

(No Model.)

3 Sheets—Sheet 1.

J. LA DOW.
BALING PRESS.

No. 367,717.

Patented Aug. 2, 1887.

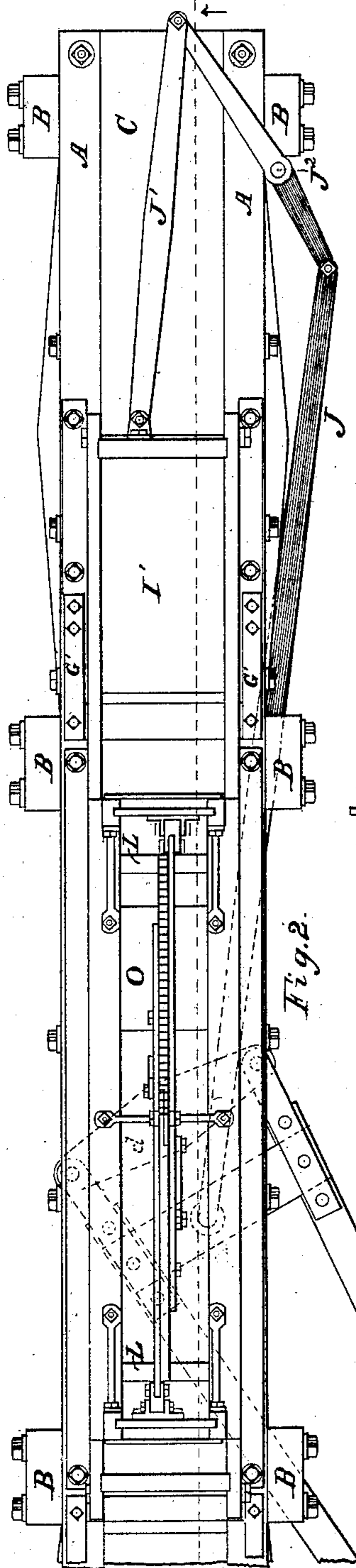


Fig. 1.

