Nov. 3, 1931. J. F. CROWLEY 1,829,787

METHOD OF MANUFACTURING TURN SHOES

Filed May 17, 1927

Fig.1.

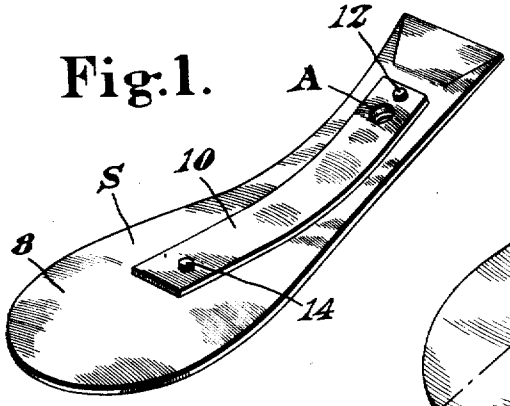


Fig.2.

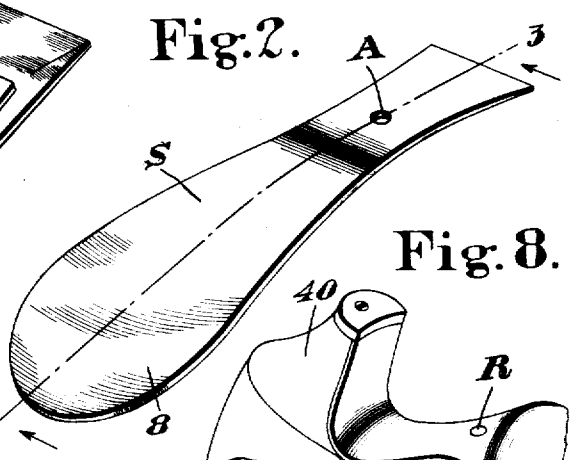
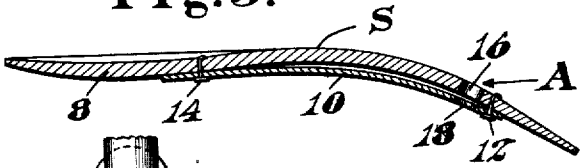


Fig.8.

Fig.3.



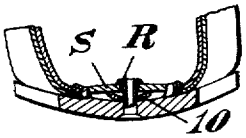


Fig.5.

Fig.6.

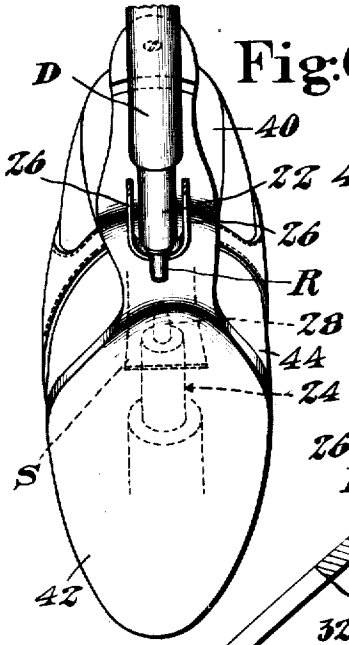


Fig.7.

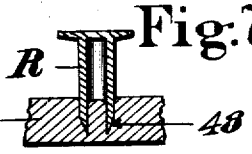


Fig.4.

INVENTOR.

John F. Crowley

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UNITED STATES PATENT OFFICE

JOHN F. CROWLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHANK & FINDINGS COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

METHOD OF MANUFACTURING TURN SHOES

Application filed May 17, 1927. Serial No. 192,106.

The present invention relates to improvements in methods of manufacturing shoes, and to improvements in shoes and shank pieces therefor. The invention is herein illustrated in its application to the manufacture of turn shoes although in certain aspects it is not necessarily restricted thereto but is applicable also in connection with the manufacture of shoes of other types such, for example, as McKay-sewed shoes wherein it is desired to secure together a bottom member, such as an insole, a reinforcing strip or shank stiffener, and an outsole.

