

No. 654,272.

Patented July 24, 1900.

G. H. NEWELL.
METHOD OF MAKING PROJECTILES.

(Application filed Nov. 6, 1899.)

2 Sheets—Sheet 1.

(No Model.)

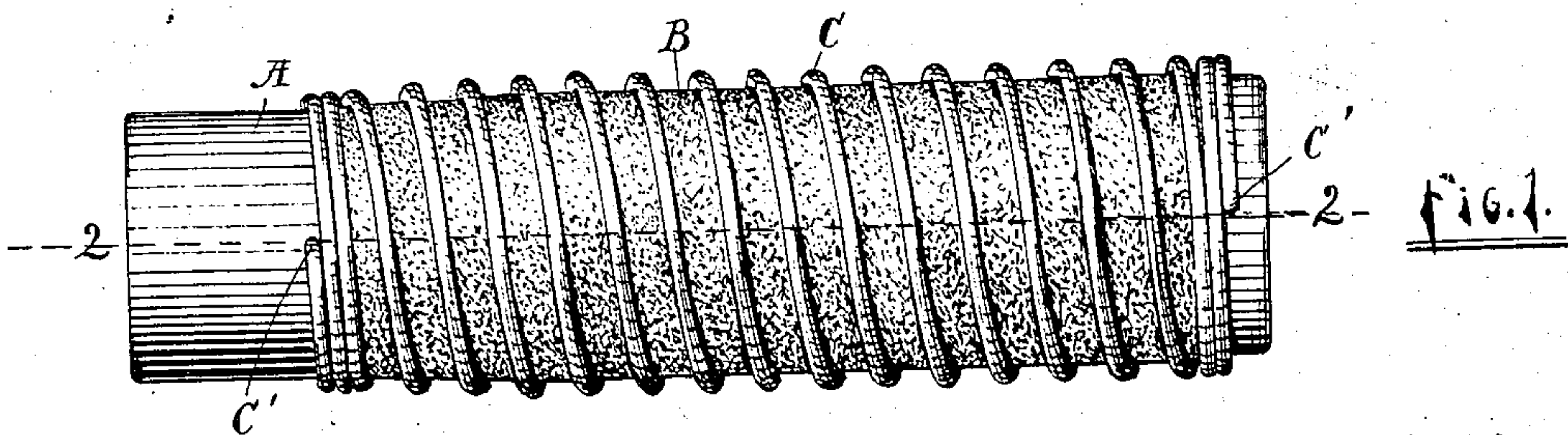


FIG. 1.

