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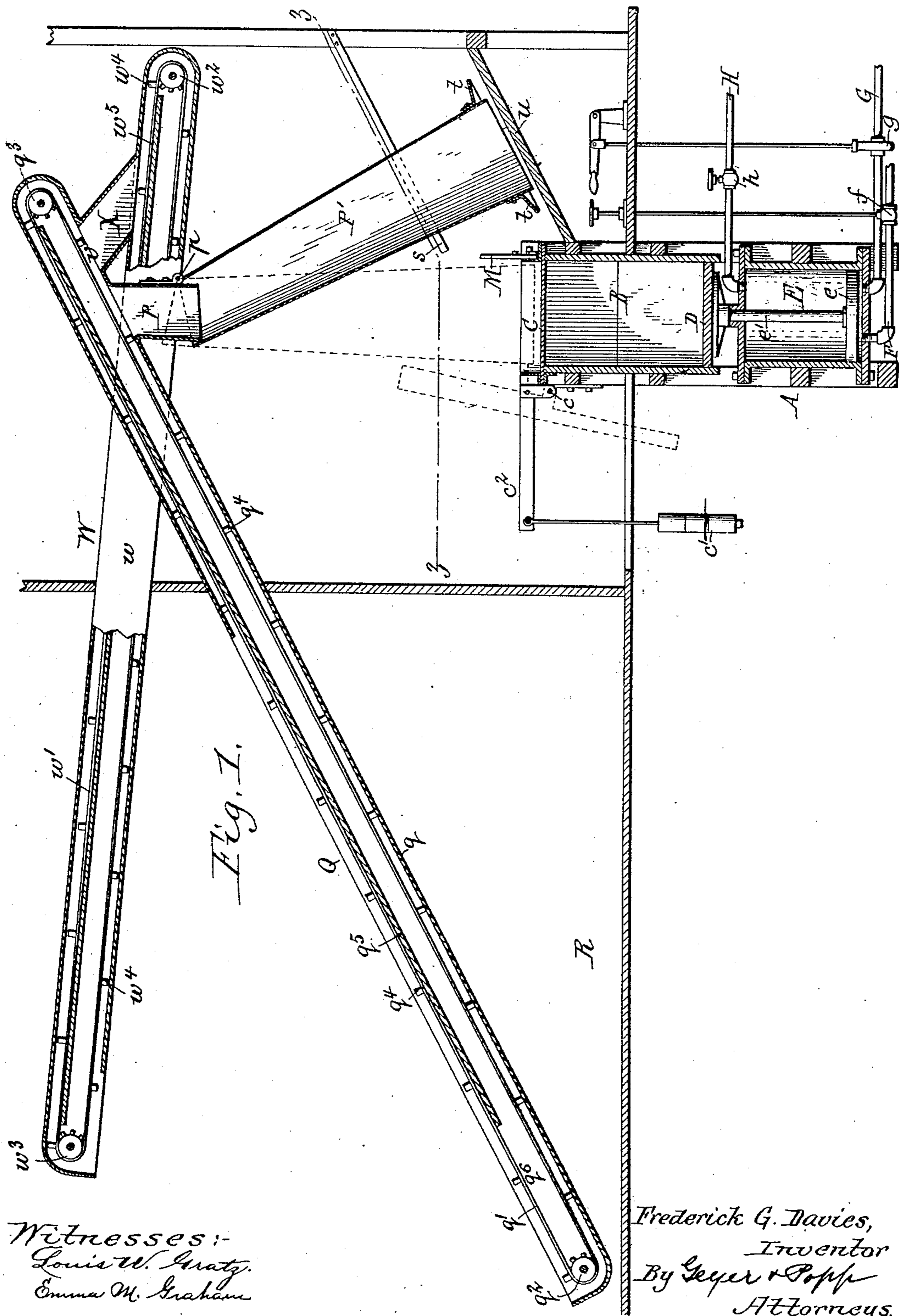
PATENTED SEPT. 13, 1904.

F. G. DAVIES.
BALING PRESS.

APPLICATION FILED APR. 30, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:-
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Emma M. Graham

