

No. 669,176.

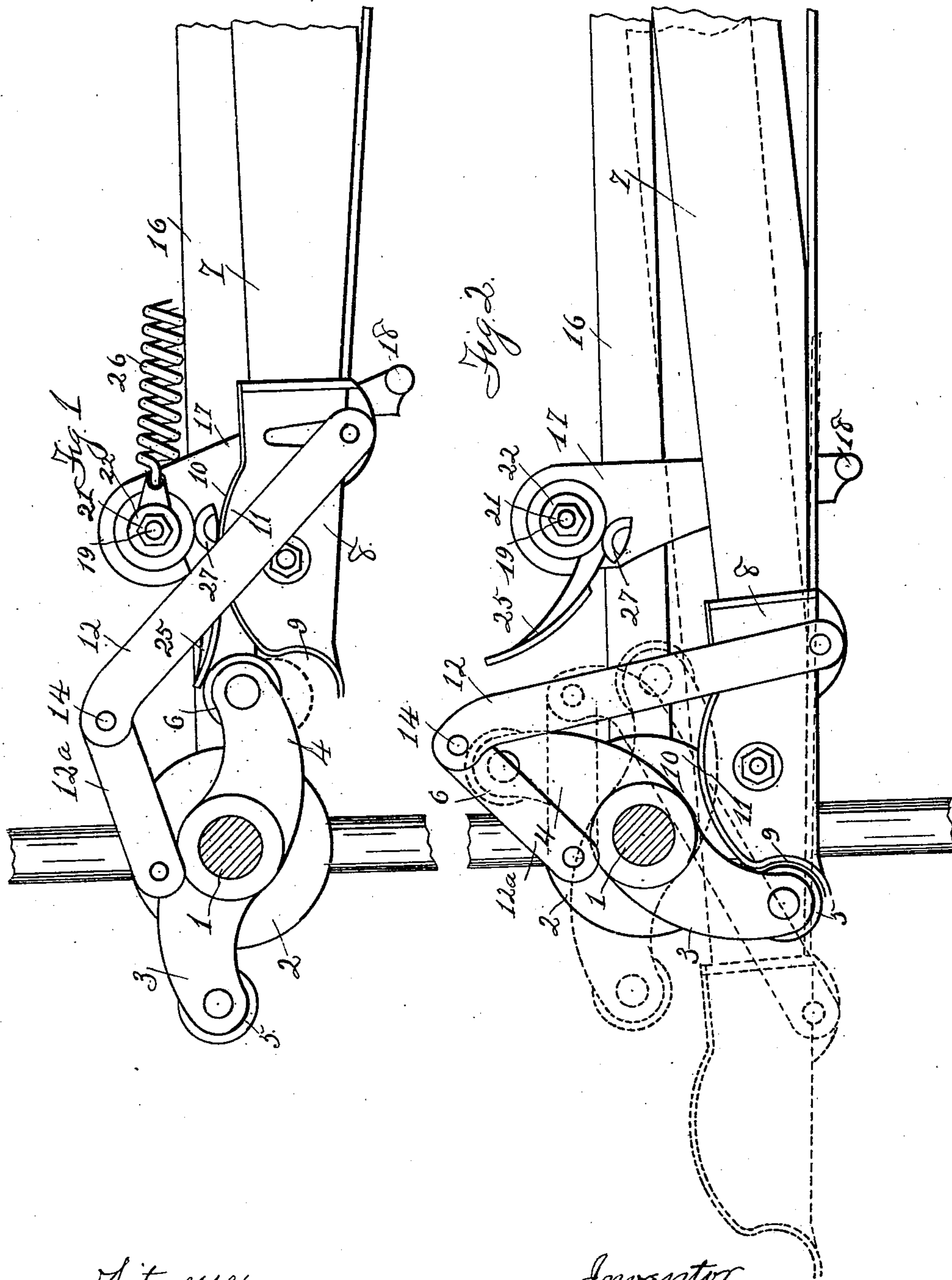
Patented Mar. 5, 1901.

W. S. LIVENGOOD.  
BALING PRESS.

(Application filed June 1, 1900.)

2 Sheets—Sheet 1.

(No Model.)



