(No Model.)

E. C. SOOY.

BALING PRESS POWER.

No. 456,239. Patented July 21, 1891.

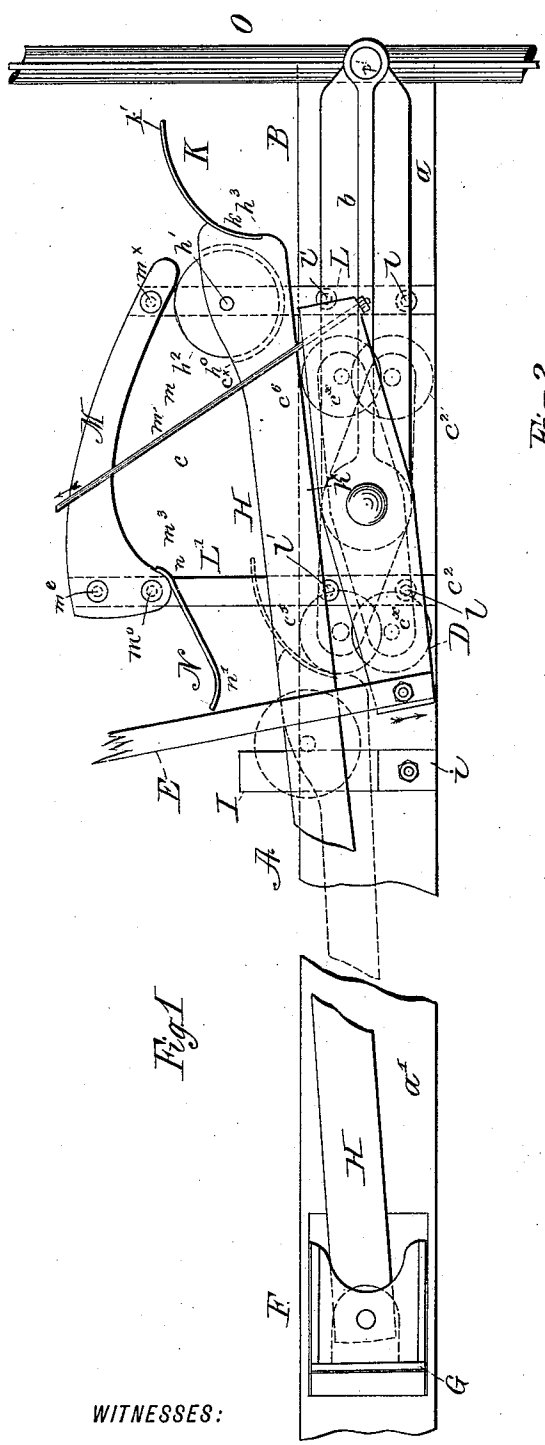


Fig. 1.

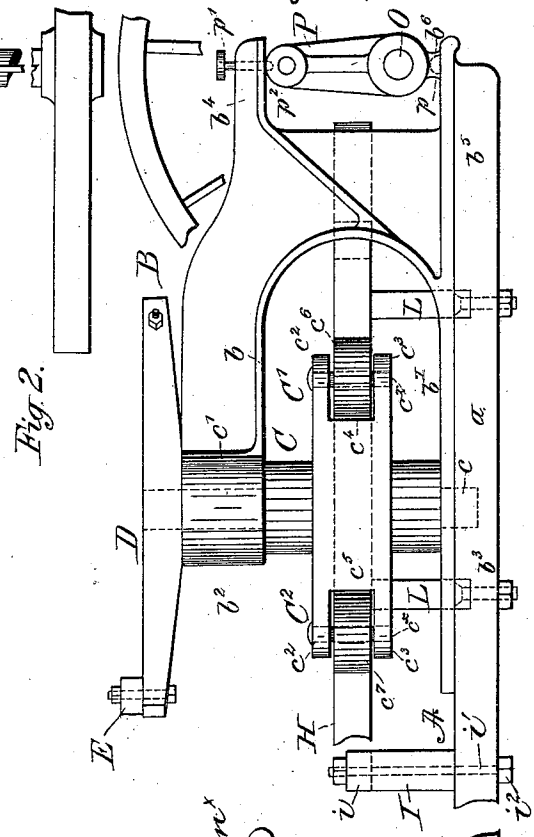


Fig. 2.