In United States Letters Patent No. 1,695,577, granted Dec. 18, 1928, upon application of William G. Dodge, there is described and claimed an improved turn shoe having a shank piece or shank stiffener which is secured to the sole of the shoe by means of a rivet extending through the sole and through the forward portion of the shank piece. In making the improved shoe disclosed in said Letters Patent there is employed a shank piece, preferably of the reinforced type, having a marginal contour corresponding to the shape of the inside of the heel and shank portions of the shoe bottom and in which a rivet-receiving aperture has preliminarily been formed midway between its lateral edges. After a shank piece of this sort has been inserted and secured in place within a turn shoe a hole is bored through the sole of the shoe by a tool passed through the aperture in the shank piece, the shank piece thus serving as a templet or jig and the wall of the aperture in the shank piece as a positioning surface to determine the location of the hole, and consequently of the rivet, in the sole. The head of the rivet being plainly visible in the outer face of the sole of the finished shoe, it is important to have the rivet centered transversely of the sole and any failure thus to center the rivet detracts materially from the appearance of the shoe.

In view of the foregoing, one object of the present invention is to insure that the rivet, which is to secure the shank piece to the sole, will be centered transversely of the sole with substantial accuracy.

To the accomplishment of the above object, the present invention, in one aspect, comprises placing within a turn shoe a shank piece, preferably a reinforced shank piece, having an aperture therein adapted to receive a fastener, utilizing the wall of the aperture in the shank piece as a gaging surface to locate a fastener in a predetermined position adjacent to the outer side of a previously unperforated portion of the sole of the shoe, and passing the fastener inwardly through the sole and through the aperture in the shank piece. In carrying out this method as herein exemplified, the rear portion of a so-called turn shank piece is secured to the sole of a turn shoe while the forward portion of the shank piece is initially left unsecured. Thereafter, the forward portion of the shank piece is firmly fastened to the sole by means of a tubular rivet which is accurately located in a central position widthwise of the sole. To this end, after the rear portion of the shank piece has been secured to the shoe, the shoe is positioned upside down with the sole and the unsecured forward portion of the shank piece interposed between the upper and lower members of a rivet setting couple and the aperture in the shank piece is engaged by a positioning pin which is associated with the lower rivet setting member and which holds the shank piece with the aperture in the line of drive of a rivet positioned beneath the upper rivet setting member. If it happens, as it often will in practice, that the shank piece has been secured at its rear portion so that the rivet-receiving aperture in its forward portion is centrally located widthwise of the sole, that fact will be noted by the operator inasmuch as it will then be readily apparent to him that the rivet at the outer side of the sole is centrally located between the opposite edges of the sole. Under these conditions the operator will actuate the upper rivet setting member to drive the rivet inwardly through the sole, the rivet forcing its way through a previously unperforated portion midway between the edges of the sole. The actuation of the upper rivet setting member will also drive the rivet inwardly through the aperture in the shank piece which is held in line with the rivet by the positioning pin

and the upper rivet setting member will cooperate with the lower member to clinch the rivet against the inner side of the shank piece. However, it will frequently happen that the shank piece, after having been secured at its heel end to the shoe, is not positioned with the aperture in its forward portion accurately located in a central position widthwise of the sole. Under such conditions the rivet, which is located in alinement with the aperture by means of the positioning pin, will likewise be located in a non-central position widthwise of the sole and the operator, observing this fact, will then move the sole into a transversely central position relatively to the rivet. This operation will cause the more or less flexible sole to be shifted edgewise relatively to the forward portion of the shank piece which at this time is unsecured to the sole. The sole having been thus transversely centered with respect to the rivet and the shank piece, while the aperture in the shank piece is maintained by the positioning pin in line with the rivet, the rivet is driven inwardly through the previously unperforated portion of the sole and through the aperture in the shank piece and is clinched against the inner side of the shank piece. Under the conditions just described it will be understood that the location of the rivet in the sole is gaged, not from the aperture in the shank piece, but from the outer side of the sole while the aperture in the shank piece is maintained in alinement with the rivet. Accordingly, the invention, in another aspect, comprises also the relative positioning of the sole of a shoe and a rivet located adjacent to the outer side of the sole by gaging from the outside of the shoe while maintaining a rivet-receiving aperture in a shank piece within the shoe in line with the rivet.

In still another aspect invention is also to be recognized in an improvement in methods of making shoes which comprises assembling a shoe bottom member, a tread sole, and a shank piece having an aperture therein for receiving a rivet, locating a rivet outside of the shoe in line with the aperture in the shank piece by gaging from the shank piece itself, forcing the rivet inwardly through a previously unperforated portion of the tread sole and thereafter through the aperture in the shank piece and through the shoe bottom member, and clinching the entering end of the rivet against the inner surface of the shoe bottom member.

