

No. 654,800.

W. S. & G. LIVENGOOD.

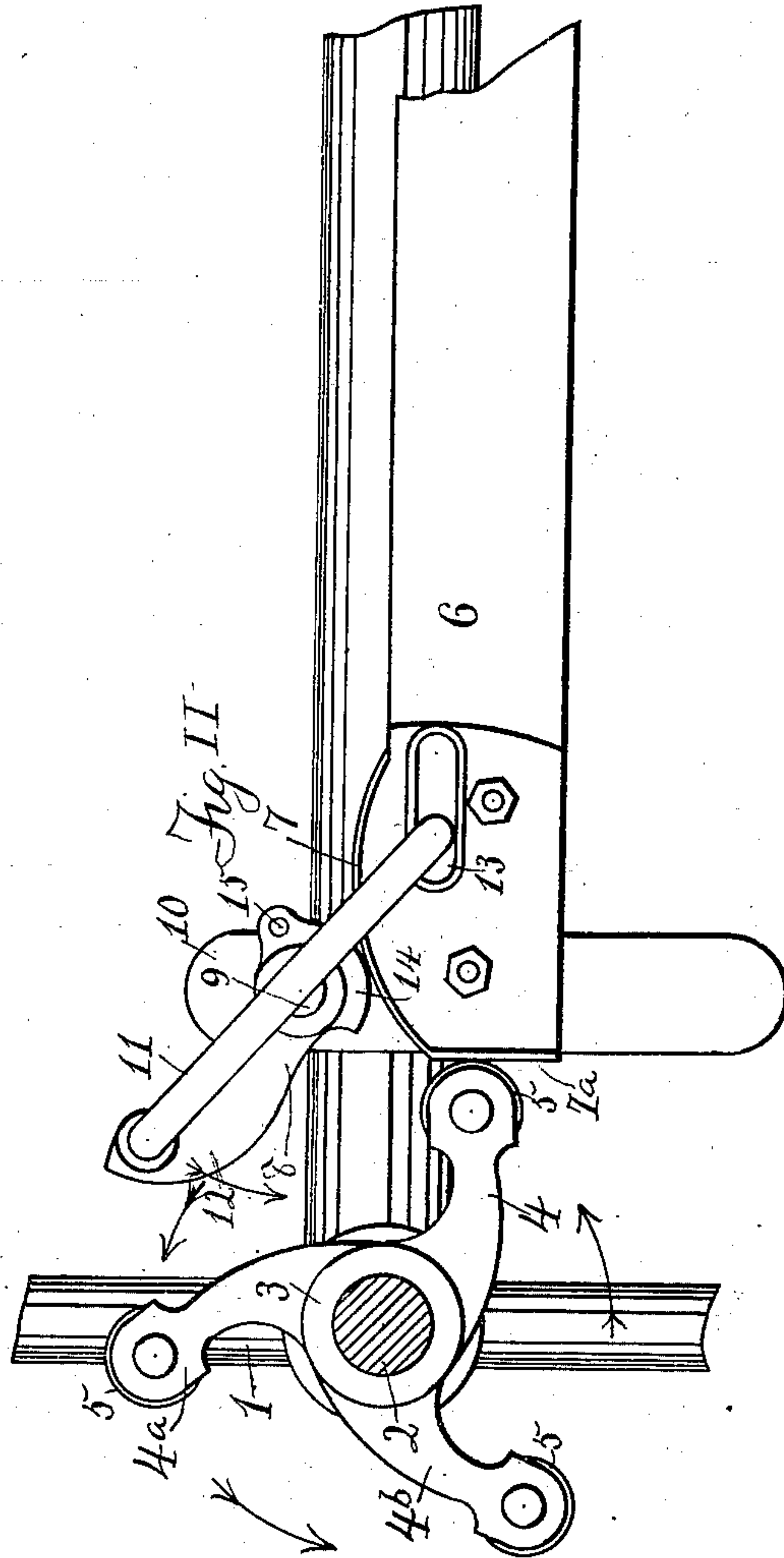
