(No Model.) 3 Sheets—Sheet 1.

P. K. DEDERICK.

BALING PRESS.

No. 550,598. Patented Dec. 3, 1895.

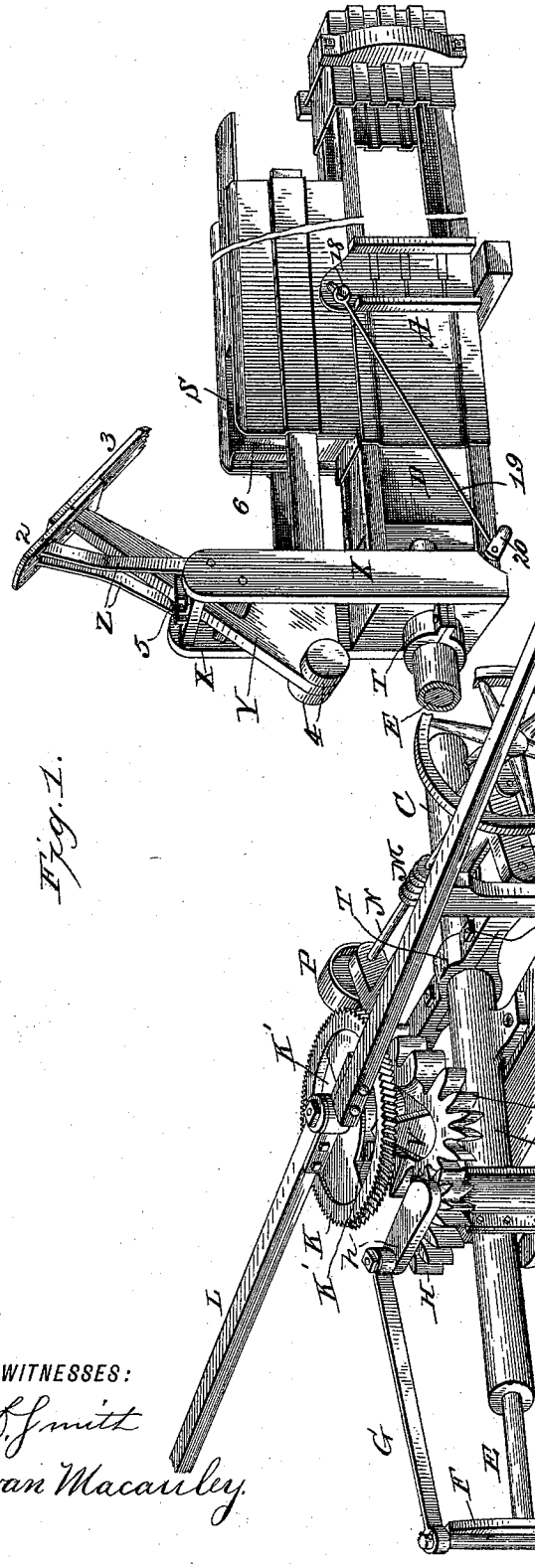

Fig. 1.

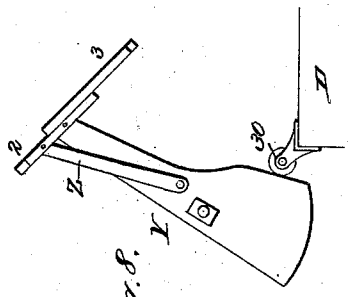

Fig. 8.

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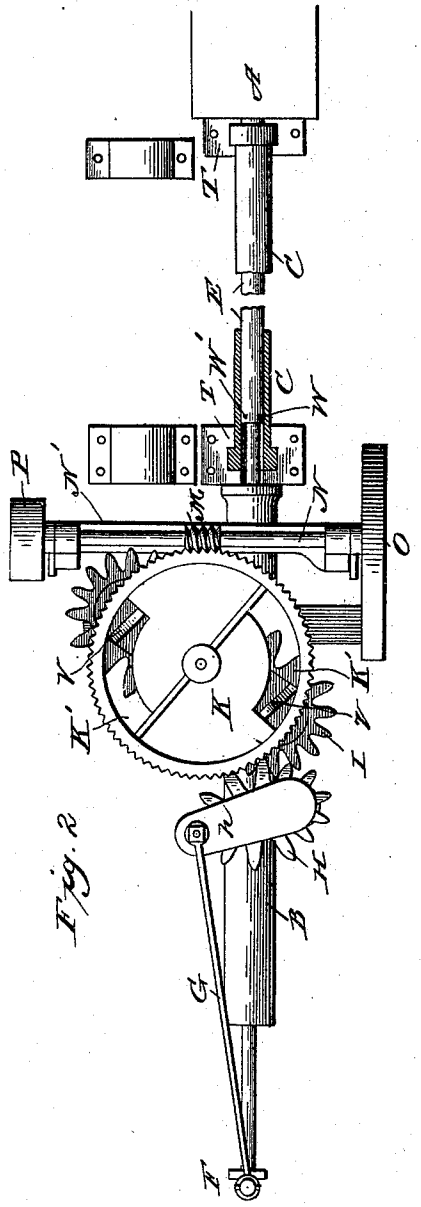

