(No Model.)

H. W. DEAN & J. MUNDELL.

LASTING AND TACKING MACHINE.

No. 418,698. Patented Jan. 7, 1890.

Fig. 1.

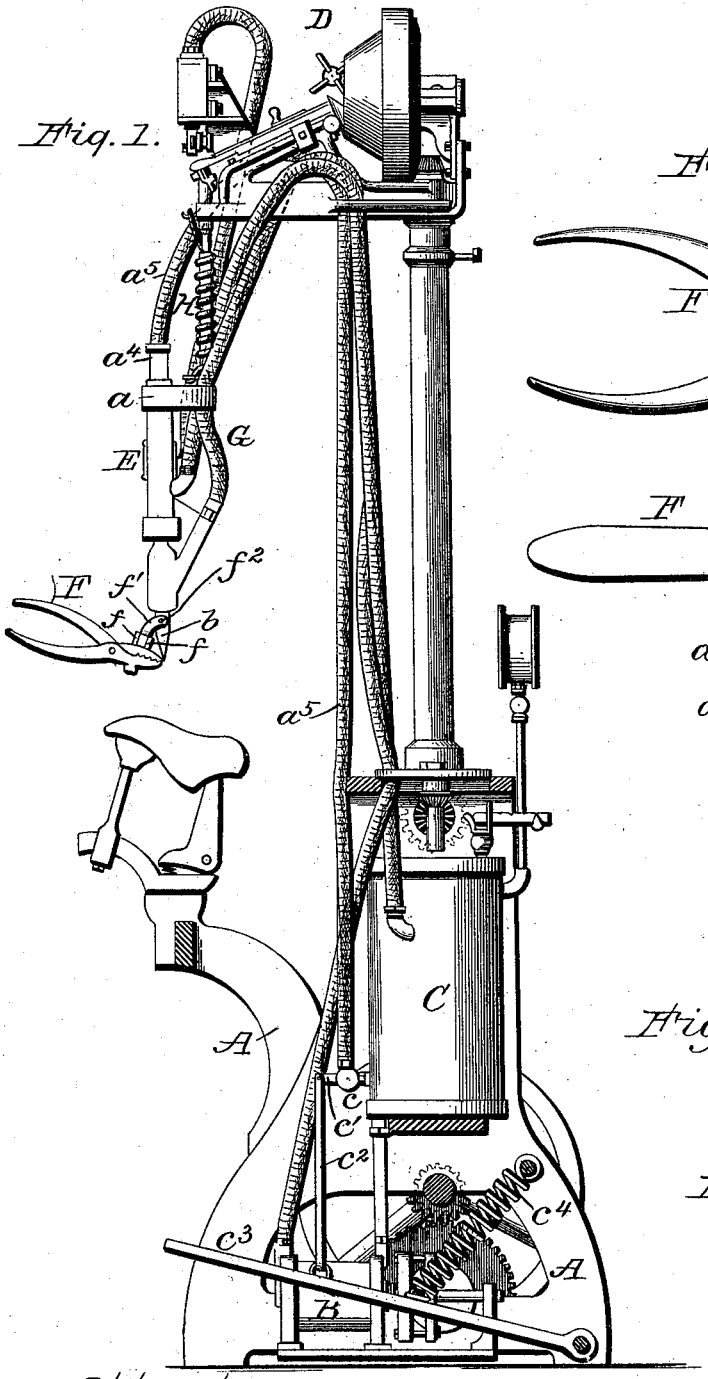


Fig. 2.

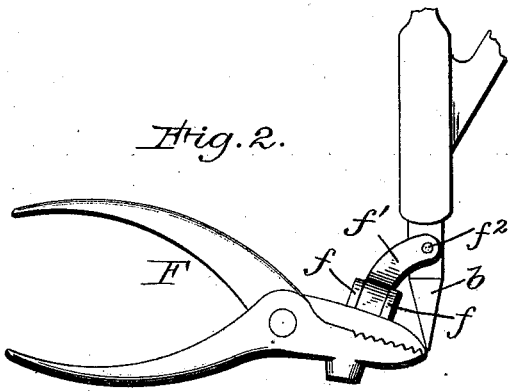
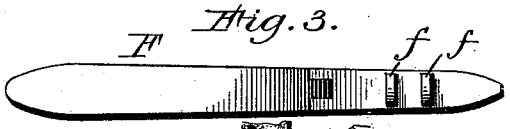


Fig. 3.