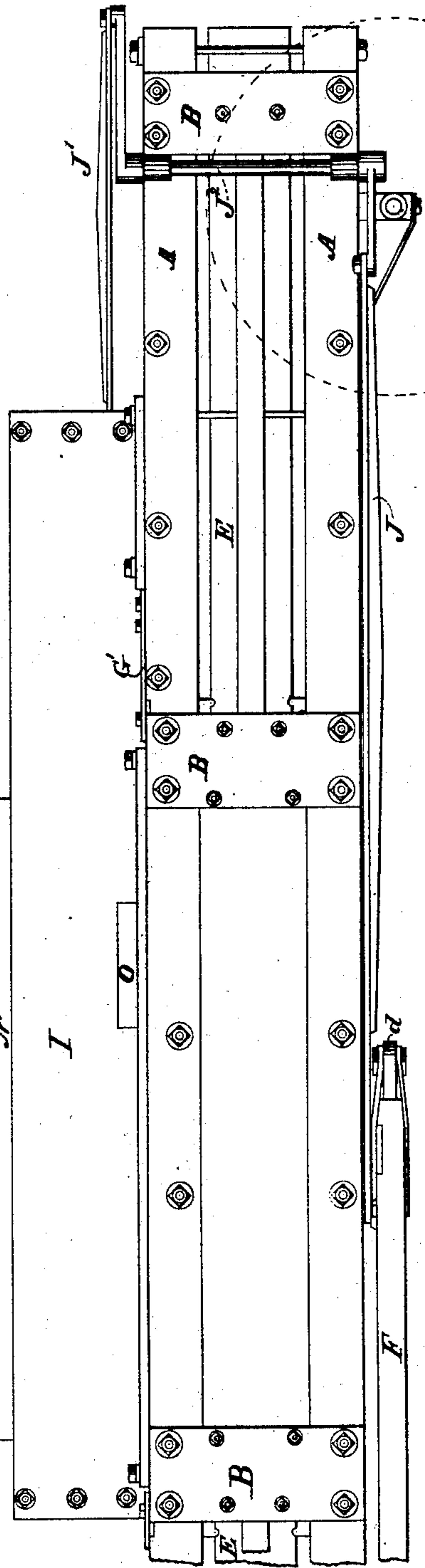
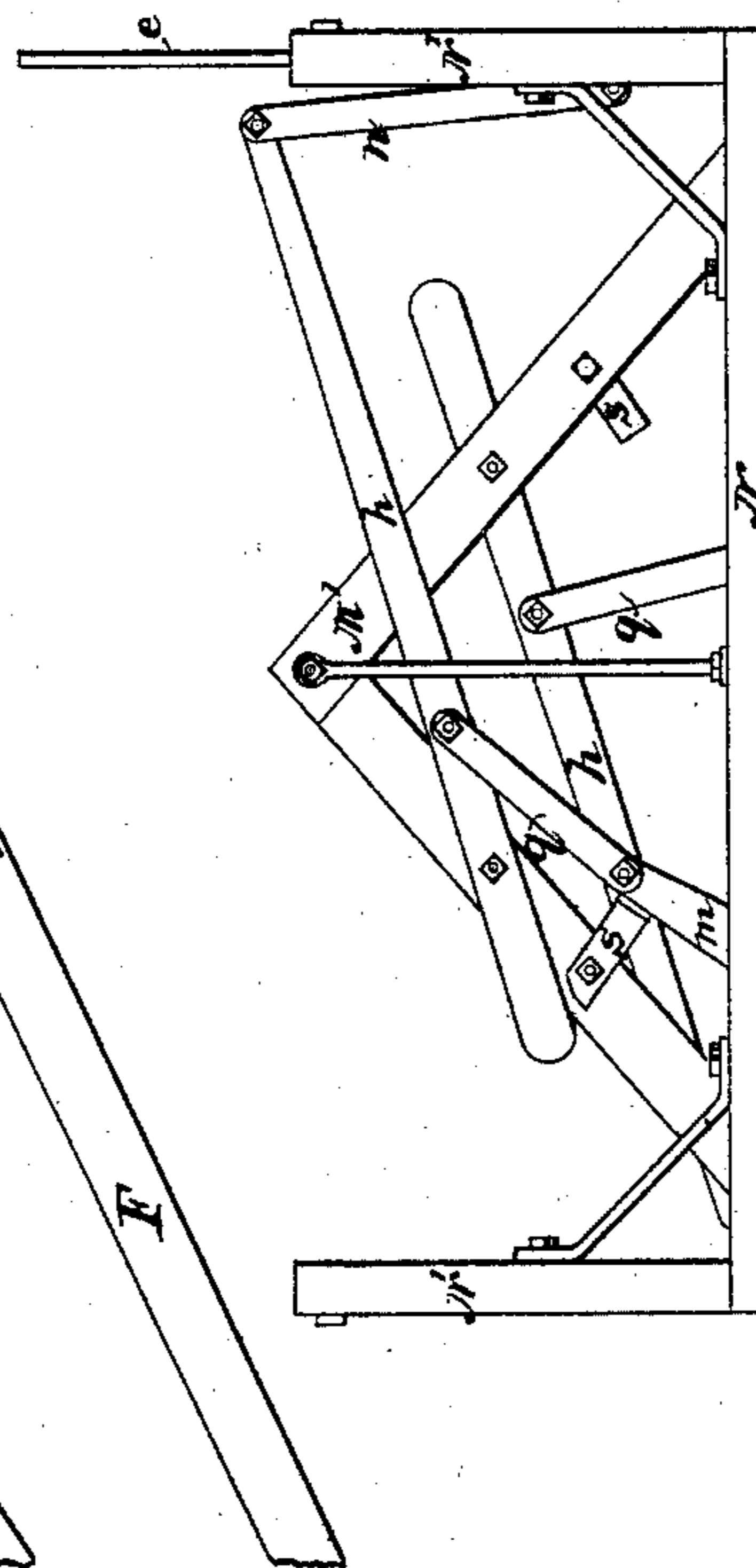


Fig. 2.

