

(No Model.)

4 Sheets—Sheet 1.

L. B. LATHROP.
BALING PRESS.

No. 325,843.

Patented Sept. 8, 1885.

FIG. 2.

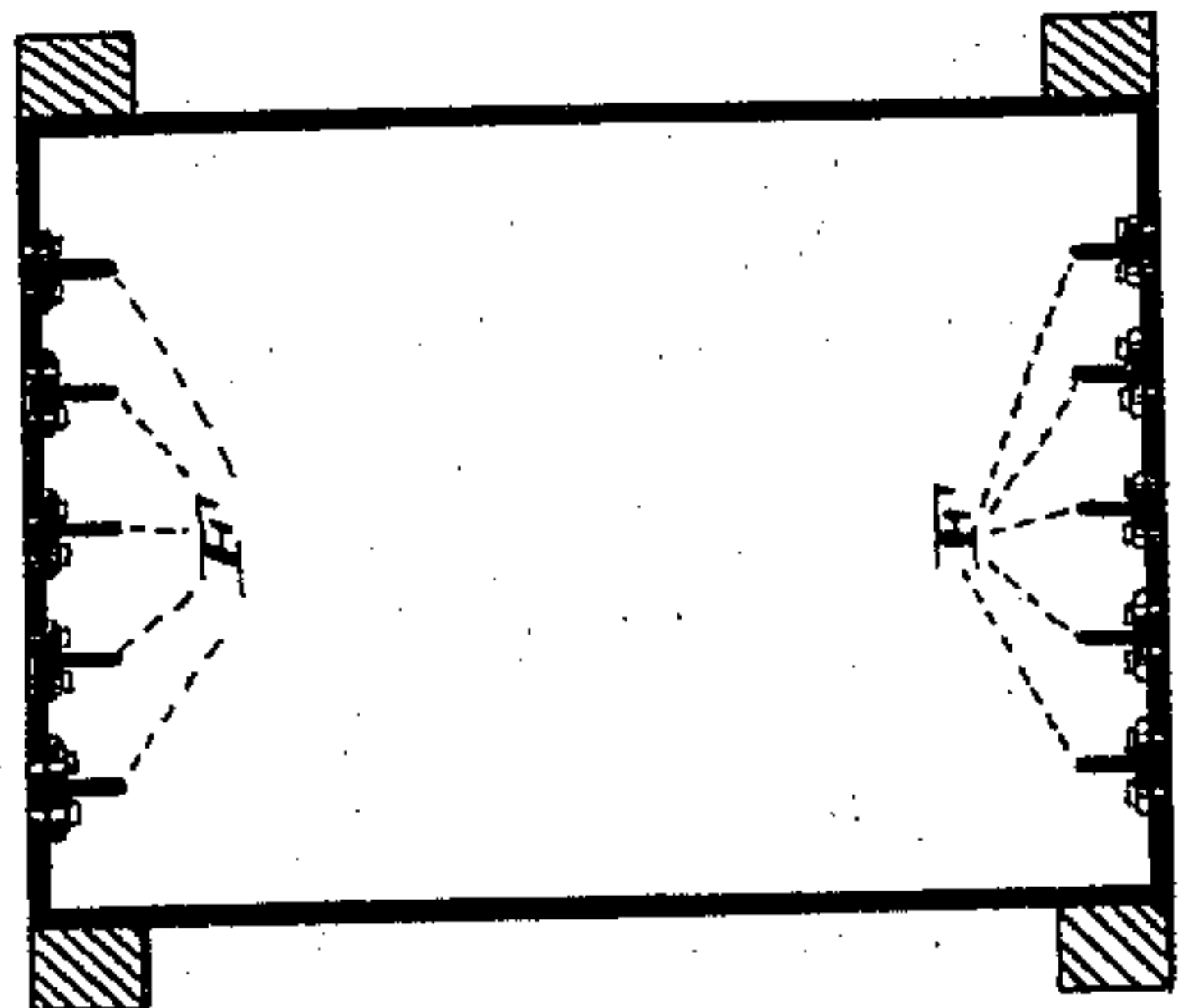


FIG. 1.

