

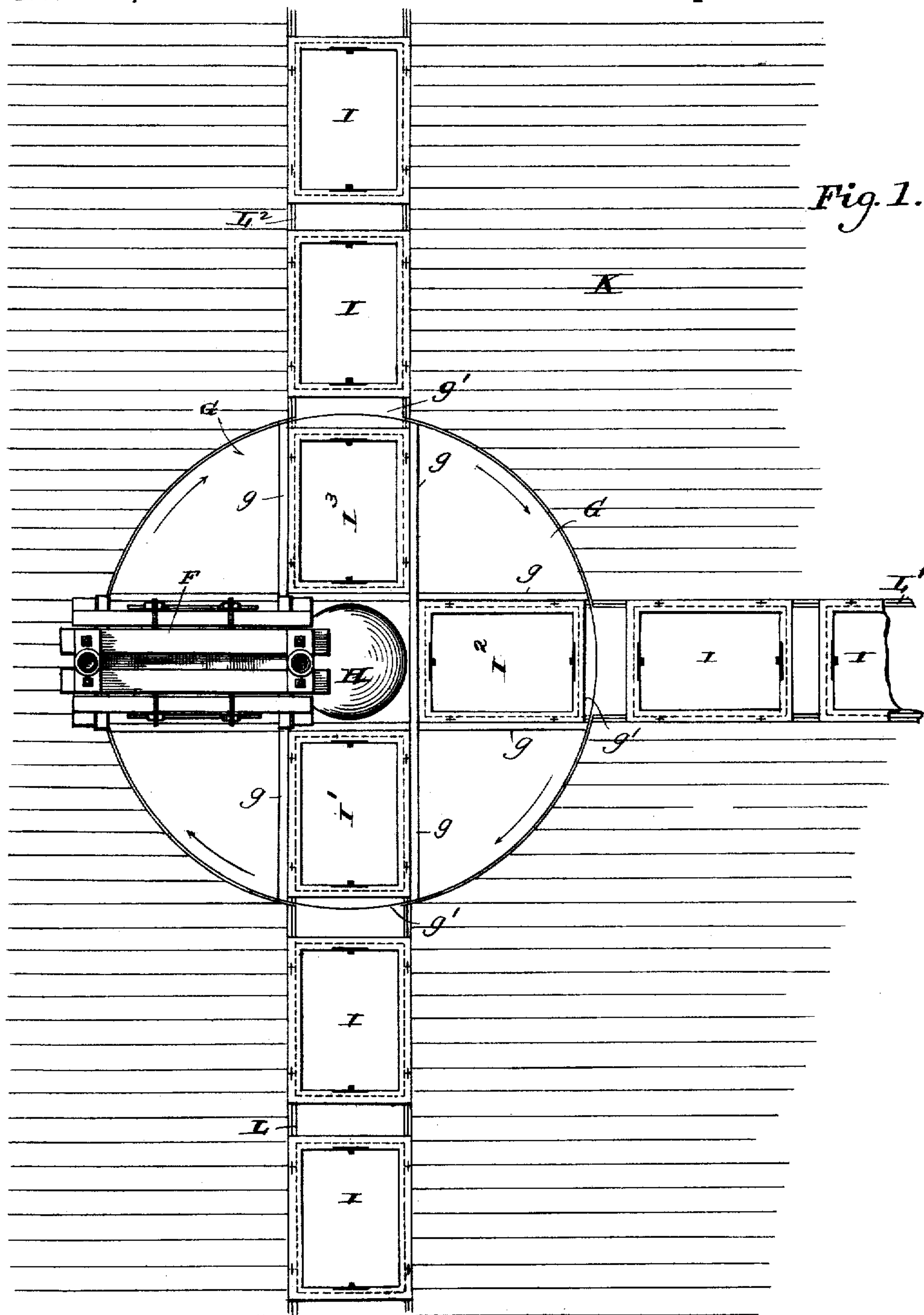
(No Model.)

3 Sheets—Sheet 1.

A. D. THOMAS.  
BALING PRESS.

No. 411,558.

Patented Sept. 24, 1889.