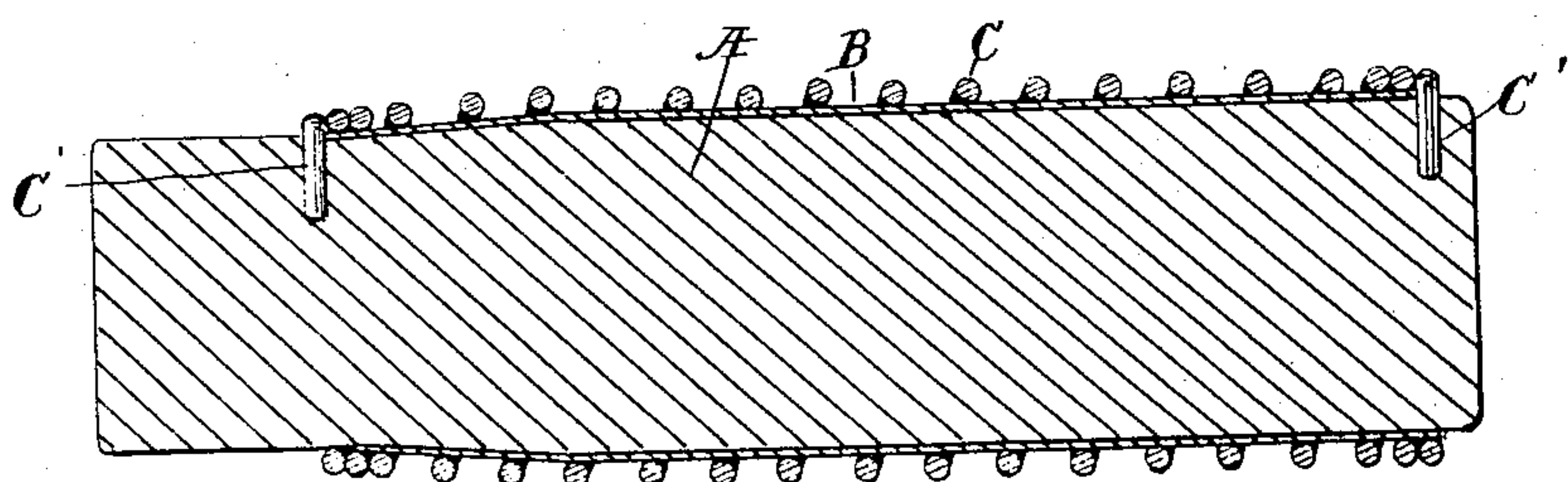


FIG. 2.

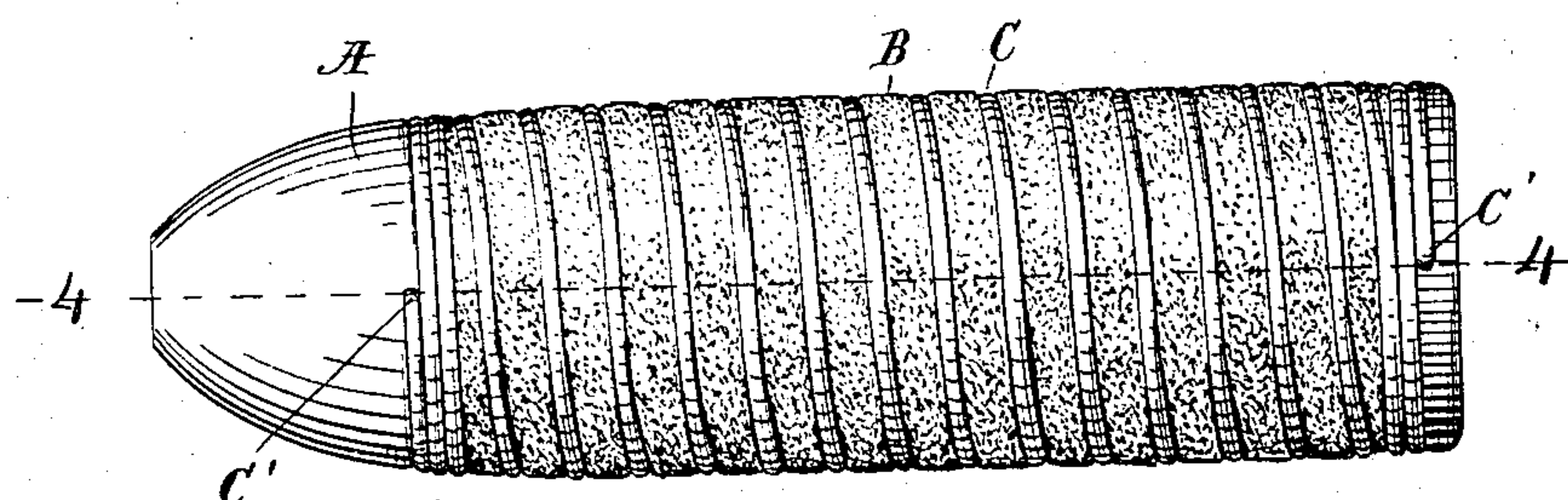


FIG. 3.

