

(No Model.)

3 Sheets—Sheet 1.

H. TYACK.  
BALING PRESS.

No. 273,407.

Patented Mar. 6, 1883.

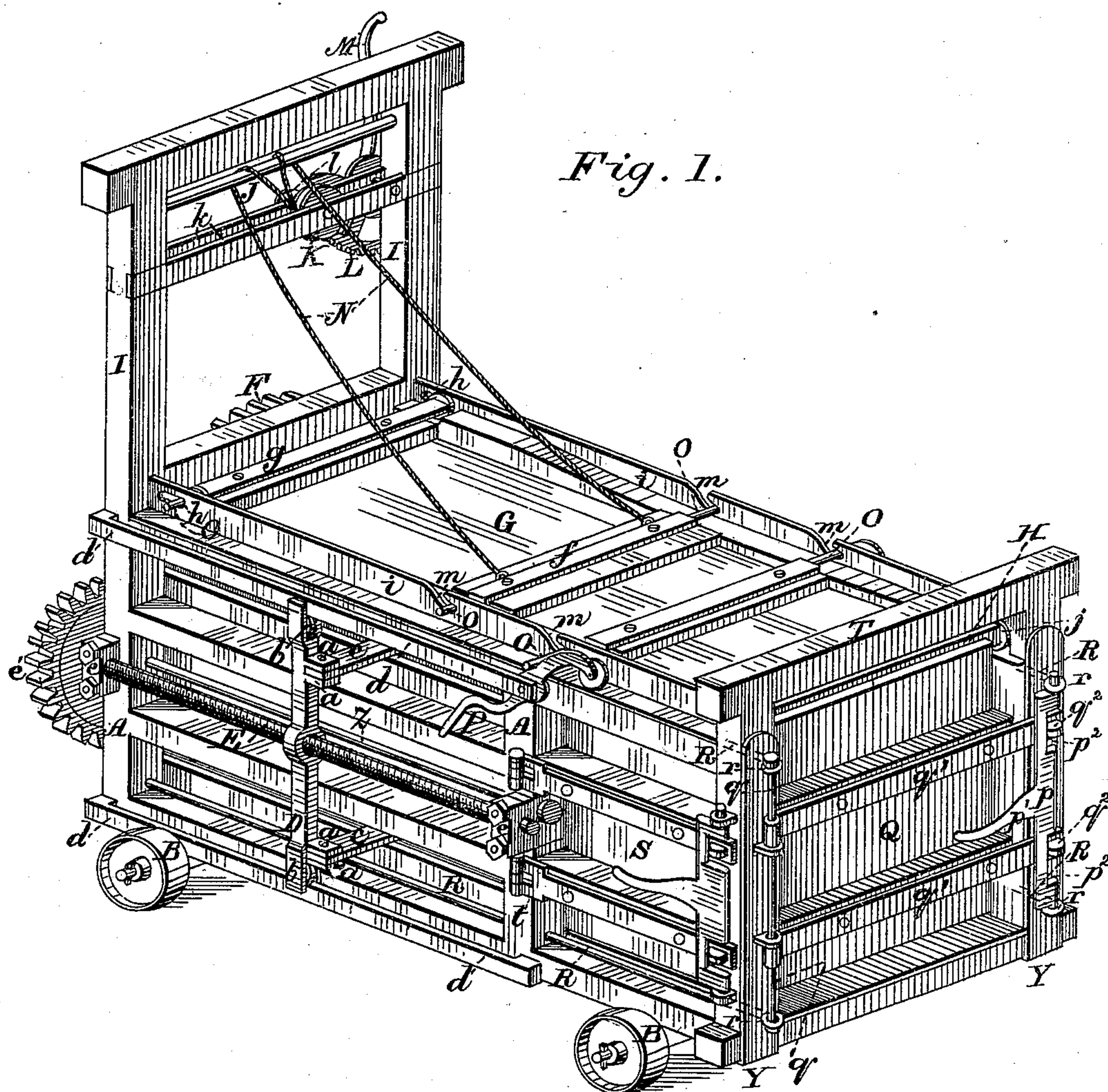
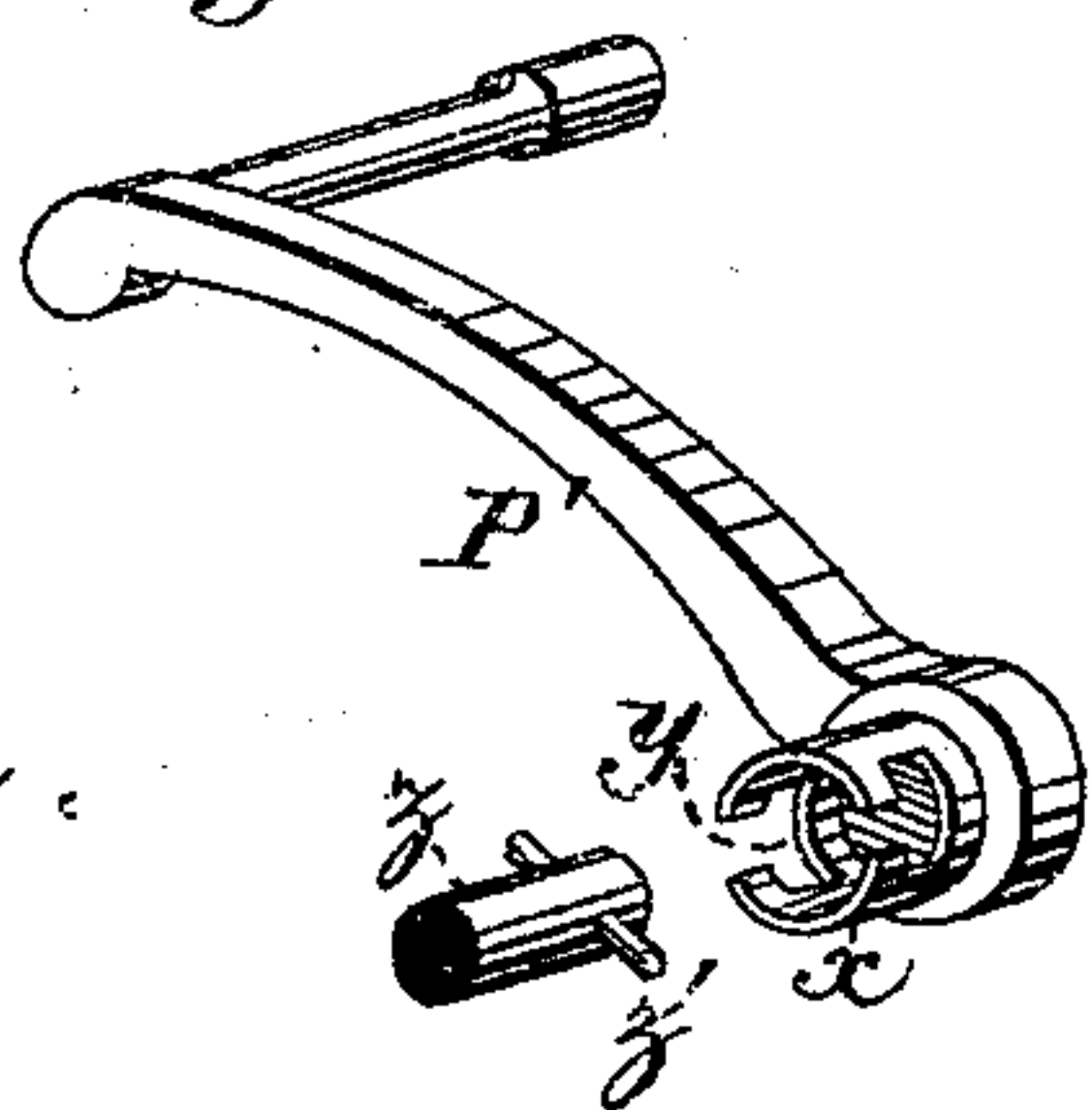


