

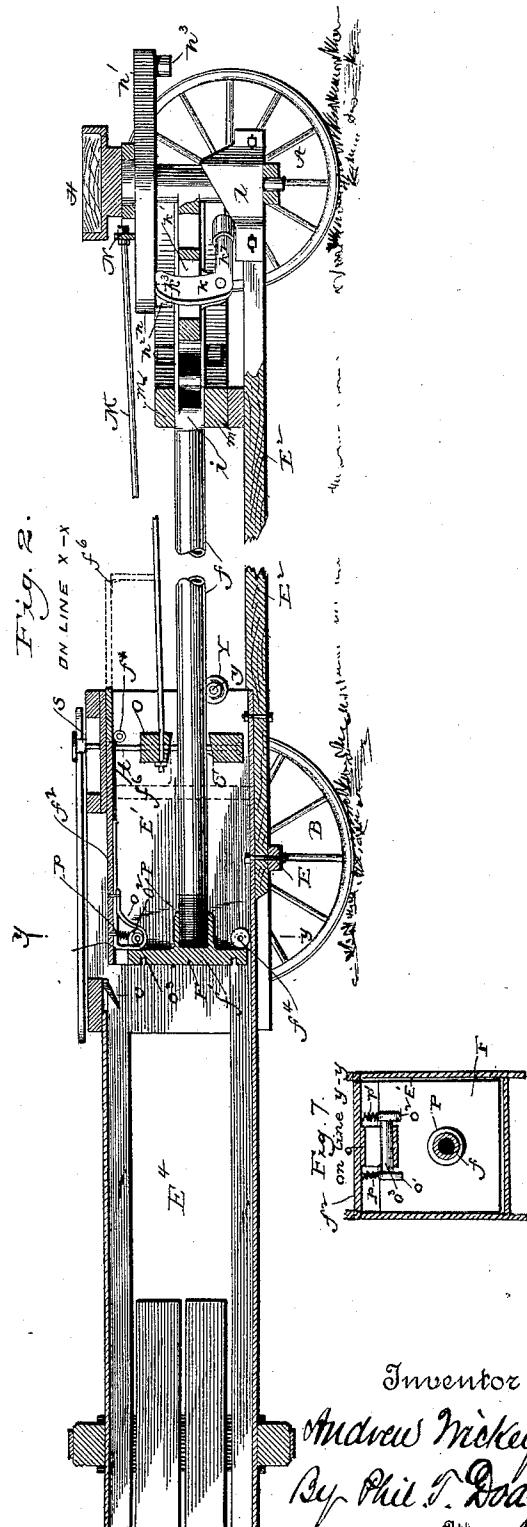
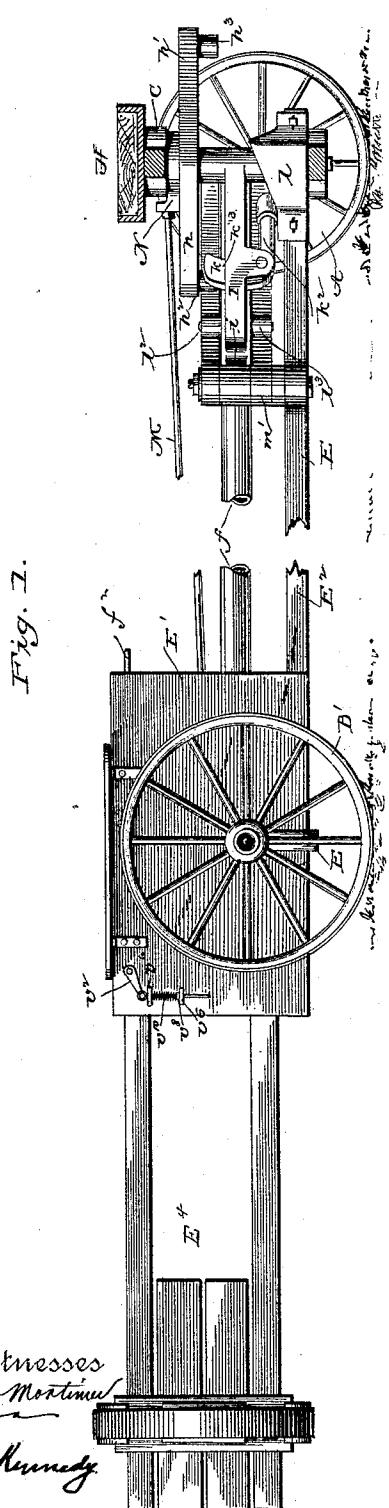
(No Model.)

