(No Model.) 3 Sheets—Sheet 1.

C. A. HEGE.

COTTON PRESS.

No. 335,194. Patented Feb. 2, 1886.

Fig. 1.

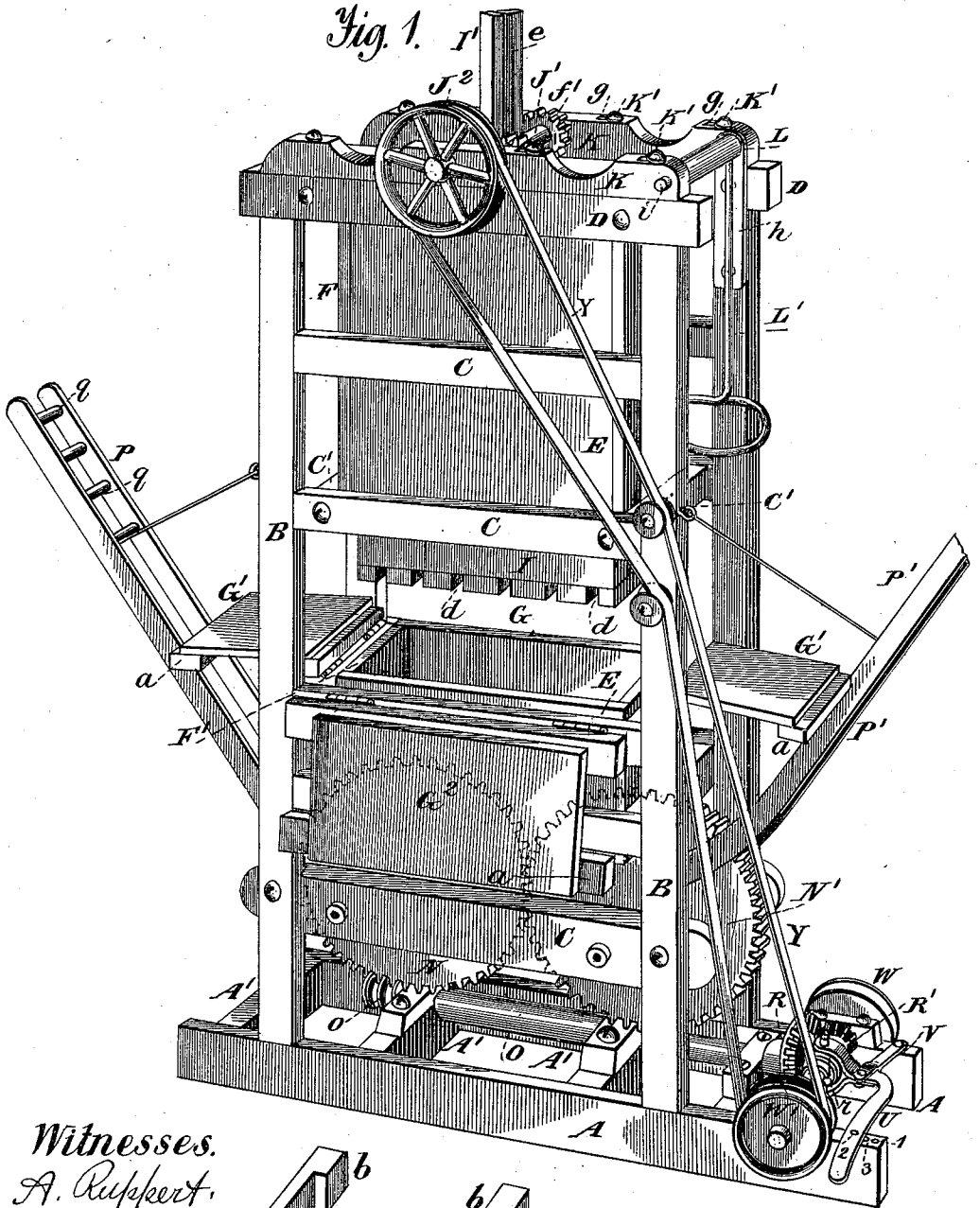
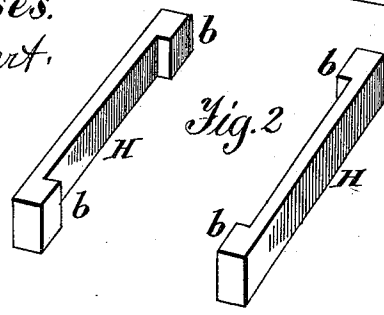