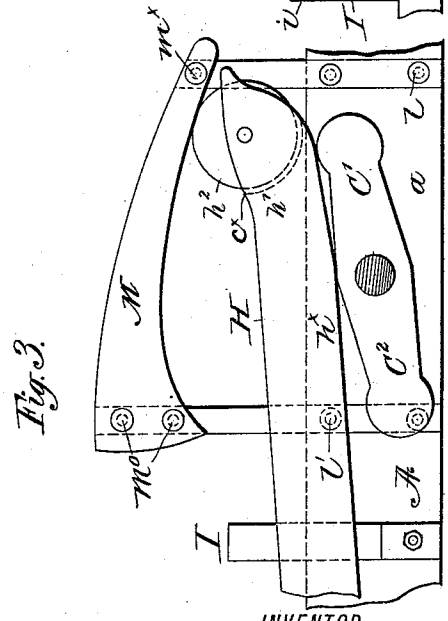


Fig. 3.

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BALING-PRESS POWER.

SPECIFICATION forming part of Letters Patent No. 456,239, dated July 21, 1891.

Application filed July 15, 1889. Serial No. 317,533. (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 thereof, such as 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.

In Letters Patent of the United States for an improvement in baling-presses granted to me on the 18th day of December, A. D. 1888, No. 394,623, the initial power of the lever-arms to operate the pitmen is applied to the side of the rebounding pitman.

The objects of the present invention are, first, to draw the vibrating end portion of the rebounding pitman disengaged from one lever-arm into engagement with the other, and, second, to relieve the guide from shock in the rebound of the pitman.

My invention further 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 plan view of my improved horse-power press, showing the position of the pitman and lever-arm at the beginning of the stroke and in the dotted lines at the end of the stroke or point of disengagement, also showing a portion of the feed-receptacle, the plunger, the curved guide for the pitman, the yoke, and the draft-pole connected with the yoke, having the extended end portion broken away. Fig. 2 is a detail side elevation of the operating mechanism, with the feed-receptacle and plunger removed. Fig. 3 is a modified plan view of the operating mechanism, showing a detail view of the bed with the yoke, upper portion of the shaft-bearings and shaft removed, a portion of the pitman with its roller, the lever-arms with the roller removed therefrom, the curved guide, and with the springs removed from said guide and from the end of the pitman.

Similar letters of reference indicate corresponding parts in all the figures.

In carrying out my invention A represents a horizontal platform or bed, which is made narrow in width and of a suitable length to support the power-shafts and feed-receptacle. Upon the extreme forward end portion a of the said bed A is rigidly secured a U-shaped casting or support B, the upper portion b and the lower portion b' of which are parallel and extend the requisite distance in the direction of the opposite end portion a' of the said bed. Through the extreme end of the upper portion b of the said support B is made a vertical opening or journal-bearing b^2, and in the lower portion b' of the said support B, in a vertical line with the said bearing b^2, is made a similar bearing b^3. Between the said portions b b' of the support B is placed in a vertical position a rotating shaft C, upon one end of which is a short journal c, which enters the bearing b^3 in the portion b' of support B, and upon the other end is a journal c', which extends through the vertical opening b^2 in the portion b of the said support, and to said journals above the said portion b of said support is rigidly attached a yoke D, both ends of which yoke extend an equal distance from said journal c'.

To one end of yoke D is pivotally attached one end portion of a horizontal draft-pole E, and to the other end of said yoke is attached one end portion of a short brace-rod e, the other end of which rod extends in the direction of and at an angle to said pole and is attached to said pole at a point a short distance from its pivotal point of attachment to yoke D in the direction of the other end of said pole, so as to relieve the pole from strain.

The horse or other power is attached to pole E and made to describe a movement in the line of a circle, and rotation is thus imparted to shaft C.

To the shaft C, between the portions b b' of the support B, are rigidly attached the lever-arms C' C^2, which constitute a double-armed lever, and which arms extend in one line of direction in the line of the diameter of shaft C and an equal distance from both sides of said shaft. The extended end portion of each one of the arms C' C^2 is forked at c^2 c^3, between which forked ends are pivoted on pivots $c^\times$ the anti-friction rollers c^6 c^7. Upon the extreme end portion a' of the bed A is attached the feed-receptacle F for the recep-

tion of material to be baled, and in said receptacle is placed the reciprocating plunger G.

To the plunger G is pivotally attached one end of the pitman H, the other end of which pitman is made to extend in the direction of and upon one side of the shaft C, so that in the rebound of said pitman its inner edge portion will come into contact with the lever-arms C′ C².

