

(No Model.)

4 Sheets—Sheet 1.

A. D. THOMAS.
COTTON PRESS.

No. 549,861.

Patented Nov. 12, 1895.

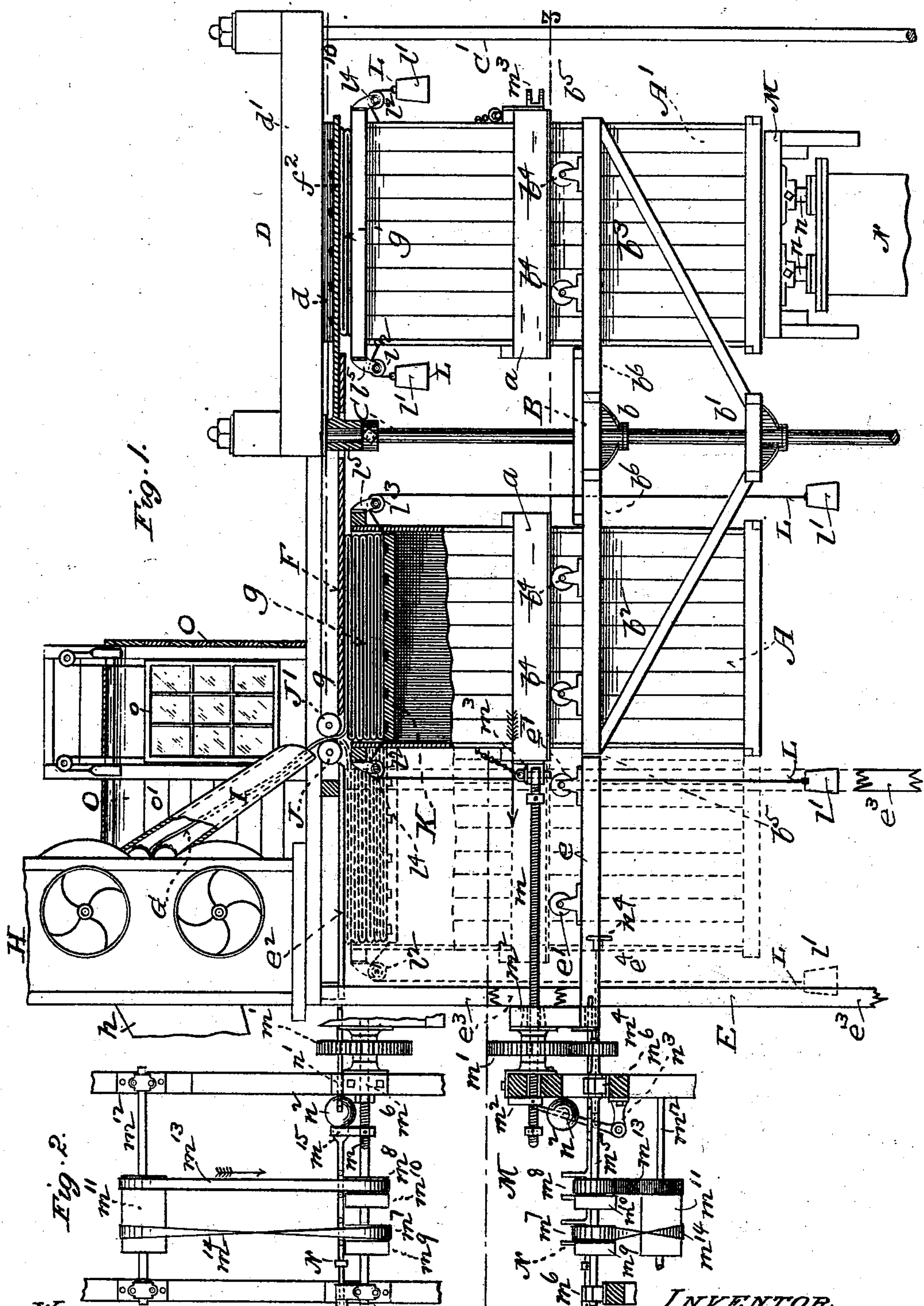


Fig. 2.

Fig. 1.

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By C. S. Moody, atty

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Fig. 3.

