(No Model.) 3 Sheets—Sheet 1.

E. C. SOOY.

BALING PRESS.

No. 410,679. Patented Sept. 10, 1889.

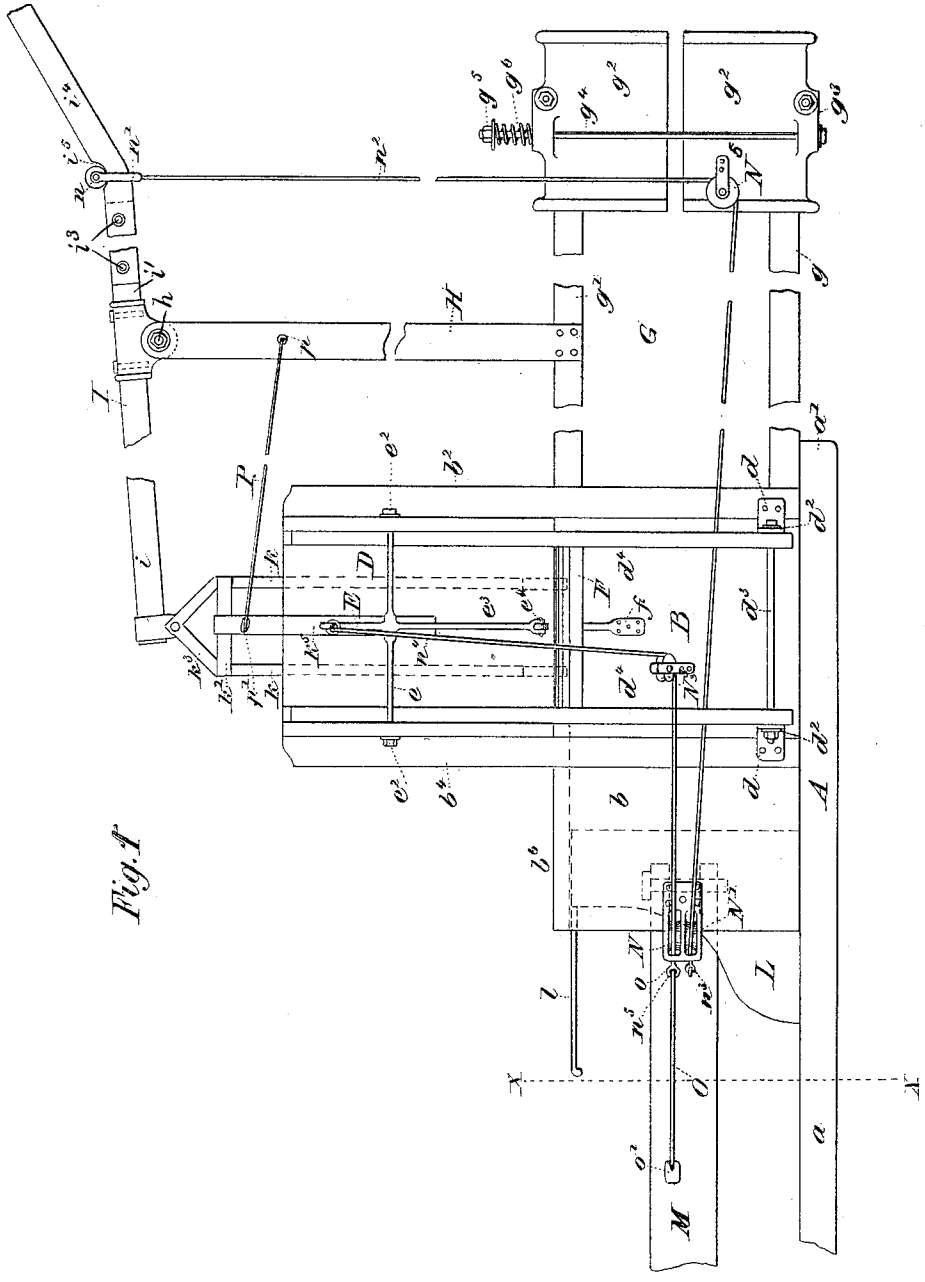


Fig. 1

