

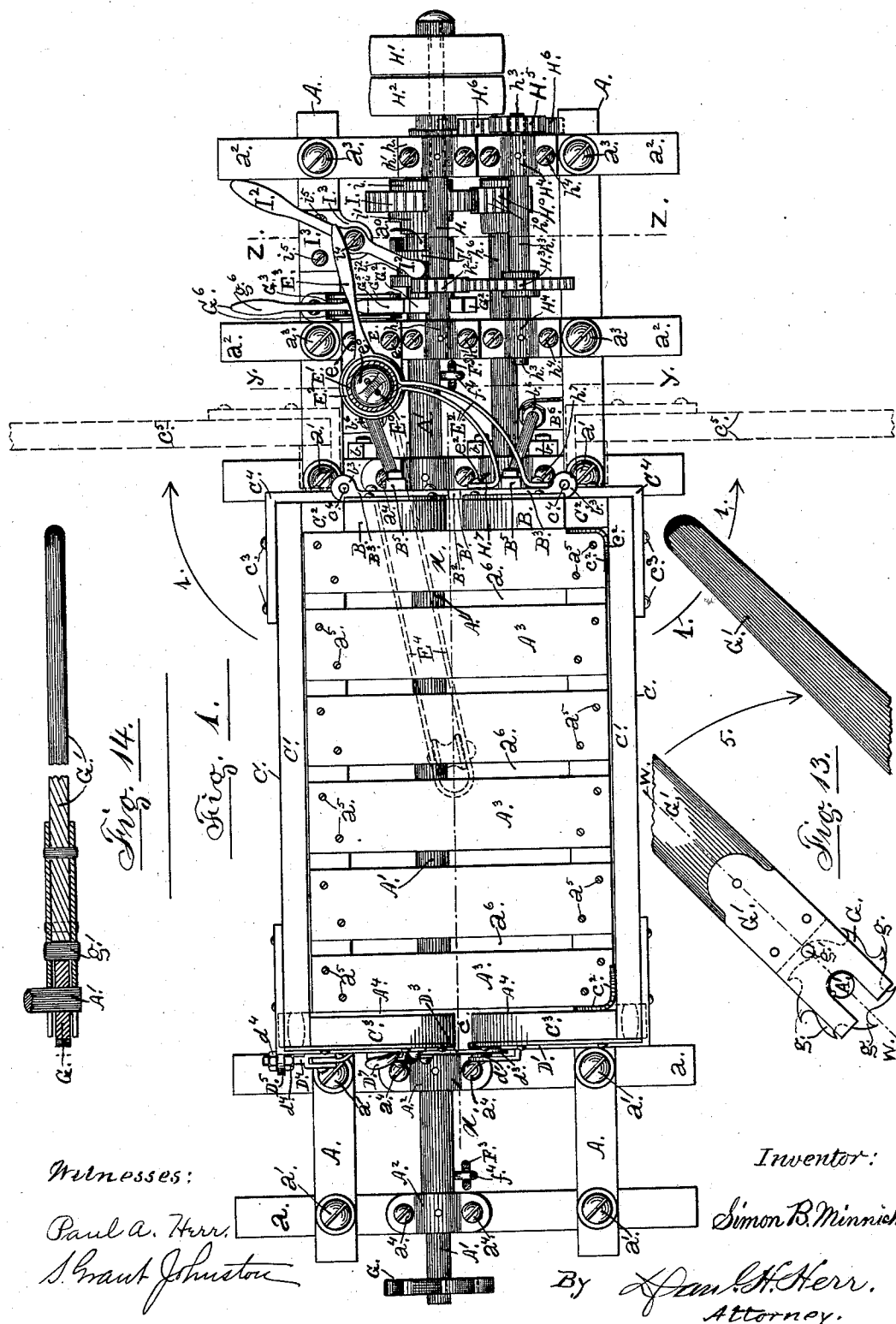
(No Model.)

4 Sheets—Sheet 1.

S. B. MINNICH.
BALING PRESS.

No. 578,702.

Patented Mar. 9, 1897.