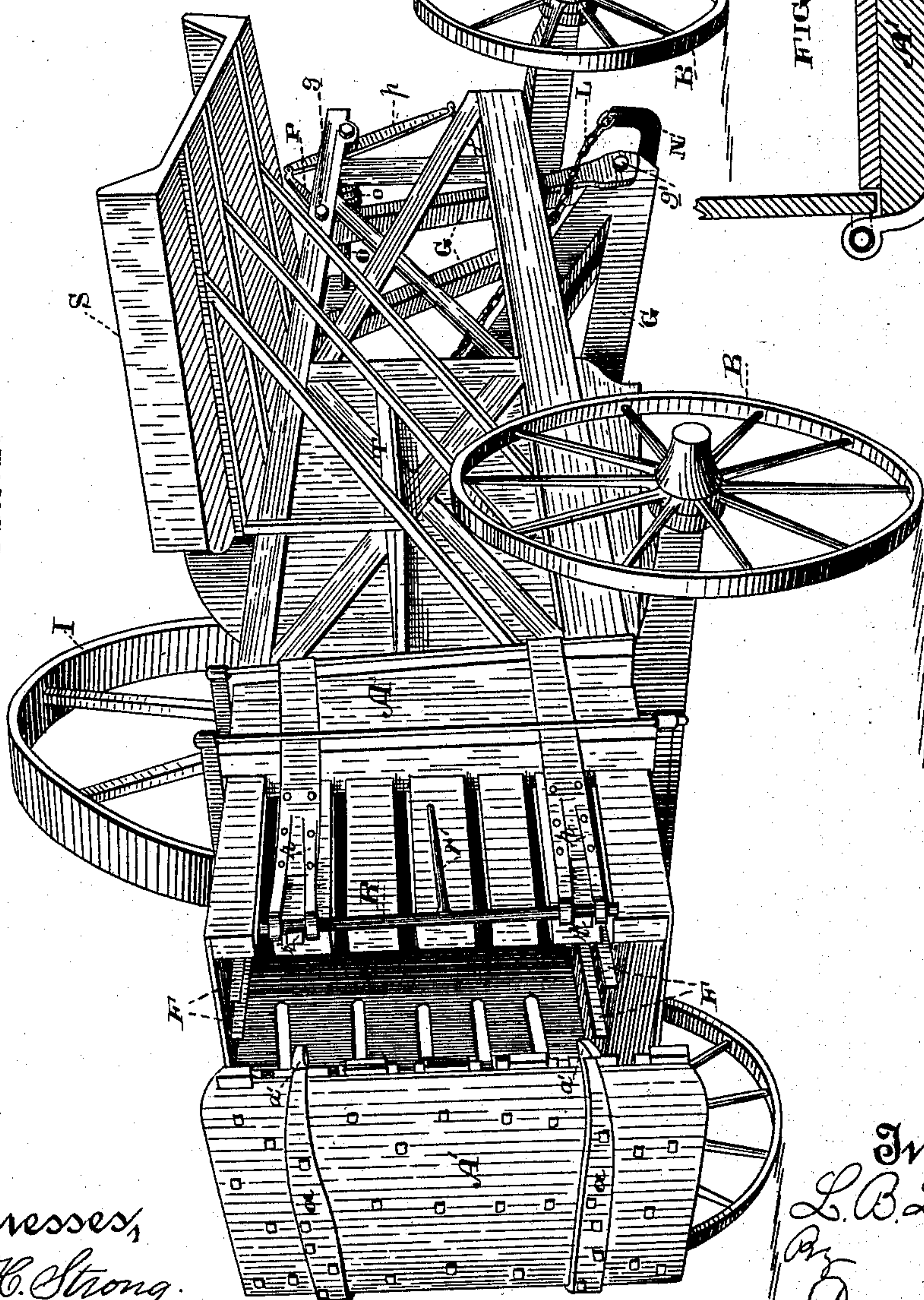


FIG. 3.

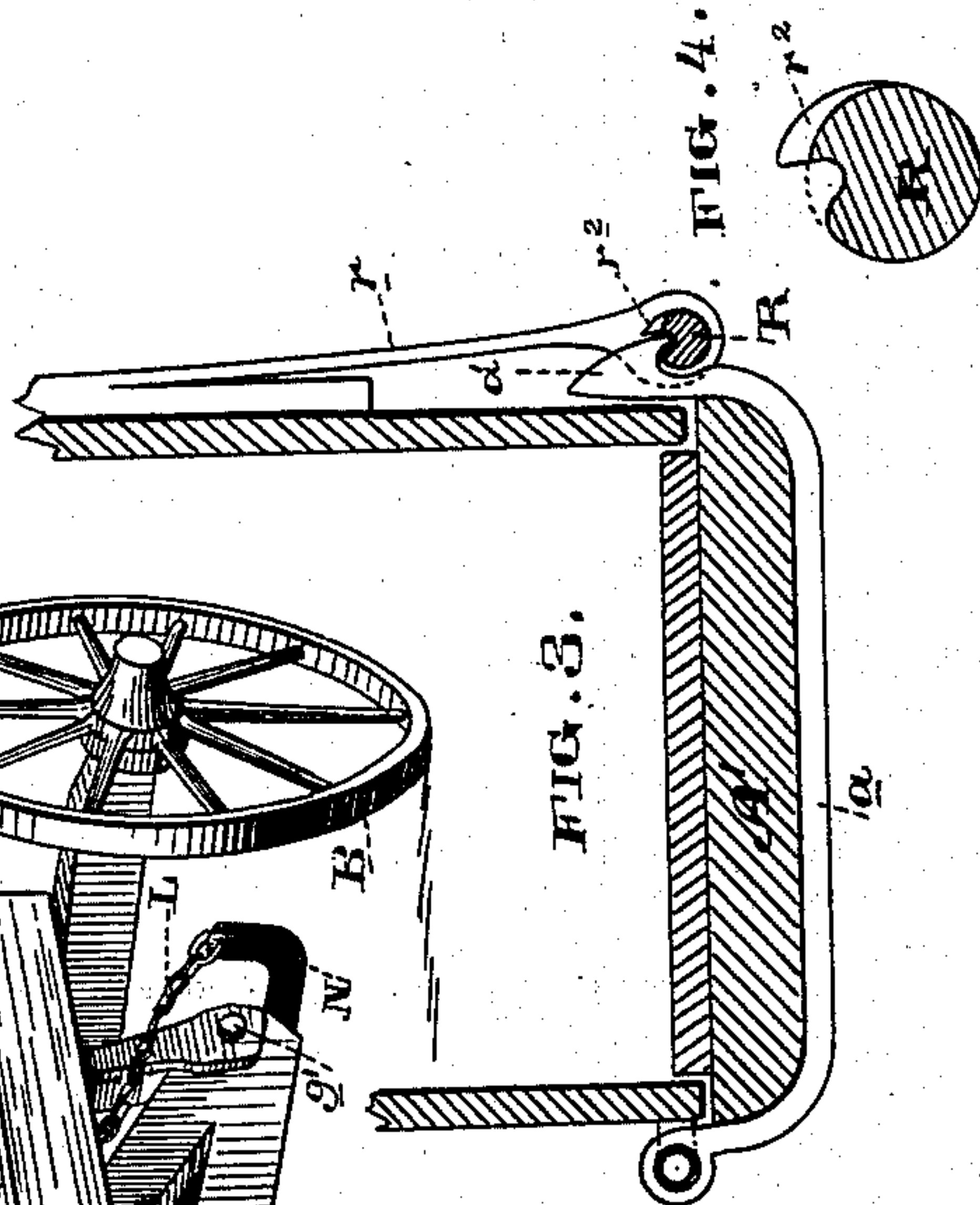
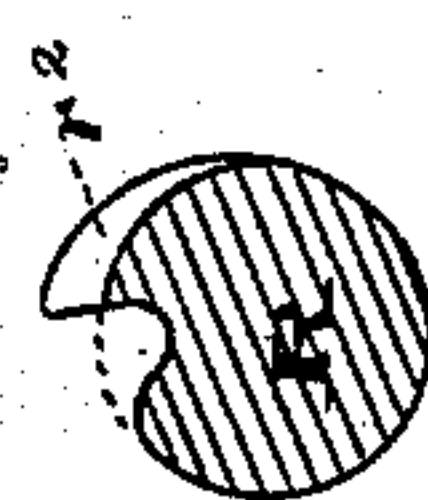