Frederick G. Davies,
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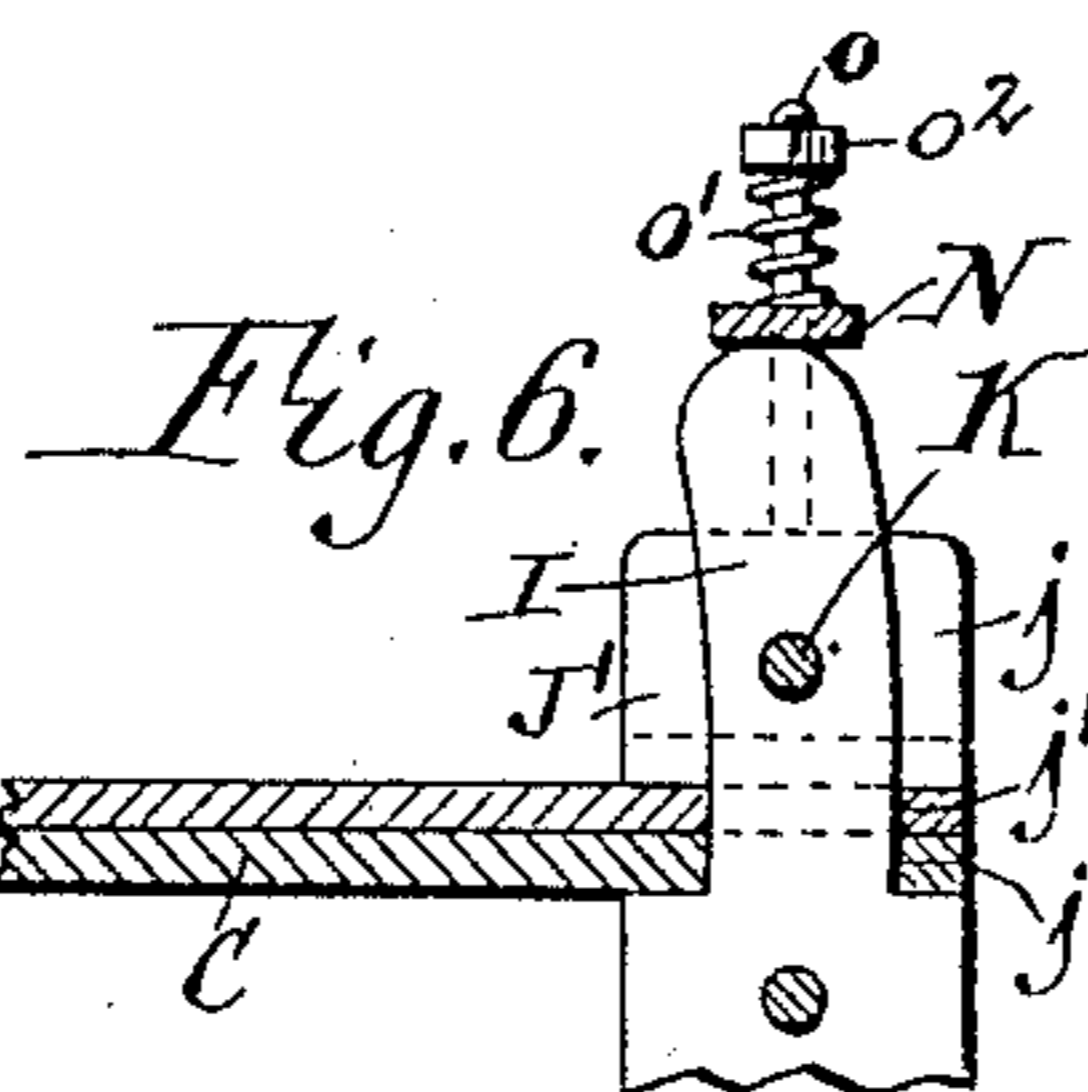