Witnesses  
J. J. Pabel  
W. H. Hewes

Inventor  
W. S. Livengood  
by J. S. Brown  
Attorney

No. 669,176.

W. S. LIVENGOOD.  
BALING PRESS.

Patented Mar. 5, 1901.

(No Model.)

(Application filed June 1, 1900.)

2 Sheets—Sheet 2.

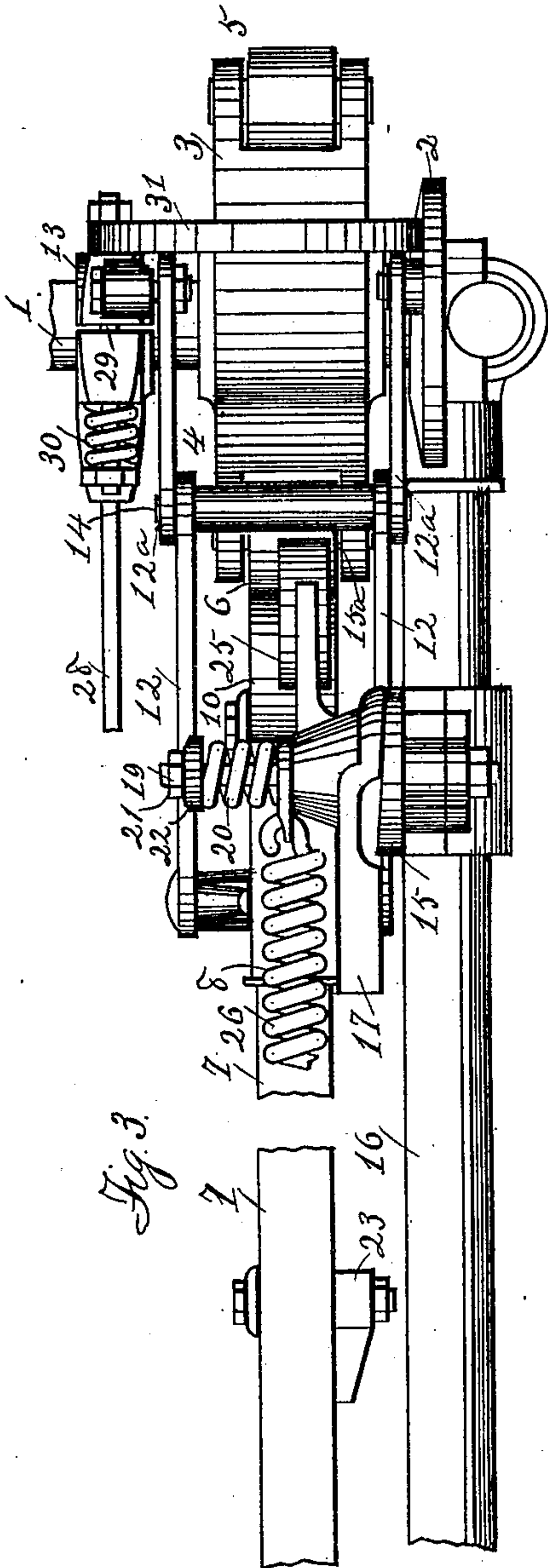


Fig. 3.

