

No. 689,501.

Patented Dec. 24, 1901.

W. F. MARKHAM.

GUN BARREL.

(Application filed Apr. 12, 1901.)

(No Model.)

Fig. 1.

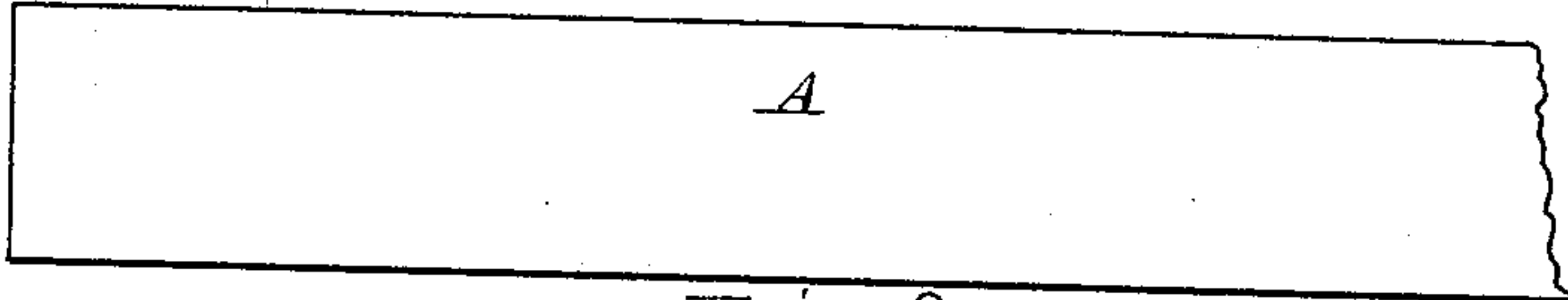


Fig. 2.

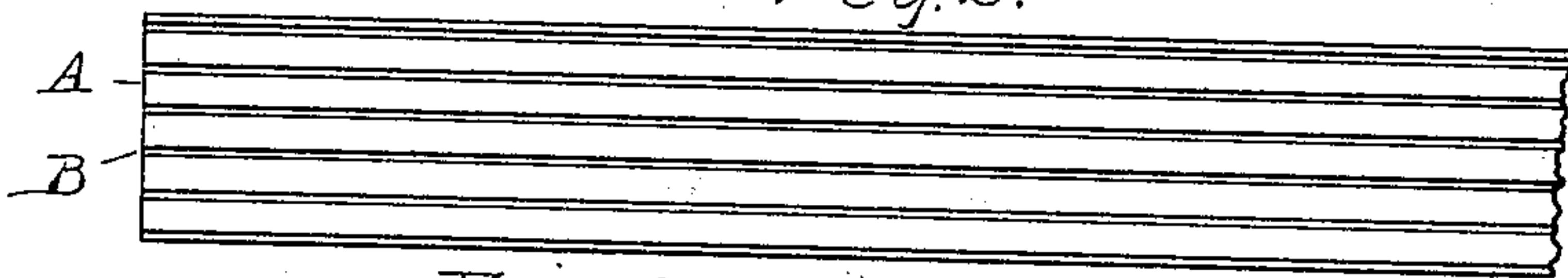


Fig. 3.

