

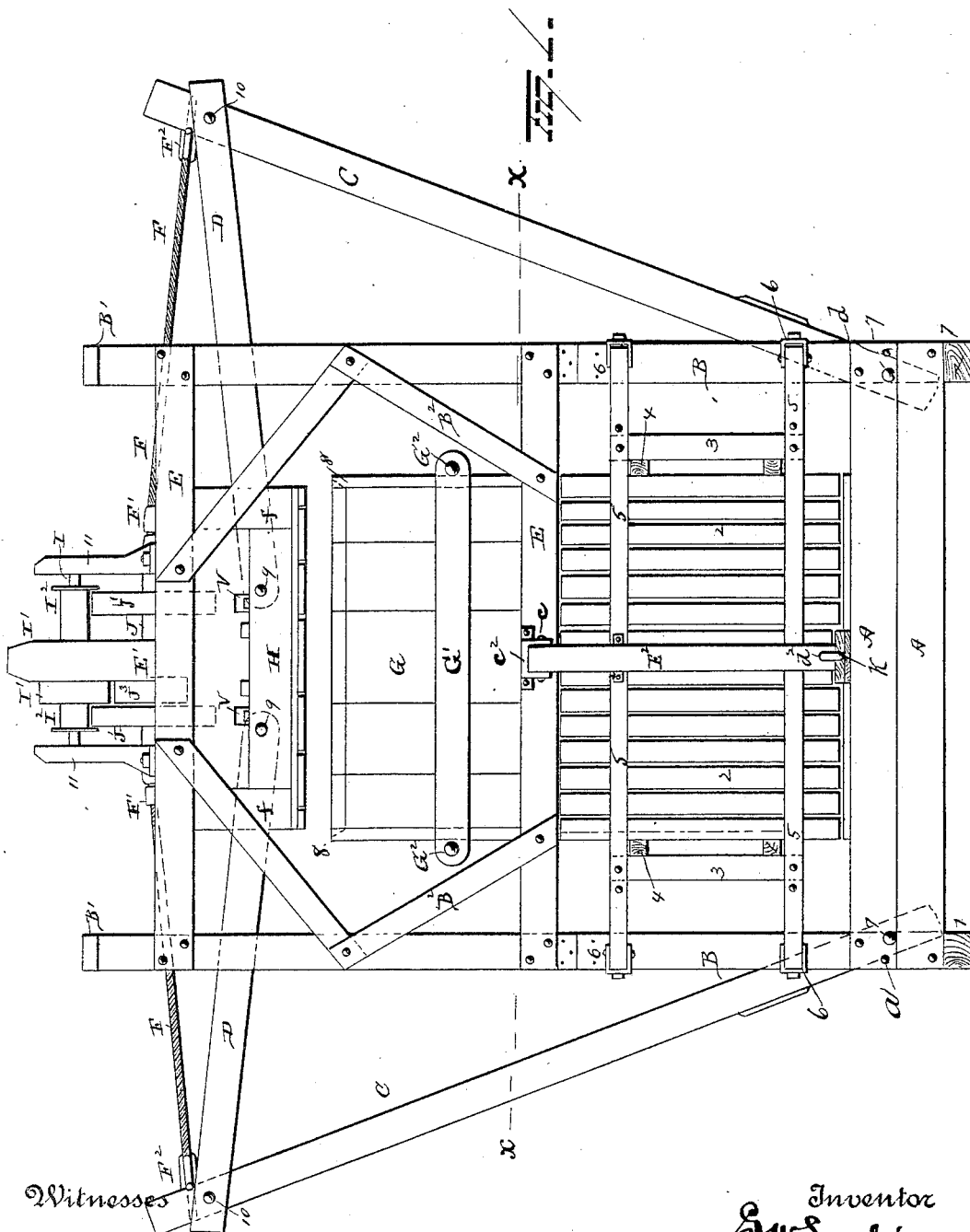
(No Model.)

4 Sheets—Sheet 1.

G. W. SOULÉ.
BALING PRESS.

No. 419,227.

Patented Jan. 14, 1890.



Witnesses

Sy. Nottingham
F. E. Sibley

Inventor
G. W. Soule.

By his Attorney
H. A. Seymour

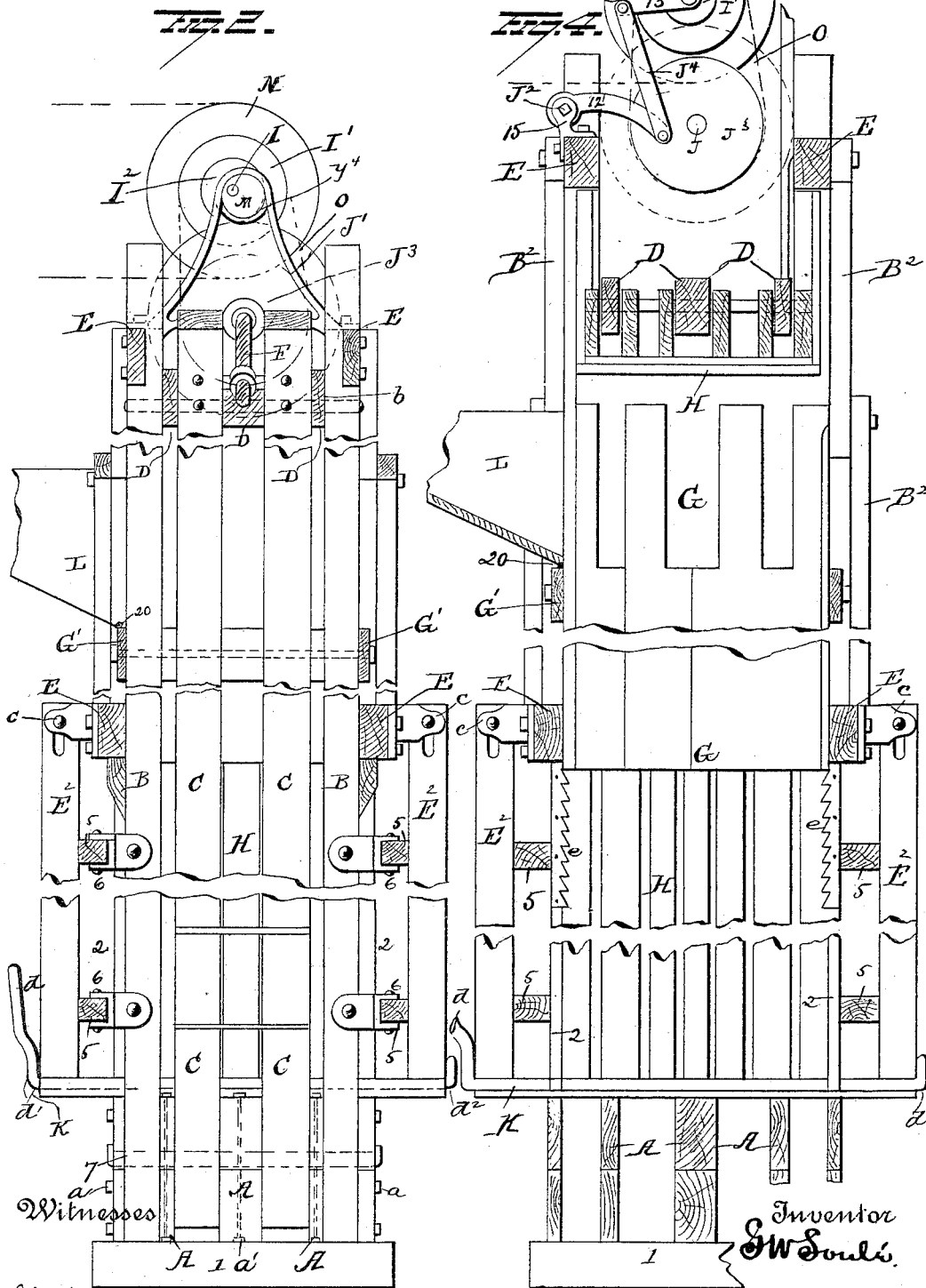
(No Model.)

