

B. W. ARNOLD.
Baling-Press.

No. 215,201.

Patented May 13, 1879.

FIG. 1.

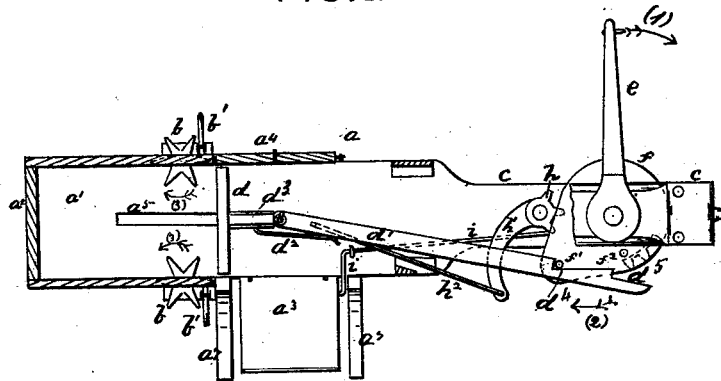


FIG. 2.

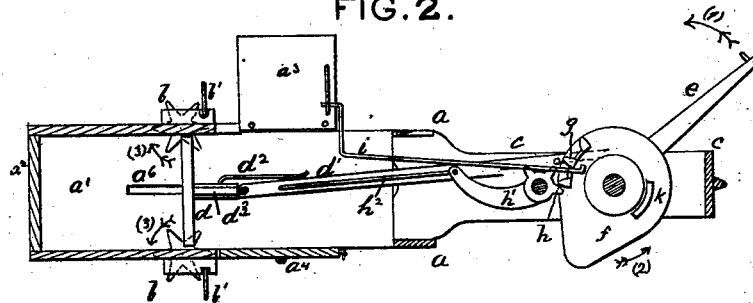


FIG. 3.

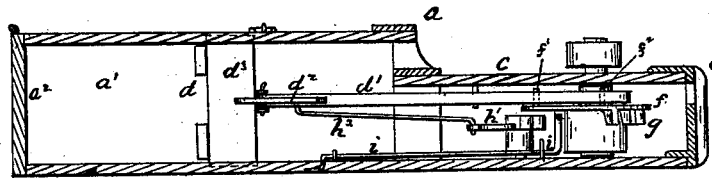
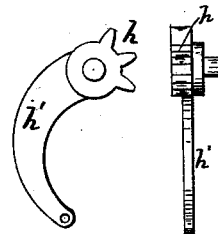
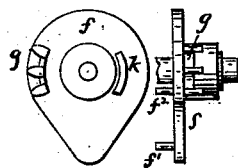


FIG. 4.

FIG. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BALING-PRESSES.

Specification forming part of Letters Patent No. **215,201**, dated May 13, 1879; application filed March 29, 1879.

To all whom it may concern:

Be it known that I, BERNARD W. ARNOLD, of Litchfield, in the county of Montgomery and State of Illinois, 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, and to letters of reference marked thereon, which form a part of this specification.

This invention consists in a cam journaled in the press-frame, and provided on one side with a series of pins or shoulders arranged at varying distances from its center of motion, and on its other side with a cog-segment and other devices, arranged to give a to-and-fro movement to the follower and operate other parts of the press mechanism; and it consists, further, in the construction of the mechanism connecting with the cam for operating the follower and other parts of the press, all of which will be hereinafter fully explained, and pointed out in the claims.

In the drawings, Figure 1 is a horizontal section of the casing, showing a top view. Fig. 2 is a horizontal section, showing an under-side view. Fig. 3 is a vertical section, showing a side elevation of the operating devices of my invention, and Figs. 4 and 5 are detail views of parts of the same.

a is the casing, having in one end the press-box *a*¹ and removable door or end board *a*², and in its opposite end the side doors *a*³ *a*⁴, and guide-slots *a*⁵ *a*⁶ in the upper and under boards. *a*⁷ are aprons or guides to facilitate the operation of putting the hay into the press through the side doors.

b b are two rollers constructed with radial arms, and journaled in the side walls of the casing at the right hand of the press-box *a*¹, and opposite the point where the follower or piston ceases to press the bale.

b' *b'* are weighted pawls pivoted to the casing, and so arranged that they will permit the rollers *b* to turn inward and toward the press-box, but prevent a backward revolution. The bale when it has been compressed will be held

by the rollers *b* after the follower has been withdrawn.

c is an extension-frame attached to the end of the casing *a*, to which is affixed the operating or power mechanism of my invention.

d is the follower, to which is hinged the lever-arm or piston-rod *d*¹ and spring *d*². The head-block *d*³ of the follower is provided with suitable extensions, which project into and slide to and fro in the guide-slots *a*⁵ *a*⁶.