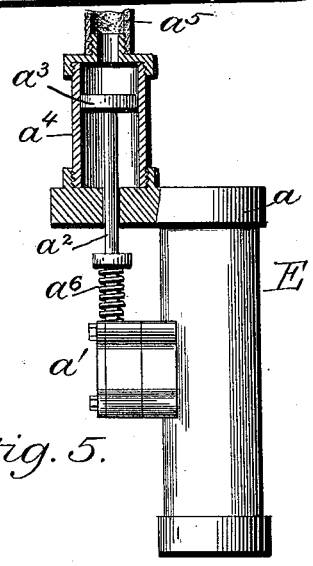
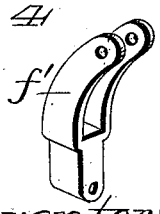


Fig. 5.

Fig. 4



Attest:
Howell Bartle
Charles F. Berry

Inventors:
Henry W. Dean
James Mundell
By Johnson & Johnson
their Attorneys.

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

HENRY W. DEAN, OF NORRISTOWN, AND JAMES MUNDELL, OF PHILADELPHIA, ASSIGNORS OF PART TO JOHN MUNDELL, OF PHILADELPHIA, PENNSYLVANIA, SIMON A. BUTLER, OF BOSTON, AND EMMA F. LOTHROP AND JOSEPH HERBERT BOWEN, BOTH OF LYNN, MASSACHUSETTS.

LASTING AND TACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,698, dated January 7, 1890.

Application filed May 8, 1889. Serial No. 309,982. (No model.)

To all whom it may concern:

Be it known that we, HENRY WELLINGTON DEAN, residing at Norristown, in the county of Montgomery, and JAMES MUNDELL, residing at Philadelphia, in the county of Philadelphia, both of the State of Pennsylvania, have invented new and useful Improvements in Combined Lasting and Tacking Machines, of which the following is a specification.

Our invention relates to machines for driving tacks in the operation of lasting the upper of the shoe to the inner sole thereof, and in which the last may be supported upon an ordinary jack; and the object of our invention is to provide a combined lasting and tacking machine in which the tack-driving device and a lasting device pivoted thereto are suspended from the tack-feeding mechanism by means of a flexible tack-feeding tube and controlled by the hands of the operator, whereby the upper of the shoe is drawn in position by the lasting device over the bottom of the last at such points as the operator may desire to properly lay and crimp the upper, and the tack driven at such point.

Our invention enables an operator to last a shoe by hand with pinchers, and at the same time tack the upper by an organized tack-driving machine in which the tacks are fed by a flexible tube to a universally-movable spring-sustained tack-driving head suspended by said tube and containing a driver operated by compressed air or other power. Such a tack-driving machine is described, shown, and claimed in an application filed by Henry W. Dean, one of the present applicants, of date April 30, 1889, under Serial No. 309,525, and it will be understood that it is the universally-movable spring-sustained tack-driving head of such machine to which our invention is applied, and by which we obtain the advantage of using a pair of lasting-pinchers as a means of controlling the position of a spring-suspended and freely-movable tack-feeding device to drive the tack at the desired point. We prefer to use a spring-sustained movable tack-driving head, because it facilitates the presentation of the pinchers in taking hold of the edge of the upper on the last, while the flexible tack-feeding tube, by which the tacks are fed to the driving-head, permits the free movement of the pinchers in relation to the last. The pinchers are connected to the tack-driving head in such manner as to give the operator free use of the same with one or with both hands, and also to manipulate the last in connection with his handling of the pinchers. As stated, the driving-motor for the tack is preferably compressed air, and for controlling its driving action we provide a treadle for operating the valve by which the compressed air is released to drive the tack.

