

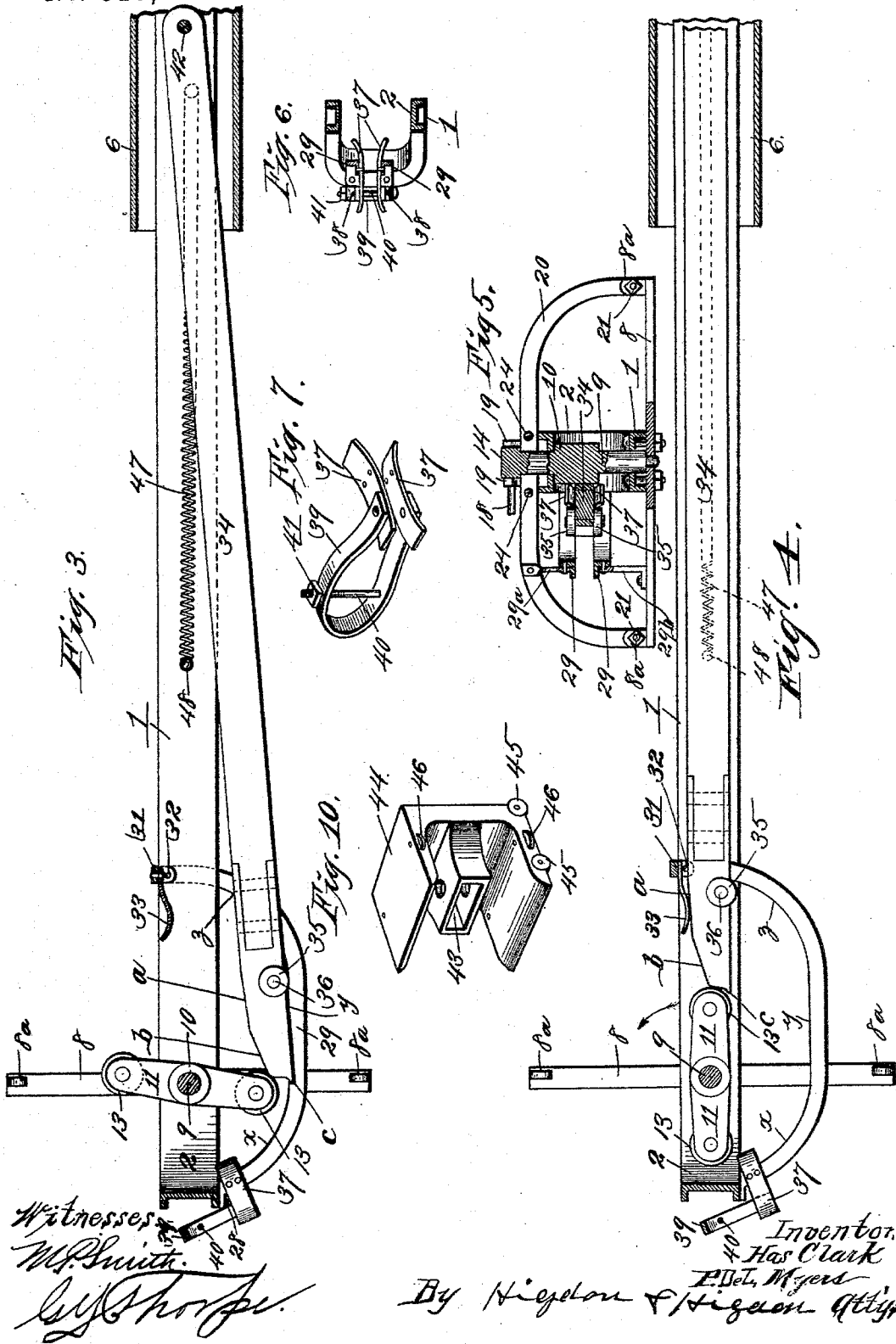
(No Model.)

2 Sheets—Sheet 2.

H. CLARK & P. DE L. MYERS.
BALING PRESS.

No. 515,748.

Patented Mar. 6, 1894.



UNITED STATES PATENT OFFICE.

HAS. CLARK, OF KANSAS CITY, KANSAS, AND PETER DE LONG MYERS, OF
KANSAS CITY, MISSOURI.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 515,748, dated March 6, 1894.