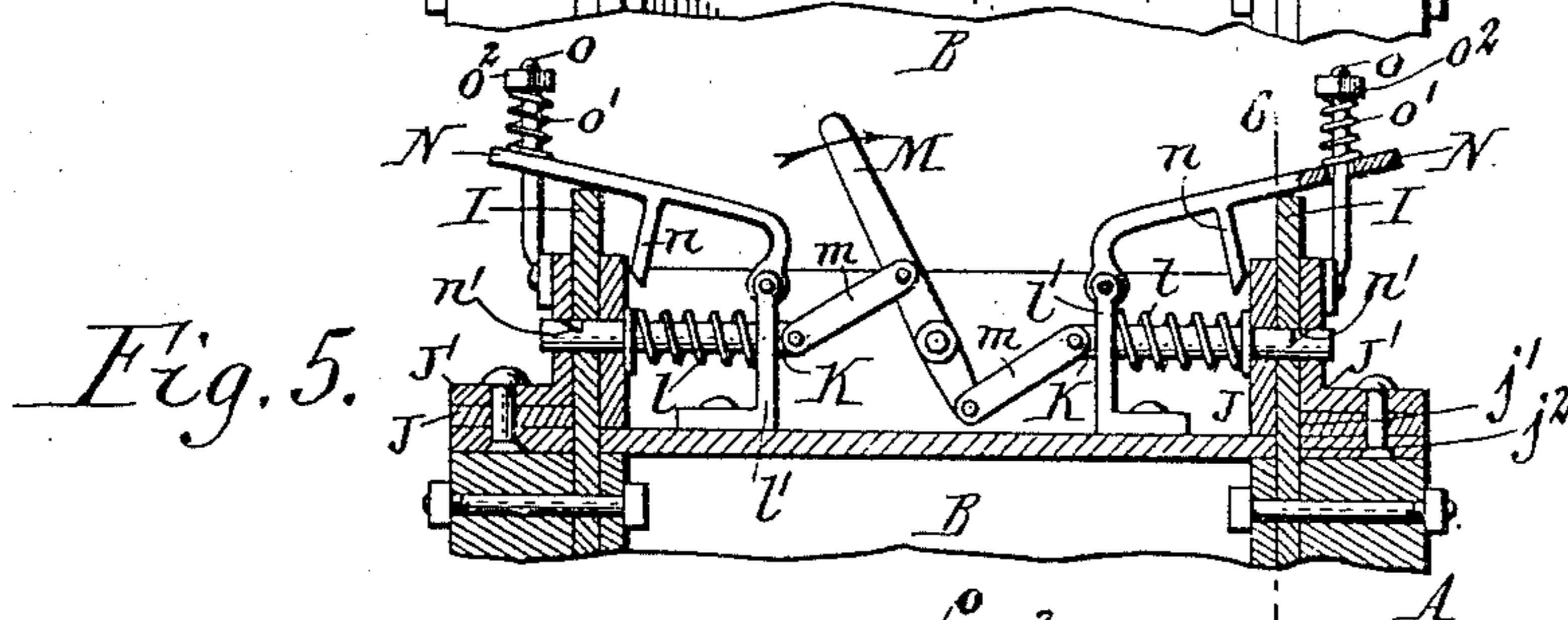
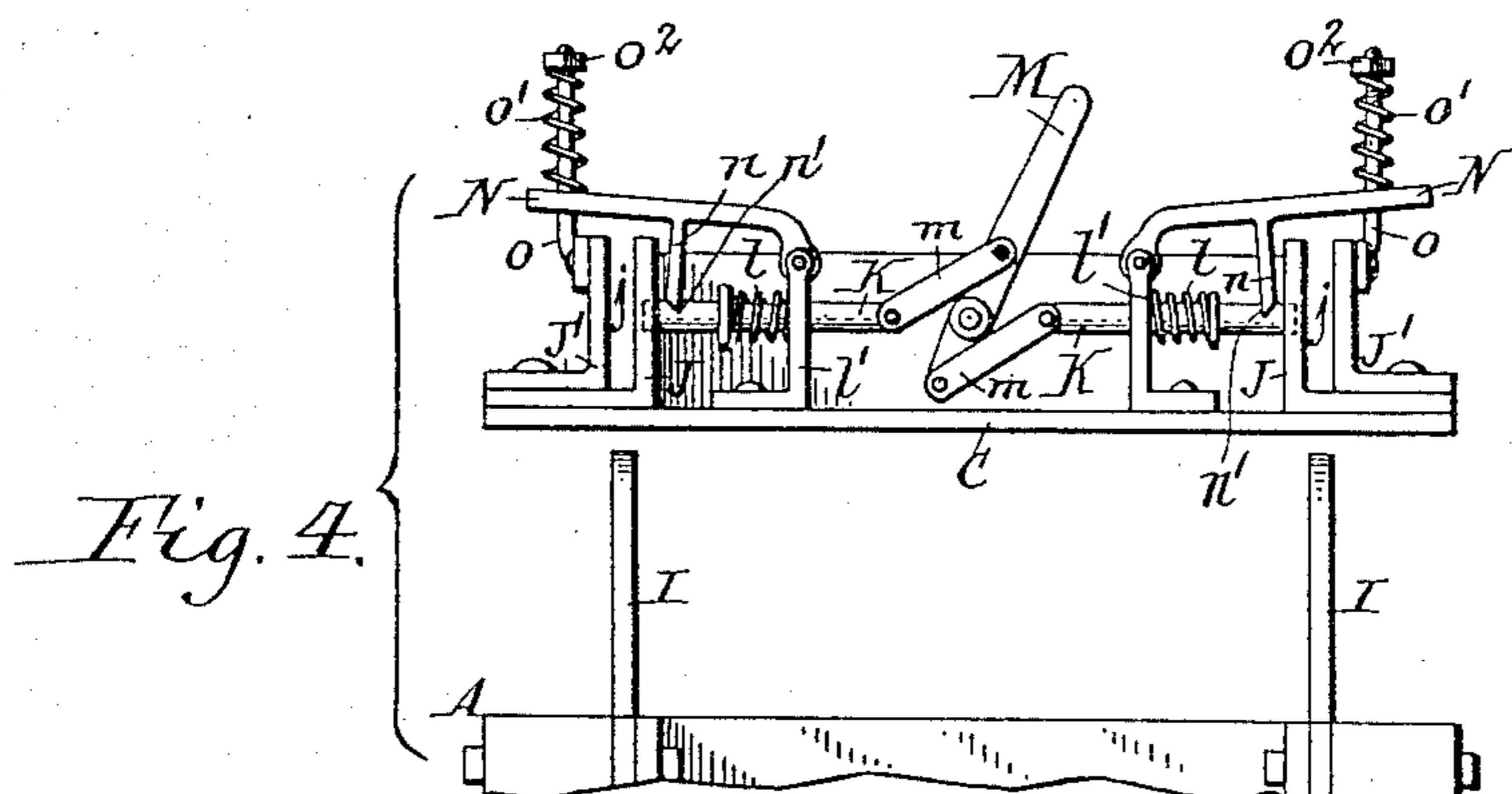
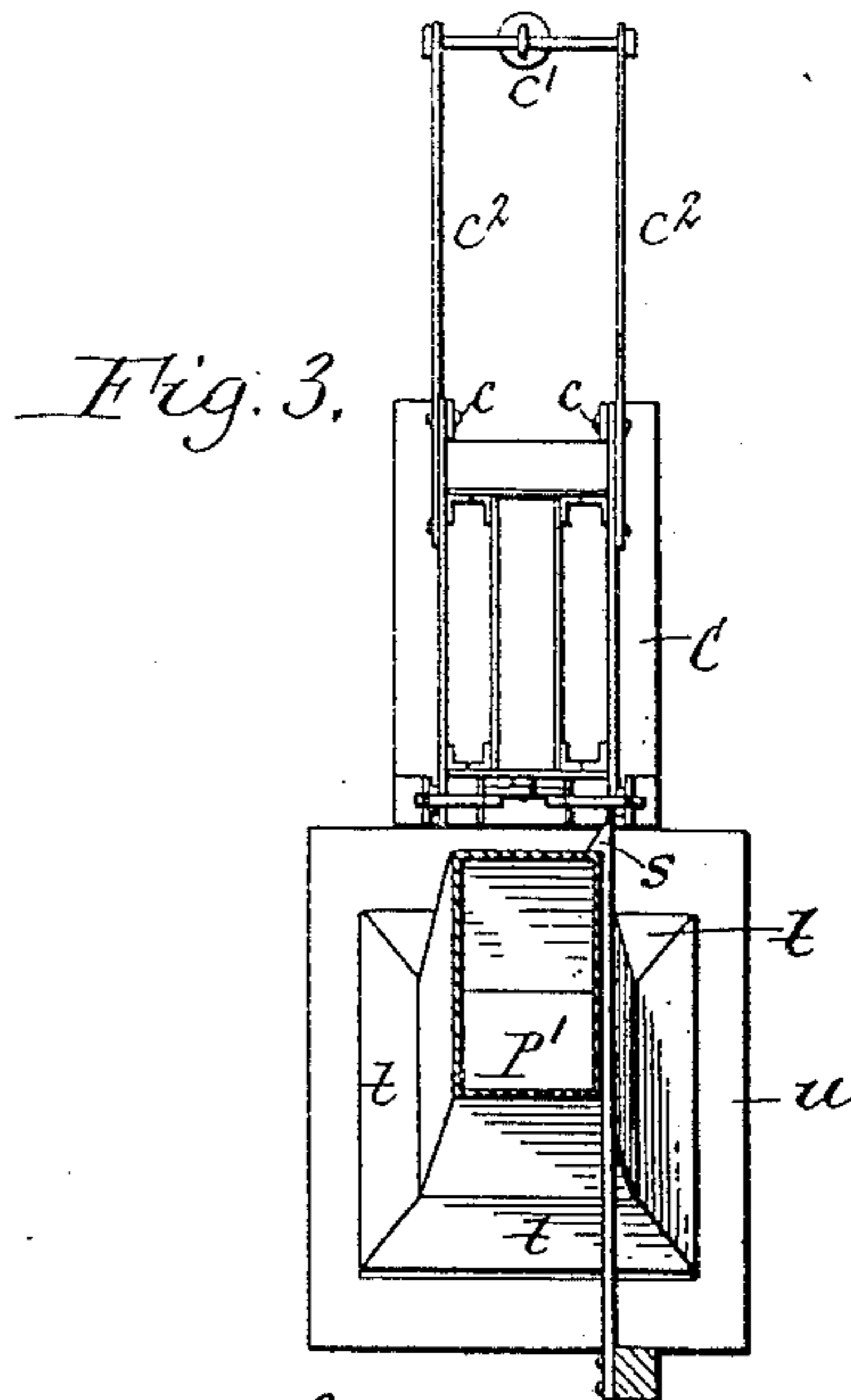