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Inventor:
John La Dow.
by his Attorney
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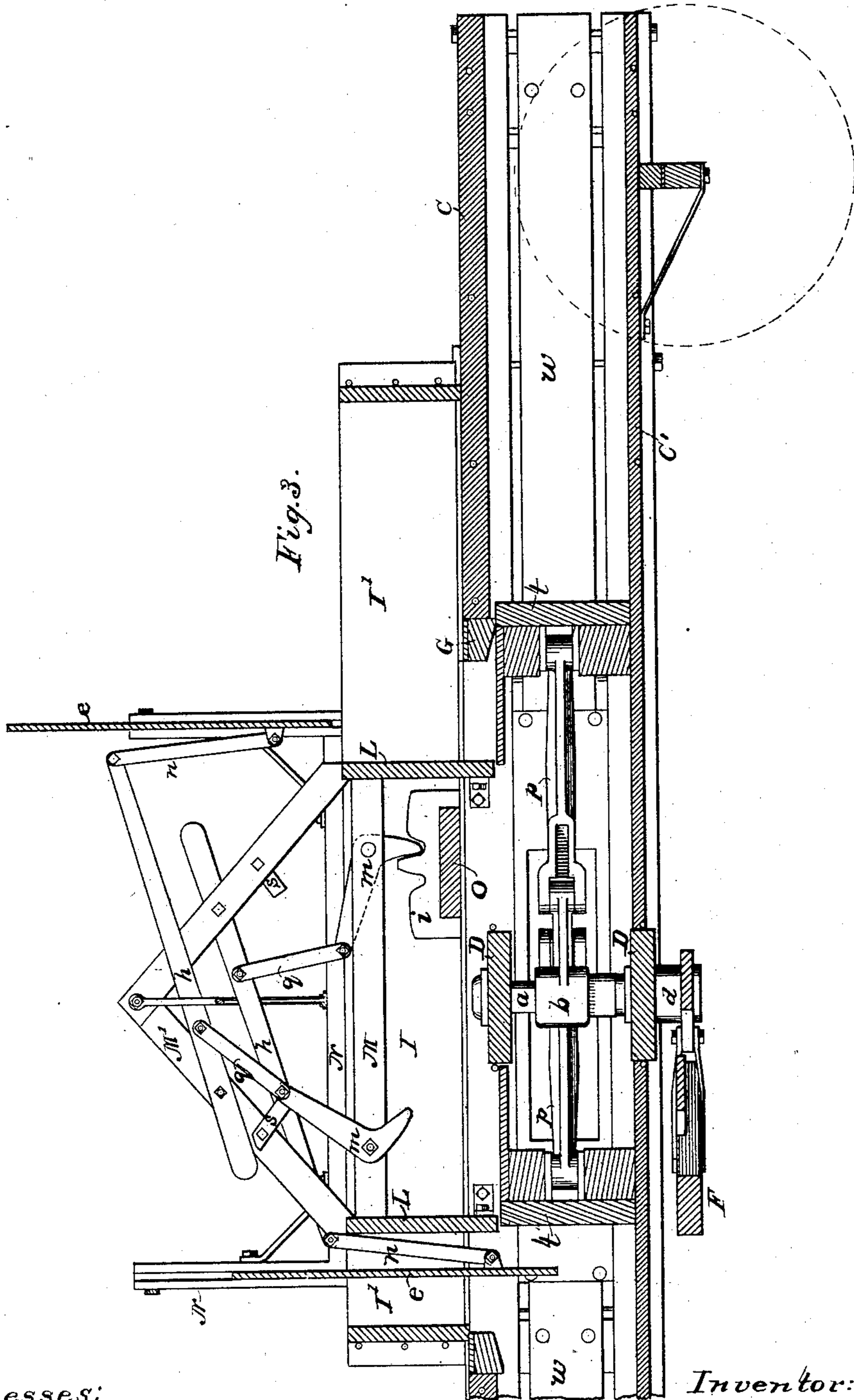
