No. 662,299.

Patented Nov. 20, 1900.

W. A. PATTERSON.

COTTON PRESS.

(Application filed June 3, 1899.)

(No Model.)

3 Sheets—Sheet 1.

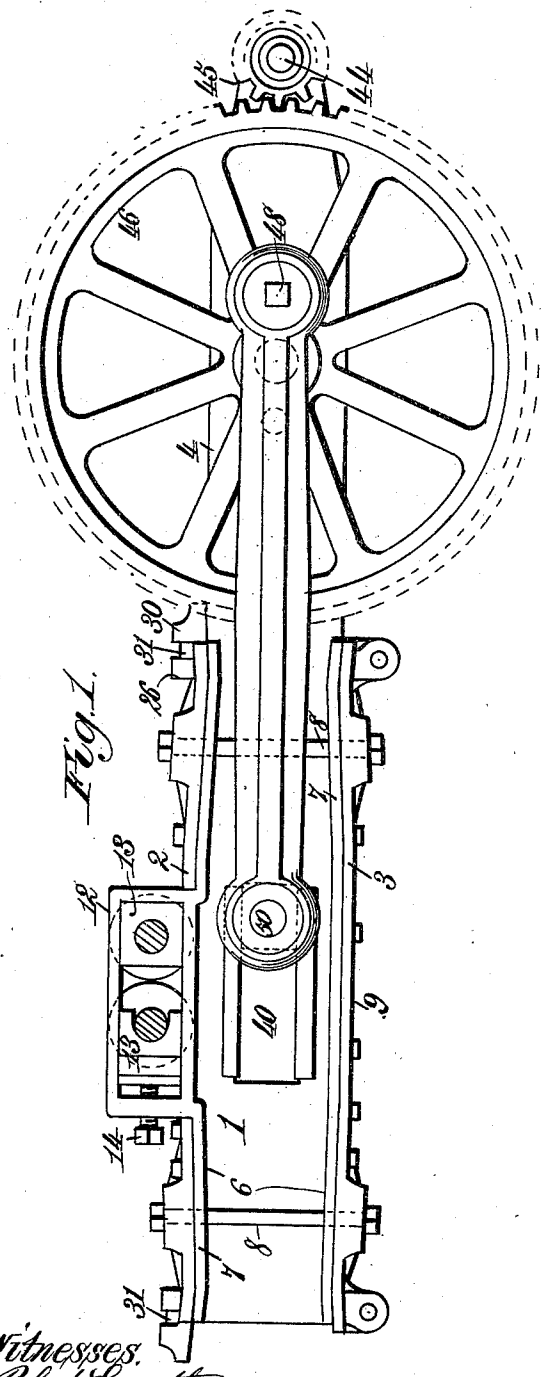


Fig. 1.

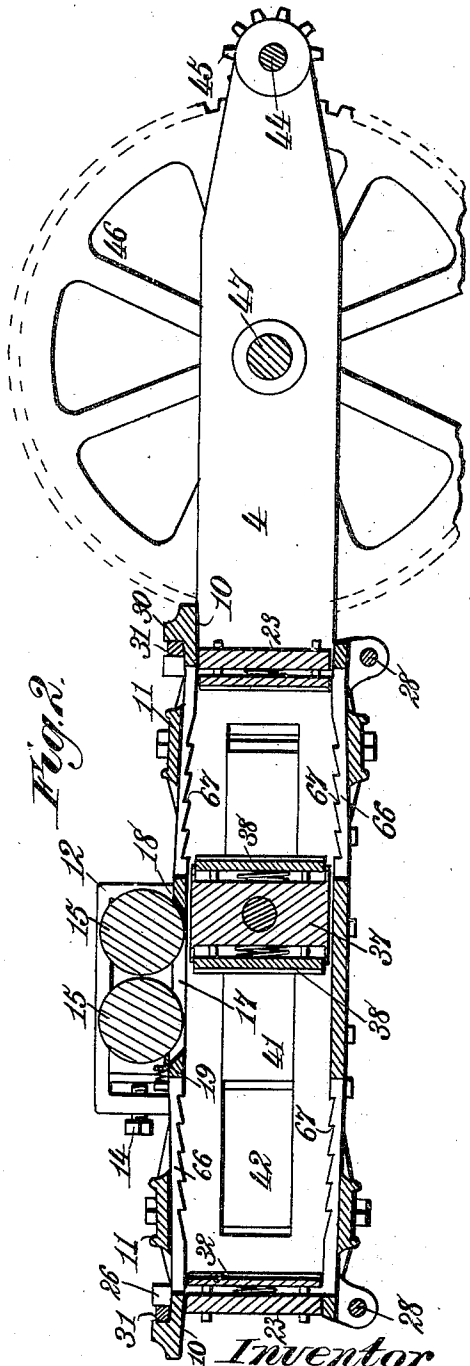


Fig. 2.

Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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3 Sheets—Sheet 2.

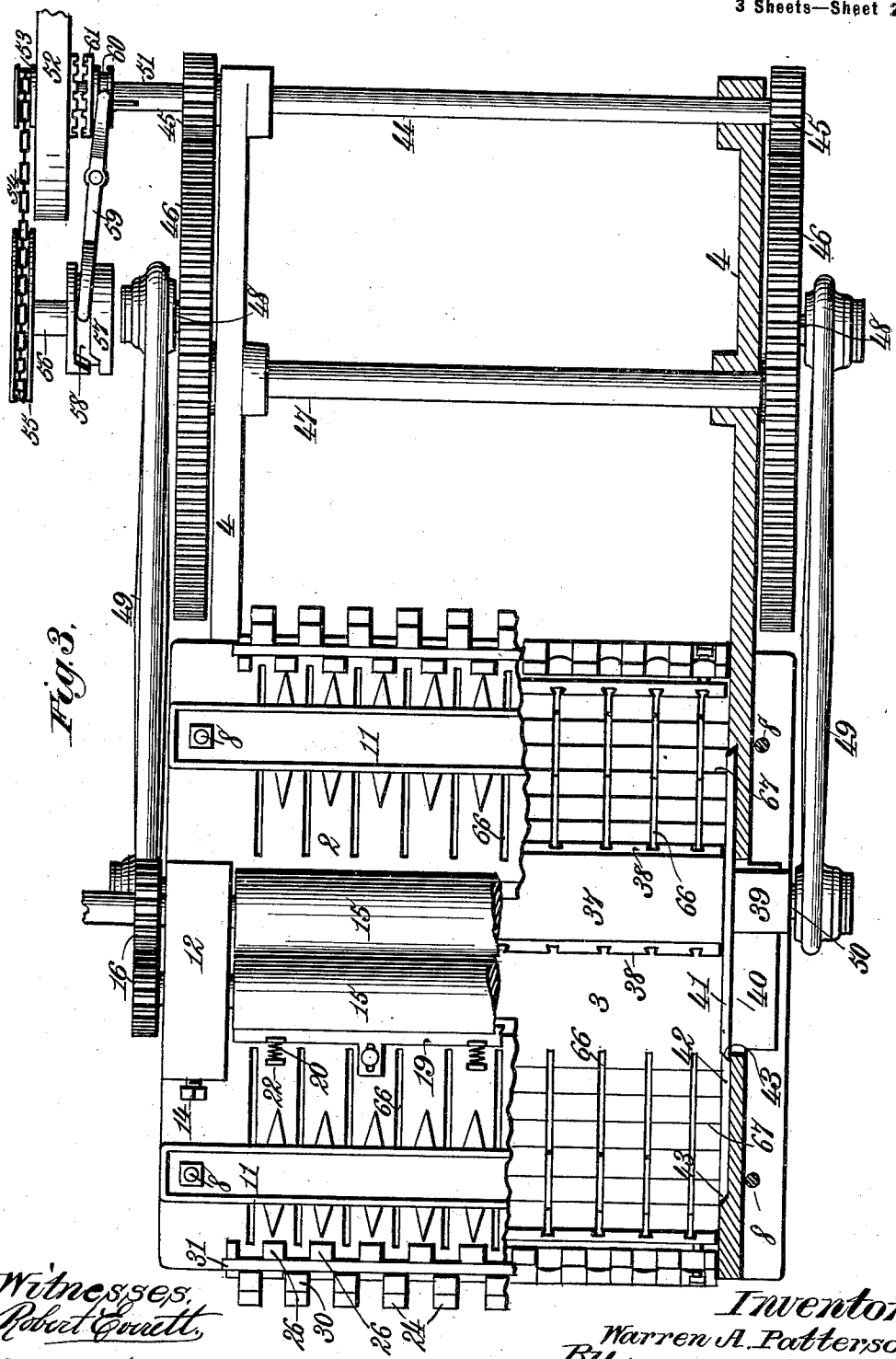


Fig. 3.

Witnesses,
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(No Model.) 3 Sheets—Sheet 3.

Fig. 4.

