(No Model.) 3 Sheets—Sheet 1.

A. F. PRESTON.

HAND TACKING TOOL.

No. 576,823. Patented Feb. 9, 1897.

Fig. 1.

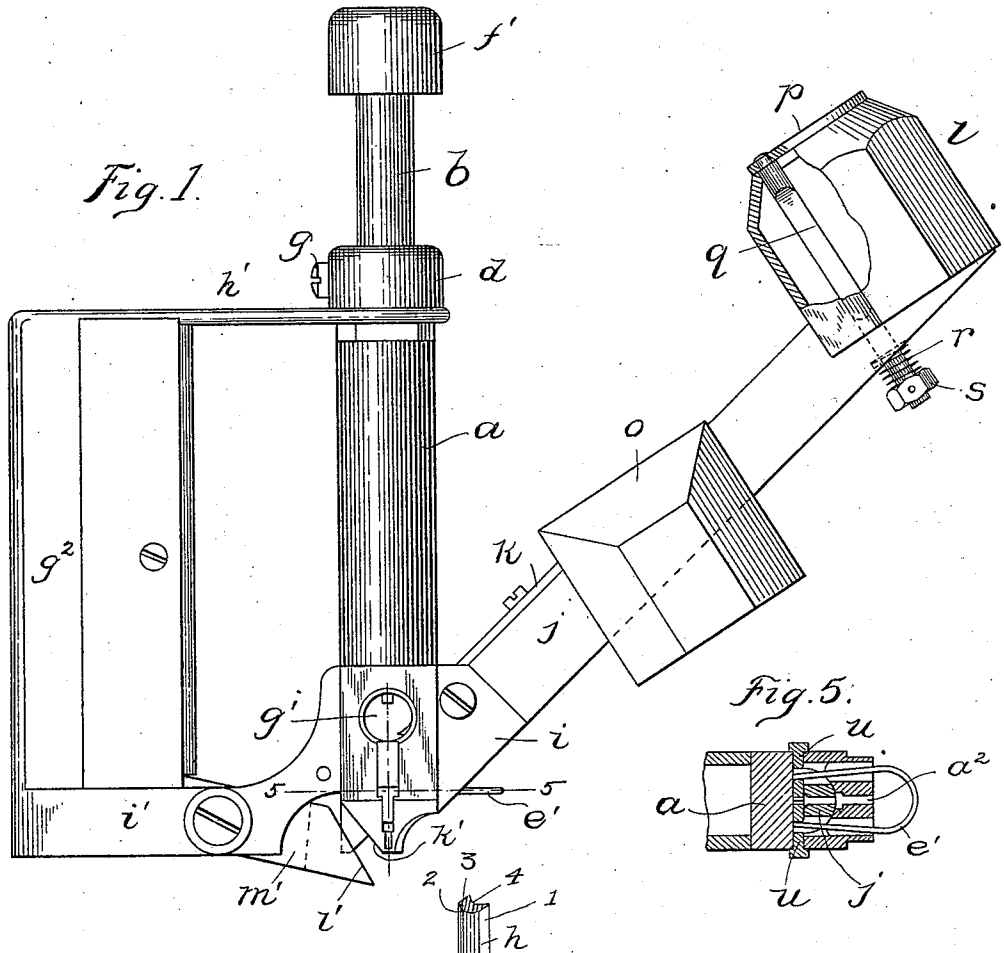
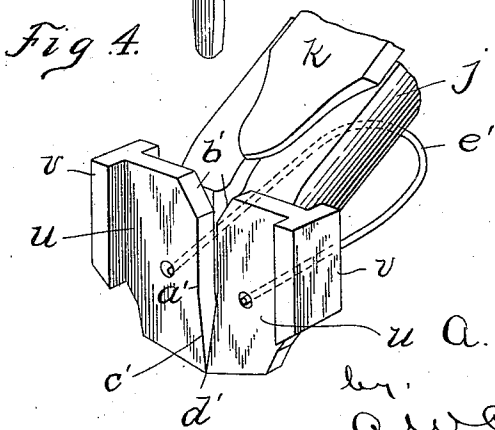


Fig. 5.

Fig. 4.



WITNESSES.

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Fig. 2.

