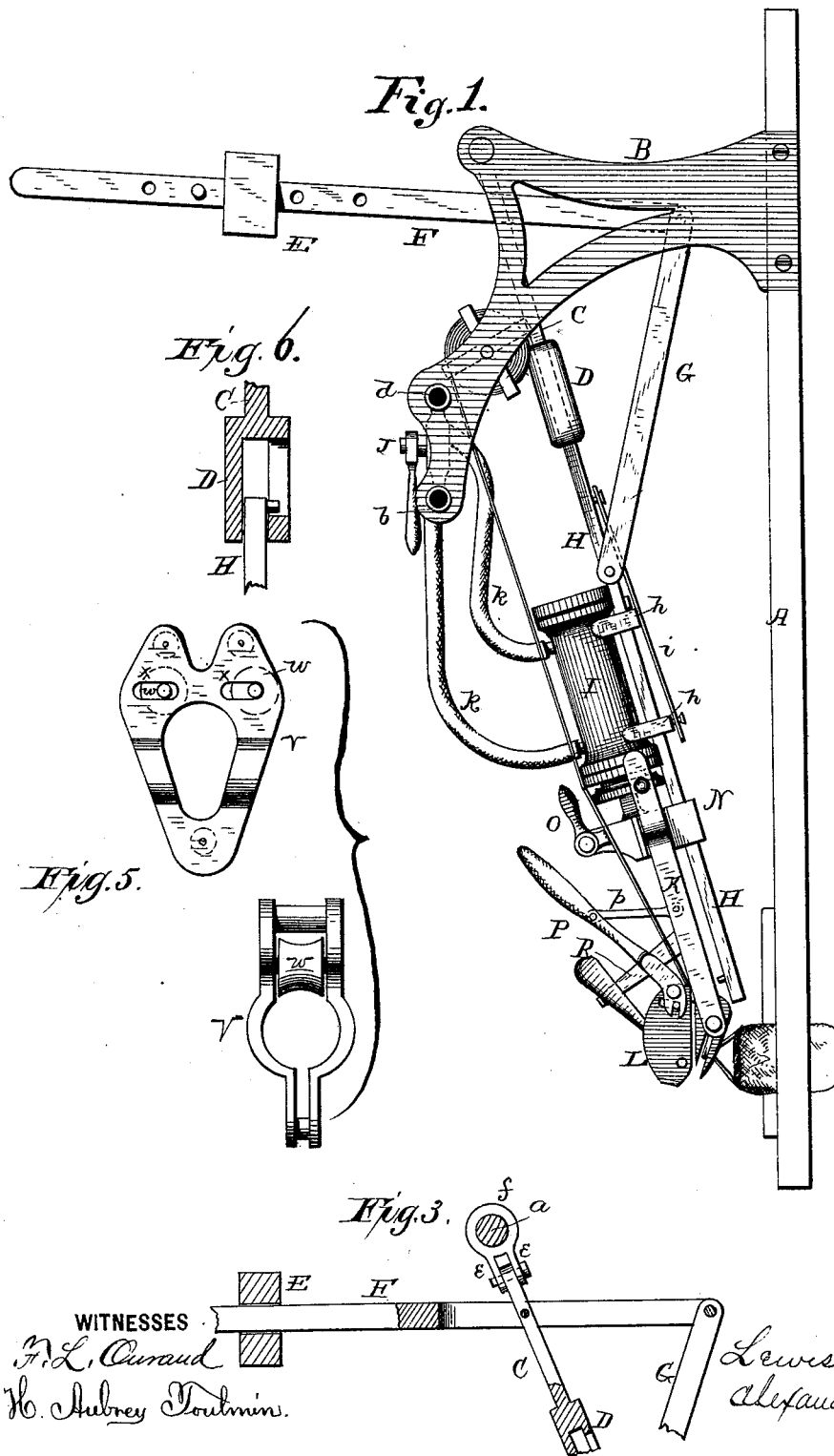


L. MILLER.
Bale-Band Tightener.

No. 220,635.