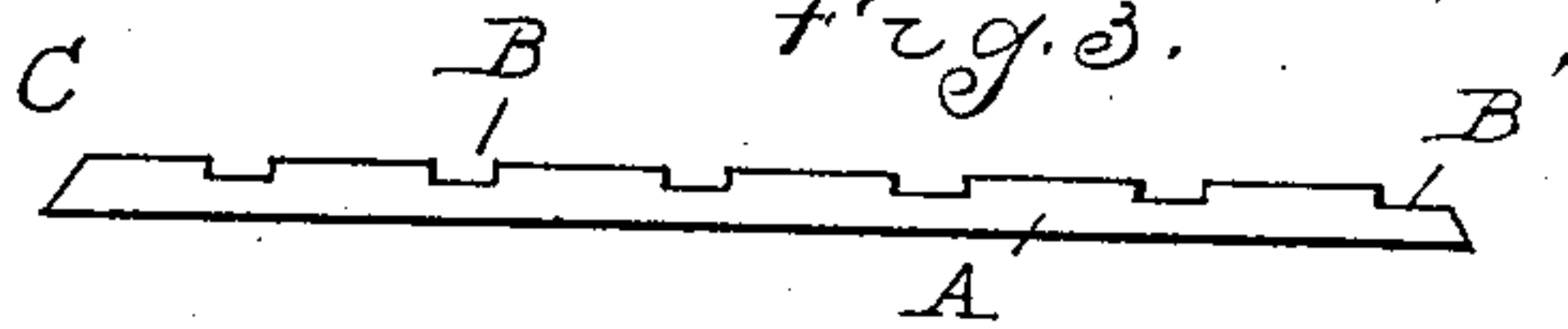


Fig. 4.