In a transverse direction to and upon the bed A of the press upon the side of shaft C and the feed-receptacle F is a stationary horizontal block I, which supports the vibrating end of the pitman H, and one end of which extends a short distance beyond the longitudinal side of the bed A of the press, and in height to a point nearly in line with the under side portion of the lever-arms C′ C². The pitman H consists of a longitudinal bar of equal thickness in a vertical direction, and from the end connected with the plunger to within a short distance of the other end, which reciprocates past the shaft C, is uniform in width. The inner longitudinal edge portion $h^{\times}$ of the pitman, which plays near shaft C, extends in one direct line from its pivotal end to the extremity of the other end. The other or outer longitudinal edge portion of the pitman is parallel with the inner edge from the pivotal end of said pitman on plunger G to within a short distance of the other end, at which point the said edge portion of said pitman is extended in an outwardly-curved line, as at h^0. In said outer curved edge portion h^0 of said pitman a short distance from the extremity of its vibrating end is made a recess $c^{\times}$, which extends in a horizontal direction a suitable distance therein. In said recess is inserted a roller h^2, the axis of which is placed a short distance from the edge portion h^0 in the direction of the edge portion $h^{\times}$ of said pitman, so as to receive the pivot h^3 and permit a segmental portion of the roller to extend beyond the edge portion of the pitman, for the purpose hereinafter described.

In the extreme vibrating end portion of the pitman H is made a curved depression h^3. To the said end portion of the pitman in the said depression h^3 is fitted and rigidly secured one end portion k of a curved spring-plate K, the other end k' of which extends a short distance beyond the end portion and the edge of said pitman having roller h^2 and in advance of said roller.

The lateral bearing for the vibrating end of pitman H consists of two longitudinal arms L L′ of different lengths. One end portion of one of the arms L (which arm is short in length) is attached rigidly by means of the bolts $l\,l'$ to the portion b' of the U-shaped casting B directly beneath the portion b of said casting and the other end extended beneath the under side portion of the pitman H and beyond the outer edge portion of said pitman. The arm L′ is bolted at its inner end in a manner similar to that of the arm L to a short extension of the portion b' of the casting B, which is made in the direction of the receptacle F from shaft C. The outer end portion of the arm L′ also extends beneath the under side portion of the pitman H in the same direction and at an increased distance to that of arm L.

To the upper side portion of arm L at its extreme outer end is attached, by means of the bolts $m^{\times}\,m^{\times}$, one end of a horizontal guide-bar M, which bar is comparatively narrow in width at said end. The other end of said bar is increased in width, and said end is extended outwardly at an oblique angle to the arm L′ and attached rigidly by means of the bolts $m^0\,m^0$ to the extreme outer end portion of the said arm L′. The inner edge portion of the bar M is made to bear against the periphery of the roller h^2 in the end of the pitman, and from said arm L to the arm L′ the said inner edge consists of a single curved surface. The plunger G is then extended within the feed-receptacle F, so as to bring the pitman H and the arms C′ C² on shaft C nearly in line in the longitudinal direction of the bed A.

Upon the block I and against the inner edge portion of the pitman H is placed a stationary guide-block i. Through the block i, in a vertical direction, is inserted a securing-bolt i', which bolt also extends through the bed A of the press, and is provided with a head i^2 at one end, and is screw-threaded and provided with the nut i^3 at the other.

To the end portion of the guide-bar M, upon the arm L′ and the curved surface of the said bar, is attached flatwise at one end n a steel spring-plate N, which plate extends a short distance from the end portion of guide-bar M, to which it is attached, and is provided with an outwardly-curved end portion n'.

In Fig. 3 I have shown a modified view of the means for controlling the movements of the vibrating end of the pitman. In this construction I dispense with the spring-plate K′ upon the end of the pitman and also with the spring-plate N upon the guide-bar M, and also with the rollers in the end of the lever-arms. To facilitate the engagement of the lever-arms C′ C² on shaft C with the vibrating end of the pitman the inner edge portion of said pitman at the extremity of said end is curved in the form of an ogee and a segmental portion of the roller h^2 extended beyond said curved line, thereby permitting the engagement of the outer end portion of one of the lever-arms directly with said roller. The bed of the press is mounted upon the axle O, and, as shown, at one end only. At each end of the axle O is a traction-wheel R. The attachment of the said end of the press to the axle is accomplished as follows: A plate b^5, integral with the U-shaped casting, extends therefrom in line with and in an opposite direction to that of the portion b' of said casting. An integral part b^4 of the U-shaped casting also extends horizontally above the plate b^5