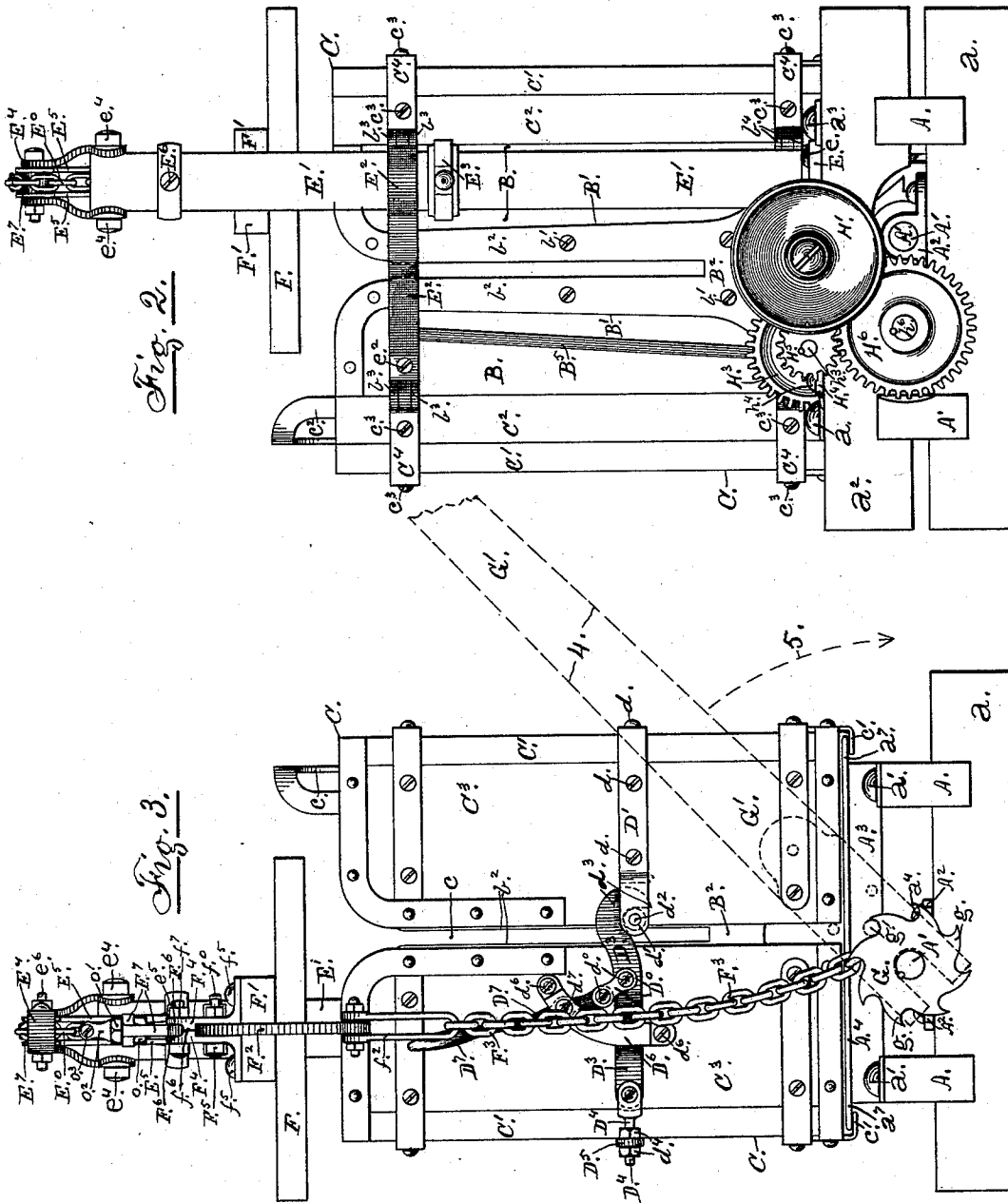
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4 Sheets—Sheet 2.

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Witnesses:

Paul A. Herr.
S. Grant Johnston.

Inventor:

Simon B. Minnich.
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Attorney.