The invention will be explained with reference to the accompanying drawings, in which

Fig. 1 is a perspective view of an improved reinforced shank piece which may be employed in carrying out my invention;

Fig. 2 is a perspective view of the upper side of the shank piece shown in Fig. 1;

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 2;

Fig. 4 is a view, partially in elevation and partially in vertical section, of a turn shoe embodying the improved shank piece shown in Fig. 1 and illustrating the manner of attaching the forward portion of the shank piece to the shoe;

Fig. 5 is a transverse sectional view of a turn shoe having the reinforced shank piece of Fig. 1 applied thereto, and showing particularly the manner in which the attaching rivet is driven through the sole and through the component parts of the shank piece;

Fig. 6 is a perspective view illustrating particularly the manner of centering the shank piece and the sole of a turn shoe transversely relatively to the members of a rivet-setting couple;

Fig. 7 is a longitudinal sectional view of a tubular rivet illustrating the manner in which it is passed through the sole of a shoe; and

Fig. 8 is a fragmentary perspective view of a finished turn shoe showing the location of the shank piece securing rivet.

Referring to the drawings, there is shown in Fig. 1 a reinforced shank piece or shank stiffener S of the type commonly known as a "turn shank" or a "shank piece for a turn shoe". This shank piece S comprises a shoe bottom member or filler member 8, which may be made of leather or leatherboard, and a metallic reinforcing or stiffening strip 10. The filler member 8 has a marginal contour shaped in the usual manner to fit within the heel and shank portions of a shoe. The reinforcing strip 10 is curved lengthwise to determine the shape of the longitudinal arch of the shoe in which the shank piece is to be incorporated and the reinforcing strip also has a slight transverse curvature for increasing its rigidity. As shown, the reinforcing strip 10 is secured at its opposite ends to the filler member by means of tacks 12 and 14 which extend through tack holes in the reinforcing strip and are clinched within the filler piece.

In order to provide for adequate and permanent stiffening of the arch or shank portion of the shoe the forward portion of the stiffener is adapted to be rigidly secured to the sole of the shoe by means of a fastener such as the tubular rivet R shown in Figs. 4 and 5.

To this end a hole 16 (Fig. 3) is formed in the forward portion of the filler piece 8 and a similar hole 18 is formed in the forward extremity of the reinforcing or stiffening strip 10, these holes being centered transversely with respect to the parts in which they are formed and the two holes registering with each other to constitute a rivet or fastener-receiving aperture such as that designated A in Figs. 1 and 2. To insure that the shank piece will be secured to the shoe in such a

manner as to provide for maximum efficiency in stiffening the shank or arch portion of the shoe and reinforcing it particularly against lateral twisting strains, the aperture A is arranged to be located at the forward extremity of the longitudinal arch of the shank portion of the sole at a point just behind the break between the ball and the shank where the head of the rivet will be out of contact with the ground when the shoe is being worn.

Inasmuch as the head of the rivet R which secures the shank piece to the shoe is plainly visible in the finished shoe, it is very desirable that it shall be centered transversely relatively to the sole with substantial accuracy, or, in other words, that the head of the rivet shall be located practically midway between the opposite edges of the sole so that the presence of the rivet head in the finished surface of the sole will not detract from the appearance of the shoe. The present invention provides for the insertion of a rivet or other fastener in a central or other predetermined position widthwise of the sole of a shoe and resides in a method which, as herein exemplified, is carried out with the aid of a rivet-driving and setting device, such as that shown at D in Figs. 4 and 6.

As shown, the rivet-driving and setting device D comprises the members 22 and 24 of a rivet-setting couple, the upper member 22 consisting of a vertical reciprocable driving plunger, while the lower member 24 consists of a fixed post axially alined with the plunger 22, the post serving as an anvil for co-operation with the plunger and having its upper end face shaped to expand the entering end of the rivet R, rolling the expanded end over against the inner surface of the shank piece so as to set or clinch the rivet in place. Suitable spring fingers 26 are associated with the upper member or plunger 22 for holding a rivet R beneath the plunger in coaxial relation with the plunger in position to be driven thereby. Rivets may be delivered successively to the spring fingers 26 from a suitable raceway, not shown. For the purpose of locating the rivet-receiving aperture A in the shank piece in vertical alinement with the driving plunger 22 and a rivet which is positioned beneath the plunger, and in order to hold the shank piece so that the sole may be moved relatively to the shank piece, if necessary, to position the sole in a central or other predetermined relation to the rivet which is to be driven therethrough, a positioning pin 28, arranged in vertical alinement with the plunger 22 is provided for entering the aperture in the shank piece. In order that the positioning pin 28 may be subsequently displaced from the aperture A to permit the passage of the rivet therethrough the positioning pin is yieldingly supported within a central bore in the post 24 by means of a spring 30 confined within a socket 32 within the post. An enlargement 34 at the lower end of the positioning pin 28 normally engages a shoulder formed at the upper end of the socket 32 to limit the upward movement of the pin 28 under the influence of the spring 30.

