M. FRIED.

TIPPING HAND TOOL.

APPLICATION FILED JULY 20, 1918.

1,328,508. Patented Jan. 20, 1920.

Fig. 1.

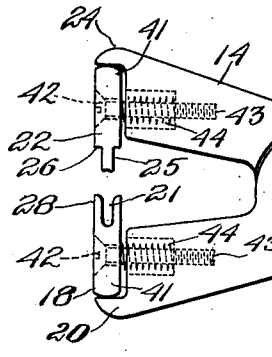


Fig. 2.

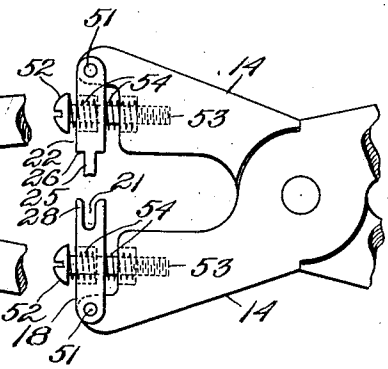


Fig. 3.

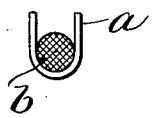
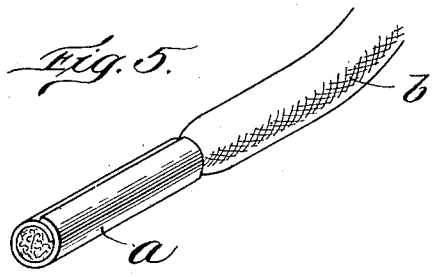


Fig. 4.



Fig. 5.



Inventor:
Marcus Fried,
by A. W. Harrison
atty.

UNITED STATES PATENT OFFICE.

MARCUS FRIED, OF LAWRENCE, MASSACHUSETTS.

TIPPING HAND-TOOL.

1,328,508. Specification of Letters Patent. Patented Jan. 20, 1920.

Application filed July 20, 1918. Serial No. 245,886.

To all whom it may concern:

Be it known that I, MARCUS FRIED, a citizen of the United States, and resident of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Tipping Hand-Tools, of which the following is a specification.

This invention relates to means for providing shoe lace ends with stiffening tips, and refers particularly to tools to be operated by hand for firmly clenching the tips onto and around the lacing.

One of the objects of the invention is to provide a simple and easily operated hand tool having ample power to clench the tips immovably on the lacing and to do the work accurately and uniformly.

Another object is to provide a tool of this character with coöperating dies having means for positively preventing them from injuring each other if they are closed with unnecessary force.

Another object is to provide the dies with portions by means of which a preliminary bending of one edge of the metal tip can be effected for a purpose hereinafter explained.

With these and other objects in view, the invention consists in the construction and combination of parts of the tool substantially as hereinafter described and claimed.

Of the accompanying drawings:—

Figures 1 and 2 are side elevations of two embodiments of my improved tool.

Figs. 3, 4 and 5 are detail views illustrating successive operations of tipping a lace.

Referring first to Fig. 1, the tool comprises a pair of lever members crossing each other and pivotally connected and having handle portions 13 and relatively short arms 14. The handles 13 are normally held apart by a suitable spring 15 to a limit determined by suitable coöperating shoulders.

To the outer face of one of the lever arms 14 the female die block 18 is yieldingly secured, as by a screw 43. A single screw is sufficient because the lower edge of the block bears against a flange or lug 20 of the supporting arm 14. The opposite edge of block 18 has a deep recess 21 the bottom of which is semi-circular in contour.

To the outer face of the other lever arm 14, the male die block 22 is yieldingly secured, as by another screw 43, the base of the block bearing against a flange or lug 24 of its supporting arm 14. Projecting from block 22 is a rib 25 the edge of which is concaved or grooved and said block is formed to present a shoulder 26 adapted to contact with the tip 28 of block 18 when the dies are closed together and arrest the dies at a point when the grooved edge of the rib coacts with the curved bottom of recess 21 in presenting a substantially tubular space. In other words, the stop shoulder structure described accurately limits the closing or operative movements of the dies and prevents the sharp edges of rib 25 from being injured or cutting into and marring the rounded bottom of recess 21. Since the coöperating stop members are carried by the dies themselves, it is easy to refit the device for use after wear, because the bottom of the recess 21 can be reshaped and the grooved edge of rib 25 also reshaped or sharpened, and then stop shoulder or shoulders 26 reduced or ground to enable the tip forming surfaces to again accurately coöperate.

The operation hereinafter described is performed more readily when the spring 15 normally holds the dies entirely apart as shown in Fig. 1, than if the rib 25 were to never entirely leave the recess 21, because the lacing *b* and a manually located tip piece *a* (Fig. 3) can be more quickly inserted in the recess 21 by laying it therein through its open top or entrance.