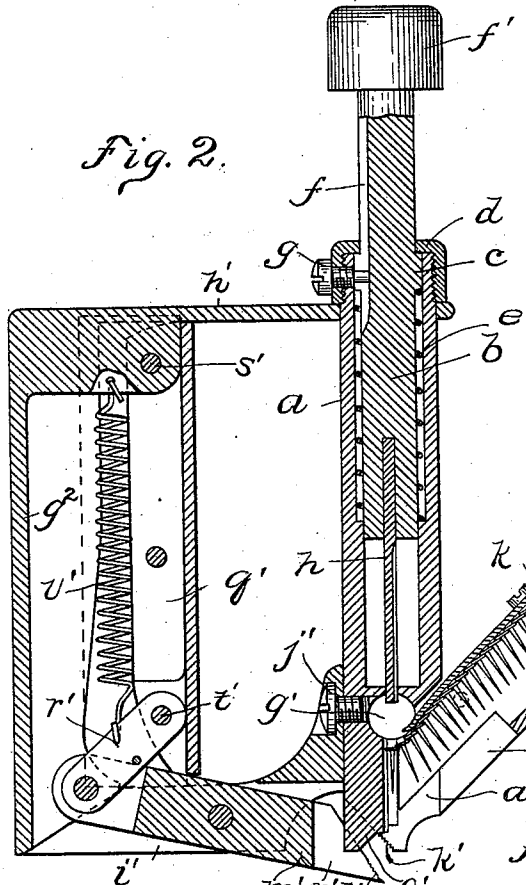


Fig. 9.

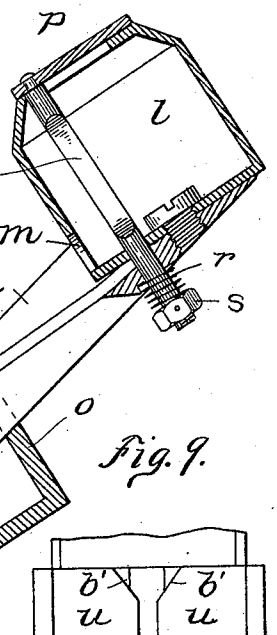


Fig. 7.

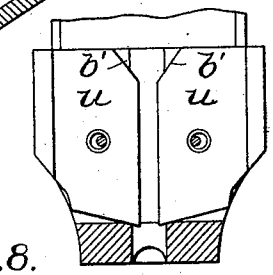
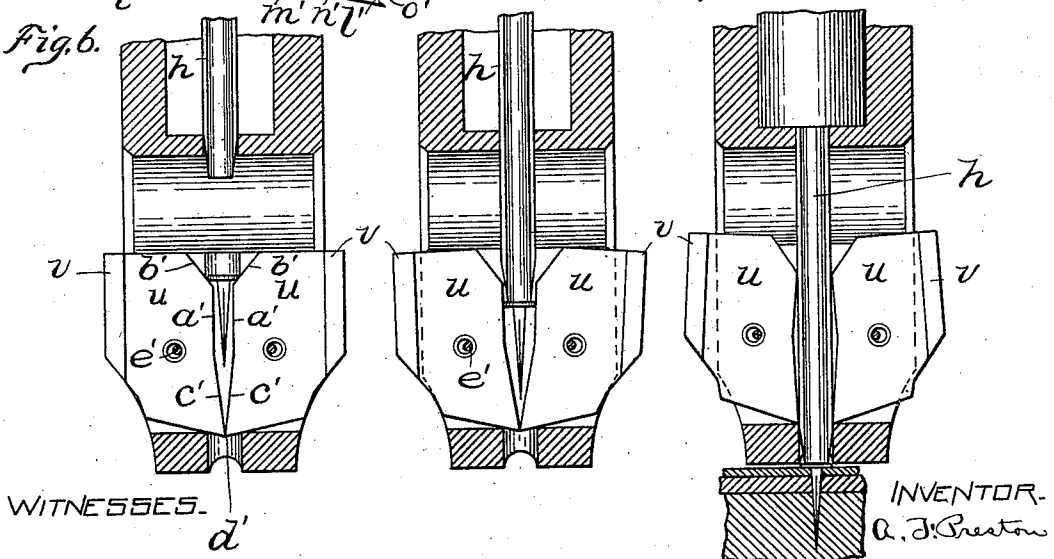


Fig. 8.