In carrying out the improved method a shank piece such as the shank piece S is placed inside of a shoe, and the rear or heel portion of the shank piece may be temporarily secured by one or more tacks driven into the heel-seat of the shoe, or, if desired, the heel may be attached before the rivet is driven through the shank piece, in which case the rear portion of the shank piece will be finally secured in place by the heel-attaching nails. In Fig. 4 there is shown a shank piece the heel end of which is secured in place by means of nails 38 which also secure the heel 40 to the sole 42 of a shoe 44 in the usual manner. In this figure, also, a tack 46 is shown for preliminarily securing in place the rear portion of the shank piece. The forward portion of the shank is initially left unsecured.

After the rear portion of the shank piece has been secured in place, either preliminarily or finally, a rivet R is driven through the sole of the shoe and through the aperture in the forward portion of the shank piece preferably by means of the illustrated rivet-driving and setting device D herein described. In using the illustrated device D the shoe is presented upside down with the sole and the forward portion of the shank piece interposed between the upper and lower rivet-setting members 22 and 24 and with the yielding positioning pin 28 projecting into the aperture A in the shank piece. The members 22 and 24 being vertically alined, and the positioning pin 28 being coaxial with the member 24, the pin 28 serves to locate the aperture A in the shank piece in vertical alinement with the rivet-driving plunger 22 and with a rivet R which is positioned by the spring fingers 26 immediately beneath and in alinement with the driving pin. The positioning finger 28 also positively holds the forward portion of the shank piece against edgewise displacement laterally of the shoe while the lower member or post 24 provides a rigid support for the portions of the shank piece and the sole through which the rivet is to be driven.

After a shoe has been positioned as above described with its sole between the members of the rivet-setting couple, the lower end of the rivet which is to be driven will be located very close to the outer surface of the sole. It may be that the shank piece is now positioned with its rivet-receivng aperture accurately located in a central position widthwise of the sole and if so this fact will be readily apparent to the operator viewing the bottom of the sole because of the central re-

lation of the rivet to the opposite edges of the narrow shank portion of the sole. Under such conditions the operator actuates the rivet-driving plunger and thus causes a rivet to be driven inwardly through a transversely central point in the sole and thereafter to pass through the aperture in the shank piece, and to be clinched against the inner surface of the shank piece, thus firmly securing the shank piece and the sole together. If, however, the sole is not centered transversely with respect to the rivet before the rivet is driven this will also be readily apparent to the operator viewing the bottom of the shoe because, under such conditions, both the rivet and the rivet-driving plonger will be positioned nearer one edge of the sole than the other. The forward portion of the shank piece being positively held against edgewise displacement by the positioning pin 28, as already described, it is then an easy matter for the operator, by a slight lateral shifting movement of the sole, to center the shank portion of the sole transversely with respect to the rivet R, the rivet-setting members and the aperture A in the shank piece, by utilizing the rivet itself (or the upper rivet-setting member or driving plunger) as a gage and thus gaging the position of the rivet from the outside of the shoe. When the shoe sole has thus been transversely centered with respect to the rivet the driving plunger 22 is operated to drive the rivet through the transverse center of the sole. This method of locating the rivet facilitates accurate centering of the rivet in the sole inasmuch as the location of the rivet in the sole is gaged from the sole itself while the relation of the sole and the shank piece is readjusted as may be necessary to insure that the rivet will pass also through the aperture in the shank piece.