Fig. 2.



Witnesses.

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E. A. Bond.

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3 Sheets—Sheet 2.

C. A. HEGE.

COTTON PRESS.

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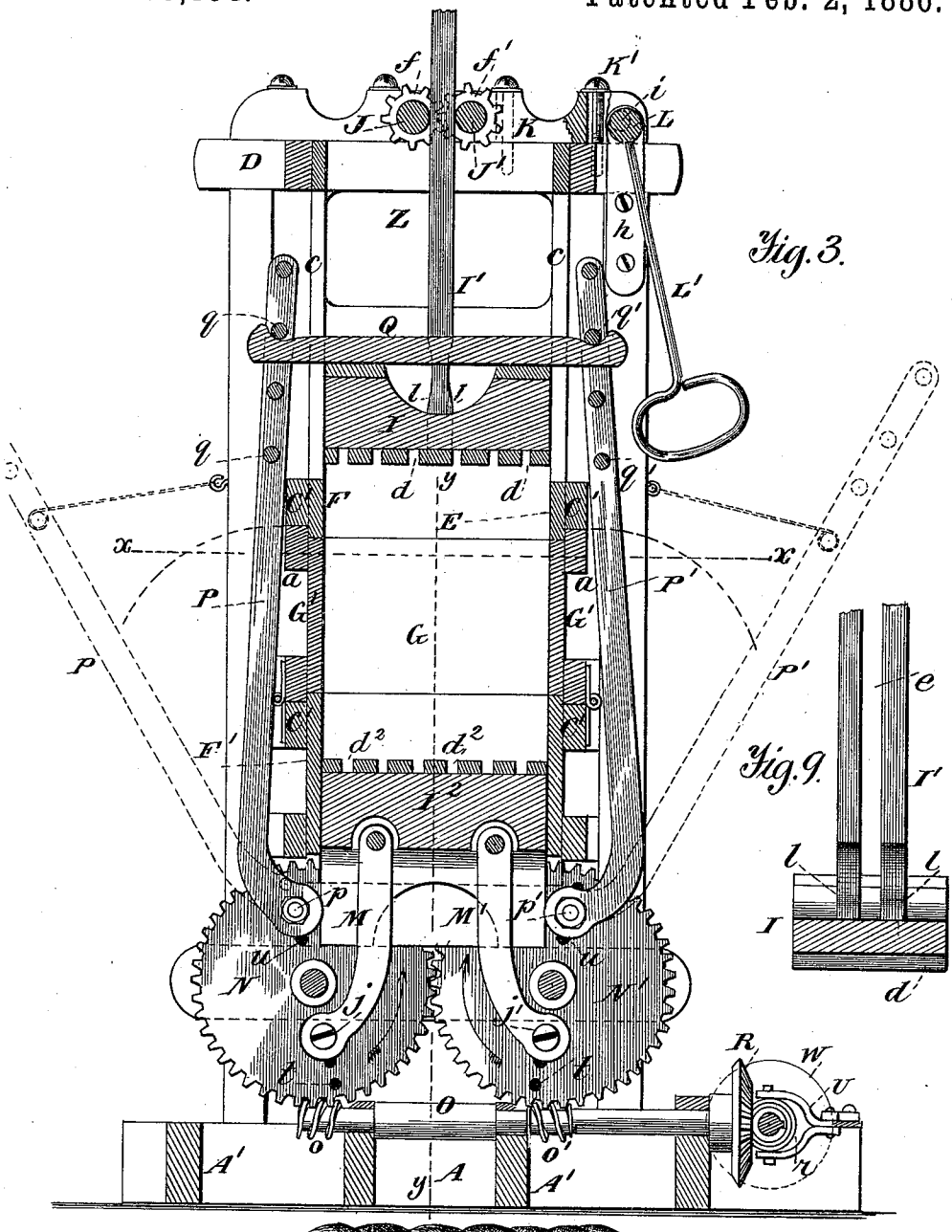