Referring to the accompanying drawings, Figure 1 is a side elevation of the upper portion of a complete lasting and tacking machine embodying our invention, the lower portion of the machine being shown in section. Fig. 2 is a view showing the lower portion of the movable tacking-head with the pinchers applied. Fig. 3 is a top view of the pinchers detached. Fig. 4 is a perspective view of the link for coupling the pinchers to the tacking-head. Fig. 5 is a view, partially in section and partially in elevation, of a portion of the tacking-head.

The frame A of the machine, the air-pump B, the compressed-air tank C, and the tack-feeding mechanism D are all as shown in said application. The tacking-head E differs only in the mechanism for releasing the compressed air and in bringing all the tubes closer to the tacking-head by means of a band *a*, so as to hold it in as nearly a vertical position as possible.

At or near the end of the tacking-head tube or nozzle *b* we have attached the pinchers F in the following manner: On the upper jaw of said pinchers we have provided two small lugs *f f*, between which is pivotally secured the coupling-link *f'*. The upper end of said link is bifurcated, so as to embrace the end *b* of the nozzle of the tacking-head, to which it is pivotally secured by means of two small studs f^2, secured to opposite sides of said nozzle or tube *b*, thus ad-

mitting of a free movement of the pinchers independently of the tacking-head, and at the same time holding it in its proper relation thereto. This free or universal movement of the suspended pinchers is preferably obtained by arranging the pivotal connections thereof at right angles to each other, and thus permit of holding the pinchers in any position, moving them or inclining in the direction of their length, and turning them at right angles to such lengthwise movement. This construction permits the movements of the pinchers within certain limits independent of the suspended tack-driving head for taking hold and pulling the upper properly over the edge of the inner sole to receive the tack from the nose of the tack-driving tube, which is held just at the point of the pinchers, which are pointed to facilitate their movement in relation to the point of the tube. This is important, as it permits the operator to incline, move, and turn the pinchers so as to readily take hold of the edge of the upper just as he wants to and just as it lies around the edge of the last. In addition to this universal movement of the pinchers, they are also free to be swung in any position around the last, and may thus be used with a fixed last. We have, however, stated that the operator has the free use of his hands to manipulate the suspended head and the pinchers, and also to manipulate the last in connection with his handling of the suspended pinchers, and for this purpose we may use a swiveled mounted last. This construction and co-operative relation of the elements combined, as stated, permits the operator to last the upper and to place the tacks, by reason of his complete control of the nozzle tack-driving head, the pinchers, and the last by his hands, while by his foot he controls a valve for the release of the air-power for driving the tacks. This, so far as we know and can find, has never been done before.

We have shown and described an efficient means, consisting of compressed air, as the power for driving the tacks, and we prefer to use such power; but other power may be used as the means for driving the tacks without departing from the spirit of our invention.

The interior of the tacking-head E and of the valve a' for releasing the compressed air are constructed and arranged as in said application above referred to; but, instead of the hand-lever for releasing the valve a', we have connected to the valve-stem a^2 a small piston a^3, housed in a small cylinder a^4 at the top of and to the one side of the tacker E. Connected to this cylinder a^4 is a rubber tube a^5, which passes up over and down through a portion of the frame of the tack-feeding mechanism D to the compressed-air tank C, and is connected to said tank by means of a valve c. This valve c has a small stem c' for opening and closing the same, and to which is fastened a rod c^2, which at its other end is connected to the treadle c^3. The treadle is held in its normal or raised position by means of a strong spiral spring c^4. Now, it is obvious that the operator can use one hand to manipulate the pinchers and have his other hand free to handle the last, as he may desire, and by depressing the treadle c^3 with his foot the valve c will be opened, which will allow the compressed air to pass up through the tube a^5 and press down the piston a^3, which will open the slide-valve a', and thus drive the tack. On releasing his foot from the treadle, the spring c^4 will cause it to rise to its normal position, and, by means of the rod c^2, close the valve c, and thus shut off the compressed air from the tube a^5. The piston a^3 is raised to its normal position by means of the spiral spring a^6 on the valve-stem a^2.