4 Sheets—Sheet 2.

G. W. SOULÉ.
BALING PRESS.

No. 419,227.

Patented Jan. 14, 1890.



Witneses
S. Nottingham
F. E. Sibley

Inventor
G. W. Soulé.
By his Attorney
H. A. Symonds

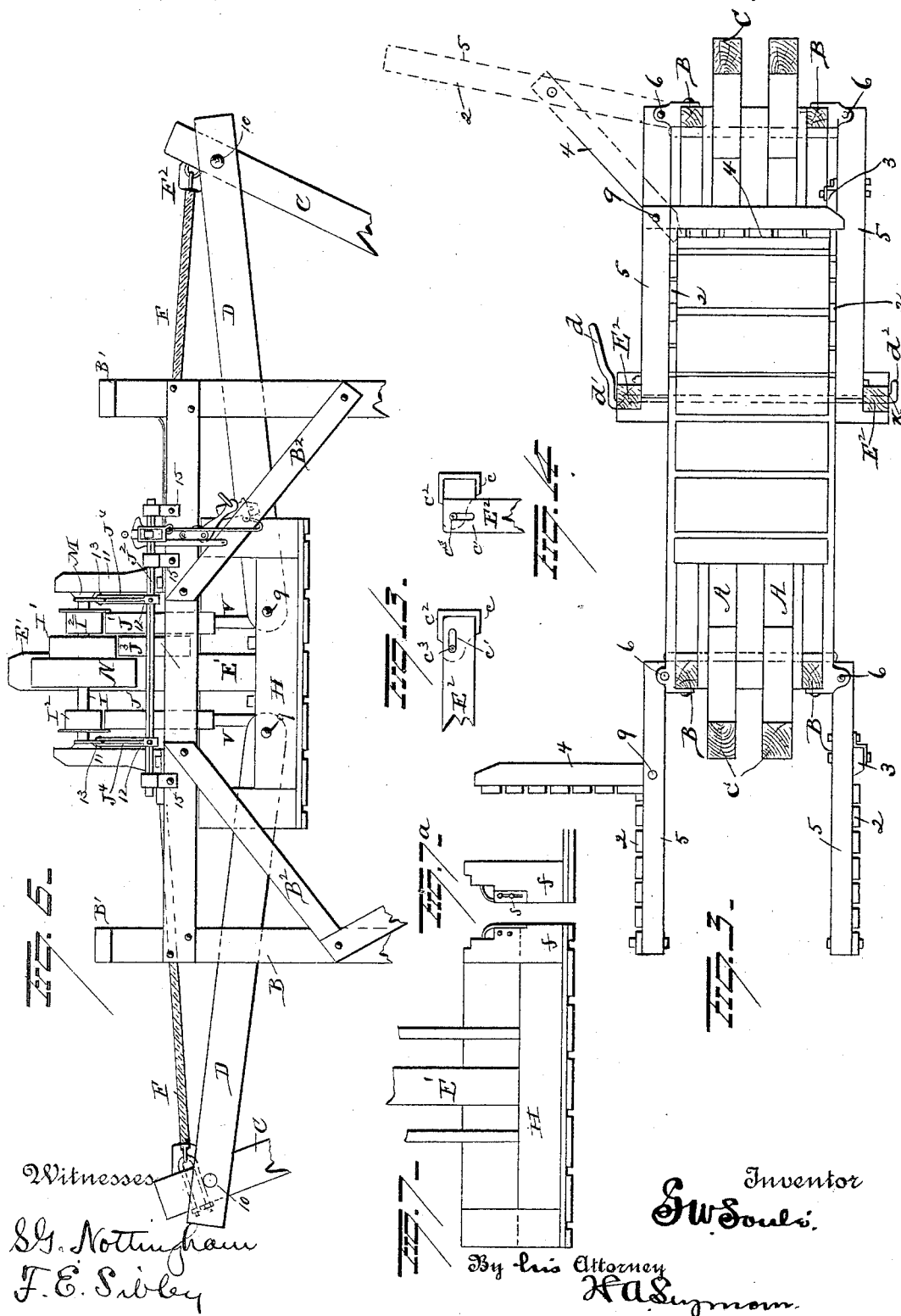
(No Model.)

4 Sheets—Sheet 3.

G. W. SOULÉ.
BALING PRESS.

No. 419,227.

Patented Jan. 14, 1890.