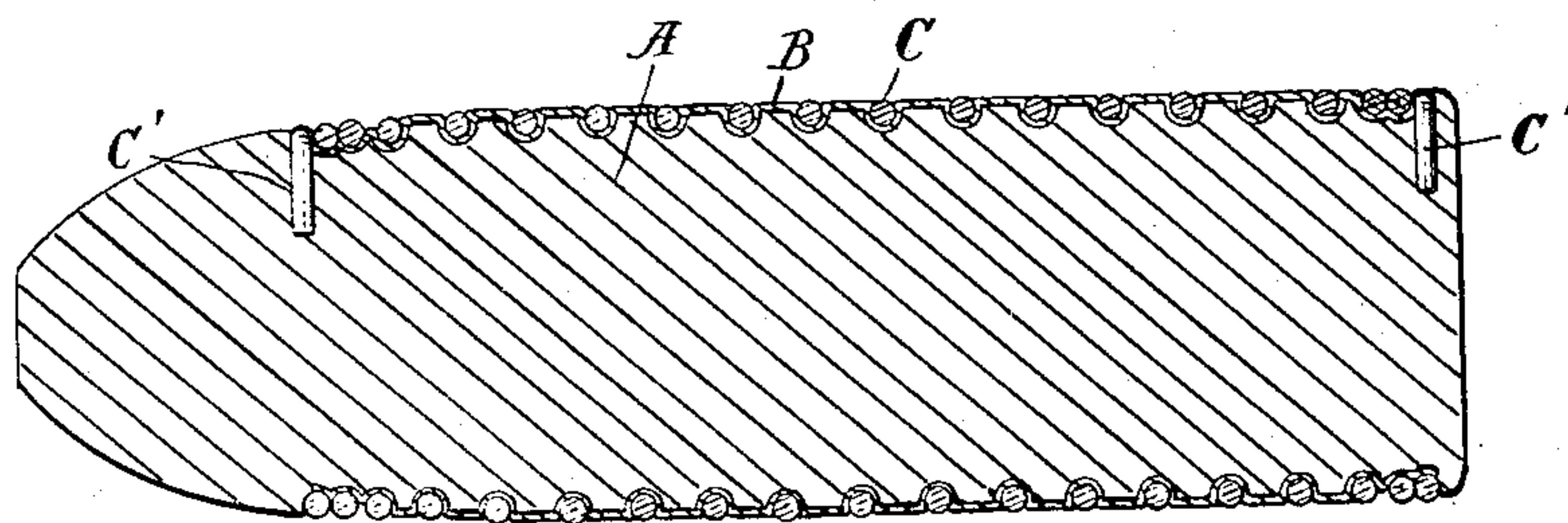


FIG. 4.

WITNESSES:

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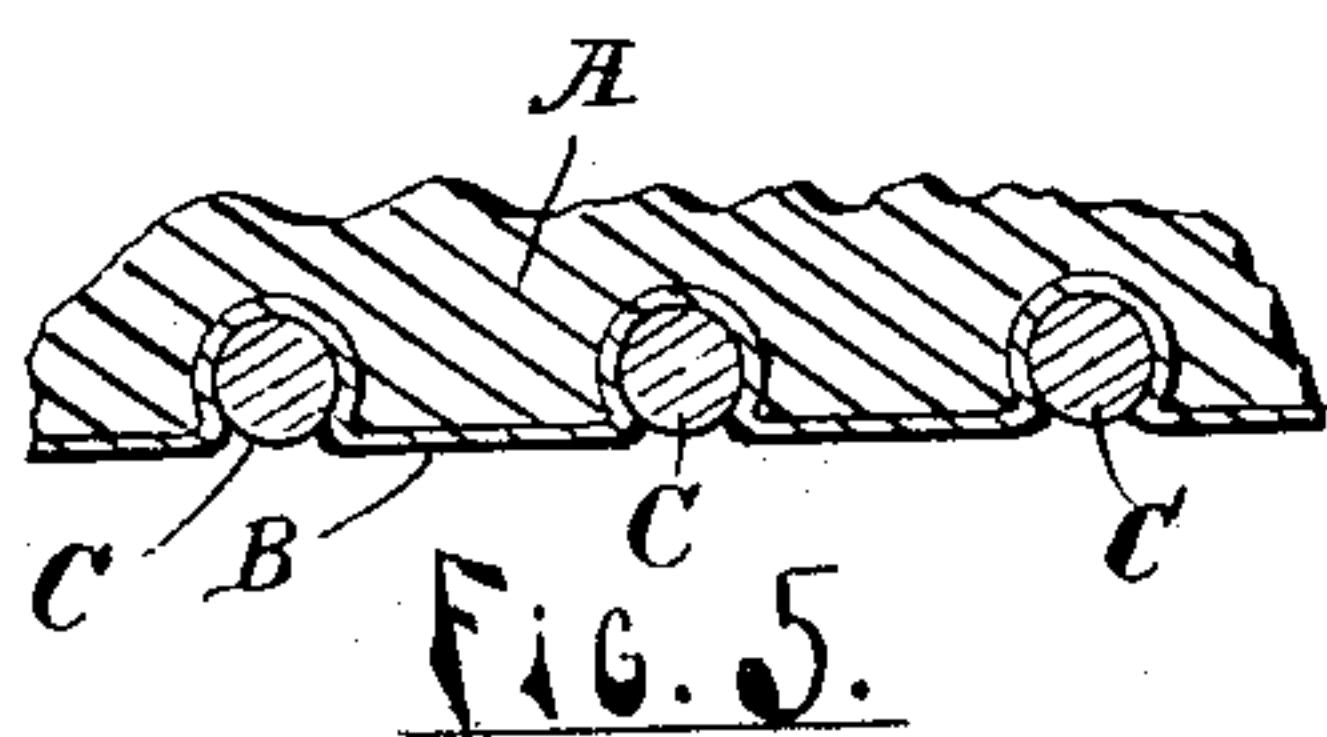


FIG. 5.

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2 Sheets—Sheet 2.

