

P. L. HIDER.
HAY PRESS.

No. 535,374.

Patented Mar. 12, 1895.

Fig. 1.

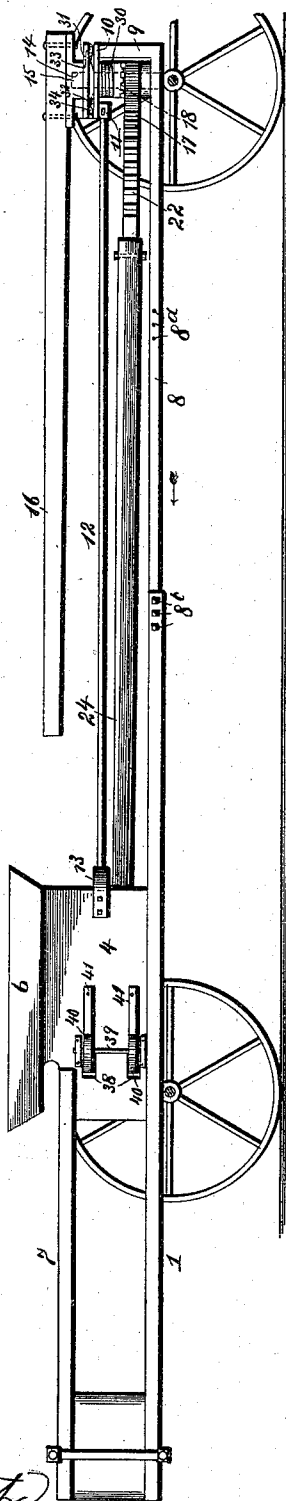


Fig. 2.

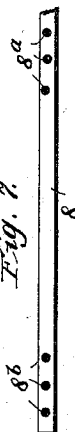
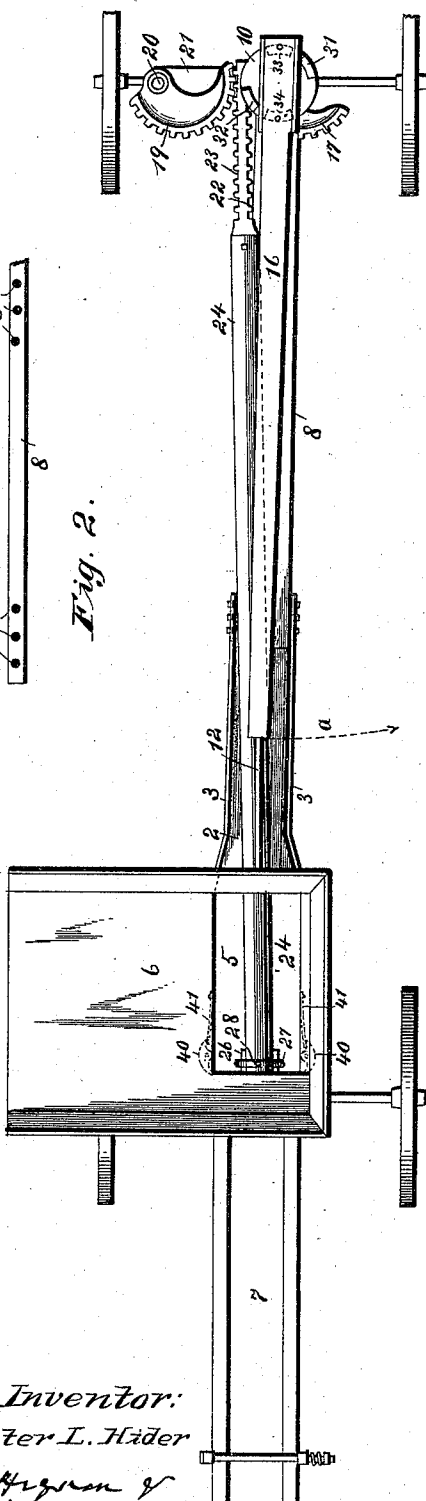


Fig. 2.



Witnesses:

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Higman &
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(No Model.)

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2 Sheets—Sheet 2.

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Fig. 5.

