S. L. GOOKIN.

METHOD OF SETTING EYELETS.

APPLICATION FILED JUNE 15, 1918.

1,327,033. Patented Jan. 6, 1920.

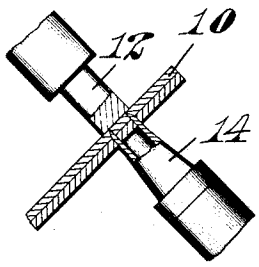


Fig.1.

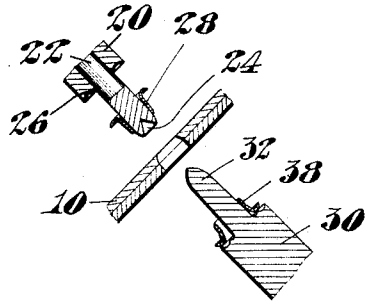


Fig.2.

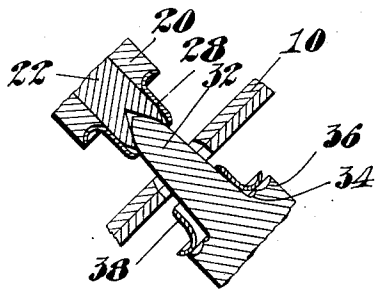


Fig.3.

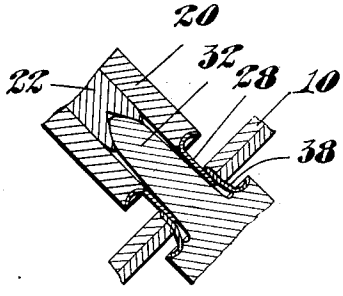


Fig.4.

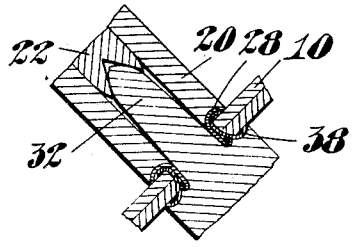


Fig.5.

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METHOD OF SETTING EYELETS.

1,327,033. Specification of Letters Patent. **Patented Jan. 6, 1920.**

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To all whom it may concern:

Be it known that I, SYLVESTER L. GOOKIN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Methods of Setting 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 a method of setting eyelets in telescoping relation and particularly to a method in which the setting of the two eyelets is performed as a single operation.

In order to secure greater holding power where eyelets are set in heavy work such as army shoes or leggings, the eyelets heretofore have been provided with a reinforcing washer or else, in some cases, two eyelets have been set in each hole, first one from one side of the work and then a smaller one inside the first and from the other side of the work so that their flanges are oppositely disposed. Complicated and expensive machinery is required if the reinforcing washer is to be used, unless the eyelets and washers are set one at a time by hand, and, if two eyelets are set successively in each hole, the operating time is doubled.

An object of the present invention is to devise an improved method of setting eyelets in telescoping relation, according to which the two eyelets may be simultaneously inserted from opposite sides of a piece of work and secured therein by a single operation.

In one of its aspects the invention consists in substantially simultaneously inserting from opposite sides of the work eyelets having barrels of different sizes, so that the barrels will be guided one through the other, and in upsetting the barrel of the larger eyelet by engagement with the inner face of the flange of the smaller eyelet. Preferably, the barrel of the smaller eyelet will be clenched in holding engagement with the flanged end of the larger eyelet.

In another aspect, the invention consists in supporting and inserting the larger eyelet by means of a tool having a tapered projecting member or pilot which tapers away from the barrel of the larger eyelet, and in guiding the smaller eyelet into telescoping relation with the larger eyelet by passing it along and in close engagement with the tapered member.

From another viewpoint, the invention consists in presenting eyelets to opposite sides of a piece of work, guiding them into telescoping relation, and in bracing the barrel of the smaller eyelet internally and externally to prevent buckling.

The preferred means for practising the invention will be most readily understood from a consideration of the following specification taken in connection with the accompanying drawings, in which,—

Figure 1 is a sectional view through the punching tools, and

Figs. 2 to 5 are sectional views through the setting tools showing them in various and successive positions as the eyelets are presented to and set in the work.