Witnesses:

B. H. Rip  
J. W. Sanford

Inventor:

Abner D. Thomas  
by C. D. Moody  
att'y.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

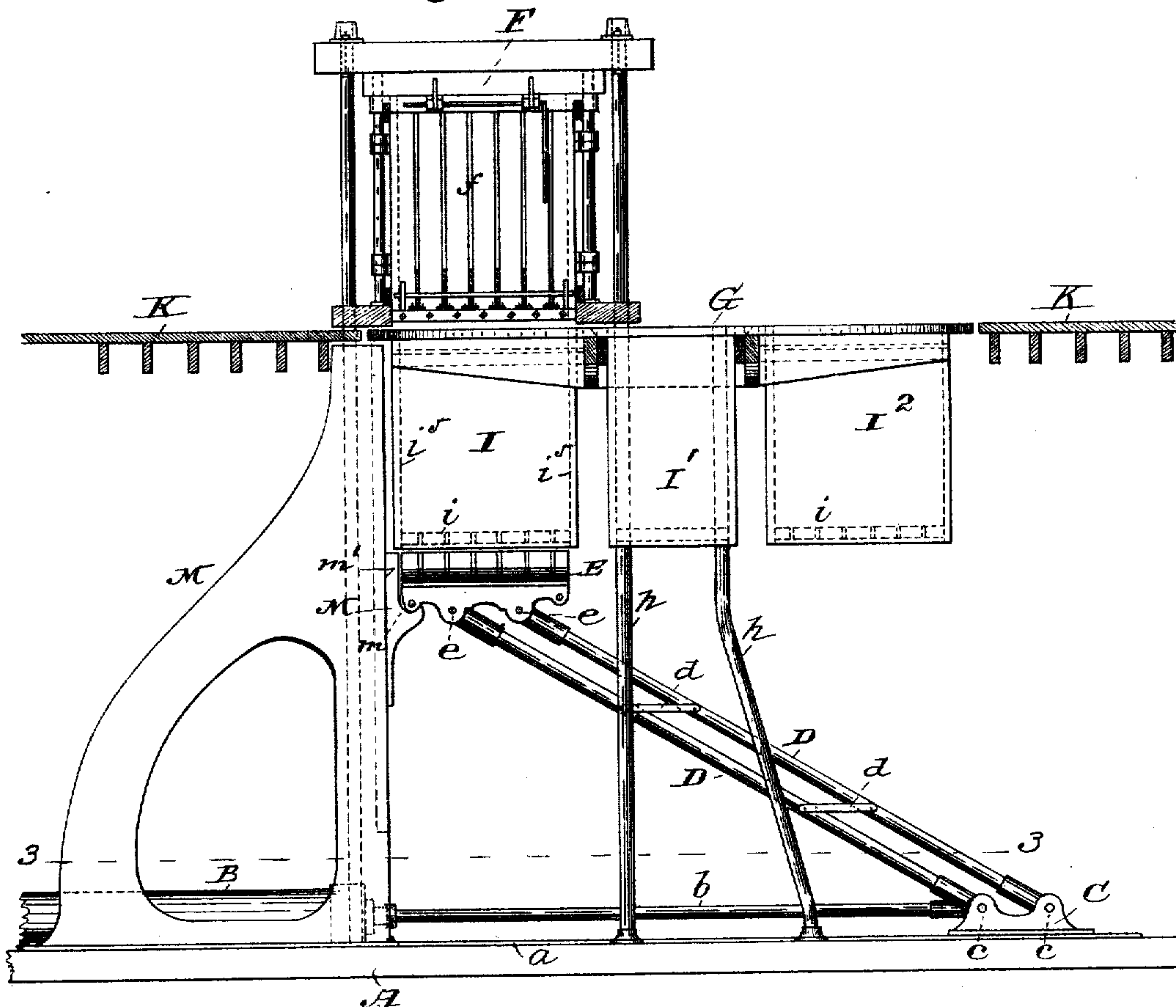


Fig. 3.