Fig. 6.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

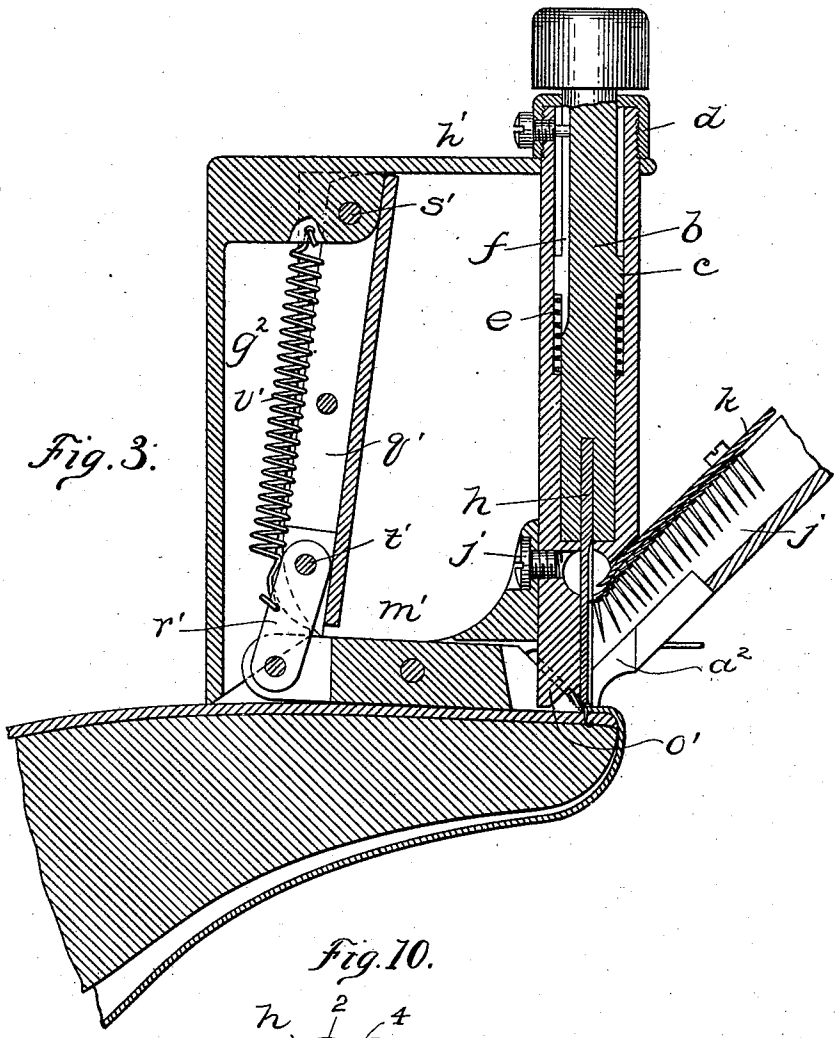
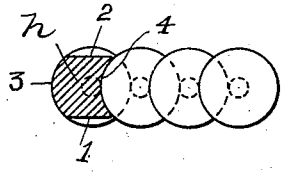


Fig. 10.



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UNITED STATES PATENT OFFICE.

ALBERT F. PRESTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE BUSELL LASTING MACHINE COMPANY, OF NASHUA, NEW HAMPSHIRE.

HAND TACKING-TOOL.

SPECIFICATION forming part of Letters Patent No. 576,823, dated February 9, 1897.

Application filed April 14, 1896. Serial No. 587,523. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. PRESTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Hand Tacking-Tools, of which the following is a description sufficiently full, clear, and exact to enable those skilled in the art to which it appertains or with which it is most nearly connected to make and use the same.

The object of this invention is to provide a hand tacking-tool by means of which the upper may be grasped and drawn taut over the last and tacks may be driven through the upper into the insole, which tool shall be constructed in such way as to be most highly efficient for the purposes mentioned and at the same time be possessed of the smallest number of parts, so as to be simple and compact.

Another object of the invention is to provide a tool of the character described in which the tacks are fed to the driver and are driven into the upper one by one without the employment or intervention of a separator therefor, while still another object is to arrange the parts of the tool in such way that the tack shall be presented squarely to and driven properly in the material.

The manner in which I attain the objects of my invention and in what the invention consists will be hereinafter fully described and pointed out.