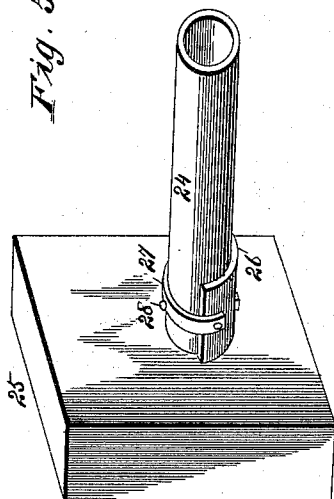


Fig. 6.

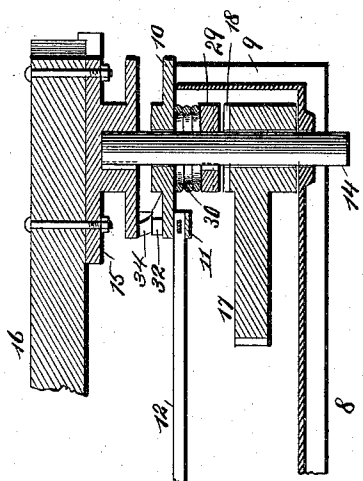
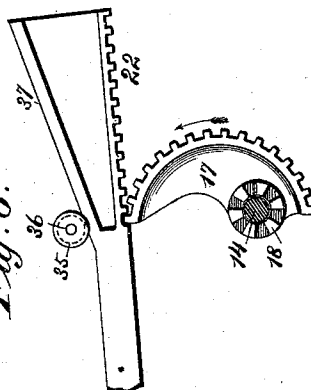


Fig. 3.

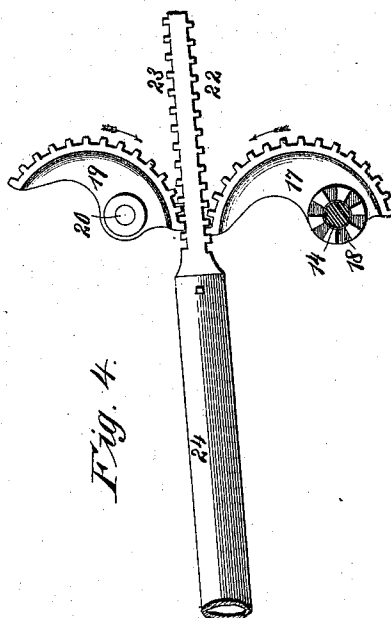


Fig. 4.

Witnesses:

S. G. Fischer
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Inventor:

Peter L. Hider

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By *[Signature]*
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UNITED STATES PATENT OFFICE.

PETER L. HIDER, OF KANSAS CITY, KANSAS.

HAY-PRESS.

SPECIFICATION forming part of Letters Patent No. 535,374, dated March 12, 1895.

Application filed July 2, 1894. Serial No. 516,343. (No model.)

To all whom it may concern:

Be it known that I, PETER L. HIDER, of Kansas City, Wyandotte county, Kansas, have invented certain new and useful Improvements in Hay-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to hay presses, and has for its object to produce a power mechanism whereby two compression strokes of the plunger are obtained with one revolution of the sweep or power-arm, whereby a rapid movement of the plunger is obtained at the beginning of the stroke, whereby the speed of movement of said plunger gradually diminishes and the power is correspondingly increased toward the end of the stroke; the power being more directly applied upon the plunger when it is most needed in completing the formation of the bale.

With this and other objects in view, the invention consists in certain novel and peculiar features of construction and combination of parts, as hereinafter described and claimed.

In order that the invention may be fully understood, reference is to be had to the accompanying drawings, in which—

Figure 1. is a side elevation of a hay press embodying my invention, and showing the same mounted upon wheels. Fig. 2. is a top plan view of the same. Fig. 3. is a vertical longitudinal sectional view on an enlarged scale of the front end of the machine. Fig. 4. is a detail plan view of the pitman bar and the eccentrically mounted segments engaging the same. Fig. 5. is a detail perspective view of the plunger and its connection with the pitman. Fig. 6. is a detail plan view of a modified form of construction. Fig. 7. is a side view of a portion of the bed or channel bar.