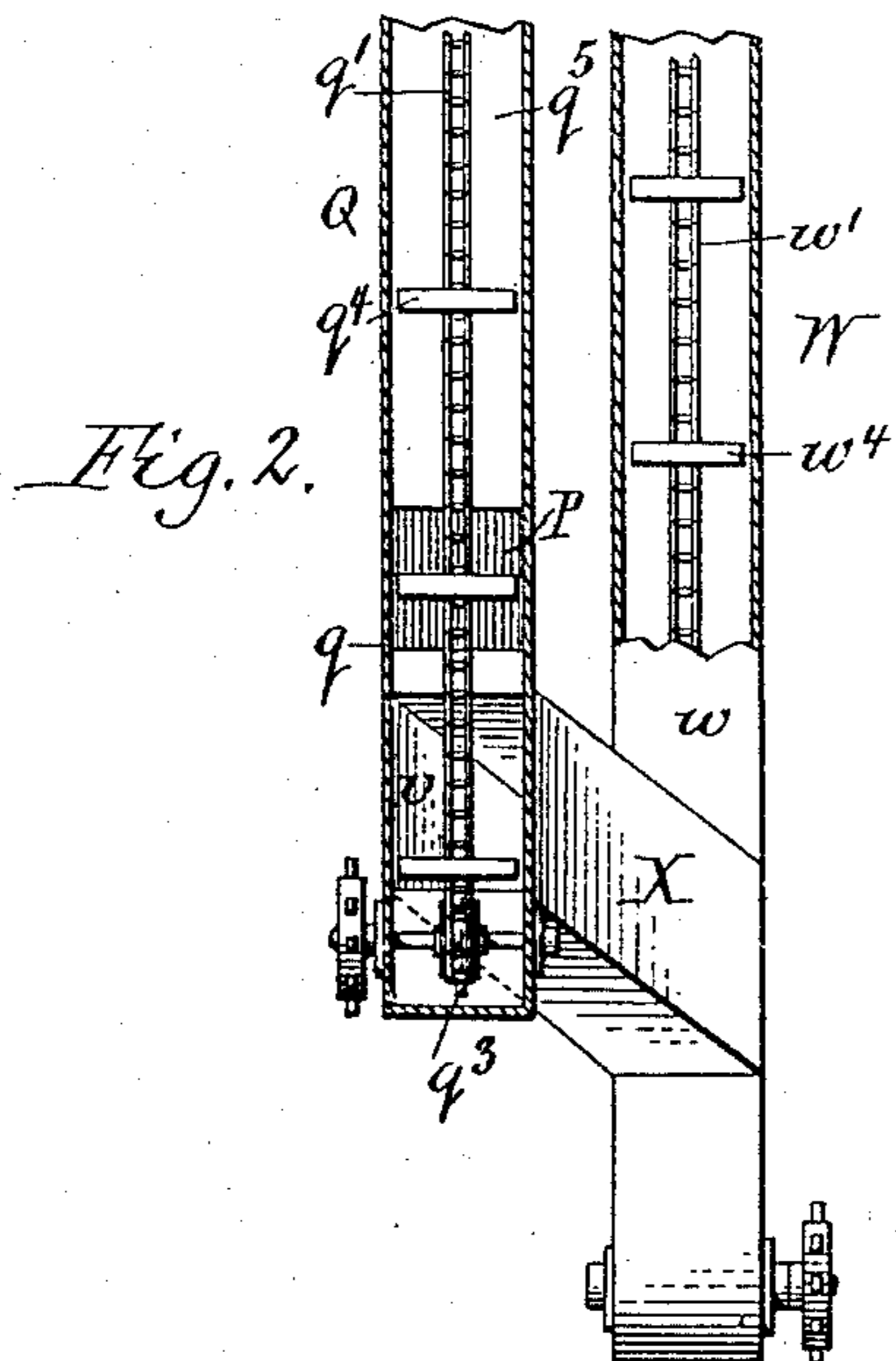
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UNITED STATES PATENT OFFICE.