Reference is to be had to the annexed drawings, and to the letters and figures marked thereon, forming a part of this specification, the same letters and figures designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a side elevation of my improved tacking-tool. Fig. 2 is a vertical sectional view of the same with the parts in their normal positions and with one tack ready to be driven. Fig. 3 is a similar section (the chute being broken off) showing an upper grasped between the clamping-jaws and the driver as having forced the tack home. Fig. 4 is a perspective view of the lower end of the chute and the tack-guide. Fig. 5 is a cross-section on the line 5 5 of Fig. 1. Figs. 6, 7, and 8 illustrate the various positions of the movable portions of the tack-guide as the tack is driven downward by the driver. Fig. 9 shows the tack-guide as being slightly modified as to the shape of the movable portions thereof. Fig. 10 shows a series of tacks as they are fed to the action of the driver, the latter being shown in cross-section.

In carrying out my invention I employ a hollow standard *a*, in which the driver-bar *b* reciprocates. The said bar is provided with an annular flange *c*, which fits snugly in the upper portion of the aperture through the standard, and the standard is fitted with a ferrule *d*, threaded thereon, which coacts with the flange to limit the upward movement of the driver-bar. A spiral spring *e* is placed around the driver-bar and has its ends pressing against the ferrule and the annular flange. To prevent the driver-bar from twisting or turning, it is formed with a straight longitudinal slot *f*, into which a stud on the end of a screw *g* extends, the latter being threaded into the ferrule and the end of the standard.

The driver *h* is set into and secured firmly to the driver-bar and is of a peculiar shape in cross-section, as I shall hereinafter describe.

The lower end of the standard is provided with wings *i*, forming a continuation of the chute *j*, which is secured to them. The chute is at an acute angle to the standard, and it feeds the tacks to the driver, the lower end of the standard being provided with a vertical slot of sufficient width to allow the tacks to pass through. The chute is provided with two side bars, far enough apart to receive the bodies of the tacks, and on which the heads of the tacks will rest, as shown in Fig. 2, there being a top plate *k*, secured above the line from the midway point of the chute to their point of delivery to preserve their positions relatively to each other. Secured to the end of the chute is a hopper *l*, in which the tacks are loosely placed, and which is provided with an escapement-orifice *m*, through which they drop into the chute. Guide-walls *n* extend above the chute from the hopper to an overflow-box *o*, secured to the said chute at a midway point between the hopper and the delivery end to guide the tacks which do not properly enter the groove in the chute to the said box *o*. The upper edges of the side

bars at *t* are serrated, so as to cause the heads of the tacks to overlap, as shown in Fig. 10. The effect of this is to present the tack at the delivery end of the chute to the action of the driver in such way that it is free to be driven into the work.

The hopper is provided with a lid or cover *p*, riveted on the end of an agitating-shaft *q*, extending through the bottom of the hopper and through the chute. The spring *r*, having its outer end pressing against the nut *s* on the end of the shaft, serves to hold the lid or cover tightly in place.

The shaft is arranged in front of the escapement-orifice and is flattened so as to present the narrow edge thereto, in order that the tacks may not be obstructed by it. By oscillating the shaft the tacks will be agitated or shaken in such way as to cause them, in case they be jammed or matted together, to pass through the orifice. The standard or driver bar guide and the chute are formed of such metal as steel, while the overflow-box and the hopper are preferably formed of aluminium for the sake of lightness.

The driver *h*, hereinbefore referred to, is of a peculiar shape in cross-section—that is to say, it is formed with two flat parallel sides 1 and 2 and two curved sides 3 and 4. Practically it is crescent-shaped in cross-section, as will be seen by examining Fig. 10. It is of such shape that as it descends its concaved side 4 will permit it to engage the lowermost tack in the chute without touching the tack behind it. This is a matter of great importance, since it enables me to dispense with separators or detents of any kind. The tacks are placed in the hopper and travel down the chute, being carried forward by their specific gravity until one by one they are presented to the driver. As the driver descends its crescent-shaped end presses upon the head of the lowermost tack, and in driving it down the concaved side 4 engages the head of the next tack, so as to hold it in place in the chute until the driver has risen to its uppermost position.

At the foot of the standard there is a vertical cross-aperture extending throughout the same, in which are placed the two movable portions of a guide for the tack to guide the latter from the delivery end of the chute to the work. The two halves *u u* consist of comparatively thin metallic plates fitting snugly in the cross-aperture, each being provided with a side flange *v*, which normally rests against the side face of the standard, as shown in Figs. 1 and 6.