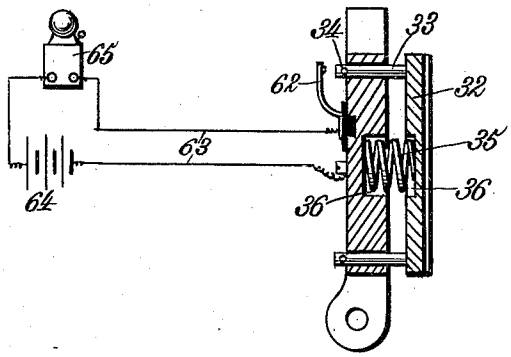


Fig. 5.

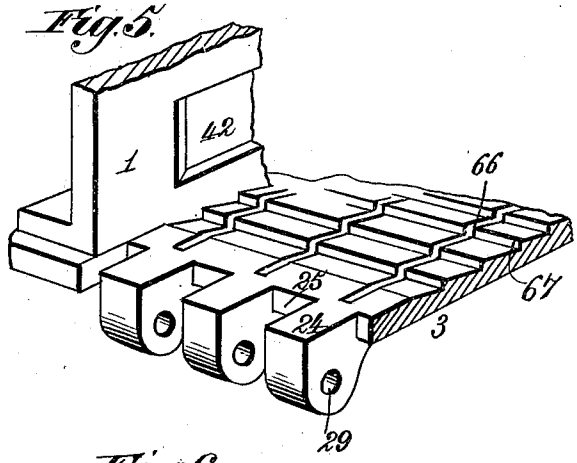
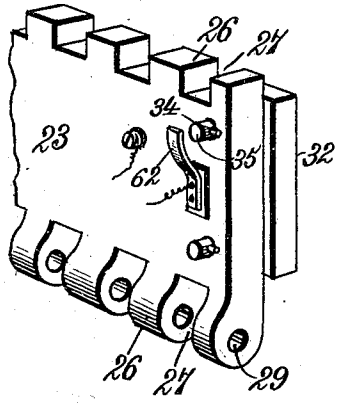


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

WARREN A. PATTERSON, OF DALLAS, TEXAS.

COTTON-PRESS.

SPECIFICATION forming part of Letters Patent No. 662,299, dated November 20, 1900.

Application filed June 3, 1899. Serial No. 719,286. (No model.)

To all whom it may concern:

Be it known that I, WARREN A. PATTERSON, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Cotton-Presses, of which the following is a specification.

This invention relates to cotton-presses, and particularly to that class wherein a reciprocating plunger operates to alternately form a bale in the opposite ends of the press; and it has for its object to provide novel means for continuously feeding the cotton in a bat-like form on opposite sides of the reciprocating plunger, to provide means for reciprocating the plunger in such manner as to alternately press the cotton in successive wads in opposite ends of the press-box, to provide means for automatically arresting the movement of and temporarily holding stationary the plunger at the end of each stroke, to effect the further compression of the cotton after the plunger has reached the limit of each stroke, to provide means for resisting the ejectment of the completed bale, to provide an automatic alarm to indicate when the bale has been formed, to provide novel means for holding the cotton in its partially-compressed state when the plunger is retracted, and finally to improve and simplify the construction and render more efficient the operation of this class of presses generally.

To these ends, my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a view in side elevation, partly in section, of my improved press. Fig. 2 is a vertical longitudinal central sectional view thereof. Fig. 3 is a top plan view, partly in section. Fig. 4 is a detail sectional view of one of the end gates for closing the end of the bale-box. Fig. 5 is a detail perspective view of one end of the bale-box, and Fig. 6 is a detail perspective view of a portion of one of the end gates.