By

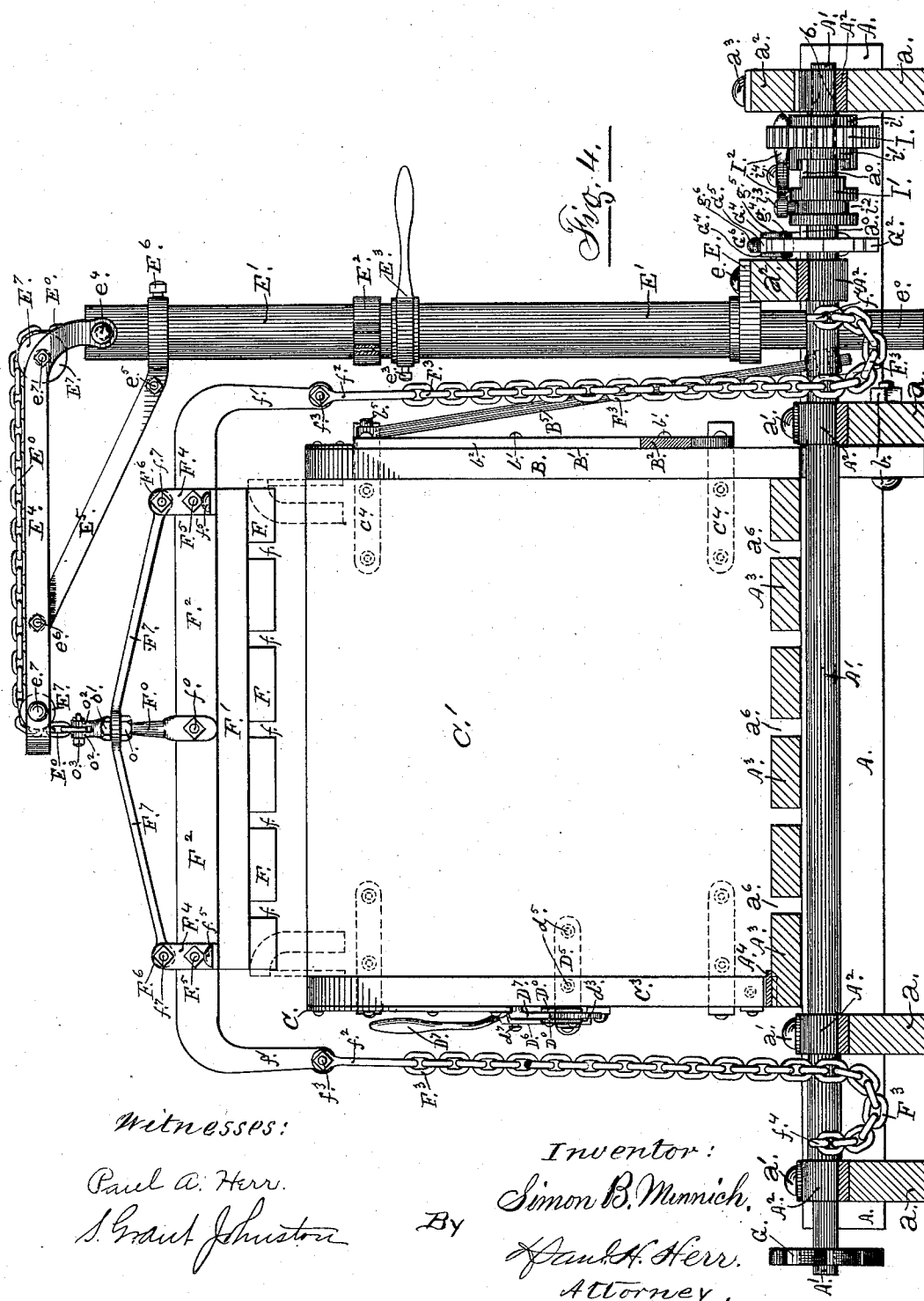
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4 Sheets—Sheet 3.

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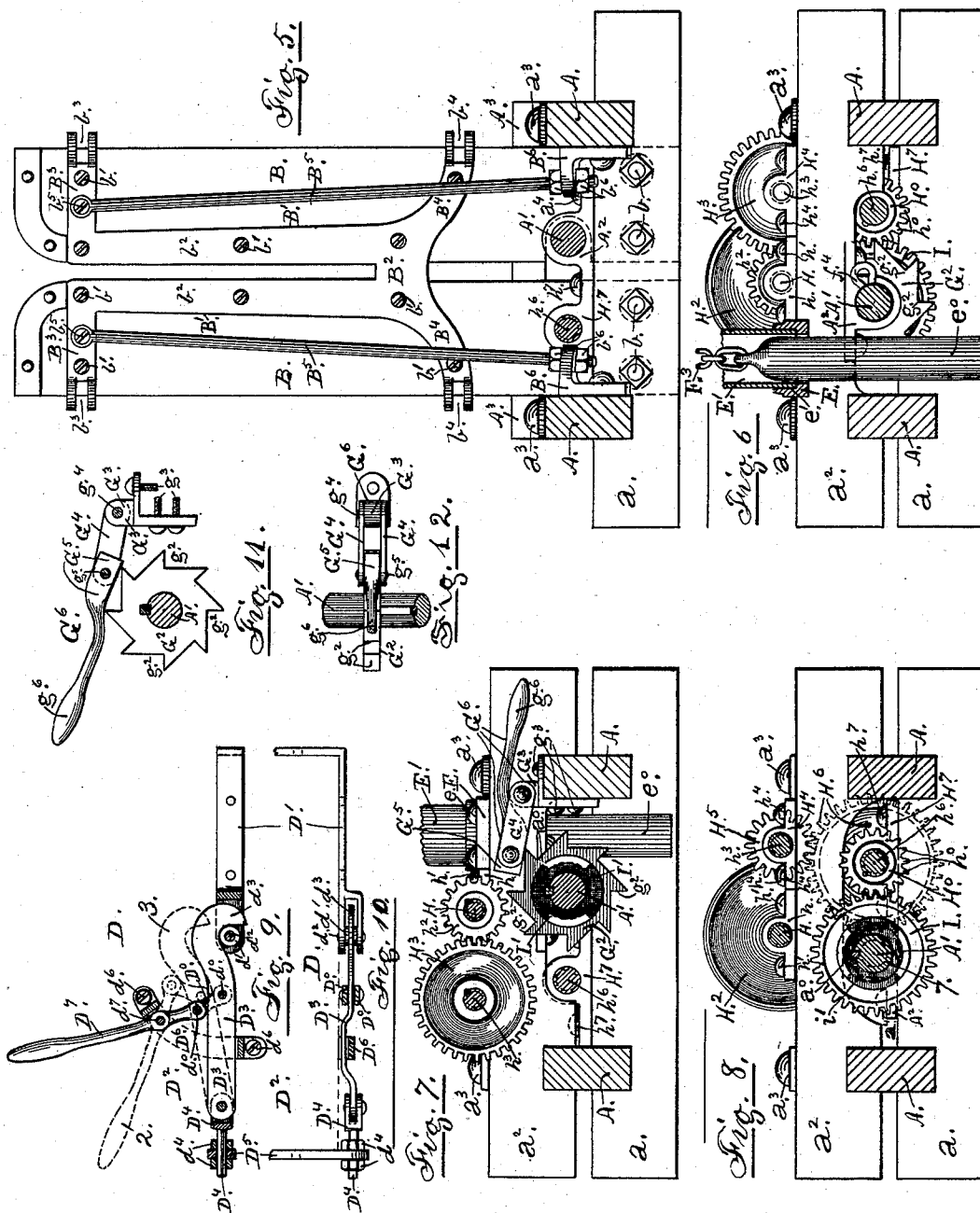
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Paul A. Herr,
Attorney.