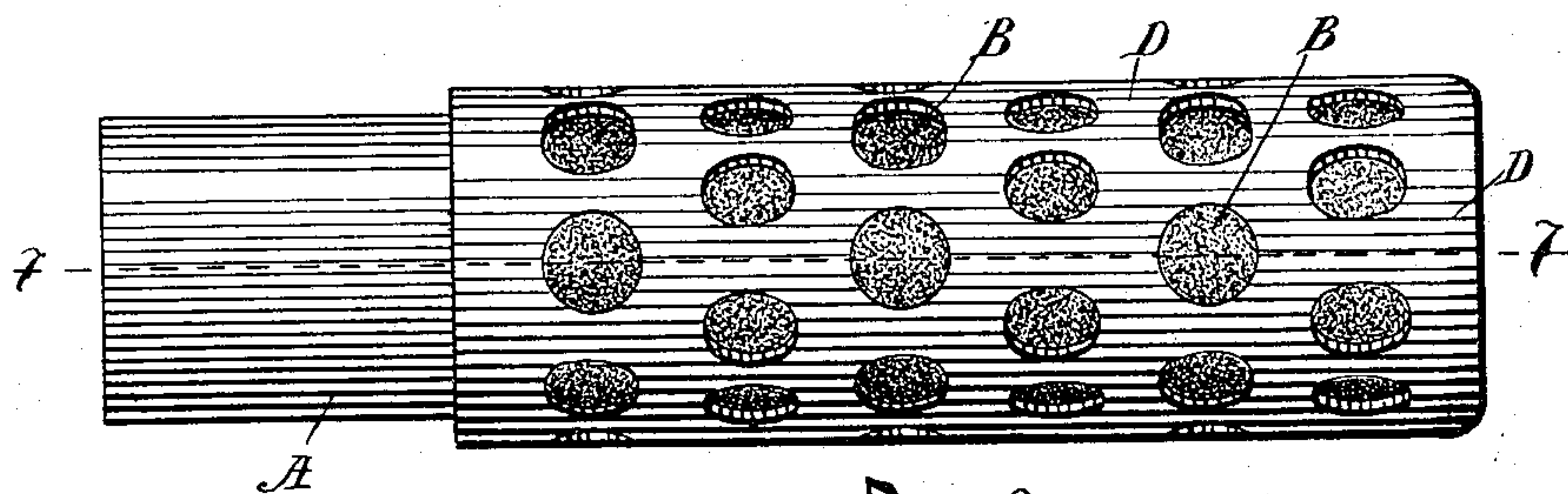


Fig. 6.

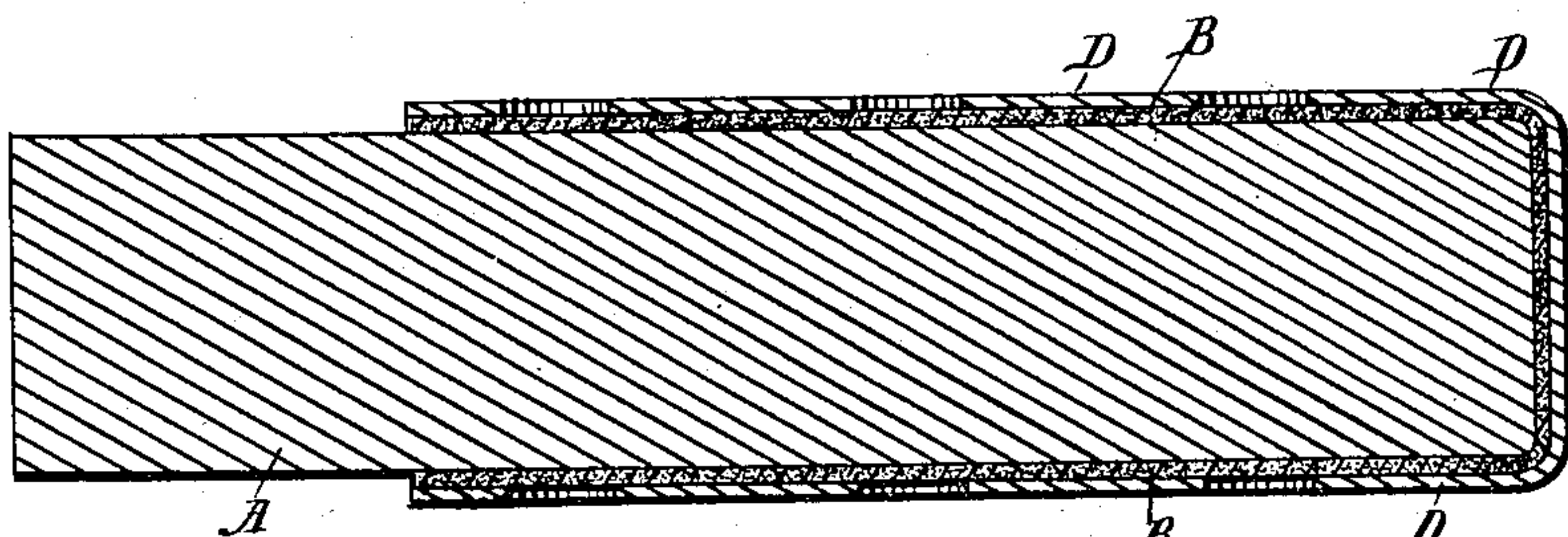


Fig. 7.