FREDERICK G. DAVIES, OF NORTH TONAWANDA, NEW YORK.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 769,692, dated September 13, 1904.

Application filed April 30, 1902. Serial No. 105,253. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK G. DAVIES, a citizen of the United States, residing at North Tonawanda, in the county of Niagara and State of New York, have invented new and useful Improvements in Baling-Presses, of which the following is a specification.

This invention relates to a baling-press which is more particularly designed for baling the shavings of planing-mills and similar material.

The objects of this invention are to improve the actuating mechanism of the plunger, to provide a locking device for the cover of the presser box or chamber whereby the cover is automatically locked upon closing the same and which can be readily unlocked for opening the cover, and to provide improved means for delivering the shavings to the presser-box.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal section of a baling-press provided with my improvements. Fig. 2 is a fragmentary sectional top plan view of the conveyer mechanism whereby the shavings are fed to the presser-box and the surplus is carried away. Fig. 3 is a horizontal section in line 3 3, Fig. 1. Fig. 4 is a fragmentary front elevation, on an enlarged scale, of the baling-press, showing the position of the cover-locking mechanism when the cover is open. Fig. 5 is a sectional view of the same, showing the position of the locking mechanism when the cover is closed. Fig. 6 is a fragmentary longitudinal section in line 6 6, Fig. 5.

Like letters of reference refer to like parts in the several figures.