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Fig. 2

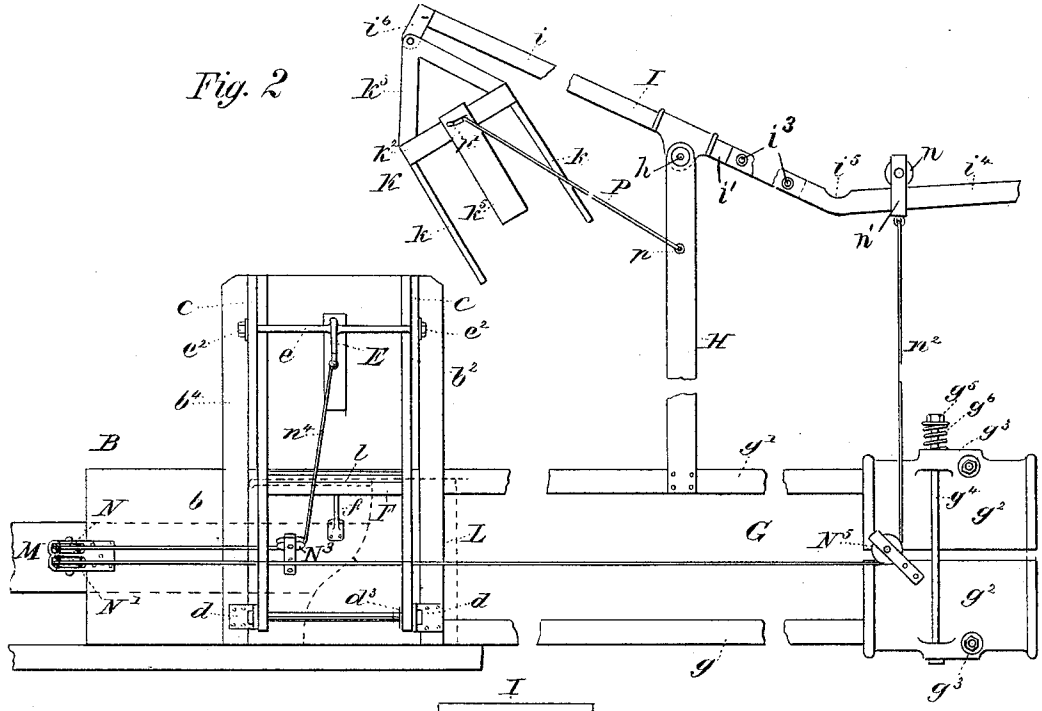
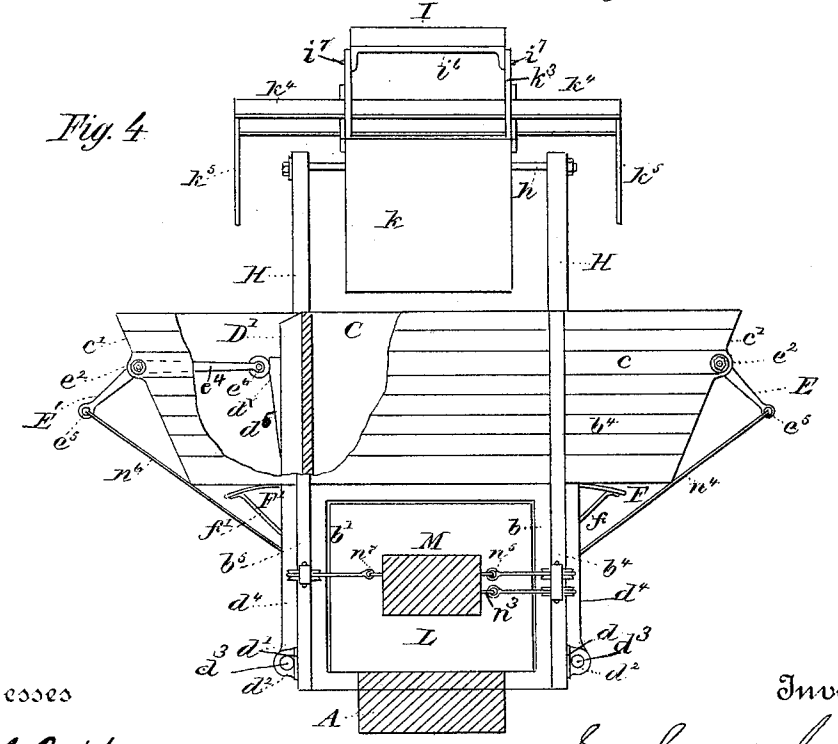