UNITED STATES PATENT OFFICE.

SIMON B. MINNICH, OF LANDISVILLE, PENNSYLVANIA, ASSIGNOR TO MARY C. MINNICH, OF SAME PLACE.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 578,702, dated March 9, 1897.

Application filed June 21, 1895. Serial No. 553,514. (No model.)

To all whom it may concern:

Be it known that I, SIMON B. MINNICH, a citizen of the United States, residing at Landisville, in the county of Lancaster and State of Pennsylvania, 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.

This invention relates to improvements in a baling-press of that class in which the follower or pressing-platform is drawn down into the forming-case by means of chains or cables, one being on each side thereof, winding from their lower ends onto a horizontal shaft or windlass extending longitudinally underneath said case and adapted to be rotated in one direction by means of a reciprocating lever engaging a ratchet-wheel secured to one end of said shaft and kept from turning back by means of a pawl acting upon a similarly-disposed ratchet-wheel; or the shaft may be rotated by a constant circular motion conveyed by means of a pulley and gear-wheel train connected and disconnected with and from said shaft by means of a clutch-and-lever rigging applied thereto in the usual way, the same pawl and ratchet-wheel serving to keep the shaft from turning back.

The object of the invention is the production of a press by means of which such commodities as hay, straw, rags, cotton-waste, mill offal, and the like may be expeditiously reduced in bulk to any approved size, conveniently tied into bundles or bales in compact form for either storage or shipping, and readily removed therefrom when completed.

The elements of the invention will severally and specifically appear in the following description and will be separately and collectively set forth in the claims.

The purposes of the invention are attained by the means, mechanism, and devices illustrated in the accompanying drawings, similar reference-letters designating like parts throughout the several views, and in which—

Figure 1 is a plan of a baling-press embodying the elements of the invention with the pressing-platform and the upper portion of

the crane removed, while the shaft of the latter appears in horizontal section. Figs. 2 and 3 are respectively right and left hand end elevations of Fig. 1 with the removed portions restored and the crane-arm straight front and rearward in position. Fig. 4 is a vertical longitudinal sectional elevation of the portion lying practically above the line $x x$ in Fig. 1 with the restored portions in place as they appear in Figs. 2 and 3; Fig. 5, a sectional elevation from the right of the supporting-base lying to the left of the line $y y$ in Fig. 1 with the case sides, the crane, and its supporting-brace removed, showing the fixed back and supporting brace-bars in full; Fig. 6, a similar elevation from the left of the portion to the right of the line $y y$, showing the lower portion of the crane-shaft, its base-bracket, and the balancing-weight in position; Figs. 7 and 8 are similar elevations, respectively, of the portions on the left and on the right of the line $z z$ in Fig. 1; and Figs. 9, 10, 11, 12, 13, and 14 are views showing details in the construction.

Two longitudinal beams A, of approved dimensions, arranged parallel to each other, mutually recessed into the upper edges of prescribed cross-pieces a and firmly secured together by bolts or screws a' , constitute the supporting-framework of the press of this invention, the cross-pieces a being the feet upon which said framework stands, and similar cross-pieces $a^2 a^2$ are secured to the tops of the beams A A by bolts and screws a^3 at prescribed points near the right-hand end of the framework to support mechanism and devices to be hereinafter described. (See Figs. 1, 2, and 4.) A shaft A', of approved dimensions, is arranged longitudinally between the beams A and is journaled in bearings A², secured to the tops of the cross-pieces a by bolts or screws a^4 , a little above the center line $x x$ in Fig. 1, being adapted to be rotated by either reciprocating or circular motion, so as to draw the compressing-chains in the vertical plane of said center line.

Two upright pieces or standards B, of approved dimensions, have their lower ends, between the beams A, rigidly secured to the inner face of one of the intermediate cross-pieces a by bolts and nuts b . (Best shown in Fig. 4.)