Fig. 3.

Fig. 9.

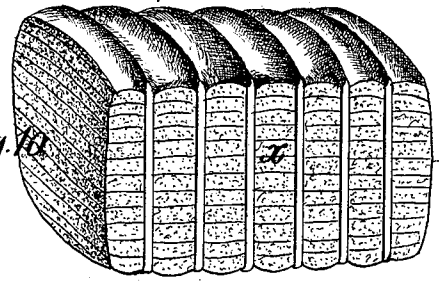


Fig. 10.

Witnesses.
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3 Sheets—Sheet 3.

C. A. HEGE.

COTTON PRESS.

No. 335,194. Patented Feb. 2, 1886.

Fig. 4.

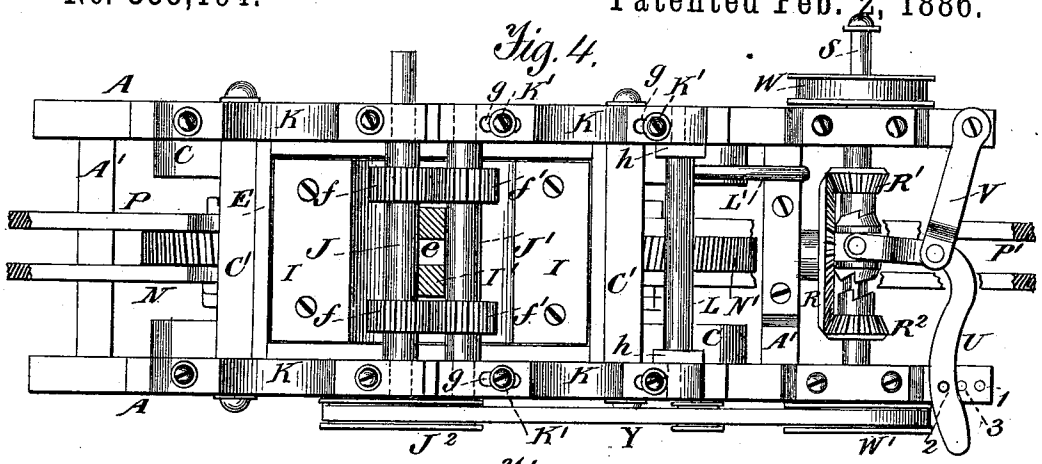


Fig. 5.

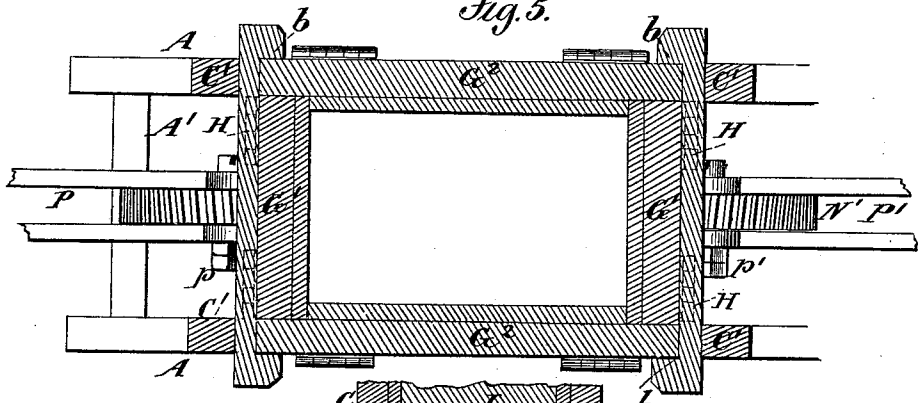


Fig. 6.