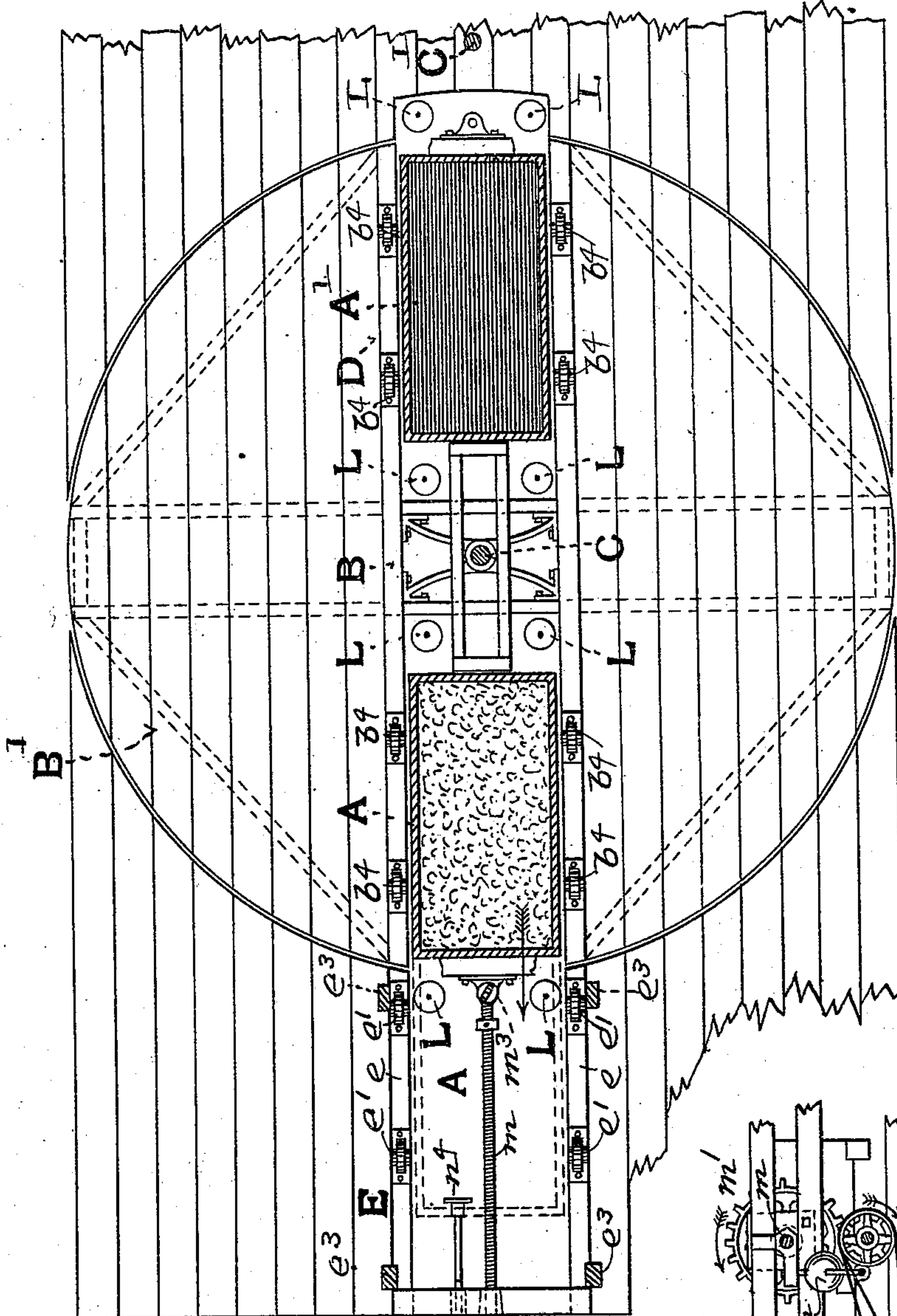
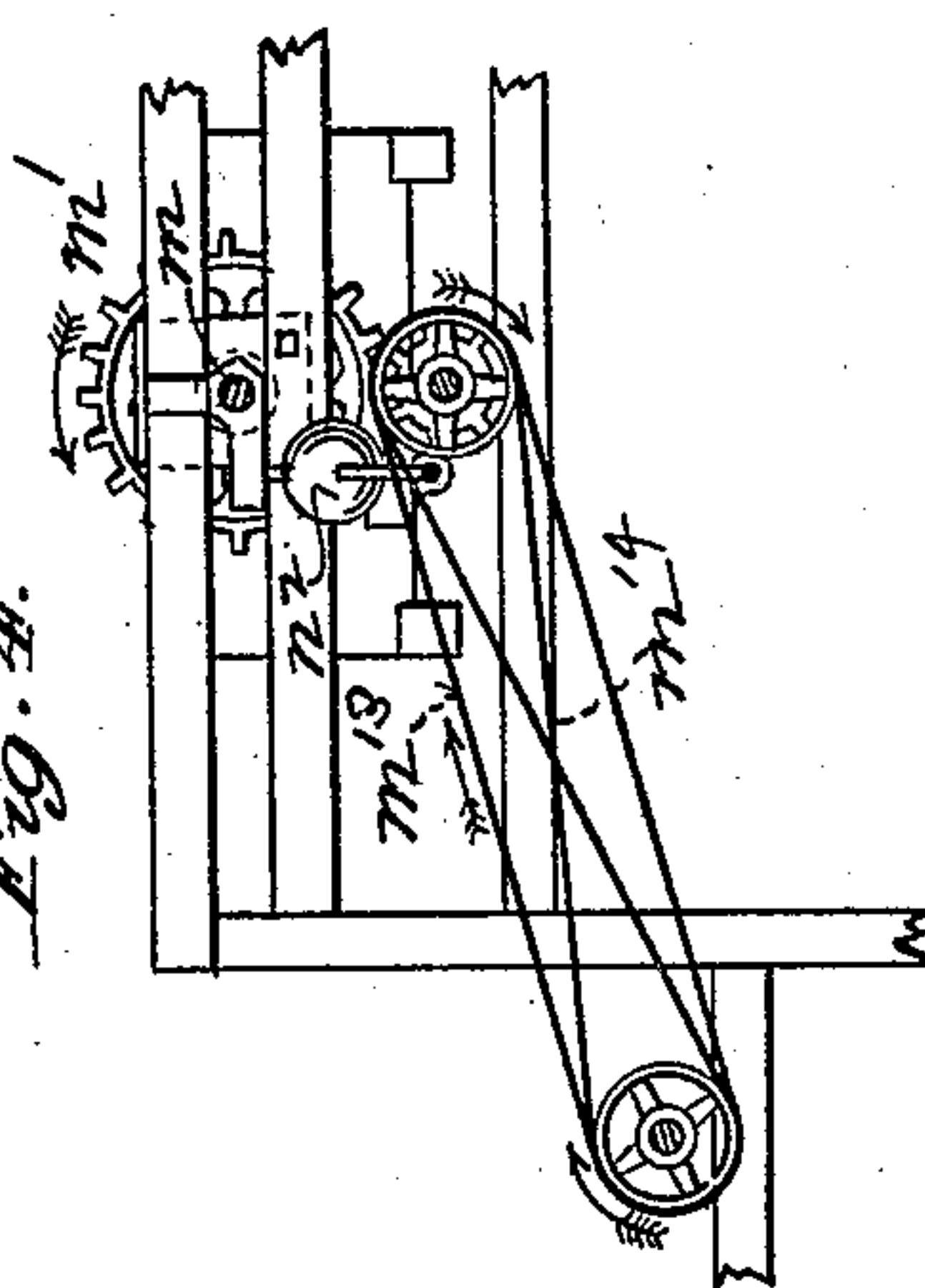


Fig. 4.