In carrying out the novel method which constitutes the subject-matter of this invention, it will be understood that various types of punching and setting tools may be utilized and that those shown and described herein are only essential to the proper carrying out of the method in so far as they are required by the terms of the claims. An aperture will be formed in a piece of work 10 comprising one or more layers of material by coöperating punching tools such as a punch block 14 and a tubular punch 12 which, it will be seen, is provided with a tapered exterior surface so that the hole formed in the work is larger at one end than at the other.

Eyelets are then inserted into the hole in opposite directions and in order to secure the best results it is desirable to have a short tapering portion at the leading end of the barrel of the smaller eyelet so that the latter may be supported more conveniently by frictional engagement with its internal surface, and so that entrance of the smaller barrel into the larger barrel will be facilitated. Further, the larger eyelet may advantageously be formed to provide an annular space adjacent to the point where its barrel joins its flange, in which space the upset portion of the smaller eyelet may be curled to interlock the eyelets when the two are set in telescoping relation. It will be assumed that the larger eyelet is to be presented from the under side of the work because this has been found the more ad-

vantageous arrangement for the reason that it enables the larger eyelet to be easily supported and guided into the hole in the work. This larger eyelet may desirably be presented to the work by means of a setting tool 30 having a centrally disposed and tapered projecting member or pilot 32 and an annular upsetting surface 34 surrounding the base of this pilot. For reasons to be later pointed out, this upsetting surface is slightly above the general level of the supporting face of the upsetting tool which may conveniently be provided with an annular groove 36 shaped to fit the flange of the larger eyelet 38. The annular ridge or shoulder formed by the junction of the surfaces 34 and 36 serves to center the larger eyelet by engagement with the internal surface of the barrel, so that when the leading end of the smaller eyelet is about to enter the barrel of the larger eyelet both eyelets are centered by coaction of their internal surfaces with concentric portions of the setting member 30. The smaller eyelet may conveniently be presented from above to the opposite face of the work by means of a setting tool 20 having a centrally disposed depressible spindle 22 whose outer end is slightly tapered and is provided with a conical recess 24 for engagement with the upper end of the tapered pilot of the other setting tool. The upper setting tool preferably will be provided with an annular groove 26 shaped to fit the flange of the smaller eyelet 28. Having supplied a smaller eyelet to the upper tool, which supports the eyelet by frictional engagement, and having placed a larger eyelet over the tapered pilot 32 of the lower tool, the two tools may be caused to approach the work from opposite sides so that the end of the tapered pilot will pass through a hole in the work 10 and engage the conical recess 24 in the spindle of the upper set at approximately the level of the work and then, as the approach of the tools continues, repel this spindle 22 into the upper set. As soon as the repulsion of the spindle of the upper setting tool 20 has brought the flange of the smaller eyelet 28 into engagement with said tool, the smaller eyelet will be disengaged from said spindle and pushed on to the end of the tapered pilot 32. The end of the pilot 32 at this time, as shown in Fig. 3, will have passed completely through the work and will preferably be so dimensioned that the contracted end of the barrel of the upper eyelet will closely engage the same near its extreme end. Preferably the approaching movements of the two tools will be at substantially the same rate of speed and as the barrels of the two eyelets are brought into the aperture in the work the barrels of the smaller eyelet will be centered by the pilot of the lower tool throughout its entire course of movement and will be braced thereby against crumpling and contracting, so that a smooth and uniform passageway for a lacing will be insured. If at first the larger eyelet is not seated on the annular surface 36 it will be held by the pilot portion 32 as shown by Fig. 3, but it will be lodged on the seat 36 in consequence of initial contact either with the work 10 or with the smaller eyelet. It is thus assured that the larger eyelet will be centered in coaxial relation with the smaller eyelet by the annular ridge or shoulder between surfaces 34 and 36 before the leading end of the smaller eyelet begins to enter the barrel of the larger eyelet. It will be noted that end-to-end abutting of the barrels of the two eyelets is prevented partly by the close engagement between the barrel of the smaller eyelet and the tapered pilot of the lower tool, partly by the tapering formation at the leading end of the smaller eyelet, and partly because the barrel of the larger eyelet will, even if the tools are supported in the inclined position illustrated, as will commonly be the case in some commercial machines, stand away from the tapered pilot all around the latter because of the fact that said tapered pilot tapers away from the barrel of the larger eyelet. After the two eyelets have been brought into telescoping relation, as shown in Fig. 4, the barrel of the larger eyelet will be guided upon the outside of the barrel of the smaller eyelet and will support the barrel of the smaller eyelet against outward buckling in case of variations in the thickness of the work or improper operation of the setting tools. The continued approach of the setting tools will then bring the barrel of the smaller eyelet into engagement with the upsetting surface 34 and cause the same to be clenched in holding engagement with the internal surface of the barrel of the larger eyelet. By reason of the preferred disposition of the upsetting surface 34 above the supporting surface for the flange of the larger eyelet, the upset end of the smaller eyelet will be curled and beaded in the final product within the base end of the barrel of the larger eyelet and will not project to the plane of the crown or embossed portion of the flange of the larger eyelet. At the same time, if the length of the barrel of the larger eyelet is properly proportioned to the thickness of the work in which the eyelets are being set, this barrel will be brought into engagement with the inner face of the flange of the smaller eyelet and, as the latter is supported by the face of the upper tool, will be upset by said engagement and will be clenched in holding engagement with the upper surface of the work.