Fig. 1.

Fig. 7.



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Fig. 2.

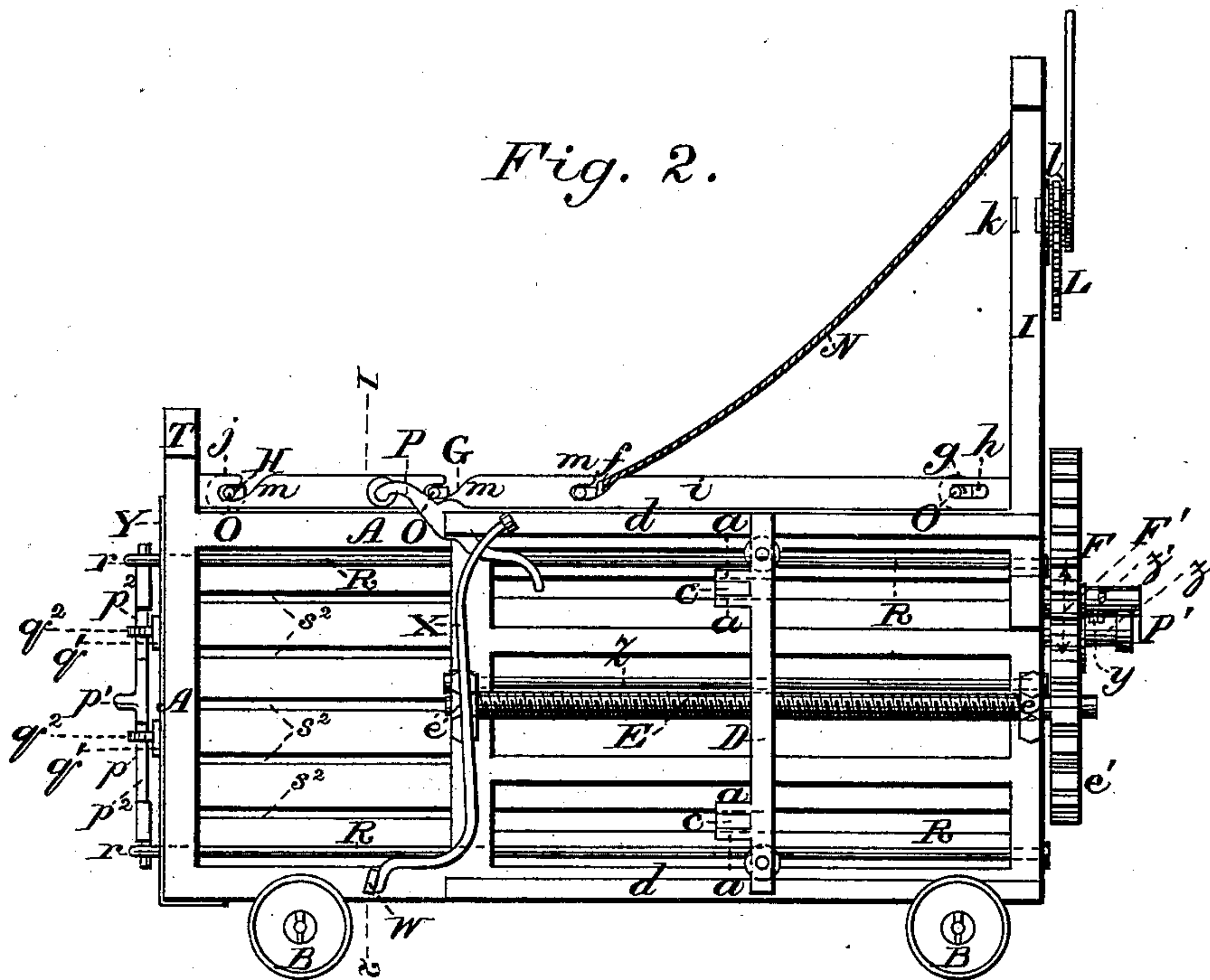