Fig. 4



Witnesses

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Fig. 3

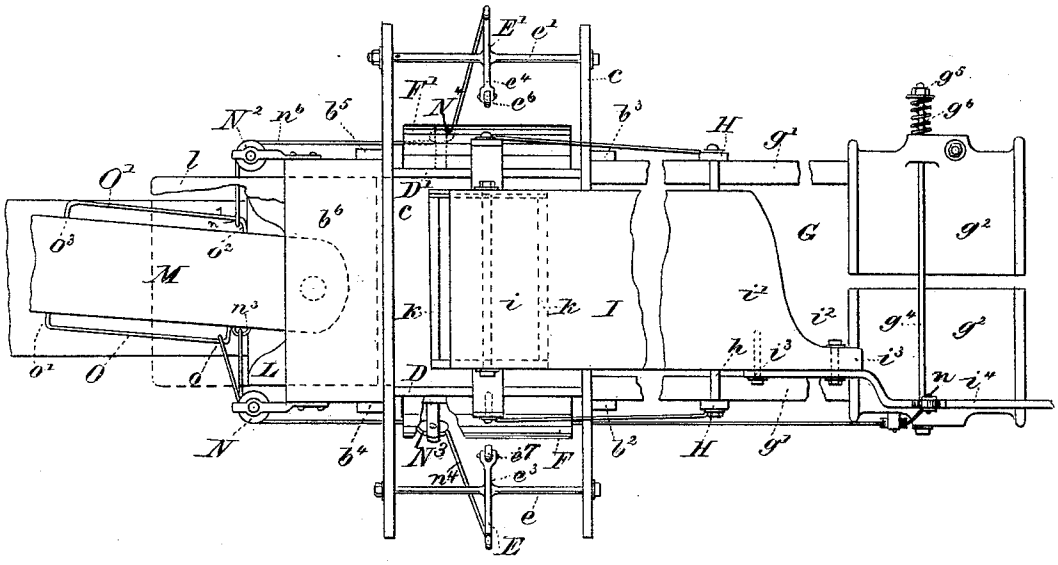
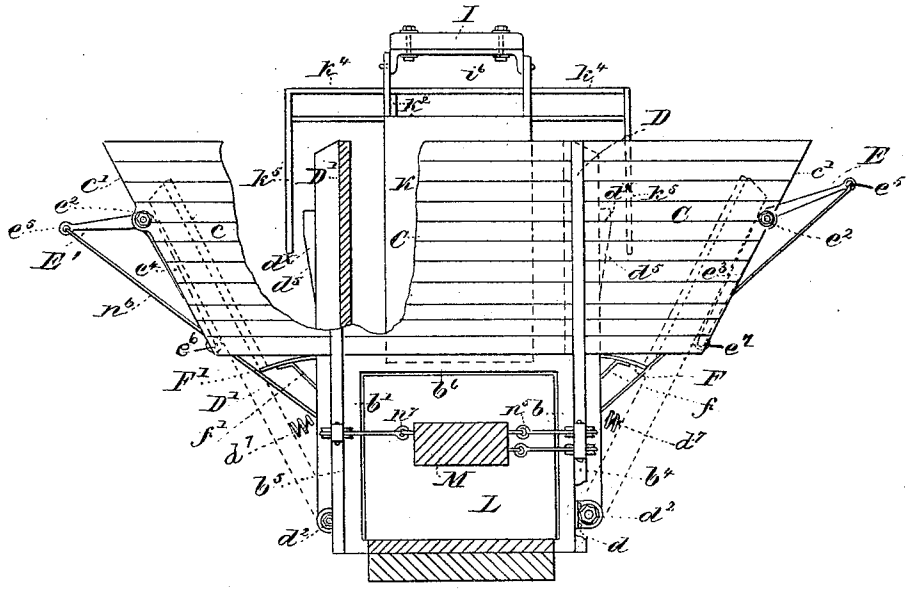


Fig. 5



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UNITED STATES PATENT OFFICE.

EPHRAIM C. SOOY, OF KANSAS CITY, MISSOURI.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 410,679, dated September 10, 1889.