Although the preferred embodiment of the invention has been herein described in

all its refinement, it will be understood that many of the desirable features mentioned are not essential to the carrying out of the novel method which forms the subject-matter of the invention.

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

1. The method of setting in telescoping relation, eyelets provided with barrels of different sizes, which consists in guiding the smaller eyelet into a hole in the work, substantially simultaneously inserting the larger eyelet and guiding it into telescoping relation with the smaller eyelet by engagement with the outside of the barrel of the smaller eyelet, and upsetting the larger eyelet by engagement against the inner face of the flange of the smaller eyelet.

2. The method of setting in telescoping relation, eyelets provided with barrels of different sizes and with annular flanges, which consists in supporting and presenting the larger eyelet by means of a tool having a tapered projecting member which tapers faster than the barrel of the larger eyelet, guiding the smaller eyelet into telescoping relation with the larger eyelet by passing it along and in close engagement with the tapered member so that it will pass inside the space formed by the non-parallel arrangement of the sides respectively of the tapered member and the barrel of the larger eyelet, and securing said eyelets to the work.

3. The method of setting in telescoping relation, eyelets having barrels of different sizes and annular flanges, which consists in moving the eyelets toward a piece of work in opposite directions from opposite sides of the work, guiding said eyelets into telescoping relation by their internal surfaces, so that the barrels may not abut in end-to-end relation, and securing said eyelets to the work.

4. The method of setting in telescoping relation, eyelets provided with barrels of different sizes, which consists in punching a tapered hole in a piece of work, presenting the eyelet having the smaller barrel to the side of the work having the smaller end of the aperture, presenting the eyelet having the larger barrel in the opposite direction to the other side of the work to enter the larger end of the aperture in the work, guiding said barrels into telescoping relation, and securing the eyelets in the work.

5. The method of setting in telescoping relation, eyelets provided with barrels of different sizes, which consists in guiding the smaller eyelet into a hole in the work, substantially simultaneously inserting the larger eyelet and guiding it into telescoping relation with the smaller eyelet and engagement with the barrel of the smaller eyelet, upsetting the larger eyelet by engagement against the inner face of the flange of the smaller eyelet, and clenching the smaller eyelet in engagement with the outer side of the flange of the larger eyelet.

6. The method of setting eyelets in telescoping relation which consists in supporting an outer or reinforcing eyelet upon a setting tool having a centrally arranged projecting pilot, passing this pilot through the work from one side, guiding a smaller eyelet into the work from the opposite side by contact with said projecting pilot, moving the eyelets into telescoping relation, and upsetting one of the eyelets to lock the eyelets together in telescoping relation in the work.

7. The method of setting flanged eyelets which consists in supporting an eyelet above a piece of work by frictional engagement with the internal surface of the eyelet, supporting a larger eyelet below the work, moving said eyelets into the work and into telescopic relation with each other while maintaining said frictional engagement to control the speed and to determine the path of the smaller eyelet, and clenching the leading end of the smaller eyelet against the flanged end of the larger eyelet to lock the evelets in telescopic relation in the work.