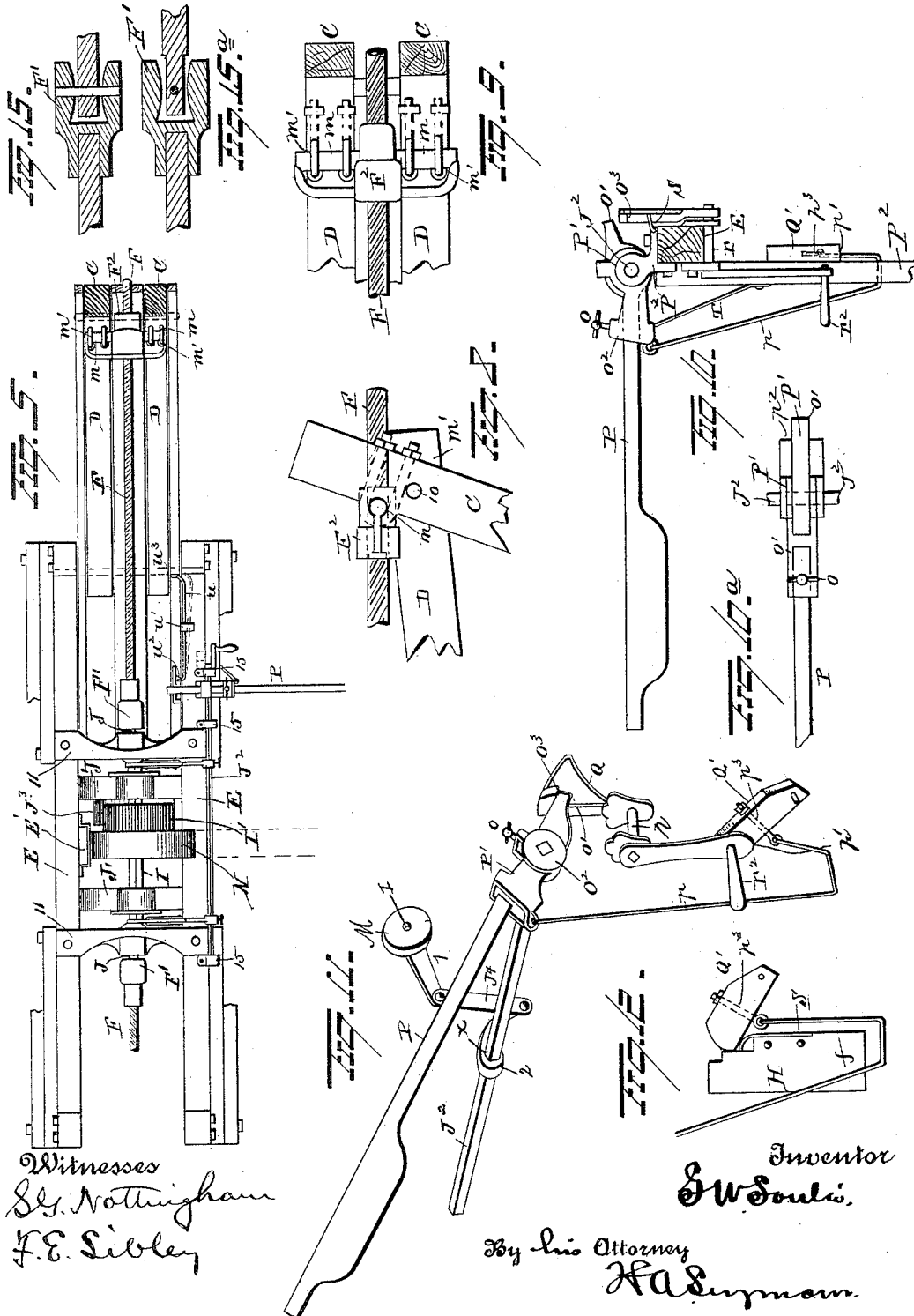
(No Model.)

4 Sheets—Sheet 4.

G. W. SOULÉ.
BALING PRESS.

No. 419,227.

Patented Jan. 14, 1890.



UNITED STATES PATENT OFFICE.

GEORGE W. SOULÉ, OF MERIDIAN, MISSISSIPPI.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 419,227, dated January 14, 1890.

Application filed October 18, 1888. Serial No. 288,447. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SOULÉ, a resident of Meridian, in the county of Lauderdale and State of Mississippi, have invented certain new and useful Improvements in Baling-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 improvements in a cotton-press which is also adapted to compress into bales hay, straw, rags, or other fibrous materials.

The primary object of my present invention is to provide a compact powerful self-packing press which may be quickly stopped or started at any desired point in the movement of its platen, and which will reverse the movement of said presser-foot or platen at either end of the travel of the same.

A further object is to provide a simple and readily-adjusted tripping mechanism which will reverse the downward movements of the platen at a designated point before the full stroke of this presser-foot or platen has been attained.

A further object is to furnish doors to a cotton-press which will inclose four sides of the press-chamber and that may be securely fastened by one locking device that can be operated to lock or unlock the door by a single movement of its lever.

A further object is to furnish the inner faces of the doors of the compressing-chamber with serrated plates, the teeth of which are in position to engage the adjacent surface of the bale when the platen is removed from a partially-formed bale to admit more material, thus preventing a relax of compression in the partly-filled bale-sack.

A further object is to provide a compressing device with reversing mechanism that is automatically acted upon to change the direction of travel of the pressing device, or arrest a vertical movement of said pressing device by contact of the moving presser-foot or platen with a suitable stop-block and connected parts.

A further object is to furnish a means for adjusting the height of an abutment on the

presser-foot or platen, (which abutment has contact with a stop-block to alter position of devices connected to the stop-block,) and thus reverse or stop upward movement of the platen, so that the instant of contact of the abutment may be regulated to actuate the reversing and arresting devices sooner or later with regard to position of the platen in the compressing-chamber, as may be desired.

A further object is to provide the stop and reverse mechanism of a baling-press with a stop prop-bar which may be readily adjusted to hold the parts of said mechanism in such relative position that motion of the platen may be arrested at any point in its stroke and so held until the prop-bar is readjusted to relieve the engaged parts of the stop and reverse mechanism, so as to permit it to automatically start the platen.

A further object is to furnish the motion-reversing mechanism of a baling-press with one or more friction clutching hubs or pulleys that are supported on a shaft in eccentric-boxes, which latter are connected to tripping devices that are automatically actuated by a moving platen or presser-foot to cause an engagement or release of these friction-hubs with other adjacent friction pulleys or drums.