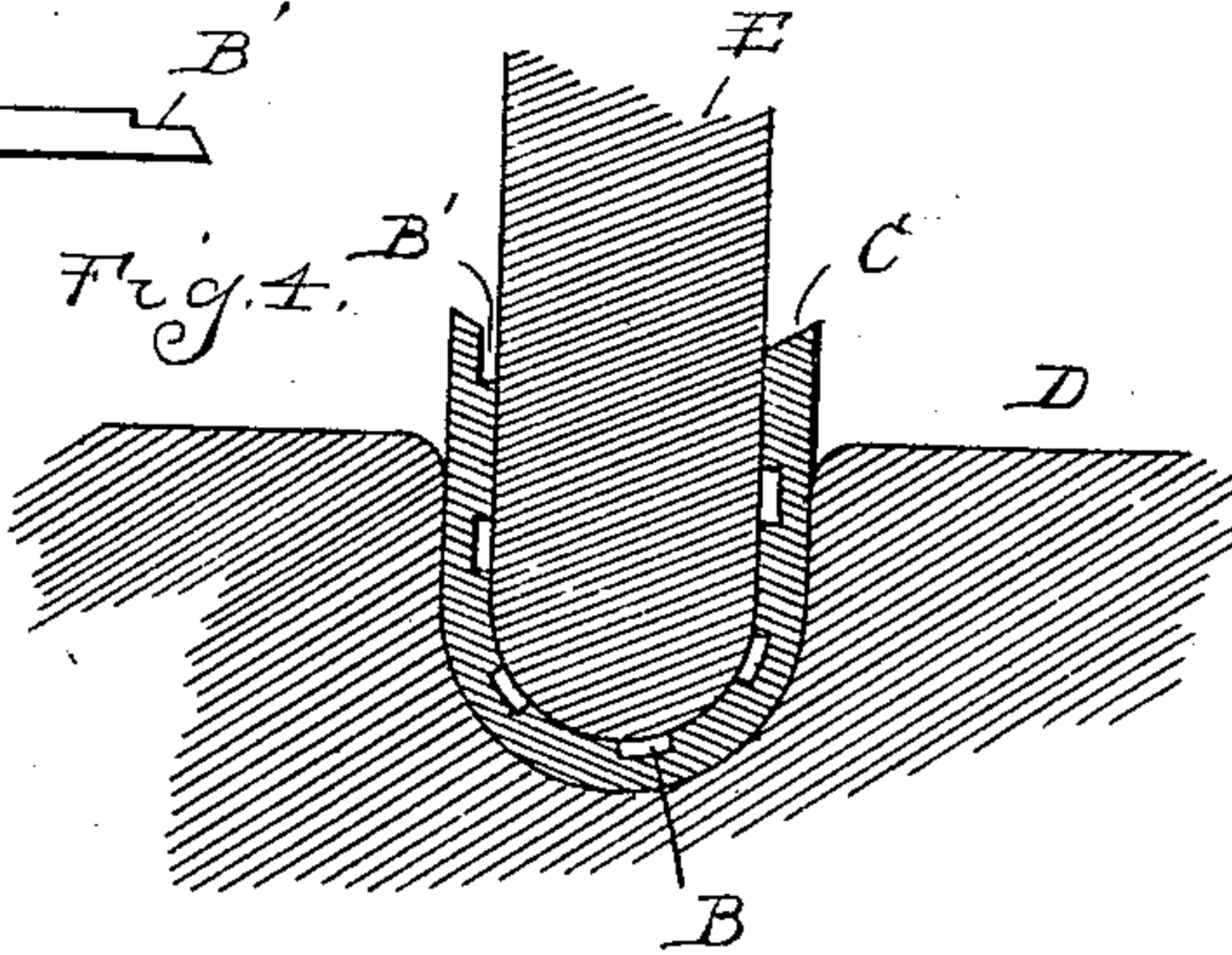


Fig. 5.

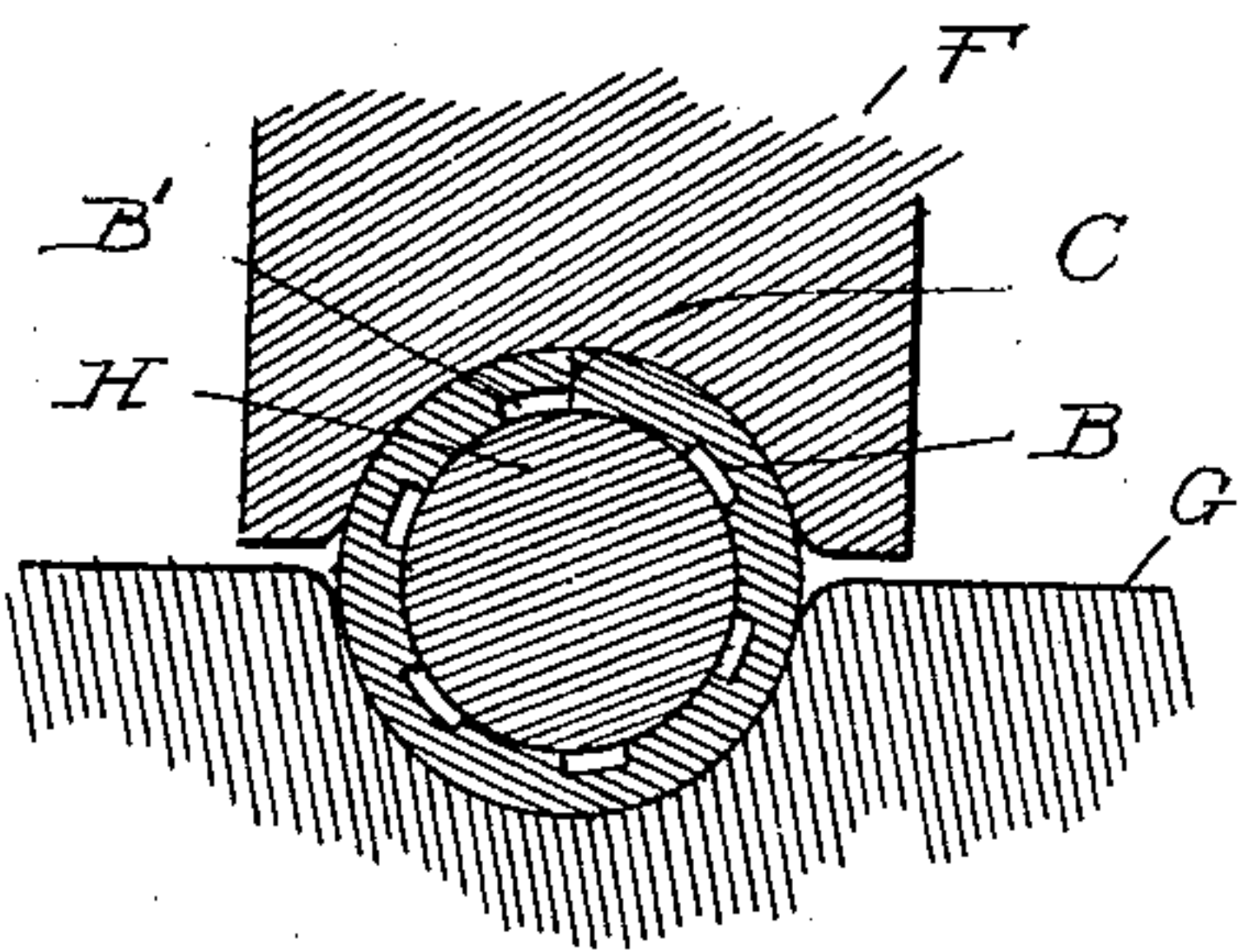


Fig. 6.