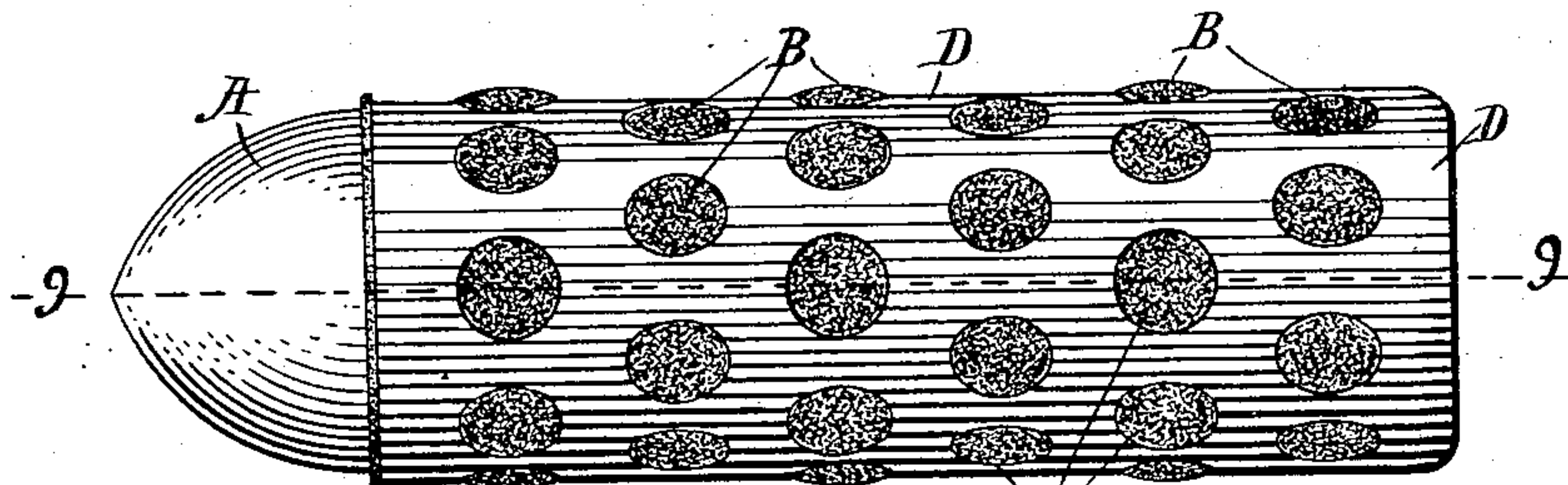


Fig. 8.