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Fig. 5.

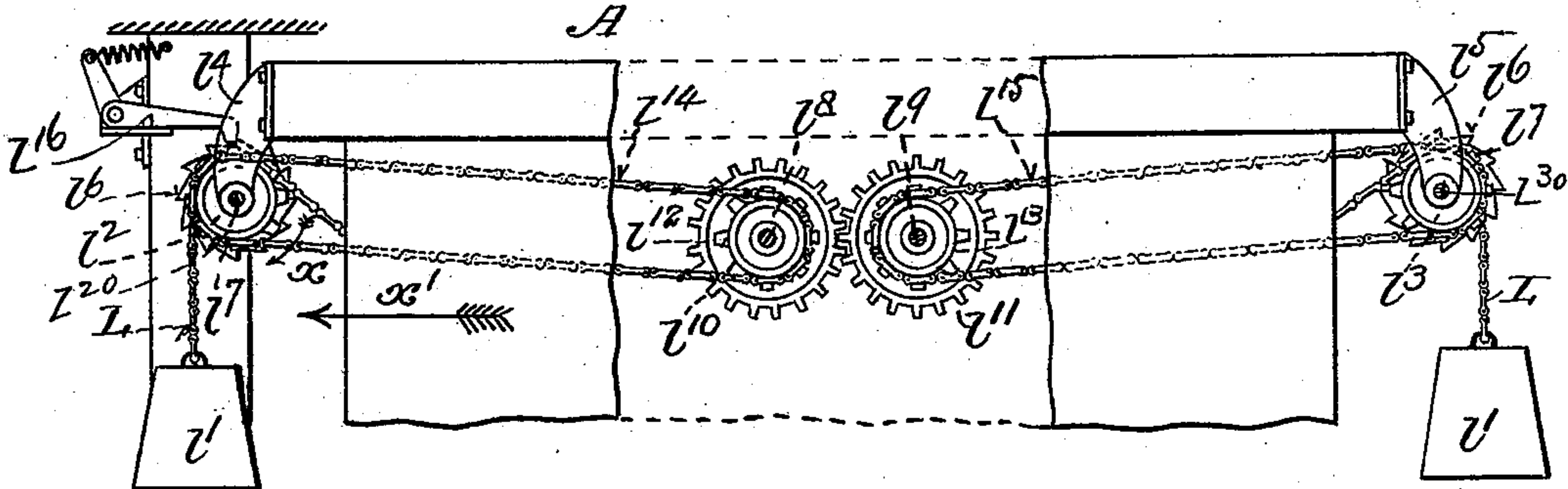


Fig. 6.