A further object is to provide the stop and reverse mechanism of a baling-press with a means for manual adjustment, whereby the motion of the presser foot or platen may be instantly suspended or reversed.

With these objects in view my invention consists in certain features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

Referring to the drawings making a part of this specification, Figure 1 is a side elevation of the press. Fig. 2 is an end elevation of same. Fig. 3 is a horizontal sectional view taken on the line *x x*, Fig. 1. Fig. 4 is a sectional elevation taken through the longitudinal center of the machine. Fig. 5 is a top plan view of the lever-actuating device. Fig. 6 is a side elevation of the platen elevated and other parts of the press located on its upper end. Figs. 7 and 7^a are side and corner views of the platen or presser-foot. Figs.

8 and 9 are detail views showing the side and top of one of the rocking nuts and its manner of connection with the screws and levers of the press. Fig. 10 is an elevation in section of the press-frame and a side view of the controlling-lever which regulates the stop and reverse mechanism, of which it is a part. Fig. 10^a is a top plan view of the controlling-lever and attached parts. Fig. 11 is a detached perspective view of the tripping-gear, which is part of the stop and reverse mechanism of the press. Fig. 12 is a detached portion of the tripping-gear and an adjustable corner-plate of the platen, shown in contact with the stop-block of the tripping-gear. Figs. 13 and 14 are views of the hinged connection of one of the clamping-bars that secure the doors of the press closed. Figs. 15 and 15^a are sectional views of the universal coupling used to connect the driving-shaft with the screws.

The bed of the machine consists of a series of joist-timbers or bed-pieces A, which are spaced apart and rest upon the sills 1, which are laid upon a firm level foundation or floor; and to obtain necessary transverse area of the bed-pieces A for strength two sets are employed, these being arranged so that one set rests on the top edges of the lower set or series, as shown in Figs. 1, 2, and 4. At the corners of the bed-pieces A four uprights B are erected, their lower ends being held between two sets of the bed-pieces, to which they are secured by the transverse screw-bolts *a*, and the superimposed pieces of the bed are rigidly held in place by the vertically-inserted bolts *a'*. (See Fig. 2.) The upright corner-posts B are held together by horizontal tie-beams E, which are bolted at their ends to the posts, and are located on each side of the frame thus produced, two being placed oppositely near the center of height of the posts B and two similarly located near the top of the corner-posts, the cap-pieces B' serving to tie the sides of the frame together. The frame of the press is further strengthened by the corner-braces B², which are extended diagonally from the string-pieces E to the posts B, these braces being similar on each side of the machine.

Between the floor-beams A of the bed, which have already been mentioned as properly spaced apart, the levers C are inserted and arranged in pairs, as shown in Fig. 2. To adapt the lever C to have a vertical rocking movement necessary for their proper action, they are pivoted between the bed-pieces A, as at 7 in Fig. 2.

Upon the floor-beams A the press-box is located near the center of width and length of the same. This box consists of two portions, the upper portion G being preferably made as a rectangular box with closed sides of stout plank, held together by clamping-bars G', bolted together at their ends by the cross-bolts G², the top and bottom ends of the box G being open and the upper edge 8 beveled

by removing the inner corner, so as to freely admit a presser-foot or platen H, that will be more fully described. The lower end of the box G terminates immediately below the lower edges of the middle tie-beams E, to which it is attached, and a continuation of the box or lower portion is produced by the combination of hinged doors 2 4, that, taken together, form a rectangular box. Two side doors 2 are located on opposite sides of the lower portion of the box, these being preferably comprised each of a series of strong bars that are arranged and secured at spaced distances upon the batten-bars 5, the ends of said bars nearest to the upright posts B being strongly hinged to these posts, as at 6, to permit them to be swung outwardly. The doors 4, which form the two end walls of the lower portion of the press-box, are constructed the same as the side doors 2, and are hinged at 9 to the inner sides of two side doors, so as to permit them to extend between the two sets of side doors at right angles thereto, as shown in Fig. 3, and to permit the side doors to be readily opened after the formation of a bale.

Upon the batten-bars 5 of the two side doors that do not carry the end doors 4 vertical strips 3 of sufficient strength are bolted at such points relatively to the free vertical edges of the end doors that when they are in closed position these strips 3 will engage closely the adjacent end surface of the end-door battens and hold them from outward displacement.

In order to secure the doors 2 4 from lateral displacement when closed, the meeting edges of the side doors are engaged by the depending clamping-bars E², which are hinged at *c* to the tie-beams E, so that the bodies of these clamping-bars will overlap each of the adjoining doors to hold the pairs of side doors closed.

It will be noticed on inspection of the detail, Figs. 13 and 14, that the hinged connection of the clamping-bars E² is such that when the bars are elevated to a horizontal plane they may be slid toward the press-box (see Fig. 13) and have their ends engaged by the top plates *c*² of the hinge *c*, the bars having elongated slots *c'* made for insertion of the fulcrum-bolts *c*³, and to permit such a sliding action, which will hold the bars E² firmly extended horizontally until released by pulling them outward to clear their ends and afford pivotal movement to the same and permit them to fall. (See Fig. 14.)

Across the press-box bottom below and near the lower edges of the doors 2 the clamping-rod K is inserted to rock immediately below the lower ends of the clamping-bars E², and on the ends of this rod cam locking-lugs *d'* *d*² are formed. These project at right angles to the body of the rod K in the same plane, so as to simultaneously engage and clamp the ends of the opposite hanging bars E² to hold them firmly in contact with the side

doors 2 when the locking-lugs are turned upright. To facilitate such a movement of the rod K as just stated, one of the lugs d' is provided with a handle-extension d , that may be operated manually to lock all the doors in closed adjustment by a single motion and release the same by a reverse movement of the handle d sufficient to remove the locking-lugs d' d^2 from engagement with the pendent bars E^2 .

In forming a bale the usual bag-covering of jute or burlap is employed, which is introduced in the lower portion of the press-box, with its edge extended over the surface of the bed outside of the press-box, to be folded up over the sides when the bale is packed. In pressing the cotton which is introduced through the hinged side chute or hopper L it is necessary to hold the pressed portion of a partially-filled bale from relaxing until another mass of cotton-lint can be introduced. To effect this desideratum, there are a series of serrated metal strips e (see Fig. 4) screwed fast to the edges of the slats or vertical bars of the doors 2 4, the teeth of said strips e depending, so as to engage the pressed portion of a bale, and thus prevent its upward movement, that would loosen the mass when pressure has been relaxed. A sufficient number of the serrated strips e are provided for each door on all sides of the box to properly hold the partly-pressed bale, as has been explained.