Patented Oct. 14, 1879.



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Fig. 2.

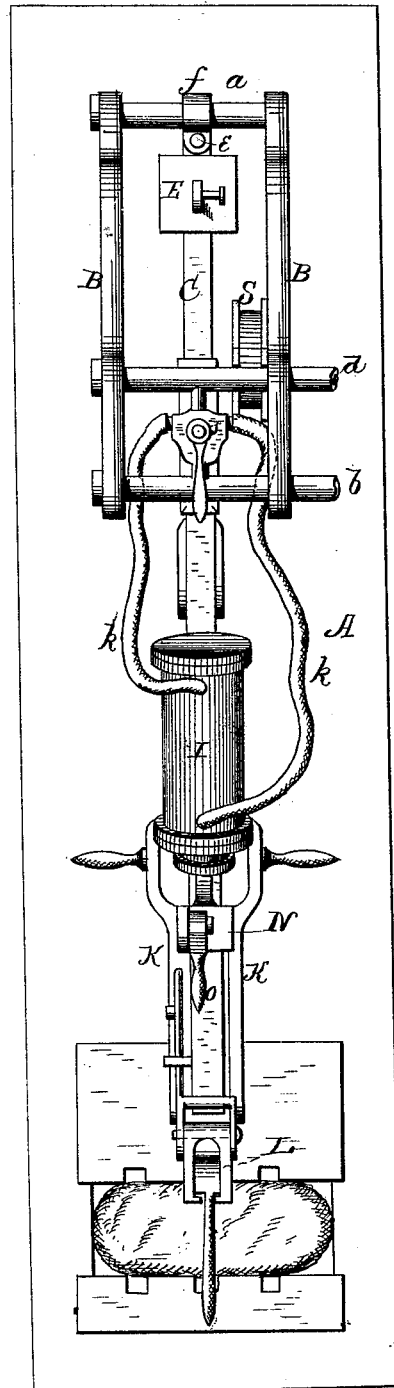
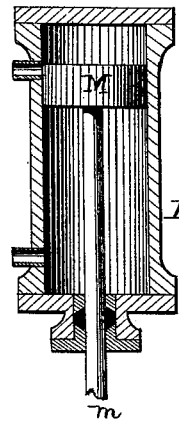


Fig. 4.



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

LEWIS MILLER, OF READING, PENNSYLVANIA.

IMPROVEMENT IN BALE-BAND TIGHTENERS.

Specification forming part of Letters Patent No. **220,635**, dated October 14, 1879; application filed August 14, 1879.

To all whom it may concern:

Be it known that I, LEWIS MILLER, of Reading, in the county of Berks, and in the State of Pennsylvania, have invented certain new and useful Improvements in Bale-Band Tighteners; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to the construction and mode of operation of a machine for tightening and tying bands around bales of cotton, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a front view of the same. Figs. 3 and 4 are detailed views of parts thereof. Fig. 5 shows a modification. Fig. 6 is a detailed view of a telescopic joint used in my machine.

A represents a part of the side of a cotton-press, at or near the top of which are suitable brackets B B, to form bearings for a continuous shaft, *a*, and also for two steam-pipes, *b* and *d*, the former being the steam-inlet pipe and the latter the exhaust-pipe.

On the shaft *a* are suspended a series of tightening and tying mechanisms at any desired distances apart.

In the drawings, however, I have only shown one of these mechanisms; but it is evident that any desired number may be used according to the number of bands to be placed around the bale, and in practice I intend to divide these mechanisms, so as to have one-half of them (more or less) on each side of the press.

As all these mechanisms are precisely alike the description of one will answer for both; but it must be understood that the said mechanisms are entirely separate and independent from each other, and any number of them may be in operation while the others are not.

On the shaft *a* is placed a collar, *f*, which may be laterally adjustable thereon, and is capable of turning or rocking on the shaft. This collar is formed with two jaws, *e e*, between

which is pivoted an arm, C, having its lower end formed with a socket, D.