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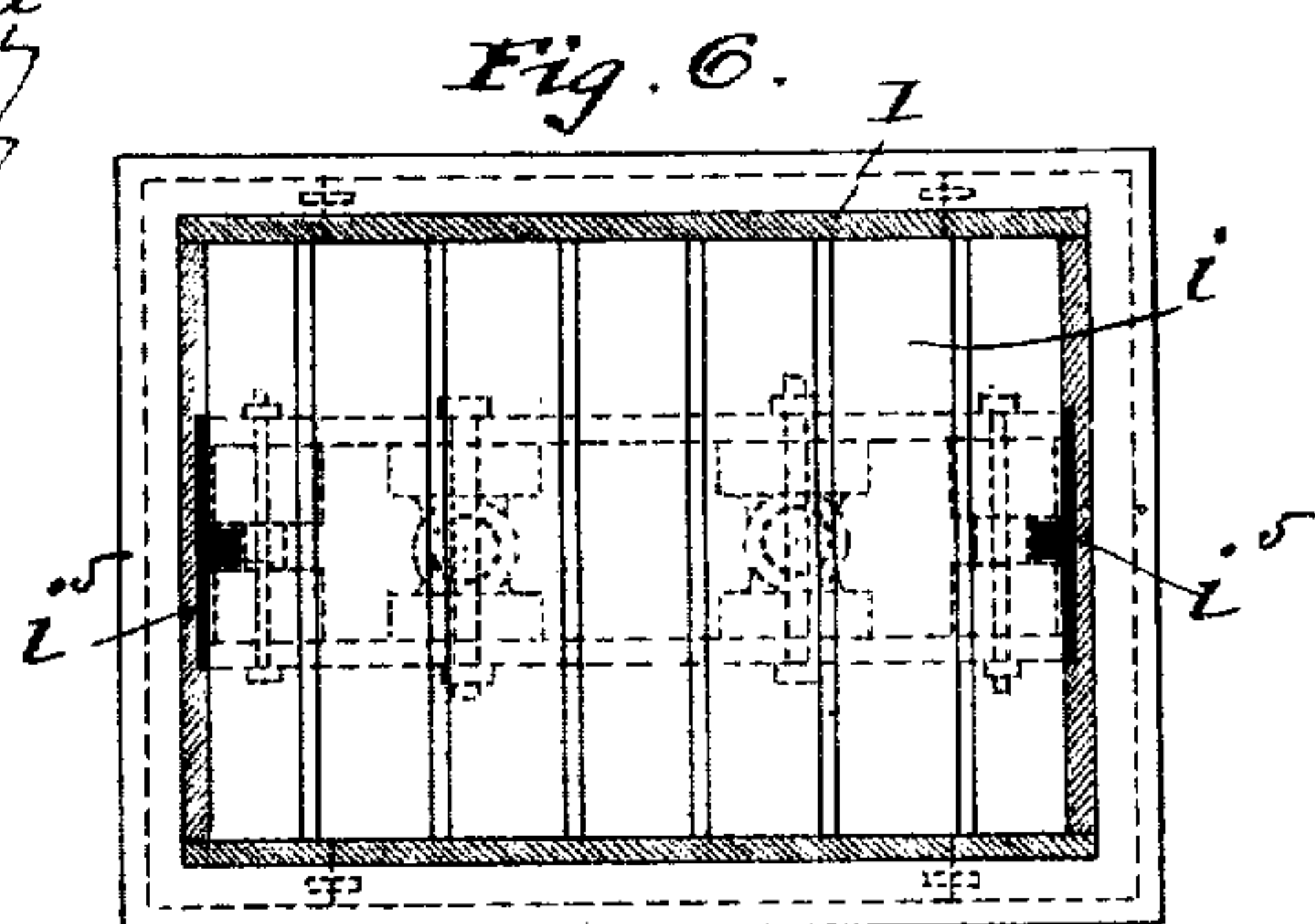
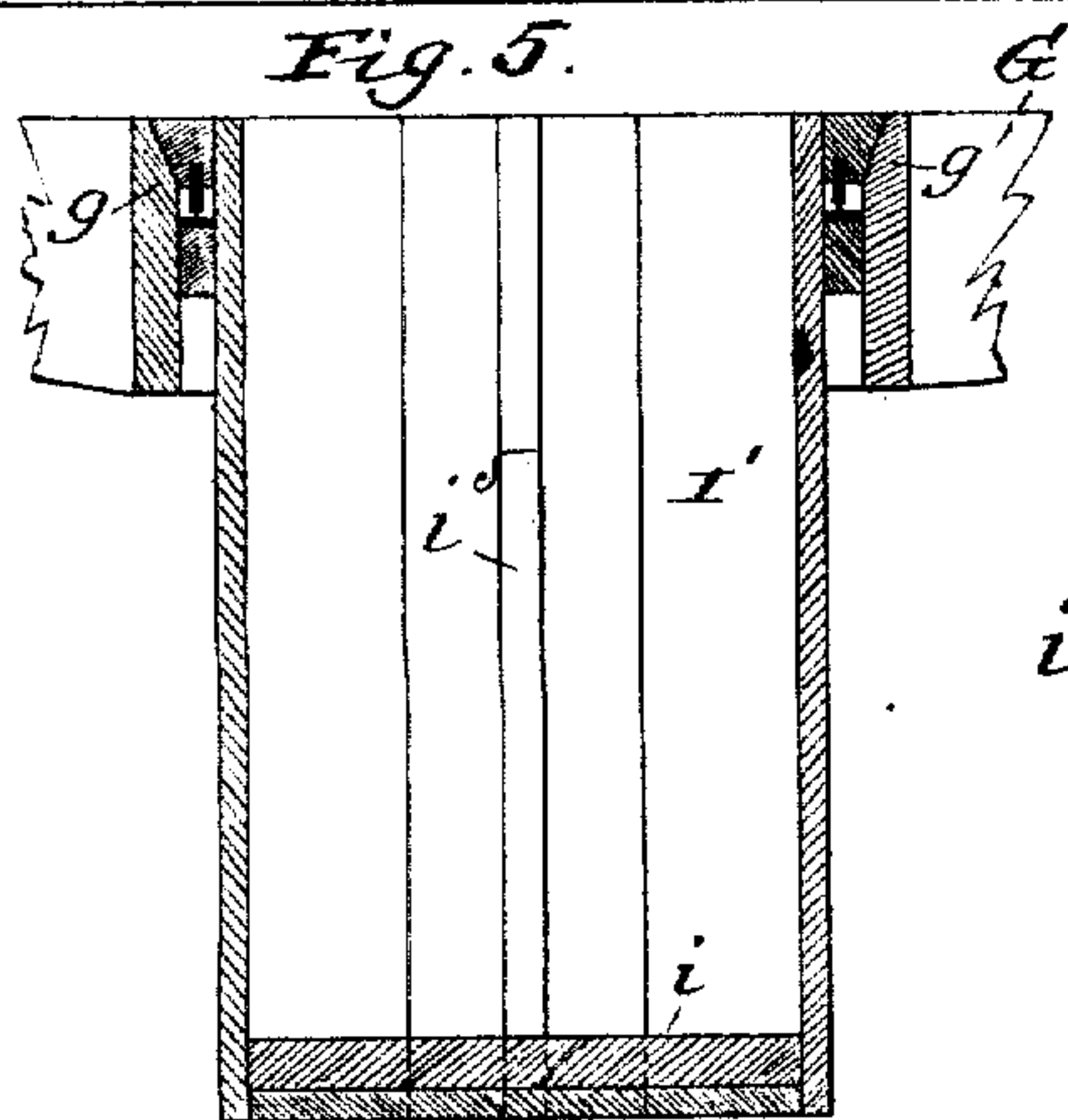