Fig. 4.

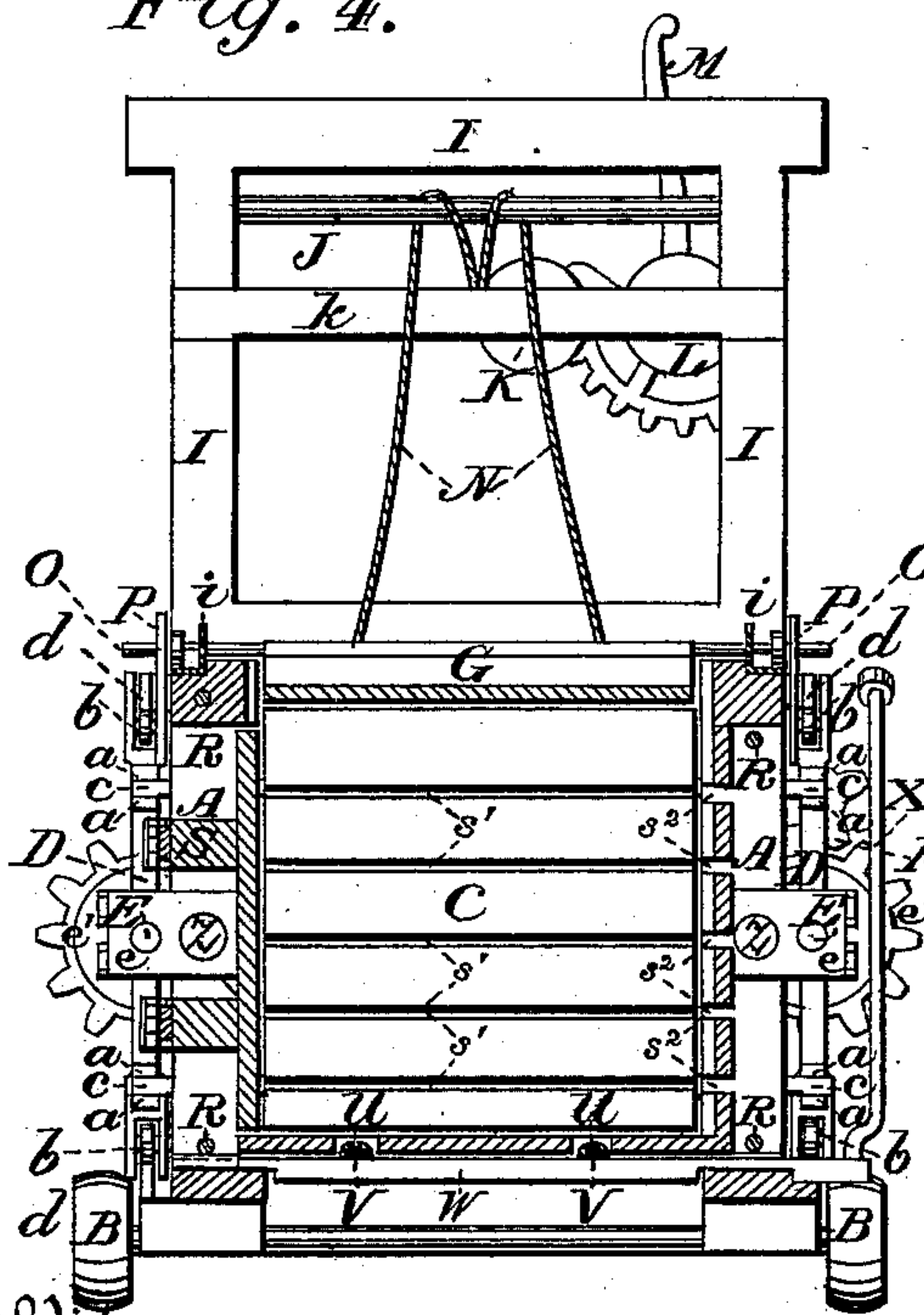
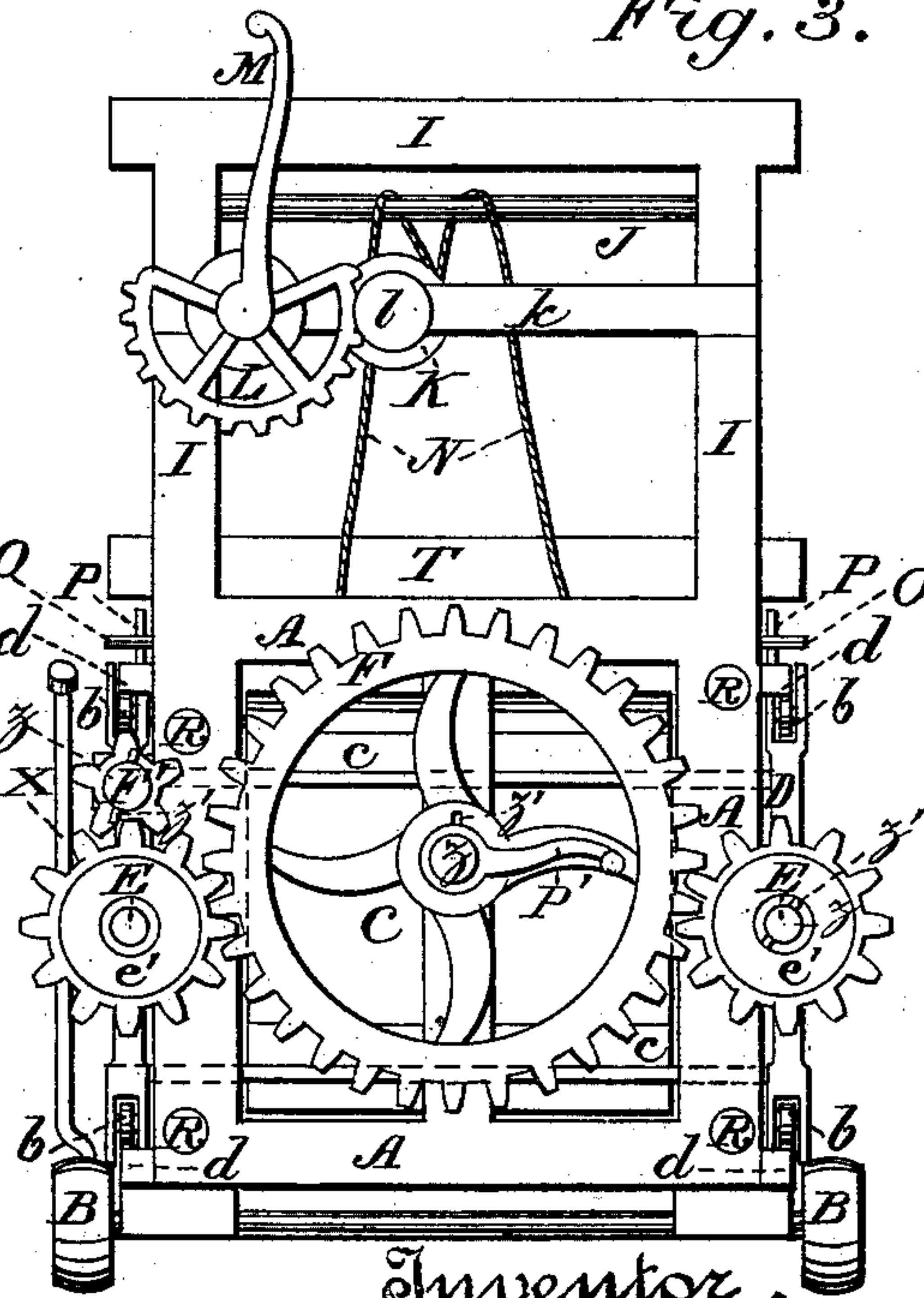