In the said drawings, 1 designates the bottom of the press proper, and it is recessed longitudinally in its upper side at 2, to form the upwardly projecting and marginal flanges 3.

The press 4 is mounted upon the bottom 1 in any suitable manner, and is provided with the usual feed-opening 5 in its upper side, and communicating with said feed-opening, is the laterally extending guide board or table 6. Extending rearwardly from the press 4, is the longitudinal plate 7, which forms the

upper side of the compression chamber. The channel-bar 8, fits within the recess 2 of the bottom 1, and is provided with the two sets of holes or apertures 8^a and 8^b, at a suitable distance apart, and a corresponding series of bolts 8^c extend through the flanges 3 of the bottom, and engage, when the baling press is in operation, the holes or openings 8^b.

When the press is not in operation, the machine is shortened, as hereinafter referred to, and the bolts 8^c engage the holes or openings 8^a. The front end of the channel-bar is bent vertically upward as shown at 9, and mounted rigidly upon the upper end of the same is the bearing-plate 10, which occupies a horizontal position.

Depending from the rear side of the plate 10, is a longitudinally extending sleeve 11, and secured by a key in said sleeve and extending longitudinally rearward, is the tie-rod 12, which engages the bail 13, secured to and projecting from the front end of the press proper. The top-plate 10 is provided with a vertical and circular bearing aperture, and a power shaft 14 depends vertically there-through, and also through the bearing opening in the channel-bar 8.

A casting 15 is secured rigidly to the upper end of the shaft 14, and is in turn bolted rigidly and firmly to one end of the sweep or power-arm 16. Mounted eccentrically and loosely upon the power-shaft 14, and resting upon the channel-bar 8, is the toothed segment 17, and formed integral therewith and projecting upwardly, is the clutch-section 18. A similar toothed segment 19 is eccentrically mounted upon a vertical stub-shaft 20, projecting from the horizontal extension 21 of the channel-bar, and a suitable distance from and to one side of the toothed segment 17, and the teeth of the segments 17 and 19 engage at all times the teeth 22 and 23, respectively, of the rack-bar, which projects forwardly from and is secured rigidly to the front end of the pitman 24; the arrangement being such that when the teeth of the segment 17 farthest from the axis of the shaft 14 are engaged with the rack-bar teeth 22, the teeth of the segment 19 nearest the center of the stub-shaft 20 are engaged with the teeth 23 of the rack-bar, and the pitman is in its retracted position, as shown clearly in Fig. 4, and is ready to begin

a new stroke. Projecting horizontally from the front side of the plunger 25 is the semi-circular socket 26, and fitting in said socket and retained therein by the semi-band 27, to which it is pivotally connected by the bolt 28, is the rear end of the pitman 24; said semi-band being bolted to the socket-plate, or otherwise rigidly secured. A clutch-section 29 is rigidly mounted upon the shaft 14, and is normally held in engagement with the companion clutch-section 18, by the spring 30, which spirally encircles the power-shaft, and bears at its upper and lower ends, respectively, against the top bearing-plate 10 and the upper side of the clutch-section 29.

In order to obtain two forward strokes of the plunger with one revolution of the sweep, at points diametrically opposite the power-shaft, the inclined shoulders or cams 31 and 32 project upwardly from the bearing-plate 10, and depending from the lower side of the casting 15, and at points diametrically opposite are the inclined shoulders or cams 33 and 34.

It will be observed from this construction that as the sweep is moved in the direction indicated by the arrow *a*, Fig. 2, and at the close of a compression stroke of the plunger, the inclined shoulders 33 and 34 come in contact with the inclined shoulders 31 and 32, and moving upwardly upon the same, the resistance of the spring 30 is overcome, and the shaft 14 is raised until the clutch 29 is disengaged from the clutch 18. Immediately this takes place the expansion of the bale being formed causes the recoil of the plunger, and the rack-bar engaging the toothed eccentrics 17 and 19, rotates the same backward in the direction indicated by the arrows, Fig. 2, and simultaneously with the recoil of the plunger, the inclined shoulders or cams 33 and 34 clear or become disengaged from the shoulders 31 and 32, and the shaft is caused by gravity and the action of the spring 30, to drop, and the clutch 29 re-engages the clutch 18, as will be readily understood, and immediately this re-engagement of the clutches takes place, the continued rotation of the shaft causes the toothed segments to operate in the direction of the arrows, Fig. 4, and advance the plunger. As the inclined shoulders or cams 33 and 34 come in contact with and ride upon the inclined shoulders or cams 32 and 31, respectively, the clutches are again disengaged, as above explained, to allow the plunger to recoil, and to arrange the pitman and plunger for the next stroke, as will be readily understood.

