E. F. TOMKINS.

APPARATUS FOR THE MANUFACTURE OF LACE TIPS.

APPLICATION FILED NOV. 19, 1919.

1,348,336.

Patented Aug. 3, 1920.

Fig. 1.

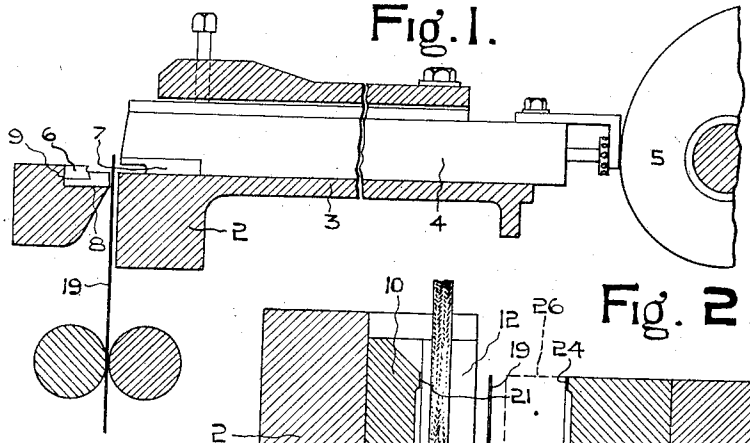


Fig. 2.

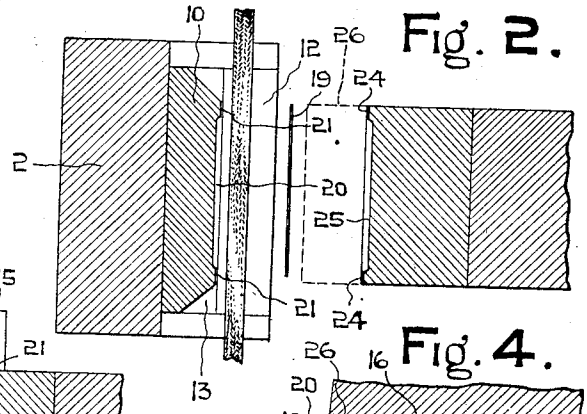


Fig. 3.

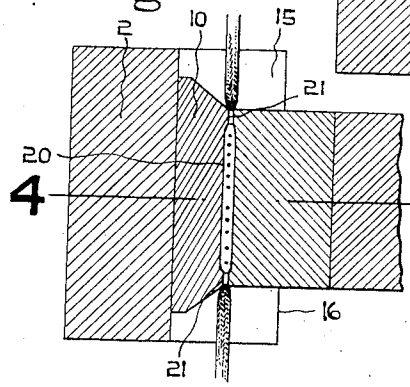
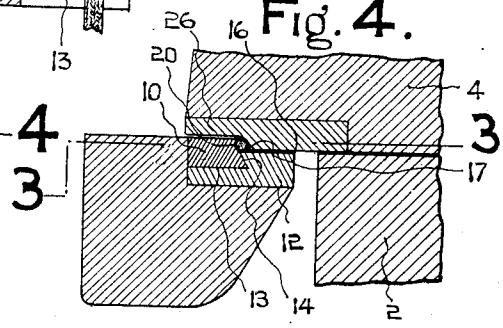


Fig. 4.



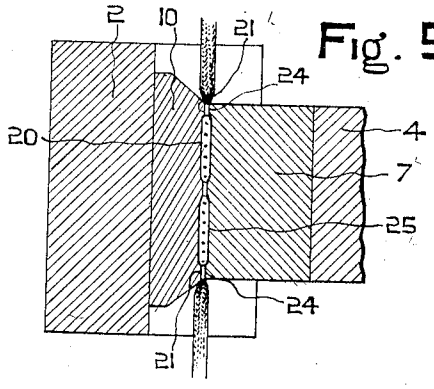


Fig. 5.

Fig. 6.

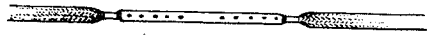


Fig. 7.

Edwin F. Tomkins
Inventor.

per Attorney

UNITED STATES PATENT OFFICE.

EDWIN F. TOMKINS, OF COATICOOK, QUEBEC, CANADA.

APPARATUS FOR THE MANUFACTURE OF LACE-TIPS.

1,348,336. Specification of Letters Patent. Patented Aug. 3, 1920.

Application filed November 19, 1919. Serial No. 339,098.

To all whom it may concern:

Be it known that I, EDWIN F. TOMKINS, a subject of the King of Great Britain, and resident of town of Coaticook, Province of Quebec, Dominion of Canada, have invented certain new and useful Improvements in Apparatus for the Manufacture of Lace-Tips; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to the manufacture and application to laces and the like of metallic tips.

