

(No Model.)

F. N. LOOK.  
DEVICE FOR MAKING COVERED EYELETS.

No. 568,317.

Patented Sept. 22, 1896.

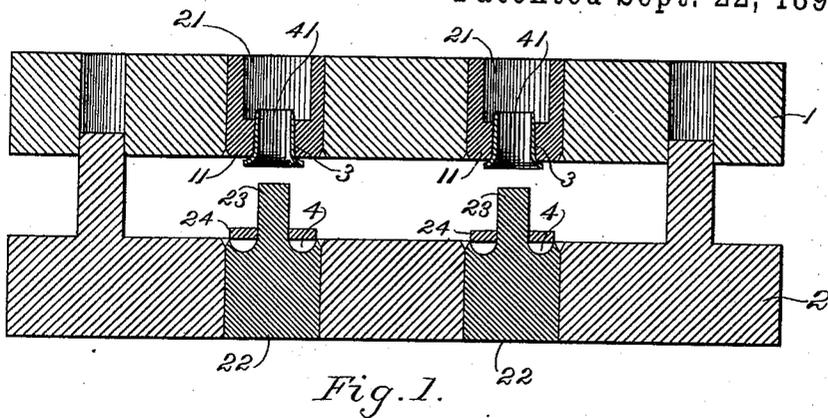


Fig. 1.

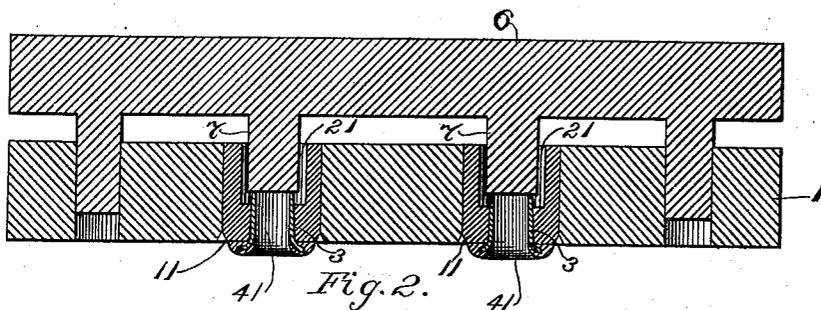


Fig. 2.

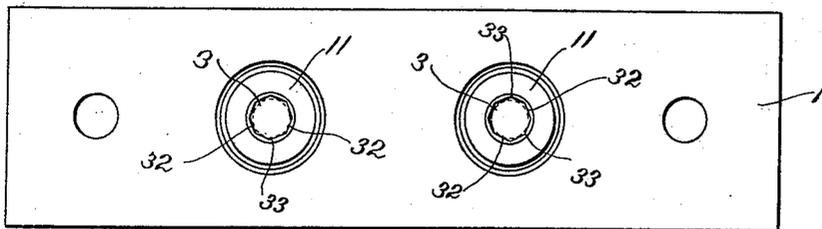


Fig. 3.

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# UNITED STATES PATENT OFFICE.

FRANK N. LOOK, OF NORTHAMPTON, MASSACHUSETTS.

## DEVICE FOR MAKING COVERED EYELETS.

SPECIFICATION forming part of Letters Patent No. 568,317, dated September 22, 1896.

Application filed January 20, 1896. Serial No. 576,077. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK N. LOOK, a citizen of the United States, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Devices for Making Covered Eyelets, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention will be described first with reference to the accompanying drawings, after which the distinguishing characteristics thereof will be pointed out more particularly, and distinctly defined in the claims at the close of this specification.

In the accompanying drawings, Figure 1 is a sectional view of the pair of mold-plates or die-plates hereinafter described. Fig. 2 is a similar view of one of the said mold-plates with the ejector-plate applied thereto. Fig. 3 is a view showing in plan the mold-plate of Fig. 2, this figure illustrating more fully the form of the hole for the reception of the barrel of the eyelet.