The spring *d*² has one end fixed rigidly to the head-block *d*³, while its opposite or free end bears upon the side of and holds the lever-arm or piston-rod *d* with its outer end pressed in against the operating-cam. The piston-rod *d*¹ has formed in its outer end a series of notches, *d*⁴ *d*⁵, on the side next the cam.

e is the sweep, which is drawn in the direction of the arrows 1, Figs. 1 and 2, by the horse hitched to its outer end. It has its axis journaled in the outer end of the extension-frame *c*, and to its axis is affixed the cam *f*, arranged between the timbers of said frame.

The cam *f* has on its upper side a series of pins or shoulders, *f*¹ *f*², so arranged that they will successively engage the notches *d*⁴ *d*⁵ as it is revolved by the sweep *e*.

I have shown but two pins, *f*¹ *f*², but it will be readily seen that more than two or only one may be employed. The notches *d*⁴ *d*⁵ correspond in number to the number of pins *f*¹ *f*². These pins may be made so that they can be removed by being constructed with a threaded shank, which may be screwed into a threaded hole in the cam, thus providing for a more gradual cumulative power or force as the sweep revolves.

On the under side of the cam there is formed a small segment, *g*, which, at the proper moment after the pressing of the bale is completed, engages a segment, *h*, on the pivoted arm *h*¹, to the outer end of which is affixed one end of the pitman *h*². The opposite end of the pitman *h*² is affixed to the inner end of the lever-arm *d*¹, near to the follower. By the action of the segment *g* on the segment *h*¹ and arm *h* the follower is withdrawn from contact with the bale into a position out of the way when the box is being filled for the next bale.

i is a crank-lever, which has one end suit-

ably attached to the door a^3 , while its other end is carried to and is formed so that it will be engaged and actuated by a projection, k , on the under side of the cam f , and automatically close the said door at the moment the said cam engages the lever-arm d^1 and begins to force the follower toward the press-box.

When the bale is completed the end of the crank-lever clears the projection k , and the door a^3 will drop open of itself unless held by temporary props or pins on the outside.

From the description hereinbefore given, and from the drawings, the operation of the press will be clearly understood.

When the hay is first put into the box it is loose, and requires little force to compress it; but as it becomes more compact greater force is required.

The pins or shoulders $f^1 f^2$ and the notches $d^4 d^5$ are arranged to meet this varying force. The outer pin, f^1 , engages the notch d^4 , after which the pin f^2 , arranged nearer to the center of motion of the cam, engages the notch d^5 , and so on, according to the number of pins and notches that may be provided.

In this invention I employ but a single piston-rod or arm, d^1 , for moving the follower, and the action of the latter is nearly in a direct line on the bale. This arm is farthest out of direct line when the least power is exerted on it. As the bale becomes more compact and the power increases the arm is drawn nearer to the direct line between the fulcrum of the cam and the center of the follower or bale.

The outer or free end of the lever-arm d^1 is held by the spring d^2 at all times in proper position, so that the pins $f^1 f^2$ will engage the notches $d^4 d^5$ as the cam f revolves.

Material to be baled requiring but slight pressure could be pressed by a machine constructed according to my device and having but a single notch, d^4 , in the arm d^1 , and a single pin, f^1 , in the cam f .

Instead of the sweep e a pulley or other suitable device may be put on the axis of the cam f , so that the press can be operated by an endless belt or chain connecting with a suitable horse or other power.

I claim—

1. In a baling-press, the cam f , provided on one side with a series of pins, $f^1 f^2$, arranged at varying distances from its center of motion, and provided on its opposite side with the segment g , and arranged to engage with intermediate mechanism and move the follower to and fro, substantially as set forth.

2. In a baling-press, the combination, with the head-block d^3 , of the follower d and lever-arm d^1 , having a notch, d^5 , in its outer end, of the cam f , provided with a pin, f^2 , which engages the notch d^5 in the arm d^1 , and is operated substantially as set forth.

3. The spring d^2 , in combination with the head-block d^3 , follower d , arm d^1 , provided with notches $d^4 d^5$, and cam f , provided with pins $f^1 f^2$, substantially as and for the purpose set forth.

4. The combination, with the door a^3 , hinged to the side of the casing a , and the cam f , having the projection k on its side, of the connecting crank-lever i , substantially as and for the purpose set forth.

5. The combination, with the follower d , head-block d^3 , arm d^1 , and cam f , having the segment g , of the arm h^1 , having segment h and pitman h^2 , substantially as and for the purpose set forth.

6. In a baling-press, the combination, with the follower d and head-block d^3 , the single hinged arm or shaft d^1 , having notches $d^4 d^5$ on its free end held by a spring, d^2 , the door a^3 , hinged to the casing a , and the crank-lever i , of the cam f , provided on its upper side with a series of pins, $f^1 f^2$, arranged at varying distances from the center of motion, and provided on its under side with the segment g and projection k , pivoted arm h^1 , having segment h and pitman h^2 , all arranged to operate substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

BERNARD W. ARNOLD.

Witnesses:

JACOB T. MILES,
DAVID DAVIS.