Laces which have been heretofore employed for lacing boots, shoes, etc., have been provided with metallic tips which could not be pulled through the eyelets during unlacing without considerable care as the inner end of the tip relatively to the lace caught in the eyelet and the tip was eventually stripped off.

The object of my invention is to produce a lace tip which will firmly clench the lace and which will not interfere with unlacing.

To this end my invention consists of a pair of tip-forming dies presenting concave matrices each matrix having shallow end portions and a comparatively deep intermediate portion. The invention further consists of the lace tip formed by these dies, the inner end of such tip relatively to the lace being of a smaller diameter than the major portion of the tip.

For full comprehension, however, of my invention, reference must be had to the accompanying drawing in which similar reference characters indicate the same parts, and wherein:

Figure 1 is a transverse sectional view of a machine equipped with my invention;

Fig. 2 is a plan view of my improved dies out of relative operative engagement;

Fig. 3 is a horizontal sectional view taken on line 3—3 Fig. 4;

Fig. 4 is a vertical sectional view thereof in relative operative engagement; taken on line 4—4 Fig. 3;

Fig. 5 is a sectional view of a pair of dies containing my invention in a modified form; and

Figs. 6 and 7 are detail views of a pair of tips as they leave the dies illustrated in Figs. 3 and 5.

The machine illustrated in the accompanying drawings represents but one embodiment of my invention and may be varied to suit requirements. For instance one of the dies in this embodiment is fixed and the other movable relatively thereto. It might be desired, however, to reciprocate both dies and it is to be understood that such variations as this come within the spirit of my invention.

The machine illustrated comprises a frame 2 presenting a slideway 3, a reciprocatory carrier 4 mounted in the slideway and actuated by a cam 5, and my improved dies 6 and 7. The former is mounted in fixed position on a seat formed in the machine frame and presenting a supporting face 8 and an abutment 9 which dissipates the shock of each impact. This fixed die may be constructed of one piece or as in the embodiment illustrated of two sections 10 and 12, the former being cut away to present a seat 13 for the latter and relative displacement being prevented by beveled faces 14. The flat top 15 of the section 12 presents an edge 16 with which an edge 17 on the movable die 7 coöperates in cutting a blank from the metal ribbon 19. The matrix proper is a longitudinal concavity 20 formed in the portion of the section 10 immediately above and adjacent to the flat top 15, the portions of the matrix adjacent its ends being of shallower depth as at 21 than the intermediate portion 22.

The die 7 is mounted upon the underside of the front end of the carrier, and has a concave matrix with shallow end portions 24 and comparatively deep intermediate portion 25 the shallow and intermediate portions being constructed and arranged to coact with the corresponding portions of the other die. The front end 26 of the movable die is located in advance of and overhangs its matrix proper and is constructed and arranged to bend the top edge of the blank down into engagement with the matrix of the fixed die as the carrier advances toward it.

The dies above described are constructed and arranged to form two tips in one operation and if it is found desirable to form but one tip in one operation, each die will have a shallow portion at one end only.

Both ends of the tip may be reduced if desired by providing a shallow portion midway between the end shallow portion as illustrated in Fig. 5.

I do not claim the lace tip *per se* as the same relates to divisional subject matter.

Operation: When the machine is set in

motion the ribbon of blanks which is of double width for the purpose of forming two tips in one operation is fed up between the two dies a distance equal to the width of one blank, simultaneously the carrier 4 commences its movement toward the fixed die 6 carrying with it the movable die 7. As the front end 26 of the latter engages the blank it bends it down into engagement with the matrix 20 at which point the edge 17 moves past the edge 16 severing the blank from the ribbon. Continued movement of the carrier causes the blank to wrap around the lace and finally clench the same the shallow portions of the matrices coöperating with each other in reducing the ends of the tip to a diameter smaller than the major portion thereof. The carrier now withdraws from the fixed die and the lace is pulled away and the tips separated.

What I claim is as follows:

In a machine of the type described the combination with the machine frame and a carrier member slidably mounted thereon, of a pair of dies one being mounted upon the frame in fixed position and the other upon the carrier member and movable in unison therewith to and from the fixed die, each die having a concave matrix presenting a plurality of comparatively deep portions and shallow portions between the deep portions and at the ends thereof.

In testimony whereof I have signed my name to this specification in the presence of two witnesses.

EDWIN F. TOMKINS.

Witnesses:
J. W. WARNSEDE,
A. C. STEVENS.