FIG. 4.



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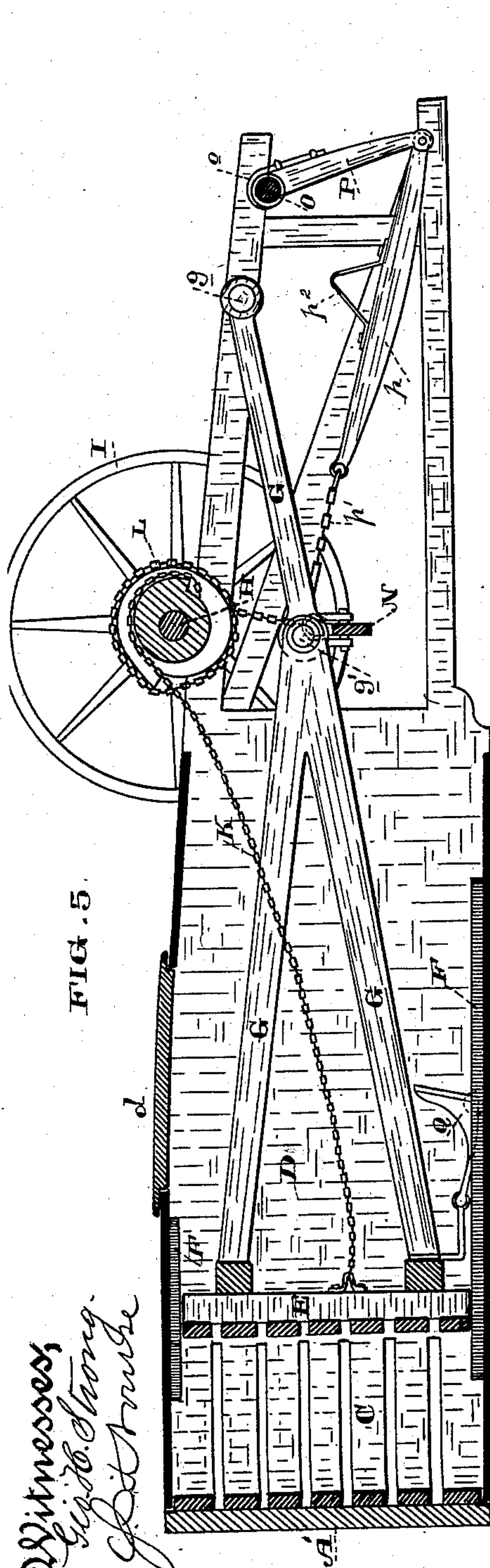


FIG. 5.

