Jan. 31, 1933. G. GODDU 1,895,457

FASTENING INSERTING MECHANISM

Filed July 3, 1929

Fig. 1.

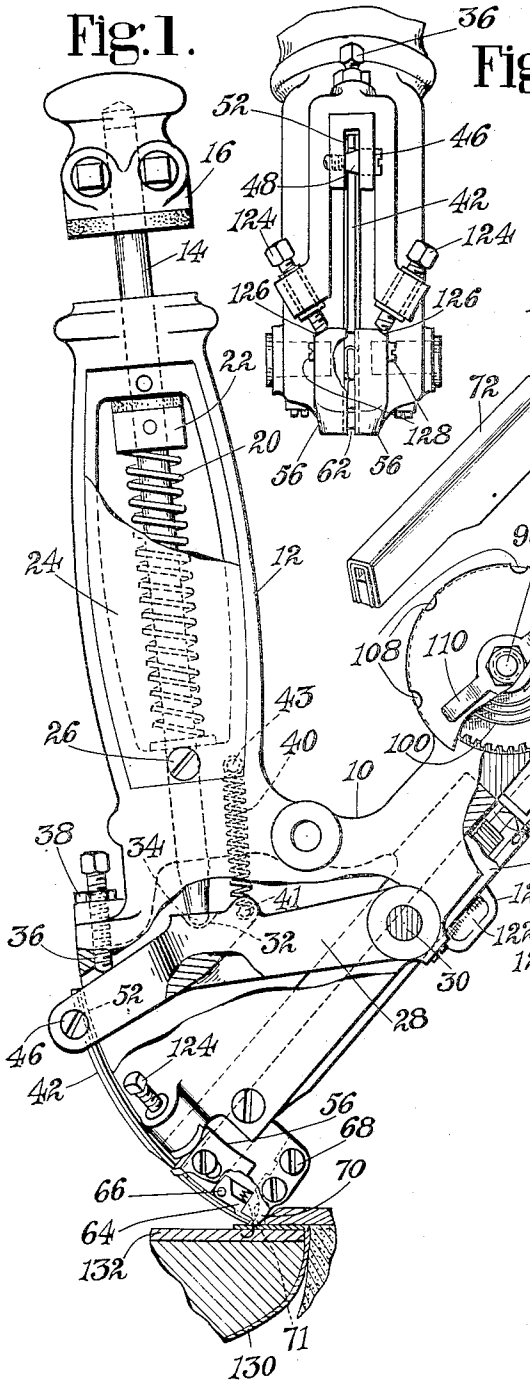


Fig. 2.