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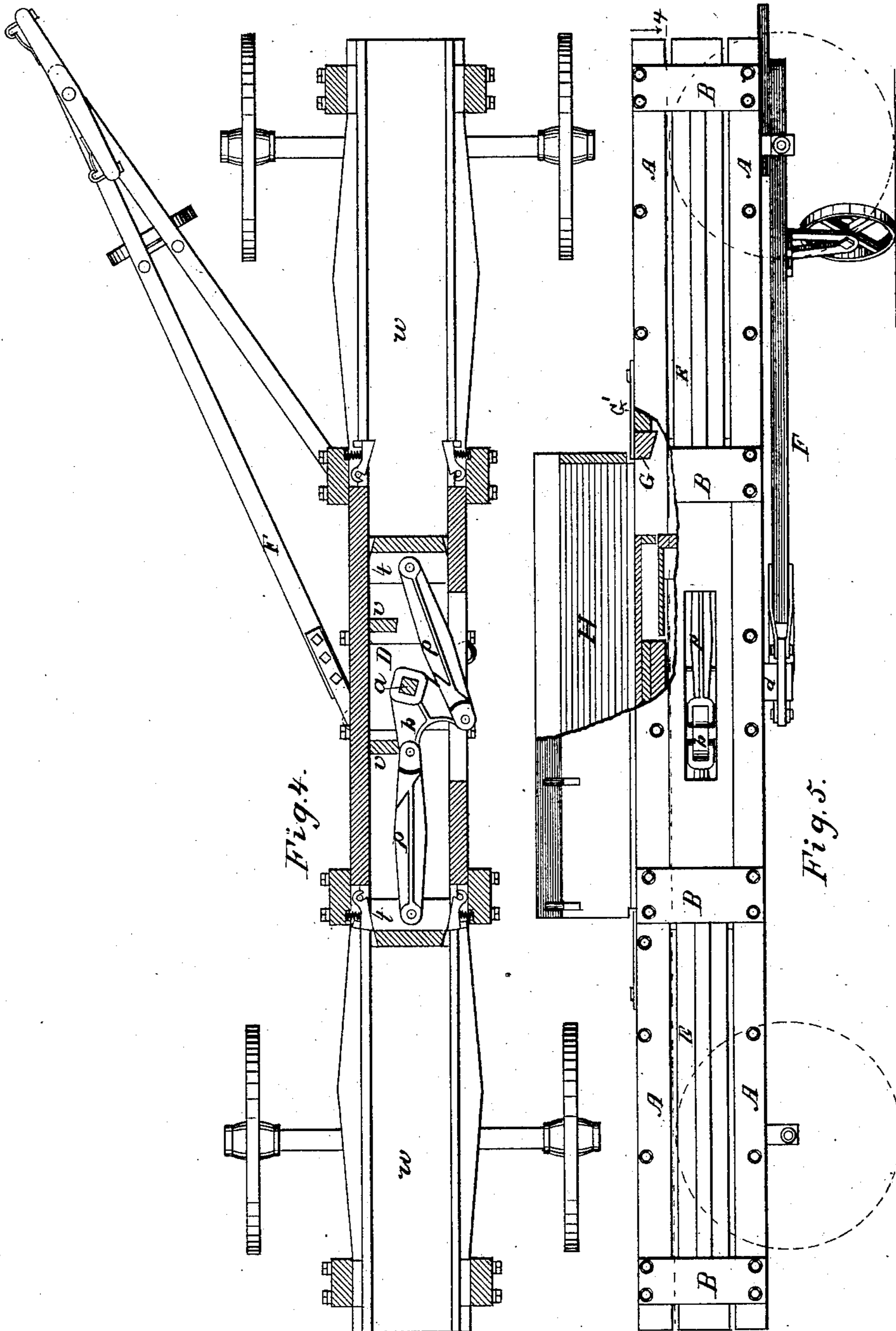
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UNITED STATES PATENT OFFICE.