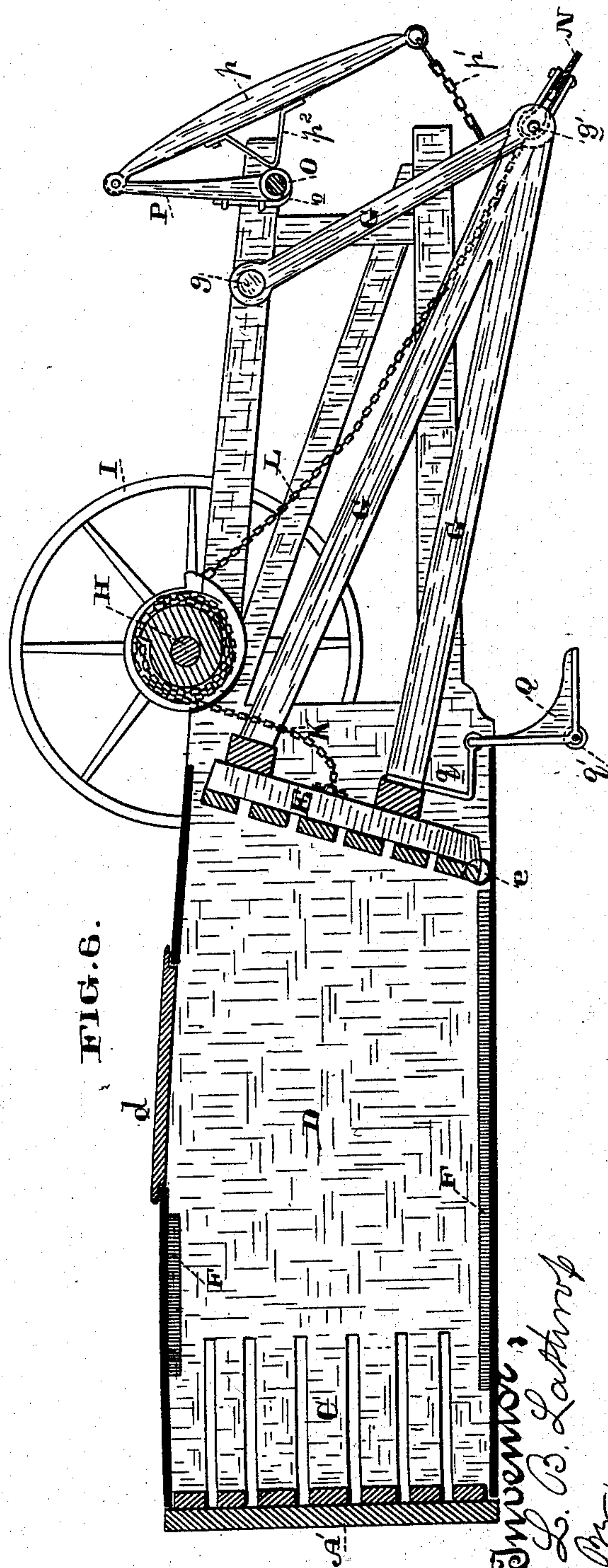


FIG. 6.

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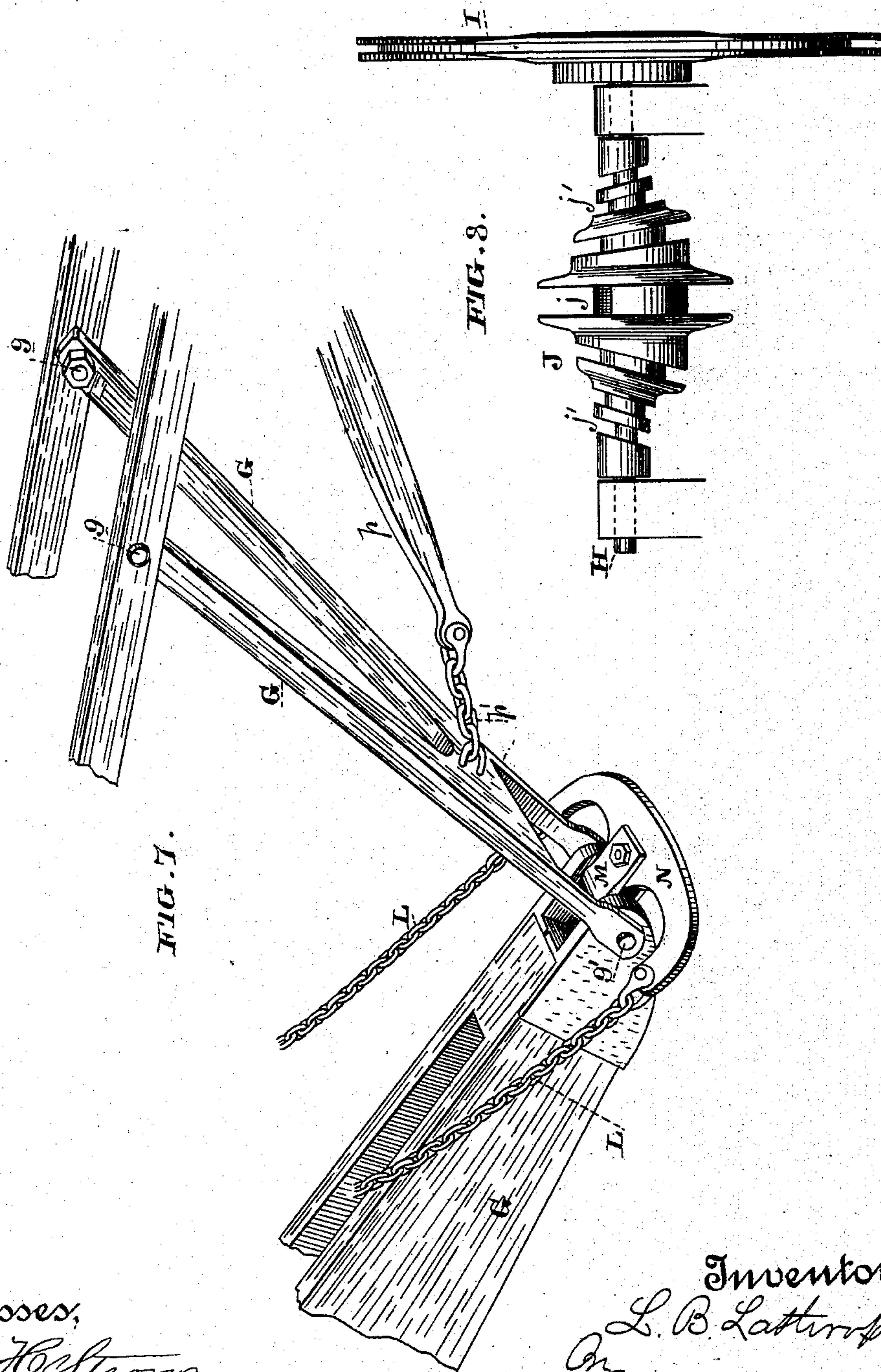
(No Model.)