Referring to the drawings, the numeral 1 indicates the sides of the press-box, and 2 and 3, respectively, the top and bottom thereof. The sides of the press-box are extended at one end, as at 4, to form a frame or support for the driving mechanism, as will more fully hereinafter appear. The central portions 5 of the sides of the press-box are parallel, as shown, and from thence to their ends they taper or are inclined toward each other, as indicated at 6. The sides 1 of the box are formed at the top and bottom with outwardly-projecting flanges 7 at their upper and lower edges, through which pass tie-bolts 8. Fitted on the upper and lower edges of the sides are the top and bottom 2 and 3, the central portions of which are parallel with each other, as at 9, and from thence they taper or are inclined toward each other in manner similar to the sides. This causes the press-box to taper or slightly decrease in diameter from its central portion toward its opposite ends, and the extreme outer ends thereof are flared outwardly, as at 10, to facilitate the discharge of the finished bales, as will hereinafter be explained. The outer edges of the top and bottom 2 and 3 of the press-box extend to the outer edges of the flanges 7, and said top and bottom are formed with transverse strengthening-ribs 11, through which the tie-bolts 8 also pass to firmly bind the sides, top, and bottom of the box together. The central portions 5 of the sides of the press-box are formed on their upper edges with plumber-blocks 12, in which are fitted journal-boxes 13, one of said boxes in each plumber-block being adjustable toward the other by means of a screw 14, as most clearly shown in Figs. 1 and 2 of the drawings. In the journal-boxes are journaled the ends of two parallel rollers 15, which are held in close juxtaposition to one another by the screws 14. The rollers 15 are geared to rotate together by gear-wheels 16, fixed on their ends, and one of said rollers may be driven or rotated by any suitable or preferred means. An aperture 17 is formed in the top 2 beneath the rollers 15. The edge of the top at one side of the aperture closely fits the fixed roller, as at 18, and on the opposite edge portion of the top is arranged an adjustable plate 19, that is held in close contact with the adjustable roller by springs 20, each bearing at one end against the flanged edge of the plate and at the opposite end against a lug or projection 22, formed on the top. By

means of this arrangement air is prevented from entering the press-box with the cotton as the latter is fed in by the rollers, as will be more fully hereinafter explained.

Arranged in the opposite ends of the press-box are hinged end gates 23. The ends of the top and bottom of the press-box are provided with alternate lugs 24 and recesses 25, and the end gates are provided at their tops and bottoms with corresponding lugs and recesses 26 and 27. The lugs 26 on the lower edges of the end gates are arranged between the lugs 24 on the bottom 3 of the press-box, and rods or pintles 28 are passed through perforations 29 in said lugs, thereby forming hinge connections between the lower ends of the end gates and the press. When the end gates are swung up into position, the lugs 26 on the upper ends thereof fit within the recesses 25 on the ends of the top of the press-box and project above the latter, as most clearly shown in Figs. 1 and 2 of the drawings. The upper sides of the lugs 24 on the top of the press-box are formed with upwardly-extending projections 30, (see Figs 1 and 2,) between which and the lugs on the upper edges of the end gates are adapted to be fitted or seated bars 31, that operate to hold the end gates closed and locked. Arranged on the inner side of each of the end gates is a yielding face comprising a flat plate 32, provided with dowel-pins 33, that project through corresponding apertures formed in the end gate and held in their place therein by cotter-pins 34, inserted in the ends of the dowel-pins. The plates 32 are normally held projected beyond the inner faces of the end gates by coiled springs 35, seated at their opposite ends in appropriate recesses 36, formed in the adjacent faces of the end gates and the plates 32.

Arranged to reciprocate back and forth in the press-box is a plunger 37. The opposite sides of the plunger are provided with yielding faces or plates 38, similar in construction and arrangement to the plates 32 on the end gates, and the opposite ends of the plunger are reduced and squared, as at 39, (see Fig. 3,) which project through slots 40, formed in the sides of the press-box. On the squared and reduced ends of the plunger are rigidly fitted cut-off plates 41, that cover the slots 40 and fit and reciprocate in recesses 42, formed in the inner sides of the press-box about said slots. The cut-off plates perform three distinct functions—viz., they cause the plunger to reciprocate in a true right line, preventing any tilting or rocking movement thereof, they prevent the escape of cotton through the slots, and the ingress of air therethrough. The ends of the cut-off plates 41 and the recesses 42 are each beveled, as at 43, in order to cause the plates to keep the recesses clear of cotton and prevent the latter from hanging in the recesses. The plunger is reciprocated in the following manner: Journaled in the ends of the frame 4 is a power-shaft 44, driven from any suitable source of power and provided with pinions 45, which gear with relatively large gear-wheels 46, mounted on the opposite ends of a shaft 47, also journaled in the frame 4. On the gear-wheels 46 are eccentric wrist-pins 48, on each of which is journaled one end of a pitman 49, the other end of which is journaled on a trunnion 50, formed on the corresponding end 39 of the plunger. It will be evident that at each half-revolution of the gear-wheels 46 the plunger will be given a single complete stroke in one direction. For the purpose hereinafter explained, however, it is desirable that the plunger at the end of each stroke be brought to a full stop and temporarily held in a state of rest, and in Fig. 3 of the drawings I have illustrated one means for automatically accomplishing such a result. As shown in said figure, the shaft 44 is shown extended at one end, as at 51, and has loosely mounted thereon a drive-pulley 52. The pulley 52 is constantly driven at a uniform speed and has formed or fixed on one face a small sprocket-wheel 53, that is connected by a sprocket-chain 54 to a relatively large sprocket-wheel 55, fixed on a shaft 56. Also fixed on the shaft 56 is a cam-wheel 57, having a cam-groove 58 formed in its periphery. A lever 59, pivoted intermediate its ends to any suitable fixed support, at one end engages the said cam-groove and at its other end engages a circumferential groove 60, formed on the hub of a sliding clutch member 61, mounted on the shaft 51. The clutch member 60 is splined on the shaft 51 in such manner as to be free to move longitudinally on the shaft, but be prevented from turning thereon, and is provided with an engaging face adapted to engage a similar face on a corresponding clutch member formed on and fixed to the adjacent face of the loose driving-pulley 52. It is to be understood that the pulley 52 is constantly running, as before stated, and hence constantly rotates the cam-wheel 57, and the latter will operate at one period of its rotation, through the medium of the lever 59, to throw the clutch members together and hold them together for a certain length of time, thereby rotating the shaft 44 and actuating the plunger. During the remainder of the rotation of the cam wheel 57 the clutch members will be held out of engagement, permitting the pulley 52 to run free, and hence the plunger will remain at rest. In practice cam-groove 58 in the cam-wheel will be so formed and its driving mechanism so proportioned that the clutch members will be held in engagement exactly long enough to give to the plunger a full stroke in one direction, and then the plunger will be held stationary for a given time, say one minute, and given a full stroke in the opposite direction, at the end of which it will again be temporarily held stationary, and so on continuously.