JOHN LA DOW, OF TRUMANSBURG, NEW YORK, ASSIGNOR TO GREGG & CO.,
OF SAME PLACE.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 367,717, dated August 2, 1887.

Application filed January 6, 1886. Serial No. 187,750. (No model.)

To all whom it may concern:

Be it known that I, JOHN LA DOW, a citizen of the United States, residing at Trumansburg, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification, reference being had to the accompanying drawings, in which similar letters refer to similar parts throughout the several views.

My invention relates, in general, to perpetual baling-presses having baling-chambers in the opposite ends of the press, and in particular to the mechanisms for actuating the follower, the condenser, and the feeder, as hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of my entire press, except the baling-chamber at one end. Fig. 2 is a plan view of the same. Fig. 3 is a vertical longitudinal section on the line 1 2 of Fig. 2. Fig. 4 is a longitudinal horizontal section of the entire press on line 3 4 of Fig. 5. Fig. 5 is a side elevation, partly in section, of my press with a stationary hopper, thus adapted to be used without the automatic condenser and feeder.

The frame-work of my press, which is alike at both ends, consists of heavy corner beams, A, and vertical beams B, similarly placed on each side of the press, and connected by a series of bolts passing through the corner beams and through or adjacent to the planks C C', forming tops and bottoms, respectively, of the baling-chambers *w*, and which lie between the corner beams and thus keep them apart. The corner beams are also connected horizontally near their middle by bolts and cross-beams D D, which latter are let into the corner beams a small distance to prevent their moving endwise of the press. The sides E of the baling-chambers *w*, which are alike and similarly situated in the two ends of the press, are securely bolted to the beams B. The usual narrow slots are provided between these sides and the corner beams to facilitate tying off the bales. The tops C of the baling-chambers terminate at the retainers G, which are securely attached to one end of the springs G', the other ends of which are securely bolted to

the corner beams, A, so as to allow the retainers to spring up and operate in the usual manner. Adjacent to these retainers are the openings through which the material to be pressed is fed into the baling-chambers. If this is done by hand, a hopper, H, Fig. 5, which extends between and includes the two feed-openings, may be provided on top of the press-frame, so that the hay may be fed from it through either of the feed-openings into the baling-chamber below.

The shaft *a*, which passes through and is hung to the cross-beams D D, carries between said beams the duplex crank *b*, restrained to turn with it. To the lower end of this shaft, which projects below the bottom of the press-frame, the sweep F is securely attached by means of the double arm *d*. The angular motion of this sweep, which is adapted to rock back and forth at the side of the press-frame, and to which the horse or other motor is applied, is practically limited by the press to about one-third of a circle. It is desirable therefore that this limited angular motion should impart the required motion to the followers in such manner that the hay may be fed in front of them alternately, and so that the mechanical advantage of the reciprocating mechanism will be as nearly as possible proportional to the force necessary to actuate the followers in all positions. As is well known, this force varies rapidly, and finally becomes very great as either of the followers approaches the end of its stroke remote from shaft *a*, and while finishing compressing the charge, while the force required to operate the followers in other positions is comparatively small. In the accomplishment of this end, duplex crank *b* is provided with two arms of equal lengths and making an angle with each other nearly or quite equal to the supplement of the maximum practical angular motion of sweep F. Each of these arms is connected to the follower nearer to it by connecting-rods *p p*, which have their remote ends pivotally connected with the followers and their adjacent ends bifurcated and adapted to receive within the aperture thus provided the ends of the duplex crank-arms, as shown. By this construction the duplex crank can be made in a