Application filed August 14, 1888. Serial No. 282,716. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM C. SOOY, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Baling-Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of my invention is to effect a primary compression of the material to be baled anterior to its compression by the plunger in the press and by means of the power communicated to the plunger; and it consists in the novel construction and combination of parts, which will first be fully described, and then specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the baling-press, showing the plunger in a retracted position and the weight lowered within the elevated chamber. Fig. 2 is a side elevation of the press as seen in Fig. 1, showing the plunger within the feed-chamber and the weight above and drawn aside from the opening in the elevated receptacle. Fig. 3 is a plan view of the press as seen in Fig. 1. Fig. 4 is an end view of the press from the position indicated by the line $x\ x$ on Fig. 1, with the pitman and base in section, the weight in an elevated position, and a portion of the ends of the elevated receptacle broken away, showing in full lines the vibrating side and side-closing lever. Fig. 5 is a similar view to that seen in Fig. 4, showing the weight within the elevated receptacle and the side-closing levers thrown down by the depressing-arms on the weight.

In the construction of my improved press, A represents a horizontal platform or bed, which is made narrow in width and of the proper length to support the respective feed and baling chambers. Extending from the opposite longitudinal sides of the bed A in a vertical relation are the sides $b\ b'$ of the feed-receptacle B. Rigidly attached to the exterior portions of the sides $b\ b'$, at the end of the feed-receptacle B, and also at an intermediate point from the opposite ends of said sides $b\ b'$, are the standards $b^2\ b^3\ b^4\ b^5$, which extend in height a sufficient distance to support the ends of the elevated receptacle hereinafter described.

To the feed-receptacle B, and extending in the longitudinal direction of and upon the portion a' of the bed A and in open communication at one end with said receptacle, is connected the baling-chamber G, the sides of which consist of the parallel upper angle-irons $g'\ g'$, pivotally attached to the inner sides of the standards $b^2\ b^3$ at one end in line with the upper edge of the sides $b\ b'$ of the feed-receptacle B, and the lower angle-irons $g\ g$, which are also attached to the inner side of the standards $b^2\ b^3$ and rest upon the portion a' of bed A. To the outer sides and extreme ends of the angle-irons $g\ g\ g'\ g'$, opposite to those attached to the standards $b^2\ b^3$, are attached rigidly the angle-plates $g^2\ g^2\ g^2\ g^2$, which extend a short distance beyond said ends of the angle-irons $g\ g\ g'\ g'$ in a longitudinal direction and in a transverse relation to said angle-irons, said plates being made to approach each other to within a short distance. Upon the sides of the plates g^2 are cast the lugs g^3, which are perforated in a transverse relation to the angle-irons $g\ g'$ and receive the adjusting-bolts $g^4\ g^4$, the upper ends of which bolts are screw-threaded and provided with the adjusting-nuts g^5, and between said nuts and the said lugs around said bolts g^4 are spiral springs g^6.

In the feed-chamber B, between the sides b b', is placed the reciprocating plunger L, and to said plunger is pivotally connected one end of the pitman M, which is operated by suitable motive power in the well-known manner. A portion of the feed-chamber B above the plunger L is inclosed by a top b^6, extending from one side b to an opposite side b' of said chamber and from the standards $b^4\ b^5$ nearly to the ends of said sides. To the top portion of the plunger L is attached a horizontal plate l of the same width as said plunger L, and which extends horizontally in the longitudinal direction of pitman M as far as is necessary to close the feed-opening in the chamber B.

In a transverse relation to the sides b b' of the feed-chamber B, and rigidly attached to the inner side portion of the standards b^2 b^3 b^4 b^5, are the opposite vertical ends c c of the elevated receptacle C, which ends rest upon the upper longitudinal edges of the feed-chamber B and extend the proper height to afford a deep receptacle for the reception and primary compression of the loose material to be baled. The said ends c c in length are extended beyond the plane of the vertical sides b b' of chamber B so far as to permit the vibrating sides hereinafter described to be opened to a wide extent to receive the material in bulk and within the limits of said ends c c, which ends are cut away at an angle inclined in the direction of the bed A of the press.