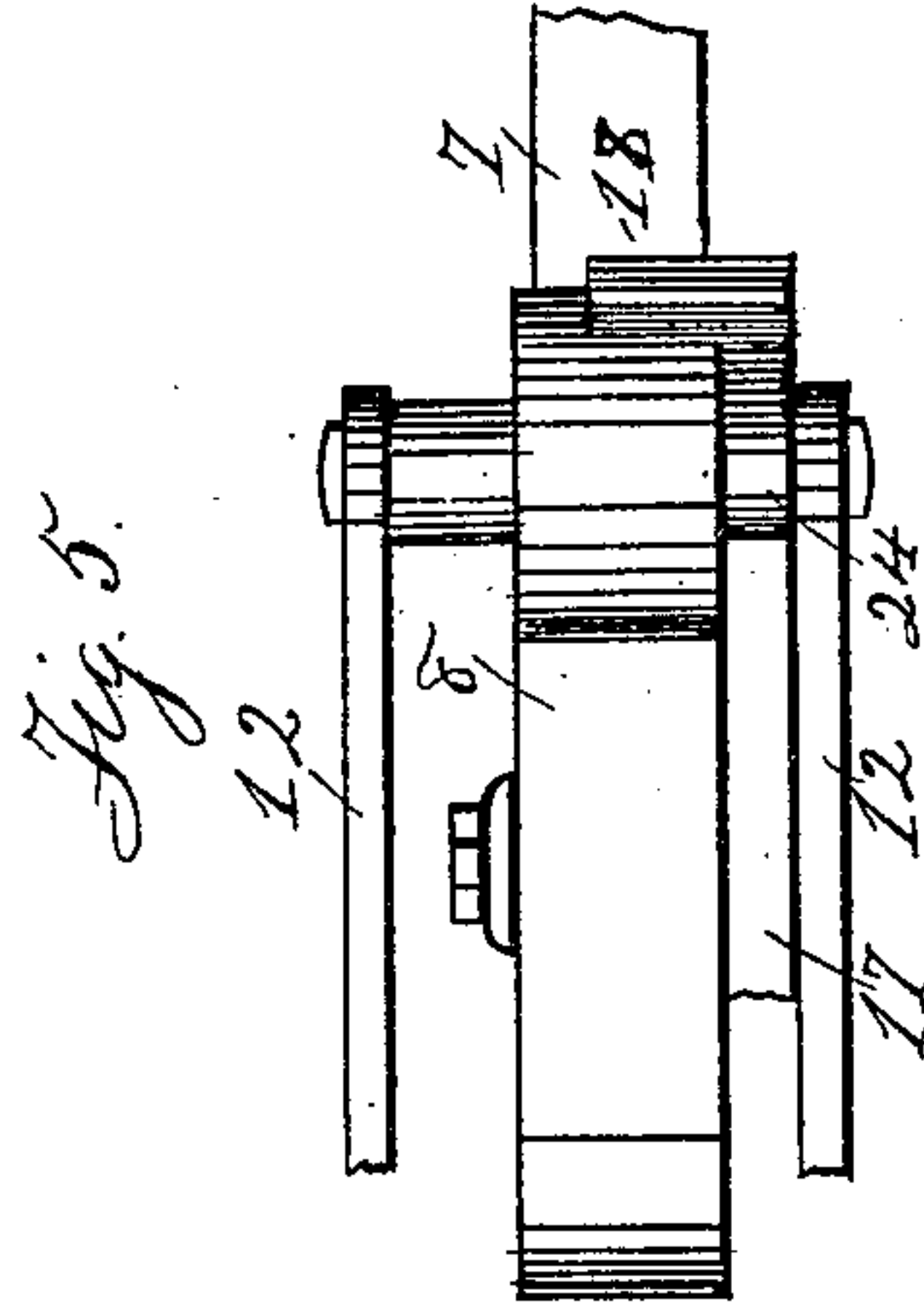


Fig. 5.