By reference to Fig. 4, it will be apparent that the pitman, at the beginning of the stroke, is engaged by the teeth of the segment 19 nearest its axis 20, and that it is engaged at the opposite side by the teeth of the segment 17 farthest from the axis 18, and thereby occupies a position at an angle to the direction of the stroke of the plunger, and that as said segments are rotated in the direction of the arrows, Fig. 4, to advance the plunger,

the pitman is simultaneously advanced and swings at its front end toward the power-shaft 18, therefore applying the pressure upon the bale being formed, as the stroke of the pitman is completed, almost in the direct longitudinal line of the machine; the power being increased as the power is more directly applied.

The toothed segment 19 and its engaging rack-bar 23, form a guide for the reciprocating action of the plunger, and serve to hold the rack-teeth 24 positively in engagement with the teeth of the power segment 17. In lieu of this segment and its engaging rack-bar, an anti-friction roller may be employed; said roller being mounted rotatably upon the stub-shaft 36 upon the extension 21 of the bed or channel bar 8, and engaging said roller, is an inclined track-rail 37, which diverges forwardly toward the front end of the rack-bar. When the pitman is in its retracted position the teeth farthest from the axial center of the toothed segment 17, engage the rack-bar, and the anti-friction roller bears against the adjacent end of the track-rail 37, and as said segment is rotated in the direction indicated by the arrow, Fig. 6, the pitman is advanced and is caused to move laterally at its front end by reason of the action of the anti-friction roller upon the guide-rail, so that the rack-bar shall at all times engage the toothed segment 17.

The side-walls of the press proper are provided with openings 38, and pivotally mounted upon the vertical rods carried at the outer sides of the same, are the retainer-arms 40, and these retainer-arms are acted upon by the springs 41, secured to the sides of the press, to hold their inner ends yieldingly within the baling-chamber. As the bale is being formed, and is forced beyond the inwardly-projecting ends of said retainer-arms, the pressure of the springs 41 is overcome, and said retainer-arms pivotally yield to allow the bale to pass. After the stroke of the plunger is completed and it is withdrawn, the springs immediately cause the retainer-arms 40 to project into the chamber and thereby prevent the bale following in the wake of the plunger.

In the operation of the machine, the same is moved from the wheeled framework and placed upon the ground, and is designed to be supported by said framework only when the device is being conveyed from one place to another.

From the above description, it will be apparent that I have produced a power mechanism for hay presses which, as the stroke of the plunger nears completion, more directly applies the power thereon, and which exerts a gradually increasing pressure as the resistance of the bale being formed becomes greater, and by which two strokes of the plunger are obtained to one revolution of the sweep.

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

In a hay press, the combination with a suitable framework provided with upwardly projecting inclined shoulders or cams, a power-shaft journaled therein, a sweep-carrying casting mounted upon the power-shaft and provided with depending inclined shoulders or cams and a pitman provided with teeth, of a toothed segment 17 mounted loosely and eccentrically upon the power-shaft, provided with a clutch-section 18, a second clutch-section mounted rigidly upon the shaft, and a spring encircling the shaft and exerting its pressure upon a stationary part of the framework and upon the clutch-section rigidly car-

ried by the shaft, so that as the shaft is rotated the engagement and disengagement of the upwardly projecting and depending cams will cause the shaft to rise and fall, and consequently the disengagement and reengagement of the said clutch-sections, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PETER L. HIDER.

Witnesses:

M. R. REMLEY,
OS. Y. THORPE.