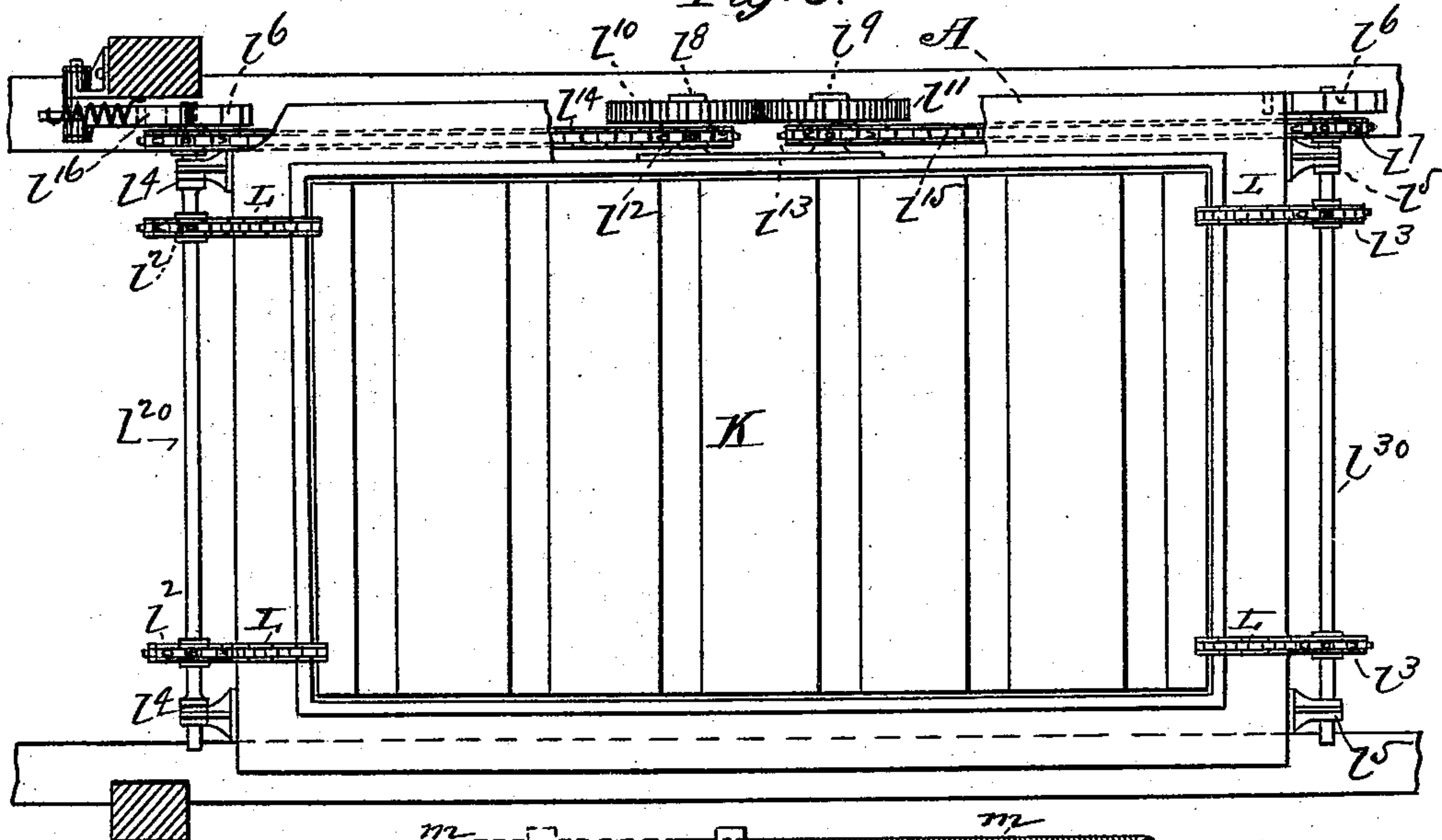


Fig. 7.

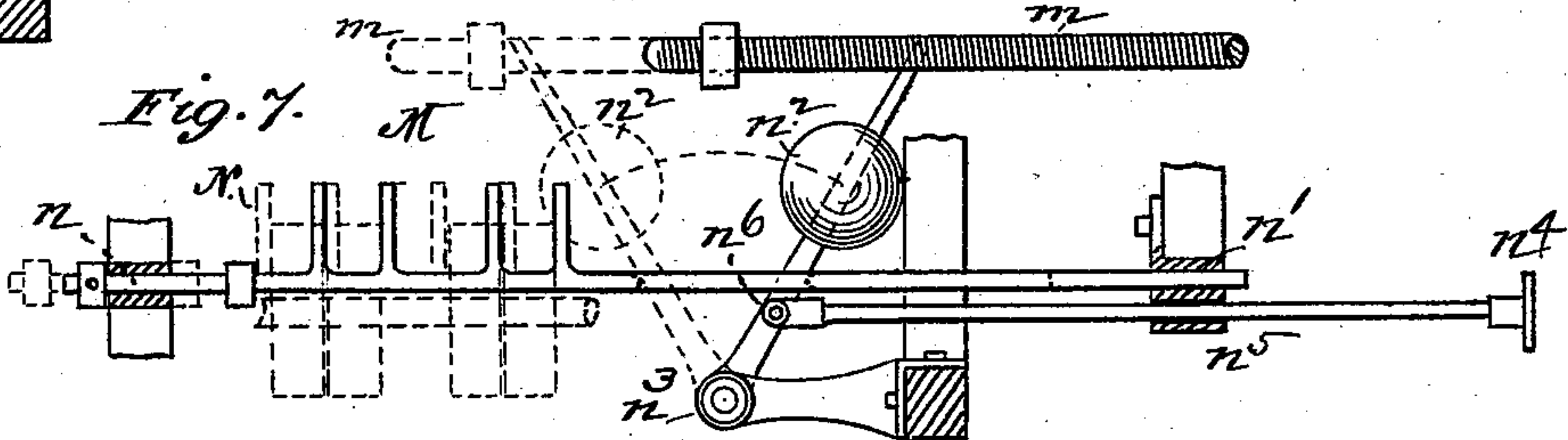
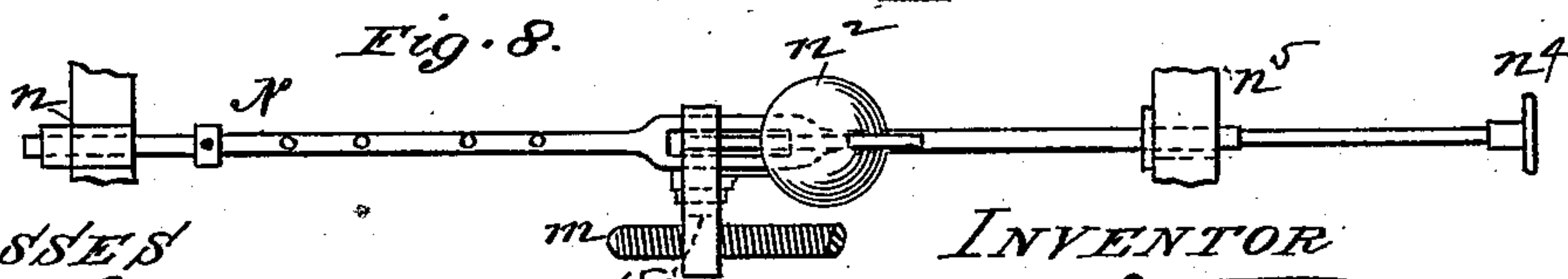


Fig. 8.