Fig. 2.

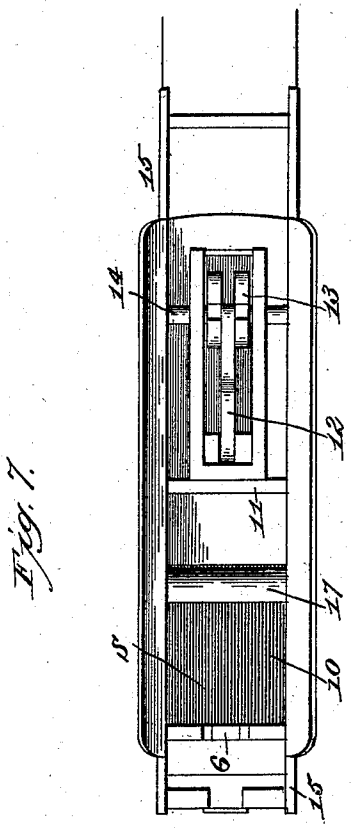

Fig. 1.

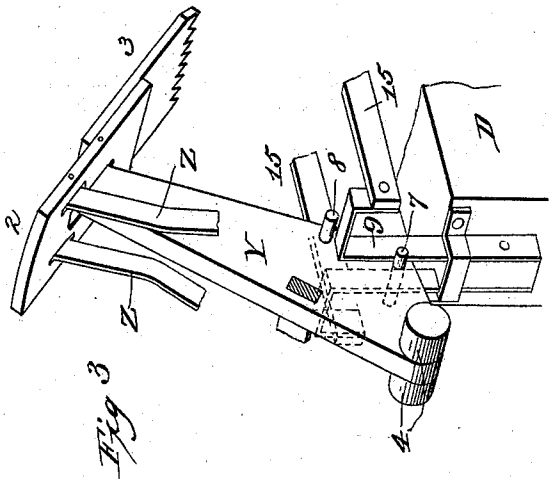

Fig. 3.

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Fig. 4.