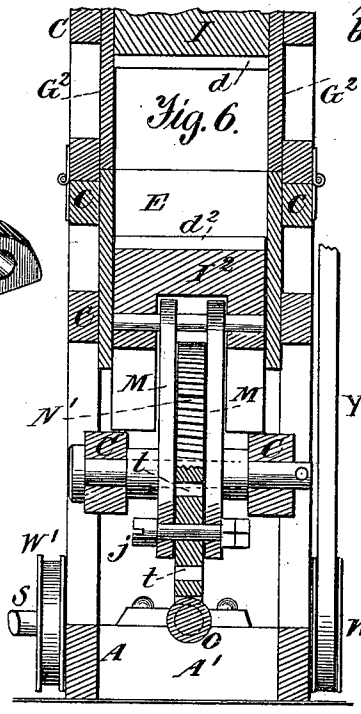


Fig. 7.

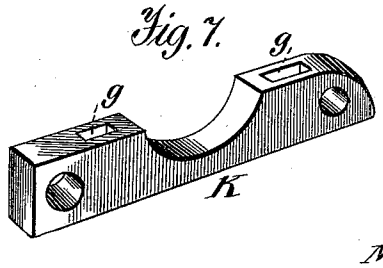
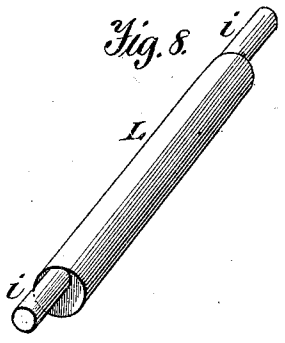


Fig. 8.



Witnesses.
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E. H. Bond.

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UNITED STATES PATENT OFFICE.

CONSTANTINE A. HEGE, OF SALEM, NORTH CAROLINA.

COTTON-PRESS.

SPECIFICATION forming part of Letters Patent No. 335,194, dated February 2, 1886.

Application filed October 14, 1885. Serial No. 179,900. (No model.)

To all whom it may concern:

Be it known that I, CONSTANTINE A. HEGE, a citizen of the United States, residing at Salem, in the county of Forsyth and State of North Carolina, have invented certain new and useful Improvements in Cotton-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to cotton-presses, and has for its object to produce a press in which the pressure can be made equal from both top and bottom, or made greater from the top than from the bottom at varying degrees, or applied from the top alone, and in which the cotton will be pressed in layers, the general construction being such that the friction usually found in presses is greatly reduced, the power is increased, and the mechanism employed simplified.

To the foregoing ends the invention consists in the construction and also in the combination of parts hereinafter particularly described, and then sought to be clearly defined by the claims, reference being had to the accompanying drawings, forming a part hereof.

Figure 1 is a perspective of the press. Fig. 2 is a perspective of the locking keys or bars to the doors. Fig. 3 is a vertical section. Fig. 4 is a plan, with parts broken away. Fig. 5 is a horizontal cross-section on the line *x x* of Fig. 3, with parts broken away. Fig. 6 is a vertical section across the press on the line *y y* of Fig. 3, with parts broken away. Figs. 7, 8, and 9 are details of one of the adjusting-blocks, adjusting-eccentric, and follower, respectively. Fig. 10 is a perspective of a bale, showing the cotton packed in layers.

In the drawings, the frame of the press is shown composed of the base consisting of longitudinal sills A and cross-blocks A′, uprights B, resting upon sills A, side and end sills, C and C′, respectively, and top sills, D, resting on the upper ends of uprights B. I do not confine myself, however, to this construction of frame.