These standards are of equal width and vertically a prescribed distance apart, forming a channel therebetween for the passage of the follower or press beam in performing its functions. Against their back faces is placed a metallic framework or iron body B' , and firmly secured thereto by bolts or screws b' , tapped and screwed home thereinto, forming a cross-bar B^2 to hold the pieces together, and side facings $b^3 b^2$ to the channel to prevent the follower-beam from abrading its edges, and the oppositely and outwardly disposed arms B^3 and B^4 , respectively, at its upper and lower ends have their extremities b^3 and b^4 bifurcated and rounded, forming portions of hinge-joints, whereby the side walls of the case, yet to be described, are hinged in place to said pieces, while two rods B^5 have their upper ends resting against the upper arms B^3 and firmly secured in place by screws or bolts b^5 , with their lower ends screw-threaded and passed through inwardly-projecting lugs B^6 , rigidly secured to the inner faces of the beams A , (best shown in Fig. 5,) with pairs of nuts b^6 on said screw-threaded ends, one above and the other below, and adapted to be screwed home onto the upper and under faces of each of said lugs, adapting said rods to be adjusted as to length to firmly brace the standards and to hold them always perpendicularly in position. These standards B , with the metal framework B' , and the rods B^5 constitute the fixed body, to which the swinging portions of the baling-case are hinged, holding said case always normally in position, and the bottom of the case consists of a number of rectangular strips or pieces A^3 , preferably made of wood and placed crosswise on top of the beams A , with their outer ends flush with the outer faces of said beams and their extremities rigidly secured in place by nails or screws a^5 , (best shown in Fig. 1,) with interstices or spaces a^6 between them (see Fig. 4) to receive the cords or ropes with which the pressed substance is tied to complete the bales.

The swinging portions C , two in number, are exact counterparts of each other, similar in construction but oppositely disposed. (See Fig. 1.) These portions consist of rectangular plates $C' C'$, of approved dimensions, to constitute the side walls of the case. (See Figs. 1 and 4.) Rigidly secured, in any approved manner, to the inner faces of their rearward edges are vertical strips $C^2 C^2$, equal in width to the thickness of the beams $A A$, above which they are placed, and closely fitted or jointed to the outer vertical edges of the pieces $B B$, before mentioned, to constitute with said pieces the rear end wall of the case, (see Figs. 1 and 2,) and also rigidly secured to the inner faces of their forward edges are vertical planks or pieces $C^3 C^3$ to constitute the forward end wall of the case, leaving a vertical interstice or space c between them for the passage of the forward end of the follower or press beam before mentioned, (see Figs. 1 and 3,) while underneath, at the forward end angles thereof,

these portions $C C$ are rigidly provided with inwardly-projecting hooks $c' c'$, one being at each angle, to engage the outwardly-projecting points or ends $a^7 a^7$ of a metal strip or plate A^4 , rigidly secured to the top of the forward bottom cross-strip A^3 , along the outer edge thereof, to hold the forward ends of the swinging portions $C C$ downwardly in place, keeping said ends from tilting up, (best shown in Figs. 3 and 4,) and the rear portion C , at the upper angles thereof, is provided with rigidly-secured and upwardly-projecting angle-irons $c^2 c^2$ to serve as stops, guiding the follower or press plate into the case to perform its functions. (See Figs. 1, 2, and 3.) To the outer faces, embracing the rearward angles of these portions, are angle bars or strips c^4 , rigidly secured thereto by bolts or screws c^3 , and the rearwardly-disposed ends of said strips are fitted into the bifurcated extremities b^3 and b^4 (see Fig. 5) and secured together by pins c^4 , (see Fig. 1,) whereby said swinging portions are hinged to said fixed back (best shown in Fig. 2) and adapted to be swung outwardly, as indicated by the arrows 1, even to the positions indicated by the dotted lines c^5 , completely opening the case, when the finished bale may be conveniently removed therefrom.

A clamp device D (best shown in detached side elevation and plan in Figs. 9 and 10) consists of two members D' and D^2 , horizontally placed and respectively secured to the right and left hand portions $C^3 C^3$ of the front end wall of the case. (Best shown in Fig. 3.) The right-hand member D' is a strap extending from about the center to the right-hand edge, where an angle end embraces the adjacent side of the case, being rigidly secured thereto by bolts or screws d' , and the other end is bifurcated and provided with a roller d' , pivoted between the wings of said bifurcated end by a pin d^2 and secured into said wings, and the left-hand member D^2 consists of a strap D^3 , provided at its inner end with a downwardly-disposed hook d^3 to engage said roller d' , holding the front ends of the swinging portions C of the case securely together and having its outer or rearward end pivoted between its wings to the bifurcated head of a bolt D^4 , having its shaft screw-threaded with clamp-nuts d^4 thereon and passed through an eye in the forward end of a strip D^5 , rigidly secured by bolts or screws d^5 to the outer face of the left-hand portion C of the case, one of the nuts d^4 being on either side of said strip D^5 and adapted to be screwed home thereon, whereby said bolt D^4 is adjustable as to length and adapted to keep said hook d^3 longitudinally in close engagement with said roller d' . (See Figs. 1, 3, and 9.) Over the inwardly-bent portion of the strap D^3 , Fig. 10, is placed an arched guide-strip D^6 , (best shown in Figs. 3 and 9,) and in having its extremities secured to the outer face of the adjacent portion C^3 of the case by screws d^6 serves to guide said strap D^3 in its upward