The rivet, which is shown in detail in Fig. 7 as being tubular and having a lower extremity 48 which is beveled or tapered on its outer side, will punch a hole through the sole as it is driven, and the aperture in the shank piece being in line with the rivet, the rivet will pass through the aperture, the positioning finger 28 yielding as the rivet advances, and finally the upper end of the anvil or post 24 will function to clinch the beveled end of the rivet over against the shank piece. As shown clearly in Fig. 7, the beveled end of the rivet will cut a hole of a diameter smaller than that of the outside of the rivet above its beveled end portion and consequently the rivet is obliged to force or crowd its way through the relatively small hole in the sole, thus enlarging the hole to the diameter of the rivet and insuring that the rivet will fit very tightly in the sole. Because of the above-described tight fit of the rivet in the sole there will be no opportunity for moisture to reach the inside of the shoe by entering between the rivet and the walls of the aperture in the sole. Not only is it easier to drive the rivet because of its beveled end portion but the rivet will have no tendency to enter the sole at an angle to the surface of the sole as it might if the bore in the rivet were eccentric due to inaccuracy of manufacture and if the end of the rivet were unbeveled. Moreover, the beveled end construction of the rivet insures that the rivet will enter the hole in the shank piece even if the rivet and the hole are slightly out of coaxial relation.

The manner of gaging the location of the rivet from the outside of the sole by utilizing the rivet itself (or the rivet-driving plunger) as a gage will be apparent from an examination of Fig. 6. This figure shows a shoe as it is viewed by the operator just before the sole is centered transversely with respect to the rivet and the rivet-setting members. As shown, the sole and the shank piece of the shoe have been interposed between the upper and lower rivet-setting members 22 and 24 with the rivet-receiving aperture in the shank piece S engaged by the positioning pin 28 so that the forward portion of the shank piece is held with the aperture in vertical alinement with the upper member or rivet-driving plunger 22. It will be observed that the shank piece S has not been centered transversely with respect to the sole of the shoe and that, accordingly, the sole is not centered transversely with respect to the aperture in the shank piece nor with the rivet-setting members 22 and 24 nor with the rivet R itself. By shifting the shoe toward the left, however, while the shank piece is held by the pin 28, the sole of the shoe may readily be brought into transversely centered relation with the rivet, as well as with the shank piece and the aperture in the latter, and when the sole has been thus centered this fact will be readily apparent to the operator because of the proximity of the rivet and the rivet-setting plunger to the sole. Thus the rivet-setting plunger, or the rivet which has been fed into position beneath the plunger, or the plunger and the rivet together, constitutes a gage which is located outside the shoe and within the vision of the operator and whereby the operator may conveniently and with substantial accuracy center, or otherwise locate in predetermined relation to the sole, the rivet which is to be driven through the sole and the shank piece.

If only a single tack is driven through the rear portion of the shank piece for the purpose of preliminarily holding the shank piece in place it will be obvious that the above-described lateral shifting movement of the shoe sole relatively to the forward end portion of the shank piece may be readily effected inasmuch as the shoe will be permitted to pivot about the tack. If, however, the heel portion of the shank piece is permanently secured in place by the heel-attaching nails, as

illustrated, the desired amount of relative shifting movement between the sole and the forward portion of the shank piece may be readily secured because of the yielding character of the sole and the shank piece, it being relatively easy to crowd the latter sufficiently against the heel-attaching nails toward either side of the shoe, as may be desired.

The invention having been described, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. That improvement in methods of making turn shoes which comprises placing a shank piece within a turn shoe, positioning the shank piece in a predetermined relation to a gage within the vision of the operator, thereafter positioning the sole of the shoe in a predetermined relation to said gage, and passing a fastener through the sole and the shank piece while both the sole and the shank piece are maintained in said respective predetermined relations to said gage.

2. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a fastener-receiving aperture therein, presenting the assembled shoe and shank piece to a fastener-driving member, holding the shank piece with the aperture in position to receive a fastener, thereafter moving the shoe relatively to the shank piece to center the sole transversely with respect to the fastener-driving member and to the aperture in the shank piece, and operating said member to drive a fastener through the sole and through the aperture in the shank piece.

3. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a fastener-receiving aperture therein, positioning the shank piece to locate said aperture in the line of drive of a fastener-driving member, and operating said member to drive a fastener through the sole and through the aperture in the shank piece while gaging the location of the fastener relatively to the sole by said fastener-driving member or by a fastener located in position to be driven by said member.

4. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a fastener-receiving aperture in its forward portion, securing the rear portion of the shank piece to the shoe while leaving the forward portion unsecured, relatively moving the forward portion of the shank piece and the sole of the shoe to center the aperture in the shank piece transversely with respect to the sole of the shoe, and passing a fastener through the sole and through the aperture in the shank piece to secure the forward portion of the shank piece to the sole.

5. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a fastenter-receiving aperture in its forward portion, securing the rear potion of the shank piece to the shoe while leaving the forward portion unsecured, holding the forward portion of the shank piece and moving the sole of the shoe relatively thereto to center the sole transversely with respect to the aperture in the shank piece, and passing a fastener through the sole and through the aperture in the shank piece to secure the forward portion of the shank piece rigidly to the sole.

6. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a rivet-receiving aperture therein, placing the shoe with the shank piece and the sole interposed between the members of a rivet-setting couple, locating the aperture in the shank piece in alinement with one of said members, centering the sole transversely with respect to the other member of the couple, and operating said members to drive a rivet centrally through the sole and through the aperture in the shank piece and to clinch the rivet against the inner side of the shank piece.

7. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a rivet-receiving aperture therein, placing the shoe with the shank piece and the sole interposed between alined members of a rivet-setting couple, locating and maintaining the aperture in the shank piece in alinement with one of said members, centering the sole transversely with respect to the other member of the couple as determined by the visible relation of said member with the outside of the shank portion of the sole, and operating said members to drive a rivet centrally through the sole and through the aperture in the shank piece and to clinch the rivet against the inner side of the shank piece.

8. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a rivet-receiving aperture in its forward portion, securing the rear portion of the shank piece to the shoe while leaving the forward portion of the shank piece unsecured, presenting the shoe to a riveting device and holding the forward portion of the shank piece with the aperture located in position to receive a rivet, moving the sole of the shoe relatively to the forward portion of the shank piece to center the sole transversely with respect to the aperture in the shank piece, and operating the riveting device to drive a rivet through the sole and through the aperture in the shank piece to secure the forward portion of the shank piece rigidly to the sole.

9. That improvement in methods of making turn shoes which comprises placing within a turn shoe a turn shank piece having a rivet-receiving aperture in its forward por-

tion, securing the rear portion of the shank piece to the shoe while leaving the forward portion of the shank piece unsecured, presenting the sole of the shoe to a rivet-driving device, engaging the aperture in the shank piece with a positioning pin associated with said device and thereby locating said aperture in the line of drive of said device, moving the sole of the shoe relatively to the forward portion of the shank piece to center the sole transversely with respect to the aperture in the shank piece and the line of drive of said device, and operating said device to drive a rivet through the sole and through the aperture in the shank piece.

10. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having a rivet-receiving aperture in its forward portion, securing the rear portion of the shank piece to the shoe but leaving the forward portion unsecured, relatively moving the sole and the forward portion of the shank piece to center the hole in the shank piece transversely relatively to the sole and thereafter passing a rivet inwardly from the outside of the shoe through the sole and through the aperture in the shank piece and clinching the rivet against the inner surface of the shank piece.

11. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having an aperture therein adapted to receive a fastener, utilizing the wall of the aperture in the shank piece as a gaging surface to locate a fastener in a predetermined position adjacent to the outer side of a previously unperforated portion of the sole of the shoe, and passing the fastener inwardly through the sole and through the aperture in the shank piece.

12. That improvement in methods of making turn shoes which comprises placing a shank piece within a turn shoe, positioning the shank piece in a predetermined relation to a fastener fixedly held outside of the shoe in position to be driven inwardly through the sole, securing the rear of the shank piece to the shoe, moving the sole relatively to the shank piece to center its shank portion transversely relatively to said fastener and driving the fastener inwardly through the sole and through the shank piece while both the sole and the shank piece are maintained in said respective predetermined relations to said fastener.

13. That improvement in methods of making shoes which comprises assembling together a tread sole and a shank stiffener having a fastener-receiving aperture therein, gaging from the shank stiffener itself to locate adjacent to the outer side of the tread sole and in line with the aperture in the shank stiffener, a tubular rivet having its entering end beveled on its outer side to cause the rivet to punch in the sole a hole of a smaller diameter than that of the unbeveled portion of the shank of the rivet and to enlarge the hole to fit said unbeveled portion of the rivet as the rivet is passing through the sole, driving the rivet inwardly through a previously unperforated portion of the tread sole, continuing to drive the rivet to pass it through the aperture in the shank stiffener, and upsetting the beveled end of the rivet to secure the shank stiffener and the sole together.