The adjacent edges of the guides are shaped as shown in Figs. 6 to 8—that is to say, each edge has a straight portion *a'*, a reëntrant inclined portion *b'*, and an outwardly-extending portion *c'*. When the movable parts of the guide are in their normal positions, their edges touch at the point *d'*. The straight portions *a'* are parallel and are at a distance apart less than the depth of the head of the tack, while the edges *b'* form a converging guide, into which the tack drops or moves from the delivery end of the chute, as clearly illustrated in Fig. 4. The parts *u u* are held in position and are pivoted upon the ends of a curved spring *e'*, as shown in the last-mentioned figure, which passes through apertures in the standard. Below the chute there is an aperture a^2 for tacks which are not properly delivered from the chute.

In employing the tacker for driving tacks into the upper the driving-bar *b*, which is provided with a head *f'*, is given a smart blow, with the effect of forcing it to its lowest position. The lowermost tack having dropped from the delivery end of the chute into the space between the edges *b' b'* the crescent-shaped end of the driver engages the head thereof and forces the tack downward. The said tack is maintained in its vertical position by the yielding pressure of the adjacent edges of the movable parts of the guide and is presented at right angles to the last.

The position that the parts assume during the passage of the tack from the delivery end of the chute until it is driven home is illustrated in Figs. 6, 7, and 8. When the tack has been driven in as far as possible, the spring *e* carries the driver-bar into its uppermost position, and as the end of the driver *h* leaves the line of the tacks in the chute the next tack, which has been prevented from sliding down by the concaved side of the driver, slides down and takes its position between the converging edges *b' b'* of the movable portions of the guide.

The transverse aperture *g'* and the vertical aperture a^2 through the standard are provided so that if a tack be not properly presented it will drop through either of the apertures.

In Fig. 9 the movable portions of the guide are shown as having their adjacent edges parallel through their entire length except at the upper end, where they converge, as at *b'*.

For the manipulation of the tack and for drawing the upper taut over the last I provide the same with a handle and with a movable jaw coacting with a movable portion of the handle to grip the edge of the upper against a stationary jaw on the foot of the standard.

The handle consists of a vertical hollow bar g^2, having a cross-bar *h'* at the upper end, which is secured to the standard. The lower end of the bar *g'* is provided with a cross-bar *i'* and is connected to the lower end of the standard by means of a screw *j'*.

The foot of the standard is cut away, so as to provide a fixed jaw *k'*, with which a movable jaw *l'* on the end of a lever *m'* coöperates. The end of the lever is slotted at *n'* to receive a web *o'*, extending from the front of the standard beyond its end at substantially right angles to the face of the jaw *k'*.

For forcing the jaw *l'* up against the fixed jaw I employ toggle-levers *q'* and *r'*, the former

being pivoted at s' to the upper end of the handle and at t' to the lever r', and the said lever r' being pivoted to the end of the lever m'. Side plates u' are secured to the lever r', so as to form a smooth handle which can be gripped by the hand, with the part g^2 resting against the palm of the hand and the fingers on the lever q'. By pressing against the said lever q' it may be drawn toward the bar g' in such way as to coact with lever r' and force lever m' down and hold the movable jaw l' firmly against the fixed jaw k'. It will be seen that by employing the toggle-lever the jaws clamp the leather more tightly as the pull upon the handle is increased.

A tension-spring v' is secured to the handle and to the lever r', so that when the fingers are relaxed the parts will assume their normal positions and the movable jaw will move away from the fixed jaw.

From the foregoing it will be observed that I have provided a simple and a handy tool for securing the upper of a shoe to the insole. In using it the handle is held in the left hand and the edge of the upper is gripped between the jaws and the leather is drawn taut over the last. Then with the right hand the driver is given a smart blow, with the effect of driving a tack through the upper into the insole.

