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A. LATHAM.

METHOD OF FORMING BLANKS FOR COVERING EYELETS:

APPLICATION FILED OCT. 26, 1905. RENEWED DEC. 12, 1907.

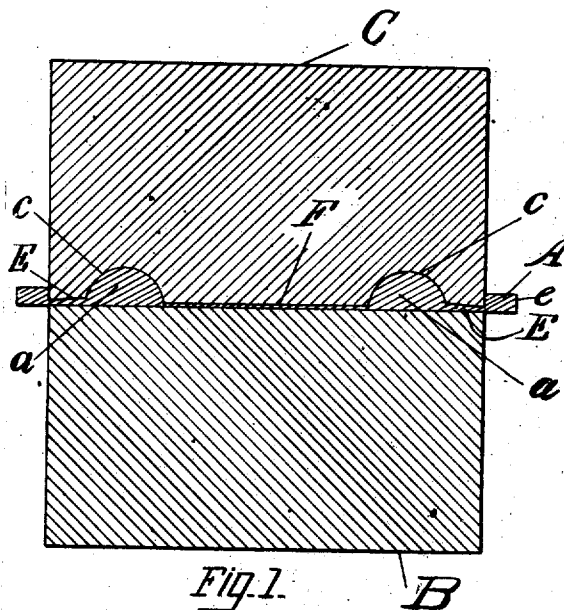


Fig. 1.

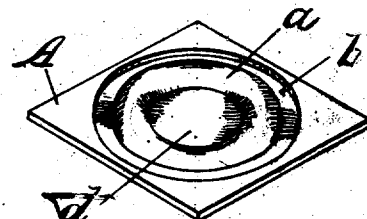


Fig. 2.

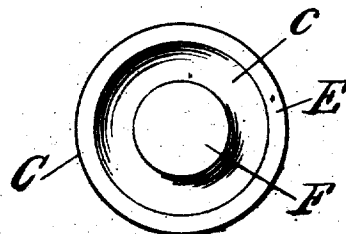


Fig. 3.

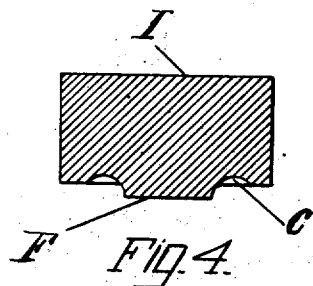


Fig. 4.

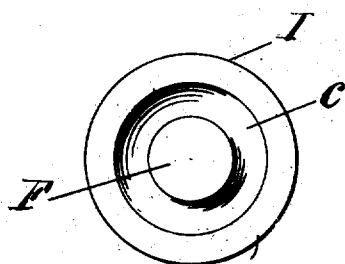


Fig. 5.



Fig. 7.

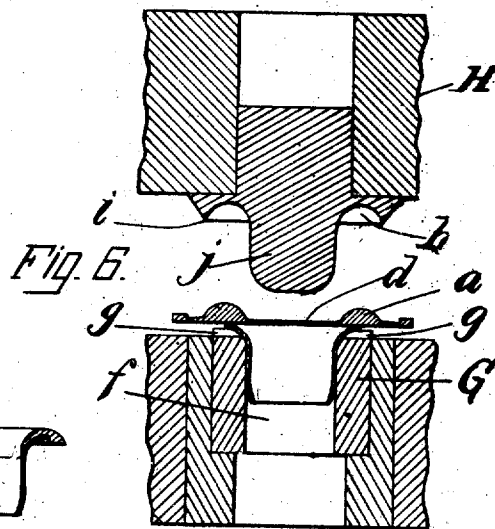


Fig. 6.

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METHOD OF FORMING BLANKS FOR COVERING EYELETS.

No. 893,739.

Specification of Letters Patent.

Patented July 21, 1908.

Application filed October 26, 1905, Serial No. 284,573. Renewed December 12, 1907. Serial No. 406,202.

To all whom it may concern:

Be it known that I, ALBERT LATHAM, a citizen of the United States, residing at Waltham, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain Improved Method of Forming Blanks for Covering Eyelets, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to the treatment of covering material in the manufacture of blanks used to form wear-resisting coverings for eyelets.

The invention comprises a method of forming blanks in which great economy is practiced by utilizing material which, in processes hitherto employed, has been wasted.

In the following specification and claims the word "blank" will be used to denote that portion of the covering material which is applied to an eyelet, whether said portion be formed or shaped before or during the covering operation.