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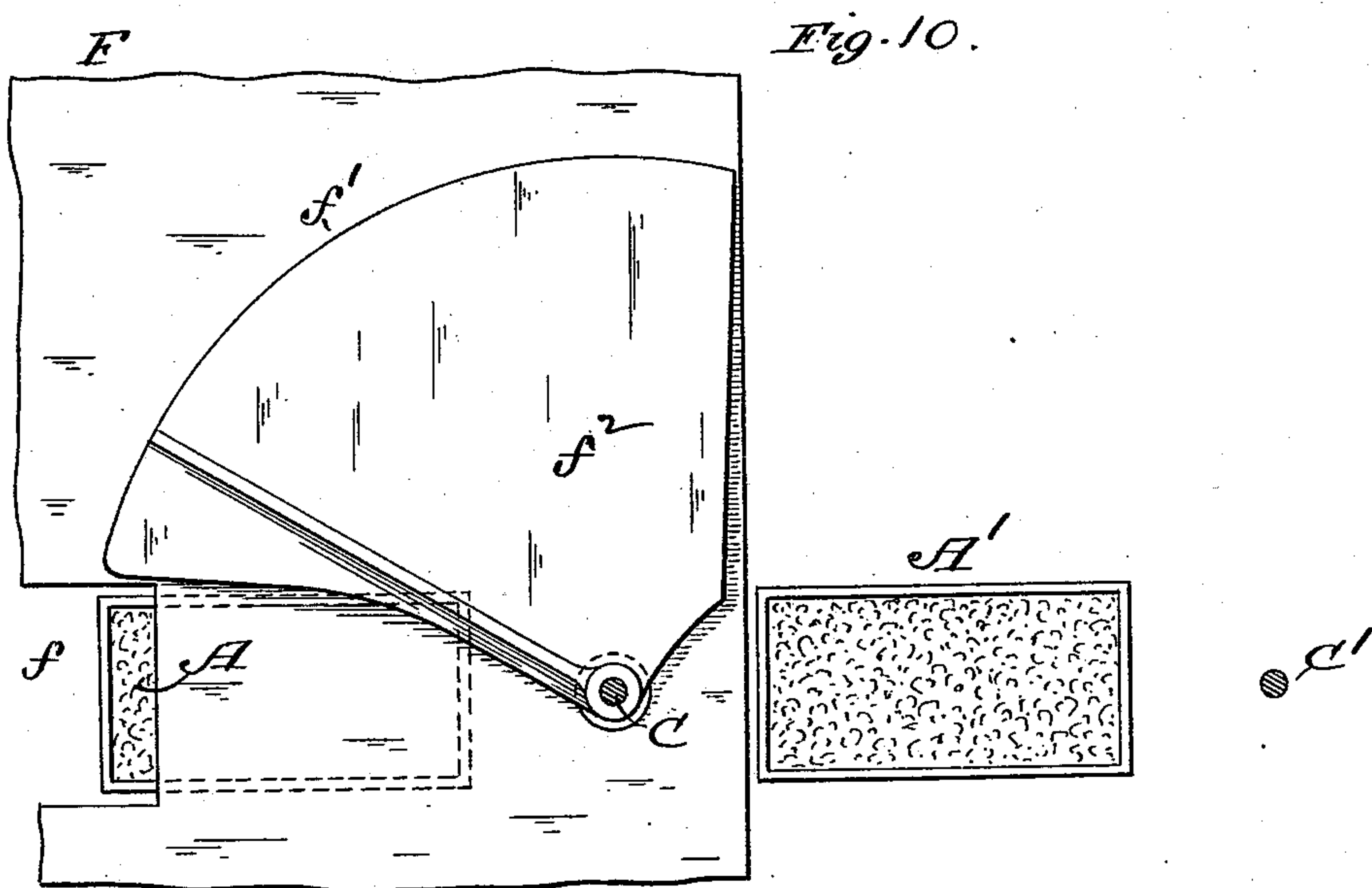
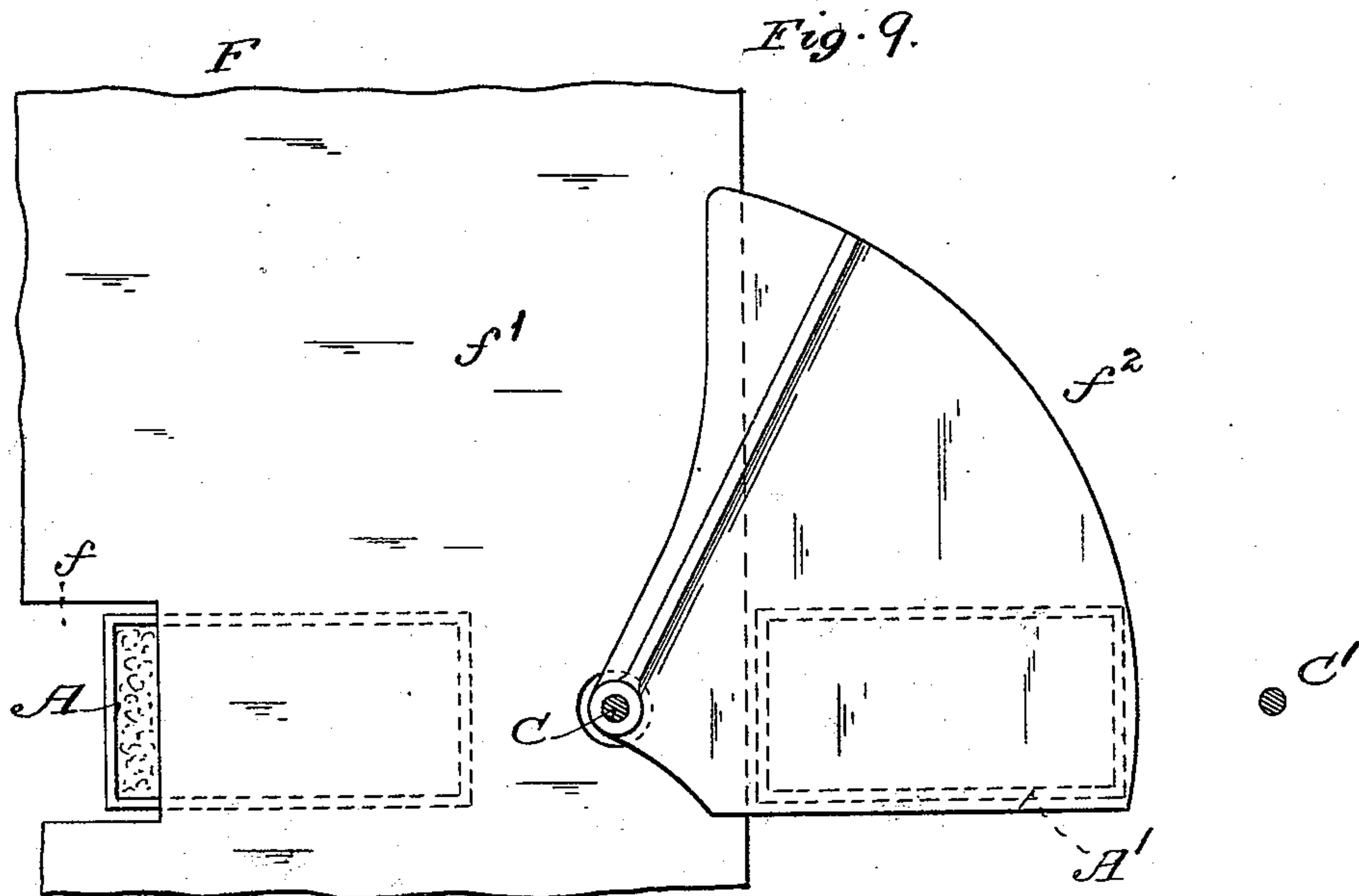
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4 Sheets—Sheet 4.