The pressing of successive charges of loose cotton or other material which is being compacted into a bale is in this machine effected by a presser-foot or platen H, that is constructed as shown, and consists of a rectangular frame having strong corner-pieces f and a vertical guide-bar E' , this bar extending from the center of width of the platen H upwardly to engage the inner surface of one of the upper tie-bars E, and thus prevent an improper binding action laterally of the platen when it is moved up or down, the corner-pieces f also aiding to hold the platen level when it is being forcibly pressed upon loose material in the press-box G. The relative dimensions of the box G and platen H are such that the latter may be freely reciprocated within the former, and it should here be stated that the lower portion of the press-box formed by the combination of the doors 2 4 is made of proper increased width between its sides, so that the projected teeth of the strips e will not be impinged against by the reciprocating platen H. It is of further advantage to make the lower portion of the press-box larger in diameter than the upper portion of the press-box, from the fact that frictional resistance to the free downward movement of the platen H is reduced and the lateral expansion of the bale permitted. The slatted sides of the lower portion of the box allow the air to escape as pressure is brought to bear on the mass composing the bale.

The hopper L, hinged at 20, is made to close an opening formed in the side of the

box G when it is upwardly swung and secured with its bottom in alignment with the side of the box, and when lowered it forms a convenient chute on which cotton in mass may be placed and pushed inwardly below the platen, which is held above it when this feeding is effected, as will be more fully explained.

To give a reciprocal motion to the platen H and force it downward with great power, it is connected to the upper ends of the levers C by the toggle-levers D, which latter are pivoted to the platen and levers C by the transverse bolts 9 10, respectively. Both of the toggle-levers D are of such relative length that when the platen H is fully elevated they will lie slightly inclined, with their inner ends below a horizontal plane, as in Fig. 1.

The toggle-levers D are composed, preferably, of a series of beams, the outer ends of which are secured against the side faces of levers C, the pivot-bolts 10 holding the parts together, and at the same time permitting free hinged action at these points of connection. When the platen H is fully elevated, the levers C will be outwardly inclined, and it is apparent that the rocking inwardly of these levers on their pivot-bolts 7 will force the platen H downward, the length of the jointed toggle-levers D and levers C being properly proportioned to cause the platen to have the requisite reciprocal travel vertically.

To actuate the platen by vibration of the levers C, frictional gear is employed to rotate screws connected thereto. Two housing-brackets 11 are mounted transversely and parallel to each other upon each of the two upper tie-beams E. These brackets afford revoluble support to a longitudinal shaft J, which is connected at its ends to the adjacent ends of two screws F by universal couplings F' . The screws are threaded right and left hand pitch—that is to say, a right-hand-pitched screw extends from one end of the shaft J and a left-hand-pitched screw from the opposite end. The other ends of said screws engage the nuts F^2 , which latter are shown in detail in Figs. 8 and 9, where it will be noticed that the perforated and threaded body of the nuts are provided with transverse trunnions m , that are held in place by loop-bolts m' , which are inserted transversely through the ends of the levers C, and secured firmly by nuts in a way to permit the nuts F^2 to rock on their trunnions, and thus accommodate them to change of position given to the screws when the levers C are rocked by the draft of the screws. Upon the screw driving-shaft J two heavy drums or cylinders J' are mounted and rigidly fastened, and between them, near to the vertical guide E' , another pulley is placed on this shaft and secured to it. On the same brackets 11 on which the shaft J revolves in boxes a counter-shaft I is supported by eccentric-boxes M (see Fig. 2) of the same throw, the said eccentric being mounted in bearings η^4 , so that these boxes, if moved together, will retain the

counter-shaft I in planes parallel to the driving-shaft J. On the counter-shaft I, near its center of length, a driving-pulley N is secured, which is designed to receive and transmit motion and power from a proper source by means of a belt attachment to the same. A pulley I' is mounted on the shaft I to align with the pulley J³ on the shaft J, whereon are arranged, also, the large friction-drums J', which align with two smaller drums or friction-hubs I² on shaft I. These drums and hubs are of such relative diametrical size that a partial rotation of the eccentric-boxes M will depress the counter-shaft I sufficiently to cause a forcible contact of the peripheral faces of the hubs I² with the drums J', and a reverse movement of said boxes M will remove the hubs from bearing contact upon the drums in an obvious manner. The pulleys J³ I' are connected by a suitable belt O, (see Fig. 4,) the tension of which is so adjusted that when the counter-shaft I is elevated in its eccentric boxes M to remove the hubs I² from frictional contact with the drums J' a sufficient distance the belt O will be tightened, so as to transmit motion and power from the top or counter-shaft I to the lower or driving shaft J. It will be seen that when the friction-hubs I² are lowered by turning the eccentric-boxes to have contact with the drums J' the screws F will be revolved, the levers C drawn toward the press-box, and the platen H forced downward. A reversal of the eccentric-boxes will cause pulleys I' J³ to tighten the slack belt O, when the belt and pulleys will revolve the shaft J in an opposite direction, and, by turning the screws, throwing out the levers C and elevating the platen. It should be here mentioned that the reversal or upward movement of the platen H is preferably made more rapid than the downward movement of the same, and to this end the pulleys I' J³ are so proportioned that the shaft J will be run at least four times as fast when elevating the platen as when the frictional hubs and drums are in operation to depress the platen, which is accomplished with great force, acquired by the combined screw-and-toggle mechanism employed.

In the operation of baling cotton it has been usual in ordinary presses to insert a charge of loose cotton and then tramp it with the feet to measurably pack it into smaller bulk previous to application of power pressure. This operation is tedious, and requires time as well as the labor of two or more men to work the baling-press.

One of the important objects of my present invention is to avoid the tramping of loose cotton in baling it and to render the machine capable of doing this work of consolidating successive charges of loose cotton rapidly and effectually. In order to perform expeditiously the work just mentioned, it is necessary that the movement vertically of the platen H should be under the complete control of the operator, so that it may be ar-

rested quickly in its downward passage, run up rapidly, and returned to press a charge of loose cotton when the latter is inserted below the platen to receive its impact.