8. The method of setting, in an aperture in a piece of work, two telescoping eyelets provided with barrels of different sizes and each having an embossed annular flange upon one end of its barrel, which consists in passing a tapered guiding member through the larger eyelet and then through an aperture in the work, moving said eyelets into the work and then into telescoping relation with one another in the work while guiding the smaller eyelet upon the tapered member passed through the work and while guiding the larger eyelet upon the tapered member and upon the outside of the barrel of the smaller eyelet, and then clenching the barrel of the smaller eyelet to retain both eyelets in the work.

9. The method of setting flanged eyelets which consists in moving the barrels of two eyelets of different size simultaneously into a piece of work from opposite sides of the latter, guiding the barrels into telescopic relation while their leading ends are in the work, and locking the eyelets in telescopic relation in the work by clenching the leading end of the smaller eyelet against the flanged end of the larger eyelet.

10. The method of setting flanged eyelets which consists in moving the barrels of two telescopic eyelets into a piece of work from opposite sides while the work remains in one position, guiding and moving the eyelets into telescopic relation while the work remains in said position, and clenching the leading end of the smaller eyelet against the flanged end of the larger eyelet to lock the eyelets in telescopic relation in the work.

11. The method of setting flanged eyelets which consists in moving two eyelets simultaneously into a piece of work and into telescopic relation therein, and locking the eyelets together in the work by clenching the leading end of the inner eyelet against the flanged end of the outer eyelet.

12. The method of setting flanged eyelets which consists in moving two eyelets simultaneously into a piece of work and into telescopic relation therein, and locking the eyelets together in the work by continuing the inserting movement of one of the eyelets and, at the same time, clenching the leading end of the inner eyelet against the flanged end of the outer eyelet.

13. The method of setting flanged eyelets which consists in moving two eyelets simultaneously into a piece of work and into telescopic relation therein, and locking the eyelets together in the work by continuing the inserting movement of both eyelets and, at the same time, clenching the leading end of the inner eyelet against the flanged end of the outer eyelet.

14. The method of setting flanged eyelets which consists in inserting two eyelets into a piece of work and in moving the eyelets into telescopic relation therein by continuing the inserting movement while the work remains in one position, and locking the eyelets in telescopic relation in the work by clenching the leading end of the inner eyelet against the flanged end of the outer eyelet.

15. The method of setting flanged eyelets which consists in moving two telescopic eyelets continuously from positions at opposite sides of and separate from a piece of work into telescopic relation with their barrels in the work, and clenching the leading end of the inner eyelet against the flanged end of the outer eyelet to lock the eyelets in telescopic relation in the work.

16. The method of setting flanged eyelets which consists in moving two telescopic eyelets continuously from positions wholly outside and at opposite sides of a piece of work to final position in telescopic relation in the work, and clenching the leading end of the inner eyelet against the flanged end of the outer eyelet contemporaneously with said movement of the eyelets, to lock the eyelets in telescopic relation in the work.

17. The method of setting flanged eyelets which consists in inserting the barrel of one eyelet into a piece of work from one side and at the same time inserting the barrel of a smaller eyelet into the work from the opposite side and in line with the first said eyelet while guiding the smaller eyelet by frictional engagement with its internal surface, continuing the inserting motion of the eyelets until the flanges are seated against the opposite sides of the work, and clenching the leading end of the smaller eyelet against the flanged end of the larger eyelet to lock the eyelets in telescopic relation in the work.

18. The method of setting flanged eyelets which consists in inserting the barrel of an eyelet through a piece of work from one side and at the same time inserting the barrel of a smaller eyelet through the barrel of the first said eyelet from the opposite side of the work, continuing the inserting movement of one of the eyelets until the leading end of the larger eyelet is turned over and clenched by the flange of the smaller eyelet, and clenching the leading end of the smaller eyelet against the flanged end of the larger eyelet to lock the eyelets in telescopic relation in the work.

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

SYLVESTER LEO GOOKIN.