4 Sheets—Sheet 3.

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FIG. 9.

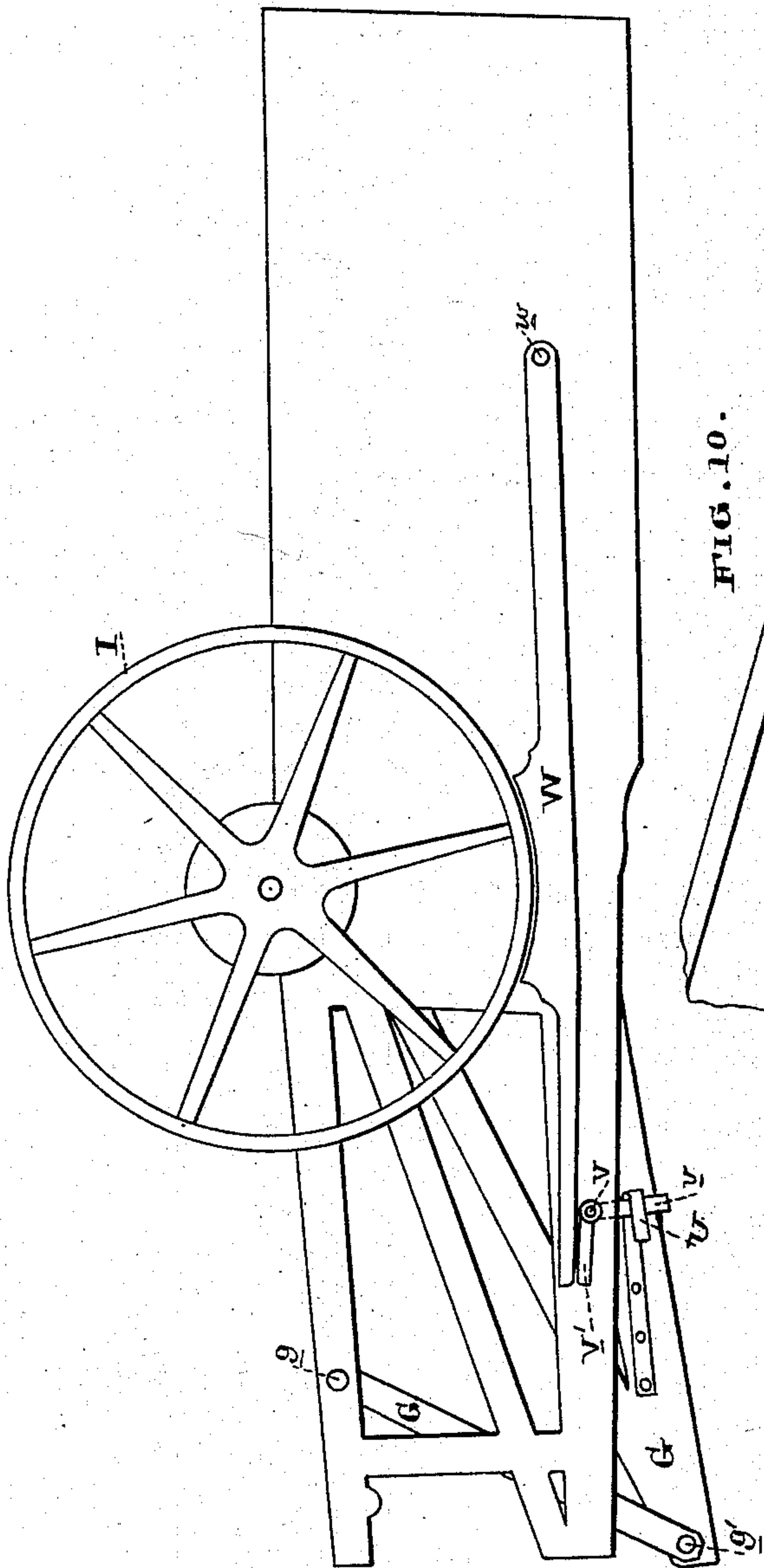
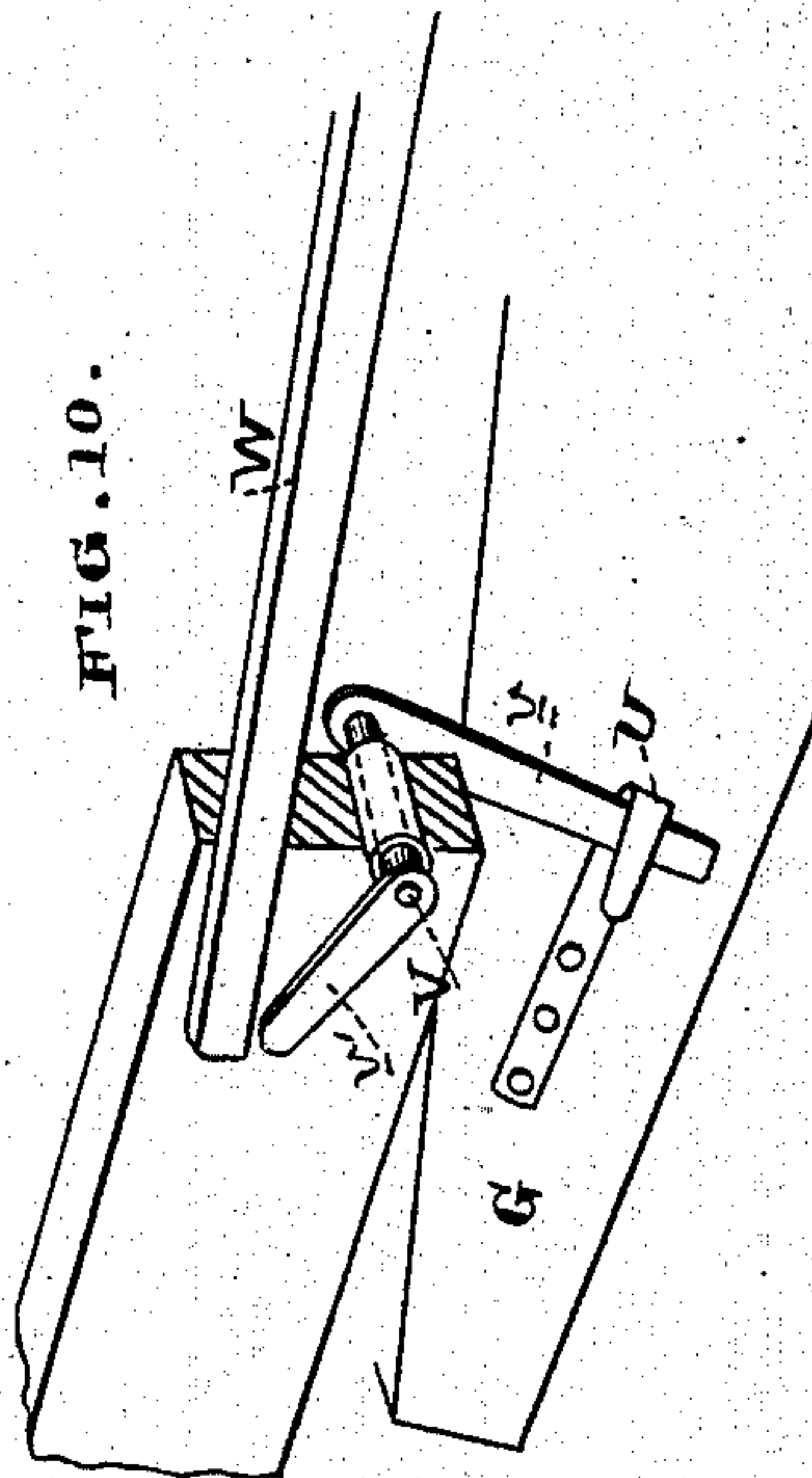


