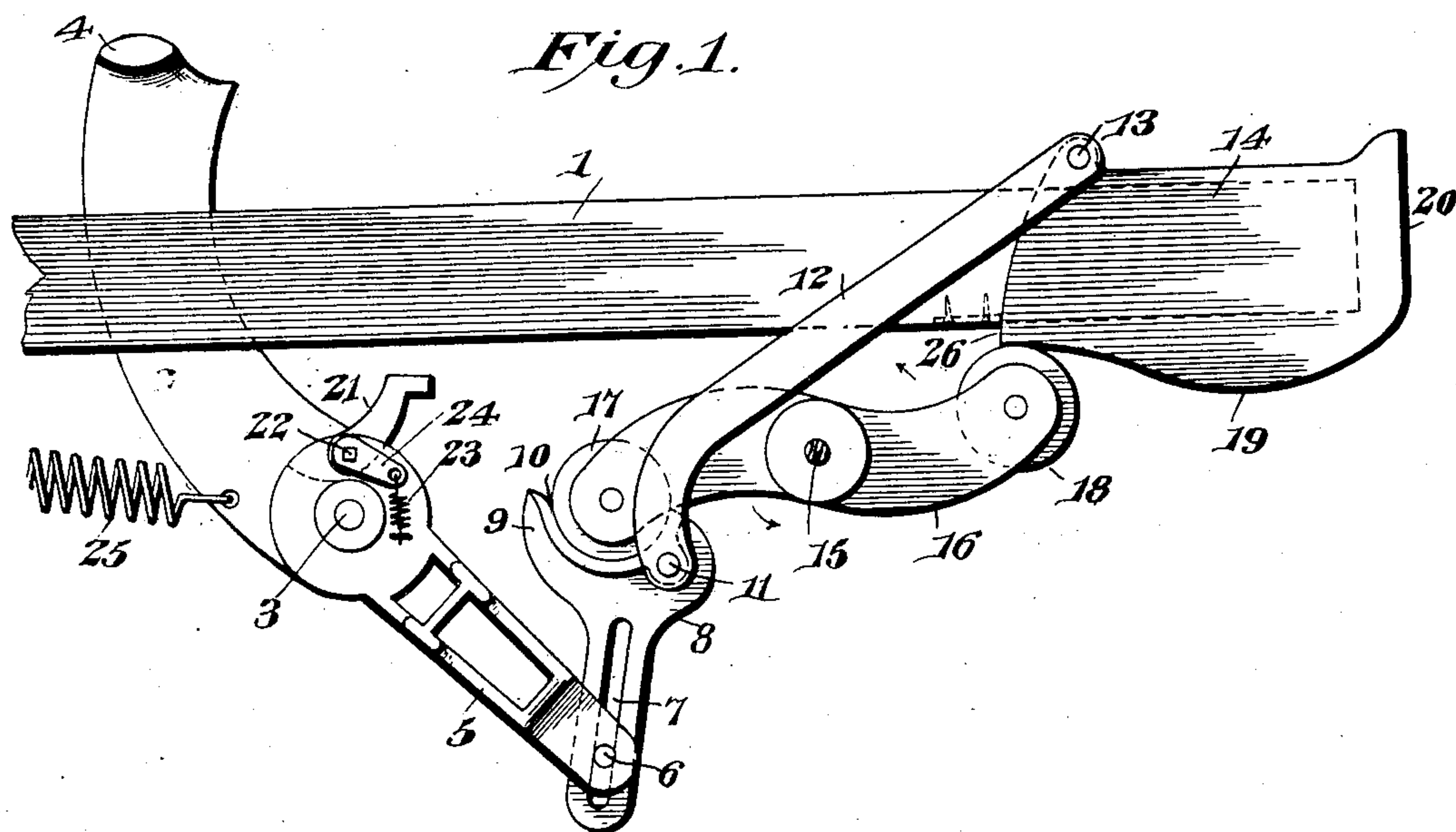
PATENTED JUNE 14, 1904.