By employing the mechanism above described for grasping the edges of the upper between the two jaws I am enabled to obtain several important results. When the upper is grasped and a pull is exerted upon the same, the hand is drawn back to draw the lower end of the handle backward, since the resistance is at the lowest end of the handle. Therefore the pressure which is exerted in my tool is accomplished by the last two fingers of the hand at a point where I obtain the greatest amount of leverage and in the horizontal planes of the two gripping-jaws. By employing the lever q, which is pivoted at its upper end to the handle, the last two fingers press against it near the lower end thereof, so that the natural pull of the hand will effect the gripping of the jaws, whereas if the said lever were pivoted at the lower end of the handle the pull of the fingers would be at a point of the least leverage, as will be readily understood. Again, by employing toggle-levers such as I have described I effect a rapid movement of the movable jaw, which increases in strength as the said jaw approaches the fixed jaw, and, moreover, after the toggle-levers are in alinement, or nearly so, the edges of the upper are grasped and locked between the jaws and do not require a constant pulling strain upon the levers—that is to say, that after the movable part of the handle is once thrown inward by the fingers the edges of the upper are practically locked between the jaws and a firm pressure upon the said movable part is not requisite, as the toggle-levers are practically in alinement. Whereas if I should employ in lieu of the toggle-levers a fixed arm projecting upwardly from the lever m' it would be necessary to always maintain a strong pull against the said arm, in order to grasp the lever firmly, as the said jaws would never be locked together. Again, a fixed arm projecting up from the lever m' would move in an arc about the pivot of the latter, and consequently would have a movement which would be backward and downward relatively to the fixed portion of the handle, and hence in drawing the jaws together the hand would be cramped by the action of the said arm. Therefore by employing the toggle-levers which I have described I am enabled to practically lock the jaws together with the least exertion and by a pull upon the point of the greatest leverage.

The parts of the tool are very simple and are not liable to get out of order, since if the movable portions of the tack-guide should become weakened they could be easily removed and replaced with new ones.

The tack-guide may be considered as a vertically-stationary yielding guide, since it is pivoted on the ends of the spring in such way as to yield sufficiently to allow the tack to be driven down, and at the same time to coact with the driver to guide the tack to the upper in a line at right angles to the same. There is no chance for the tacks to jam or be presented in any way so as to injure the parts, since they escape from the standard if they are not in the proper position.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. In a tacker, the combination with a driver, a driver-bar guide, means at the end of said driver-bar guide for receiving a tack through which it may be driven by the driver-bar, and an unobstructed chute for delivering the tacks one by one to the said yielding means, of a driver for engaging the tacks and driving them through the yielding means, said driver having a concave side to escape the tack next the one engaged thereby.

2. In a tacker, the combination with an unobstructed chute for delivering tacks having their heads overlapping to the action of a driver, and a yielding guide for the tacks, of a driver for driving the tacks through the yielding guide, said driver having a concave side to escape the tack next to the one engaged thereby.

3. In a tacker, the combination with a chute, and a guide consisting of two spring-held plates having their inner edges adjacent to each other, of a crescent-shaped driver for engaging only one of the tacks.

4. In a tacker, a yielding guide for receiving the tacks one by one from the chute and guiding them when engaged by the driver consisting of two movable plates having the

upper portion of their inner edges converging, and spring-pivots for said plates for the purposes described.

5. In a tacker, the combination with a driver, of a tack-guide formed of two plates having their inner edges adjacent, and a U-shaped wire forming a spring, said plates being each pivoted on one leg of the spring.

6. In a tacker, the combination with the driver-bar guide, and the driver of a yielding tack-guide having its two movable portions lying in vertical slots in the foot of the driver-bar guide, and a spring mounted in the last said guide, and having its ends extending into the movable portion of the tack-guide and forming spring-pivots for said movable portions, substantially as set forth.

7. In a tacker, the combination with a driver, the driver-bar guide, and a fixed jaw on the foot of the said guide, of a handle secured to said guide, a movable jaw pivoted on the handle and toggle-levers adapted to be operated by the finger for moving the movable jaws.

8. In a tacker, the combination with a driver, a driver-bar guide, and a fixed jaw on the foot of said guide, of a handle secured to said guide, a movable jaw pivoted on the handle, toggle-levers consisting of a long bar pivoted at its upper end to the upper part of the handle, and a relatively short bar pivoted to the end of the movable jaw, said long bar extending practically the length of the handle, said parts being arranged so that the jaws may be practically locked together, for the purposes set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 13th day of April, A. D. 1896.

ALBERT F. PRESTON.

Witnesses:
MARCUS B. MAY,
CHAS. E. TODD.