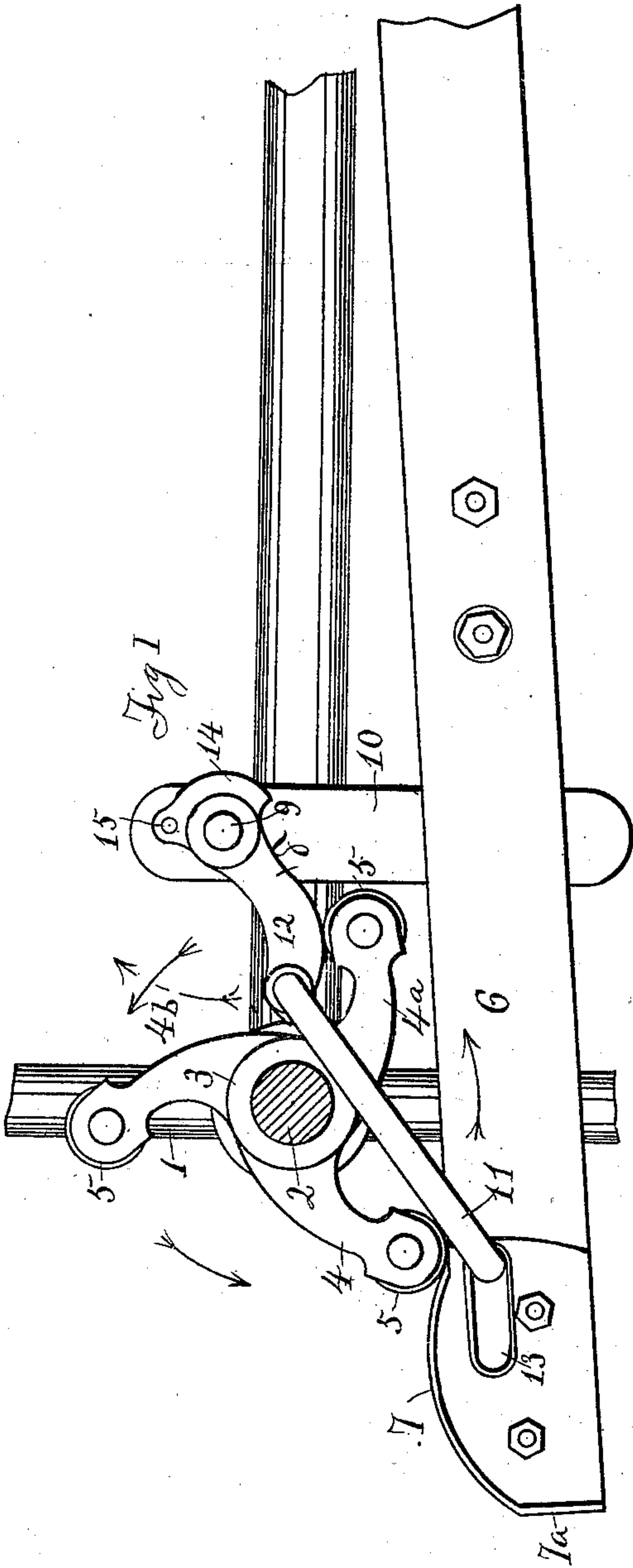
Patented July 31, 1900.

