(No Model.) 2 Sheets—Sheet 1.

E. C. SOOY.

BALING PRESS.

No. 386,360. Patented July 17, 1888.

Fig. 1.

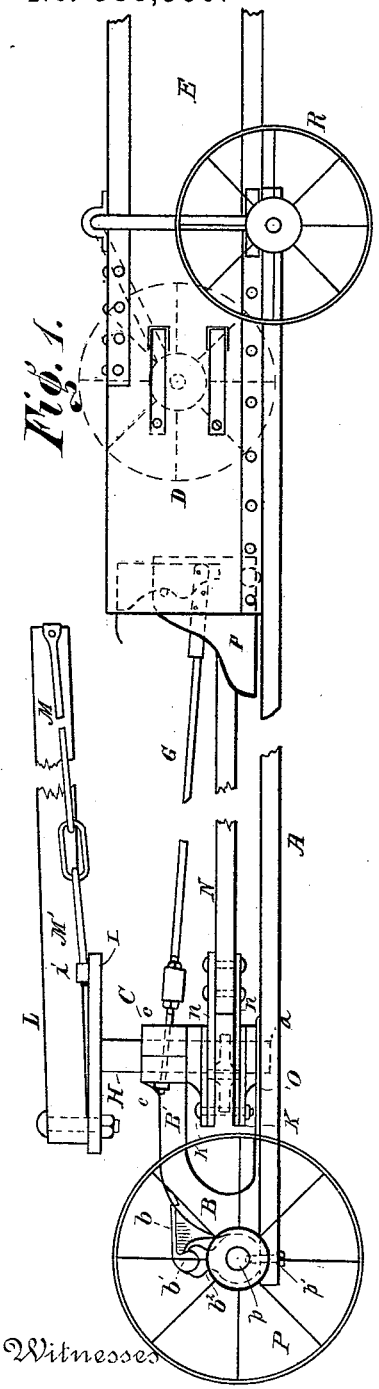
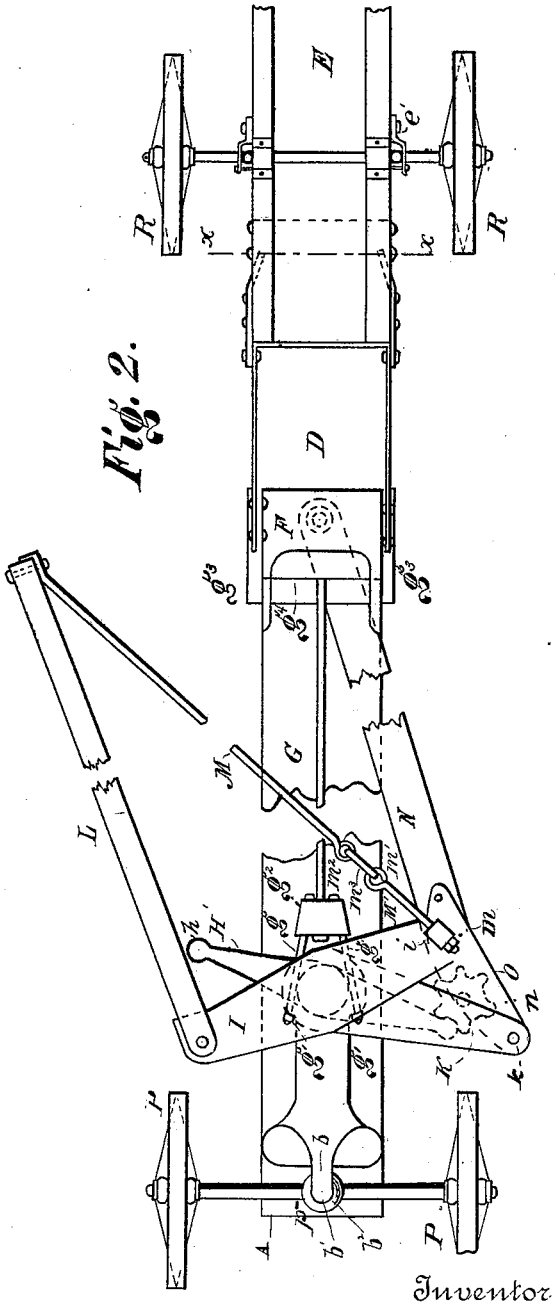


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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BALING PRESS.