To the lower end and outer side portions of the respective standards b^2 b^3 b^4 b^5 are attached the bearing-plates d d', the portions d^2 of which plates extend at right angles and are perforated to receive the horizontal rods d^3 d^3. To the said rods d^3 are pivotally attached the lower ends of the vibrating bars d^4 d^4, which bars extend in height an equal distance to that of the ends c c of the receptacle C and are placed in pairs on opposite sides of chamber B, between said ends c c. To the inner sides of the respective pairs of vibrating bars d^4 d^4 are attached rigidly the side-closing portions D D′ of the receptacle C. Extending laterally from the exterior portion of the sides b b' at the upper edge portion and in a downwardly-curved plane between the ends c c of the receptacle C, and as far outwardly as the sides D D′ are permitted to vibrate, are the fixed guard-plates F F′, which are supported beneath by the rods f f, which extend from said plates F F′ to the respective sides b b' of chamber B. Near the lower ends of the bars d^4 d^4 and to the inner side of said bars, opposite the sides b b' of chamber B, is attached one end of the spiral springs d^7 d^7. The opposite ends of said springs extend to and are compressed against the said sides b b' when the bars d^4 d^4 are moved to a vertical position. Through the opposite ends c c of the receptacle C, near the inclined side portions and outside of the bars d^4 d^4, are inserted the rock-shafts e e' and retained by the nuts e^2 e^2, upon which shafts are the bell-crank levers E E′, the end portions e^3 e^4 of which constitute arms and extend in the direction of the outer side portion of the vibrating sides D D′, and are provided with the anti-friction rollers e^6 e^7. The opposite ends of the bell-crank levers E E′ are provided with transverse perforations e^5. Upon the outer side portion of the sides D D′, in the path of the rollers e^6 e^7 on the bell-crank levers E E′, is attached in a vertical position an abutting strip $d^\times$, the outer side portion of which is inclined at an angle at d^5 converging toward the bed A of the press. Fixedly attached to the opposite angle-bars g' g' of chamber G, and at a point equally distant from the standards b^2 b^3 and the extreme delivery end of the said chamber G, are the vertical standards H H, which extend in height an increased distance above the said standards b^2 b^3, and so far as to afford a fulcrum for the weight-elevating beam, hereinafter described.

In a transverse relation to and through the upper ends of the standards H H is inserted the rock-shaft h. Upon the rock-shaft h is mounted an oscillating beam I, one end portion of which is nearly the width of chamber G and extends to a point in a substantially-horizontal direction over the chamber C centrally between the standards b^2 b^3 b^4 b^5. The opposite end i' of the beam I is contracted narrowly in width, as at i^2, toward one longitudinal side, and to said side is attached, by means of the bolts i^3 i^3, the bar i^4, which bar is bent upwardly at an obtuse angle to the beam I and extends to the end of the baling-chamber G. In the upper side portion of the bar i^4, in the angle formed by the said bar and beam I, is made a transverse curved depression i^5.

To the extreme end portion of the beam I, above the receptacle C, is rigidly attached in a transverse relation a plate b^6, having lugs i, i^7 at its opposite ends. To said lugs i^7 i^7 are pivoted in opposite relation the triangularly-shaped supports k^3 k^3, and to the horizontal portion k^2 of said supports is rigidly attached the upper ends of the plates k k of the weight K, which plates are adapted to enter the opening in the receptacle C and extend, when the weight-supporting end of the beam is depressed, within the said receptacle to the feed-opening in chamber B.

Attached rigidly to and extending in a transverse relation and outwardly from the horizontal portions k^2 k^2 of the supports k^3, a short distance beyond the vertical plane of the sides b b' of the feed-chamber B and in a vertical line with the inclined strips $d^\times$ on the vibrating sides D D′, are the supporting-bars k^4 k^4, to the extreme outer ends of which bars are attached rigidly the upper ends of the depending arms k^5 k^5, which are shorter than the plates k k of the weight K. In the upper end of one of the arms k^5, near the support k^3, is made a transverse slot p'. To the standard H, in line with said arm k^5, is pivotally connected one end of a rod P, the opposite end of which rod extends to the bar k^5 and is bent at right angles and inserted in said slot p'. To the opposite sides of the pitman M, near the end which is connected with the plunger L, are secured at proper distances apart the respective lugs o o' and o^2 o^3, and to said lugs are rigidly attached the respective opposite ends of the horizontal rods O O′.