Fig. 3.



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Fig. 5.

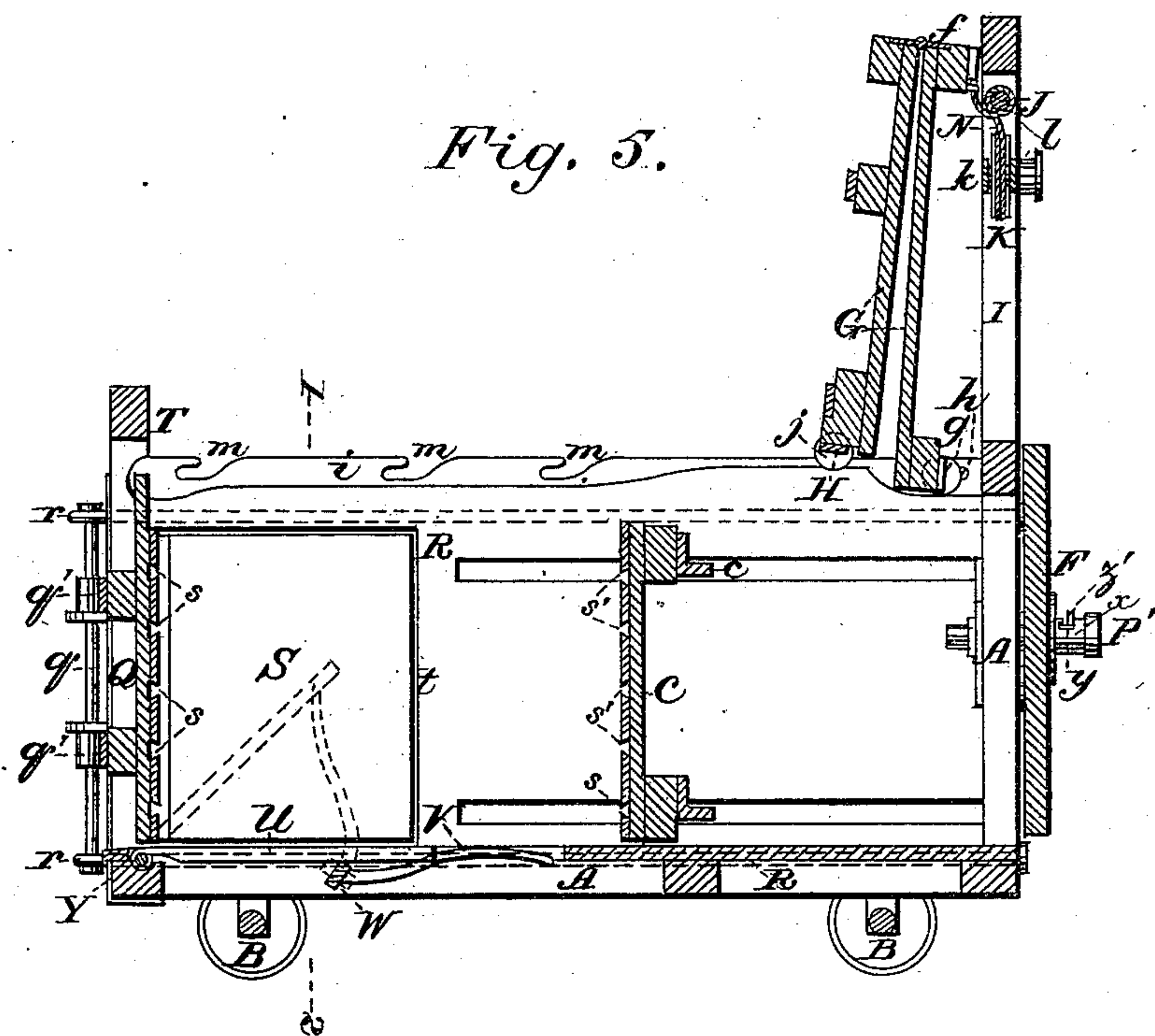
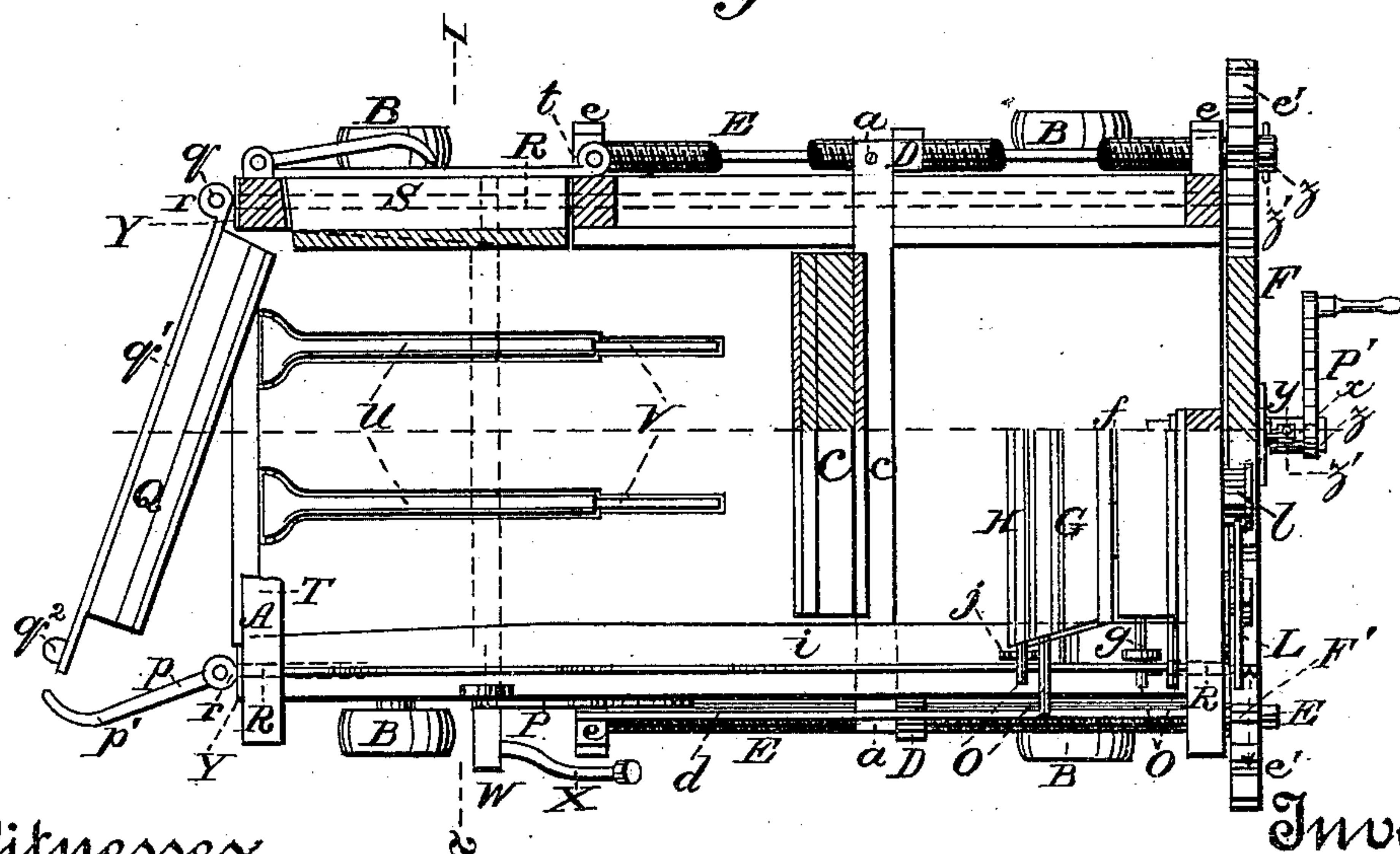


Fig. 6.