2 Sheets—Sheet 1.

A. WICKEY.
BALING PRESS.

No. 421,462.

Patented Feb. 18, 1890.



Witnesses

M. M. Montague

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Inventor

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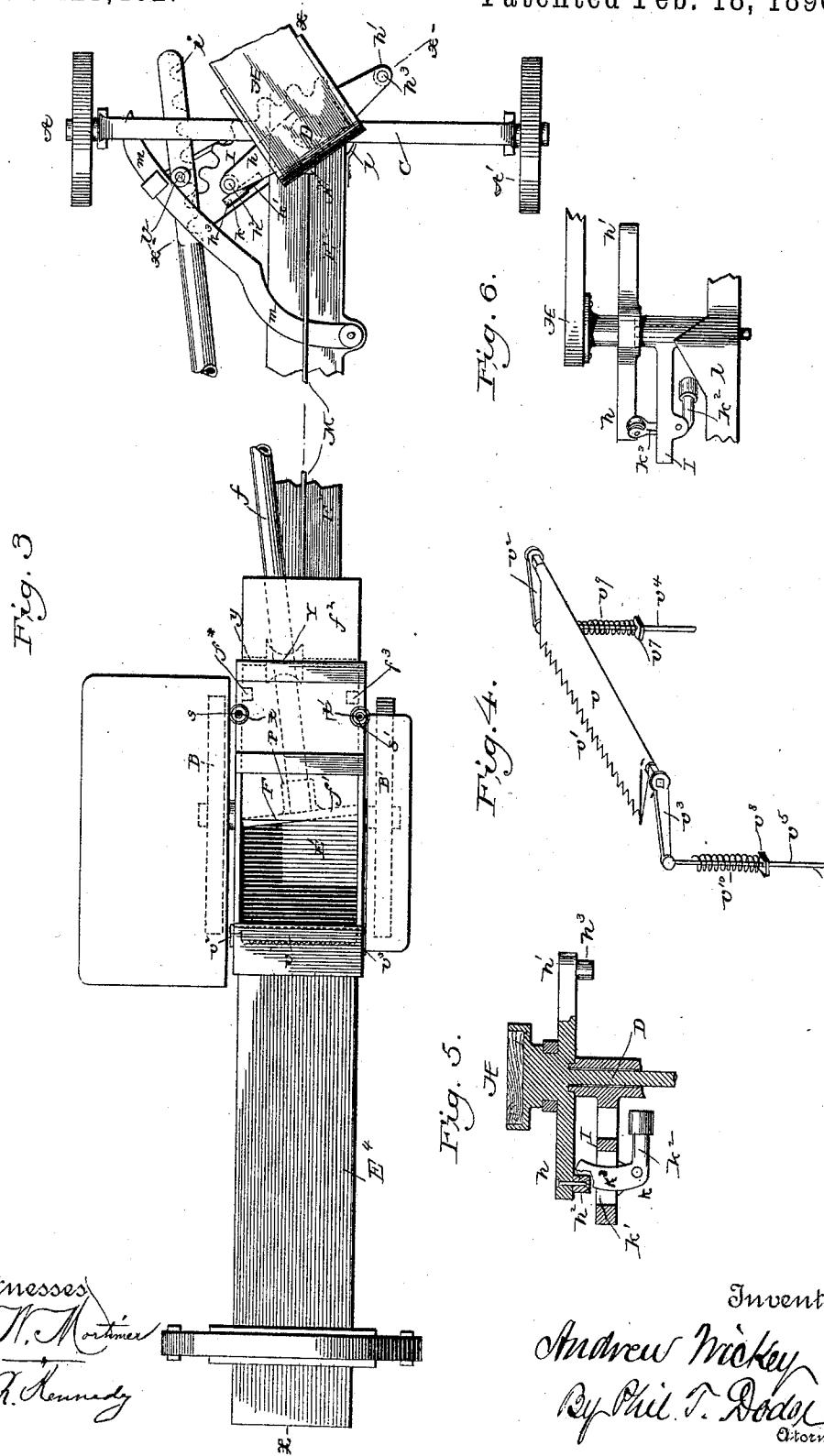
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2 Sheets—Sheet 2.