A. D. THOMAS.
COTTON PRESS.

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Patented Nov. 12, 1895.



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Att'y

UNITED STATES PATENT OFFICE.

ABNER D. THOMAS, OF LITTLE ROCK, ARKANSAS.

COTTON-PRESS.

SPECIFICATION forming part of Letters Patent No. 549,861, dated November 12, 1895.

Application filed April 4, 1894. Serial No. 506,265. (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 Cotton-Presses, of which the following is a full, clear, and exact description.

The present improvement relates mainly to cotton-pressing mechanisms in which the cotton is assembled in folds or layers in the baling-chamber preparatory to being pressed into a bale; and it consists in the mode of introducing the layers into the baling chamber or chambers, in the construction and operation of the baling-chambers and associated mechanism, in the means for guarding against flying cotton, and in minor features of the construction, 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 sectional elevation of a press constructed according to the principle of the improvement; Fig. 2, a plan of a portion of the mechanism; Fig. 3, a horizontal section on the line 3 3 of Fig. 1; Fig. 4, a vertical section on the line 4 4 of Fig. 3; Fig. 5, a side elevation of the upper portion of one of the baling-chambers. A portion of the box is broken away to exhibit its parts beyond. Fig. 6 is a sectional plan of the parts of Fig. 5; Fig. 7, a side elevation of the baling-chamber shifting mechanism; Fig. 8, a plan of the same; and Figs. 9 and 10 horizontal sections on the line 9 10 of Fig. 1, showing, respectively, the closed and the open position of the movable part of the construction.

The views are not all upon the same scale.

The same letters of reference denote the same parts.

The improvement can be partly carried out with the aid of a single baling-chamber; but to more fully carry it out I employ two or more baling-chambers, to the end that while one bale is being pressed in one of the chambers and tied out the quantity of cotton requisite for another bale is being placed in another of the chambers, and it is in connection with such a construction that the improvement is illustrated.

A and A' represent a pair of baling-chambers arranged to be shifted to bring them alternately into position for receiving the cot-

ton and alternately into position for the cotton to be pressed therein into bales. To this end the baling-chambers may be variously sustained. A desirable construction is exhibited.

B represents a turn-table upheld and journaled to be swung horizontally upon one C of the upright rods C C' of the baling portion D of the construction. The table is in effect a double-ended bracket sustained and journaled at the points *b b'* upon the rod C, and both of its parts *b² b³* are provided with rollers *b⁴*, which constitute the immediate support for the baling-chambers. The chambers in turn are provided with projections or parts such as the cleats *a*, suitable for riding upon the rollers. Each half part of the table is open at its outer end *b⁵* to enable such baling-chamber in turn to be transferred to and from the table, substantially as is indicated by the two positions of the chamber shown, respectively, in the full and in the broken lines in Figs. 1 and 3—that is, the table can be turned around to bring the baling-chambers successively into position to be shifted onto an adjustable fixed portion of the construction.

E represents the portion of the construction which receives the baling-chamber from the table. It is adapted for the baling-chamber to be rolled into and out of it, and also for confining the cotton downward in the baling-chamber when that part enters it. For these purposes the portion E has ways *e e*, having rollers *e'*, onto which the baling-chamber rides, substantially as indicated, as the chamber is transferred to and fro, and it has a roof *e²* for covering the chamber when transferred, and *e³ e³* are suitable uprights for sustaining the described ways and cover. The roof *e²* is level with the roof F that covers the baling-chamber when supported by the table B. The roof *e²* and roof F are suitably relatively shaped and arranged to enable the cotton, that comes to the baling-chamber in the form of a thin sheet G, to pass between them into the baling-chamber. In the present illustration the sheet is supported to come from a condenser H and to drop through a spout I to between a pair of rolls J J', which feed the sheet into the baling-chamber. Said rolls substantially cover an opening *f* in the roof

F, saving the distance (practically imperceptible) the rolls are spaced apart to feed the cotton. The cotton entering the chamber is thus confined downward therein by means of the parts e^2 F and the rollers as the box is shifted from the frame B onto the holder E and back again.