W. R. COLMAN.  
BALING PRESS.

APPLICATION FILED MAY. 8, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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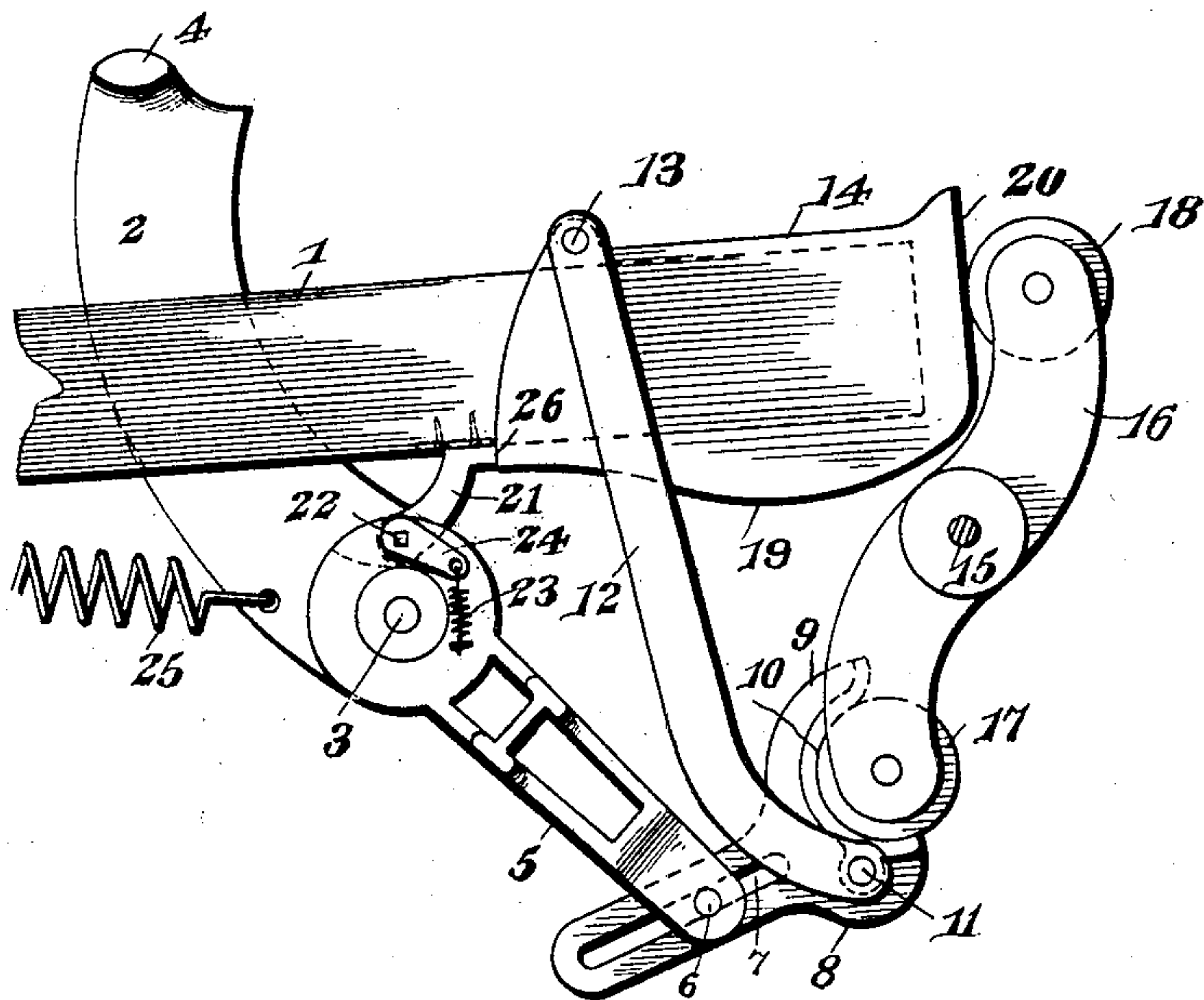