FIG. 10.



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UNITED STATES PATENT OFFICE.

LEVI B. LATHROP, OF HOLLISTER, CALIFORNIA.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 325,843, dated September 8, 1885.

Application filed April 27, 1885. (No model.)

To all whom it may concern:

Be it known that I, LEVI B. LATHROP, of Hollister, county of San Benito, and State of California, have invented an Improvement in Baling-Presses; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the class of baling-presses more especially adapted for baling hay, and to certain improvements therein based upon former inventions of mine secured to me by Letters Patent of the United States No. 225,396, dated March 9, 1880, and No. 249,640, dated November 15, 1881.

My invention consists in details of construction, as hereinafter described, and specifically claimed.

Referring to the accompanying drawings, Figure 1 is a perspective view of my baling-press. Fig. 2 is a vertical cross-section through the baling-chamber, showing the strips for finishing the ends of the bale. Fig. 3 is a detail section showing the latch mechanism of the end door. Fig. 4 is a horizontal section of the latch-shaft. Fig. 5 is a longitudinal vertical section of my press, showing the follower driven home. Fig. 6 is a similar view of the follower withdrawn to its limit. Fig. 7 is a perspective view of the rear end of the toggle, showing the equalizer-bar. Fig. 8 is an elevation of the double conical chain-pulley. Fig. 9 is an elevation, showing the application of the brake mechanism. Fig. 10 is a perspective detail of the brake mechanism.

A is the body of the press, mounted on wheels B. The forward end of the press, as shown in Figs. 5 and 6, constitutes the baling-chamber and is designated by C. Back of the baling-chamber is what may be called the "feed-chamber" D, to which access is had through the top door, *d*. Within the press is the follower E, adapted to move back and forth for the usual purpose.

F are strips or bars (shown in Fig. 2) within the press. These are set edgewise and are properly secured to the bottom and the top of the press. They are parallel to each other and are separated by a short space. The object of these strips is to finish the ends of the

bale by folding in the hay and making the ends square and smooth.

In ordinary vertical presses where an opportunity is afforded to tramp the hay, the ends are folded or turned in by the feet and hands of the trampers, so that when the bale is ejected the ends are properly finished; but in a press of the description I show, where the hay is fed in through the top in great quantities, as there is no opportunity to tramp, some means must be provided for automatically folding in the ends of the bale, so that they shall not be ragged and rough. This is the function of the strips F. They bend or fold the hay which is pressed down between them and over them, and when the bale is ejected the ends are smooth, and the ropes hold them properly.