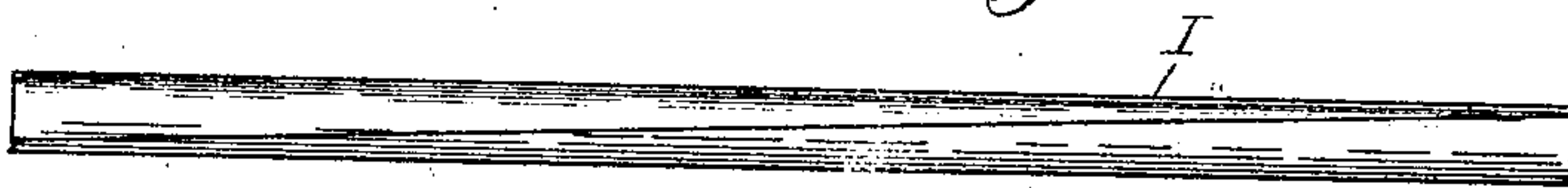
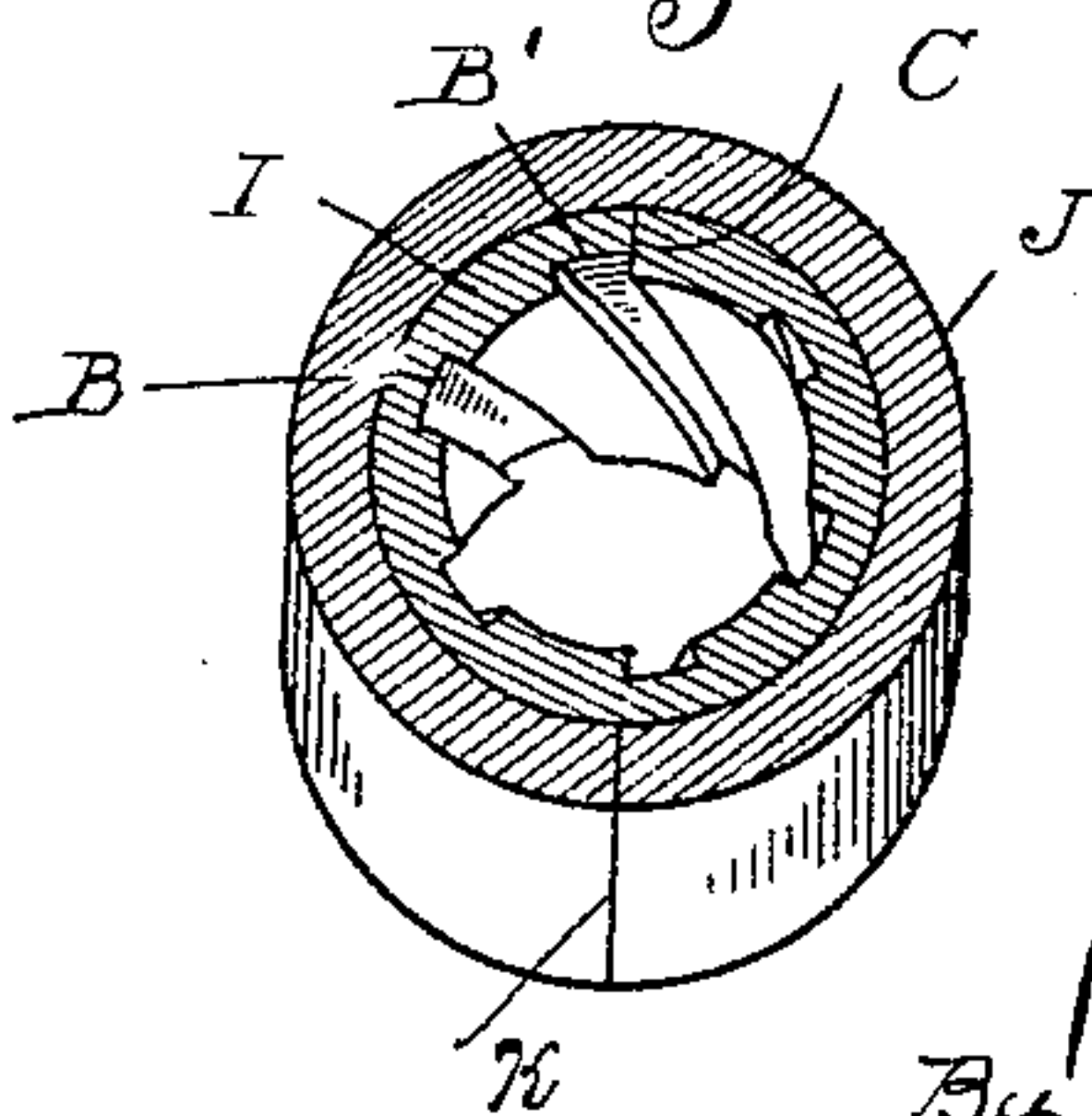