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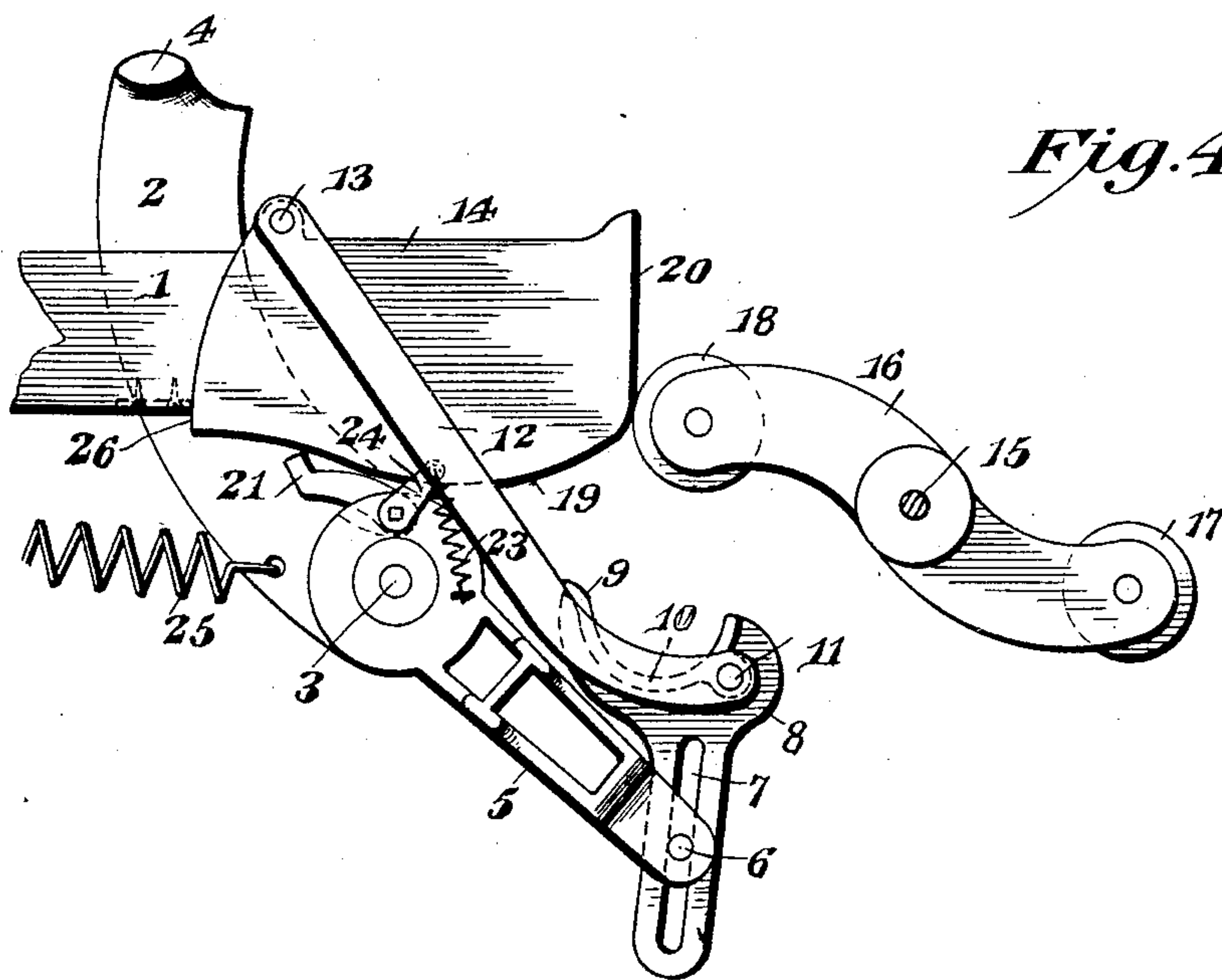
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NO MODEL.