BALING PRESS.

(Application filed Mar. 25, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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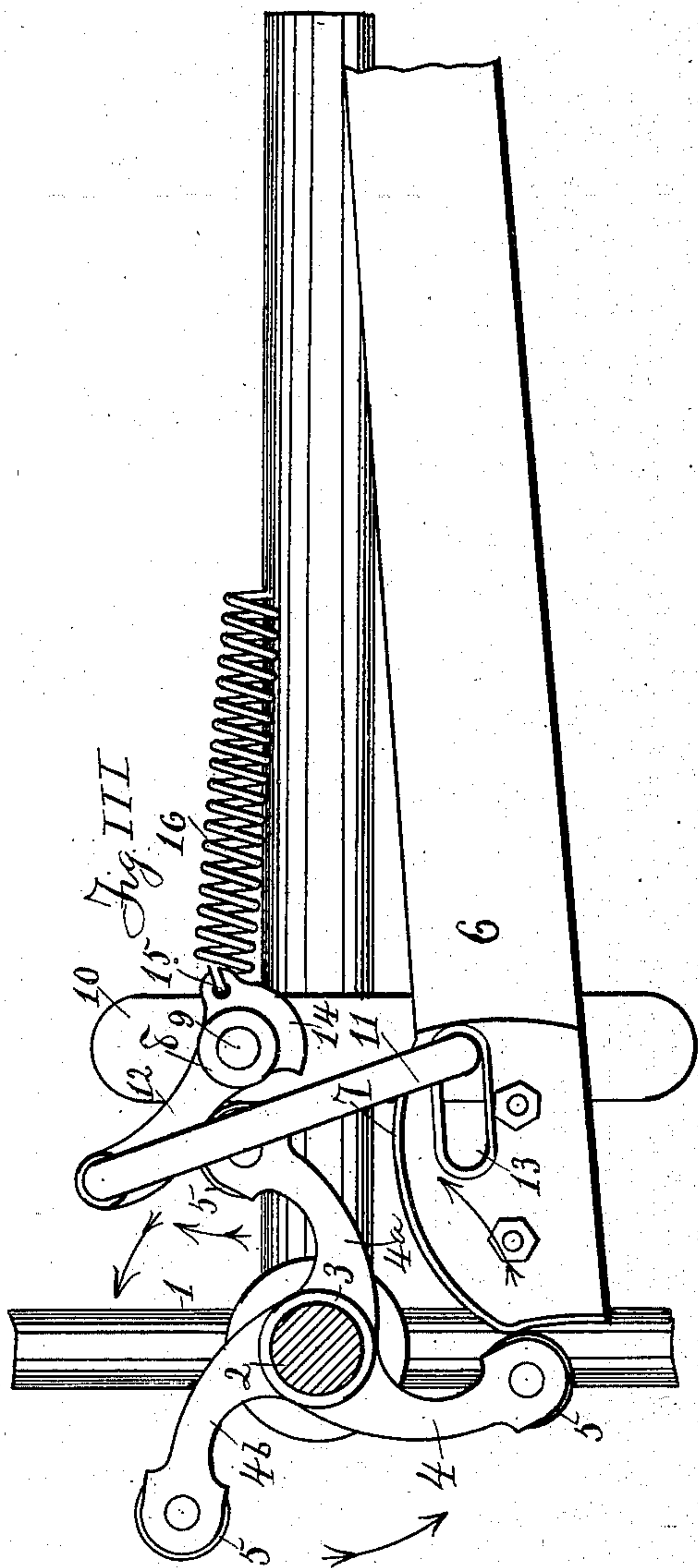
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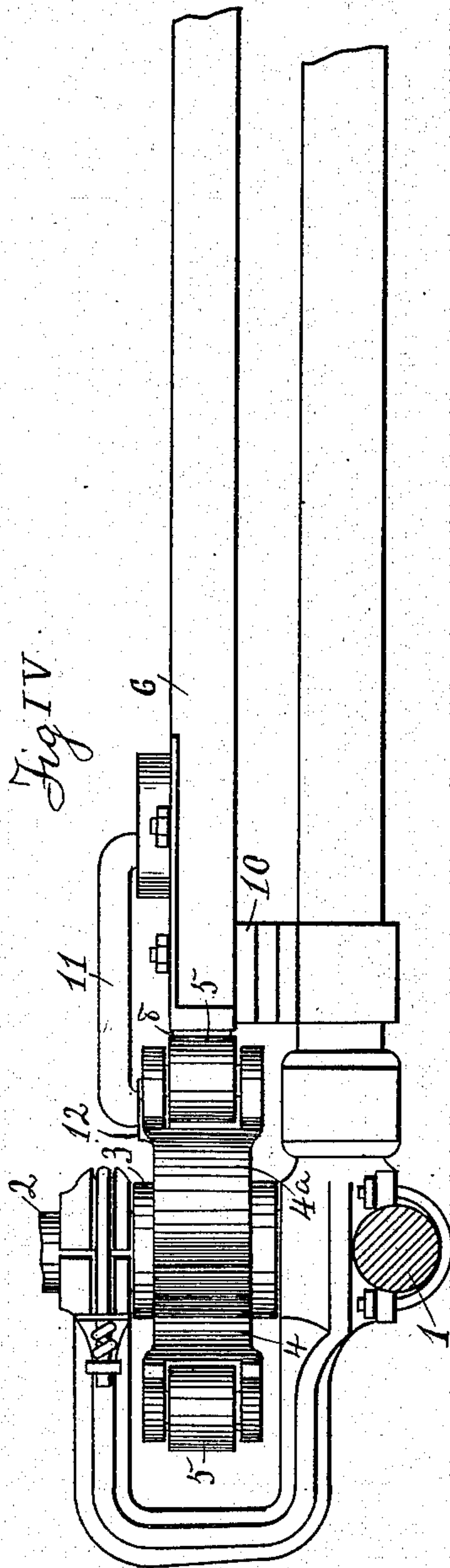
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UNITED STATES PATENT OFFICE