In the manufacture of what are termed "covered" eyelets, that is, eyelets having their flanged ends covered with plastic material or the like, a pair of mold-plates or die-plates, such as those which are shown at 1 2 in Fig. 1, is employed. One of such plates—namely, that designated 1 in the said figure—is provided with solid or undivided dies 11, each of which is formed with a hole 3 for the reception of the barrel or body of an eyelet which is to have a head or covering of plastic material molded thereon, and into which hole the barrel of the eyelet is entered by the longitudinal movement of the eyelet. The other plate—namely, that designated 2—is provided with dies 22, each of which is formed with a circular recess 4, corresponding in conformation with the head or covering to be molded upon the eyelet and with a central pin 23 to pass into the central hole of an eyelet.

My present invention has for one of its objects to enable the eyelet, prior to and during the molding operation, to be held securely in the said hole 3, the said eyelet being held in the said hole with sufficient firmness so that when the plates are separated at the conclusion of the molding operation the eyelet will remain in said hole and its head or covering

will be detached from the recess and pin of plate 2. It always has been a difficult problem to effect this holding in the case of a solid or undivided die. Various devices have been suggested and employed hitherto for accomplishing this result. These prior devices have been objectionable, so far as known to me, either because they were more or less unreliable in operation, or because they were of such a character as to interfere with the operations necessary in molding the covering or head thereon, or because they render difficult the removal of the eyelet after completion of the molding operation, or for other important reasons.

I am enabled to accomplish the holding of the eyelet as aforesaid by the means hereinafter described, while at the same time I avoid the objections which have been raised to the devices hitherto employed.

In accordance with my present invention I dispense entirely with the spring-acting gripping devices which heretofore have been employed in connection with the plate 1 for the purpose of holding the eyelets in the holes 3, and I form each of the said holes slightly tapering, that is, slightly less in diameter at or near the inner or reverse end thereof than it is at the mouth or entering end thereof, as shown in the drawings. The tapering hole 3 is of slightly less diameter than the exterior diameter of the barrel of the eyelet 41, so that when an eyelet is forced into the hole the former will be held securely in the latter by the friction of the exterior of the barrel with the inner surface of the die 11.

At 21 is a countersink or recess in the back of the mold-plate or die-plate 1 at the inner end of each hole 3. The depth of the hole 3, that is, the vertical length of its walls, is less than the length of the barrel of the eyelet, so that when the eyelet is forced home in the hole the end of the barrel will project beyond the hole 3 into the countersink or recess 21, as shown. The plate 1, as previously described, is one of a pair of mold-plates, and when the eyelets are in position in the tapering holes of the plate 1 they are in readiness to have their flanged ends covered with a molded covering of plastic material by bringing the mold-plate or die-plate 1 into contact with the mold-plate or die-plate

2, which latter previously has been supplied with covering material 24 to cover the flanged end of each eyelet. After the molding operation is completed the mold-plate or die-plate 1 is withdrawn from the mold-plate or die-plate 2, the eyelets being so securely held in the tapered holes 3 that they will remain therein while the molded coverings are being detached from the die-plate 2.

For the purpose of discharging the covered eyelets from the mold-plate 1 an ejector-plate 6 is provided, which has formed thereon projections 7, each of the latter being either equal in diameter with the small ends of the eyelets or slightly greater. When the ejector-plate 6 is applied to the mold-plate 1, the ends of the projections 7 enter the recesses 21 21 and come into contact with the ends of the eyelets which project into the recesses 21 21, so that on pressure being applied the eyelets will be started out of the tapered holes 3 and discharged from the said mold-plate or die-plate 1 without in any way becoming marred or injured.

In the drawings I have shown the devices as constructed and arranged to operate on two eyelets at a time. It will be understood that this is for convenience in illustration and description simply. In practice I contemplate constructing the mold-plates or die-plates and also the ejector-plate to act on a large number of eyelets at a time. That is to say, the mold-plates or die-plates will be formed to receive a considerable number of eyelets and to mold the heads or coverings of plastic material upon the entire series at one operation; also, the ejector-plate will be constructed to simultaneously discharge or eject from the mold-plate 1 the entire series of eyelets which are contained in the holes made through the same. I have shown the ejector-plate as provided with projections, each of which is slightly greater in diameter than a single eyelet, and entering recesses at the inner or reverse ends of holes 3 3. As will be obvious, instead of a separate recess around the reverse end of each of the holes 3 3 a single recess may be provided for a number of the holes 3, and in this case the projection which acts upon the ends of the barrels of the eyelets may be of a size and shape to enable it to act upon a number of eyelets at one time.