very simple form, and the joint-pins, which extend through the crank and the forks of the connecting-rods, and which are free to turn in the former and restrained from turning in the latter, are thus relieved as far as possible from any binding movement. The duplex crank *b* and sweep *F*, which are rigidly attached to shaft *a*, are adjusted relatively to each other, so that when the sweep is turned in either direction to the practical limit of its motion, as determined by its proximity to the sides of the press, then one of the arms of the duplex crank will be nearly or quite on the dead-center, as shown in Fig. 4, beyond which the crank is restrained from turning by one of its arms impinging against one of the stops *vv*. By this arrangement the angular motion of the sweep, thus practically limited by the press-frame to about one-third of a circle, imparts the desired reciprocating motion to the followers; and, moreover, by each of the crank-arms rocking to the dead-center adjacent to the follower it actuates, and to that dead-center only, an approximation to the desired mechanical advantage in all positions is attained.

A condensing-box, *I*, which is provided with a condensing-chamber, *I'*, at each end for receiving the loose material to be condensed preparatory to being transferred to the baling-chamber below, is adapted to reciprocate on top of the press-frame, and is actuated by the sweep *F*, through the mechanical connections consisting of the rock-shaft *J*², hung at the side of the press-frame and provided with two securely-attached arms, which are connected with the sweep *F* and condensing-box *I* by the rods *J J'*, respectively. At the adjacent ends of the feed-openings to the bale-chambers are stationary heads *L*, which are securely bolted to the frame, and against which the material thrown into the condensing-chambers is compressed. These heads are connected by the frame-work *M'* and bar *M*, to which the mechanisms for actuating the feeders *e e* are hung, and by rods *N*, which form the upper guides to the condensing-box, and to which the guides *N'* to the feeders *e* are attached and braced.

A cross-piece, *o*, which reciprocates with and is securely attached to the sides of the condensing-box near its middle, carries a short rack, *i*, of the peculiar construction shown in Fig. 3. The lower arms of levers *m m*, which are hung to the bar *M*, project into the path of the central tooth of and are adapted to engage with rack *i*. The upper arms are connected by rods *q q* to levers *h h*, which are hung to the frame-work *M'* and extend toward the feeders *e e*, respectively, and to which their adjacent ends are connected by rods *n n*. The upper arms of levers *m m* are adapted to turn a small distance by the dead-centers and against stops *s s*, thereby locking the feeders at the upper ends of their strokes.

The mechanisms so far described operate as follows: The horses attached to the sweep *F* travel in one direction through about one-third of a circle, and are then turned and travel

back through the same arc, and so on. The motion thus transmitted to the duplex crank *b* imparts a reciprocating motion to the followers, as described, while the sweep, by means of the mechanical connections consisting of the connecting-rods *J J'* and rock-shaft *J*², causes the condenser-box to reciprocate in the same plane as the followers, but with a longer stroke. The rack *i*, in moving with the condenser-box, carries the lower end of lever *m* with it, thus causing the lever to turn until the lower arm rides over the short tooth at the end of the rack, in doing which the lever *m*, through the connecting-rod *q* and lever *h*, raises the feeder *e*, operating over the remote feed-opening, and finally locks the feeder at the upper end of its stroke by passing the dead-center and resting against the stop *s*. The rack then travels freely until its central tooth comes in contact with and imparts its motion to the other lever *m*, which, through the intermediate mechanism, forces the other feeder *e* down through the feed-opening until the condenser-box reaches the end of its stroke, when, in commencing its return-stroke, it raises and locks the feeder, as before described. The feeders remain locked until again actuated by the rack. Thus during a small motion at each end of the condenser's stroke the rack *i* positively and automatically actuates the feeders. The operator in working my press throws the loose material into the two condensing-chambers alternately, where it is partially compressed and transferred by the feeders to the baling-chambers below, where it is completely compressed, and the bales separated and tied off in the manner common to perpetual presses.

It may be remarked that if the common stationary condensing-box having plungers reciprocating within each end of the same is used instead of my reciprocating condensing-box, the rack *i* must then be connected with said plungers or other moving part of the press. Further, instead of the lock movement provided to retain the feeding-boards at the end of their upward stroke, the usual counter-balance may be used.