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BALING PRESS.

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Witnesses

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UNITED STATES PATENT OFFICE.

ANDREW WICKEY, OF QUINCY, ILLINOIS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 421,462, dated February 18, 1890.

Application filed March 11, 1889. Serial No. 302,773. (No model.)

To all whom it may concern:

Be it known that I, ANDREW WICKEY, of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification.

The invention consists in various improvements in what are known as "rebounding-plunger presses," in which the hay or other material is fed in successive charges into a trunk or chamber and compressed therein by a plunger and the accumulated mass forced through the contracted end of the trunk.

In the accompanying drawings, Figure 1 is a side elevation of a baling-press having my improvements embodied therein. Fig. 2 is a longitudinal vertical section of the same on the line $x x'$ of Fig. 3. Fig. 3 is a top plan view of the same. Fig. 4 is a perspective view of the tucker or detaining-plate. Fig. 5 is a vertical section on the line $x' x'$ of Fig. 3. Fig. 6 is a view of a modification. Fig. 7 is a section on the line $y y$ of Fig. 2.

Referring to the drawings, E' represents the baling-chamber, provided with a top opening to receive the charges of material, and with the horizontal trunk E^4 , forming a continuation thereof, and contracted toward the delivery end to assist in the compression of the material in its course to the point of delivery. With the exception of certain details hereinafter described, these parts are all essentially of the same construction as in presses now in general use.

The baling-chamber is sustained by an underlying axle E , the ends of which are cranked upward and mounted in ground-wheels $B B'$. To the under side of the baling-chamber is firmly bolted a reach-bar E^2 , which is extended forward and connected at its extremity by a vertical shaft D to the front wheel-frame C , having at its ends journals to carry the ground-wheels $A A'$. This wheel frame or axle C is constructed with an opening therethrough from front to rear to admit the operative parts, hereinafter described.

The compression of the charges is effected, as usual, by a reciprocating follower or plunger F , sometimes termed a "traverser," mounted in the bale-chamber. Instead of guiding this plunger in the usual manner to

keep its face properly presented to the charge, I secure it rigidly to the forward end of a pitman f , which receives, like the pitman in common use, both a longitudinal and lateral motion at its opposite end. I propose to operate this pitman either by the special mechanism hereinafter described or by any ordinary mechanism now in general use for the purpose. Being attached rigidly to the plunger, it prevents the latter from tipping or rocking out of an operative position. It serves not only to advance and retract the plunger, but to hold it in such position that its face is presented fairly against the charge. Owing to the lateral vibration of the pitman the plunger receives a slight rocking or tipping movement in a horizontal plane as it is carried forward and backward, but this tipping action is so slight that the action is not imparted thereby.

I prefer to connect the pitman to the plunger by screwing it into a rigid neck P on the back of the plunger, as shown in Fig. 2; but it is to be understood that any rigid connection of an equivalent character may be employed.