To accomplish the movement just mentioned, a controlling mechanism is provided, which will now be described. The eccentric-boxes M each have arms 13 extended from them at similar points with regard to their eccentricity, and a rocking shaft J², which is supported in the bracket-boxes 15 to move freely, is provided with arms 12, to which they are loosely connected by the links J⁴, that are pivoted at their ends to the ends of the arms, thus providing means for the partial revolution of the eccentric-boxes M by a rocking movement of the shaft J². Upon one end of the rock-shaft J² the controlling-lever is supported to extend outwardly at right angles to the shaft. (See Figs. 10 and 10^a.) This lever is composed of two portions P P', the portion P being weighted, as at 16, (see Fig. 10,) the latter portion P' being a skeleton shoe, which is provided with two parallel jaws that are perforated to receive the rock-shaft J², which is secured to the same, the boxed end o² of the portion p' being provided with a longitudinal aperture that has a sliding fit upon the other portion, which is inserted through it, there being a limited movement allowed for one portion between the upper and lower walls of the box, which is controlled by the handled set-screw o. The portion P' of the controlling-lever is held from lateral displacement by the bracket-stand P², which is bolted to the corner of the tie-beam E, and it will be seen that the integral body of the lever is extended through the portion P' and formed into a toe o', that projects inside the tie-beam E, it being understood that the portion P' of the lever is perforated to loosely engage the shaft J², on which it is placed. The toe o' of the lever is extended sufficiently to lock beneath an overhanging shoulder o³, formed on the latch Q, that is pivotally supported by its lower end to vibrate on the inner face of the tie-beam E. (See Figs. 5, 10, and 11.) To be more specific, the latch Q is attached to a short shaft r, that is supported to rock in boxes secured to each side of the tie-beam E, so that the shaft r may lie below the tie-beam and project outside of the same, it having a crank-handle r² affixed to this end, so as to permit the latch to be manually turned, if desired. Upon the outer lower edge of the portion P' a depending rod p is attached. Said rod, extending a proper distance downward, is bent at right angles to pass under the diagonal brace B² of the frame, so as to have its upwardly-bent end p' engage an eyebolt p³, which penetrates through and is secured to a stop-block Q', that is pivoted at its lower end to the inner side of the adjacent diagonal brace B² in such a relative position that this block will be held inclined across the path of upward travel of a corner of the platen H when the lever-toe o'

is engaged with the shoulder o^3 of the latch Q, and holds the weighted lever elevated and ready to fall, which would turn the rock-shaft J^2 and relax the reversing-belt O, due to partial rotation of the eccentric-boxes M. As has been indicated, the tightening of the reversing-belt O is effected by the weight of the lever acting on shaft J^2 and boxes M. Therefore, when the corner of the upwardly-moving platen engages the stop-block Q', said lever by its consequent elevation will operate the eccentric-boxes in such a direction as to slacken the belt O and arrest the upward motion of the platen in an obvious manner. With regard to the manner of increasing the degree of frictional contact of the hubs I^2 and drums J' , it should be explained that, the toe o' of the lever being engaged with the shoulder o^3 of the latch Q, the lever is held outwardly extended, and as it is loosely held on the shaft J^2 , while the portion P' is rigidly attached thereto, an adjustment of the set-screw o will revolvably move the shaft J^2 , so as to turn the eccentrics M more or less and increase or diminish their frictional contact with each other. An adjustable plate s (see Fig. 12) is fitted onto the corner f of the platen H, which may be given a limited change of position vertically, the corner plate s being intended to abut against the stop-block Q' to trip the lever, this provision of adjustment allowing a closer regulation for time of contact with regard to other parts of the controlling mechanism, which will effect the elevation of the lever sooner or later in the upward travel of the platen H. It is also desirable that the downward travel of the platen H may be restricted in pressing the bales, so that the operation may be expedited. To effect this automatically, a reversing-bar u (see Fig. 5) is fastened by one of its ends u^2 to the side of the latch Q, projecting toward the end of the press and having a hooked end u^3 , that is bent inwardly to lie above one of the toggles D when so adjusted. A horizontally-slotted bracket-plate u' is affixed to the tie-beam E about the center of length of the reversing-bar u , through which said bar passes, and may be moved a limited distance sidewise. If the bar u is set as shown in full lines in Fig. 5, it will lie with its hooked end u^3 above the toggle-lever D, so that when this lever rises by reason of the draft of the screws F during the downward passage of the platen it will impinge against this bent end and trip the latch Q, whereas if the bar u is moved outwardly, as shown in dotted lines in the same figure, a further downward travel of the platen will be permitted; and it is apparent that when the bar is adjusted to either position the vertical movement of the platen will be regulated thereby. It is feasible to have several reversing-bars u of different lengths, so that a change of travel of the platen H may be quickly effected and it be made to automatically reverse at different

points by a change of bars. The speed of travel of the main belt and driven pulley N should be rapid to obtain required motions of the machinery and give effective action thereto, and as the friction-drums J' are heavy they acquire considerable momentum; consequently this momentum would keep the shaft J revolving if not checked.

To stop instantly the drums from rotating, when this is necessary, two upwardly-projected brake-bars V (see Figs. 1 and 6) are fastened by their lower ends to the side of the platen H, so that they will clear the inner surface of the upper tie-beam E and abut against the faces of the drums J' , thus immediately arresting the rotary motion of said drums.

It should be explained that the slackness of the reversing-belt O must be such that when the eccentric-boxes M are moved so as to release the friction-hubs I^2 from contact with the drums J' the belt will not be sufficiently tightened to drive the shaft J until a further movement of the eccentric-boxes is produced, so that a cessation of vertical movement of the platen may be attained when desired. This may be produced instantly at any point of downward travel of the platen by manually operating the handles of the crank r^2 , which will trip the latch Q, a stop-rod T (see Fig. 10) being so placed as to receive the falling lever and arrest its full downward movement at a point which will release the friction-gear, while it fails to tighten the reversing-belt O enough to reverse the motion of the platen H.

The stop-rod T can be manually set in an instant to arrest motion of the platen without unshipping the driving-belt. This provision is of great utility in the operation of the press, and is particularly available when the bale has been pressed and the platen is elevated to admit the adjustment of the bales upon the bale, which may then be quickly removed from the press.