2 SHEETS—SHEET 2.



*Fig. 3.*



*Fig. 4.*

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# UNITED STATES PATENT OFFICE.

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## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 762,689, dated June 14, 1904.

Application filed May 8, 1903. Serial No. 156,229. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM RICHARD COLMAN, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Baling-Press, of which the following is a specification.

My present invention relates to an improvement in baling-presses, and more particularly to novel power mechanism for operating a plunger which reciprocates within a press-box to compress the successive charges of material fed therein while the plunger is in its retracted position.

The objects of the invention are to secure a comparatively long stroke of the plunger, a large feed-opening, and an extended dwell of the plunger at the limit of its retractile movement, whereby the operator is enabled to feed a complete charge of material to the press-box before the plunger advances.

A further object of the invention is to economize power by the utilization of a power-head of minimum size and by the elimination of the seat or socket usually formed in the end of the pitman-head.

To the accomplishment of these objects and others subordinate thereto the invention in its preferred embodiment resides in those features of construction and arrangement to be hereinafter described, illustrated in the accompanying drawings, and defined in the appended claims.

In said drawings, Figure 1 is a plan view of the power mechanism of the press, the pitman being shown at the limit of its retractile movement. Fig. 2 is a similar view with the pitman sufficiently advanced to permit the engagement of its rear end by the power-head.

Fig. 3 is still another view of the same character with the pitman farther advanced and in engagement with a swinging pitman-guide, and Fig. 4 is another plan view showing the pitman at the limit of its forward movement.

Like numerals are employed to designate corresponding parts throughout the views.

Presses of the type of which this invention is concerned include a press-box in which reciprocates a plunger, these elements being omitted from the drawings, since presses of

this type are common in the art. The plunger is reciprocated by a pitman 1, the power end of which is shown in the several figures of the drawings. The pitman is ordinarily supported at a point adjacent to its end by a supporting-arm 2, secured to a supporting-base, (not shown,) as by a bolt 3, and formed at one extremity with the usual stop-lug 4. The casting in which the supporting-arm 2 is formed is in accordance with my invention provided with a rigid extension or bracket 5. At the extremity of this bracket is retained a vertically-disposed pin 6, received within a comparatively long slot 7, extending longitudinally of what may be termed a "draw-bar" 8. This draw-bar is provided with an enlarged terminal head 9, formed with a socket or concavity 10, and to this head, preferably at a point adjacent to one end thereof, is pivotally connected, as indicated at 11, a link 12. The link 12 is somewhat longer than the bar 8 and is preferably somewhat curved at the end thereof connected to the bar. The opposite end of the link 12 is pivotally connected, as indicated at 13, to the metal cap or head 14 of the pitman. The connections of the several elements described may be varied in many respects for the purpose of securing the necessary movements without incidental lost motion. For instance, the extremity of the arm or bracket 5 may be bifurcated for the reception of the draw-bar to facilitate the sliding and swinging movements thereof without unnecessary vibration. In like manner the link 12 may be duplicated at the lower side of the pitman, although so far as the invention is concerned the manner in which the parts are guided or the duplication of certain of the parts to secure greater stability is immaterial.