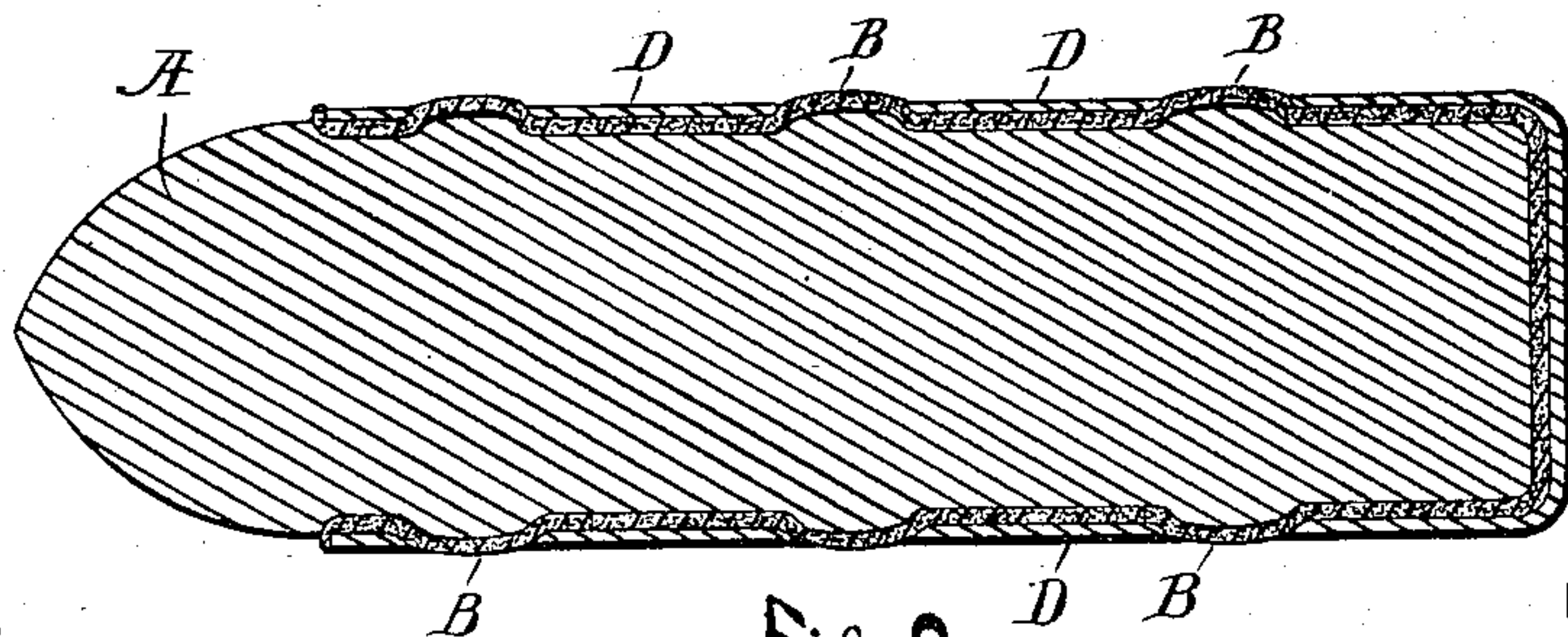


Fig. 9.

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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING PROJECTILES.

SPECIFICATION forming part of Letters Patent No. 654,272, dated July 24, 1900.

Application filed November 6, 1899. Serial No. 735,920+. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. NEWELL, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in the Art of Manufacturing Projectiles for Small-Arms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the art of manufacturing projectiles for small-arms, and more particularly to such projectiles having a body made of lead or other soft metal and covered in part or whole by a jacket of harder and stronger metal having openings therein and with a patch of porous material between this jacket and the body and projecting through said openings of the jacket; and the object of my invention is to provide means whereby such projectiles may be produced cheaply and expeditiously.

My invention consists, essentially, in providing a soft-metal blank of suitable dimensions, placing thereon a covering of suitable porous material to form the patch, placing on the outside of said blank and covering and substantially without the plane of said covering a suitable casing of material harder and stronger than the said body to constitute the jacket; and having suitable openings therein to permit the patch to protrude therethrough, and finally placing this structure in a suitable mold or die and compressing the same, whereby the metal of the body is caused to flow outward within the spaces or openings of the jacket, carrying the covering therewith, and the form of said parts is suitably changed by such application of pressure, as hereinafter more fully described, and particularly pointed out in the claims.

Reference being had to the accompanying drawings, Figure 1 represents a blank with the covering and casing assembled and ready for the final step in the process of manufacture; Fig. 2, a longitudinal section of the same on the line 2 2 at Fig. 1; Fig. 3, the same after final treatment by pressure and changed in form thereby to constitute the finished projectile; Fig. 4, a longitudinal section of the same on the line 4 4 of Fig. 3;

Fig. 5, an enlarged detail showing the manner in which the metal of the blank flows outward through the openings in the casing and around the wire forming the same when such wire is used; and the manner in which the covering is carried outward through said openings by such flow of the metal, and Figs. 6, 7, 8, and 9 show corresponding views of a modified construction adapted to the same method of manufacture in which the casing or jacket consists of a shell of thin steel or other suitable material having suitable openings to permit the patch to protrude there- through.

A represents the soft-metal body of the projectile, which is first formed in any suitable manner in the shape of a substantially-cylindrical blank of less diameter and greater length than the finished projectile is intended to be.

B represents a covering of suitable porous material to constitute the patch, which covering is attached to the blank by any suitable means and encircles the same, said covering being of sufficiently-yielding material to change form and permit the flow of the metal constituting the blank without tearing or parting.