The invention will be described as employing sheet covering material and the expression "blank-area" will be used to denote that area of a sheet of material which is occupied by a blank. The expression "inside the blank-area" will be used to indicate that portion of a sheet which is surrounded by the blank-area.

It has been a common practice to cover eyelets with plastic material in the form of a sheet, a portion of the material, of substantially the full thickness of the sheet, being removed to form the central aperture of each blank intended to register with the lacing passage of an eyelet. This method was disadvantageous since the considerable area of material thus removed was wasted. When blanks for several eyelets were formed from a sheet, superfluous material intervened between the curved outlines of adjacent blanks, and this superfluous material also was wasted. In methods heretofore used it has been considered necessary to use a sheet of a thickness approximating the maximum thickness intended for the blank, and hence, those portions of a sheet which were wasted comprised considerable areas of relatively thick stock.

Many millions of eyelets are covered

yearly with celluloid, the material commonly used for this purpose, and the multiplied waste occasioned as above suggested is a source of serious expense to those engaged in this industry. The initial cost of celluloid is so great as to forbid discarding waste material and consequently all waste is carefully preserved and reworked into new sheets or the like. This does not, however, avoid a considerable loss because the process of reworking is itself expensive. Obviously it is highly desirable to utilize as much as possible of the material in its initial form thereby reducing the amount of waste necessary to be reworked and eliminating in large part the secondary expense heretofore involved in the use of celluloid.

To this end the present invention contemplates the employment of a relatively thin sheet of covering material so that wasted portions shall be of less volume than when lost from a thick sheet, and the invention also contemplates a further reduction of waste by using material which would otherwise be wasted, in increasing the thickness of the relatively thin sheet to form the thick parts of a blank.

More specifically this invention consists in a method of forming blanks from sheet material by increasing the thickness of a relatively thin sheet within a blank-area, to form a blank of greater thickness than the sheet.

In the particular application of the invention herein shown and described, the method is characterized by moving material from inside the blank-area outward to utilize that waste material in increasing the thickness of the blank.

Other characteristics of the invention will be explained in the following description and will be defined in the claims.

Devices which may conveniently be used in the practice of a method embodying this invention are shown in the accompanying drawings, in which:

Figure 1 is a vertical section through a pair of cooperating blank forming dies. Fig. 2 is a view in perspective of a sheet of plastic material with a blank formed thereon by the dies shown in Fig. 1, (reduced one-half from Fig. 1). Fig. 3 is a bottom plan view of the acting face of the upper die shown in Fig. 1. (Also reduced one-half). Figs. 4

and 5 are respectively a vertical section and a bottom plan view of a modified blank-forming die. Fig. 6 is a vertical section of a pair of cooperating eyelet-covering dies such as may be used in covering eyelets with blanks formed according to this invention. Fig. 7 is a vertical section of an eyelet covered by a blank formed according to this invention.

The figures are drawn approximately to the scale of 3 to 1, except Fig. 1 which is drawn to a scale of 6 to 1.

In preparing a blank for covering an eyelet having a central lacing passage, by the preferred application of this novel method employing the specific devices shown in the drawings, a relatively thin sheet of plastic covering material, preferably celluloid, is used and an annular rim of greater thickness than the sheet, is formed upon said sheet by moving material from inside the rim outwardly and from outside the rim inwardly to contribute to the increased thickness of said rim.

As shown in Fig. 1 a sheet A of plastic material rests on a flat die B and is acted upon by a die C. The die C has an annular recess *c* and two presser-faces E and F. The face E is concave and frusto-conical in form and inclines inwardly to the recess *c*. The face F is circular and flat.

The plastic material usually employed in covering eyelets is normally hard or rigid and may conveniently be rendered plastic by the application of heat. To this end the dies B and C, or either of them alone, may be heated in any suitable manner, or the sheet A may be heated separately, and introduced to the dies in its altered state. Any other practicable method of rendering the sheet A plastic may be adopted if desired.

In practicing this invention by the above described devices, the die C is brought down upon the sheet A of plastic material and subjected to suitable pressure. The lower edge of the presser face E engages the sheet A in the circumference of a circle, and as it descends the inclined face E moves material inwardly from said circumference to contribute to the formation of a blank in the recess *c*. The face F meets the sheet A on a circle inside the blank-area and as it descends, said face F moves material from beneath it outwardly into the recess *c* to complete the formation of the blank.