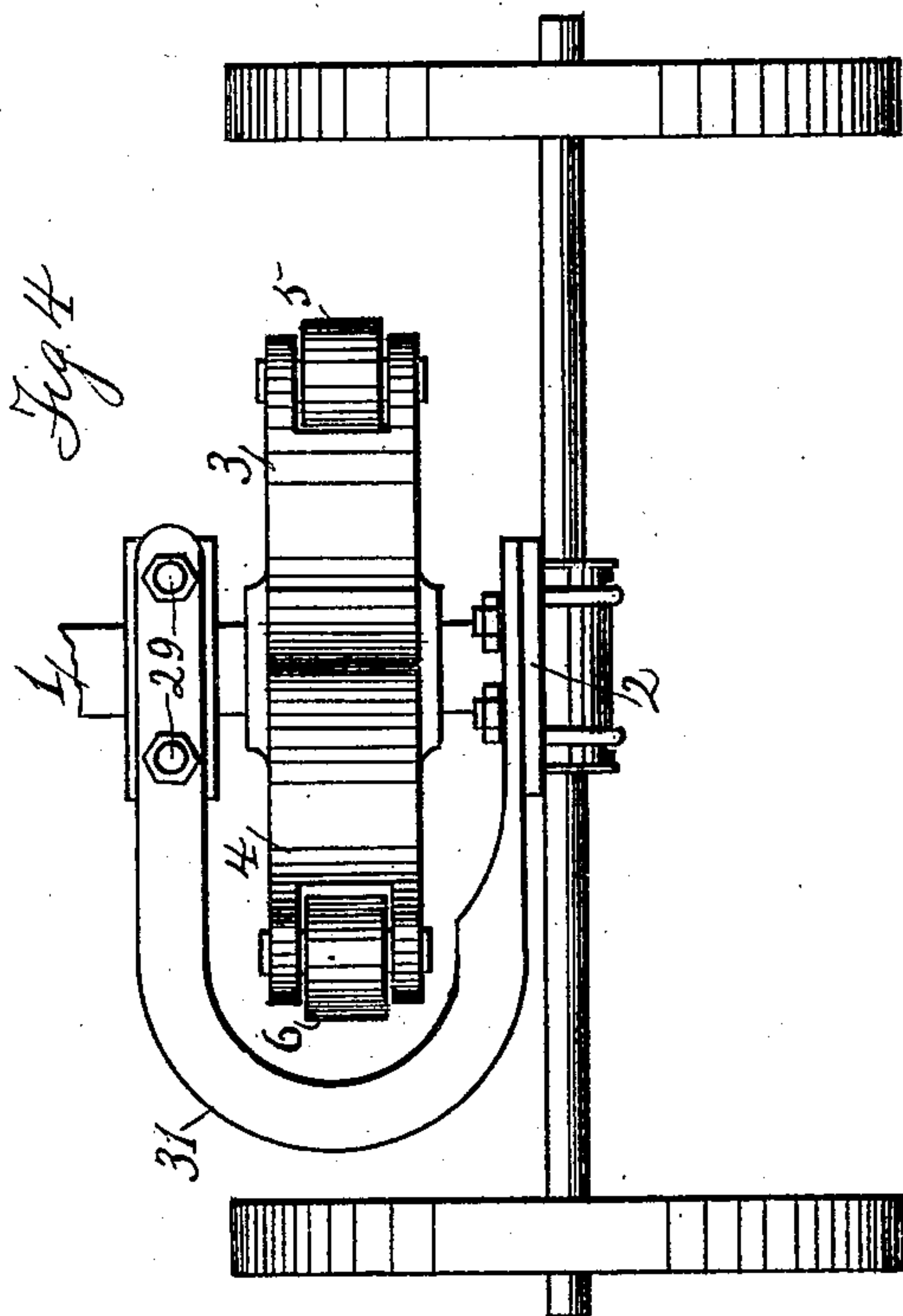


Fig. 4.

Witnesses.  
J. J. Pabst  
W. H. News

Inventor  
W. S. Livengood  
by  
J. S. Brown  
Attorney



# UNITED STATES PATENT OFFICE.

WINFIELD S. LIVENGOD, OF KANSAS CITY, KANSAS, ASSIGNOR TO THE  
GEO. ERTEL CO., OF QUINCY, ILLINOIS.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 669,176, dated March 5, 1901.

Application filed June 1, 1900. Serial No. 18,698. (No model.)

*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 Wyandotte, in the State of Kansas, have invented certain new and useful Improvements in Baling-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in baling-presses of that type or class known as "full-circle" presses, in which a plunger is operated by a pitman having a vibrating end portion, and it has more particular reference to improvements in the means for controlling and operating the pitman of such a press; and my invention consists in certain features of novelty hereinafter described, and pointed out in the claims.

Figure 1 represents a plan view of the power end of a baling-press, showing the relation of the parts with the pitman at the extremity of the instroke, the trip-lever roll having just left the end of the pitman. Fig. 2 represents a plan view of the same, showing the relation of the parts with the pitman in two positions—first, in dotted lines showing the pitman at the extremity of the outstroke or rebound, and, second, in heavy lines showing the pitman in the position at which the trip-lever roll enters the pocket and takes effect upon the end of the pitman. Fig. 3 represents a side elevation, the parts being in substantially the same position as shown in Fig. 1. Fig. 4 represents a detail view showing the relation of the stud upon the outer end of the swinging pitman-brake for limiting the outward movement of the pitman, the parts being in substantially the same position as shown in Fig. 1. Fig. 5 represents an end elevation showing the arrangement of the yoke supporting the head-block which forms the upper bearing of the power-shaft.