In the frame is supported or built, in any suitable manner, the trough E, the same being formed into an upper section, F, formed with vertical slots *c* in its ends, and lower section, F′, with a space, G, between them closed when the cotton is being pressed by end doors, G′, and side doors, G^2, which are hinged at their lower ends to the sills, as shown, so as to be swung open or dropped when the bale has been sufficiently pressed, for the application of the bale bands and ties. These doors are provided at their upper edges with cross-pieces *a*, which bear against the outside of the upper section of the trough when the doors are closed, and against which the locking-keys H bear to hold the doors closed. These locking-keys are formed each with lugs *b* at opposite ends, which are brought up against the outside faces of the pieces *a* to the side doors with a wedging action, so as to bind the doors together. When the doors are to be opened, these keys are simply pressed from off the said pieces. I do not limit myself, however, to this particular locking means.

Within the upper portion of the trough there works a follower, I, formed on its under face with a series of recesses or slots, *d*, for the passage of the bale-band, and having extending upwardly from its top a shaft, I′, formed with a vertically-extending slot, *e*, terminating below its upper end, the said shaft in the drawings being shown as having its upper end broken away. This shaft passes between two friction-rollers, J J′, provided each with a set of cog-wheels or pinions, *f f′*, one set meshing with the other, and one of the rollers having its shaft extended and a pulley or band wheel, J^2, thereon for the belt which transmits power thereto. One of the rollers is journaled in movable boxes or blocks K, which slide on the top sills, D, so that the frictional contact with the shaft I′ can be regulated by adjusting the blocks, and thus the follower be raised and lowered, or, if desired, the contact so reduced after the follower has been raised as to permit the follower to drop by gravity. Any suitable means for effecting this result may be employed without departing from the spirit of my invention. As a means suitable as any, if not better than any other that suggests itself now, is the following: The boxes K are formed with elongated slots *g*, and a pin or bolt, K′, is passed through each of said slots

into the top sills, D. These bolts will permit the boxes to slide back and forth, and at the same time prevent them from moving laterally. The boxes are slid back and forth by an eccentric, L, passed through metallic plates *h*, secured to the uprights B, and having its ends *i* entering the boxes, as shown. A handle or lever, L′, is connected to the eccentric so as to turn it. The above is given merely as an illustration of suitable means for sliding the journal-boxes without any intention of limiting myself thereto.

In the lower portion, F′, of the trough E is a bed or follower, I², which may be movable or immovable. It is shown as movable, and is provided on its top face with a series of slots or recesses, *d*, corresponding to those in the face of the upper follower, and for the same purpose. This follower I² is jointed to the upper ends of the two sets of levers M M′, the lower ends of the levers being jointed by pins or bolts *j j′* to the gears N N′, which mesh with each other and with the worms O O′ on the shaft Q, by which they are turned. It is preferred that the two wheels should mesh with each other; but such is not so of necessity, and it is obvious that the worms could mesh with the gears at the top instead of the bottom, so as to bring the gears beneath a floor in the mill, and thus bring the press lower or nearer to the floor. These and similar mechanical changes are obvious to the mechanic, and reference is here made to them to show that they can be made without departing from the spirit of my invention. To the same gears, N and N′, are jointed the lower bent ends of divided or bifurcated levers P P′ by bolts *p p′*. The upper portions of these levers are provided with rounds *q q′*, connecting the separated parts of the two levers, and are for the notched or hook ends of the cross-bar Q to engage with when pressure is to be applied through the levers P P′ to the cotton in the press. The levers P P′ and M M′, in connection with the gears N N′, act as toggle-levers to exert the desired and required pressure on the cotton, for as the gears are revolved in the direction of the arrows the lower ends of the levers P P′ are carried outward, and the lower ends of levers M M′ inward, so that the upper ends of the two sets of levers are moved, respectively, downward and upward so as to carry the follower and bed-plate toward each other and thus compress the cotton.