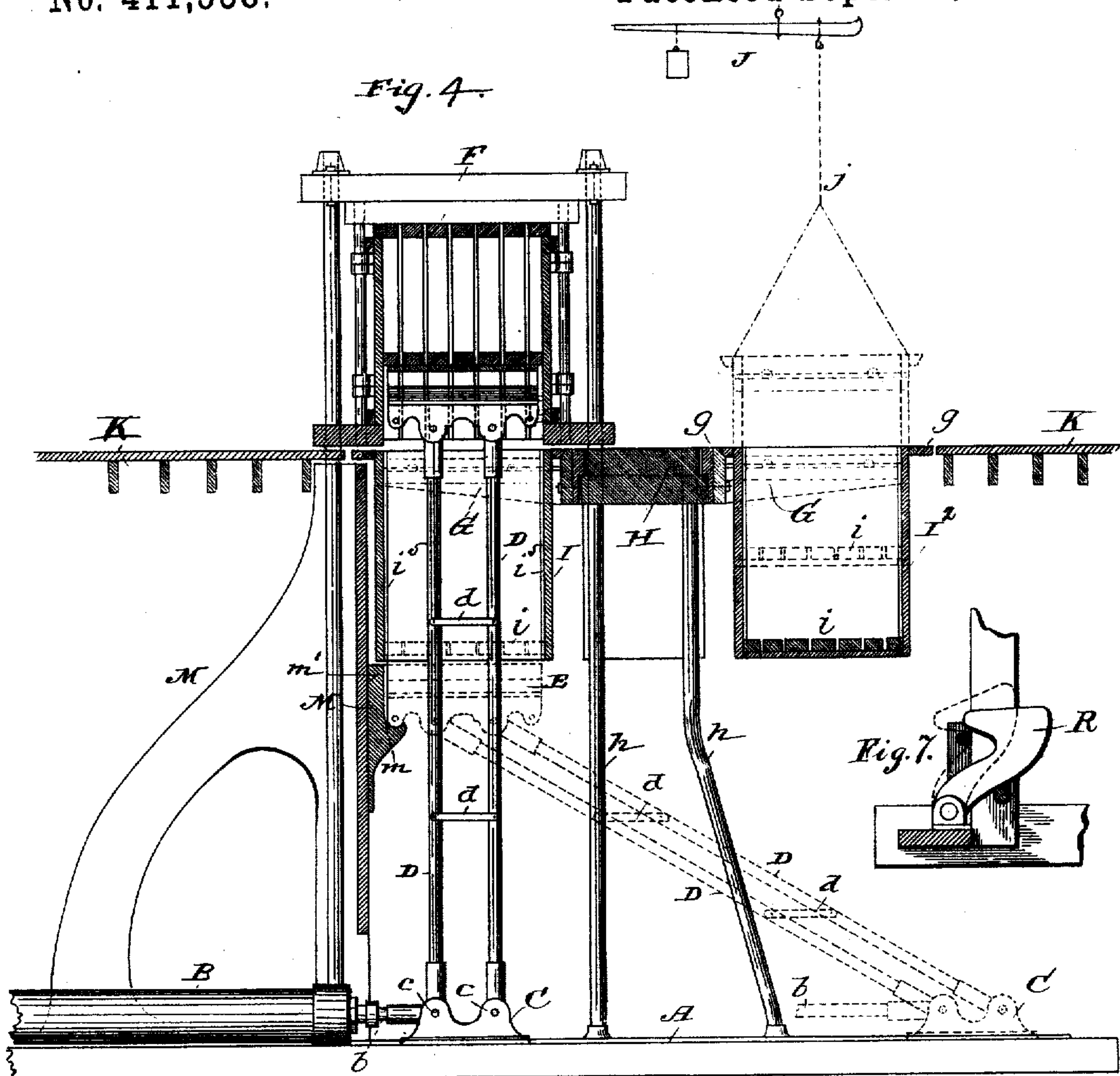
(No Model.)