I am aware that in English Patent No. 8,288 of 1839 a double-end press is shown having followers adapted to reciprocate in either end of the press, which are actuated by and connected with a duplex disk-crank having two crank-pins separated substantially as in my present press. I therefore do not claim the duplex crank, broadly; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. In a perpetual baling-press having baling-chambers arranged in its opposite ends, the combination of followers adapted to reciprocate within said chambers, a vertical shaft hung to the central part of the press-frame, a duplex crank securely attached to said shaft within the frame and provided with two arms separated by an arc nearly or quite equal to the supplement of the crank's angular motion, each of which is connected to the follower

nearer to it by a connecting-rod, a sweep securely attached to said shaft below the press-frame and adapted to reciprocate at the side of the same, said sweep and crank being adjusted relatively to each other, so that when the sweep is at the limit of its angular motion in either direction one of the arms of the duplex crank will be nearly or quite on the dead-center adjacent to the follower with which it is connected, substantially as described.

2. In a perpetual baling-press having baling-chambers arranged in its opposite ends, the combination of followers adapted to reciprocate within said chambers, a vertical shaft hung to the central part of the press-frame, a duplex crank securely attached to said shaft within the frame and provided with two arms separated by an arc nearly or quite equal to the supplement of the crank's angular motion, connecting-rods having their remote ends pivotally connected with the followers and their adjacent ends bifurcated and adapted to receive within the aperture thus provided the ends of the arms of the duplex crank and be pivotally connected with said arms by a joint-pin, a sweep securely attached to said shaft below the press-frame and adapted to reciprocate at the side of the same, said crank and sweep being adjusted relatively to each other, so that when the sweep is at the limit of its motion in either direction one of the arms of the duplex crank will be nearly or quite on the dead-center adjacent to the follower with which it is connected, substantially as described.

3. In a perpetual baling-press having baling-chambers arranged in its opposite ends, the combination of followers *tt*, adapted to reciprocate within said chambers, a vertical shaft, *a*, hung to the central part of the press-frame, duplex crank *b*, securely attached to said shaft, connecting-rods *pp*, joining said crank and followers and having their adjacent ends bifurcated and adapted to receive the two arms of the duplex crank, as shown, stops *vv*, adapted to prevent the arms of said crank from turning by either dead-center, and sweep *F*, securely attached to said shaft below the press-frame, and adapted to rock back and

forth at one side of the press, substantially as described.

4. In a baling-press provided with baling-chambers at its opposite ends and followers adapted to reciprocate within the same, the combination of a sweep connected mechanically with and adapted to actuate the followers, with a rock-shaft hung at the side of the press-frame and provided with two attached arms, respectively connected to the sweep, and a condensing-box adapted to reciprocate over the baling-chambers, substantially as described.

5. In a baling-press, the combination, with oppositely-extending baling-chambers provided with feed-apertures from above at their adjacent ends and arranged in opposite ends of said press, of a condensing-box extending parallel to the press-frame and adapted to reciprocate over both baling-chambers by being restrained by suitable guides from all but a longitudinal movement, vertical heads securely attached to the press-frame at the adjacent sides of said feed-apertures and against which the loose material is compressed, and suitable mechanism for reciprocating said condensing-box, substantially as described.

6. In a perpetual baling-press provided with a condenser operating above the baling-chamber, and a vertically-operating feeder, the combination of a rack connected to and reciprocating with the condenser, with a lever having one arm projecting into the path of and adapted to be operated by the rack, and the other end of which is connected by suitable mechanism with the feeder, whereby the rack operates said feeder, substantially as described.

7. In a baling-press, a vertically-operating feeder connected with lever *h*, in combination with lever *m*, adapted to be actuated by rack *i*, and having its upper end connected to lever *h* by rods *q*, whereby as it is turned up it can pass the dead-center and by having its further motion stopped lock the feeder at the top of its stroke, substantially as described.

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