The arrangement of levers described gives the greatest power with the minimum of friction and strain on the parts.

The shaft is provided with a bevel gear-wheel, R, with which mesh the bevel-pinions R′ R², loosely mounted on the shaft S, so as to turn thereon except when engaged by the clutch T, which is feathered, so as to slide lengthwise on the shaft and turn therewith. This clutch is moved back and forth to engage with one pinion or the other by means of a lever, U, fulcrumed to an arm, V, and connected to the clutch by having its forked end pivoted to a collar, *r*, which encircles the clutch, and in which the latter turns. This clutch can be held in engagement with either pinion by passing a pin through the long arm of the lever and into either one of the holes 1 and 2 in the sill A, and can be held from engagement with either by passing the pins into the hole 3. The shaft S carries a pulley, W, at one end, from which will lead a belt to any suitable source of power, and at the other end carries a pulley, W′, from which a belt, Y, extends to the pulley J².

In operation the clutch T stands out of engagement with pinions R′ R², and the follower I is raised till it is above the opening Z in the side of the press at its top for the passage of the cotton, and the concaved or reduced portions *l* of the shaft are opposite to the faces of the friction-rollers J J′, holding the follower up at the top of the press, yet allowing the frictional rollers to turn, by thus having the reduced portion of shaft between them, thus preventing the follower from descending while the cotton is being introduced through the opening Z and until the desired quantity has been introduced to form a layer thereof. Then the eccentric-lever is moved inward, causing the frictional rollers to separate enough for shaft I′ to freely pass between them, which at once causes the plunger to drop with all its weight on the layer of cotton just introduced, thus giving a heavy blow to same, and in a measure compressing it into a flat layer. As soon as the follower has thus dropped the lever L′ is moved out away from the press, thus turning the eccentric in the opposite direction and pressing the frictional rollers nearer together, when the shaft I′ is at once firmly grasped between the frictional rollers, whereby the follower is again raised to the top, when the reduced portion of shaft I′ is again brought between the frictional rollers, and the rollers continue to turn without moving the plunger, while another charge of cotton is then introduced and the operations described repeated until sufficient quantity of cotton has been introduced to form a bale, with the plunger I resting on top of the cotton. Then the levers P P′ are placed in an upright position and the bar Q passed through the slots *c* in the ends of the trough, and the slot *e* in the follower-shaft I′, with the face of the bar at both ends bearing against the under side of two of the rounds *q* and *q′*, the bar also resting on top of the follower I. The upward elastic pressure of the cotton will keep the cross-bar against the rounds, and the hook ends of the bar will keep the levers from pulling laterally off of the bar. The clutch T will now be thrown into engagement with pinion R², when worm-shaft O will turn the wheels N N′ inwardly, as shown by the arrows, so as to move levers M M′ upwardly and draw levers P P′ downwardly, thus moving the follower I and bed-plate I² toward each other and

compressing the cotton into a compact bale. By the time the cotton has been pressed as much as desired the two followers will have advanced far enough to bring their recessed faces d' d^2 where the bale-bands can be passed through them and around the bale when the doors G^2 are thrown open. After the application of the bands and ties the clutch is shifted into engagement with the pinion R′, when the shaft O is turned in the opposite direction, so as to retract the levers M and P, when the bar Q can be removed and the levers P P′ thrown back into the position shown by full lines in Fig. 1 and dotted lines in Fig. 3, where they will be held by rods or chains *s*, and the end doors, G′, thrown open, when the tied bale *x* can be easily removed from the press. The shaft still being turned in the same direction, the levers will be drawn back to their first positions, when the operations already described will be repeated and bale after bale formed.