A represents the main frame of the baling-press, and B the pressing box or chamber, having a movable top or cover C at its upper end and a plunger or follower D in its lower part, whereby the shavings in the presser-box are compressed preparatory to placing the tie wires or bands around the same in a well-known manner. The plunger is reciprocated vertically in the pressing-box by a ram or engine consisting, essentially, of a cylinder E, arranged vertically below the presser-box, a piston e, arranged in the cylinder, and a rod e', connecting the piston and plunger and pass-

ing through the upper head of the cylinder. Steam or other pressure medium is conducted into the space in the cylinder below the piston by a pipe F, having a valve f. The spent steam is discharged from the cylinder by an exhaust-pipe G, containing a valve g. Upon closing the exhaust-valve g and opening the pressure-valve steam is admitted into the lower part of the cylinder, thereby raising the piston and plunger and compressing the shavings in the box. Upon closing the pressure-valve and opening the exhaust-valve the spent steam is permitted to escape and the piston and plunger descend by gravity.

H represents a vent-pipe which contains a valve h and whereby the space in the cylinder above the piston is placed in communication with the atmosphere. By opening the regulating-valve h more or less the escape of the air from the upper end of the cylinder during the upward movement of the piston and the admission of air into the same end of the cylinder during the downward movement of the piston may be cushioned so as to prevent sudden or quick action of the piston, thereby avoiding straining or racking of the press and also enabling the attendants to conveniently remove the finished bale and prepare the press for the next following bale.

The top or cover C is pivotally connected at its rear end to the press-frame by hinges c c, so that the cover can be turned vertically for opening and closing the top of the presser-box. The cover is preferably counterbalanced by a weight c', attached to arms c'', projecting rearwardly from the cover. Upon closing the cover over the top of the presser-box the same is held in place by a locking device, which is constructed as follows:

I I represent two coupling-lugs, which project upwardly from opposite sides of the front part of the main frame and which are adapted to enter sockets in the opposing front part of the cover. Each socket is formed partly by the space j between the upright flanges of two angle-irons J J', secured upon the cover, and partly by openings j' j'', formed in the base-flange of one of said angle-irons and in the cover in line with the space j, as shown in Figs. 5 and 6.

K K represent coupling or locking bolts, which are movable transversely in guides on the cover and each of which is adapted to pass at its outer end through corresponding openings in the upright walls of one of the sockets and the corresponding coupling-lug I, thereby locking the cover over the inlet of the presser-box, as shown in Fig. 5. Each locking-bolt is yieldingly held in its operative position by a spring l , interposed between a shoulder on the bolt and a standard l' , in which the inner end of the bolt is guided. The inner ends of the bolts are connected by links $m m$ with opposite arms of a hand-lever M, which is pivoted on an angle-iron on the cover. Upon turning the hand-lever in the direction of the arrow, Fig. 5, both bolts are withdrawn from the lugs I I of the main frame, thereby unlocking the cover, so that the same can be raised for opening the top of the box, as shown in Fig. 4. Each of the locking-bolts is held in its retracted position while the cover is raised from the presser-box by a detent consisting of an arm N, pivoted at its inner end on the standard l' and having a depending tooth or pawl n , which is adapted to engage in a notch n' in the upper side of the companion locking-bolt. The outer end of the detent-arm projects over the angle-irons J J' and has an opening which receives a guide-rod o , projecting upwardly from the outer angle-iron J'. The detent is depressed into its operative position by means of a spring o' , interposed between the upper side of its arm and a screw-nut o^2 on the upper end of the guide-rod o .

The coupling-lugs I I are of such height that when they fully enter the sockets of the cover they project above the angle-irons J J' and lift the detents out of engagement from the locking-bolts. While the cover is open the locking-bolts are held in their retracted position outside of the path of the coupling-lugs I by the detents, which are depressed and engage their pawls with the notches of the bolts, as shown in Fig. 4. While the box is thus open and the plunger is lowered the box is filled with shavings or other material to be baled, and then the cover is closed down upon the box, whereby the coupling-lugs enter the sockets of the cover and lift the detents out of engagement from the bolts, causing the latter to be projected by their springs through the openings in the coupling-lug and the opposite walls of the socket, as shown in Fig. 5, automatically locking the cover upon the presser-box.

After the box has been filled the plunger is raised to compress the shavings, and the tie-wires or bands are applied to the bale. The attendant then turns the hand-lever in the direction of the arrow, Fig. 5, for withdrawing the bolts from the coupling-lugs, and when the bolts have been thus shifted the expansion of the bale causes the cover to be lifted

sufficiently to permit the detents to drop with their pawls into engagement with the notches of the bolts and hold the same in a retracted position. The cover is now raised so as to fully clear the top of the box to permit the bale to be removed and another charge of loose shavings to be delivered into the box.