G is the toggle, the short arm of which is pivoted at *g* to the rear portion of the press-frame. The long arm of this toggle is a forked one, as shown in Figs. 5 and 6, and its forward end is framed solidly in the follower. As shown in my former Letters Patent, the toggle was pivoted to the back of the follower—in the first patent being pivoted to its center, and in the second patent being pivoted on a horizontal central line on the back of the follower; but in the present invention the points of attachment are in a vertical line and are solid. The advantage of this is that it can be made easier and cheaper, but principally that it serves to guide and steady the follower much better than a hinged connection, and the toggle is itself the better guided and steadied by the follower. This rigid attachment of the forward end of the toggle to the follower occasions the tipping or angular position of the latter, as shown in Fig. 6. This renders it necessary to mount the follower upon a roller or rollers located at its bottom, whereby it may easily tip, and may also move back and forth with little friction.

In Fig. 6, *e* is one of the rollers, and there may be a number of these across the width of the follower. It will be observed that this roller is located at the forward edge of the follower. This position is necessary, for the purpose of keeping the lower forward edge of

the follower as near to the lower surface of the press as possible and to make it move true. If it were placed at the back edge, it would have a tendency to throw the forward edge up and allow it to ride over a portion of the hay, but being on the forward edge it fulcrums on said edge, thereby keeping it down close to its bearing.

Across the top of the rear portion of the frame is the shaft H, upon which is mounted the main operating-wheel I, which is intended to carry a rope, to which the horses are attached, for the purpose of rotating said wheel and shaft.

Upon the shaft, as shown in Fig. 8, is a double conical pulley, J. This pulley has a central deep-grooved face, *j*, and side conical grooved faces, *j'*. Upon the central grooved face, *j*, is secured and adapted to wind a chain, K, Figs. 5 and 6, the forward end of which is attached to the back of the follower.

Secured to the side conical faces, *j'*, are the chains L, the rear ends of which are seen in Fig. 7. Through the rear end of the toggle G is passed a shaft, *g'*, which forms the pivot-joint of the arms of the toggle. Upon the center of this shaft is journaled or pivoted a link, M, in the rear end of which is pivoted the equalizer-bar N, to the ends of which the chains L are attached.

I prefer to make the shaft *g'* and the link M integral by forming the shaft as pins projecting from the sides of the link and journaled in the arms of the toggle.

The general operation of the machine is similar to that shown in my previous patents, and need be but briefly described.

By rotating the wheel I the chains L are wound up, thereby raising and moving forward the toggle G, by which the follower E is driven home. When the strain on the wheel I is relieved, the weight of the toggle causes it to drop down, thereby returning the follower. The equalizer N keeps the chains even and distributes the strain equally between them, and by being pivoted in the toggle by means of the link said equalizer conforms to the motion of the toggle, and thereby remains at the same angle.

In my second Letters Patent I show as the equivalent of the chain K a strap, which is provided with blocks, and which winds up on a pulley on the driving-shaft. The object of this strap, as therein explained, is to take advantage of the momentum of the large wheel I, which is acquired by reason of the dropping of the toggle, to cause said wheel to pull the follower farther back than the toggle itself would. The belt acts as a connection between said wheel and the follower, and in order to make use of this connection and prevent any slacking of the belt, I have blocks upon it which practically increase the diameter of the pulley over which it winds and thus keep it taut. The chain K in the present press is for precisely the same pur-

pose; but instead of having the blocks, which are rather clumsy, I have in this case the deep-groove-faced center *j* of the pulley J. The chain K, in first winding around said face, is taken up sufficiently for the incipient momentum of the wheel, and as this momentum increases the chain winding upon itself in the face *j* winds up faster in accordance with the revolution of the wheel, as it practically increases the diameter of the face on which it winds; but even this momentum is not sufficient to draw the follower back as far as I desire. Accordingly I have the following mechanism: (Shown in Figs. 5 and 6.)

Mounted transversely on the extreme rear of the press is a shaft, O, around which is coiled a heavy spiral spring, *o*. Upon this shaft is secured a crank-arm, P, to the upper end of which is attached a bar, *p*, the lower end of which is connected with the lower portion of the short arm of the toggle by a chain, *p'*, as shown in Fig. 7.

Upon the inner surface of the bar *p* is a guide iron, *p*².

The operation of this device is as follows: Assuming the follower to be moving back from the position shown in Fig. 5 to the position shown in Fig. 6, the spring *o* causes the crank-arm P to rise and the bar *p* to move back, keeping its connection with the toggle taut. The momentum of the toggle would barely carry its short arm past the perpendicular, which would not be sufficient to move the follower back as far as desired, but as it swings to and just past the perpendicular, the spring *o*, through the crank-arm P and arm *p*, pulls it back farther to a position shown in Fig. 6. The object of the guide-iron *p*² is that by coming in contact with the shaft O, it will throw the bar *p* out far enough to prevent a line strain upon it when the toggle is raised again, and thus produces more of a circular motion, whereby it can be drawn down.

In order to hold the follower in the position shown in Fig. 6, I have the weight Q. This is suspended from an angle-arm, *q*, attached to the back of the follower. It is provided with a roller, *q'*, as shown. When the follower is in the position shown in Fig. 5, the weight simply travels on the bottom of the feed-chamber D, but when the follower is brought back, as shown in Fig. 6, it drops down over the end of the bottom of the press and locks the follower, preventing it from moving forward again by reason of the tendency of the toggle to swing down.

A', Figs. 1 and 3, is the end door, through which the bale is discharged. The catch or latch of this door is as follows: Bolted to the outer surface of the door are straps *a*, having on their ends the beveled catches *a'*.