Application filed May 12, 1893. Serial No. 474,037. (No model.)

To all whom it may concern:

Be it known that we, HAS. CLARK, of Kansas City, Wyandotte county, Kansas, and PETER DE LONG MYERS, of Kansas City, Jackson

5 county, Missouri, have invented certain new and useful Improvements in Baling-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.
10 Our invention relates to improvements in baling-presses; and the objects of our invention are to produce a power for driving or forcing the pitman to compress the hay in the baling-case, which exerts a positive, steady
15 and continuous pressure from the beginning to the end of the stroke; to produce means whereby said power is opposed by the minimum amount of frictional resistance, and also to provide a means to guide the pitman in its
20 stroke and hold it against the pressure-power.

A further object of our invention is to provide means whereby, as the power-arm passes from engagement with the pitman at the end of its stroke, the pitman is induced positively
25 to return to its former position at the proper side of the power-arm, and also to produce means whereby the pitman is guided and limited in its return movement or recoil, so as to prevent the pounding and shock or jar incident to the recoil of the pitman. Further-
30 more to produce a baling-press, which is simple, strong, durable and inexpensive of construction.

With these objects in view, our invention
35 consists in certain peculiar and novel features of construction and arrangement of parts, as will be hereinafter described and pointed out in the claims.

In order that our invention may be fully understood, we will proceed to describe it with
40 reference to the accompanying drawings, in which—

Figure 1, is a top-plan view of a baling-press constructed in accordance with our invention,
45 and showing the pitman at the beginning of its stroke. Fig. 2, is a side elevation of the same. Fig. 3, is a top plan view of a portion of the baling press, and showing the position of the pitman after two-thirds of its stroke
50 has been made. Fig. 4, is a similar view, but showing the pitman at the end of its stroke.

Fig. 5, is a vertical section taken on the line 5—5 of Fig. 1, and looking toward the front end of the machine. Fig. 6, is a vertical section taken on the line 6—6 of Fig. 1, to more clearly
55 show the arrangement of the guide and clamping-plates. Fig. 7, is a perspective view of the guide and clamping-plates detached from the guide or track-rails. Fig. 8, is a detached perspective view of the bracket, and the push-
60 spring carried thereby. Fig. 9, is a detail perspective view of the power-shaft, its component parts and the sweep carried thereby. Fig. 10, is a detail perspective view of the
65 plunger.

In the drawings, 1 designates the bed-plate of a baling-press; this bed-plate being of any
70 suitable or preferred material, and formed with a yoke 2 at its forward end. The bed-plate is supported at its rear end in the usual
75 manner, and is supported upon and pivotally connected to the front axle 3, by the king-bolt 4, the opposite ends of the axle having the wheels 5 mounted thereon in the usual manner.

Secured upon the bed plate a suitable distance from its rear end is a baling-case 6,
80 with which communicates and extends upwardly therefrom the feed hopper 7. Secured transversely and horizontally to the under side of the bed plate a suitable distance forward of the front axle is a bar 8. The power
85 shaft 9 is vertically mounted and supported in the usual manner through the yoke portion of the bed plate and is formed a suitable distance from its upper end with the enlargement 10, which bears against the under side
90 of the upper or rear end of the yoke portion of the bed-plate. Formed integral with the power shaft and projecting outwardly therefrom and oppositely to each other are the
95 power-arms 11; these arms being formed with the bifurcations 12 in their outer ends in which are revolubly mounted the anti-friction rollers 13. Formed integral with the upper end of the power shaft is the cross-arm
100 14, which is provided with a socket 15 upon one end, in which is secured the inner end of the sweep 16 by bolts 17 which pass through the cross-arm 14. A brace-rod 18 adapted to be bolted or otherwise suitably connected to the outer end of the sweep arm in the usual manner, has its inner end passed through an