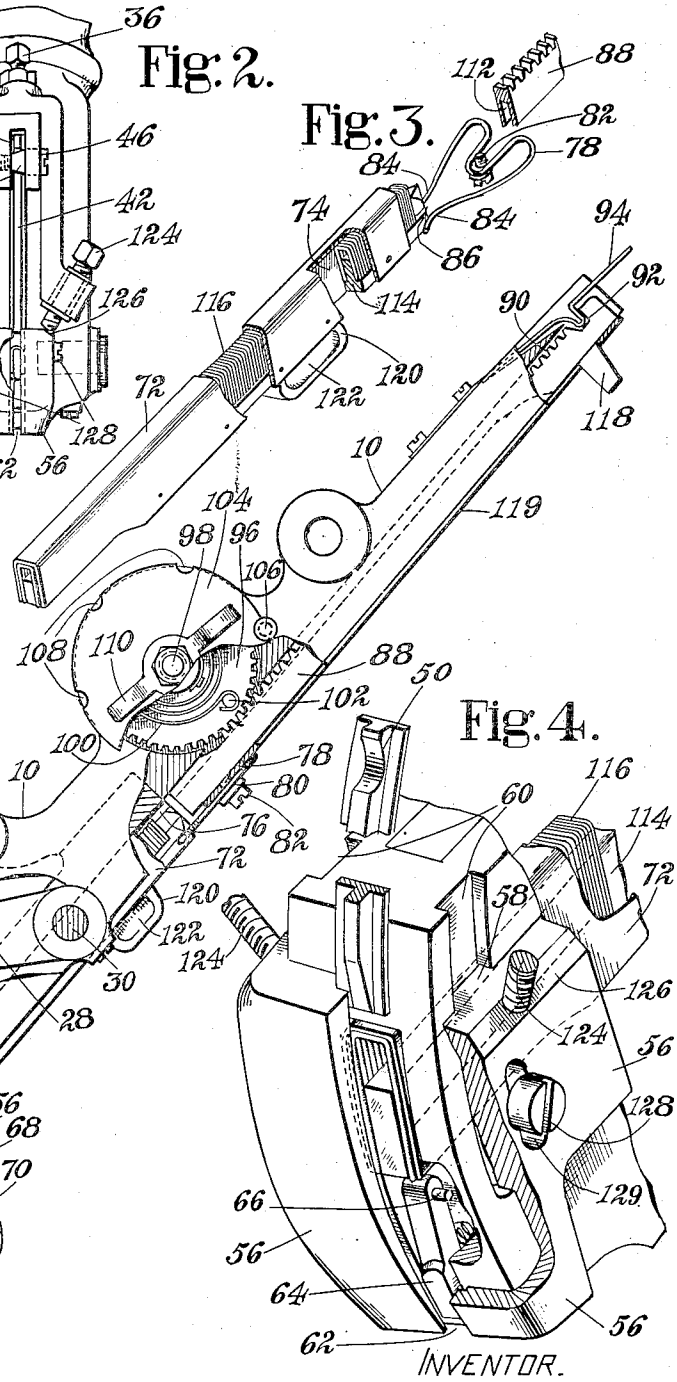


Fig. 3.

Fig. 4.

INVENTOR.

George Goddu

By his Attorney,

Nelson W. Howard

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UNITED STATES PATENT OFFICE

GEORGE GODDU, OF WINCHESTER, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY

FASTENING INSERTING MECHANISM

Application filed July 3, 1929. Serial No. 375,707.

This invention relates to fastening inserting mechanisms and is illustrated herein as embodied in a hand staple inserting device adapted to be used in the lasting of boots and shoes in a bed lasting machine.

After a shoe upper has been pulled and wiped into place in the bed lasting operation, it is usual to secure certain portions of its margins to the insole by driving fastenings through the upper and insole of the shoe to hold the upper in lasted relation to the insole and the last. Heretofore, hand tackers have been employed to perform this operation, the tacks being clenched against an iron plate carried by the last. In using fastenings of this sort imperfect clenching causes the tacks not only to be of little value as fastenings, but to be a source of annoyance to the wearer of the shoe due to the existence of a sharp projection in the innersole of the shoe in every instance in which a tack fails to clench properly. Even the tacks which clench properly produce an undesirable roughness on the surface of the insole.

It is an object of the present invention to provide a fastening inserting implement suitable for use in the bed lasting operation of such a character that no portion of the fastenings can penetrate the inner face of the insole.

In view of the foregoing, the illustrated embodiment of the invention comprises an improved hand staple inserting device suitable for use in conjunction with the lasting of shoes in a bed lasting machine and arranged to insert fastenings through the upper and into the insole of a shoe in such a way that no portion of the fastenings penetrate the inner face of the insole.

A feature of the invention resides in means for yieldingly supporting a staple strip magazine within the device whereby the magazine may be quickly and easily removed from the device for refilling when desired.

In accordance with another feature of the invention the illustrated device is provided with improved staple feeding means, in which a spring-actuated presser member is constructed and arranged to enter a staple passage formed in the staple support or magazine of the device to urge the fastenings forwardly and to lock the magazine within the device, provision being made for varying the tension of the spring which actuates the presser member.

With the above and other features and objects in view, the invention will now be described in connection with the accompanying drawing and pointed out in the claims.

In the drawing,

Fig. 1 is a side elevation of a hand staple inserting device, partly in section to show more clearly the construction thereof, and illustrating the position of a curved staple inserted through the upper and into the insole of a shoe;

Fig. 2 is an end view of the lower end of the device, with the staple nozzle partly broken away to show the position of a staple before it is driven;

Fig. 3 is a perspective view of the staple support or magazine and the spring for locating the support;

Fig. 4 is a perspective view, on an enlarged scale, of the lower end of the device with a portion of the nozzle broken away to show more clearly the staple inserting and guiding means.

The hand staple inserting device illustrated is provided with a housing 10, having an upstanding portion 12 in which a spring pressed rod 14 is mounted for reciprocating movement and having a head 16 usually engaged by a maul in the hand of the operator. A compression spring 20 bearing at one end against a collar 22 pinned to the rod 14 and at the other end against the upstanding portion 12 tends to maintain the striking rod 14 in its uppermost position. A removable plate 24 screwed to the housing 12 at 26 is provided so that the spring 20 and the collar 22 may be assembled on the rod 14 within the housing.

Mounted within the housing 10 is a lever 28 fulcrumed at 30 to the housing 10 and having a cup-shaped seat 32 formed in the median portion thereof to receive the rounded lower end 34 of the rod 14. A set screw 36 threaded in the housing 10 is adjustable to limit the upward movement of the lever

28 and may be locked in its adjusted position by means of a lock nut 38. A spring 40 fastened at one end to the lever 28 at 41 and at the other end to the housing 10 at 43 tends to urge the lever 28 in a clockwise direction, as viewed in Fig. 1, and to hold the lever 28 normally against the stop 36.