To one side of the pitman 1 is disposed a vertical power-shaft 15, upon which is mounted in the usual manner a rotary double-ended head 16, provided at its opposite extremities with rollers 17 and 18, which in the fully-retracted position of the pitman engage the seat or socket 10 of the draw-bar and the front end of the adjacent side wall of the pitman-head 14, respectively. The side face of the pitman-head 14, which the rollers of the



power-head successively engage, is curved to form a cam 19, the purpose of which will be made apparent hereinafter. Another novel feature of this head is the perfectly flat or straight end wall 20 thereof. It has heretofore been necessary to provide the rear extremity of the pitman or of the head thereof with a pronounced concavity or socket designed to prevent the pitman from moving out of contact with the rollers of the power-head by reason of the lateral movement of said pitman during its forward stroke. While this concavity or socket accomplishes the end for which it is designed, it presents great resistance to the movement of the power-head when the latter reaches the position in which the roller moves out of contact with the pitman. The sudden imposition of this strain upon the draft-animals is obviously objectionable, particularly as it occurs at the limit of the plunger-stroke, at which time a maximum back pressure is exerted upon the pitman by the highly-compressed material in advance of the plunger. This objectionable feature I have overcome by making the rear end of the pitman-head perfectly flat or smooth and by providing a swinging guide 21, which compels the pitman to move laterally in a manner to compensate for the arcuate movement of the power-roller after the latter has moved into engagement with the flat end face of the pitman-head. By the provision of this guide and the consequent lateral movement of the pitman the rear end of the latter will move forward in an arcuate path, corresponding substantially to the arcuate path traversed by the power-rollers, so that possible disengagement of the pitman and the power-head during the forward stroke of the former is prevented, and at the same time the elimination of the usual socket in the end of the pitman-head permits the power-roller to move easily and smoothly out of contact therewith when the forward end of the stroke is reached. The swinging guide 21 is in the form of an arm mounted upon a vertical shaft 22, journaled in the hub portion of the supporting-arm 2. This guide-arm extends somewhat rearwardly and toward the pitman and is retained in its normal position by a spring 23, secured at one end to a fixed part and at its opposite end to a rocker-arm 24 on the shaft 22. The retraction of the pitman is effected in the usual manner by a strong retracting-spring 25, secured to the arm 2, as shown in Fig. 1, and to the pitman at an advanced point.

Briefly, the operation of the mechanism described is as follows: The opposite ends of the power-head being in engagement with the draw-bar and pitman-head, respectively, as shown in Fig. 1, the rotation of the head through the instrumentality of the sweep in the usual manner will cause the draw-bar and pitman to be moved in opposite directions, and since these two elements are connected by

the link 12 the pitman will be forced to move forward, and the draw-bar besides being shifted endwise will swing in order that its engagement with the head may be maintained during a predetermined movement of the latter. As the forward movement of the pitman continues the pitman-head 14 will travel forwardly over one of the rollers of the power-head—as, for instance, the roller 18—and as the cam 19 of said head travels over the roller the lateral movement of the pitman will be accentuated, and by reason of the link connection between the draw-bar and the pitman such accentuation will result in an increase of pressure upon the plunger. Obviously, therefore, the plunger will be advanced under increasing pressure as the compression of the material in advance of the plunger increases. By the time the draw-bar becomes ineffective by reason of the advance of the link the roller 18 of the power-head will have moved into engagement with the flat terminal face 20 of the pitman-head 14. (See Fig. 2.) Further movement of the pitman will now be effected from the power-head direct, and as the roller 17 moves out of engagement with the draw-bar the pitman will be drawn laterally to cause the engagement of the swinging guide 21 with a shoulder 26 on the pitman, this shoulder being preferably formed by the front end of the head 14. This position of the parts, the pitman being in engagement with the swinging guide and the power-head being ready to move out of engagement with the draw-bar, is shown in Fig. 3. The special utility of the guide 21 will now be apparent. As the power-head continues to rotate the pitman will be forced forward and by its engagement with the guide 21 will cause the latter to swing, and since its outer end must necessarily move in an arcuate path the pitman will be moved laterally in order to prevent the arcuate movement of the engaged end of the power-head from effecting the disconnection of the head and pitman before the latter has reached the limit of its forward movement. Before such limit is reached, however, the guide 21 will have been swung back to an ineffective position, as shown in Fig. 4. When the parts have reached this position, or perhaps upon slight further advance of the power-head, the spring 25 will retract the pitman, and as the cam-face 19 of the latter rides back over the roller of the head the pitman will be moved laterally, restoring the parts to their normal positions, as indicated in Fig. 1, and permitting the swinging guide 21 to fly back to its initial position under the impulse of its spring 23.