Fig. 2 shows a blank formed as just described. The presser-face E has acted to move material inwardly to form the blank *a*, leaving the thin annular portion *b*; and the presser-face F has acted to move material outwardly from inside the blank-area to the blank *a* leaving the thin circular portion *d*. It will be noted that the portions *b* and *d* are materially thinner than the normal thickness of the sheet (see *e*, Fig. 1), consid-

erable waste material having been removed from said portions to increase the thickness of the blank.

It is by no means essential that this improved method of preparing blanks be practiced in connection with such apparatus as is here shown and described or in making blanks of the type used for illustration. The invention is not to be restricted in its application to use in connection with any particular sort of mechanical contrivance.

By way of illustrating the many possible forms of apparatus which might be used in practicing a method embodying this invention a modified form of blank-forming die I is shown in Figs. 4 and 5. This die has in general the same characteristics as one of the dies shown in Fig. 1, except that the presser face E is omitted in the modification. This die I has a recess *c* for shaping the blank, and it also has a presser face F, which acts upon the sheet material to move material from inside the blank-area into the recess *c*. In the use of this die, no material is moved from outside the blank-area inwardly.

In order to demonstrate how a blank formed according to this invention may be used, eyelet covering dies are shown in Fig. 6 and a covered eyelet is shown in Fig. 7.

The eyelet to be covered is shown as having an outwardly projecting flange at one end. This eyelet is positioned in a cylindrical aperture *f* in a lower covering die G, (see Fig. 6), with the lower face of its flange resting on supports *g g* which project upwardly from the face of the die. A blank is placed upon the eyelet flange and an upper die H is pressed upon it.

The die H has an annular recess *h* which gives the final shape to the covering of the eyelet and which has the proper conformation to suit this purpose. The blank *a* is preferably formed to fit approximately within said recess *h*. The die H also has a trimming edge *i* and a depending finger *j*. As the die H descends the finger *j* penetrates the thin portion *d* inside the blank-area and either removes it entirely or wipes part of it down on the inside of the flange, or it may be, into the barrel of the eyelet, according to the particular form of the finger. At this time the blank is preferably plastic as when acted upon by the blank-forming die C. When the recess *h* descends it embraces the blank *a* and presses it down upon the eyelet flange and forces some of the material beneath the flange into the spaces between the supports *g g*. The trimming edge *j* cuts away any fragments which may have been left around the edge of the blank *a*. In this manner the eyelet is covered.

It is not intended to claim as a part of this invention the specific method of covering an eyelet just described; but any method of forming eyelets, having heads or coverings

of plastic material, which involves the use of a blank formed in accordance with this invention, comes within the proper scope of this invention as it is defined in the claims.

While the method of this invention has been described as applied to the formation of a blank for covering an eyelet having a central lacing passage, it is to be understood that in its broad aspects the invention is applicable to the formation of blanks for covering lacing hooks and similar articles, and therefore the word "eyelet" wherever occurring in the specification and claims should when the context permits be construed as including eyelets, lacing-hooks and similar articles.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:—

23 1. The method of forming blanks from sheet material which consists in concentrating material of a relatively thin sheet in a blank-area to form a blank which is thicker than the sheet material.

25 2. The method of forming blanks from plastic material which consists in moving waste material into a blank to form a blank which is thicker than the plastic material.

30 3. The method of forming blanks from plastic material prior to the eyelet covering operation, which consists in moving material to those points where a blank is desired to be thick to form a blank of greater thickness than the plastic material.

35 4. The method of forming blanks from sheet material which consists in increasing the thickness of the sheet in a blank-area by moving material from inside said blank-area outward.

5. The method of forming blanks from sheet material which consists in moving material from inside a blank-area into said area to produce a greater thickness in said area than the thickness of the sheet material.

6. The method of forming blanks from sheet material which consists in moving material from inside the blank area and from outside said area into said area to form a blank thicker than the sheet material.

7. The method of forming blanks from sheet material which consists in moving material from inside the blank-area and from outside said area, to that part of said area which is desired to be thick.

8. The method of forming blanks from sheet material which consists in moving waste material to increase the thickness of a portion of a sheet thereby forming a blank which lies substantially in the plane of the sheet.

9. The method of forming blanks from sheet material which consists in moving material laterally in the plane of the sheet to increase the thickness of material in a blank-area.

10. The method of forming blanks from sheet material which consists in forcing material radially outward from inside a blank-area and radially inward from outside said area and shaping the material so moved to form a blank thicker than the sheet material.

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

ALBERT LATHAM.

Witnesses:

JOHNSON MORGAN,
BENJ. J. THOMAS.