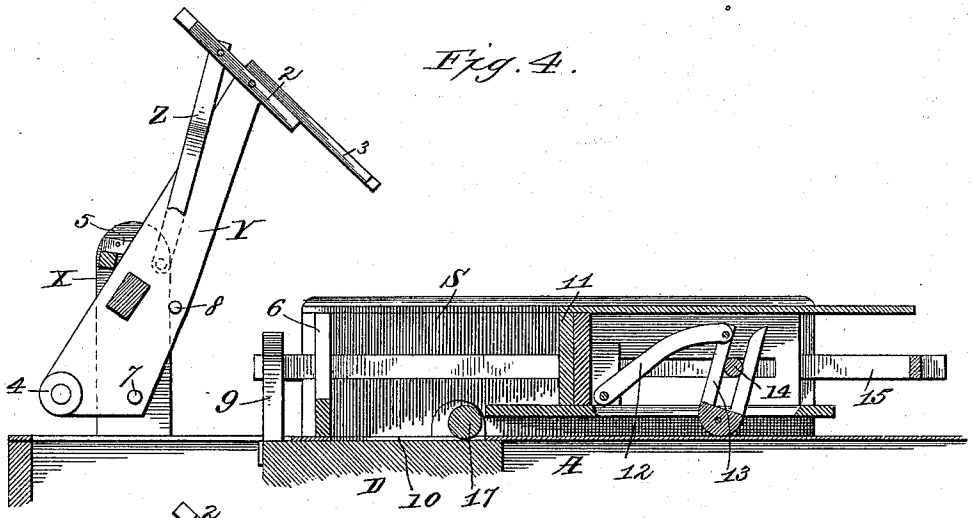


Fig. 5

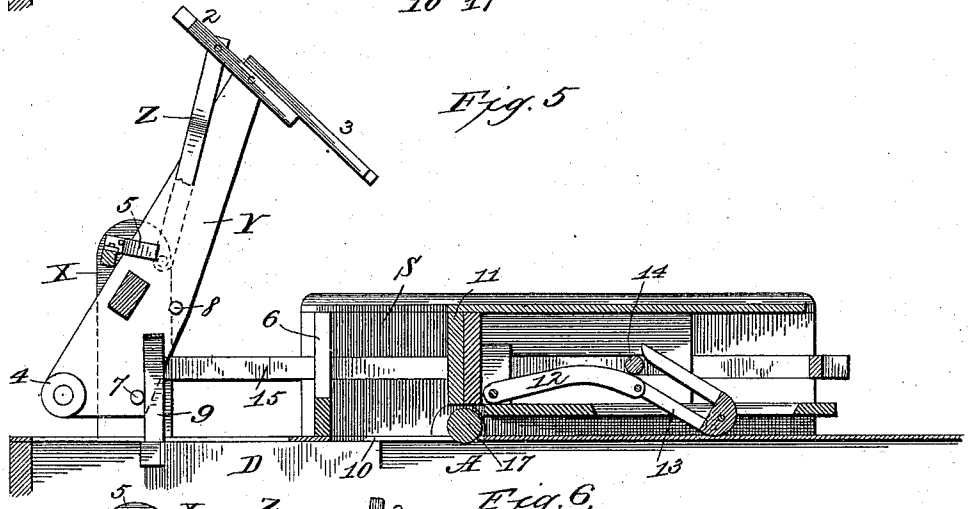
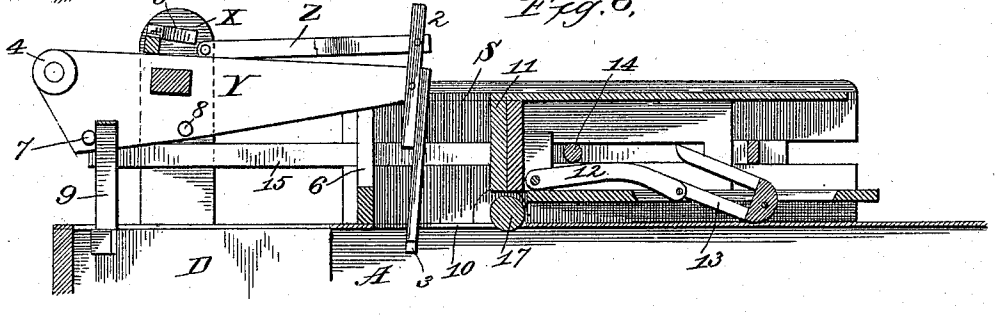


Fig. 6.



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UNITED STATES PATENT OFFICE.

PETER K. DEDERICK, OF LOUDONVILLE, NEW YORK.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 550,598, dated December 3, 1895.

Application filed December 5, 1890. Serial No. 373,716. (No model.)

To all whom it may concern:

Be it known that I, PETER K. DEDERICK, of Loudonville, in the county of Albany and State of New York, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

My improvements relate to that class of baling-presses for which Letters Patent were granted me October 29, 1872, Nos. 132,566 and 132,639, and the various modifications of the same for which Letters Patent have since been granted me, particularly such as are operated by horse-power rotating a lever at one end of the frame and passing over the power connections which communicate the power to the traverser in the baling-case.

Referring to the accompanying drawings, Figure 1 is a perspective view of my improved baling-press. Fig. 2 is a sectional plan view of the power devices. Fig. 3 is a perspective view of the feeder detached. Figs. 4, 5, and 6 are sectional elevations of the feeder and condenser in different positions. Fig. 7 is a plan view of the condenser. Fig. 8 is a view of a modification of the means for operating the feeding device.

Similar letters and figures of reference represent similar parts.

A is the baling-case, which may be constructed as shown or in any suitable manner well known in this class of presses.

