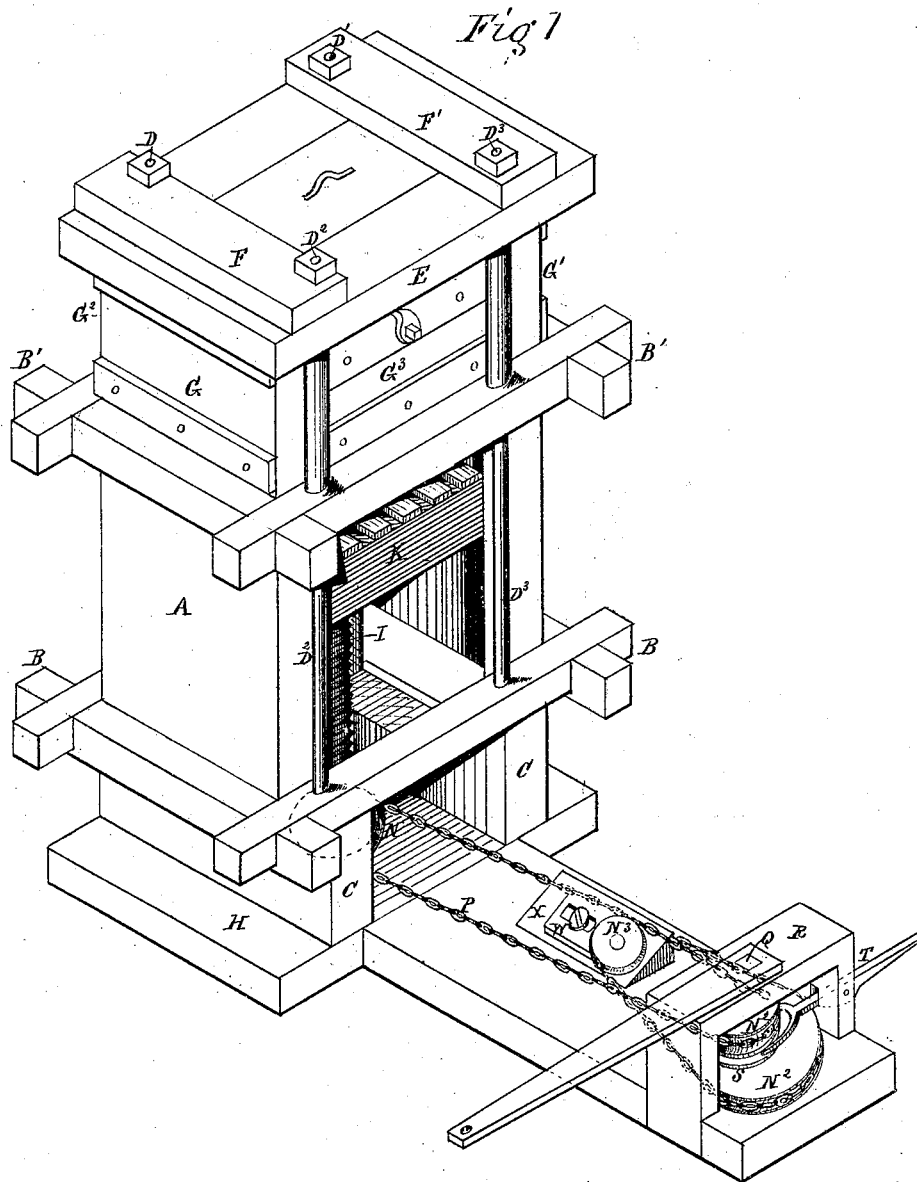


*J. Knowles,*

*Cotton Press.*

*No. 102,424.*

*Patented Nov. 22, 1870.*



Witnesses  
*Isaac R. Oakford,*  
*Frank Stout*

*David Knowles*  
Inventor  
By his Attorney  
*Chas. Eastman*

# United States Patent Office.

DAVID KNOWLES, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 109,424, dated November 22, 1870.

## IMPROVEMENT IN COTTON AND HAY-PRESSES.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, DAVID KNOWLES, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful "Improvement in Presses for Baling Cotton, Hay, &c.," and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawing and to the letters of reference marked.

The object of my invention is to construct a press for cotton or other fibrous products requiring compression or baling by combining certain well-known devices so as to render it simple, durable, and effectual in operation.

Figure 1 is a perspective view of a press embodying my improvements.

Figure 2 is a vertical section through a portion of the same.

Figure 3 is a plan view of the chain and pulleys used in elevating the platen.

To enable those skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

The receptacle for confining the cotton or other fibrous products while under compression, consists of a long rectangular-shaped box A, made with an opening in the front side, and securely held together by means of the frames B and B', one of which is placed at the lower end of the box and the other at a suitable distance above it.

The said box is elevated by resting the frame B on two bolsters, C and C', through which is passed four vertical rods, D, D', D'', and D'''. These rods extend up and pass through the side pieces of the frames and through the head-block E of the box, and bear on their upper ends suitable nuts for securing the block to them.

In order to give additional strength to the block, two cross-pieces, F and F', are placed on it, through which the rods also extend.

The diameter of the rods between the upper surface of the frame B' and the lower side of the cross-pieces F and F' are increased by incasing them in tubes of considerable thickness, or by increasing this part of the rod itself, in order to give additional stiffness and cause them to act as columns for supporting the head-block.

The sides and ends of the press-box above the frame B' are made detachable in order to open so as to allow the bale to be discharged from either end of the platen. This is accomplished by making the end pieces G and G', and the side pieces G'' and G''', in separate parts. The end pieces are provided on their vertical edges with projections, which extend around a short distance on each side of the box and are flush

with it. The space remaining between these projections on each side of the box are filled up with the side pieces G'' and G''', so that when in place they form a continuous box, as shown in fig. 2 of the drawing.