It will be observed that the locking device is automatically released by the trip device when the door is closed upon the box and that but a single movement of the hand-lever is required for releasing the cover and holding the locking device in its inoperative position.

The feed mechanism whereby the shavings are delivered to the box is constructed as follows: P P' represent the upper and lower sections of an upright feed-spout arranged above the presser-box. The upper receiving-section P of the spout is fixed, and the shavings are delivered into the same by a conveyor Q, which has its receiving end in the lower part of the room R. The lower delivery-section is pivotally connected at its upper

end to a hinge p with the lower end of the upper section, so that the outlet of the lower section can be swung over the box for delivering shavings into the same, as shown by dotted lines in Fig. 1, or swung to one side of the box for cutting off the feed to the box and permitting the cover to be closed, as shown by full lines in the same figure. The spout is preferably flared and enlarged from its upper inlet end toward its lower outlet end, so that the shavings fall away from the inner side of the spout and prevent the same from becoming clogged. The spout-sections are so arranged that the same are both substantially in vertical alignment with the box while feeding shavings to the latter, and the pivotal connection between the sections is so constructed that the lower section swings forwardly from the box into an inclined position, in which it is held when not in use by a catch s , mounted on a stationary support.

As the shavings descend through the spout into the presser-box a blast of dust escapes through the space between the spout and the box, which blast in the absence of any provision to prevent it would blow the dust upwardly into the face of the attendant. In order to prevent the dust from blowing upwardly, on the outer side of the delivery-section of the spout the latter is provided with a guard-flange or shield t , which extends entirely around the outer side of the spout at its lower end, as shown in Figs. 1 and 3. The dust upon passing upwardly around the lower edge of the spout strikes the shield and is deflected laterally below the face of the attendant, thereby enabling the machine to be handled without interference of the dust.

The shavings are preferably supplied continuously to the feed-spout, so as to avoid stopping and starting of the supply-conveyor. In

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order to cause the shavings to accumulate in the feed-spout and prevent the same from escaping at the lower end thereof while the spout is swung away from the presser-box, an inclined abutment or stop-board u is arranged adjacent to the box. After the box has received the required charge of shavings from the feed-spout the lower section of the latter is moved forwardly until it is caught by the catch s , in which position its lower end is arranged over the stop-board and the further escape of shavings is prevented, thereby causing the constantly-incoming shavings to fill the spout. After the previous charge of shavings has been baled and discharged from the press the lower section of the spout is again moved from the stop-board to the box, whereby the flow of shavings from the spout into the box is resumed. The lower end of the movable spout-section stops short of the stop-board, so as to form a small gap between the same, as shown in Fig. 1. This relative arrangement of the spout and stop-board, while attended by a slight waste or spilling of the shavings, permits of shifting the spout easier than if the parts were fitted to produce a perfect closure of the spout when the same is swung away from the presser-box. By accumulating the shavings in the spout while the bale is being pressed a large quantity of shavings is always on hand, which permits of filling the box rapidly.

The conveyer shown in the drawings for carrying the shavings from the storage-room to the feed-spout consists, essentially, of an inclined elevator leg or housing q , an endless chain belt q' , arranged lengthwise in the leg and passing around wheels q^2 q^3 at the lower and upper ends of the leg, and wings or flights q^4 , secured transversely at intervals to the belt. The lower side of the elevator-leg communicates at a distance from its upper end with the upper or receiving end of the feed-spout, and the belt is driven so that the lower or carrying part thereof moves upwardly along the lower side of the leg, whereby the shavings are carried from the storage-room into the feed-spout. The upper or return part of the elevator-belt is supported on a board q^5 in the elevator-leg and may extend at its upper end close to the upper wheel q^3 ; but its lower end is separated a considerable distance from the lower wheel q^2 , so as to form an opening q^6 , through which the shavings can drop to the lower carrying side of the elevator, thereby avoiding the tendency of choking the elevator, which would be liable to happen if all the shavings had to pass under the lower wheel q^2 . Between the feed-spout and the upper wheel q^3 the elevator-leg is provided in its lower side with a relief-opening v . The shavings elevated by the lower part of the conveyer-belt q are discharged into the feed-spout until the same is filled, and then the surplus is carried beyond the feed-spout

and discharged through the relief-opening in the elevator-leg, thereby preventing choking of the elevator. As the shavings are discharged from the spout into the presser-box and a vacant space is formed in the top of the spout, all of the shavings carried by the elevator are again discharged into the spout until the same is filled, and then the surplus is carried to the relief-opening.

W represents a return-conveyer whereby the surplus shavings carried beyond the feed-spout are returned to the storage-room. This conveyer consists of a leg or housing w , extending from the delivery end of the supply-conveyer Q into the shavings storeroom, and an endless belt w' , passing around wheels w^2 w^3 at opposite ends of the return-leg w and provided at intervals with transverse wings or flights w^4 . The upper or carrying part of the return conveyer-belt w' moves rearwardly over a board w^5 in the return-leg. The surplus shavings discharged through the relief-opening of the elevator-leg q are conducted by a chute X upon the board w^5 , from which they are carried by the return-belt into the storage-room. By thus returning to the storeroom the surplus shavings, which at times cannot enter the feed-spout, the conveyer mechanism may be run continuously without liability of clogging the same.