and downward motion, keeping it confined in position against said face and its hook d^3 in position to always positively engage the roller d' when said case portions C C are brought together or in position for baling, Figs. 10, 3, and 1. A lever-arm D^7 (best shown in Fig. 9) is placed underneath the guide and immediately fulcrumed thereto by a pin or screw d^7 , having its lower end connected with the strap D^3 by links D^0 D^0 , one being placed on either side thereof and having their extremities pivoted to said lower end and strap by screws or pins d^0 . (Best shown in Figs. 3, 9, and 10.) Said lever, when in the position indicated by full lines in the drawings, has its lower end in contact with the top of said strap D^3 , holding it pressed down and its hook d^3 firmly on the roller d' , securely keeping the swinging portions of the case from parting or opening while pressing or bale-forming is in progress, and when said lever is tripped to the dotted position 2 in Fig. 9 its lower end, by reason of said links, raises said strap to the dotted position 3, also in Fig. 9, lifting its hook d^3 from off said roller, when said case portions C C may be freely opened or swung outwardly in the direction of the arrows 1, before mentioned.

On the right of the case and at a prescribed point above the center line in Fig. 1 a bracket or brace plate E is rigidly secured to the upper edge of the adjacent cross-piece a^2 by bolts or screws e . (See Figs. 1, 2, 4, 6, and 7.) In the upper face of this plate is formed a circular socket or recess e' , into which is loosely placed to rotate therein the lower end of a tube or pipe E' to constitute the crane shaft or stand, and the bracket is made circularly hollow or open equal to the bore of the shaft (see Fig. 6) to give free passage to the balance-weight yet to be described.

A two-winged brace-arm E^2 , having a ring encircling the shaft at the fold of the wings and having its feet secured to the fixed back of the case by bolts or screws e^2 , serves to brace the crane at about the center of its stand, and a lever-arm E^3 , having a ring at one end embracing the shaft and rigidly secured thereto by a set-screw e^3 , serves to rotate the crane. (Best shown in Figs. 1, 2, and 4.) The arm E^4 of the crane consists of a strap of bar metal turned over at the forward end a little beyond the center of the case, (shown by the dotted lines in Fig. 1,) forming a horizontally-disposed fold, and its two limbs, rearwardly extending in two parallel vertical planes at a prescribed distance apart, have their rearward ends, downwardly curved and outwardly flared, rigidly secured to the upper end of the stand by bolts or screw e^4 . Braces E^5 E^5 , consisting of a strap of bar metal bent about the stand at a prescribed distance below its top and bound together by a bolt and nut e^5 , form a ring embracing said stand and rigidly secured thereto by a set-screw E^6 , and said braces, forwardly extending and upwardly sloping, have

their forward ends rigidly secured to the inner faces of the limbs of the arm by bolts and nuts e^6 . Between the limbs of the arm, near to the forward and rear ends thereof, are pivoted grooved pulleys or sheaves E^7 E^7 by means of studs e^7 e^7 , passed through said limbs and sheaves and secured in place by nuts screwed home onto their threaded ends. On these pulleys or sheaves is mounted a chain E^0 , adapted to move back and forth thereon, having suspended to its forward or upper end the press-beam and follower or press plate yet to be described and to its rearward or under end within the hollow of the crane-stand a weight e^0 to balance said beam and plate in whatever height they may be, the forward pulley being arranged to guide the chain in the vertical axis of the case and rearward one in the axis of the tube or pipe stand. (See Figs. 2, 3, and 4, but the weight and attached chain are best shown in Fig. 6.)