The side and end pieces are strengthened by battens secured across them, and the extremities of the planking of the box, which are secured to the inside of the frame B', are brought down a short distance below the upper surface of it, so as to form a space into which the lower ends of the side and end pieces are inserted, while their upper ends are retained in a rabbet made on the lower side of the head-block E.

The bolsters C and C' are rested on a bed or platform, H, and are secured to it by passing the rods D, D', D'', and D''', through, and allowing their heads to bear against the under side of the bed or platform; the bolsters are also brought as close together as possible, so as to economize space, and at the same time to give great strength and compactness to the apparatus.

By arranging the rods at a certain distance from the center of compression their entire strength is concentrated at the points where it is most needed to resist the strain on the press.

The central portion of the said bolsters are cut down a proper distance in order to allow the platen to fit in the recesses and thus to be brought as close as possible to the bed H, thus giving a larger space above the platen for the reception of loose material previous to compressing it.

In the center of the compression-box A is placed a vertical screw-shaft I, on the upper end of which is attached a platen, K, which fits loosely in the box and compresses the cotton or other material; its surface, and also that of the underside of the head-block E, are scored across for the reception of the bands for securing the bale.

The upper end of the shaft is attached to the platen by means of a socket-plate, L, which allows the shaft to revolve independent of it. This end of the shaft is also supplied with a pin, M, which is inserted in an opening made in the shaft so as to prevent its turning when power is applied, and is withdrawn to allow the shaft to descend by its own gravity when it is desired to lower the platen.

The shaft I passes through a chain-pulley, N, in the hub of which is cut a female screw-thread to suit the thread on the shaft; the hub of the said pulley rests and turns in an annular recess formed in the circular plate O, which is secured to the bed H of the apparatus, so as to relieve the strain of the endless strain P from the shaft, fig. 2.

At a suitable distance from the compression-box is placed a frame, R, which supports an upright shaft, Q, and on which is placed loosely two chain-pulleys,

N<sup>1</sup> and N<sup>2</sup>, of different diameters. Between the said pulleys, and made so as to slide up and down on the shaft, is a clutch, S, provided with a forked lever, T, for operating it.

The upper and lower flanges of the clutch are made with suitable openings, which engage alternatively with pins or studs, U, U<sup>1</sup>, U<sup>2</sup>, and U<sup>3</sup>, secured on the upper and lower surfaces of the pulleys N<sup>1</sup> and N<sup>2</sup>.

Immediately in front of the frame R is a pulley, N<sup>3</sup>, pivoted at a proper inclination to a sliding plate, W, which rests and is adjusted by a set-screw on a bevel piece, X, secured to the bed of the machine.

The chain P, fig. 3, is passed around the large pulley N<sup>2</sup>, and one end of it is carried up and around the pulley N<sup>1</sup>, immediately above, by passing it over the inclined pulley N<sup>3</sup>. This end is then continued out and passed around the pulley N on the shaft I, and is joined to the opposite end previously passed around the pulley N<sup>2</sup>.

The pulley N<sup>3</sup> can be adjusted so as to give the proper tension to the chain, and the chain, when secured together at the ends, forms an endless connection.

The cotton is inserted in the box through a man-hole made in the head-block E, and the bale, after being compressed and tied up, is discharged from either end of the platen.

In arranging the chain and pulleys in the manner above described a variable velocity is given to the shaft I and the platen K; by engaging or disengaging the clutch S with or from the pulleys N<sup>1</sup> or N<sup>2</sup> of different diameters, as, for instance, at the commencement of the operation, a quick speed is required, as the resistance is very small, scarcely perceptible, and gradually increases as the density of the cotton increases under the action of the press, at which time a slower speed is necessary.

The side and end pieces G, G<sup>1</sup>, G<sup>2</sup>, and G<sup>3</sup> are placed in position by first inserting their lower ends in the space formed for the purpose on the inside of the

frame B, after which they are slightly raised vertically by inserting a wedge or block under the edge of the lower battens, which forces their upper ends into the rabbet on the under side of the head-block; and when it is desired to open the press for the discharge of the bale, the wedges or blocks are withdrawn, and any suitable device employed to force the pieces downward, when the lateral pressure on the bale will cause them to be forced outward.

The front side of the press-box need not necessarily be made open, as described in the foregoing part of this description, the object in this case being merely to show the interior arrangement.

Motion is given to the apparatus through power applied to the end of the lever T<sup>1</sup>, which rotates the shaft Q and pulley N<sup>1</sup> and N<sup>2</sup>, and communicates it from them by means of the endless chain P to the vertical shaft carrying the platen.

Having thus described my invention, its construction and operation,

What I claim, and desire to secure by Letters Patent, is--

1. The construction and arrangement of the box A, frames B and B<sup>1</sup>, bolsters C and C<sup>1</sup>, rods D, D<sup>1</sup>, D<sup>2</sup>, and D<sup>3</sup>, head-block E, cross-pieces F and F<sup>1</sup>, side and end pieces G, G<sup>1</sup>, G<sup>2</sup>, and G<sup>3</sup>, substantially in the manner and for the purpose specified.

2. The combination of the chain-pulleys N, N<sup>1</sup>, N<sup>2</sup>, and N<sup>3</sup>, circular plate O, endless chain P, shaft Q, clutch S, lever T, pins or studs U, U<sup>1</sup>, U<sup>2</sup>, and U<sup>3</sup>, and sliding plate W, constructed and arranged substantially as described.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

DAVID KNOWLES.

Witnesses:

ISAAC R. OAKFORD,  
GEO. E. NICHOLS.