It is thought that from the foregoing the construction and operation of my power mechanism will be clearly comprehended; but while the present embodiment of the invention is thought at this time to be preferable I desire to reserve the right to effect such changes, modifications, and variations of the illustrated



structure as may come fairly within the scope of the protection prayed.

What I claim is—

1. In power mechanism for presses, the combination with a pitman, and a draw-bar provided with a terminal socket and having link connection with the pitman, of a double-ended rotary power-head engaging the socket of the draw-bar and the adjacent side wall of the pitman during the initial movement of the latter.

2. In power mechanism for presses, the combination with a pitman, of a draw-bar having a combined reciprocating and swinging movement and formed with a socket, a link connecting one end of the draw-bar to the pitman, and a rotary power-head cooperating with the draw-bar and pitman to propel the latter and arranged to engage the socket in the draw-bar.

3. In power mechanism for presses, the combination with a pitman, of a bracket disposed at one side thereof, a draw-bar having loose pivotal connection with the bracket and formed with a terminal socket, a link connecting one end of the draw-bar to the pitman, and a rotary power-head having terminal engagement with the socket of the draw-bar and with one side of the pitman.

4. In power mechanism for presses, the combination with a pitman, of a bracket located at one side thereof and provided with a pin, a draw-bar having a terminal socket and formed with a longitudinal slot for the reception of the pin, a link connecting the draw-bar and pitman, and a rotary power-head provided with terminal rollers disposed to engage the socket of the draw-bar and the adjacent side of the pitman during the initial movement of the latter.

5. In a power mechanism for presses, the combination with a pitman, a draw-bar, and an intermediate connecting-link; of a rotary power-head cooperating with the draw-bar and pitman during the initial movement of the latter and with the pitman alone during the final movement thereof, and means for moving the pitman laterally to prevent premature disengagement of the pitman and head.

6. In power mechanism for presses, the combination with a pitman, a draw-bar, and an intermediate connecting-link; of a rotary

power-head cooperating with the draw-bar and pitman, and a swinging pitman-guide disposed for engagement with the pitman to move the same laterally whereby premature disengagement of the head and pitman is prevented.

7. In power mechanism for presses, the combination with a pitman provided at one side with a shoulder and at its rear end with a flat face, of a rotary double-ended power-head arranged to engage the flat end face of the pitman to propel the latter, and a swinging pitman-guide disposed for engagement with the shoulder of the pitman during the advance of the latter, and means for effecting the retraction of the guide upon the retraction of the pitman.

8. In power mechanism for presses, the combination with a pitman having a terminal head provided with a flat end face, of a rotary power-head disposed to engage said face to propel the pitman, a swinging pitman-guide disposed to be engaged by the opposite end of the pitman-head and to compel sufficient lateral movement of the pitman to compensate for the arcuate movement of the engaging portion of the power-head and thus prevent the premature disengagement of said head from the flat face of the pitman-head, an arm connected to the swinging guide, and a spring connected to said arm to retract the guide upon the retraction of the pitman.

9. In power mechanism for presses, the combination with a pitman, of a draw-bar located at one side thereof and having link connection therewith, a rotary double-ended power-head engaging the draw-bar and the side face of the pitman during the initial movement of the latter and arranged to engage the end face of the pitman during its final movement, and a swinging guide arranged to engage the pitman and to compel sufficient lateral movement thereof to prevent the premature disengagement of the pitman and power-head.

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

WILLIAM RICHARD COLMAN.

Witnesses:

C. J. CORDRIEMON,  
E. G. MOREHEAD.