I have pointed out in the course of this specification that the hole 3 is of such relative diameter that when the barrel of an eyelet is driven into the said hole it binds and is held by the friction. From this it results that when the molding operation is completed and the mold-plates or die-plates are separated from each other the barrel of the eyelet will be held in hole 3 of mold-plate 1 with sufficient firmness to pull the molded head or covering of the flanged end of the eyelet out of the recess of the mold-plate 2.

In order that the eyelets always may be retained by mold-plate 1 at the time of separat-

ing the two mold-plates, notwithstanding the fact that the barrels of the eyelets sometimes vary in size from one another, it is necessary that in practice the holes 3 should be made small enough in diameter to engage firmly with the barrels of smallest diameter that are encountered in the eyelets which are to be provided with molded heads or coverings. As will be perceived, if the said holes are small enough to bind and hold frictionally the barrels of smallest diameter which are inserted into the same, those barrels which are of the larger diameters will be gripped with still greater firmness and will require the expenditure of an increased amount of force in order to effect their ejection or discharge. With the object in view of obviating injury to or the crushing of the barrels of the eyelets in consequence of the exertion of excessive pressure upon the inner ends thereof by the ejector device, or injury in placing the eyelets in the holes aforesaid, I provide as follows: Instead of forming the hole 3 truly circular in cross-section, so as to conform to the circular exterior of the barrel of the eyelet, I form the interior of the die 11 with separated longitudinally-disposed prominent portions which contact with the said barrel as the latter is inserted into the same and with intermediate relatively-depressed portions which are not intended to contact with the barrel. The prominent portions aforesaid compress the barrel at the places where they contact with the exterior thereof, while the intermediate depressions allow the elasticity of the material of the barrel to come into play somewhat. The frictional hold of the die upon the barrel is lessened through the formation of such depressions. The result is that although the eyelet is held with ample security in the die 11 at the time of effecting the separation of the mold-plates, yet when the ejector device is caused to act against the inner ends of the eyelets the latter are dislodged with comparative readiness and without becoming crushed or injured by the action of the ejector device. A convenient mode of forming the die to secure the prominent surfaces and intermediate depressions aforesaid is illustrated fully in Fig. 3, wherein the inner surface of the die 11 is shown formed with a number of faces or planes 32 32 and entrant angles 33 33. The said faces or planes are or may be tangential to the dotted circle in Fig. 3.

I claim as my invention—

1. A pair of molds to form the molded head or covering of an eyelet, one of the said molds being undivided and having a hole into which the barrel of an eyelet is entered by the longitudinal movement of the eyelet, said hole being of slightly less diameter than the exterior diameter of the barrel of the eyelet, whereby an eyelet forced longitudinally into said hole will be compressed and held throughout the operation of molding, substantially as described.

2. A mold for use in molding heads or coverings upon the flanged ends of eyelets formed with a hole of slightly less diameter than the exterior diameter of the barrel of an eyelet and less in length than the said barrel, combined with an ejector-plate to engage with the projecting end of the eyelet at the reverse end of said hole and discharge it from the said hole, substantially as described.

3. The combination with a mold provided with a tapering hole extending from the face of said plate to a recess of greater diameter formed on the opposite face of said mold, of an ejector-plate provided with a projection of equal or greater diameter than the small end of the eyelet and formed to enter said recess to engage the eyelet and discharge it from said tapering hole, substantially as described.

4. The undivided mold provided with a hole into which the barrel of an eyelet is en-

tered by the longitudinal movement of the eyelet, said hole having longitudinally-disposed relatively prominent portions to engage with the exterior of said barrel, with intermediate relatively-depressed portions, combined with an ejector device, substantially as described.

5. The undivided mold provided with a hole into which the barrel of an eyelet is entered by the longitudinal movement of the eyelet, said hole having longitudinally-disposed relatively prominent portions to engage with the exterior of said barrel, with intermediate relatively-depressed portions, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK N. LOOK.

Witnesses:

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