From the foregoing description of the bale-press and its advantages in operation it is evident that the work of baling cotton, hay, straw, or rags may be expeditiously performed by the labor of one man, who can feed the cotton or other material to be baled and also operate the machine, the automatic operation of which and its means of adjustment to regulate motion or arrest it entirely greatly aiding the work of rapidly and perfectly compressing fibrous materials into a compact bale.

Many slight changes may be made in the details of construction of the press and their combination and arrangement within the scope of my invention. Hence I do not desire to be restricted to the exact form and arrangement of parts shown; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a baling-press, the combination, with

a bed and a frame, of side doors and two end doors hinged to two of said side doors, the said end and side doors when in closed adjustment forming a rectangular compression-chamber, and means, substantially as described, for locking the side and end doors in closed adjustment.

2. In a baling-press, the combination, with a bed and a frame, of a compression-chamber formed of two hinged side doors, each having a hinged end door, and two hinged side doors that are provided with notches and strips which are adapted to impinge against the edges of the said end doors when all are closed, substantially as set forth.

3. In a baling-press, the combination of a slotted bed, a frame, and a press-box consisting of an upper portion and lower portion, the latter being composed of two pairs of hinged side doors, two end doors hinged to two of the side doors, abutments secured to the two other side doors to adapt them to retain the end doors from outward movement, and a locking device for the side doors, substantially as set forth.

4. In a baling-press, the combination, with a bed, a frame, a press-box consisting of an upper fixed portion and a lower portion, the latter composed of hinged side doors and end doors hinged to two of the side doors in the manner described, of a pair of hinged clamping-bars and a rocking rod for engaging the clamping-bars, substantially as set forth.

5. In a baling-press, the combination, with a bed, a frame, and a press-box consisting of an upper fixed section and a lower section composed of hinged side doors, and end doors hinged to two of the side doors, as described, of a folding chute or hopper pivoted to the side of the upper section of the press-box, substantially as set forth.

6. In a baling-press, the combination, with a bed and an upright frame, of a press-box consisting of an upper and a lower section, the latter being composed of a series of side and end doors hinged to the side doors, as described, a pair of clamping-bars to impinge against the side doors, a rocking rod adapted to hold the clamping-bars in locked position, and a folding chute attached to the upper section of the press-box, substantially as set forth.

7. In a baling-press, the combination, with a bed, a frame, and a press-box composed of an upper fixed portion and a lower portion, the latter being made up of two sets of side doors hinged to the frame, and end doors hinged to two of the side doors, in the manner described, of two pendent hinged clamping-bars adapted to engage the side doors, and a rocking rod provided with two cam-lugs, which engage the lower ends of the clamping-bars and hold all the doors together in closed position, substantially as set forth.

8. In a baling-press, a clamping device for the hinged doors of the press, comprised of two pendent clamping-bars and a rocking rod

having two locking-lugs that are actuated by a handle to lock the doors, substantially as set forth.

9. In a baling-press, the combination, with a bed, a frame, and a press-box, of upright levers, a platen actuated by said upright levers, two screws free at their outer ends, so as to move in the arcs of circles as the free ends of the upright levers are moved toward and away from the frame, and swinging nuts secured to said upright levers and engaging the screws, substantially as set forth.

10. In a baling-press, the combination, with a bed, a frame erected on the bed, a press-box, and a platen, of a pair of upright levers pivoted to the bed, a pair of toggle-levers pivoted to the upright levers and also to the platen, a right-hand screw, a left-hand screw, a shaft connected by universal joints to these screws, a pair of rocking nuts to connect the screws to the upright levers, and rotating devices which are adapted to rotate the screws, substantially as set forth.

11. In a baling-press, the combination, with two side doors having two end doors hinged on their inner sides, two other side doors that are adapted to engage and hold the end doors from outward movement when all the doors are folded to form a box, and a supporting-frame, of two clamping-bars hinged to the frame and a rocking rod to lock the clamping-bars against the doors, substantially as set forth.

12. In a baling-press, the combination, with swinging doors, of two pendent locking-bars hinged at their upper ends and adapted to rest against the meeting edges of the doors of the press-box to lock them closed, and devices for supporting said bars in a horizontal position, substantially as set forth.

13. In a baling-press, a compression-chamber formed of two pairs of doors, one pair of said doors being provided at points between their ends with two hinged doors forming the end walls of said chamber, substantially as set forth.

14. In a baling-press, the combination, with a compression-chamber formed of two pairs of side doors, one pair of said doors being provided at points between their ends with two hinged doors forming end walls of the compression-chamber, of serrated strips affixed to the inner face of said doors, substantially as set forth.

15. In a baling-press, the combination, with a bed and a frame, of a press-box consisting of a fixed upper section and a lower section composed of a series of hinged side doors and end doors hinged to two of said side doors at points between the ends of the latter, and strips secured to the side doors and provided with downwardly-projecting teeth, substantially as set forth.

16. In a baling-press, the combination, with a bed, a frame, a plate, and means for moving the platen vertically, of a press-box consisting of a fixed upper section and a lower

section made up of a series of hinged side doors and end doors hinged to a pair of said side doors at points between the ends of the latter, and toothed strips secured to the inner faces of the side doors, substantially as set forth.

17. In a baling-press, the combination, with a bed, a frame, and a platen, of levers, right and left hand screws, mechanism to rotate the screws together in opposite directions, four side doors, two end doors hinged to two of said side doors at points between the side edges of the latter, two pendent locking-bars that bear on the meeting edges of the side doors when they are closed, and a locking-rod having two locking-lugs adapted to hold all the doors closed when it is made to engage the ends of the pendent locking-bars, substantially as set forth.

18. In a baling-press, the combination, with a bed, a frame, a press-box, and a platen, of a set of upright levers pivoted to the bed, a set of levers pivoted to the upright levers and to the platen, two screws, one right hand, the other left hand, both adapted to rotate together in a forward or reverse direction, universal joints, and rocking nuts for the screws to connect them to the upright levers and with a shaft, substantially as set forth.

19. In a baling-press, the combination, with right and left hand screws, a driving-shaft connected to said screws, a friction-drum secured to the driving-shaft, and a reversing-pulley also fixed upon the driving-shaft, of a counter-shaft, eccentric-boxes that support the counter-shaft, a friction-hub, a pulley in line with the reversing-pulley on the driving-shaft, a reversing-belt, and a device for changing the position of the eccentric-boxes carrying the counter-shaft, and a main driving-pulley, substantially as set forth.