To the forward end of the chain E^0 is suspended the follower or press plate of the invention, (best shown in Figs. 3 and 4,) being somewhat less in length and breadth than are the same dimensions of the interior of the case, so as to be freely movable up and down therein or without rubbing or chafing against the inner sides thereof. A number of cross-pieces F, of approved dimensions, are arranged, similar in plan to those which constitute the bottom of the case, with interstices or spaces f between them for the passage of the tying-rope above the compressed body to form the bale. On the transverse center line of their upper faces they are rigidly secured in any approved manner to the under face of a longitudinal piece or sill F' , also of approved dimensions. These cross-pieces and sill are preferably made of wood, and taken together they constitute the base of the follower or pressing-plate. Lengthwise of the piece or sill F' on its longitudinal center line is placed the narrow edge of a beam F^2 of bar metal of approved dimensions, with its extremities projecting either way a prescribed distance beyond the back and front end walls of the case, where its outer ends are turned down, forming vertical limbs or arms f' , being practically perpendicular to the beam F^2 , and oblong open links or clevises f^2 , passed through the upper end links of chains F^3 , are pivoted at their open ends to the lower ends of the arms f' by bolts and nuts f^3 to connect the upper ends of said chains with said beam, while staples or eyebolts f^4 , engaging the lower end links of the chains F^3 and firmly secured into the body of the shaft or windlass A' , serve to secure the lower ends of said chains to said windlass. On top of the sill F' , even with the end edges thereof and against the vertical sides of the beam F^2 , are arranged L-shaped braces or brackets F^4 , having their horizontal limbs secured to the sill by bolts or screws f^5 and their vertical limbs secured to the beam by bolts and nuts F^5 , which limbs, extending above the beam,

are provided with inwardly-projecting side lugs f^6 , embracing the top of the beam to hold it down, and with upwardly-projecting side ears F^6 , between which are placed and firmly secured thereto, by bolts and nuts f^7 , the extremities of a brace or truss bar F^7 , having its center upwardly bent and upheld by a truss-post F^0 , whose bifurcated lower end straddles the beam F^2 and is secured thereto in place by a bolt and nut f^0 and whose threaded upper end, with a nut o thereon, is passed upwardly through said center, said nut contacting with the under side of the bar, and when screwed upward on said post serves to give to said bar the required tension, while on the upper end of the post, projecting above the bar a prescribed distance and firmly screwed home onto said bar, is a nut o' , having integral with its head or top two upwardly-projecting ears o^2 , between which is placed the upper or forward end link of the chain E^0 before mentioned, and a pin or screw o^3 , passed through said ears and link, serves to join these parts together, suspending the trussed beam with its connections from this end of the chain E^0 , the weight e^0 at the other end of the chain within the tubular stand serving to hold them at any desired height, and the crane itself in being rotated serving to horizontally carry them in any desired direction. (See Figs. 1, 2, 3, and 4.)

A ratchet-wheel G is rigidly secured to the left-hand end of the shaft A' , (see Figs. 1, 3, and 4,) having teeth g in its periphery, adapted to be engaged by a pin g' , centrally located between the two sides of the bifurcated end of the lever G' , (see Figs. 13 and 14, also dotted lines 4 in Fig. 3,) whereby said shaft is rotated to perform its functions by pressure on said lever in the direction indicated by the arrows 5. This lever being an element included in a former patent, Reissue No. 7,945, issued to me November 13, 1877, for a tobacco-press, is not introduced here as an element of this invention, but simply as the reciprocating means to rotate the shaft A' . In the former invention the pawl (not shown in the drawings) to keep the shaft from turning back is directly applied to the ratchet-wheel G .

Near to the right-hand face of the upper cross-piece a^2 , supporting the crane-shaft (see Figs. 1 and 4) and rigidly secured to the shaft A' , as by keying, is a ratchet-wheel G^2 , having angular teeth g^2 , (best shown in Fig. 11,) and opposite its upper or right-hand edge is an upwardly-projecting lug G^3 , having the wings of its L-shaped base rigidly secured to the top and inner face of the adjacent beam A by bolts or screws g^3 . (See Figs. 11 and 7.) To the lug, against the sides thereof, are pivoted the lower ends of link-bars G^4 by a screw or rivet g^4 , with its square or angular end slightly projecting forward beyond the free ends of the link-bars G^4 , and pivoted therebetween to said free ends by a screw or rivet pin g^5 is a lever-block G^5 , with its handle g^6

upwardly curving and rearwardly extending, resting normally on top of the lug G^3 .

The lug G^3 with the pivoted links G^4 and the lever-block G^5 constitute the pawl G^6 of the invention. This pawl G^6 , occupying the normal position indicated in Fig. 7, has its forward end adapted in engaging the radial edges of the ratchet-teeth g^2 to keep the wheel from turning farther in this direction, holding the shaft A' from rotating backward as against any strain that may be brought to bear upon it in pressing, and when the lever-block is raised by lifting its handle g^6 and tilted over to the position indicated in Fig. 11 said handle will extend over the top of the wheel, Fig. 12, and the block in lying on top of the teeth forms an inclined or sloping plane over them, preventing engagement or checking, allowing the wheel and shaft to rotate freely in any direction.