opening in the cross-arm 14, and is engaged by retaining nuts 19 which bear against the opposite sides of the said cross-arm 14. An arch-bar 20 has its lower or free ends bolted at 21 to the upwardly extending ears or projections 8^a of the transverse bars 8, and is formed at its central portion with a vertical and semi-cylindrical recess 22 adapted to fit snugly against that portion of the power shaft 9 between the upper side of the yoke 2 of the bed plate, and the under side of the cross-arm 14. A bearing cap 23 is fitted against the opposite side of said shaft and is secured by bolts and nuts 24 and 25 respectively, to the arch-bar; thus forming an additional brace and bearing for the upper end of the power shaft. To form an additional brace for the power-shaft and also to form a longitudinal brace for the baling-case, a tie-rod 26 is provided; this tie-rod being secured at its forward end to the bearing cap 23, and has its rear end passing through the semi-circular coupling brace 27, bolted at its opposite ends or otherwise suitably secured to the opposite sides of the baling-case. Secured at their forward ends upon bolts 28 to the vertical portion of the yoke 2 of the bed plate, is a pair of horizontal and parallel guide or track rails 29; these guide or track rails being formed preferably of angle-iron. The forward portions of these guide or track rails are arranged concentrically to the axis of the power shaft for a suitable distance at *x*, they then extend rearwardly and parallel with the bed plate a distance equal to the radius of the forward curved portion at *y*, and then their rear end or portion is curved inwardly at *z* to the same radius as the front curved portion and concentric to a point rearward of the axis of the power shaft, equal to the length of the radius of said curved portion. The rear ends of the guide or track rails are then carried transversely of and above the bed-plate, and are secured to the horizontal arms 30, of a bracket 31, which is bolted or otherwise suitably secured at 32 to the bed plate. Riveted or otherwise suitably secured to the bracket 31 and projecting toward the forward end of the machine preferably is a push spring 33; the object of which will be hereinafter referred to. The guide or track rails are also additionally supported by the hanger 29^a, secured at its opposite ends to the upper rail and to the arch-bar 20, and by the standard 29^b, secured at its opposite ends to the lower rail and to the transverse bar 8.

The parallel guide or track rails are arranged opposite the upper and lower sides respectively of the horizontal power arms 11 of the power shaft 9, and the pitman 34 is adapted to operate horizontally between said guide or track rails, and in the same horizontal plane as the power arms. The forward end of the pitman, which may be of wood as usually constructed, or of metal if preferred, is provided at its upper and lower sides with anti-friction rollers 35, journaled upon the upper and lower ends of the verti-

cal bolt or pin 36; said rollers being arranged to project slightly beyond the outer edge or margin of the pitman, and adapted to travel along the upper and lower guide or track rails as the pitman is forced rearwardly to compress the hay in the baling case. The inner edge or side of the pitman is also formed with an outwardly inclined or beveled surface *a*, commencing a slight distance inward or rearward of the anti-friction rollers, and extending forwardly to meet the rear end of beveled edge *b*, which is arranged at a greater angle than the bevel *a*, and extends forwardly or outwardly to the front end of the pitman. The front end of the pitman is rounded at its inner corner and at its outer corner is formed with a projection *c*, the object of which will be hereinafter described. Secured to the lower and the upper sides of the top and bottom guide or track-rails 29 at their forward ends and adjacent to the front end of the yoke, by bolts, rivets, or other suitable means are the spring-guide and clamping plates 37, the inner or rear ends of which, respectively incline upwardly and downwardly to form a flaring opening or mouth therebetween, and the outer ends project outwardly and forwardly a suitable distance from the guide or track rails, and are provided respectively, with the upwardly and downwardly projecting pins or lugs 38. A spring clip 39, approximately U-shape in side view, has its free end formed with openings which engage the pins 38 at the upper and lower sides of the outer ends of the spring guide and clamping plates 37, and a bolt 40 is passed vertically through said spring and has its upwardly projecting screw threaded end engaged by a clamping nut 41. From this construction it will be seen that by operating the nut upon the bolt 40 this clip may be made to increase or decrease the pressure upon the clamping or outer ends of the spring guide and clamping plates 37, the object of which will be explained in the operation of the machine.

The rear end of the pitman is pivotally mounted to operate laterally upon the vertical bolt 42, in the flaring mouth or socket of the plunger 44 adapted to reciprocate within the baling case 6. This plunger is mounted upon rollers 45 journaled at the sides thereof, and is also provided with horizontally arranged rollers 46, there being two of these rollers 46 at each side of the plunger and arranged in vertical alignment with each other. The object of these horizontal rollers 46 is to reduce to the minimum, the friction between the sides of the plunger and the sides of the baling-case during the reciprocation of the plunger therein. A retracting spring 47 is also secured at its front end to a bolt or projection 48 secured to the bed plate, and has its rear end secured to a bolt or projection 49 secured to the pitman adjacent to the plunger. It is designed by this construction to obtain the greatest movement of the stroke with a minimum expenditure of power, and

to obtain this result the first ninety degrees of movement of the power shaft is designed to force the pitman to travel two-thirds of the entire length of the stroke, while the last half of the revoluble movement of the power-shaft, (having the pressure) is designed to move the piston the remaining one-third of the stroke and compress the hay tightly in the baling-press.