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# UNITED STATES PATENT OFFICE.

HENRY TYACK, OF GRASS VALLEY, CALIFORNIA.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 273,407, dated March 6, 1883.

Application filed December 11, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY TYACK, of Grass Valley, county of Nevada, State of California, have invented an Improved Baling-Press; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain new and useful improvements in presses for baling hay, cotton, wool, rags, hops, hair, &c. These improvements relate to the entire press and all its parts, and include principally the construction of the body or frame, the follower and the means for operating it, the cover or lid and the means for adjusting and opening it, the front or discharge door and the means for mounting it, the side door, and other details, all of which I shall hereinafter fully describe.

The object of my invention is to provide an effective baling-press, and each of the several improvements which I have made has in view this general result.

Referring to the accompanying drawings, Figure 1 is a perspective view of my device. Fig. 2 is a longitudinal elevation. Fig. 3 is an end elevation. Fig. 4 is a transverse section on the line 1 2, Figs. 2, 5, and 6. Fig. 5 is a longitudinal section, showing cover raised up. Fig. 6 is a half-plan of top and a half-plan midway between the top and bottom of the press. Fig. 7 is a view of the hand-crank.

Let A represent the body or frame of the press, mounted on wheels B for convenience in transportation.

C represents the follower within the press, held therein by means of bars *c*, secured to its rear side above and below, and having their ends projecting through elongated slots in the sides of the press, Fig. 1. The ends of these bars are secured between flanges or jaws *a*, upon vertical standards or supports D, which are themselves mounted centrally upon horizontal screws E—one on each side of the press—and suitably journaled in bearings *e* thereon. The ends of the standards are slotted and have mounted in them friction-rollers *b*, which travel upon guide rails or flanges *d*, secured to the sides of the press above and below.

The screws E extend from the rear end about two-thirds the distance of the press, which represents the distance which it is intended the follower shall travel. Revolution is imparted to these screws by means of a large spur-gear,

F, mounted on the rear end of the press, and meshes on each side with pinions *e'* upon the rear ends of the screws, Fig. 3; or it may be imparted, as I shall explain, by the small pinion F', meshing with one of the pinions *e'*, or, again, by one of the pinions *e'* directly.

It will be seen that by means of power applied to the spur-gear the standards D, supporting the follower, are advanced or withdrawn by the revolution of the screws, and a direct power is thus applied to the follower, in which no force is wasted. The power applied to spur-gear F is sacrificed to speed, which is necessary in the return of the follower; but when the small pinion F' is used power is increased at the expense of speed. Pinion *e'* gives another variation. The entire top of the press consists of a folding cover, G, constructed and fitted as follows: It is centrally divided transversely, and hinged at *f* in such manner that it may fold upwardly by raising its center, Fig. 5. This is accomplished by placing the hinges on the lower edge. Across its rear end is a bar, *g*, the ends of which are preferably provided with small rollers and fit loosely through elongated slots *h*, made in the vertical side of angle strips *i*, secured along the edges of the top of the press. The ends of the bar are rounded and act as a hinge, upon which the rear end of the cover turns when its hinged center is raised.

Across the forward end of the cover is a bar, H, having on its ends rollers *j*, which travel upon the top edges of the press just inside the angle-strips *i*, Fig. 5. When the center of the cover is raised the rear end turns on its bar *g* and the forward end travels backward, its rollers *j* remaining on the edges of the press. It thus uncovers the entire top of the press to allow the material to be baled to be fed to it, Fig. 5. When released the cover returns to its position of its own weight, its rollers *j* traveling forward on the press. I shall now describe the means for raising it and the means for automatically barring it to resist the strain when the follower is operating.

The rear end of the press is extended up to form a frame, I, across which is mounted a drum, J, and in a frame, *k*, just under is mounted a grooved-face pulley, K, carrying a small pinion, *l*, Fig. 5. With this pinion en-



gages a semicircular or segmental gear, L, having a lever, M, Figs. 3 and 4.

Cords or chains N are secured to the cover just behind its hinged center, extend back around the drum J, and down to the pulley K, to the face of which it is attached. Now, when the cover G has to be opened, after the pressure is relieved, to release the bale and to admit of fresh material, the lever M is pulled down. This, through its segmental gear L, operates pinion *l* and winds up the cords or chains N on pulley K. The tension of the chains being upon the cover immediately behind its hinge, the cover is raised at its center in the manner heretofore described, and may be there held until it is desired to release it.

In the angle-strips *i* are made curved slots *m* on each side, in which the projecting ends of bars O, secured across the top of the cover, are adapted to fit, Figs. 1, 5, and 2. When the cover is released and the forward end travels home, the ends of bars O come down to the edge of the angle-strips *i*, and then move down into the curved slots *m*, in which they are so secured as to resist the vertical strain of the bale within, Figs. 1 and 2. Thus the cover effectively bars itself when it returns to its place.