The press of this invention may be operated solely by hand by means of the lever G' , applied to the ratchet-wheel G , as shown, but it may also be operated by a continuous or rotary motion, as will be shown. To this end a driving-shaft H is centrally arranged and journaled in bearings h , secured to the top faces of the upper cross-pieces a^2 a^2 by bolts or screws h' . (See Fig. 1.) On the forward end of this shaft, beyond the framework, two pulleys H' and H^2 are mounted, H' loosely to rotate thereon without turning the shaft and H^2 rigidly affixed to rotate it, while near to its rearward end is rigidly secured a pinion h^2 , having teeth to intermesh with those of a gear-wheel H^3 , rigidly secured to a similar shaft h^3 , (best shown in Fig. 7,) which shaft is journaled in bearings H^4 , also secured to the upper faces of the cross-pieces a^2 a^2 by bolts or screws h^4 , while on the outside of the framework, Fig. 1, there is rigidly secured to its outer end a pinion H^5 , having teeth to intermesh with those of a gear-wheel H^6 , rigidly secured to the outer end of a shaft h^6 , (best shown in Fig. 2,) which shaft, extending rearward, is journaled in bearings H^7 , secured to the upper faces of the under cross-pieces a by bolts or screws h^7 , (see Figs. 1, 5, and 8,) and near to the forward end of this shaft, just inside of the adjacent cross-piece a and rigidly secured thereto, is a pinion H^0 , having teeth h^0 to intermesh with those of a gear-wheel I , having on its outer face a hub extension i and on its inner face integral therewith a clutch member i' , said wheel I being loosely mounted on the forward reduced end of the shaft A' , as is indicated by the dotted lines 6 in Fig. 4 and the dotted circle 7 in Fig. 8, rotating freely thereon without turning said shaft. Mounted on the shaft A' , between the wheel I and the ratchet-wheel G^2 and adapted to engage the clutch member i' , is a shifting clutch member I' , kept from rotating thereon by a feather a^0 , extending from said ratchet to said gear-wheel and seated in said shaft, while in its periphery is an annular groove i^2 , engaged by a pin i^3 in the forward end of a lever-arm

I², pivoted centrally by a pin or screw ⁷⁴ to the top of a bearing-plate I³, secured to the upper face of the adjacent beam A by bolts or screws ⁷⁵, (see Figs. 4 and 1,) and said lever-arm is adapted to move the clutch member I' back and forth on the shaft A' into and out of engagement with the clutch member i', whereby said wheel I is secured to said shaft A', rotating it to perform its functions, and again released therefrom, the pawl, as described, keeping it from turning back.

Having now described the invention and ascertained the manner in which it performs its functions, what is considered new, and desired to be secured by Letters Patent, is—

1. In a press of the character described having a base-framework as shown, with the baling-case having the rear-end-wall portions rigidly secured to said framework as shown, and the swinging side and front-end wall portions as described having their inwardly-projecting rear-end edges hinged to the outer edges of said rigid rear-end-wall portions, of the clamp device comprising the strap, D', with the inner end roller, d', rigidly secured to one of the swinging wall portions, as shown; the strap, D³, having the hook, d³, at one end and the other end pivoted to the head of the bolt, D⁴, as shown; the bolt, D⁴, having its screw-threaded shaft with the clamp-nuts, d⁴, thereon, adjustably secured to the forward end of the strap, D⁵, as shown; the strap, D⁵, having its rearward end rigidly secured to the side of the other swinging wall portion, as shown; the arched guide-strip, D⁶, placed over the strap, D³, having its extremities secured to the front wall of said swinging portion as shown; the lever-arm, D⁷, passed underneath said guide-strip and pivoted thereto, as shown; the links, D⁰ D⁰, having their upper ends pivoted to the lower end of said lever-arm, D⁷, and their lower ends pivoted to said strap, D³, as shown; all substantially as and for the purpose hereinbefore set forth.

2. In a press of the character described,

with the base-framework having the longitudinal beams and the under and upper cross-pieces secured together as shown; the baling-case, with the fixed back and the hinged side and front-end wall wings, secured in position to said framework; and the windlass underneath the case, with the ratchet-wheel and pawl to keep it from turning, and journaled in bearings also secured to the framework; of a bracket-plate with a ring-socket in its upper face and rearward of the case secured to the adjacent upper cross-piece of said framework, a tubular shaft having its lower end rotatably seated in the socket of said bracket, a two-limbed brace-arm having a ring at one end loosely embracing the shaft, and the feet of its limbs rigidly secured to the fixed back of the case, and a lever-arm having one end rigidly secured to said shaft to rotate the same, a horizontal crane-arm having two parallel limbs with their rearward ends rigidly secured to the upper end of the shaft, inclined brace-bars having their lower ends rigidly secured to the body of the shaft and their upper ends to the limbs well toward their forward ends, grooved pulleys near to the forward and rear ends of the crane-arm pivoted between the limbs thereof, a chain mounted on the pulleys and having its ends downwardly depending the forward one at the axis of the case and the rearward one in the hollow of the shaft, a balance-weight secured to the extremity of the said rearward end and the press-beam with the attached follower-plate suspended from the extremity of the said forward end, and chains connecting the extremities of the said press-beam with the body of the windlass, all substantially as described and for the purpose hereinbefore set forth.

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

SIMON B. MINNICH.

Witnesses:

DANIEL H. HERR,
I. C. ARNOLD.