and in an opposite direction and in line with the portion b of said casting. To the axle O, at a point equidistant from the traction-wheels R R, is attached rigidly one end of a short post P, the other end of which post extends upwardly a short distance to the under side and outer end portion of the part b^4 of the U-shaped casting, and is provided with the vertical perforation p^2. Directly beneath the post P, in the under side portion of the axle O, is made in an upward direction a perforation p, and to the upper side and outer end portion of the plate b^5 is rigidly secured a short pin b^6, which pin enters the perforation p. Through the support b^4, above and in line with the perforation p^2, is made a screw-threaded perforation p^0, in which is fitted the screw p^7 and which screw also enters the perforation p^2 in the post P.

In the operation of the press the material to be baled is placed in the receptacle F and the power applied to the draft-pole E, and the yoke D rotated in the direction indicated by the arrows in Fig. 1. The pressure brought to bear upon the shaft C is communicated to the lever-arms C′ C^2, and one of the anti-friction rollers in the end of one of the arms C′ C^2 is brought to bear on the inner edge of the vibrating end portion of the pitman H, and under this leverage the said end portion of the pitman is thrust outwardly, so as to bring the roller h^2 against the curved edge of the guide-bar M, and the resistance to its movement being less toward the point $m^\times$, or in the line of the curve at the greater distance from the shaft c, the end of said pitman is moved to said point with the least power applied to operate the press. At this point the roller in the end of the lever-arm engages with the groove in the end of the pitman, and in one-quarter of the circle described by the lever-arm the said arm and pitman are carried to a position nearly in line, as seen in dotted lines in Fig. 1, the outer edge portion meeting the guide-block i. In this position the plunger G upon the pitman is forced within the receptacle F and the full compression of the material to be baled obtained. In the next quarter of the circle of rotation the roller upon the lever-arm is moved from its engagement with the end of the pitman, and under the expansion of the material in the receptacle F the plunger D rebounds and also the pitman, the vibrating end of which is thrown in the direction of the guide M. The spring-plate K on the end of the pitman strikes the spring N on the guide M and the curved surface of the said guide and thrusts the inner edge of the pitman against the shaft C in readiness for another stroke of one of the lever-arms. At the limit of rebound of the vibrating end portion of the pitman the spring K passes beyond the end portion of the guide M on the arm L and the inner edge of the pitman is in a position in contact with the lever-arms. The operation of the lever-arm is then repeated, as before. The springs may, however, be dispensed with upon either pitman or guide M, or both, as required, as in Fig. 3. The curved portion of the pitman in said figure enables the lever-arm to obtain a purchase upon the end portion of the pitman with greater facility and in one-quarter turn of the lever-arms engage with the roller h^2.

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

1. In a baling-press having a suitable bed, the combination, with a driving-shaft upon said bed, having oppositely-extended lever-arms, and anti-friction rollers in the ends of said arms, of a rebounding plunger and a pitman having its vibrating end provided with an anti-friction roller, laterally-extended fixed arms extending beyond the circuit of said lever-arms and the outer edge of said pitman when said pitman is retracted, a horizontal fixed guide-bar upon said extended arms inclined outwardly at an angle to said arms and having its inner edge composed of a single curved surface, a stop-block upon said bed limiting the movement of said pitman in alignment with the lever-arms, and a curved spring-plate upon the vibrating end of said pitman, as and for the purpose described.

2. In a baling-press having a suitable bed, the combination, with a driving-shaft upon said bed, having lever-arms, and anti-friction rollers in the ends of said arms, of a rebounding plunger and a pitman having an anti-friction roller in its vibrating end and a curved spring-plate in said end extending beyond said roller, laterally-extended fixed arms extending beyond the circuit of said lever-arms and the outer edge portion of said pitman when said pitman is retracted, a horizontal fixed guide-bar upon said extended arms inclined outwardly at an angle to said arms, having its inner edge composed of a single curved surface, a stop-block limiting the movement of said pitman in alignment with the lever-arms, and a curved spring-plate upon the curved surface of said guide-bar extending beyond the end of said bar and in the path of the spring-plate upon the vibrating end of said pitman, substantially as and for the purpose described.

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