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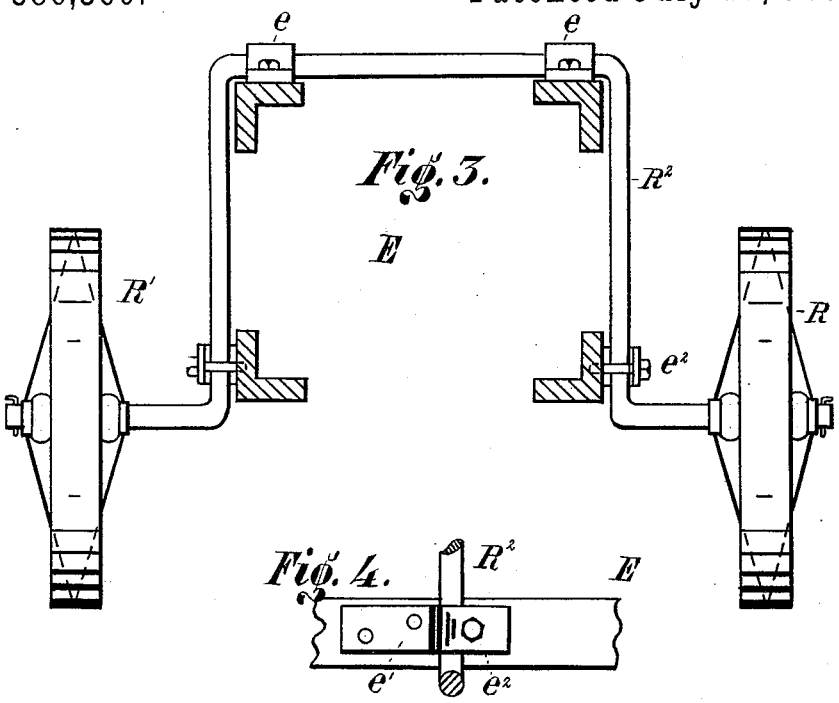

Fig. 3.

Fig. 4.

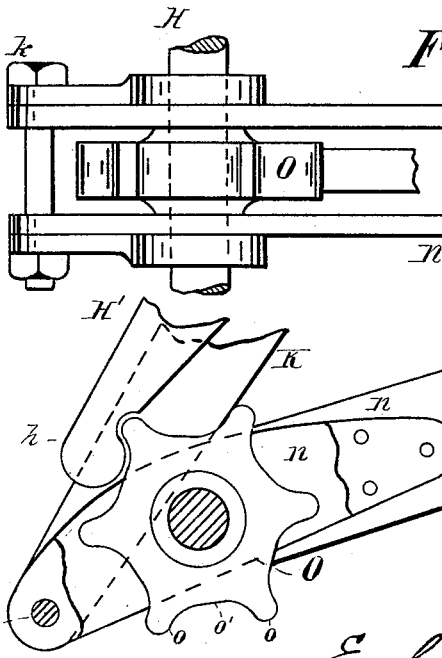

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

EPHRAIM C. SOOY, OF KANSAS CITY, MISSOURI.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 386,360, dated July 17, 1888.

Application filed August 9, 1887. Serial No. 246,504. (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.

My invention has for its object, first, in a horse-power press, to relieve the pole from the shock incident to the recoil of the pitman as soon as the operating-lever and said pitman in contact have passed the dead-center and the sudden thrust forward is given to the pole by the operating-yoke on the shaft, thus preventing the pole from striking the animal or team attached thereto and in advance; second, to afford two or more anti-friction bearing-points on the end of the pitman for the crank on the driving-shaft and lessen the wear and enable the crank and pitman to pass the dead-center with minimum friction; third, to enable the press to be dismounted from the rear traction-wheels when power is applied to move the press backward.

In the drawings, Figure 1 is a longitudinal side elevation of the press mounted upon traction-wheels. Fig. 2 is a plan view of the press as seen in Fig. 1. Fig. 3 is a transverse view of a portion of the press, taken on the line *x x* of Fig. 2, showing the swing-axle and rear traction-wheels of the press. Fig. 4 is a detail view of the keeper and bolt. Fig. 5 is a detail side view of the end portion of the pitman attached to the guiding-arms, the rotating gear-wheel on the pitman, and the crank-shaft. Fig. 6 is a detail top view of the end portion of the pitman with the upper plate removed, showing the gear-wheel.

In the construction of my improved press I make a horizontal platform, A, the desired length to support the press and power. To the platform A, at the extreme forward end, is attached a vertical support, B, which is bent at right angles at B′ the proper height and extends a short distance toward the rear end of the platform A, and upon the end of said support I make the journal-box C, which is divided in a vertical lateral relation to the platform A into two parts, *c c*. Upon the opposite end of the platform A, and connected together, are mounted the feed-receptacle D and baling-chamber E, the feed-receptacle D being directly opposite the support B B′.