G is the flexible tack-feeding tube by which the universally-movable tack-driving head is suspended, and we prefer to construct this tube with a spring H, by which it is suspended from the frame of the tack-feeding mechanism, it being understood that the connecting of the tack-feeding tube with the delivery end of the tack-feeding raceway is such as to allow said tube to have a vertically-yielding function with the spring, and that the latter has a balancing function for the tack-driving head.

As a hand apparatus, a pair of pinchers and tack feeding and driving mechanism have been combined, the tacks being driven by hand, and the tack feeding and driving mechanism being rigidly connected with and mounted directly upon the upper jaw of the pinchers; but it is obvious that such a device could not be attached to or combined with the pneumatic universally-movable tack-driving head herein shown and described.

We are also aware that a pair of lasting-pinchers have been pivotally mounted upon the end of a horizontal bar operated by the treadle for seizing the edge of the upper and pulling it over the edge of the inner sole to receive tacks, both placed and driven by hand; but it is obvious that such a device could not be attached to or combined with the pneumatic universally-movable tack-driving head herein shown and described.

Our invention embraces two well-known devices in combination, and which, in their conjoint co-operation, produce a new lasting and pneumatic tack-driving machine, in which both the driving device and the lasting device are each capable of universal movement and operation as an entirety not before known or used, and giving the advantages of quick and easy lasting by hand with a pneumatic driver operated by a treadle.

We claim—

1. In a power lasting and tacking machine, the combination of a universally-movable depending tack-driving head carrying tack-feeding mechanism, with a pair of lasting-pinchers pivoted to the nozzle of said head

to have a universal movement in relation to the same, substantially as described, for the purpose stated.

2. In a combined lasting and tacking machine, a power tack-driving head, a pair of lasting-pinchers pivotally connected to the nozzle or tube of said head, a flexible tack-feeding tube suspending said head and pinchers, and suitable mechanism for feeding tacks separately into said flexible suspending-tube, substantially as described.

3. In a tacking-machine, the combination, with a tacking-head, and the tack-feeding air-exhaust and air-supplying tubes which support the same, of a band which holds said tubes together above said head, and a pair of lasting-pinchers movably attached to said head, substantially as described.

4. In a combined lasting and tacking machine, the combination, with a suspended universally-movable power tack-driving head, of a pair of lasting-pinchers, and an intermediate coupling pivoted to the nozzle or tube of said tack-driving head and to the upper jaw of the pinchers, the pivots being arranged at right angles to each other, whereby the pinchers are permitted to have a free movement in every direction independent of the suspending tack-driving head, substantially as described.

5. In a combined lasting and tacking machine, the combination, with a universally-movable pneumatic suspended tack-driving head having pivots f^2 upon opposite sides of its tack-presenting nozzle or tube, of a pair of lasting-pinchers having perforated lugs f upon its upper jaw, and a coupling f', the pivots whereof stand at right angles to each other, for the purpose stated.

6. In a combined lasting and tacking machine, the combination, with a universally-movable power tack-driving head and a pair of lasting-pinchers pivotally connected to the nozzle or tube of said head for universal movement thereon, of a flexible spring-connected tack-feeding tube H, substantially as described.

7. In a power lasting and tacking machine, a suspended universally-movable tack-driving head, a pair of lasting-pinchers pivoted to said head to have a universal movement in relation to the same, and means, substantially as described, within the control of the operator for driving a tack at the desired moment in lasting the upper.

8. In a power lasting and tacking machine, a device for supporting the shoe while being lasted, a mechanism or implement for driving a tack, consisting of a universally-movable tack-driving head having a valve-controlled tack-driver and a flexible suspending tack-feeding tube therefor, in combination with a pair of lasting-pinchers pivoted to the nozzle of said suspended head for universal movement in relation to said head, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

HENRY W. DEAN.
JAMES MUNDELL.

Witnesses:
A. E. H. JOHNSON,
HENRY R. LAKE.