An arcuate driver 42 is clamped to the lever 28 by a clamping screw 46. The clamping screw 46 has a tapered body portion 48 arranged to engage a depression 50 on the driver 42 to clamp the driver 42 against a pair of cooperating surfaces 52 on the lever 28.

The housing 10 has a staple guiding throat or nozzle which, in the construction herein shown, comprises a pair of separate members 56. By reference to Fig. 4 it will be seen that each of the members 56 is mounted in an arcuate groove 60 formed on the housing 10 and concentric with the fulcrum 30 of the lever 28. In order to facilitate precise adjustment of the members 56, adjusting screws 124 are provided engaging beveled surfaces 126 of the members 56, and binding screws 128 extending through slots 129 formed in the members 56 are arranged to hold the members 56 in their adjusted position. An arcuate driver passage 62 is formed by the members 56 through which the driver 42 reciprocates. A spring-pressed finger 64 having a front end portion arranged to extend between the legs of the staple as they are driven is pivoted at 66 to the housing 10. A deflecting member 68, the lower end 70 of which occupies a position opposite the end of the staple guiding passage 62 in the throat members 56 is also mounted in the housing 10, and has a beveled surface 71 formed thereon for deflecting the legs of a staple in curved parallel paths in a manner similar to that disclosed in my application for Letters Patent of the United States, Serial No. 209,299, filed July 29, 1927.

A staple-supporting member or magazine 72 (Fig. 3) having a staple raceway 74 formed therein is mounted in a horizontal recess 76 formed in the housing 10. The member or magazine 72 is supported within the recess 76 by means of a spring clip 78 fastened to the housing 10 at 80 by a screw 82. The spring clip 78 has a pair of curved ends 84 engaging a pair of beveled surfaces 86 formed on the magazine 72 to position the magazine within the recess 76.

A presser-member 88 is constructed and arranged to enter into and move through the staple passage 74 of the magazine 72 to feed the fastenings forwardly and to lock the magazine within the device. The presser member 88 is mounted in a horizontal guideway 90 formed in the rearward portion of the housing 10 and held in position by a plate 119 fastened to the under surface of the housing 10, and has a longitudinal groove 112 formed therein slidably to engage the inverted T shaped saddle portion 114 of the magazine. A shoulder 92 formed on the member 88 is adapted to be engaged by a flat spring 94 to hold the member 88 in its inoperative position as shown in Fig. 1.

A gear 96 the teeth of which are arranged to mesh with teeth formed on the upper surface of the member 88 is rotatably mounted in the housing 10 at 98. A spiral spring 100 has one end attached to the gear 96 at 102 and the other end fast to a plate 104 which may be locked in adjusted position by means of a locking pin 106 engaging one of a series of notches 108 formed on the plate 104. A wing-nut 110 fast to the plate 104 is provided for adjustably positioning the plate 104 to give the proper tension to the spiral spring 100.

Unlatching of the presser member 88 by lifting the spring 94 causes the spiral spring 100 to urge the gear 96 in a clockwise direction as viewed in Fig. 1, thus causing the member 88 to move into the staple passage 74 of the magazine 72 and to engage the rearmost staple of a staple strip 116, mounted therein. The staple strip 116 is thus urged forwardly, by the presser member 88, thereby forcing the first staple of the staple strip into the driver passage 62 of the staple nozzle 56 and beneath the driver 42. Entry of the presser member 88 into the staple passage 74 of the magazine 72 causes the magazine to be locked positively in place within the device during the feeding of a staple strip. The member 88 has a downwardly projecting piece 118 by which the operator may return the member 88 to its inoperative position as shown in Fig. 1.

In order to facilitate the removal of the magazine 72 from the device for the insertion of a new staple strip the magazine 72 has depending therefrom a lug 120 having oval finger gripping depressions 122 formed thereon.

In operation, the upstanding portion 12 is grasped in the hand of the operator and the device applied to that portion of the upper desired to be fastened to the insole. The operator strikes the head 16 of the rod 14 thereby forcing the rod 14 downwardly. Downward movement of the rod 14 causes the lever 28 to rock in a counterclockwise direction, as viewed in Fig. 1, and the driver 42 to traverse the driver passage 62. Movement of the driver 42 through the driver passage 62 causes the driver to separate a staple from the staple strip 116 and to drive the staple thus separated through the upper 130 and into the insole 132, the legs of the staple being deflected laterally of the cross-bar of the staple.

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

1. A hand staple inserting device having, in combination, removable supporting means for a strip of staples, yielding means for locating the suporting means laterally and longitudinally of the device, and means for locking the support in its located position whereby the supporting means is rigidly held in located position.

2. A hand staple inserting device having, in combination, a removable magazine for a staple strip having a staple passage formed therein, and means constructed and arranged to enter said staple passage yieldingly to feed the staple strip forwardly and to lock the magazine within the device.