It will be observed that the wheels N and N′ have a series of holes, *t* and *u*, for the attachment of both sets of levers P and M. This permits the point of attachment of the levers to be adjusted so that the pressure can be regulated at the will of the attendant—that is, the pressure can be made the same from both top and bottom, so that the bed-plate I^2 will move upwardly two feet and the follower I downwardly two feet, thus getting a combined pressure of four feet; or, by shifting the levers, the pressure can be made to be three feet or four feet from the top, depending on the extent of the adjustment, and two feet from the bottom, thus getting a combined pressure of five or six feet, with the greatest pressure from the top, where the most is usually required, from the tendency of the cotton to expand upwardly.

It is obvious that the construction described allows many changes in the extent of pressure from opposite sides of the bale, so that the pressure can be applied where it is most needed. If desired, the bed-plate I^2, as already intimated, can be made to rest stationary in the bottom of the trough, and only the follower moved, so that the pressure will be from the top only; or, if preferred, the top plunger or follower may be held rigid, after the bale has been packed ready for pressing, and the bed-plate or bottom follower made to move upward, so that the pressure will be altogether from the bottom, thus bringing the pressure either from the top or bottom independently, or from the bottom and top at once, as may be desired. This press can be used in a horizontal as well as in a vertical position.

The follower I, operating as described, permits the cotton to be packed in layers, which is very desirable in cotton for many reasons apparent to persons handling cotton.

The press as a whole is simple in construction and operation, and yet possesses all the strength requisite in presses of this character, and, besides, has among other advantages those of permitting the pressure to be varied as desired and of building up the bales in layers.

It is obvious that changes in the details of construction and arrangement of parts can be made without departing from the essentials of my invention.

Having fully described my invention and set forth its merits, what I claim is—

1. The combination, with the trough, of two followers therein movable toward each other, and levers for moving said followers and varying the extent of pressure, so that one will have a more extended pressure than the other, substantially as described.

2. The combination, with the trough, of a follower and an adjustable lever for adjusting the extent of pressure of said follower, substantially as described.

3. The combination of the trough, the follower, the rotating wheels, and levers P P′, jointed at one end to said wheels and adapted to be detachably connected at their other end with the follower, substantially as described.

4. The combination, with the trough and the followers therein, of the rotating wheels, levers P P′, connected at one end with said wheels, and adapted to have the other end connected with one of the followers, and levers M M′, connected to said wheels at one end and at the opposite end with the other of said followers, substantially as described.

5. The combination, with wheels N N′, of levers P P′, adjustably connected therewith, and a follower, substantially as described.

6. The combination, with wheels N N′, of levers M M′, adjustably connected therewith at one end, and at the other end connected to follower I^2, substantially as described.

7. The combination, with the trough, of the wheels N N′, levers P P′, connected thereto, and a bar, Q, connecting the upper ends of said levers, substantially as described.

8. The combination, with the trough, of the follower I, provided with a slotted shaft, I′, levers P P′, and a bar, Q, passed through slots in the trough and the slot in the shaft and connecting the ends of the two levers, and means for moving said levers, substantially as described.

9. The combination, with the trough and the follower provided with the shaft I′, of the friction-roller J, provided with cogs *f f*, friction-rollers J′, provided with cogs *f′ f′*, meshing with cogs *f f*, blocks K and K′, sliding on the top sills, D, and carrying roller J′, and means for moving said blocks back and forth, substantially as described.

10. The combination, with the trough having therein a follower provided with a shaft, having a portion thereof reduced in size, of rollers bearing against said shaft to raise and lower the same, the said rollers on the upstroke of the follower filling in the reduced

portion of the shaft, so as to be free to revolve without moving the shaft, substantially as described.

11. The combination, with the wheels N N′ and levers M M′ P P′, connected thereto, of a worm-shaft the worm of which meshes with the teeth of said wheels, a gear-wheel to said shaft, pinions meshing with said gear-wheel, and a clutch for locking either of said pinions to regulate the direction of rotation of the shaft, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CONSTANTINE A. HEGE.

Witnesses:
A. G. HOUGH,
C. P. NORFLEET.