3 Sheets—Sheet 3.

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No. 411,558.

Patented Sept. 24, 1889.



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# UNITED STATES PATENT OFFICE.

ABNER D. THOMAS, OF LITTLE ROCK, ARKANSAS.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 411,558, dated September 24, 1889.

Application filed January 5, 1889. Serial No. 295,560. (No model.)

*To all whom it may concern:*

Be it known that I, ABNER D. THOMAS, of Little Rock, Arkansas, have made a new and useful Improvement in Baling-Presses, of which the following is a full, clear, and exact description.

This improvement is adapted more especially to presses used in baling cotton; but many of its features can be applied to other presses—such, for instance, as are employed in baling hay, moss, excelsior, &c.

The novelty consists in the structure of the device and the combination of the parts thereof with each other and as a whole, all substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a general plan of the improved mechanism; Fig. 2, a view showing the principal portion of the mechanism in side elevation and the stationary platform in vertical section, the parts being shown as when the press-platen is below the carrying-box; Fig. 3, a horizontal section on the line 3 3 of Fig. 2; Fig. 4, a central vertical section of the press, the rods and platen being shown upright in full lines, their position when lowered being indicated by broken lines. The view includes a weighing device. Figs. 5 and 6 are detail views upon an enlarged scale, Fig. 5 being a vertical section, and Fig. 6 a horizontal section, of one of the carrying-boxes. Fig. 7 is a sectional detail of a part of the press, showing the appliances for retaining the pressed material in the baling-chamber.

The same letters of reference denote the same parts.

Considered generally, the mechanism under consideration in its most desirable form consists as follows: Commencing at the bottom of the construction there is a horizontally-arranged bed-plate A, supporting a steam-cylinder B, and having ways or guides *aa*, upon which a cross-head C is moved to and fro by means of the cylinder piston-rod *b*. A pair of parallel thrust bars or rods D D at the lower end thereof are jointed to the cross-head and respectively at the points *cc* thereon, and at the upper end thereof the thrust-bars are jointed to a press-platen E and respectively at the points *ee* thereon. Drawing the cross-

head C, by means of the piston-rod, toward the cylinder causes the thrust-bars to be moved from an inclined position—such as shown in Fig. 2—into an upright position, as shown in Fig. 4. Pushing the cross-head by means of the piston-rod in the opposite direction causes the thrust-bars to be withdrawn downward into their original position. The press-platen rises and falls with the thrust-bars, and in its movement is guided, preferably in the manner hereinafter set forth.

The baling-chamber F is a fixture, and it is arranged at a suitable superior level to enable the thrust-bars to coact therewith in effecting the baling of the cotton.

The receptacle which is usually employed in baling-presses below the level at which the bale is formed, and which serves to hold the material about to be pressed, can be, so far as the action of the thrust-bars is mainly concerned, a fixture; but in the present instance, to carry out the improvement more fully, the receptacle is movable, and instead of a single receptacle several receptacles are used—that is to say, beneath the level of the baling-chamber is a frame or turn-table G, pivoted upon a support H, to enable it to be turned horizontally around, and provided with a series of what may be termed “carrying-boxes” I I' I<sup>2</sup> I<sup>3</sup>, which are adapted to hold the material which is being pressed. By turning the frame G upon its pivot, the boxes I I', &c., can be carried successively beneath the baling-chamber and above the press-platen, and when any one of the boxes is thus placed the press-platen, by means of the thrust-bars, can be moved upward and downward through the box and into and out of the lower portion of the baling-chamber. To enable the frame G to be moved as described, the thrust-bars and platen must first be withdrawn to bring the platen below the level of the carrying-boxes, whereupon the frame is free to be turned upon its pivot in either direction.

The other features of the improved construction will be noted in describing its operation, which is as follows: The cotton or whatever material is being baled is filled into the boxes I I', &c., and then the frame or “turn-table” G, as it may indifferently be termed, is swung around to carry the first box



