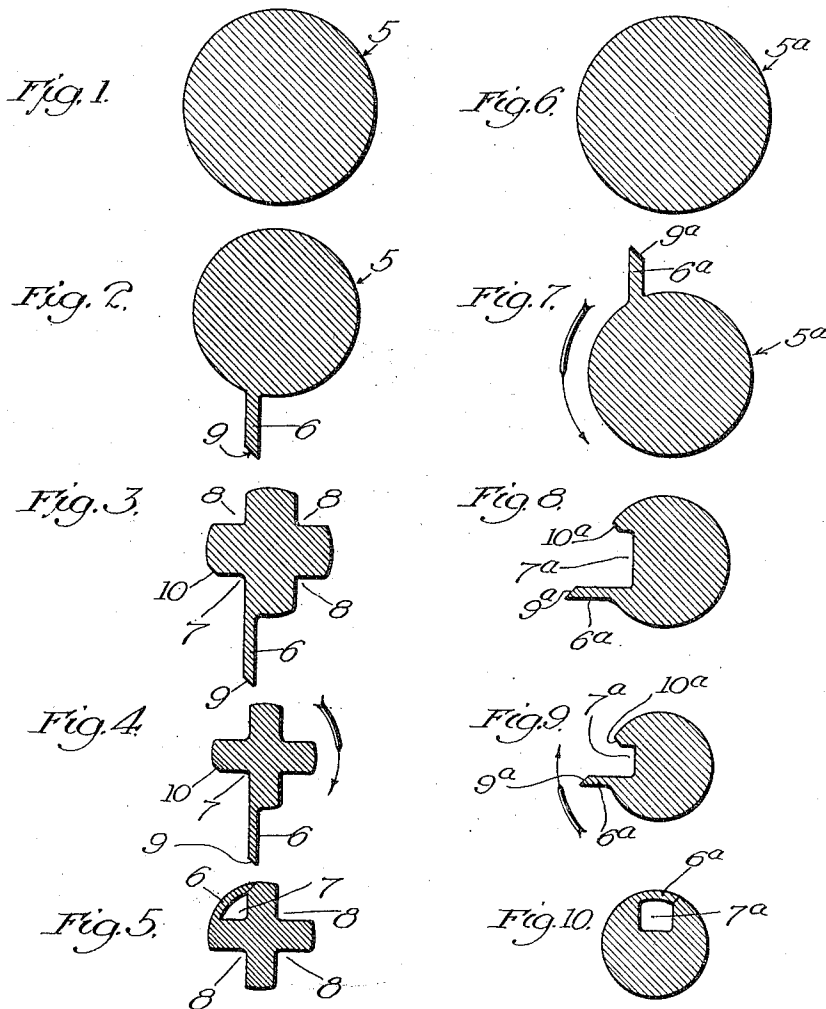


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 PROCESS FOR THE FORMATION OF STEEL BARS AND THE LIKE.
 APPLICATION FILED NOV. 27, 1911.

1,030,831.

Patented June 25, 1912.



Witnesses:
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UNITED STATES PATENT OFFICE.

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PROCESS FOR THE FORMATION OF STEEL BARS AND THE LIKE.

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Specification of Letters Patent.

Patented June 25, 1912.

Original application filed October 31, 1910, Serial No. 589,902. Divided and this application filed November 27, 1911. Serial No. 662,636.

To all whom it may concern:

Be it known that I, WILLIAM K. RILEY, a citizen of the United States, residing at San Bernardino, county of San Bernardino, State of California, have invented new and useful Improvements in Processes for the Formation of Steel Bars and the Like, of which the following is a specification.

This application refers particularly to divisional matter from my application for United States Letters Patent on processes for the formation of steel bars and the like, filed October 31st, 1910, and bearing Serial No. 589,902.

Contained within my broad invention for the formation of bars for drill steel or other purposes are two specific forms of process.

Broadly, my process consists in forming a flange or other projecting portion on the outside of a bar and forming a groove adjacent the flange and then turning the flange over the groove to form a cover, thus forming a longitudinal duct through the bars.