Each baling-chamber has a bottom K. It sustains the cotton as it is fed into the chamber and subsequently as it is being pressed into a bale. The bottom is vertically adjustable to be lowered as the cotton accumulates in the chamber and to be uplifted when the bale is being pressed, and it is also designed to support the cotton as it is received in the baling-chamber, so that any desired amount of pressure can be exerted upon the cotton as it is being fed into the chamber and until the chamber is swung around into position for the bale to be pressed. At the same time it is arranged to yield and drop in the baling-chamber when the desired pressure therein upon the cotton is reached, and thus provide for the reception of the cotton until the chamber is properly filled. In the present instance the bottom is connected with the weighted cords L, which extend from the bottom over bearings l^2 l^3 , to hang substantially as shown. The baling portion D of the construction is a familiar one, saving as it is modified by the embodiment therein of the improvement under consideration. Any suitable means, such as the underneath platen M, supported upon and adapted to be raised and lowered by means of the rods n n of the steam-cylinder N, and the overhead top d , attached to the cross-beam d' , are employed to coact with each baling-chamber and its bottom when the same is swung into the position of the chamber A' for the purpose of pressing the contents of the chamber into a bale.

The operation of the mechanism as thus far described is as follows: With the baling-chambers arranged as in Fig. 1 the cotton is fed from the condenser into the chamber A. At the commencement of the filling of the chamber the bottom K is elevated to the upper limit of its movement, which may be at any preferred distance between the roof F. The cotton is delivered, as stated, in the form of a thin sheet, and as it is delivered thereinto the baling-chamber is being shifted to and fro between its two positions shown in Fig. 1. This causes the cotton to be arranged in folds g in the baling-chamber substantially as shown, and as the cotton fills into the chamber the folds are successively carried beneath the under side of the parts e^2 F. The cotton is distributed evenly throughout the length of the chamber, and the sides and ends of the chamber insure the even piling of the folds. Meanwhile as the cotton is thus being introduced in the form of folds and pressed in the chamber the chamber-bottom is being lowered. The operation proceeds until the bottom has been dropped to the lowest limit. The chamber A is then uncoupled,

and the table B swung around to shift the chamber A and its contents into the position of the chamber A', and that chamber in turn by the same movement is caused to take the place of the chamber A. The contents of the chamber A are then pressed into a bale in the ordinary manner, and the bale is tied out as usual. The chamber A' is then similarly filled with the cotton, and the operation is repeated. The roof F is extended suitably at f' to confine the cotton downward in the baling-chamber as it is shifted from its position of the chamber A into that of the chamber A', and to enable the contents of the baling-chamber to be properly confined until the chamber is squarely beneath the press-top d the roof F extends around to beneath said top; but said extension or portion f^2 of the roof is movable to provide for withdrawing it after the chamber is in position beneath the top d , so that the cotton can come in contact with the top d . The preferable mode of operating the portion f^2 is indicated in Figs. 9 and 10. The part in question is journaled to the rod C, so that it can be swung around upon the main portion of the roof F, as shown. By this means the part is not only withdrawn from beneath the press-top, but is also out of the way, so that the attendants can stand on the floor B' of the turn-table in tying out the bale. Any other means can be employed for confining the contents of the chamber. Suitable space is provided at b^6 and b^6 in the region of the frame B, and also at e^4 and e^4 at the outer ends of the chambers, respectively, to provide for the operation of the weighted cords, as described.

The weight l' of the cords L from time to time is raised to enable the baling-chamber bottom K to drop within the chamber, and preferably in the following manner: The cords are carried over pulleys l^2 l^3 , attached, respectively, to the shafts l^{20} l^{30} . The shafts are respectively journaled in brackets l^4 l^5 , attached to the baling-chamber, and they are each provided with a ratchet l^6 and sprocket l^7 . A pair of shafts l^8 l^9 are journaled to the baling-chamber, as shown. These shafts are intergeared by means of the wheels l^{10} l^{11} , and they are respectively furnished with the sprocket-wheels l^{12} l^{13} . A belt l^{14} is carried around the sprocket-wheels l^7 l^{12} , and another belt l^{15} is carried around the sprocket-wheels l^{13} l^7 . A spring-pawl l^{16} , as the baling-chamber is shifted to and fro beneath the rollers J J', coacts with the ratchets l^6 l^6 . The ratchets point in opposite directions. By this means when the baling-chamber is shifted to the left hand, as viewed in Fig. 5, the left-hand ratchet l^6 is rotated by the pawl one tooth-space in the direction indicated by the arrow x , Fig. 5, and the belt l^{14} is moved in the direction indicated by the arrow x' , same figure. This movement is communicated to the belt l^{15} , and all of the weights l' in consequence are correspondingly lifted and the chamber-bottom correspondingly lowered.

The movement of the baling-chamber to the left brings the pawl l^{16} into engagement with the right-hand ratchet l^6 , and when the baling-chamber is shifted in the opposite direction—that is, to the right—the right-hand ratchet becomes the driver, and the shafts l^{20} l^{30} , the belts, and other associated parts are again operated to effect another lowering of the chamber-bottom, and thus at each reciprocation of the baling-chamber its bottom is lowered to provide for the reception of another layer of the cotton. In the movement of the baling-chamber the pawl may be said to push the left-hand ratchet and to pull the right-hand ratchet.

