

(No Model.)

2 Sheets—Sheet 1.

S. D. KEENE.

MACHINE FOR FOLDING COTTON LAPS.

No. 307,119.

Patented Oct. 28, 1884.

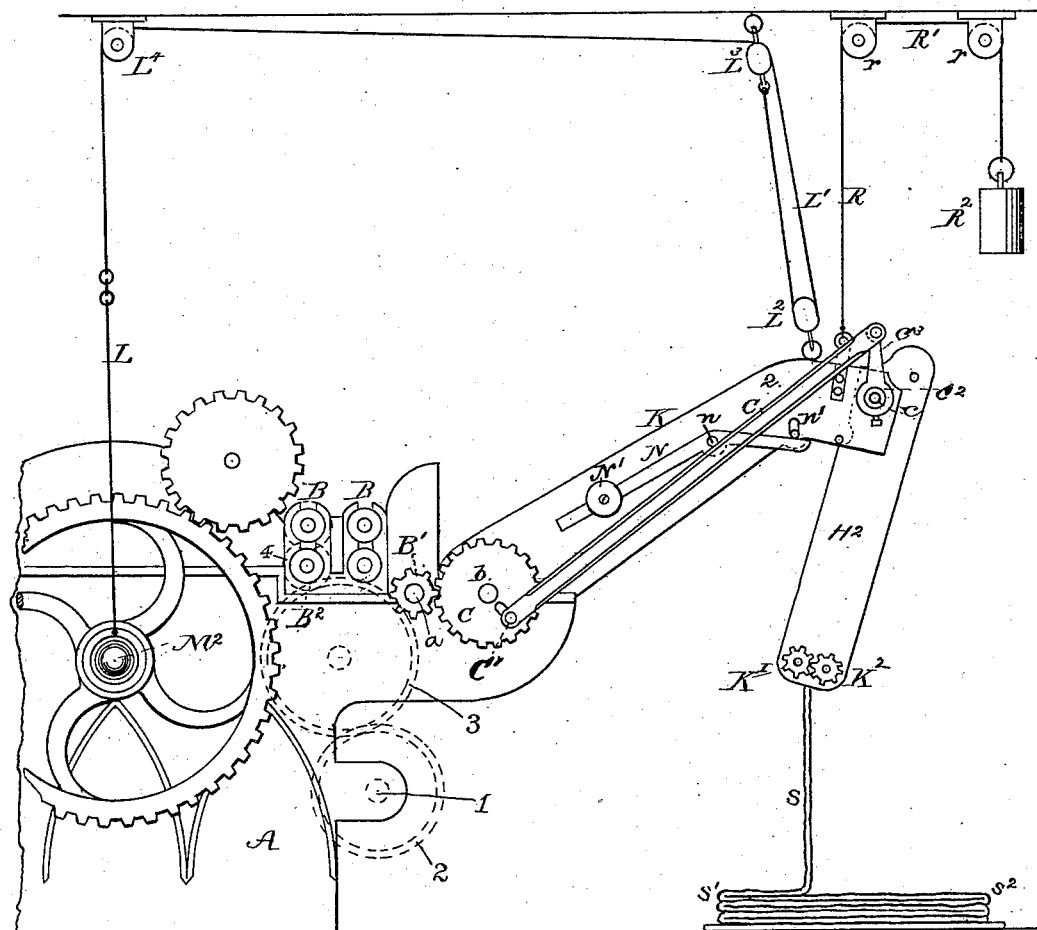


Fig. 1.

WITNESSES

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Jno. C. Schroeder

INVENTOR

Samuel D. Keene
by J. C. W. Dyer
att'y

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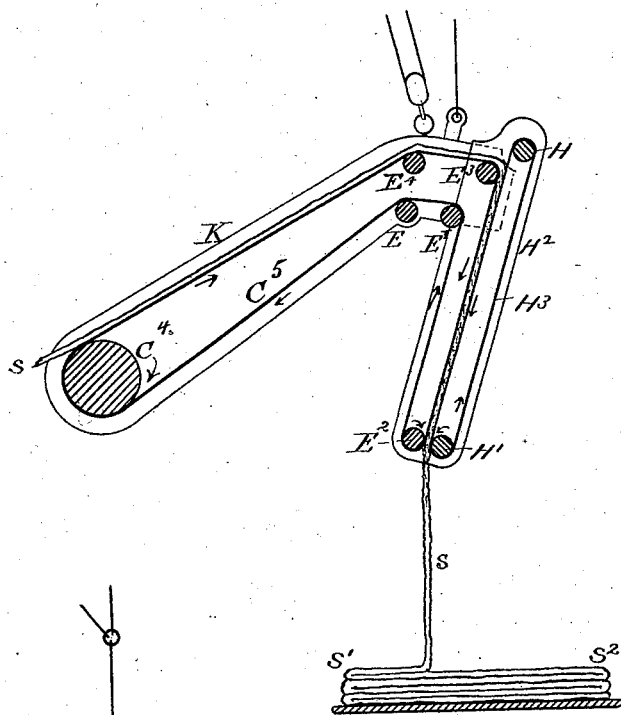


Fig. 2.