In order that audible notice may be given when a bale has been fully compressed and is

in readiness for being tied, I provide the following indicating mechanism, (best shown in Figs. 3, 4, and 6, of the drawings:) Fixed to each end gate 23, but insulated therefrom, is one end of an electric spring-contact finger 62, the free end of which normally lies in front of, but not in electrical contact with, the outer end of one of the dowel-pins 33. The terminals of an electric circuit 63 are respectively connected to the end gate and to the contact-finger, and included in said circuit is a battery 64 and bell 65. As best shown in Figs. 4 and 6, the circuit is broken between the contact-finger and the corresponding dowel-pin 33; but when the bale has been sufficiently compressed to force the plate 32 outward against the action of the springs 35 the end of the dowel-pin will make electrical contact with the contact-finger, thereby closing the circuit and sounding the bell to give notice that the bale is in readiness to be tied. The tops and bottoms of the press-box are provided with slots 66, as usual, through which the tying-wires may be inserted and tied in an ordinary and well-known manner.

The operation of my improved press is as follows: In practice the press is arranged beneath any number of cotton-gins and a chute or hopper (not shown) operates to deliver the cotton from the gins to the feed-rolls 13. The latter, as before stated, are constantly rotated and operate to continuously feed the cotton into the press-box in a bat-like form. This action of the feed-rolls operates to give the cotton a preliminary or initial partial compression, whereby a large proportion of the air is expelled therefrom, and as the plunger is reciprocated back and forth the cotton is fed by the rolls first on one side of the plunger and then on the other, and consequently the cotton-bat is forced by the plunger in successive wads alternately in opposite ends of the press-box. In plunger-presses employing reciprocating plungers having a fixed length of stroke the cotton can never be fully compressed by the plunger, owing to the fact that it contains more or less air, and until this air is expelled or escapes the cotton cannot be thoroughly compressed. In a press constructed as above described, however, when the plunger reaches the end of its stroke it is temporarily held in a state of rest, during which time the air is permitted to escape, and as it escapes the yielding face or plate 38 is forced forward by its springs and operates to effect a further compression of the cotton. The cotton is thus forced in successive wads in the end of the press-box until a sufficient quantity has been compressed therein to form a bale, when its further compression will sound the electric alarm, upon which the bale is wired or tied in a well-known manner, the temporary stoppage of the plunger affording ample time for the operation, after which the end gate is unfastened and lowered. The plunger will then operate to press the cotton against the inner end of the completed bale, gradually forcing the latter out of the end of the press-box until its rear end reaches the flared end of the press-box, when it will automatically drop from the latter. The gate is then again raised and fastened to receive the impact of the succeeding bale being formed. Owing to the tapered form of the ends of the press-box, considerable force is required to eject the completed bale, and hence the latter will interpose a sufficient resistance to the cotton being pressed behind it by the plunger until the completed bale has been ejected and the end gate again closed and fastened.