In order to automatically release it from the slots *m* when the follower has been driven home, I have the S-shaped levers P pivoted to the sides of the press just about in line with the ends of the screws E, Figs. 1, 2, and 4. The lower ends of these levers are in position to be moved forward by the advancing standards D, and the upper ends are forward of the projecting ends of one of the bars O, so that when the follower has nearly reached its limit the standards D, coming in contact with the lower ends of the levers P, throw their upper ends backward against the ends of bar O, and thus move the said bar and its companion bars out of the slots *m*, when the lever M, I have described, may be moved to complete the operation and raise the cover.

At the front end of the press I have the door Q, through which the bale is discharged when completed. This door is peculiarly hung and constructed.

From end to end of the body A, at the four corners, are longitudinal tie-bolts R, Figs. 1, 2, and 6. The rear ends of these are secured by nuts, and their forward ends, which project beyond the face of the press, are formed into eyes *r*, Figs. 2 and 1. In two of these, on one side, is secured the vertical pintle *q*, upon which the hinge-strips *q'* are journaled, Figs. 1 and 5. In the two on the other side is mounted the vertical latch *p*, Figs. 1 and 2. This latch has a central lever or handle, *p'*, and notched-out ends *p*<sup>2</sup>. The ends of the hinge-strips *q'* extend within these notches, and are provided with curved lugs *q*<sup>2</sup>, Figs. 6 and 1. When the latch is turned to lock the door its notches pass over the curved lugs *q*<sup>2</sup> and fit behind them, in which position no outward strain upon the door by the bale within can release them, Figs. 1 and 2. The lever *p'* must be turned to make

the latch release the lugs. Besides the advantageous operation of this latch, the way in which both latch and hinge are secured to the tie-bolts produces a very desirable result.

The door Q is the counter of the follower, and great strain is brought against it, which is resisted by its hinge and latch. Now, by securing both of these to the tie-bolts the strain is transferred to the rear of the press, and the whole frame is thus made to bear the full force of the power applied. It binds it all together and makes it staunch and firm.

Upon the inside face of the door, across it, are made grooves *s*, preferably formed by the meeting edges of beveled face-strips with their bevels turned in, though they may be formed otherwise, as in the door itself. (See Fig. 5.) In the face of the follower are made similar grooves, *s'*, placed in relatively opposite positions to those formed in the door. (See Figs. 5 and 4.)

In one side of the frame A are made a number of slots, *s*<sup>2</sup>, corresponding in position to the grooves in the follower and door, and extending far enough to connect with the ends of both when the follower is driven home, Figs. 2 and 4. This construction is for the purpose of admitting the baling-wire or tying material, which is inserted through a side door, S, which I shall now explain, Figs. 1 and 5. This door is hinged to the side of the press at *t*, and is provided with a similar locking device to that which I have described in connection with the door Q. When this side door, S, is opened the wires or other tying material may be easily passed around the bale through the grooves in the front door and follower and slots *s*<sup>2</sup> in the side of the press.

When the bale is wired or tied and is ready to be taken out it might still bind in the press and be difficult to remove. To obviate this difficulty I make the forward end or mouth of the frame A slightly flaring on the sides, beginning about at the point where the follower stops when driven home, Figs. 6 and 4.

The side door, S, is made of sufficient thickness to have its inner surface, when the door is closed, continue the straight line of the rear portion of the side of the press, so that when the bale is pressed home by the follower it is confined by said door in just the same contracted space on one side as if the frame A were not made flaring, Fig. 6; but when said door is opened the flaring sides of the frame provide a wider space and allow the bale to lie loosely therein, and it may be readily discharged without binding. For the purpose of discharge I make the front T end of the press higher than the cover.

Pivoted in the base of the front of the press are two arms, U, which are adapted to lie down in slots in the floor, and to swing up under the bale by means of arms or cams V impinging upon them from beneath, and operated by a shaft, W, mounted transversely under the press, and having a long lever, X, extending up beside the frame A. (See Figs. 5, 6, 2, and



4.) By moving the lever X the shaft W is rocked, its cams V raised under the rear ends of the swinging discharging-arms U, and the bale forced out through the high front opening of the press. This front face of the press I strengthen by metal straps Y, secured under the edge and extending up each side of the door-frame nearly to the top, Fig. 1. These metal strips form strong bearings for the tie-bolts R, the hinge  $q'$ , and latch  $p$ .

To strengthen the frame A beside the power-screws, and steady the bearings  $e$  in which they work, I have longitudinal bolts Z—one on each side—extending about the same distance as the screws, Figs. 1 and 2.

To impart power to the gearing I have a hand-crank,  $P'$ , the advantage of which lies in its ready adjustment not only to the main gear F, but also to the pinions  $e'$  and  $F'$  when any one of them may be required to transmit power from its source. This crank is perforated at its end, and has a circular flange or collar,  $x$ , in the sides of which are made T-shaped slots  $y$ , formed by two cuts at right angles, as shown in Fig. 7. The shaft  $z$  of the spur-gear projects and has a cross pin or bar,  $z'$ . The pinion  $F'$  has a similar shaft and cross-pin, and one of the pinions  $e'$  is likewise provided. When the crank is fitted on the shaft of any of these gears the pin  $z'$  passes into the slots  $y$  and is secured. The peculiar construction of the crank  $P'$ , whereby it may be adjusted readily to any of a series of power devices, gives me an opportunity of suiting the work to the necessity. The crank may be easily removed, and is therefore specially adapted to be fitted to whatever gear necessity may require. When the follower is being forced forward, if the large gear F does not furnish enough power, the crank is removed from it and placed either on one of the pinions  $e'$  or on the small pinion  $F'$ , and the power greatly increased; but when the follower is returning speed is required, and the crank is then fitted to the large gear F.