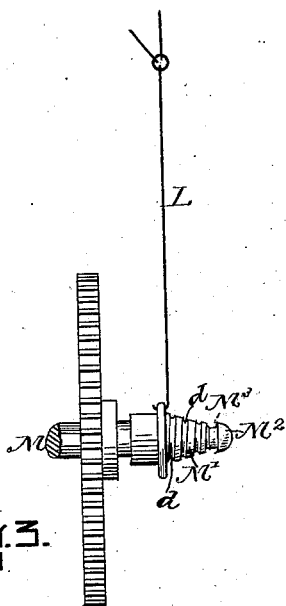


Fig. 3.

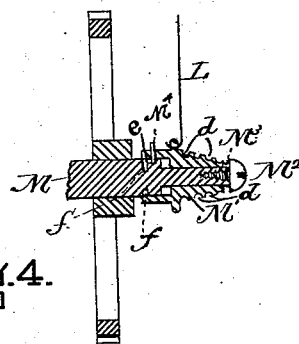


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL D. KEENE, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO LEVI WILSON, OF SAME PLACE.

MACHINE FOR FOLDING COTTON LAPS.

SPECIFICATION forming part of Letters Patent No. 307,119, dated October 28, 1884.

Application filed May 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. KEENE, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Machines for Folding Cotton Laps; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is the production of a machine for folding the cotton lap or sheet as it comes from the lap-forming machine back and forth into a rectangular stack or pile of proper height to form, when compressed, a bale of the required thickness.

In an application for Letters Patent numbered 132,180, filed by me even date herewith, I have described a method of making bales of raw cotton or cotton waste, in which the folding of the sheets of the same back and forth into a rectangular pile preparatory to compressing into bales forms an important step in the process. In this application I propose to claim mechanism adapted to form such piles; and my invention therein consists in the construction and combination of the various parts, that will be hereinafter more fully set forth, and form the subject-matter of the claims.

Referring more particularly to the accompanying drawings for a better comprehension of my invention, Figure 1 represents a side elevation of my lap-folding device in connection with a portion of an ordinary lap-forming machine. Fig. 2 is a vertical section through the lap-folding devices, the same being detached from the lap-forming machine. Fig. 3 shows a spiral grooved collar attached to the outer end of the condenser-shaft of the lap-forming machine and details connected with the same. Fig. 4 is an axial section of the parts shown in Fig. 3.

A represents the end of an ordinary lap-forming machine, the delivery-rolls B B thereof being arranged as usual.

B' is a driving spur-gear mounted upon a shaft, *a*, journaled in bearings formed in the frame of the lap-forming machine, which shaft is rotated by the following means:

1 represents the usual cross-feed shaft, driven from the counter-shaft by belt in the ordinary manner. This cross-feed shaft 1 has secured to it a gear-wheel, 2, which meshes with a

larger intermediate gear-wheel, 3, which in turn meshes with the gear-wheel B' on the shaft *a*, journaled in the end of the lap-forming machine A, as before stated. This gear-wheel 3 also meshes with a gear-wheel, 4, on the lower feed-roller, B², thus forming the means for operating said rolls as well as the lap-forming mechanism. The driving spur-gear B' meshes with another spur-gear, C, which is mounted upon a shaft, *b*, also journaled in bearings formed in the front extension of the frame of the lap-forming machine, which shaft serves also as a pivot to the shell or case K at the front of the frame of the lap-forming machine. This shell or case K is a box of suitable material and size, and preferably in use extends outward and upward from the front of the lap-forming machine, and has pivoted to its outer end a pendent shell or case, H², substantially like the case K, the chambers of the two shells or cases directly communicating with each other. The office of this shell or case H² is by oscillating back and forth through a certain space to fold back and forth the lap which is delivered by it. To produce this oscillation the spur-gear C has a wrist-pin, C', to which is pivoted a pitman, C², which in turn is pivoted to a crank-arm, C³, which crank-arm is secured upon a shaft, *c*, journaled in bearings formed in the top end of the case K, and upon which the extension H² is rigidly secured, and thus by means of this construction the extension H² is oscillated back and forth.