WINFIELD S. LIVENGOD AND GABRIEL LIVENGOD, OF KANSAS CITY,
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BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 654,800, dated July 31, 1900.

Application filed March 25, 1899. Serial No. 710,424. (No model.)

To all whom it may concern:

Be it known that we, WINFIELD S. LIVENGOD and GABRIEL LIVENGOD, citizens 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 are made a part of this specification.

Our invention relates to improvements in baling-presses, having more particular reference to improvements in the power end of the press and the devices and arrangement of devices by which the pitman is operated and controlled; and our invention consists in certain features of novelty hereinafter described, and pointed out in the claims.

Figure I represents a plan view of the pitman of a baling-press and its immediate operating and controlling mechanism embodying our invention, this view showing the pitman and the position and operative relation of the parts at the beginning of the instroke of the pitman. Fig. II represents a plan view showing the pitman and operative relation of the parts at the end of the instroke of the pitman. Fig. III represents a plan view showing the pitman and the operative relation of the parts at that point in the cycle at which the trip-arm passes to and takes effect upon the end of the pitman. Fig. IV represents a side elevation of the same, showing the pitman and operative relation of the parts as shown in plan view in Fig. II.

Similar numerals refer to similar parts throughout the several views.

1 represents the axle upon which the power is mounted.

2 represents the power-shaft, mounted in a foot-step carried on the axle in the usual manner.

3 represents a hub fixed upon and arranged to turn with the power-shaft. Upon said hub are provided the series of trip-arms 4, 4^a, and 4^b, having the usual antifriction end rollers 5. The yoke and horse lever or sweep by which the power-shaft is operated, being of the usual construction familiar in the art, are not shown.

6 represents the pitman, having a convex

inner face 7 and a square end 7^a, with our pitman-controlling device, the concavity forming a pocket in the pitman end usually provided not being required.

8 represents a guide-lever pivotally mounted on a stud 9 on the bed-plate 10.

11 represents a link connecting the arm 12 of said guide-lever with the pitman, the pitman end of said link operating in the slot 13 in the pitman-head. On the other end of said lever is formed the block 14, which at the proper time operates as a stop-block to determine the side movement of the pitman and prevent its passing the center at the end of the instroke.

15 represents an eye formed on the guide-lever, to which one end of the coiled spring 16 may be connected, the other end of said spring being connected with the pitman in the usual manner, said spring serving the purpose common thereto of retracting the pitman when the pressure in the baling-chamber is not sufficient to cause the rebound.