B is the frame of the horse-power, which I preferably construct of hollow cylindrical form, being in effect a cast-iron pipe. This power-frame B may be connected to the baling-case A in any suitable manner. I have shown it connected by a pipe C, firmly clamped to the power-frame B and baling-case A by means of box-clamps and bolts T T', (more clearly shown in Fig. 2,) thus forming a continuous rigid frame which may be readily disconnected and dismembered for shipment.

The staff E of the traverser D extends through both the pipe C and power-frame B and is connected to a cross-head F, which in turn is connected to the power devices by links G G.

To the frame B, I journal the crank-gear H, which has a bearing extending through the perpendicular projection U and is provided with a crank-arm *h* at the bottom to correspond with a crank-arm *h*, formed on the gear at the top, thus constituting what may be termed "twin cranks," on the wrists of which the links G G work. The part U may be all cast solid with the frame and have a perpendicular hole through it to receive the shaft of the crank-wheel; but I have shown the outside half of the part U in the form of a half-box to bolt on, so that the crank-gear with journal passing through and cranks *h h* may be all cast in one solid piece, thereby making a much more rigid, stronger, and cheaper piece of machinery.

The gear I may be journaled at either side of frame B; but I have shown it journaled at the side opposite to that one which the crank-gear H is journaled and, preferably, in the same manner as the crank-gear. The stem or journal of the gear I extends downward to form the shaft or pivot. Another stem or shaft extends upward from gear I to form a journal for the wheel K.

The gear I is the driving-gear and is a double cam and the gear H a single cam, so that one revolution of gear I produces two revolutions of gear H, the cam shape giving a varying motion, so as to increase the power at certain stages and correspondingly diminish it at others. Thus when the hardest work is done, double the power of a crank without gearing is secured and at the same time two strokes to one round of the horse-lever instead of one, thus doubling the power and doubling the velocity or reducing the velocity of the power-shaft and wheel K one-half and at the same time relieving it of half the work. This double cam and single cam gear may be varied in form so as to vary the power, and instead of being a continuous rim of cogs may be in segments, but so as to conform to each other and still constitute a double cam and a single cam.

The wheel K may be firmly secured to the gear I or to the described upward projection or shaft of said gear on which it is mounted, but would thus produce shock on the horses when used with horse-levers L by the rebound of the traverser, propelled by reaction of the pressed material when the cranks *h* cross the center and reverse. Hence I preferably mount the wheel K loosely on the said shaft or stem

of gear I, with upward projections or lugs V from the wheel I, extending through openings K′ in the wheel K, so that the rebound may reverse the power-gears part or all the way without turning the wheel K or horse-lever L, all of which is more clearly shown in Fig. 2.

The wheel K is a worm-wheel, to be driven with a worm mounted on a shaft provided with a band-wheel to receive a belt from a steam-engine or other motor, or the power may be coupled to the worm-shaft in any suitable manner.

M is the worm; N, the shaft; P, the band-pulley, and O the balance-wheel. The frame N′ of this worm-shaft may be rigidly secured to the power-frame B and the worm-shaft removed when desirable to operate the machine by the horse-lever L, or it may be hinged, as shown in Fig. 1, so as to swing back and down on the pipe connection out of the way. The worm-wheel might also be removed and the horse-lever be applied direct to the shaft of gear I. As is well known to all mechanics, worm-gearing will heat and grind out or wear out very quickly under great pressure and great velocity, and as applied to this class of baling-presses worm-gears heretofore have for this reason proved undesirable.

By means of the power-gear I and crank-gear H, as herein described and explained, I diminish the velocity of worm-wheel K one-half without reducing the number of revolutions or strokes of the cranks and traverser, so that the liability of heating and grinding is obviated and, as also explained, the same gearing H I distributes and equalizes the work, so that only half the extreme pressure falls on the worm-gearing, as compared with wheel K, being direct on the crank-shaft, thus obviating wear and doubly insuring durability. This combination gearing may be connected to the traverser by a pitman direct or in any suitable manner instead of connecting by means of the parts G F E and with the same advantages.

The staff E, connecting to the traverser, may be a rod or pipe or both combined, and I preferably construct it in two parts, as shown in Fig. 2, so as to shorten it for shipping. The two parts may be coupled together in any suitable manner. I prefer to use a rod at the end connecting to the head F and continue the same to the point W, Fig. 2, where it enters and is firmly secured to a pipe continuation by rivets W′ or otherwise connected to the traverser D, as shown. By removing the rivets or other connecting means the pipe and rod may be disconnected for shipment.