14. That improvement in methods of making shoes which comprises assembling with the rest of a shoe a tread sole and a shank stiffener having a fastener-receiving aperture therein, utilizing the wall of the aperture in the shank stiffener as a gaging means for alining with said aperture a fastener located adjacent to the outer side of a previously unperforated portion of the tread sole, driving the fastener inwardly through the tread sole and through the aperture in the shank stiffener, and upsetting the inner end of the fastener to secure the shank stiffener to the sole.

15. That improvement in methods of making shoes which consists in assembling a tread sole with a shoe bottom member having a fastener-receiving aperture therein and a shank stiffener having a fastener-receiving aperture registering with the aperture in the bottom member, utilizing the walls of the apertures in the bottom member and the shank stiffener in positioning a fastener-inserting device to locate a fastener adjacent to a previously unperforated portion of the tread sole in alinement with said fastener-receiving apertures, operating the fastener-inserting device to drive the fastener inwardly through the tread sole and through the apertures in the shank stiffener and the bottom member, and clenching the inner end of the fastener against the bottom member.

16. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having an aperture therein adapted to receive a rivet, gaging from the shank piece itself to locate a rivet outside of the shoe in line with said aperture, inserting the rivet to secure the shank piece to the shoe by causing the entering end of the rivet to be forced through a previously unperforated portion of the shoe sole and then through said aperture in the shank piece, and clinching the entering end of the rivet against the shank piece.

17. That improvement in methods of making shoes which comprises placing within a shoe a shank piece having an aperture therein adapted to receive a rivet, relatively positioning the sole of the shoe and a rivet located adjacent to the outer side of the sole by gaging from the outside of the shoe while maintaining the aperture in the shank piece in line with the said rivet, driving the rivet inwardly through the sole and through the aperture

in the shank piece, and clinching the inner end of the rivet against the inner surface of the shank piece.

18. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having an aperture therein adapted to receive a rivet, engaging the aperture in the shank piece to position the aperture in line with a rivet and a rivet-driving device located adjacent to the outer side of the sole of the shoe and to hold the shank piece against movement, moving the sole relatively to the shank piece and relatively to the rivet and the rivet-driving device while utilizing the rivet or the rivet-driving device as a gage to locate the rivet in a predetermined relation to the sole widthwise of the shoe, forcing the rivet inwardly through a previously unperforated portion of the sole and through the aperture in the shank piece, and clinching the inner end of the rivet against the inner side of the shank piece to secure the shank piece and the sole together.

19. That improvement in methods of making shoes which comprises assembling a shoe botton member, a tread sole, and a shank piece having an aperture therein for receiving a rivet, locating a rivet outside of the shoe in line with said aperture by gaging from the shank piece itself, forcing the rivet inwardly through a previously unperforated portion of the tread sole and thereafter through said aperture in the shank piece and through said bottom member, and clinching the entering end of the rivet against the inner surface of the shoe bottom member.

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

JOHN F. CROWLEY.

in the shank piece, and clinching the inner end of the rivet against the inner surface of the shank piece.

18. That improvement in methods of making turn shoes which comprises placing within a turn shoe a shank piece having an aperture therein adapted to receive a rivet, engaging the aperture in the shank piece to position the aperture in line with a rivet and a rivet-driving device located adjacent to the outer side of the sole of the shoe and to hold the shank piece against movement, moving the sole relatively to the shank piece and relatively to the rivet and the rivet-driving device while utilizing the rivet or the rivet-driving device as a gage to locate the rivet in a predetermined relation to the sole widthwise of the shoe, forcing the rivet inwardly through a previously unperforated portion of the sole and through the aperture in the shank piece, and clinching the inner end of the rivet against the inner side of the shank piece to secure the shank piece and the sole together.

19. That improvement in methods of making shoes which comprises assembling a shoe botton member, a tread sole, and a shank piece having an aperture therein for receiving a rivet, locating a rivet outside of the shoe in line with said aperture by gaging from the shank piece itself, forcing the rivet inwardly through a previously unperforated portion of the tread sole and thereafter through said aperture in the shank piece and through said bottom member, and clinching the entering end of the rivet against the inner surface of the shoe bottom member.

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

JOHN F. CROWLEY.

CERTIFICATE OF CORRECTION.

Patent No. 1,829,787. **Granted November 3, 1931, to**

JOHN F. CROWLEY.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, line 112, for the word "pin" read plunger, and line 113, for "finger" read pin; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of June, A. D. 1932.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)

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