In order to close the feed-opening as the plunger advances, I employ, as usual, a top plate f^2 , extending forward from the upper edge of the plunger, and in order that this plate may be moved freely forward and backward by the rocking plunger I employ a loose joint or connection between them, so that the plunger may rock horizontally without swinging the plate sidewise. The jointed connection may be of any suitable construction which will permit the plunger to rock in a horizontal plane independently of the top plate. I prefer to employ the construction shown in Figs. 2 and 7, in which o represents a stirrup fixed to the under side of the top plate and passing downward around a horizontal roller or pin o^3 , fixed between ears o' and o^3 on the back of the plunger. The stirrup is of such size as to permit a considerable motion between the plunger and the top plate, not only in a horizontal, but also in a vertical direction. Springs $p p'$, seated between the top plate and the top of the plunger, hold the plate up normally to its normal position, but admit of its sinking in the event of the hay being wedged between the plate

and the top of the trunk, as sometimes happens. The top plate is sustained at its forward end by stationary rollers f^* , fixed to the inside of the baling-chamber.

5 In order that the plunger may move forward without having the top plate project into the path of the animals employed to operate the machine, I divide the top plate transversely between its ends and connect the 10 parts by a hinge, as shown at f^6 , so that the forward end may drop to the position indicated by dotted lines in Fig. 2. When the plunger moves inward, the rollers act to lift the hinged end to its operative position.

15 In order to retain the charges as they are moved forward by the plunger, I mount in the top of the baling-chamber, at the delivery side, a detaining-plate v , extending entirely across the same from side to side. The 20 plate is mounted at its forward edge on horizontal journals, and is provided at the rear edge, as shown in Fig. 4, with teeth v' at the delivery edge to engage the hay. The journals of the plate are provided at their outer 25 ends with crank-arms v^2 v^3 , connected, respectively, to rods v^4 v^5 , provided with nuts v^7 and v^8 , acted upon by spiral springs v^9 v^{10} . The springs are mounted upon the rods and bear at the upper ends against stationary 30 plates v^6 on the outside of the baling-chamber. This arrangement of the parts permits the toothed edge of the detaining-plate to rise under the pressure of the advancing charges, but causes it to sink securely into engagement 35 with the same. By tightening the nuts upon the rod the tension of the spring and the consequent pressure of the plate may be increased.

In order to assist in sustaining the pitman 40 and to relieve its operating parts of friction, I support it upon a grooved roller Y , mounted to turn and to slide freely on a horizontal shaft y , fixed across the forward end of the baling-chamber. The roller shifting laterally 45 with the pitman affords a constant rolling support therefor.

In order to arrest the rebounding motion 50 of the piston with an easy action, I provide an adjustable stop consisting of the two timbers O and O' , mounted transversely in the forward end of the trunk in position to embrace the hub P of the plunger as the latter retreats. The proximate faces of these timbers are beveled outward, as shown, so that 55 the hub enters between them with a wedging action. The upper timber may be fixed in position, but the lower timber O' is sustained at its ends by two rods t t' , carried through the top of the trunk and provided with adjusting-nuts s s' , by means of which the lower 60 timber may be raised toward its companion in order to increase the frictional effect upon the hub of the plunger.

For the purpose of advancing the plunger 65 and allowing the same to rebound, and this by a continuous rotary motion of an operating-sweep, I employ the mechanism shown in

Figs. 1, 2, 3, and 5. The sweep H is bolted to a plate formed upon or secured to the upper end of a vertical shaft D , so that as the 70 sweep revolves it imparts a rotary motion to said shaft. The shaft carries a rigid cross-arm h h' , bearing at its ends the depending studs or rollers h^2 and h^3 . An eccentric toothed gear or rack-segment I is mounted 75 to turn loosely around the shaft E , and is provided with an angular dog k , connected thereto by a horizontal pivot. One end k^3 of this dog extends upward through the opening k' in the gear I into the path of the studs h^2 80 h^3 , which are carried in a circular path by the rotation of the sweep. The lower end k^2 of the dog k is carried by the vibration of the gear I against a stationary cam-plate l , fixed to the frame. 85