To the end of the baling-case A, I secure two upright pieces X, to which I pivot the rock-lever Y and the guide-bars Z, as shown, the ends of both being also pivoted to the feed-head 2, the bars Z being shorter between centers than the lever Y, in order to secure vertical movement of the end 3 of the blade when passing through the hopper S. The transposition of the bars Z and lever Y would require the latter to be shorter between pivots. By reason of this combination of short and long connection Y Z, I secure a much shorter, smaller, and lower feed device. Weights 4 are secured to rock-lever Y to elevate the head 2 quickly, and in order to prevent rebound and shock in stopping, a friction device 5, preferably V-shaped, is secured, as shown, so that the lever Y falls back into the open end of the V-friction device and is stopped without shock. Any other friction device against which the lever would fall would accomplish the result. The rock-lever Y falls back between the bars Z Z. Hence one of said bars is pivoted to each standard X. The end of the hopper S is slotted downward at 6 to allow the arms that carry the head 2 to pass down into the hopper in order to feed the charge down properly.

By reference to Fig. 3 it will be seen that iron pins 7 and 8 are arranged upon the lever Y, so as to form a projection at each side which comes in contact with standards, 9 projecting up from the traverser D, the standards 9 striking the projections 7 when the traverser has nearly reached the limit of its backward stroke and operating the feed-head to force down a charge, as shown in Figs. 3, 4, 5, and 6. Should the weights 4 fail to bring back the feed device by reason of entanglement in the hay the uprights 9 strike the projections 8 and force the feeder up out of the way. Pins 7 and 8 may be provided with friction-rollers to reduce friction. Any substitute for pins 7 and 8 that will come in contact with the traverser or projections 9, so as to give the proper movement to the feeder, will accomplish the result, or the rock-lever Y may come in direct contact with the traverser without the projections from either rock-lever or traverser, as these are but the bearing and wearing points. A roller might be pivoted to the rear part of the traverser, as shown at 30, Fig. 8, and the rock-lever widened to come in contact and secure the proper movement.

By reference to Letters Patent No. 151,477 it will be seen that I have shown a hopper with a condensing-head to condense the loose material over the feed-orifice by means of a rigid connection between the traverser and condensing-head, so that they must move together. The defect in this device is the limited time given to feed or push down the condensed charge, which must be done when the condenser-head has reached the limit of its stroke at the feed-orifice and before starting to return hence almost instantly.

My improved press is provided with a stop-condenser head, which moves up to the feed-orifice rapidly and stops, while the traverser continues to move on some distance, thus giving ample time to feed down the charge before the traverser starts on the return. Following I describe one method of constructing and operating my stop-condenser head.

The hopper S is located over the press-box and feed-orifice 10, Fig. 7, and extends rear-

ward over the bale-chamber of the case A and is provided with a movable head 11, Figs. 4, 5, 6, and 7, adapted to move within the hopper. This head 11 is connected by a pitman 12, pivoted to an arm 13, which arm is pivoted to the hopper bottom, as shown, so that when the arm 13 is moved back and forth the condenser-head N advances and recedes with it. This arm 13 is slotted, as shown, so that a bar or pin 14, moved longitudinally backward and forward through the hopper, will vibrate it. At each side of the hopper are slide bars 15, preferably moving in the walls of the hopper S, and through both of which the pin or bar 14 passes or is otherwise secured, thus forming a frame to guide the movements of the said bar 14. These slides 15 may be connected to the traverser in any suitable manner. I have attached them to a lateral extension of the uprights 9, as more clearly shown in Fig. 3, the slides 15 being riveted or bolted to the said extension of uprights 9, as shown. By this arrangement the slides 15 and the bar 14 must move with the traverser D. The bar 14 being within the slot of arm 13, as shown in Fig. 4, and moving with the traverser D, must vibrate the said arm, as shown in Fig. 5, bringing the condenser-head 11 up to the feed-orifice, as shown, thus condensing the charge, and remains stationary while the traverser, with slides 15 and bar 14, continue to move, the latter passing out of the slot in arm 13 and forward over and retaining the pitman 12, which holds the head 11 in position, as shown in Fig. 6, by which time the charge should be pushed or fed down within the press-chamber, either by hand or by the automatic feeder hereinbefore described, and the traverser returning moves the pin 14 back again to the arm 13 and into the slotted end, and continuing vibrates it in the reverse direction. The slides 15 might be rigidly attached to the condenser-head 11 and the arm 13 pivoted to the press at or near the standards X with pitman 12, connecting to slides or frame 15 and projections from the traverser to serve as pin or bar 14; but this would simply be reversing the device to pull the head 11, by means of pitman 12, instead of pushing it.