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

1. In a baling-press, the body or frame A, in combination with the follower C, having bars  $c$  projecting through elongated slots in the sides of the frame, and the means for operating said follower, consisting of the standards D, to which said bars are attached, the screws E, mounted in the sides of the press, and upon which the standards are fitted and travel, and gearing connected with said screws and with the source of power, substantially as herein described.

2. In a baling-press, the body or frame A, in combination with the follower C, having bars  $c$ , the standards D, having end rollers,  $b$ , the guides or tracks  $d$  upon which they travel, the operating-screws E, having pinions  $e'$ , and the main spur-gear F, meshing with said pinions, all arranged and operating substantially as herein described.

3. In a baling-press, the frame or body A and the traveling follower C, in combination with the standards D, the screws E, mounted in bearings  $e$ , and the bolts Z, bracing said bearings, substantially as herein described.

4. In a baling-press, the body or frame A, in combination with the transversely centrally hinged cover or lid G, hinged at its rear end to the frame, and a means for raising said cover at its center to cause its forward end to travel back to open the top of the press, substantially as herein described.

5. In a baling-press, the body or frame A, having angle-strips  $i$  on its upper edges, in which are the elongated rear slots,  $h$ , and the curved slots  $m$ , in combination with the transversely centrally hinged cover or lid G, having a rear bar,  $g$ , fitted in the slots  $h$ , and bars O, adapted to fit in the curved slots  $m$ , and rollers  $j$  at its forward end to travel on the top of the frame, and a means for raising said cover at its center to cause its forward end to travel back to open the top of the press, substantially as herein described.

6. In a baling-press, the body or frame A, having the vertical extension or frame I on its rear end, and angle-strips  $i$ , with their slots  $h$   $m$ , as described, in combination with the transversely centrally hinged cover or lid G, with its bars  $g$  O and rollers  $j$ , fitted in the angle-strip on top of the frame, as shown, and the means for raising said cover at its center to cause its forward end to travel back and open the press, consisting of the cords or chains N, the drum J, pulley K, pinion  $l$ , segmental gear L, and lever M, all arranged substantially as herein described.

7. In a baling-press, the body or frame A, follower C, standards D, and screws E, and the angle-strips  $i$ , having curved slots  $m$ , in combination with the transversely centrally hinged cover or lid G, having bars O, adapted to fit in said slots, as described, and the means for releasing said bars from said slots, consisting of the pivoted S-shaped levers P, the lower ends of which are engaged by the advancing standards D, and their upper ends impinging against the extended ends of one of the locking-bars O, substantially as herein described.

8. In a baling-press, the body or frame A, having the bolts R extending its entire length, secured at both ends, and forming eyes  $r$  at their forward ends, and the follower C, in combination with the front door, Q, hung by a hinge and secured by a latch, both of which are secured to and mounted in the eyes  $r$  of the tie-bolts R, substantially as and for the purpose herein described.

9. In a baling-press, the frame or body A, having the bolts R, with eyes  $r$  at the forward ends, and the follower C, in combination with the door Q, having hinge-strips  $q'$ , with curved faced lugs  $q^2$ , the pintle  $q$ , secured in the eyes  $r$  of the bolts and hinging said strips, and the latch  $p$ , journaled in said eyes  $r$ , and having the notches  $p^2$  and lever  $p'$ , all arranged and operating substantially as herein described.



10. In a baling-press, the body or frame A, having a swinging side door, S, and elongated slots  $s^2$ , in combination with the follower C, having parallel grooves  $s'$  upon its face, and the counter door Q, having parallel grooves  $s$  upon its inner surface, said grooves in follower and door and said slots in the frame being in relation with each other to permit the passage of the tying material to tie the bale, substantially as herein described.

11. In a baling-press, the body or frame A, having a high forward end, T, in combination with the means for discharging the bale, consisting of the swinging arms U in the base of the frame, and devices for raising said arms, substantially as herein described.

12. In a baling-press, the body or frame A, having a high end, T, in combination with the means for discharging the bale, consisting of the swinging arms U in the base of the press, the cams V, shaft W, and lever X, all arranged substantially as herein described.

13. In a baling-press, the front end, T, of the frame or body A, having metal bracing and

strengthening strips or face-plates Y upon its face, substantially as herein described.

14. In a baling-press having a follower driven by screws E, the power-gearing consisting of the spur-gear F, pinions  $e'$ , and small pinion  $F'$ , said gears each having a shaft,  $z$ , with a cross-pin,  $z'$ , in combination with the adjustable hand-crank  $P'$ , having a flange or collar,  $x$ , with T-shaped slots  $y$ , adapted to fit over and secure said pin  $z$  to drive said gears, substantially as herein described.

15. In a baling-press having a follower, C, driven by screws E, the power-gearing consisting of the spur-gear F, pinions  $e'$ , and small pinion  $F'$ , in combination with an adjustable crank,  $P'$ , adapted to be readily fitted to or removed from each of the said gears and pinions, substantially as and for the purpose herein described.

In witness whereof I hereunto set my hand.

HENRY TYACK.

Witnesses:

JOHN FERRELL,

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