

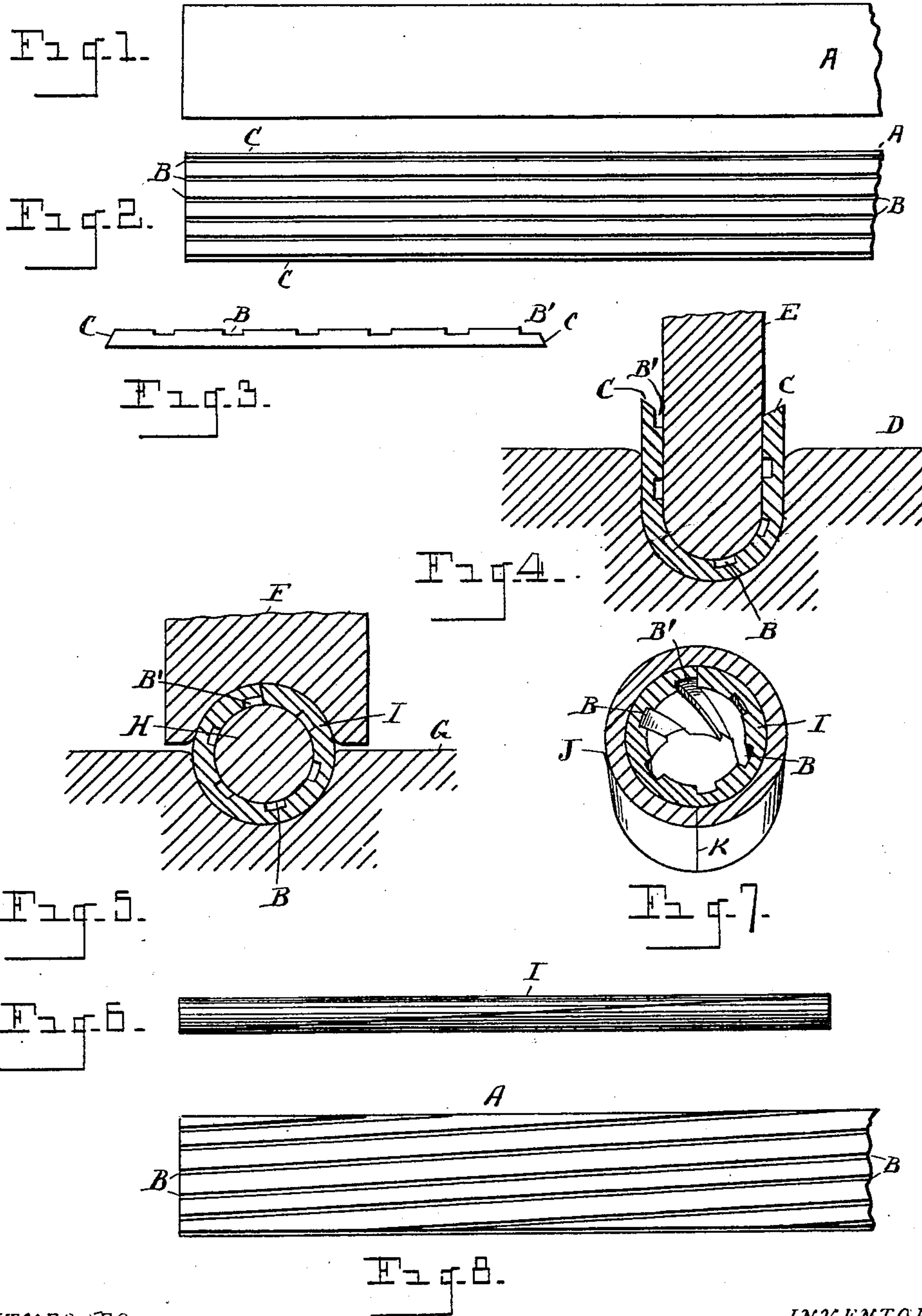
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W. F. MARKHAM.  
MANUFACTURE OF RIFLED GUN BARRELS.

(Application filed Sept. 10, 1901.)

(No Model.)



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF RIFLED GUN-BARRELS.

SPECIFICATION forming part of Letters Patent No. 689,502, dated December 24, 1901.