C is the casing to form the jacket, which in Figs. 1 to 5, inclusive, consists of a suitable wire wound spirally on the outside of the said patch and with spaces or openings between the turns of the same, except one or more turns at the respective ends of the same, and in Figs. 6 to 9, inclusive, consists of a shell of thin steel having suitable openings, said casing in each case being substantially outside the plane of the blank and covering when first applied, as shown in Figs. 1 and 6, and the wire casing having its coils a little more open than in the finished product to permit of the longitudinal compression of the structure by the flow of the metal of the body when under pressure, as hereinafter described. The end of this wire may be secured by inserting the same in the body, as shown, or in any other convenient manner, provided it have suitable openings at intervals through which the patch may be forced or carried by the flow of the metal comprising the blank when subjected to pressure, as described.

From the foregoing description the operation of my new art of manufacturing projectiles for small-arms will be readily understood.

5 When the blank A, covering B, and the casing C are assembled, as shown in Figs. 1 and 2, and placed in any suitable mold or die of proper dimensions and subjected to pressure by any suitable means, the structure
10 will assume the form substantially as shown in Figs. 3, 4, 8, and 9, the metal comprising the blank flowing laterally outward through the openings in the casing C, carrying the covering outward through said openings until arrested by the wall of the inclosing mold or die,
15 and thence the metal will flow around the wire when wire is used, partially inclosing the same and effectively securing the said wire in place by embedding the same in the surface of the
20 projectile, as shown in Fig. 5.

I do not claim herein projectiles constructed as described herein, the same being made the subject of separate applications, as follows: patent on projectiles numbered 621,697
25 and dated March 21, 1899, and also an application for patent filed March 29, 1899, Serial No. 710,870.

Having thus fully described my invention, what I claim, and desire to secure by Letters
30 Patent, is—

1. The art of manufacturing projectiles for small-arms consisting of, providing a blank of soft metal and of suitable dimensions, placing thereon a casing having suitable lateral
35 openings, said casing being at first substantially outside the plane of the blank and secured in place thereon, placing said blank and casing in a suitable mold or die, subjecting the same to pressure whereby the metal
40 blank is caused to flow laterally through the openings of the casing and is reduced longitudinally, substantially as described.

2. The art of manufacturing projectiles for small-arms, consisting of providing a blank
45 of soft metal of substantially-cylindrical form, winding a suitable wire spirally upon

the outside of said blank and with open spaces between the coils of the wire securing the ends of the wire to the blank, and placing
50 this blank and wire in a suitable mold or die and subjecting the same to pressure whereby the metal of the blank is caused to flow laterally outward between the coils of wire and partially inclose the same, and the blank longitudinally reduced, substantially as described. 55

3. The art of manufacturing projectiles for small-arms, consisting of, providing a blank of soft metal, substantially cylindrical in form and of suitable dimensions, placing
60 thereon a covering of porous and yielding material, placing outside the said covering a casing of harder and stronger material than that of the body and provided with openings securing the same in place on the blank, and finally subjecting said structure to pressure
65 in a suitable mold, whereby the metal of the blank is caused to flow laterally outward through the openings in the casing, and assume the change of form, substantially as described. 70

4. The art of manufacturing projectiles for small-arms, consisting of, providing a blank of soft metal of substantially-cylindrical form, applying thereto a porous and yielding covering, winding a wire outside of said patch and at
75 intervals thereon, and inserting the ends of the wire in said body, and subjecting said body, covering and wire to longitudinal pressure, in a suitable mold, whereby the metal of the blank flows outward between the coils, bringing
80 the coils of the wire within the plane of the projecting portions of the covering, and securing each separate turn of wire in place within the body of the projectile, substantially as described. 85

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

GEORGE H. NEWELL.

Witnesses:

LUTHER V. MOULTON,
MILES V. EASTERBY.