20. In a baling-press, the combination, with a driving-shaft, right and left hand screws connected to said shaft, a counter-shaft supported in eccentric-boxes parallel to the driving-shaft, reversing-pulleys on these shafts, and a reversing-belt connecting these pulleys, of a friction-hub and a friction-drum mounted on the counter-shaft and driving-shaft, respectively, a main belt-pulley on the counter-shaft, and a device to change the position of the eccentric-boxes that support the counter-shaft, substantially as set forth.

21. In a baling-press, the combination, with a driving-shaft, universal couplings, rocking nuts, and right and left hand screws that are engaged by these couplings and nuts, of a counter-shaft supported in eccentric-boxes, friction-gear mounted on the parallel driving and counter shafts, reversing-pulleys, a reversing-belt, a driving-pulley, and a device to throw the eccentric-boxes and stop or reverse the motion of the screws, substantially as set forth.

22. In a baling-press, the combination, with a counter-shaft that receives motion from a main belt-pulley, eccentric-boxes supporting

the counter-shaft, a friction-hub mounted on the counter-shaft, and a reversing-pulley, of right and left hand screws, a driving-shaft, a friction-drum, a reversing-pulley, a reversing-belt, and a controlling mechanism connected to the eccentric-boxes to move the counter-shaft toward or from the parallel driving-shaft, substantially as set forth.

23. In a baling-press, the combination, with a driving-shaft, a platen, levers connected to the platen, and screws for actuating the levers, of a counter-shaft, direct-motion friction devices and belt, connected reversing mechanism located on said shafts, a reversing-shaft, and devices connecting the reversing-shaft and counter-shaft, whereby either the direct-motion friction devices or the reversing mechanism are thrown into operation, substantially as set forth.

24. In a baling-press, the combination, with a driving-shaft, a counter-shaft, eccentric-boxes, a main belt-pulley mounted on the counter-shaft, friction-hubs, friction-drums, two reversing-pulleys, and a reversing-belt, of a reversing-shaft, arms thereon, arms on the eccentric-boxes, links to connect these two sets of arms, and a controlling mechanism adapted to be moved by the platen of the press to shift the eccentrics and change the direction of motion of the press-platen or stop it, substantially as set forth.

25. In a baling-press, the combination, with a driving-shaft, a counter-shaft, friction-gearing on said shafts, and a belt connecting the shafts, of a reversing-shaft, devices connecting the reversing-shaft and counter-shaft, whereby the latter is moved by the reversing-shaft toward and away from the driving-shaft, and a controlling-lever connected to the reversing-shaft and actuated by gravity when released by a moving platen, substantially as set forth.

26. In a baling-press, the combination, with a bed, a press-box, and a platen, of a driving-shaft, a counter-shaft, friction devices thereon for moving the driving-shaft in one direction, a reversing-belt for moving the driving-shaft in the opposite direction, a reversing-shaft connected with the counter-shaft for moving the latter toward and away from the driving-shaft, a controlling gravity-lever attached to the reversing-shaft, a rocking latch, a stop-block, and connections between the stop-block and lever, substantially as set forth.

27. In a baling-press, the combination, with a platen and devices for moving the platen up and down, of a reversing-shaft for changing the direction of movement of the platen-operating devices, a controlling-lever attached to said shaft, a latch, a removable prop-rod for checking the fall of the controlling-lever, and a stop-block connected to the pivoted latch, substantially as set forth.

28. In a baling-press, the combination, with a platen and platen-operating devices, a reversing-shaft, and a controlling-lever secured

thereto, of a pivoted latch for holding the controlling-lever elevated, and a stop-block connected to the pivoted latch and located in the path of the platen, substantially as set forth.

29. In a baling-press, the combination, with a bed, a frame, a platen, hinged doors forming a compression-chamber, levers, and screws connecting the levers and platen, of a driving-shaft, a counter-shaft that may be moved toward or from the driving-shaft in parallel planes, friction hubs and drums secured on said shafts, and screws connected to one of said shafts and indirectly to the platen-pulleys, and a reversing-belt mounted on these pulleys, a reversing-shaft, a controlling-lever, a pivoted latch that when engaged by the toe of this gravity-lever holds it elevated, and a stop-block connected to the pivoted latch and located in the path of the platen, substantially as set forth.

30. In a baling-press, the combination, with a platen and platen-actuating devices, of an adjustable plate secured to one corner of the platen, a trip located in a position to be engaged by the adjustable plate, and devices, substantially as described, connecting the trip and platen-actuating devices.

31. In a baling-press, the combination, with a driving-shaft, friction-drums thereon, and friction-hubs that are supported to receive motion and rotate the drums rapidly, of a platen that is adapted to move vertically by rotation of the drums, and brake-bars attached to the platen to impinge against the surface of the drums, substantially as set forth.

32. In a baling-press, the combination, with

a driving-shaft, two friction-drums mounted on this shaft, a counter-shaft supported to rotate above the driving-shaft in eccentric-boxes, the eccentric-boxes, two friction-hubs secured on the counter-shaft, a main belt-pulley on the counter-shaft, two reversing-pulleys, one secured upon each of these two parallel shafts, and a reversing-belt mounted on the reversing-pulleys, of a platen actuated by the driving-shaft, and two brake-bars attached to the platen and projected vertically, so as to impinge on the faces of the friction-drums, substantially as set forth.

33. In a baling-press, the combination, with a bed, a frame, a press-box, and a hinged hopper, of levers, a platen, two screws, a driving-shaft, universal couplings that connect the ends of the screws with the ends of the driving-shaft, rocking nuts secured to the upper portions of the upright levers and engaged by the screws, friction-gear to rotate the screws forwardly and force the platen downwardly, reversing-pulleys, and a reversing-belt, a counter-shaft mounted in eccentric-boxes, an adjustable controlling-lever mounted on a reversing-shaft and connected to the countershaft-boxes, a retaining-latch, and a stop-block connected to this latch and adapted to trip the controlling-lever when said block is engaged by the corner of the platen, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE W. SOULÉ.

Witnesses:

S. B. HOLT,

P. A. HUGGINS.