3. A hand staple inserting device having, in combination, a member provided with a driver passage, a readily removable magazine for a staple strip, means for yieldingly supporting the magazine within the device constructed and arranged to engage a pair of formed surfaces thereon to position the staple strip in alinement with an opening into the driver passage, and means for moving the staple strip forwardly into the driver passage and for locking the magazine in said alined position.

4. A hand staple inserting device having, in combination, a removable magazine for a staple strip having a staple raceway formed therein, and a spring-actuated presser member constructed and arranged to move through said raceway to urge the staple strip forwardly and to lock the magazine within the device.

5. A hand staple inserting device having, in combination, a member having a driver passage therein, a removable magazine for a staple strip having a staple raceway formed therein, a spring-actuated presser member constructed and arranged to move into said raceway to urge the staple strip forwardly and to lock the magazine within the device with the staple strip in alinement with an opening into the driver passage, and means for varying the tension of the actuating spring for the presser member.

6. A hand staple inserting device having, in combination, a housing having a passage formed therein for a staple support, a staple support, yielding means for centering the support transversely of the passage, and means for moving the staple strip along said passage and cooperating with the centering means to lock the support within the housing.

7. A hand staple inserting device having, in combination, a housing, a throat member having an arcuate driver passage therein, a lever, an arcuate driver carried by said lever, and means for clamping said driver in engagement with a pair of cooperating surfaces formed on said lever to position the driver in alinement with the driver passage in the throat member.

8. A hand staple inserting device having, in combination, a housing, a throat member having an arcuate driver passage therein, a lever, an arcuate driver carried by said lever and constructed and arranged to move through said driver passage, means for producing movement of the lever to cause the driver to separate a staple from a staple strip and to drive the staple thus separated through said arcuate driver passage and into a piece of work, and means for returning the lever to its uppermost position.

9. A fastening inserting implement having, in combination, a striking rod, means tending at all times to maintain the rod in its uppermost position, a lever, an arcuate driver carried by the lever, an adjustable stop, and means for normally holding the lever against the stop.

10. A fastening inserting implement having, in combination, a lever, an arcuate driver carried by the lever, means for swinging the lever about its fulcrum, means for returning the lever to its uppermost position, and means for varying the uppermost position of the lever.

11. A fastening inserting implement having, in combination, a lever, an arcuate driver carried by the lever, a throat member having an arcuate driver passage therein concentric with the fulcrum of the lever, means for feeding successively a plurality of staples into the throat member, and means for controlling the uppermost position of the lever to cause the driver to be held normally in operative relation to a staple in the driver passage.

12. A hand staple inserting device having, in combination, a lever, an arcuate driver carried by said lever, a throat member having an arcuate driver passage therein concentric with the fulcrum of the lever, means for feeding successively a plurality of staples into the driver passage, means for rocking the lever to cause the driver to drive the staple through the driver passage, and a deflector cooperating with the driver to curve the legs of the staple laterally of the cross-bar of the staple.

13. A hand staple inserting device having, in combination, a lever, an arcuate driver carried by the lever, a throat member having an arcuate driver passage therein corresponding in curvature to said driver, means for rocking the lever about its fulcrum to cause the driver to move a staple through the driver passage, and a deflector cooperating with the driver to deflect the legs of the staple in curved parallel paths.

14. A hand staple inserting device having, in combination, a housing, a throat member, means for feeding successively a plurality of staples into the throat member, a lever, an arcuate driver carried by the lever, means for moving the driver, a deflector having a surface formed thereon inclined relatively to the

line of drive for engaging the legs of the staple, and means for guiding the legs of the staple to the inclined surface of the deflector.

15. A hand staple inserting device having, in combination, a housing, a staple nozzle mounted thereon, means for feeding a staple into the staple nozzle, driving means, a deflector having a beveled surface formed thereon inclined relatively to the line of drive for engaging the legs of the staple, and means for adjusting the staple nozzle in a curved path to position the end thereof in cooperative relation with the beveled surface of the deflector.

16. A hand staple inserting device having, in combination, a member provided with a driver passage, a magazine for a staple strip having a pair of beveled surfaces formed thereon, means for engaging the beveled surfaces of the magazine to support the magazine within the device and to position the staple strip in alinement with an opening into the driver passage, and means for locking the magazine wth the staple strip in said alined position and for feeding the staple strip forwardly into the driver.

17. A hand staple inserting device having, in combination, a member provided with a driver passage, a magazine for a staple strip having a pair of beveled surfaces formed thereon, supporting means for the magazine, said means comprising a spring clip having a pair of curved ends for engaging the beveled surfaces of the magazine to position the staple strip in alinement with an opening into the driver passage, and means for locking the magazine in said alined position.

In testimony whereof I have signed my name to this specification.

GEORGE GODDU.