Similar numerals refer to similar parts throughout the several views.

1 represents a vertical power-shaft mounted on a bed-plate 2 and provided with the laterally-extending power-arms or trip-levers 3 and 4, having antifriction-rollers 5 and 6 in their ends. These parts are of the usual construction and arranged to be operated in the

usual way by means of a horse-lever mounted on the power-shaft, which being familiar and common to this class of hay-presses is not shown.

7 represents the pitman, having mounted upon its vibrating end a pitman-head 8, provided at its end with a pocket 9 to receive the trip-lever roller and having a convex face 10, forming a hump 11 upon its inner side, over which the trip-lever roller travels as the pitman advances upon its instroke. The vibrating end of the pitman in its path and movement is controlled by a toggle device consisting of the arms 12, pivotally connected with the pitman, and the arms 12<sup>a</sup>, the upper one of which is pivotally connected with the head-block 13 and the lower one pivotally mounted upon the bed-plate 2, said arms 12 and 12<sup>a</sup> being hinged together at 14, a sleeve 15<sup>a</sup> being provided at the knee of the toggle thus formed, as shown in Fig. 3. The arrangement and pivotal relation of said toggle-arms are such that when, as shown in Fig. 2, the pitman is at the extremity of its outstroke the knee of the toggle will lie in the path of the trip-lever arms and as the trip-lever advances as one trip-lever roller engages the side of the pitman the opposite roller will engage the knee of the toggle and operate the pitman at the beginning and during the early part of the instroke, the engagement of said trip-lever roller with the knee of the toggle continuing until the opposite trip-lever roller is seated in the pocket at the end of the pitman, as shown in heavy lines in Fig. 2, the toggle-arms acting to draw the pitman into position as the trip-lever roller passes down the inclined face of the pitman and into the pocket.

Upon a bed-plate 15, mounted upon the reach 16, is pivotally mounted a swinging or oscillating brake-beam 17, extending under and supporting the vibrating end of the pitman and upon which the pitman rides in making its in and out stroke, a stud 18 being provided on the outer extremity of said beam to limit the lateral movement of the pitman. Upon the pin 19, on which said brake-beam is pivoted, is mounted a tension-spring 20, the tension of which may be adjusted by the nut 21, bearing upon the cap 22, and the meeting or bearing faces of the brake-beam and said bed-plate are at an inclination to the horizontal,



as shown in Fig. 3, so that as the pitman rebounds after making its instroke as it nears the limit of its rebound a block 23 on the under side of the pitman is arranged to engage said brake-beam and turn it on its pivot and by reason of said inclined faces will compress said spring, and thereby the pitman is gradually stopped and the shock of the rebound relieved, and then on the instroke as the pitman approaches the limit of such instroke an extension 24 on the under side of the pitman is so arranged as to engage said brake-beam and carry it back to the position shown in Fig. 1 at full instroke. By reason of said inclined faces the force required to move said brake-beam will not appreciably interfere with the full force of the instroke.

It very frequently happens that when the instroke is made, for various reasons within the knowledge of those familiar with the operations of a hay-press, the plunger will stick in the baling-chamber and the pitman will not rebound, thus causing delay and serious inconvenience. To obviate this difficulty a tripping-arm 25 is mounted upon said brake-beam and extends into the path traversed by the trip-lever, so that when the pitman is released from the trip-lever roller, if the rebound does not at once take place, as the trip-lever advances it comes in contact with said tripping-arm and turns said brake-beam, which by its engagement with said extension 24 acts upon the pitman to release the plunger, when under the pull of the usual tension-spring 26 the rebound will take place. The importance of this feature in securing the immediate rebound of the pitman will be apparent to any one experienced in the operation of a hay-press.