The pivot of the arm C in the jaws *e e* runs at right angles to the shaft *a*, so that the arm C can be swung to either side as well as back and forward, the latter movement being admitted by means of the collar *f*.

Near the upper end of the arm C is pivoted a forked lever, F, the forward portion of which is provided with an adjustable weight, E.

The inner or rear forked end of the lever F has pivoted to it the upper end of a connecting-bar, G, and the lower end of this connecting-bar is pivoted to a sliding bar, H, which has its upper end inserted in the socket D, thus forming a telescopic joint between the arm C and sliding bar H.

The connecting-bar G is slotted or forked at both ends, so that there will be pivots on both sides, and thereby prevent any twisting or lateral strain during the operation.

I represents the steam-cylinder, provided on the back with loops or slides *h h*, through which the bar H passes, so that the cylinder can slide up and down thereon. The steam-cylinder is, however, held up on said bar by means of a spring, *i*, as shown.

k k are flexible steam-pipes connected to the cylinder I a suitable distance from its ends, so as to form a cushion of steam at each end of the cylinder during the operation to prevent the piston from striking the heads of the cylinder. The flexible pipes *k k* connect with a valve, J, which communicates with the two pipes *b* and *d*, and is so arranged as to admit steam to either end of the cylinder and exhaust from the other.

From the lower end of the cylinder I extend two arms, K K, downward, between the lower ends of which the bale-band bender L is pivoted.

As this bender forms the subject of a separate application it is not necessary to describe its construction in detail here.

M is the piston within the cylinder I, from which piston the rod *m* extends through the lower head of the cylinder and connects with a cross-head, N, sliding upon the bar H and between the two arms K K. On the front of this cross-head is a clamping-lever, O, for holding the bale-band.

In the bender L is a cutter, *n*, for severing the band. This cutter is worked by a lever, P, which passes under a guard, R, and is by a link, *p*, connected to one of the arms K.

S is a reel, mounted on one of the brackets B, and contains a continuous roll of the hoop-iron *t*.

The machine is operated as follows: The bale being pressed and the band passed around the same, the buckle *r* is fastened to the end of the band by the bender L. By means of the telescopic joint D H the machine is lowered so that the bender L can be brought down over the buckle *r*. The band is then passed into the bender and clamped by the lever O on the cross-head N. Steam is now admitted into the lower end of the cylinder, when the cylinder will be forced downward and the piston upward at the same time, thus drawing and tightening both ends of the band at one stroke. By means of the bender L the band is then cut off and fastened in the buckle. The steam being reversed in the cylinder, the parts resume their former positions.

The main object of my invention is to produce a machine that shall be perfectly pliable, so that it can be instantaneously adjusted according to the position of the bale and buckle.

The weight E on the lever F counterbalances the machine and holds it in an inclined position, so that the lower end thereof is thrown inward against the bale. The joint *f e* admits of universal movement in any direction. The telescopic joint D H admits of the machine being lowered to its work without moving the cylinder on the bar H, which would destroy the stroke of the cylinder.

In some class of processes the tightening

mechanism will be suspended from a carriage, V, movable upon the shaft *a*. This carriage has rollers *w w*, the journals of which enter slots *x* in the sides of the carriage to facilitate the starting of the same.

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

1. In a bale-band tightener, a cylinder with interior piston arranged, respectively, to move simultaneously in opposite directions, for the purpose of pulling on both ends of the bale-band at the same time, substantially as herein set forth.

2. A bale-band-tightening mechanism suspended by a universal joint and counterbalanced by a weight and lever, for the purposes set forth.

3. A bale-band-tightening mechanism provided with a cylinder and piston moving in opposite directions, and a telescopic joint independent of said cylinder and piston, for the purposes herein set forth.

4. In a bale-band tightener, the combination of a cylinder, a piston therein, the cylinder and piston being capable of moving in opposite directions, a clamping device connected to the piston, and a band-bending mechanism connected to the cylinder, for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of August, 1879.

LEWIS MILLER.

Witnesses:

H. AUBREY TOULMIN,
FRANK GALT.