In order to prevent the cotton from expanding or "creeping" back toward the center of the press-box when the plunger is retracted, the inner sides of the top and bottom of the plunger are formed with ratchet-like ribs 67, the abrupt shoulders of the ribs being disposed toward the ends of the press-box, whereby said ribs engage the upper and lower edges of the cotton and hold it against backward movement.

I have referred above to the operation of compressing the cotton in one end of the press-box only; but it will of course be understood that the cotton is continuously being pressed in both ends of the press-box.

Having described my invention, what I claim is—

1. In a cotton-press, the combination with a press-box and a reciprocating plunger, of mechanism for reciprocating the plunger, means for automatically holding the plunger temporarily stationary at the end of each stroke, and means for expelling the air from and effecting a further compression of the cotton while the plunger is held stationary, substantially as described.

2. In a cotton-press, the combination with a press-box, of a plunger having a yielding face arranged to yield toward the plunger at each outward stroke of the latter, mechanism for reciprocating the plunger, means for holding the plunger stationary at the end of each outward stroke, and means for projecting the yielding face outward while the plunger is held stationary to expel the air from and effect a further compression of the cotton, substantially as described.

3. In a cotton-press, the combination with a press-box, of a reciprocating plunger, means for automatically holding the latter temporarily stationary at the end of each outward stroke, a plate arranged on the forward face of the plunger and movable toward and from the same, and springs interposed between the plate and the face of the plunger, said springs being constructed and arranged to yield toward the plunger at each outward stroke of the latter and expand at the end of each outward stroke and force the plate beyond the limit of movement of the plunger to expel the air from and effect a further compression of the cotton, substantially as described.

4. In a cotton-press, the combination with

a press-box, of a reciprocating plunger, a plate arranged on the face of the plunger and movable toward and from the same, springs interposed between the plate and the face of the plunger, means for reciprocating the plunger and means for automatically holding the plunger temporarily stationary at the end of its stroke, substantially as described.

5. In a cotton-press, the combination with a press-box having baling-chambers in its opposite ends and provided with a central feed-opening, of a plunger arranged to reciprocate in the central portion of the press-box between the baling-chambers, two feed-rolls arranged transversely of the press-box above the feed-opening, one of said feed-rolls rotating in close juxtaposition to one edge of the feed-opening and the other feed-roll being arranged in laterally-adjustable bearings, a plate arranged at the opposite edge of the feed-opening, and springs operating to keep said plate in contact with the adjustable roll, substantially as described.

6. In a cotton-press, the combination with a press-box having longitudinal slots in its opposite sides, the inner faces of said sides being recessed about the edges of the slots, of a plunger arranged to reciprocate in the press-box and provided with squared and reduced ends projecting through the slots, pitmen connected to said reduced ends and operating to reciprocate the plunger, and cut-off plates seated and longitudinally movable in the said recesses and rigidly fitted on the squared and reduced ends of the plunger, the ends of said recesses and cut-off plates being oppositely beveled, substantially as described, and for the purpose specified.

7. In a cotton-press, the combination with the press-box, the plunger therein and the end gate in the end of the press-box, of a yielding face-plate disposed on the inner side of the end gate and having projecting dowel-pins extending therethrough, springs disposed between the face-plate and end gate, a spring-contact finger fixed at one end to the end gate at one end and at its other end normally standing in front of but out of contact with one of said dowel-pins, an electric circuit the terminals of which are respectively attached to said contact-finger and to the end gate, and a battery and signal included in the circuit, the arrangement being such that when the face-plate is forced outward by the bale the circuit will be closed and the signal actuated, substantially as described.

8. In a cotton-press, the combination with the press-box having projecting lugs formed on the end of its top, said lugs having upwardly-extending projections formed on their extremities, of an end gate hinged to the end of the bottom of the press-box and having lugs formed on its upper edge arranged to project between the lugs on the top of the press-box, and a bar adapted to be fitted between the projecting ends of the lugs on the end gate and the projections on the lugs of the top of the press-box to lock the gate in its closed position, substantially as described.

9. In a cotton-press, the combination with the press-box and a plunger arranged to reciprocate therein, of mechanism for reciprocating said plunger, and an automatic controlling device arranged to throw the plunger-actuating mechanism out of operation at the end of each stroke of the plunger and temporarily hold the latter stationary, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WARREN A. PATTERSON.

Witnesses:
H. W. JOYCE,
J. C. HAMBERLIN.