10 In the operation of the device, the power being applied, the friction roller 13 of one of the power arms 11 bearing against the bevel surface or edge *a*, of the pitman forces said pitman outwardly and rearwardly, and causes
15 the rollers 35 to travel along the guide or track rails 29; the roller 13 next comes in contact with the beveled edge or face *b*, the greater bevel or inclination of which face, allows the roller to have a square bearing thereon or
20 greater purchase, and forces the pitman to continue its rear and outward movement until the roller 13 bears against the end of said pitman, and the anti-friction rollers 35 have reached the rear end of the straight portion
25 *y*, of the guide or track rails, and the pitman has completed two-thirds of its stroke. The continued movement of the shaft, now causes the roller 13 to bear inwardly and directly upon the end of the pitman until the end of
30 the stroke of the pitman has been reached, and the free end of the pitman has assumed the position shown in Fig. 4, and the beveled surface *a* thereof, is in contact with the push-spring 33. The continued revoluble move-
35 ment of the power shaft in the direction of the arrow, forces the pitman against the push-spring until the roller 13 has cleared or moved from contact with the end of said pitman; the push-spring, and also the projection *c*, upon the
40 end of the pitman, resisting any further movement of the pitman in that direction. As soon as the roller 13 of the power-arm 11, has cleared entirely the free end of the pitman, the retracting spring 47 and the expansion of the
45 hay, cause the pitman to move forward and resume its former or initial position; the push-spring 33 by pressing against the bevel edge *a* of the free end of said pitman, having a tendency to force it toward the proper side of the
50 power-shaft. The expansion of the hay and the retracting power of the spring 46 causes the pitman to move forward with terrific force, and to prevent the usual pounding and jar or shock to the machine which is incident to this
55 return movement of the pitman in all hay-press machines of this character, the spring clamping and guide plates are provided; the forward or free end of the pitman being guided in the flaring opening formed between said
60 guide-plates and coming in contact with the clamping end of said plates, which frictionally engaging upon the upper and lower sides of the end of the pitman, is gradually arrested, so that by the time the pitman has reached
65 its initial position as shown in Fig. 1 there will no pounding or shock result; the spring clip being arranged to the proper tension.

The clamping arrangement of the spring guide and clamping plates at the front end of the guide or track rails and adjacent to the
70 yoke of the bed plate is so arranged, that the anti-friction rollers 35 carried at the upper and lower sides of the pitman will not strike thereagainst, upon the return movement of the pitman.

75 From the above description, it will be seen that we have produced a baling press, in which the pressure upon the pitman is steady, positive and continuous from the beginning to the end of the stroke, and in which the greatest
80 length of stroke is obtained with the minimum amount of power expended, and in which said power is opposed by the minimum amount of frictional resistance. Also it will be seen, that we have provided a means to guide the
85 pitman in its stroke and hold it against the pressure power, and furthermore a means whereby, as the power arm passes from engagement with the pitman at the end of its
90 stroke, the pitman is induced positively, to return to its former position at the proper side of the power shaft; also means, whereby the pitman is guided and limited in its return
95 movement or recoil, so as to prevent the pounding and shock or jar incident to the recoil of the pitman, and furthermore a baling press, which is simple, strong, durable and inexpensive of construction.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a baling-press, the combination with a bed-plate, and a pair of guide or track-rails carried thereby, and consisting of a front curved portion, a rear curved portion and an
105 intermediate longitudinally extending portion connecting the front and rear portions, and a pitman, interposed between the guide or track-rails, and having anti-friction rollers a suitable distance from its front end, which
110 bear against the inner edge or side of the guide or track-rails, of a power-shaft also carried by the bed-plate, and arranged concentric and eccentric respectively, to the front and rear curved portions of the guide or track-rails,
115 and having power-arms which in operation gradually transfer their leverage from a point inward of the end, along the inner side or edge to and against the free end of the pitman, to cause the friction rollers thereof to
120 follow the guide or track rails, substantially as set forth.