In Figs. 4, 5, 6, and 7, 17 is a roller with journals extending outside of the frame and hopper, as shown in Fig. 1 at 18, with a slot to allow said journal to move upward and down a little, as also shown. A loop or eye of rod 19 is secured on this journal, as shown at 18, and the other end of said rod 19 is pivoted to crank-arm 20, said crank-shaft extending across the press, with another crank-arm and rod connecting to the roller-journal at the opposite side of the press. The crank-shaft 20 is journaled to the press-frame, and at or near its center is provided with another arm similar to 20 and projecting upward at about the same angle, hence in the path of the traverser D, which will press it down, carrying the outer arms 20 with it and drawing down on the rods 19 and roller 17, thus folding down any overlap of the previously-pressed charge and constituting a positive folder, by reason of connections with the traverser or power instead of being operated by springs or weights, as usual.

In operation, the horse-levers L being removed and the worm-shaft N being placed in position, as shown in Fig. 2, power is communicated to pulley P by means of a belt, thus revolving shaft N, worm M rapidly, and wheel K slowly with great power, carrying gear I with it, which revolves the crank-wheel H and cranks *h h* twice to one revolution of gear I and wheel K, and hence through means of connections G, F, and E making two strokes of the traverser D, condensing, feeding down, and pressing a charge at each stroke of the traverser D. The reverse movement of the traverser draws the condensing-head 11 forward to condense the charge over the feed-orifice, the said head being retained stationary while the traverser moves on to operate the feeder and project its blade and head downward into the hopper, the feeder-arm passing through the opening of head 6 and the traverser D, moving forward to press the charge, again moves back the condenser, and also the feeder, should the weights 4 fail to do so.

Having thus described my invention, what I claim as new is—

1. In a baling press, the combination with the bale chamber, and the feed blade, of the pivoted rock lever and pivoted guide arm, both connected to the blade and one located above the other, the uppermost one being pivoted forward of the other; substantially as described.

2. In a baling press, the combination with the bale chamber and the feed blade, of the pivoted rock lever connected to the blade and the pivoted guide arm of less length than the rock lever connected to the blade and located above and with its pivot forward of the pivot of the said lever; substantially as described.

3. The combination with the feeder head and the pivoted arm Y, of the pivoted arms Z Z located above and in vertical planes on opposite sides of the arm Y, said arm Y having a path of travel extending between said arms Z Z whereby the blade is permitted to draw back away from over the feed opening; substantially as described.

4. In a baling press, the combination with the bale chamber, traverser and the pivoted rock bar and the feed blade carried by its outer end, of the standard on the traverser and the two pins cooperating therewith, one located on the end of the rock bar carrying the feed blade and the other on the opposite end of said bar, whereby the feed blade is moved positively up and down; substantially as described.

5. In a baling press, the combination with the press case, hopper and movable condenser

head, of the pitman 12 pivoted slotted arm 13 connected to the pitman and bar 14 moved by the traverser and working in the slotted arm; substantially as described.

6. In a baling press, the combination with the press case, a hopper, traverser D, standards 9 slide bar 15 and bar 14 carried thereby, of the pivoted arm 13 cooperating with the bar 14, pitman 12 connected to the arm and condenser head moved by the pitman; substantially as described.

7. In a power mechanism for baling presses, the combination with the horizontally movable traverser staff power shaft mounted in vertical bearings, crank arms driven from said shaft and the staff connected with said arms, of the worm gear on the power shaft and the worm shaft and worm mounted in movable bearings and adjustable into or out of engagement with the worm wheel substantially as described.

8. In a power gearing for baling presses, the combination with the traverser, staff and casing through which it slides, of the vertically arranged bearings on said casing, the power shaft mounted in said bearings, the horizontally arranged bearings on said casing, the worm shaft and worm mounted therein, the worm wheel on the power shaft with which the worm engages and connections between the power shaft and traverser staff; substantially as described.

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