Two sheaves N N′ are attached, one a short distance below the other, in a horizontal position to the outer side and end portion of the feed-chamber B, in line with the pitman

M. To the opposite side of the said chamber B is attached in a similar manner a sheave N^2. Upon the outer portion of the sides $b\,b'$ of chamber B and to said sides are attached in line with the pitman M the horizontal sheaves or blocks N^3 N^4, the latter sheave being shown in dotted lines, Fig. 3. To the angle-plate g^2, at the delivery end of the chamber G and upon the side in line with the sheaves N N', is attached a sheave N^5, which in position is beneath the bar i^4 of beam I. Upon the bar i^4 is a traction-roller n, pivoted between the depending hanger-plates n'. To the lower end of the hanger-plate n' is connected one end of a rope n^2, which extends under sheave N^5 and thence to and over sheave N' on the side of chamber B, and the opposite end attached to a staple n^3, fixed to the side of the pitman M directly beneath the lug o, which lug supports the rod O. Upon the same side of the press, and to the perforated end e^5 of lever E on shaft e, is attached one end of a rope n^4, the opposite end of which extends in a downward direction under sheave N^3, thence to and over sheave N on the feed-chamber B, the opposite end being attached to a traveler-ring n^5 on the rod O on pitman M. Upon the opposite side of the press and of the feed-chamber B, and to the perforated end e^5 of the bell-crank lever E', is attached one end of a rope n^6, which is passed under sheave N^4, thence over sheave N^2 on the feed-chamber B, its opposite end being attached to a traveler or ring n^7 on the rod O' on pitman M.

In the operation of the press the plunger L is retracted to the end of chamber B opposite to that connected with the baling-chamber G, and the weight K lowered within the feed-receptacle C to a point a short distance within the feed-opening of chamber B. The vibrating sides D D' are moved into a vertical position, and the end portions e^3 e^4 of the bell-crank levers depressed and thrown aside from the said sides D D'. Power is then applied to pitman M, and the plunger L is forced in the direction of the opening in the baling-chamber G. In this movement power is exerted only upon the rope n^2, and the weight K is elevated above and thrown by rod P to one side of the opening in the receptacle C. The material to be baled is then deposited in large quantities within the elevated receptacle C, and the sides D D' vibrate outwardly to admit the material and rest against the rock-shaft e e'. In the completion of the stroke of the plunger, which is forced a short distance within the baling-chamber G, the travelers n^5 n^7 on rods O O' are brought sharply against the lugs o' o^3 on pitman M, and the power is applied to ropes n^4 n^6, and the bell-crank levers E E' are operated to throw the vibrating sides D D' into a vertical position, and the intermediate material is compressed within the receptacle C, and upon the rebound of the plunger L the weight K descends and drives the compressed material through the feed-opening within the baling-chamber B, and in the same movement the arms of the bell-crank lever are thrown aside from the sides D D'. In the readvance of the plunger toward the baling-chamber G the weight K is uplifted and the sides D D', which are free from the control of the depending arms e^3 e^4, are vibrated in opposite directions against the rock-shafts e e' by the expansion of the springs d^7, which springs are compressed as the sides D D' are moved in the manner described. When the sides D D' of chamber C are against the rock-shafts e e', the material which would otherwise fall outside the press is retained by the plates F F', and upon the elevation of said sides the material is compressed within the receptacle C, and this compression is effected at all times in degrees and without shock to the vibrating sides.

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

1. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening, vibrating bars pivotally attached at their lower ends to the sides of said feed-chamber a suitable distance below the said feed-opening, sides to said elevated receptacle attached to said bars and adapted to vibrate to and from said feed-opening in the arc of a circle, and laterally-extended curved plates attached to the side of said feed-chamber beneath said vibrating sides, as and for the purpose described.

2. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening and laterally-extended end portions, laterally-vibrating sides to said elevated receptacle, and a rock-shaft on each of said extended portions of said ends, a bell-crank lever on each of said rock-shafts adapted to move said sides into a vertical position, and elevating-ropes connected with said bell-crank levers and said plunger, as and for the purpose described.

3. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening and laterally-extended end portions, and laterally-vibrating sides to said elevated receptacle, rock-shafts having bell-crank levers on said extended portion of said ends, and an inclined projection on said vibrating sides in the path of the respective

ends of said bell-crank levers, for the purpose described.

4. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening and laterally-extended end portions, laterally-vibrating sides to said elevated receptacle, rock-shafts on said extended portions of said ends, and bell-crank levers on said rock-shafts having anti-friction vibrating end portions, an inclined projection on said sides in the path of the anti-friction ends of said bell-crank levers, and elevating-ropes connected with said bell-crank levers on said rock-shafts and with said plunger, for the purpose described.

5. In a baling-press, the combination, with the feed-receptacle for the material to be baled provided with a feed-opening, of a reciprocating plunger, an elevated receptacle over said feed-chamber, having an opening registering with said feed-opening, a baling-chamber having an opening communicating with said feed-chamber in the direction of the path of said plunger, a suitable standard on said baling-chamber, and an oscillating beam on said standard, extending at one end to a point over the opening in said elevated receptacle, a material-ejecting weight pivoted upon the said end of said beam, adapted to enter the opening in said elevated receptacle, and a rod pivotally attached at one end to said standard and at its opposite end to said weight at a described angle to said beam, for the purpose described.

6. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger, a pitman provided with traveler-rods and travelers on said rods in the rear of said plunger, an elevated receptacle over said feed-chamber, having an opening registering with said feed-opening, and a baling-chamber in communication with said feed-chamber and in the line of the path of said plunger, standards upon said baling-chamber extending above said elevated receptacle, and an oscillating beam on said standards, having one end portion extending to and over the said opening in said elevated receptacle, and provided with a weight pivotally attached thereto and adapted to enter said elevated receptacle, and an upwardly-inclined bar on the opposite end portion of said beam and a roller on said bar, sheaves on said feed and baling chambers, and a cable attached to said roller on said beam and extending through said sheaves and attached to said travelers on said pitman, for the purpose described.

7. In a baling-press, the combination, with the feed-chamber for the material to be baled having a feed-opening, of a reciprocating plunger and a baling-chamber in communication with said feed-chamber, a pitman provided with longitudinal rods and travelers in rear of said plunger, an elevated receptacle over said feed-receptacle, having its opening registering with said feed-opening and provided with extended end portions and laterally-vibrating sides, rock-shafts on said extended end portions of said ends, and arms on said shafts adapted to elevate said sides and levers on said rock-shafts, standards on said baling-chamber extending above said elevated receptacle, and an oscillating beam on said standards having one end portion provided with a pivotally-attached material-compressing weight and extending over the said elevated receptacle, and its opposite end portion provided with an upwardly-inclined arm, laterally-extended arms on said weight adapted to move into the path of said arm on said rock-shaft, suitable sheaves on said baling-chamber and said feed-receptacle, and a cable attached to said roller on said beam and extending through said sheaves and attached to said travelers on said pitman, for the purpose described.

8. In a baling-press, the combination, with the feed-chamber for the material to be baled having a feed-opening, of a reciprocating plunger, a baling-chamber having an opening in communication with said feed-opening and in the line of the path of said plunger, a pitman on said plunger, and rods on said pitman provided with retarding ends, an elevated receptacle over said feed-chamber, having its opening registering with said feed-opening and laterally-extended portions, laterally-vibrating compressing sides to said elevated receptacle, and rock-shafts on said extended portions of said end, having bell-crank levers adapted to move said sides into a vertical position, standards on said baling-chambers extending above said elevated receptacle, and an oscillating beam on said standards having one end provided with a compressing-weight pivotally attached thereto and extending to and above said feed-receptacle, arms on said weight adapted to move into the path of the arms on said rock-shaft, and an upwardly-inclined notched arm on said beam opposite to that provided with said weight, and a roller on said arm, sheaves on said baling and feed chambers, and cables attached, respectively, to said roller on said beam and to said pitman and also to the bell-crank levers on said rock-shaft, and the rods on said pitman, substantially as and for the purpose described.

9. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber provided with an opening registering with said

feed-opening and laterally-extended end portions, laterally-vibrating side bars adapted to support the sides of said elevated receptacle, pivoted at their lower ends to the sides of said feed-chamber, rock-shaft on said extended end portions of said elevated receptacle, provided with side elevating bell-crank levers, and springs between said vibrating bars and the sides of said feed-chamber, for the purpose described.

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