To take the lap delivered into the shell or case K from the delivery-rolls of the lap-forming machine and discharge it from the lower end of the extension H², the following devices are used. A roller, C⁴, mounted upon the shaft *b* and rotated with it, carries an endless belt, C⁵, which passes over another roller, E¹, pivoted near the upper corner of the shell or case K, thence over another roller, E², pivoted on the shaft *c* in the upper part of the shell or case K, thence down over and around another roller, E³, pivoted near the lower end of the shell or case H², thence up over rollers E⁴ and E⁵, pivoted near the lower outer end of the shell or case K, and thence back to the roller C⁴. The shaft to which the roller E² is secured has on one end a spur-gear, K', which meshes with another spur-gear, K², and causes the shaft on which this gear is mounted to ro-

tate. This shaft carries a roller, H', which in turn drives an endless belt, H², which passes over a roller, H, in the upper end of the shell or case H², and causes the portion of the said belt adjacent to the belt C⁵ to move in the same direction as the belt C⁵ is driven within the same shell or case—that is, toward the bottom end thereof. The lap shown by the letter S passes from the delivery-rolls B B upon the upper surface of the belt C⁵, and is carried by such belt over the rollers C⁴, E⁴, and E³, where it is seized and gripped between the belt C⁵ and the belt H², the belt H² compressing it toward the belt C⁵ to some extent, and making it uniform in thickness, and delivering it out of the open end of the shell or case H², and folding it regularly, as shown by the letters S' S².

It is important in this operation of folding back and forth of the lap that the mouth of the shell or case H² should remain at a substantially uniform distance above the pile as it is built up, and at no time at a great distance from it, in order that there should be at no time such a strain upon the lap by its own weight as to endanger its integrity. I accomplish this preferably by the following mechanism: A counterbalance-weight, R², with a rope, R', passing up and over pulleys r, has the other end, R, of the rope attached to the upper outer end of the shell or case K, and supports nearly the weight of such end and its various connections. Another rope, L', attached to a pulley-block, L², passes down through a pulley-block, L², attached to the outer upper end of the shell or case K, thence back through the first-named pulley-block L², thence over a pulley, L¹, secured directly above the condenser-shaft M of the lap-forming machine, and from such last-named pulley L¹ the other end, L, of said rope passes down to the outer end of said shaft M, and is then secured to a collar, M', upon the end of said shaft. This collar has a spiral groove, d, throughout its length, adapted to receive the rope L, and has a slight longitudinal movement upon the shaft M, to which it is locked by a pin, M⁴, dropping into a longitudinal groove, e, on said shaft. The rotation of the shaft M carries with it the collar M', which, winding up the rope L, gradually raises the outer end of the shell or case K, and this collar carries such length of spiral groove that the winding up of the rope will raise the outer end of such shell or case sufficiently for the folding of a pile necessary when compressed to form a bale of the desired size. When in its revolution the rope L has reached the outer end of the collar, it falls into a sloping recess, M², between such end and a screw-cap, M², on the end of the shaft, and by a wedging and drawing action slides the collar inwardly upon the shaft M, and also the pin M⁴ in its longitudinal groove e, until such pin falls into a circumferential groove, f, around the shaft, when the collar becomes loose on the shaft, which permits it to revolve freely, the rope L thereon un-

winding, and thereby permitting the outer end of the shell or case K to drop into position for folding a new pile. By means of this screw-cap M² the collar M' can be easily removed and collars substituted with a different length and pitch of spiral groove, so as to adjust the elevation of the outer end of the shell or case K as desired.

N is a lever pivoted to the side of the case K, as at n, carrying at its long arm a weight, N', adapted to be adjusted upon said lever-arm, and resting at its upper short arm beneath the outer journal ends of the roller E, the journal-bearings for which in the case K being elongated to permit of a certain play of the roller, as shown at n'. The object of this weighted pivoted lever is to regulate the proper tension of the endless belt C⁵, so as to always keep the same taut; otherwise the lap would not be of uniform thickness and delivered regularly because of the sagging of the endless belt.

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

1. The combination, with a lap-forming machine, of the lap-folding attachment consisting of the inclined case K, pivoted at the end of said machine, depending case H², pivoted to the case K, endless belts C⁵ and H², rollers mounted within said cases H² and K, for supporting and operating said belts, pitman C², crank-arm C³, wrist-pin C', spur-gears B' C and K' K², and mechanism for suspending said lap-folding attachment and operating the gear B, all constructed, arranged, and adapted for operation substantially as and for the purposes described and shown.

2. The combination, with the case K and the roller E, vertically movable in journal-bearings in said case, of the weighted lever N N', pivoted to the side of the case, and resting at its upper end beneath the journal ends of the said roller, substantially as and for the purposes set forth and shown.

3. The combination, with the condenser-shaft M, having the collar M' thereon, and the cases K and H² of the lap-folding attachment, of the mechanism for suspending and raising the said lap-folding attachment, consisting of the weighted rope R R², pulleys therefor, rope L L', pulley-blocks L² L², and pulley L¹, all constructed, arranged, and adapted for operation substantially as and for the purposes set forth and shown.

4. The combination, with the condenser-shaft M, having a longitudinal groove, e, and circumferential groove f formed therein, of the collar M', having a spiral groove, d, recess M², and pin M⁴, and screw-cap M², as and for the purposes set forth and shown.

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

SAMUEL D. KEENE.

Witnesses:

THOMAS A. JENCKES,
CHAS. D. WILSON.