The plunger-operating pitman is provided on its side with teeth i to engage the teeth of the gear I , and the teeth of the two parts are held in constant engagement by rollers i^2 i^3 , mounted on the pitman and traveling 90 against the edges of the eccentrically-curved rails m m' . When the plunger is retracted, the parts stand normally in the position shown in Fig. 3, the teeth at the outer end of the gear I being in engagement with the pitman. As the sweep revolves, one or the other of its studs h^2 h^3 will encounter the upper end k^3 of the dog k , and through the dog will cause the gear I to turn forward with the sweep. As it turns forward, its teeth advance 95 the pitman and plunger, the leverage gradually increasing as the teeth nearer the center are brought successively into action. As the plunger completes its forward movement, the lower end k^2 of the dog k encounters the 100 cam l , which throws its upper end out of engagement with the stud on the driving-arm. Although both the sweep and the driving-arm continue their rotation, the gear I and the pitman are permitted to move backward 110 under the reactionary pressure or effect of the charge upon the plunger. During the same revolution of the sweep the second stud is brought into action on the dog and the plunger advances, as before. Thus it is that 115 by a continuous rotation of the sweep the plunger is advanced and released, and this twice during each rotation of the sweep. The cam-plate l is fixed to the frame by bolts passing through slots therein, as shown in Figs. 120 1 and 2, so that it may be adjusted to trip the dog sooner or later. In this manner the point to which the plunger is advanced may be varied at will.

In order to strengthen the structure and 125 resist the tendency of the plunger to force the baling-chamber away from the operating mechanism, I employ a tie-rod M , connected at one end to the cross-bar O of the baling-chamber and at the opposite end to a lug N 130 on the axle-frame.

Having thus described my invention, what I claim is—

1. In combination with the bale-chamber

and the reciprocating top plate therein, the reciprocating plunger jointed to the top plate to rock independently in a horizontal plane.

2. The bale-chamber and the rocking reciprocating plunger, in combination with the top plate, the stirrup connecting the plate and plunger, and the intermediate spring, whereby the plate is permitted an independent rising-and-falling motion and the plunger allowed to rock without causing the plate to bind at its edges against the side of the chamber.

3. In combination with the baling-chamber, the plunger and the longitudinally and laterally movable pitman fixed to the plunger, the pitman-sustaining roller, and the shaft, whereon the roller is free to turn and slide.

4. The combination, with the laterally and longitudinally moving pitman having the plunger attached, of the grooved pitman-sustaining roller mounted to move laterally with the pitman, substantially as described and shown.

5. The baling-chamber, the detaining-plate extending across the same and provided with supporting-journals at one edge and with teeth at the other, in combination with the crank-arms applied to its journals, and the rods and springs for actuating said crank-arms:

6. In a bailing-press, the rebounding plunger with the hub or projection therein, in combination with the fixed beveled bars O O' to embrace the projection and check the motion of the plunger.

7. The rebounding plunger with the hub or

projection thereon, in combination with the bars O O', and the rods and nuts to adjust the latter.

8. In combination with the plunger, its actuating-pitman provided with teeth, the eccentric gear engaging the same, the rotary sweep and its shaft and cross-arms, the dog to engage the arms, and the cam or incline to disengage the dog, whereby the sweep is enabled by a continuous rotary motion to repeatedly advance and release the plunger.

9. The combination, with a traverser or plunger and a pitman provided with a rack and connected with the traverser, of the power-shaft turning in one direction, a rack-segment 50 loosely mounted on the shaft, so as to be turned with the latter and returned on the shaft, and meshing with the pitman-rack, and automatically connecting and disconnecting mechanism for the rack-segment.

10. The combination of a traverser or plunger, a pitman having a rack, a power-shaft, an oscillating rack-segment loosely mounted on the shaft and engaging the pitman-rack and having a projection, a press projection, and a 60 shaft projection for automatically connecting and disconnecting the shaft with the segment projection.

In testimony whereof I hereunto set my hand, this 6th day of February, 1889, in the presence of two attesting witnesses.

ANDREW WICKEY.

Witnesses:

U. H. KEATH,
MICHAEL PIGGOTT.