To compensate for the arcs of movement of the two arms 14 toward and from each other so as to permit the dies to properly interengage and operate, each die block is held between the outer face of its carrying arm and the head 42 of a screw 43 passing through the block into said arm. A spring 44 coiled about the screw bears against the bottom of a recess in the arm and against the rear face 41 of the block and holds the block against the head of the screw. By adjusting either or both of the screws 43 the die blocks will retain accurate relative positions when apart to insure the entry of one die into the other when brought together. After the dies are interengaged the springs 44 yield to permit the dies to slide without binding during completion of their tipping operation.

The stiffening tips *a* may be of any of the well-known materials, longitudinally U-shaped and having a row of perforations to form inwardly-extending tongues to enter the lacing material *b* as usual.

In operation, the user of the tool first places the end of the lacing in a tip *a* while the latter is in the form shown in Fig. 3 and pinches the tip to close it (see Fig. 4) sufficiently on the lacing to cause it to remain there until inserted between the dies of the tool. The handles 13 are then moved toward each other until further movement is arrested by the contact of shoulder 26 with tip 28. This causes the sharp edges of the die rib 25 to ride down outside the tip and wrap or close its edges, one usually in advance of the other, the proportions of the handles 13 relatively to the arms 14 which carry the dies being such that ample force can be brought to bear to finally roll the tip tightly around the lace end, (Fig. 5).

Normally the spring 15 holds the tool with the dies apart or open far enough for the lacing and partly applied tip to be passed in to the recess 21 over the top of the female die member, and after the operation described, and hand pressure on handles 13 is released, said spring acts to return the tool to the condition shown in Fig. 1, so that the lacing and its applied tip can be lifted out from the recess through its open top. This is an advantage over any structure wherein the dies remain partially interengaged because then the tipped lacing must be pulled out instead of lifted out, and frequently the action of the dies is such as to somewhat jam the tip in the bottom of the recess so that some instrument must be used to loosen it. And a pull exerted on the lacing might result in leaving the tip jammed in the recess. These objections are avoided by the present structure which enables the tipped lace ends to be lifted clear from the recess.

To secure the best results, it is desirable to render it certain that the edges of the tips shall be closed in, one in advance of the other. To aid in attaining this result, the preliminary pinching toward the Fig. 4 position should close in one edge more than the other. When the material of the tip is of such nature that this can not be conveniently done by hand, it can be easily effected by inserting the edges of the tip *a*, while in the Fig. 3 position, in the space between the shoulder 26 and the tip of die 18, and then further operating the tool to cause said shoulder and tip to partly bend in one edge of the tip. Then the dies are opened and the lace and its partly bent tip is shifted from tip 28 down to the bottom of the recess and the operation completed as already described.

I do not limit myself to the specific construction of the entire tool as illustrated in Fig. 1, as the same may be variously modified and still retain the advantages hereinbefore emphasized. For instance in Fig. 2 the structure is quite similar to that of Fig. 1, but the die blocks are pivoted to the arms 14 at 51, and screws 53 having heads 52 pass through said blocks into arms 14. Springs 54 bear oppositely against the dies. In each of Figs. 1 and 2 the screws, being adjustable, determine the proper relative positions of the dies when apart, so that when moved together the edge of die rib 25 will accurately enter recess 21.

It will now be clear that in each form illustrated the male and female dies are separated but are certain to accurately interengage when brought together, and the shoulder 26 of die 22 coöperates with the tip 28 of die 18 in positively stopping the closing movement of the dies at the proper point for effecting completion of the operation of applying the tip to the lacing and preventing any such excessive closing movement as might injure either die. It will also be clear that each form comprises a tool of the character described having two clenching portions, viz: the closing jaws provided with the shoulder 26 of die 22 and the opposing tip portion 28 of die 18, and the shaping or collapsing surfaces provided by the grooved edge of die 25 and the opposing curved bottom of recess 21.

Having now described my invention I claim:—

1. A tool of the character described having pivotally connected arms, male and female dies normally separated and yieldingly carried by said arms to compensate for the arcs of movement of said arms, and means for insuring accurate interengagement of the dies when brought together.

2. A tool of the character described, having pivotally connected arms, male and female dies normally separated and yieldingly carried by said arms to compensate for the arcs of movement of said arms, means for insuring accurate interengagement of the dies when brought together, and means for positively stopping the closing movement of the dies at a point to leave a cylindrical space between said die faces.

3. A tool of the character described, having pivotally connected arms, male and female dies normally separated and yieldingly carried by said arms to compensate for the arcs of movement of said arms, means for insuring accurate interengagement of the dies when brought together, and stopping means comprising a shoulder of one of the dies and a coöperating portion of the other die.

4. A hand tool for applying tips to laces, comprising a pair of pivotally connected levers and normally separated dies yieldingly carried thereby, said dies having coöperating male and female portions for closing a tip

upon a lace and also having coöperating portions for effecting a preliminary bending of the tip.

5. A hand tool for applying tips to laces, comprising a pair of pivotally connected levers, screws carried by said levers, dies loosely mounted on said screws, means for holding the dies normally separated, and means including springs for insuring accurate interengagement of the dies when brought together.

In testimony whereof I have affixed my signature.

MARCUS FRIED.