It will be observed that, as shown in dotted lines in Fig. 2, as the pitman reaches the limit of its rebound the trip-lever roller is still some distance from the side of the pitman, this distance representing about a ten-foot walk for the horses on the circle of a twelve-foot horse-lever between the end of the rebound and the beginning of the instroke of the pitman. By this arrangement to obtain such interval an important advantage is gained in that, as is well known, in the usual construction and operation of a hay-press the interval between the rebound and the beginning of the instroke is so short that the person feeding the press is not given time to properly introduce a charge of hay into the baling-chamber in advance of the plunger. With the arrangement and operation here set out such an interval is gained that the press may be properly fed, while when the trip-lever roller comes into engagement with the side of the pitman by the accelerated movement given to the pitman at the beginning of the instroke by the other trip-lever roller acting through the toggle-arms no time is lost in gaining such interval, and, furthermore, by the arrangement and construction here set out a longer stroke by some eleven inches is given to the

pitman than heretofore obtained, and by reason of such longer stroke of the pitman a correspondingly-longer feed-opening to the baling-chamber is obtained, thereby very greatly increasing the capacity of the press.

27 represents a stop-block arranged to limit the lateral movement of the pitman and effect the release of the pitman from the trip-lever at the end of the instroke.

As shown in Fig. 3, the head-block 13 is formed in two parts, to the rear one of which the reach-rod 28, extending to and connecting the head-block with the baling-case, is secured. The connection of the reach-rod with the baling-case being a familiar construction in this type of presses is not shown. Said two parts of the head-block are secured together upon the power-shaft by bolts 29, upon which are mounted tension-springs 30, so arranged that by the longitudinal strain upon the reach-rod in operating the pitman the two parts of said head-block will be drawn apart and the springs 30 compressed, and when at the end of the instroke the trip-lever is released and the strain upon the reach-rod relieved the expansion of said springs will close said parts together upon the power-shaft, forming a brake which will equalize the draft and relieve the shock upon the horses incident to the sudden release of the trip-lever. A yoke 31 is mounted upon the bed-plate 2 and secured by the bolts 29 upon the head-block to support the head-block and give stability to the power-shaft.

Having thus fully described my improvements and the manner in which they operate, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a baling-press having a reach connecting the baling-case with the power end of the press, the combination with a bed-plate mounted on said reach, a brake-beam pivotally mounted upon said bed-plate and operating upon inclined contiguous faces on said bed-plate and brake-beam, and a tension-spring bearing upon said brake-beam, of a pitman, a block on the under side of the pitman to the rear of said brake-beam and an extension on the under side of the pitman in advance of said brake-beam, arranged in such manner that the reciprocations of the pitman will operate said brake-beam, substantially as set forth.

2. In a baling-press having a reach connecting the baling-case with the power end of the press, the combination with a bed-plate mounted on said reach, a brake-beam pivotally mounted upon said bed-plate and operating upon inclined contiguous faces on said bed-plate and brake-beam, and a tension-spring bearing upon said brake-beam, of a pitman provided with a block upon its under side, arranged in such manner that the rebound of the pitman will operate said brake-beam to compress said spring and gradually stop the pitman and relieve the shock of the rebound, substantially as set forth.



3. In a baling-press having a suitable bed-plate and a reach connecting the baling-case with the power end of the press, the combination with a power-shaft mounted on said bed-plate, and trip-levers mounted on said shaft, of a bed-plate mounted upon said reach, a brake-beam pivotally mounted upon said bed-plate, a pitman, an extension on the under side of said pitman arranged to bear against the advance face of said brake-beam, and a tripping-arm mounted on said brake-beam, arranged in such manner that one of said trip-levers will act upon said trip-arm at the beginning of the outstroke of the pitman, substantially as set forth.

4. In a baling-press having a suitable bed-plate, a vertical power-shaft mounted upon said bed-plate, a yoke mounted upon said bed-plate, a head-block formed of flexibly-connected segments mounted upon and forming the upper journal-bearing of said shaft, and connected with and supported by said yoke, and a reach-rod connected with one of said segments, arranged in such manner that when the longitudinal strain upon said shaft is relieved said segments will close upon said shaft and act as a brake thereon; substantially as set forth.