I, with its contents, beneath and into connection with the baling-chamber. The thrust-bars are then moved to elevate the platen. The platen in its upward movement encounters the bottom *i* of the box. The bottom is movable, and it and the cotton resting upon it are upborne by the platen and are raised through the box I and into the baling-chamber, and the contents of the box are thereby pressed. In the sides of the baling-chamber, at or near the bottom, are pivoted the usual retaining devices, as shown at R in Fig. 7. These devices are adapted and arranged to be moved outward by the cotton as the platen moves upward and automatically move inward on the descent of the platen and retain the pressed material in the baling-chamber, and the thrust-bars and platen are lowered to their original position, and the box-bottom *i* by the movement is replaced on its bearing in the box I. The value of the parallel thrust-bars and the means for moving them as a device for producing a pressure in the baling-chamber appears in this: As the upward movement of the platen is initiated, the least resistance is encountered and the least power is exerted by the thrust-bars; but as the platen rises the resistance increases and more power is required. The additional power is obtained by reason of the thrust-bars assuming more and more an upright position, and, finally, when the greatest pressure needs to be applied the thrust-bars are approaching a position directly at right angles to the piston-rod, and they are then capable of exerting the greatest power. Furthermore, a pair of thrust-bars arranged as described are desirable in that by means of them the platen can be properly held with relation to the carrying-box and baling-chamber as it is moved in them. When a single thrust-bar is employed, trouble is experienced by reason of the platen becoming turned upon the thrust-bar, so that one end of the platen is higher than the other end. The material being pressed may offer more resistance above one end of the platen than it does above the other end thereof, and when this is the case the platen is apt to turn at its point of connection with the thrust-bar, so as to become inclined to the longitudinal axis of the baling-chamber, and when it is thus inclined the platen binds upon the baling-chamber wall and its movement is cramped. The platen cannot assume this position when a pair of thrust-bars are employed, as described. The platen and the cross-head are held parallel to each other in all of the positions of the thrust-bars, and as the cross-head, or whatever part is used to move the thrust-bars, is made to move at right angles to the longitudinal axis of the baling-chamber the platen is held at right angles to such axis. After the contents of the first box I, have been thus transferred into the baling-chamber, the frame G is turned farther around upon its pivot, by which movement

the box I is shifted from beneath the baling-chamber, and the second box I' is moved into the place previously occupied by the first box I. The contents of the second box I' are then, in manner similar to that in which the contents of the first box were treated, transferred by the action of the thrust-bars into the baling-chamber and there combined with the material previously received from the first box. The frame G is then again shifted and the contents of the third box I<sup>2</sup> similarly pressed into the baling-chamber and combined with the first two lots of material, and so on until sufficient material has been pressed into the baling-chamber to form the desired bale. By this means while one lot of material is being pressed other lots are being made ready for pressing. By continuing to rotate the frame G, as described, the boxes I, I', &c., can be used repeatedly, for as fast as one of the boxes is brought into coincidence with the baling-chamber, the box last used is returned into position to receive another lot of material. Another advantage largely, but not wholly, derived from the movable series of carrying-boxes is being able to readily and accurately predetermine the weight of the bale. To this end the boxes are made detachable from the frame G and capable of being connected with a weighing device, so that for the time being the weight of the box and its contents are transferred to the weighing device. The weight of the box being known, it is at once made practicable to place a certain weight of material in the box, and so with the next box in the series. Therefore to compose a bale of a certain weight, that weight of material is placed in those of the boxes whose combined contents go to make up that bale. A convenient arrangement for thus weighing the boxes is shown in the drawings.

J represents a scale adapted by ties *j* to be connected with a box I<sup>2</sup>, and the box in turn can be raised from off its bearings *g* in the frame G, as indicated by the broken lines, Fig. 4. After the desired weight of material has been ascertained, the box is replaced upon its bearings *g*, and then the frame G is turned around to bring another box into position beneath the scale, whereupon the quota of material belonging to that (second) box is similarly weighed, the box is replaced in the frame G, and the frame turned farther around, and thus proceeding with the operation, filling the boxes partially, then completing the filling at the time of weighing, and then pressing the various lots of material successively into the baling-chamber. The bale, when completed, is removed from the baling-chamber in the ordinary manner.

The improvement is more fully carried out when the frame or turn-table G is wholly or partly surrounded by a fixed platform or floor K, Figs. 1, 2, and 4, and especially when this fixed floor is provided with ways L, L', &c., which are adapted to connect with the ways or



bearings *g* in the frame *G*, for by providing an opening *g'* in the frame *G* at the outer end of the ways *g*, and adapting the ways *L*, &c., as stated and as shown in Fig. 1, to connect with the ways *g* the boxes *I*, &c., can be transferred from the frame *G* to the floor *K* and back again to the frame, and thus the boxes can be filled at any convenient points about the floor *K*, and then transferred to the frame *G*, and ultimately carried beneath the baling-chamber, and then when emptied withdrawn from the frame *G* to the floor *K* again. By this means the capacity of the press is increased, for whenever the frame *G* is at rest, the empty boxes at any point of the frame can be removed and filled boxes inserted in their place. To this end the ways *L*, &c., may be suitably constructed, and may have side ways, (not shown,) so that the interchange of the boxes can be readily effected. The ways *g* *L*, &c., may be constructed in any suitable manner to promote the operation, as described.