Within the hay-receptacle D is placed a plunger, F. For the purpose of strengthening the press between the support B B′ and the feed-receptacle D, I extend through the parts *c c* of the journal-box C in the longitudinal direction of the press the rods *g g*, upon the ends of which, in one direction, are the nuts *g′ g′*, and toward the feed-receptacle D, or in the opposite direction, the ends of the rods *g g* are inserted in a transverse tongue-plate, g^2.

Upon the outer sides of the feed-receptacle D, and midway its height from the platform A, I attach upon opposite sides the horizontal bars g^3 g^3, which extend a short distance in the direction of the support B B′. I then connect with the bars g^3 g^3 a transverse bar, g^4, and to said bar and also to the said plate g^2, I attach the respective opposite ends of a rod, G.

Directly beneath the journal-box C, in a vertical line with its opening, and in the platform A, I make the seat or journal-bearing *a*. I then place in the journal-box C a vertical crank-shaft, H, which extends upwardly above the journal-box C, and upon the upper end of said shaft I attach rigidly a transverse yoke, I, the opposite ends of which yoke extend at equal distances from the shaft H. Upon one end of the yoke I, I pivotally attach, in a horizontal relation, one end of the draft-pole L. Upon the opposite end of the yoke I is placed a perforated lug, *i*, and through said lug I insert a short rod, M′, one end having a nut, *m*, which bears upon the lug *i*, and the opposite end a ring, *m′*. I then bolt rigidly to the side of the draft-pole L, opposite to that attached to the yoke I, and midway its length, one end of a rod, M, and upon the opposite end I make a ring, m^2. I then connect the rings *m′* m^2 by means of a yielding joint or link, m^3.

Upon the shaft H, between the platform A and the support B′, I journal loosely one end of the opposite horizontal guiding-arms K K, and between said arms I rigidly attach to the

shaft H a rotating crank, H′, which extends from said shaft a shorter distance than the length of the said guiding-arms. One or more cranks may be attached to said shaft in the same horizontal plane, as desired. To the plunger F in the feed-receptacle D, I pivotally attach one end of a pitman, N, and to the opposite end I attach to the upper and under sides the plates *n n*, which are curved slightly in an outward direction from the shaft H and extend beyond the end of said pitman and are pivotally connected to the ends of the guiding-arms K (between which they are inserted) by the bolt *k*.

Between the plates *n n* and at an equal distance between the opposite ends of said plates I pivot, in a horizontal relation, a gear-wheel, O, from which extend radially the teeth *o o*, and between opposite teeth an inwardly-curved bearing, *o′*, which receives the end of the crank H′ on shaft H, which end is curved at *h* to fit the curved bearing portion of the gear.

The forward end of the platform A and press is mounted permanently upon the traction-wheels P, as follows: From the support B, I extend in a horizontal direction over the end of the platform A an arm, *b*, and upon the end of said arm I make a ball, *b′*. Upon the front axle, *p*, carrying the wheels P P, I attach a cup, b^2, which receives the ball *b′*, forming a swivel-joint. Through the end of the platform A, in a vertical relation to the ball *b′* and extending into the axle *p*, is inserted a bolt, *p′*. The rear end of the press which supports the feed-receptacle and baling-chamber I dismount from the wheels R R on opposite sides, as follows: I first attach to the opposite longitudinal upper edges of the baling-receptacle E, near the feed-receptacle D, the journal-boxes *e e*, the openings in which correspond laterally with each other. I then make an axle, R^2, for the wheels R R′, which extends from one wheel R to the side of the baling-chamber E, a slight distance below its under side, and is then bent at right angles in an upward direction and continued to a point opposite the journal-boxes *e e*, and then again bent at right angles and extended horizontally through said journal-boxes to the opposite side of the baling-chamber, and is then bent at right angles in a downwardly direction to a point slightly below the under side of the baling-chamber E and in a horizontal plane with the opposite portion of the axle attached to the wheel R, and then bent at right angles and the end passed through the hub of the wheel R′. Upon the lower side portion of the baling-chamber E, in a line vertical with the journal-boxes *e e*, I attach the keepers *e′ e′*, which are composed of flat plates bent in the center to form a portion at right angles to the opposite end portions which extend therefrom. These keepers *e′ e′* are attached firmly to the baling-chamber, with the open end portion in the direction of the forward end of the press, and between which the vertical swinging portion of the inverted-U-shaped axle is admitted. To retain the said portion of the axle in the keeper *e′ e′*, I insert through the end of the keeper *e′ e′*, at right angles, a bolt, e^2, which enters a slight distance the side and lower portion of the baling-chamber E.