2. In a baling press, having a bed-plate, and a power-shaft provided with arms, and revolvably carried by said bed-plate, the combination of guide or track-rails, each consist-
125 ing of a front portion curved concentrically to the axis of the power-shaft, and a rear portion curved eccentrically to the axis of the power-shaft, and a straight intermediate portion connecting the curved portions, with a
130 pitman interposed between the said guide or track-rails, and provided with anti-friction rollers a suitable distance from its front end,

which bear against the inner side of the track-rails, and having its inner side from a point adjacent or opposite to the said rollers, inclined or beveled so as to gradually diminish the width of the said pitman toward its front end, substantially as set forth.

3. In a baling-press, the combination with a bed-plate, a vertical power-shaft having arms, and a pitman having anti-friction rollers at its vibratory end, of a pair of guide or track-rails carried by the bed-plate at their front ends, and having a straight middle portion and curved ends, and having their rear ends extended transversely over the bed-plate, and a bracket secured to the bed-plate and supporting the rear ends of said guide or track rails, and a push-spring carried by said bracket opposite the space between the said guide or track-rails substantially as set forth.

4. In a baling press, the combination with a bed-plate, a vertical power shaft having arms, and a pitman provided with anti-friction rollers at its vibratory end, of a pair of horizontally arranged guide or track-rails, carried by the bed-plate, and spring-guide plates carried by the guide or track-rails near their front end, and arranged to form a flaring mouth or opening to receive the vibratory or free end of the pitman upon its recoil and gradually check the same, substantially as and for the purpose set forth.

5. In a baling-press, the combination with a bed-plate, guide or track-rails carried by said bed-plate, and a revoluble shaft having oppositely projecting power-arms carrying anti-friction rollers in their outer ends, of a pitman located between said guide or track-rails, and carrying anti-friction rollers at its upper and lower sides adapted to travel along the guide or track-rails as the power-shaft is revolved, and spring guide-plates a spring-clip engaging said guide-plates, and means to so adjust said spring-clip that the tension upon the free or outer ends of the spring guide-plates will be increased or diminished, so that the free end of the pitman on its recoil or return movement may be frictionally engaged by the free or outer ends of said guide-plates, substantially as set forth.

6. In a baling-press, the combination with a bed-plate and a transverse bar secured to the under side of said bed-plate, an arched-bar secured at its opposite ends to said transverse bar, and a pair of guide or track-rails supported horizontally by said bed-plate and by

said transverse and arched bars, and a vertical-power shaft having oppositely projecting power-arms having anti-friction rollers in their outer ends, of a pitman, having a beveled inner edge or side so as to present a bearing surface for the roller of the power-arms, and also having an extension at its corner opposite to the beveled side or edge, and anti-friction rollers carried at the upper and lower sides of the pitman and adapted to roll or travel along the guide or track-rails, substantially as set forth.

7. In a baling-press, the combination with a bed-plate, a power-shaft having oppositely projecting power-arms carrying anti-friction rollers in their outer ends, and guide or track-rails carried by the bed-plate and having their forward portion arranged concentrically to the axis of the shaft, and having a straight portion extending rearward and parallel with the bed-plate a distance equal to the radius of the curved forward portion, and having their rear portion also curved to the radius of the front portion, and arranged concentrically to a point to the rear of the axis of the shaft, equal to the length of the said radius, of a pitman having its inner edge or side beveled and having its end extended, and carrying anti-friction rollers at its upper and lower sides adapted to follow and bear against the continuous guide or track-rails, as the power-shaft is revolved, substantially as set forth.

8. In a baling press, the combination with a bed-plate, and a shaft having oppositely projecting power-arms provided with anti-friction rollers in their ends, and guide or track-rails carried by said bed-plate and having their forward and rear portions curved, and connected by a straight portion parallel to the bed-plate, of a pitman carrying anti-friction rollers at its upper and lower sides, to bear against and travel along the guide or track-rails and having its inner edge or side formed with a beveled surface *a*, and with a second beveled surface *b* terminating in a curved end, and also formed with an extension *c* at its outer corner, substantially as set forth.

In testimony whereof we affix our signatures in the presence of two witnesses.

HAS. CLARK.

P. DE LONG MYERS.

Witnesses:

M. P. SMITH,

G. Y. THORPE.