R is a shaft, journaled in the ends of spring-arms *r*, which are bolted to the side of the press. The shaft is provided with a handle, *r'*, as shown in Fig. 1, and is also provided

near its top and bottom with beveled catches r^2 , as shown in Fig. 4.

When the door A' is slammed to, its catches a' , meeting with the catches r^2 , force the shaft 5 outwardly on its springs and partially turn it until the catches engage.

To open the door, the handle r' is turned forward, thereby forcing the engaging surfaces of the catches against each other, where- 10 by the shaft is thrown outwardly on its spring-arms, at the same time its catches r^2 pushing the catches a' away, and thus freeing the door.

S in Fig. 1 is the hay-platform. T is a supplementary platform, located on the side of 15 the press and below the hay-platform. This is for the purpose of allowing a man to stand in a convenient position for forking the hay in through the top door of the press.

In order to stop or check the momentum of 20 the driving-wheel I as the follower comes back, I have a brake mechanism. (Shown in Figs. 9 and 10.) Upon the rear portion of the toggle is bolted a hook, U, which engages 25 with a crank-arm, v . The upper end of this crank-arm is fast on a spindle or shaft, V, which is journaled in a suitable seat in the frame-timbers. The outer end of the spindle carries a crank-arm, v' , the upper end of 30 which bears under the rear end of the brake-lever W. This lever is pivoted at its other end at w , and has a curved face on its body, which impinges on the wheel I, as shown in Fig. 9. As the toggle moves back, the hook 35 U, engaging with the crank-arm v , throws the crank-arm v' up and puts on the brake-lever W.

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

1. In a baling-press, the parallel-spaced strips F in the press-chamber for folding in the material to be baled and finishing its surface, substantially as herein described.

45 2. In a baling-press, the parallel-spaced strips F, located in the bottom and top of the press-chamber and adapted to fold in and finish the ends of the bale, substantially as herein described.

50 3. In a baling-press having a horizontal chamber and a horizontally-reciprocating follower adapted to press a bale in an upright or upended position, the parallel and spaced strips F in the bottom and top of the chamber adapted to fold in and finish the ends of the 55 bale, substantially as herein described.

4. In a baling-press, the reciprocating follower E, in combination with the toggle G, secured rigidly and solidly to the back of the 60 follower and provided with a long arm, which is forked and engages the follower near the top and bottom, substantially as herein described.

5. In a baling-press, the reciprocating fol- 65 lower E, in combination with the toggle G, secured rigidly and solidly to the back of the

follower and at points distant from its longitudinal central line, substantially as shown and described.

6. In a baling-press having a follower, E, 70 toggle G, and driving-wheel I, the deep-grooved pulley j on the shaft of the driving-wheel, and the chain K, attached to said pulley and to the back of the follower, substantially as and for the purpose herein described.

7. In a baling-press, the follower E, toggle 75 G, driving-wheel I, and shaft H, in combination with the double conical pulley J on the shaft, having a deep grooved central face, j , and side conical faces, j' , the chains L, secured to faces j' and to the toggle, and the 80 chain K, attached to face j and to the back of the follower, substantially as herein described.

8. In a baling-press, the toggle G, by which 85 the follower is reciprocated, and the chains L, connecting said toggle with the driving-shaft, in combination with the pivoted equalizer N, pivoted on the toggle at its joint and having the chains L, connected with its ends, substan- 90 tially as herein described.

9. In a baling-press, the follower E, toggle G, and shaft H, having pulley J, in combination with the pivoted equalizer N, pivoted to the toggle at its joint, and the chains 95 L, connecting the ends of the equalizer with the pulley J, substantially as herein described.

10. In a baling-press having a follower, E, and a toggle, G, by which it is reciprocated, 100 the means by which the toggle is drawn fully back, consisting of the spring-shaft O, crank-arm P, and bar p , connected with the toggle, substantially as herein described.

11. In a baling-press having a follower, E, 105 and a toggle, G, by which the follower is reciprocated, the spring-shaft O, having crank-arm P, the bar p , pivoted to the crank-arm and connected with the toggle, and the guide-iron p^2 on the bar, adapted to throw said bar 110 away from the shaft, substantially as herein described.

12. In a baling-press, the follower E and toggle G, by which it is reciprocated, in combination with the means by which the follower 115 is locked when returned and the vibratory tendency of the toggle prevented, consisting of the weight Q, attached by angle-arm q to the follower and adapted to drop over the back of the press, and rollers q' , mounted in 120 said arm, substantially as herein described.

13. In a baling-press, the door-latch mechanism comprising the straps a on the door, and having beveled end catches, a' , the spring-arms r on the press, and the grooved shaft R, 125 journaled in the spring-arms and having beveled catches r^2 , with which the catches a' of the door engage, and the handle r , substantially as herein described.

14. In a baling-press having a follower, E, 130 toggle G, and operating-wheel I, with power-transmitting devices by which the wheel op-

erates the toggle, the brake mechanism consisting of the pivoted brake-lever W, impinging on the wheel, the hook U on the toggle, the oscillating shaft V on the press-frame, the
5 crank-arm *v* on one end of the shaft engaged by the hook, and the crank-arm *v'* on its other end bearing under the brake-lever, substantially as herein described.

In witness whereof I have hereunto set my hand.

LEVI B. LATHROP.

Witnesses:

S. H. NOURSE,
H. C. LEE.