Original application filed April 12, 1901, Serial No. 55,520. Divided and this application filed September 10, 1901. Serial No. 74,900. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. MARKHAM, a citizen of the United States, residing at Plymouth, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Rifled Gun-Barrels, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in a new and useful improvement in processes of making rifled gun-barrels which consists, broadly, in taking a flat sheet or strip and forming therein grooves (which ultimately make the rifling) and while the strip is in a flat condition and then forming that strip or sheet into a tube with the grooves extending spirally around the interior. This barrel may then be used as a barrel or may be inclosed within a true barrel as a reinforcement therefor, as desired, all as more fully hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of the strip from which the gun-barrel may be made. Fig. 2 shows the same strip provided with longitudinal grooves or channels formed upon one side thereof. Fig. 3 is a cross-section thereof. Fig. 4 is a diagram-section illustrating the manner of forming the strip into U shape as the preferable first step of shaping it into its cylindrical shape. Fig. 5 is a diagram cross-section showing the dies in position to complete the cylindrical form. Fig. 6 is a side elevation of the completed barrel twisted to give the spiral effect to the grooves or rifling. Fig. 7 is a perspective view of the complete barrel. Fig. 8 is a plan view of the same strip A with diagonal grooves formed therein instead of the longitudinal grooves of Fig. 1, being a modified way of making the barrel.

In the manufacture of my improved barrel with the blank shown in Figs. 1 and 2 I proceed as follows: The flat strip of steel or other metal A (shown in Fig. 1) I groove longitudinally with a series of grooves B by any proper machine, such as a milling-machine. When I form the grooves as shown in Fig. 2 in this strip, I preferably arrange one of the grooves B' directly at the joints at one side, so that the joint when the strip is formed

into a tube will be at the bottom of one of the grooves or channels. At the same time and preferably with the same tool I form the chamfered or inclined faces C on the edges of the strip. This strip thus formed I then form into a tube in any suitable manner. The way I preferably proceed is first, by means of suitable dies D and E, to form it into a U shape, as shown in Fig. 4, and then, by the dies F and G, I shape it into a tube or cylinder, as shown in Fig. 5. To insure perfect work with the dies F and G, I preferably place in the U-shaped blank, before it is operated on by the dies F and G, a cylindrical mandrel H, which is shown in position in the tube in Fig. 5. The tube thus formed will be a split tube—that is, it will have a joint along one side and will have running longitudinally through it a series of straight channels formed by grooves B B', and in order to give these a spiral turn I bind or grasp the tube (after moving it from the dies F and G) at opposite ends and twist it to the desired extent necessary to give the spiral effect in the channels or grooves. I then have a tube I, which exteriorly is like that shown in Fig. 6 and which interiorly is provided with the spiral rifling, as shown in Fig. 7. I then take another plain blank or strip like A, only wider, and bend it into U shape by dies like E and D and then place within it as a mandrel the tube I and then close the plain tube about the tube I with a straight joint, thus forming an outer or inclosing tube J around the inner tube I, as plainly shown in Fig. 7. Inasmuch as in such a rifled barrel it is not necessary to give a twist to exceed one-third of a turn, it is obvious that there will be opposite the joint in the tube I an unbroken or unjointed side in the tube I, and on this unbroken side of the tube I, I arrange the joint K of the outer tube J so that at no point do the two slits or joints cross each other. I then preferably solder the joint K and have formed the rifled barrel shown in Fig. 7, consisting of an inner split tube with a spiral rifling and an outer inclosing split tube, the two tubes having “break-joints.”

In place of making the twist in the strip to give the rifling effect I may get a similar result by grooving the blank A with diagonal



grooves, as shown in Fig. 8. These grooves are so spaced that when the blank is shaped into a tube the grooves at the meeting edges will be in perfect alinement. This of course enables me to make the inner tube or the rifled barrel with the two operations of cutting the grooves in it and shaping it into the tube, and I avoid the twisting step. I believe that a twisted barrel is the preferable one, however, because there are no grooves crossing the joint, consequently no opportunity for shoulders or edges which might be caused by the offset of one end of the groove in relation to the other end thereof at the meeting edges. I do not desire to be limited to the use of an outer split tube, as it is evident that a jointless tube may be shrunk on or forced onto the inner tube, or, indeed, that other means of reinforcing the inner tube may be employed. This application is a division of application Serial No. 55,520, filed April 12, 1901. What I claim as my invention is—

1. The herein-described process of making

a rifled barrel, consisting in forming a series of longitudinal grooves parallel with each other in a flat plate or strip of metal and then forming that strip into a split tube with the grooves arranged in spiral form therein.

2. The herein-described process of making a rifled barrel consisting in longitudinally grooving the flat plate or strip, forming that strip into a split tube and twisting the split tube.

3. The herein-described process of forming a rifled barrel consisting of first longitudinally grooving a flat strip or plate, forming that strip or plate into a split tube, twisting the split tube and inclosing the same in an outer tube.

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

WILLIAM F. MARKHAM.

Witnesses:

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