I claim as my invention—

1. In a baling-press, the combination of a presser-box having a removable top and a vertically-movable plunger in its lower part, and a ram having a cylinder arranged vertically below the presser-box, a piston arranged in the cylinder, a rod connecting the piston and plunger and extending through the upper head of the cylinder, a pressure-pipe for conducting a pressure medium into the space in the cylinder below the piston and containing a valve, an exhaust-pipe for discharging the pressure medium from said space and containing a valve, and a vent-pipe communicating with the space in the cylinder above the piston and containing a valve, substantially as set forth.

2. In a baling-press, the combination of a presser-box provided with lugs, a hinged cover for the box having sockets which receive said lugs, bolts adapted to lock said lugs in said sockets, and a hand-lever connected with said bolts, substantially as set forth.

3. In a baling-press, the combination of a presser-box having two upwardly-projecting lugs on its front side, a cover hinged at its rear end to the box and provided at its front end with sockets which receive said lugs, bolts projecting at their outer ends through openings in said lugs and in the walls of the sockets for locking the cover upon the box, and a hand-lever connected by links with the inner ends of said bolts, substantially as set forth.

4. In a baling-press, the combination of a presser-box having two upwardly-projecting

lugs on its front side, a cover hinged at its rear end to the box and provided at its front end with sockets which receive said lugs, bolts projecting at their outer ends through openings in said lugs and in the walls of the sockets for locking the cover upon the box, springs for projecting the bolts into their operative position, and a hand-lever for retracting said bolts into an inoperative position, substantially as set forth.

5. In a baling-press, the combination of a presser-box, a hinged cover for closing said box, a locking device for the cover, a detent device for holding the locking device in its retracted position, and an automatic trip device operating to disengage the detent device from the locking device upon closing the cover, substantially as set forth.

6. In a baling-press, the combination of a presser-box having a coupling-lug at its upper end, a hinged cover for closing said box having a socket which receives the coupling-lug, a spring-bolt mounted on the cover and operating to lock said lug in the socket, a detent mounted on the cover and operating to hold the bolt in its retracted inoperative position while the cover is open, and an abutment on the box arranged to be engaged by said detent and released upon closing the cover for disengaging the detent from the bolt and permitting the latter to lock the cover upon the box, substantially as set forth.

7. In a baling-press, the combination of a presser-box having a coupling-lug at the top, a hinged cover for said box having a socket which receives said lug, a spring-bolt for locking the lug in said socket mounted on the cover, a detent mounted on the cover and provided with a pawl which engages with the bolt for holding the same in a retracted position while the cover is open and with an arm which is arranged to be engaged by said lug for releasing the pawl from the bolt upon closing the cover, a spring for moving the detent into its operative position, and a lever connected by a link with said bolt for retracting the same, substantially as set forth.

8. In a baling-press, the combination of a presser-box having two upwardly-projecting lugs on its front side, a cover hinged at its rear end to the box and provided at its front

end with sockets which receive said lugs, two transversely-movable bolts guided on the cover and arranged to pass at their outer ends through corresponding openings in the walls of the sockets and in said lugs, springs for projecting the bolts, a hand-lever connected by links with the inner ends of the bolts for retracting the same, detents provided with pawls engaging with the bolts for holding the same in a retracted position and with arms arranged to be engaged by said lugs for releasing the pawls from the bolts, rods for guiding said arms, and springs for yieldingly holding the detents in their operative position, substantially as set forth.

9. In a baling-press, the combination of a presser-box, an abutment arranged adjacent to said box, and a feed-spout movable over the box for discharging into the same and over the abutment for stopping the discharge from the spout, substantially as set forth.

10. In a baling-press, the combination of a presser-box, an inclined abutment arranged adjacent to the box, and a feed-spout pivoted at its upper end and movable at its lower end over the box for discharging into the same and over the abutment for stopping the discharge from the spout, substantially as set forth.

11. In a baling-press, the combination of a presser-box, an abutment adjacent to said box, a feed-spout movable over said box for filling the same and over said abutment for stopping the escape of material from the spout, a storage-room, a supply-conveyer having its receiving end arranged in the storage-room and provided at its delivery end with a discharge for the material into the inlet of the feed-spout and beyond said spout with a relief-opening for the escape of the surplus material, and a return-conveyer constructed to receive the surplus material from said relief-opening and deliver the same into said storage-room, substantially as set forth.

Witness my hand this 25th day of April, 1902.

FREDERICK G. DAVIES.

Witnesses:

THEO. L. POPP,
CARL F. GEYER.