5. In a baling-press having a suitable bed-plate, the combination with the pitman, the power-shaft and the trip-levers having anti-friction-rollers in their ends, of compound hinged arms so disposed that the hinge is adapted to bear against the trip-lever roller during the initial forward movement of the pitman, one of said arms pivoted on the bed-plate, the other arm pivotally connected with the pitman, and arranged to give a period of dwell or inaction to the pitman between the end of the outstroke and the beginning of the instroke; substantially as set forth.

6. In a baling-press having a suitable bed-plate, the combination with the pitman, the power-shaft, and the trip-levers having anti-friction end rollers, of compound hinged arms so disposed that the hinge is adapted to bear against the trip-lever roller during the initial forward movement of the pitman, one of said arms pivoted on the bed-plate within the radius of the trip-levers, the other arm pivotally connected with the pitman, and arranged to give a period of dwell or inaction to the pitman at the limit of rebound before the trip-levers again act to give motion to the pitman, substantially as set forth.

7. In a baling-press having a suitable bed-plate, the combination with the pitman, the power-shaft, and the trip-levers having anti-friction end rollers, of compound hinged arms, one of said arms pivoted on the bed-plate, the other arm pivotally connected with the pitman arranged to give to the pitman a period of dwell or inaction between the end of the outstroke and beginning of the instroke, and so disposed that the hinge is adapted to bear against the trip-lever roller during the initial forward movement of the pitman, and to form

a moving pivot for the arm connected with the pitman during the remainder of the movement; substantially as set forth.

8. In a baling-press having a suitable bed-plate, the combination with the pitman, the power-shaft and the trip-levers having anti-friction end rollers, of compound hinged arms, one of said arms pivotally connected with the pitman, the other arm pivoted on the bed-plate arranged to give a period of dwell or inaction to the pitman at the limit of its rebound before the trip-levers again act to give motion to the pitman, and so disposed that the hinge is adapted to bear against the trip-lever roller during the initial forward movement of the pitman and thence to the end of the forward movement to provide a moving pivot for the arm connected with the pitman; substantially as set forth.

9. In a baling-press having a suitable bed-plate, the combination with the pitman, the power-shaft, and the trip-levers having anti-friction-rollers in their ends, of a pair of arms pivotally connected with the pitman, and a pair of arms pivotally mounted on the bed-plate and having a hinged connection with said arms connected with the pitman arranged to give a period of dwell or inaction to the pitman between the end of the outstroke and the beginning of the instroke, and so disposed that the hinge is adapted to bear against the trip-lever roller during the initial forward movement of the pitman; substantially as set forth.

10. In a baling-press having a suitable bed-plate, the combination with the pitman, the power-shaft, and the trip-levers having anti-friction end rollers, of a pair of arms pivotally connected with the pitman and a pair of arms pivotally mounted on the bed-plate within the radius of said trip-levers and having a hinged connection with said arms connected with the pitman arranged to give to the pitman a period of dwell or inaction at the limit of its rebound before the trip-levers again act to give motion to the pitman, and so disposed that the hinge is adapted to bear against the trip-lever roller during the initial forward movement of the pitman; substantially as set forth.

11. In a baling-press, the combination of a plunger, a pitman connected to the plunger, means for imparting forward movement to the plunger, a carrier-arm upon which the pitman rests, means for causing the carrier-arm to move with the pitman on its rebound, and a brake for retarding the backward movement of the carrier-arm.

12. In a baling-press, the combination of a plunger, a pitman connected with the plunger, means for imparting forward movement to the pitman and plunger, a carrier-arm upon which the pitman rests, means for moving the carrier-arm with the pitman upon its rebound, and a brake for retarding the backward movement of the carrier-arm comprising a rotatable and a non-rotatable element,



a spring for forcing said elements toward each other, the said carrier-arm being rigidly united to the rotatable element.

13. In a baling-press, the combination of a  
5 plunger, a pitman connected with the plunger, means for imparting forward movement to the pitman and plunger, a carrier-arm upon which the pitman rests, means for causing the  
10 rebound, and a brake for retarding the back-

ward movement of the carrier-arm comprising a rotatable and a non-rotatable element, having oblique faces, and a spring for forcing said elements toward each other, the said carrier-arm being united to the rotatable element.

WINFIELD S. LIVENGOOD.

Witnesses:

G. WHITELAW SHIELD,

W. H. OSBORNE.