In operation, as shown in Fig. I, at the beginning of the instroke the lever-arm 12 is in the path of the trip-arm 4^a, while the next succeeding trip-arm 4 bears against the inner side of the pitman just to the rear of the convex face or hump thereon. Then as the trip-arms advance in their revolutions the arm 4^a, acting upon the lever-arm and through the link 11 upon the pitman, tends to draw the pitman sidewise or toward the power-shaft; but this being prevented by the action of the arm 4 the result is that the pitman is drawn backward, not, however, in a straight line, but on a compound curve formed by the action of the link as a radius with a moving center, the action of the trip-arm 4 tending constantly to carry it off of the curve on the link, and the action of the hump 7 on the pitman tending to still further modify the curve, the link and guide-lever, however, constantly controlling the path of the pitman. During this part of the movement, the trip-arm 4^a acting upon the lever-arm and through the link upon the pitman to draw the pitman backward, the backward movement of the pitman is very rapid, much more so than if the end of the link were fixed instead of moving and the backward movement of the pitman were due to the action

of the trip-arm 4 alone. It also moves through a larger space for a given movement of the trip-arm 4 than would be possible if the pitman were given its impulse solely by the trip-arm 4. The extent of this accelerated movement of the pitman is seen by comparing Fig. I with Fig. III, from which it will be seen that from the beginning of the instroke to the point at which the trip-arm roll passes to and acts upon the end of the pitman, while the trip-arm has moved through but about one-third or less of its course necessary to the full stroke of the pitman, the pitman itself has moved through nearly two-thirds of its stroke. This action is of the greatest advantage and importance, for during this part of the travel of the pitman the hay in the baling-chamber being in a loose condition but small amount of power is required to press it. It is therefore desirable that the travel to bring the trip-arm to bear upon the end of the pitman should be made as quickly and with as little travel of the team as possible. At the end of the instroke, as the pitman is released from the trip-arm and under pressure of the hay rebounds, the path of the pitman on its rebound is determined and controlled by the guide-lever and link.

By the use of three trip-arms on the hub the pitman is given three strokes for each revolution of the power-shaft or with each round of the team. In this there is not only a gain in time, as is manifest, but the pitman acting more quickly and more frequently smaller bunches of hay may be fed into the feed-opening, thus insuring more rapid and even pressing and a smoother bale. Another advantage obtained is that by the construction and arrangement embodying our invention we are able to make the radius of the trip-arms shorter by about one-fourth than in any tripping device now in use, and in consequence can use a horse lever or sweep shorter in like proportion, and thus with the team walking at the same rate on a smaller circle will gain largely in the daily capacity of the press. We would not, however, limit our trip to three arms, as it is manifest that our pitman-controlling device with some purely mechanical changes in construction could be operated with two or with more than three trip-arms. We are also aware that a tripping device giving three strokes of the pit-

man to each revolution of the power-shaft has been used on a baling-press, but we are not aware that such device has been before applied where a long stroke is given to the pitman, having been limited to take effect immediately and directly upon the end of the pitman.

Having thus fully described our improvements, what we claim as our invention, and desire to secure by Letters Patent, is—

1. In a baling-press having a suitable bed-plate the combination with the power-shaft provided with three trip-arms having anti-friction-rollers in their ends, of a pitman, a guide-lever fulcrumed on the bed-plate to the rear of said power-shaft and arranged to operate in the path of said power-arms, and a link connected with said lever, and with the pitman controlling the path of the pitman, substantially as set forth.

2. In a baling-press having a suitable bed-plate, the combination with a power-shaft provided with triple power-arms having anti-friction-rollers in their ends, of a pitman having a convex inner face, a guide-lever fulcrumed on the bed-plate to the rear of said power-shaft, and arranged to be operated by said power-arms, and a link connected with said lever and with the pitman and arranged to control the path of the pitman from the beginning to the end of its cycle; substantially as set forth.

3. In a baling-press having a suitable bed-plate and a vertical power-shaft mounted on said bed-plate, the combination with a pitman having a vibrating end portion, of a triple-armed trip-lever mounted on said power-shaft and arranged to operate the pitman, a lever fulcrumed upon the bed-plate and arranged to be acted upon by said power-arms and to act upon the pitman to give an accelerated initial movement to the pitman, and means for retaining the pitman within the action of said power-arms whereby said arms act first upon the side and then upon the end of the pitman; substantially as set forth.

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