Fig. 7.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM F. MARKHAM, OF PLYMOUTH, MICHIGAN.

## GUN-BARREL.

SPECIFICATION forming part of Letters Patent No. 689,501, dated December 24, 1901.

Application filed April 12, 1901. Serial No. 55,520. (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.

10 The invention consists in a new and useful improvement in rifled gun-barrels, and particularly in a barrel consisting of a tube formed from a grooved sheet or strip of metal shaped into a tube and twisted, preferably  
15 combined with a reinforcing or inclosing tube, all as more fully hereinafter described and shown.

In the drawings, Figure 1 is a plan view of the strip from which the gun-barrel is made. Fig. 20 2 shows the strip provided with the grooves or channels formed upon one side thereof. Fig. 3 is a cross-section of Fig. 2. Fig. 4 is a diagram-section illustrating the manner of forming the strip into a U shape as the first  
25 step toward shaping it into its cylindrical form. Fig. 5 is a 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  
30 to the grooves or rifling, and Fig. 7 is a sectional perspective view of the complete barrel.

In the manufacture of my improved barrel I proceed as follows: I take a flat strip of steel or other suitable metal A (shown at Fig. 1)  
35 and by any suitable machine, such as a milling-machine, I form longitudinally in it a series of grooves B. One of these grooves B', I preferably arrange directly at the joint at one side, so that the joint when the strip is  
40 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 shaped I  
45 then form into a tube in any suitable manner. The way which I preferably employ is, first, by means of suitable dies D and E 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 in- 50 sure 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 55 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 60 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 65 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 70 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 75 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 J, and on this unbroken side of the 80 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 rifle-barrel shown in Fig. 7, consisting of an inner split 85 tube with a spiral rifling and an outer inclosing split tube, the two tubes having break-joints.

I do not desire to be limited to the use of an outer split tube, as it is evident that a 90 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.

I do not herein claim the process of making the barrel set forth in this specification, as that I have divided out and made the subject-matter of another application, being Serial No. 74,900, and filed September 10, 1901.

What I do claim as my invention is--

1. A rifled gun-barrel consisting of an inner grooved, twisted, split tube and an outer reinforcement therefor.
2. An inner grooved, twisted, split tube and an outer inclosing tube.
3. An inner grooved, twisted, split tube and

an outer tube embracing the inner tube, the two tubes being arranged with break-joints.

4. The combination in a rifle-barrel, of an inner grooved, twisted, split tube having the joint in one of the grooves and an outer embracing tube inclosing the inner tube.

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

WILLIAM F. MARKHAM.

Witnesses:

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