As the capacity of the press depends largely upon the celerity with which the movements of its various parts are accomplished, it is very desirable to be able to effect the operation of the thrust-bars promptly. To this end, while they might be operated by other means and many of the advantages of the press under consideration be measurably obtained, it is better to employ steam-power, as shown, as thereby the thrust-bars can be moved quite rapidly. It is also desirable to minimize the weight of the thrust-bars, in order that the least burden shall be put upon the cylinder. Accordingly the cylinder-piston, or whatever appliance is used, is made to draw, and not to push, the cross-head on the upstroke of the thrust-bars, by which means the piston-rod (or screw, if used) can be made comparatively light. Again, by employing a pair of thrust-bars instead of a single thrust-bar and bracing the two thrust-bars, as by means of the brace-rods *d*, Fig. 2, substantially as shown, they (the thrust-bars) can be made comparatively light in weight, and yet be sufficiently stiff to prevent them from buckling.

To resist the lateral thrust of the thrust-bars, especially in initiating their upward movement, the abutment *M*, Figs. 2 and 4, is employed. This abutment can be of any suitable form. I prefer the form shown. It is provided with a curved part *m*, against which a roller upon the platen rolls just as the upstroke of the thrust-bars begins. The portion *m'*, above the curve *m*, serves also as a guide for the platen until the platen has entered the carrying-box, after which the platen is guided by means of the guides *i* in the carrying-box. The carrying-box in turn is suitably stayed laterally to resist any lateral thrust of the thrust-bars. The ways *a a* serve to guide the cross-head and the lower end of the thrust-bars. The drop of the thrust-bars can be steam-cushioned, to which end a suitable construction within the cylinder (not

shown, as its nature is understood) is provided. The thrust-bars work, preferably, between the supports *h* of the turn-table pivot.

If desired, the piston may be cushioned at both ends of the cylinders.

The series of carrying-boxes herein described may consist of two, three, or more boxes, as may be desirable or practicable.

I claim—

1. The combination, with the baling-chamber having appliances for retaining the compressed material therein, the platen, and means for operating the platen, of a turn-table having a series of carrying-boxes, said series being movable continuously in one direction past the baling-chamber, substantially as described.

2. The combination of the baling-chamber having appliances for retaining the compressed material therein, the press-platen, and a frame having a series of carrying-boxes, said frame being adjustable to bring any one of its boxes into line with the baling-chamber and platen, and said platen being movable through the carrying-box and into and out of the baling-chamber, substantially as described.

3. The combination of the baling-chamber permanently fixed in position, the platen, and means for operating said platen with the carrying-boxes and their supporting-frame, said boxes being detachable from said frame to enable them and their contents to be weighed, substantially as described.

4. The combination of the baling-chamber permanently fixed in position, the platen, the carrying-boxes, and their movable supporting-frame, said boxes being detachable from said frame to enable them and their contents to be weighed, and said frame being movable to enable the carrying-boxes to be brought into line with said baling-chamber and platen, substantially as described.

5. The combination of the baling chamber permanently fixed in position, the platen, and means for operating said platen with the carrying-boxes and their supporting-frame, said boxes being removable laterally from said frame to enable them to be filled at a point without said frame, substantially as described.

6. The combination of the baling-chamber, the platen, the carrying-boxes and their movable supporting-frame, and the outlying platform, said frame and said platform having ways, and said boxes being movable on said ways and removable from said frame to said platform and back again, substantially as described.

Witness my hand this 4th day of December, 1888.

ABNER D. THOMAS.

Witnesses:

HENRY RUDD,  
ABE STIEWEL.