In the operation of my improved baling-press it will be observed, first, that the pole to which the power is applied is pivotally connected at one end to the yoke I, and as the yoke is rotated the shaft H and its crank H′ are made to describe the same rotation in concentric circles. The position of the plunger, pitman, and the crank-shaft when power is applied to the yoke is seen in Fig. 2. The plunger F, which compresses the material, has rebounded from the expansion of the material after compression and is at the farther end of the feed-chamber remote from the baling-chamber. The crank H′, keyed to the shaft H, which is made the proper length, strikes at its extreme end between the spokes *o o* of the wheel O. The loose guiding-arms K, to which the end of the pitman N is attached, limit the recoil movement of the pitman radially from the shaft H. The bearing of the crank is then tangential to and upon the wheel O, and said crank describes a curve in the arc of a circle from a line at right angles to the press to a line longitudinal with said press, and to a point in which said pitman and crank are at a dead-center. As soon as the pitman and crank have passed the dead-center, which movement is accelerated by the spokes of the wheel and its rotary correlation, the pitman and plunger rebound the guiding-arms and the rotary wheel is in a proper position to receive the stroke of the opposite crank on shaft H. As the dead-center is passed, the crank H′, relieved from tension, operates to accelerate the speed of the yoke I and pole L, and the pole L, under the impetus, turns back on its pivot and the jointed rod yields at the point of the link-connection, so that should the pole be under a constant strain the jar from the accelerated speed of the yoke is relieved therefrom.

In Letters Patent of the United States, granted to me on the 17th of May, 1887, No. 363,012, I have described and claimed a link for receiving the stroke of the crank on the crank-shaft, and in this construction two or more cranks are used, which in their rapid rotation are required to meet the end of the link on the pitman at each rebound of the plunger.

Should the link from any cause fail to act or return in the path of the crank, the gear-wheel which I have described will not only assist to accelerate the passage of the crank past the dead-center, but also throw into position successively anti-friction bearing-surfaces in like radius for the repeated strokes of the crank corresponding to the speed imparted to the crank-shaft.

It has been customary heretofore to excavate beneath the front and rear traction-wheels, so

that the press shall rest firmly upon the ground. This has been attended with danger to the axle and caused delays.

The press in my invention being suspended from the axle, the withdrawal of the bolt e^2 immediately frees the axle from the keeper, and a sudden backward movement of the press overcomes the center of gravity and the press is deposited upon the ground. The ground is now excavated beneath the forward wheels until the end rests upon the ground and is in a horizontal position. Should it be desired, the front portion of the press may be mounted upon an axle similar to that provided for the rear end.

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

1. The combination, in a baling-press, with a driving-shaft and its crank, of a rebounding plunger, a pitman, guide-arms loosely mounted on said shaft and pivotally connected to the said pitman, a gear-wheel on said pitman, and a crank on said shaft in the path of said gear-wheel, for the purpose specified.

2. The combination, in a baling-press, with the driving shaft, of a yoke on said shaft and a draft-pole pivotally attached thereto and having a yielding support beyond the pivotal point of said pole on said yoke adapted to permit an accelerated speed of the shaft in passing a dead-center to relieve the tension on the draft-pole without shock, for the purpose specified.

3. The combination, in a baling-press, with the driving-shaft, of a yoke on said shaft and a draft-pole pivotally attached thereto, and a divided rod having one portion attached to said yoke and an opposite portion to said pole, and an intermediate yielding joint connected with said opposite portions of said rod, as described.

4. The combination, in a baling-press, with the driving-shaft, of a yoke on said shaft and a draft-pole pivotally attached at one end to one end of said yoke and provided with a lug on the opposite end of said yoke, a divided rod having one portion connected with said draft-pole and the opposite portion with said lug and loops on the said divided portion of the rod, and a link connected with said loops, for the purpose described.

5. The combination, with a baling-press having traction-wheels, of an axle having opposite parts bent in an upward direction and connected together, and a baling-press suspended therefrom, and a keeper, as and for the purpose described, on the side of said press, and a locking device on said keeper.

6. The combination, with a baling-press having traction-wheels, and journal-boxes upon the top of said press, of an axle for suspending said press extending from one of said wheels to the opposite wheel in the vertical and transverse direction described by the sides and top of said baling-press and continuous through said journal-boxes, a keeper on the lower side of said press, and a locking device on said keeper, for the purpose described.

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