The shifting of the baling-chamber to and fro to accomplish the folding of the cotton-sheet is effected, preferably, by the mechanism M. A screw-shaft m is held and is adapted to be worked through a threaded gear-wheel m' , that in turn is sustained and adapted to be rotated in suitable bearings m^2 . The baling-cases when brought into the position of the chamber A, Fig. 1, are adapted by means of the coupling m^3 to be successively connected with the screw-shaft, substantially as shown. The gear-wheel m' acts as a nut to effect the longitudinal movement of the shaft, and with it the baling-chamber, and according to the direction of the rotation of the wheel is the direction in which the shaft and baling-chamber move. The wheel m' is driven by the gear-wheel m^4 . This last-named wheel is attached to the shaft m^5 , that is held and adapted to be rotated in the bearings m^6 and that carries the two tight pulleys m^7 m^8 and the two loose pulleys m^9 m^{10} . The shaft m^5 in turn is driven from the pulley m^{11} upon the shaft m^{12} . A straight belt m^{13} connects the pulley m^{11} with the pulleys m^8 m^{10} , and the crossed belt m^{14} connects the pulley m^{11} with the pulleys m^7 m^9 , and the two belts are adapted to be shifted to enable them alternately to drive the shaft m^5 in opposite directions. N represents the belt-shifter. It is adapted to work in suitable bearings n n' to enable the belts to be properly shifted from their position (shown in Figs. 1 and 2) to engage with the pulleys m^7 m^{10} and back again onto the pulleys m^7 m^8 . The described shifting is accomplished, preferably, by means of the weighted lever n^2 , that is pivoted at n^3 , and which is caused to be turned upon its pivot and thereby effect the described movement of the shifter as follows: The baling-chamber as it moves into the position indicated by the broken lines in Fig. 1 and as it approaches the end of its stroke encounters an arm n^4 , that works through a bearing n^5 and is at n^6 jointed to the weighted lever. The baling-chamber continues to move in the described direction until it has, through the instrumentality of the arm, pushed the lever far enough beyond its perpendicular position to cause it to tilt, whereupon the lever moves promptly into its broken-line position of Fig. 7, and in so do-

ing it causes the belts to be shifted onto the pulleys m^7 m^{10} . The screw in consequence is now driven in the opposite direction, and the baling-chamber is shifted toward its full-line position of Fig. 1, and as it approaches the end of its movement in that direction the shoulder m^{15} upon the screw-shaft encounters the weighted lever and raises it in an upright position. The movement continues until the lever tilts into its full-line position of Fig. 7, whereupon the further movement of the baling-chamber in the last-described direction is arrested, when the movement outward again is initiated. This action of the screw-shaft is repeated until the baling-chamber is filled, whereupon the chamber is uncoupled from the screw-shaft and is ready to be shifted into position for its contents to be baled.

Another feature of the improved construction is the confining of the cotton from the time it enters the condenser until it is baled. To this end the cotton is delivered from the condenser through the spout I to the rollers J J', and from said rollers the cotton passes to beneath the roof e^2 and roof F, and to more completely inclose the cotton in its travel between the condenser and the baling-chamber the space at that point is inclosed by means of suitable walls O. Through a window o the interior of the room o' can be inspected. After the cotton reaches the baling-chamber it is retained closely beneath the roof F, roof e^2 , and press-top until it has been baled. The cotton can thus be transferred from the gin (not shown) through the flue h to the condenser and thence to the point at which it is baled through what may be considered a closed conduit and without being handled by any attendant.

I claim—

1. The combination of the condenser, the feed rolls, the baling chamber, the closed conduit between the condenser and the feed rolls, the housing inclosing said conduit, the press, and the roof to the baling chamber, said roof covering the space between the feed rolls and the press; substantially as described.

2. In a cotton press, the combination of a turn-table, a baling chamber projecting through said turn-table, a receiver, and ways upon said turn-table and receiver, the turn-table having an opening extending from its edge inwardly, the receiver having an open end in proximity to the edge of the turn-table and mechanism for reciprocating the baling chamber during the operation of filling the same; substantially as described.

3. In a cotton press, the combination of feed rolls, a turn-table, a baling chamber carried by said turn-table, a receiver E, roofs e^2 and F, and a press D, whereby said baling chamber may be brought into co-incidence with the receiver and the press; substantially as described.

4. In a cotton press, the combination of a movable baling chamber, a stationary press, a

feeding device for the baling chamber, a fixed roofing covering a portion of the space between the feeder and the press, and a movable leaf or cover for closing the baling chamber in its movement from the roofing to the press; substantially as described.

5. In a cotton press, the combination of a feeding device, a movable baling chamber receiving the cotton therefrom in a continuous sheet, a track or way upon which said chamber is supported and moves, a screw-rod coupled to the baling chamber, gearing for driving said rod in opposite directions to reciprocate the chamber, and a gear-reversing mechanism comprising a trip-arm located so as to be struck by the baling chamber at or near the end of its travel; substantially as described.

6. In a cotton press, the combination of a stationary feeding mechanism, a movable baling chamber receiving the cotton therefrom in a continuous sheet, means for reciprocating said baling chamber to dispose the sheets in layers therein, a movable bottom for the chamber, cords or belts for supporting said bottom, shafts at the sides of the chamber over which

said belts pass, gearing connecting said shafts together, and mechanism for operating said gearing to turn the shafts and lower the bottom, said mechanism being actuated at each reciprocation of the baling chamber so as to lower the bottom gradually corresponding to the formation of the layers in the chamber; substantially as described.

7. In a cotton press, the combination of a turn table, a baling chamber carried thereby, a feeding device for the chamber, a press, a fixed roofing forming a cover for the baling chamber during a portion of its travel from the feeding device to the press, and a movable leaf or cover for closing the baling chamber in its passage from the roofing to the press, said cover being pivoted concentrically with the turn-table; substantially as described.

Witness my hand this 9th day of March, 1894.

ABNER D. THOMAS.

Witnesses:

JOHN INGRAM,
COS ALTENBERG.