This invention takes two preferred specific forms, one in which the flange or flanges and the groove are formed simultaneously and the other in which the flange is first formed and the groove is then formed and the flange or flanges are then turned over the groove. This application refers specifically to the form of process in which a flange is first formed, then a groove is formed adjacent the flange and the flange is then turned over the groove to form a cover therefor.

In the accompanying drawings I have shown sections of steel bars illustrating the different steps of my process from inception to finish.

The process may be accomplished by any known and desirable means; the bars may be rolled to shape in a rolling mill, they may be formed by machine forging or dying or they may be formed completely by hand. The process and its essentials remain the same however carried out.

In the accompanying drawings: Figures 1, 2, 3, 4 and 5 illustrate steps of my process for the formation of a bar of one configuration. Figs. 6, 7, 8, 9 and 10 illustrate the same for a bar of another configuration.

It will be understood that in these drawings I have illustrated my process as if it consisted of five separate and distinct steps;

but it will be understood that the arrangement of steps is more or less arbitrary and may be varied to suit conditions. In some cases there may be no distinct steps at all—the process may be a continuous one from beginning to end. In other cases there may be a large number of steps with comparatively small changes of the material by each step. With this in view, and also with the fact in mind that the process may be applied to the formation of many different forms of bars not illustrated in the drawings, the forms shown in the drawings will be explained as typifying the process rather than as showing its limitations.

In the drawings 5 and 5^a designate the forms of the bars from which my process starts. The bars may be supplied to the process in this form or they may be rolled or otherwise shaped to this form as the initial step of the process. The next step consists in reducing the diameter of the bar 5 or 5^a and forming a projecting rib or flange 6 thereon. Reference is now made particularly to the first five figures. As the next step of the process, a groove 7 is formed adjacent the flange 6. In the particular form shown other grooves 8 are also formed around the periphery of the bar, it being desired in this form to have the bar cruciform in cross section when finished. It will be observed, however, that it is not necessary to form these other grooves; the essential being the formation of the flange 6 and the groove 7. The edge of flange 6 is formed with a bevel 9 and a corresponding bevel 10 is formed at the opposite edge of groove 7. When the flange 6 is turned down over the groove as is shown in Fig. 5, these two bevels engage to form a joint which may be made either fluid proof or not. In some cases it is desirable to weld the joint, and in other cases it is only desirable to press the two parts closely together. The step between Figs. 3 and 4 is merely one of reduction to the desired size. It may or may not be used. I have shown the sections in the positions which they would occupy in passing through rolls placed upon vertical axes. This being the case, the bar would necessarily be rotated through one quarter of a revolution between Figs. 4 and 5, so that the action of the rolls would be sufficient to turn flange 6 over on to the

groove. However, the turning of the flange may be effected in various other manners by machinery or by hand.

In Figs. 6-10 I have illustrated the process of formation of a modified form of bar in which the finished bar is cylindrical instead of grooved as in the form shown in Fig. 5. In this form of the process the flange 6^a is first formed and then the groove 7^a is formed adjacent the flange. The flange and groove have the beveled surfaces 9 and 10 as before explained.

These illustrations will suffice to show that my process may be applied to the formation of bars with interior longitudinal ducts of many different configurations. In the following claims I wish to cover, then, my process as hereinbefore explained as applied to the formation of any bars. In these claims it will be understood that I use the term "flange" as designating any projecting rib or member which will be available for turning over and covering the groove; and the designation "groove" is meant to include

depressions of any character, size and configuration.

Having described my invention, I claim:

1. The herein described process for the formation of steel bars and the like, comprising first forming a flange projecting from the bar, then forming a groove adjacent the flange, and then turning the flange over the groove to form a cover therefor.

2. The herein described process for the formation of steel bars and the like, comprising first forming a longitudinal flange projecting from the bar, then forming a longitudinal groove in the bar adjacent the flange, and then turning the flange over so that its edge engages the opposite side of the groove.

In witness that I claim the foregoing I have hereunto subscribed my name this 14 day of November 1911.

WM. K. RILEY.

Witnesses:

H. C. BOONE,
P. H. GREEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."