

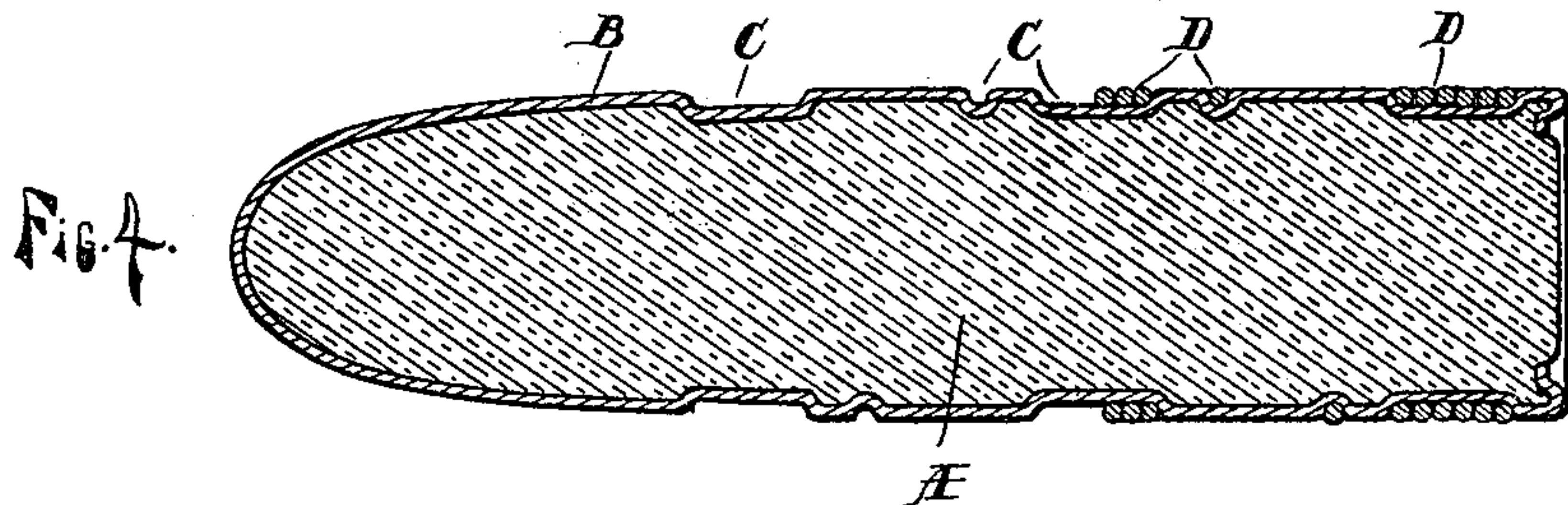
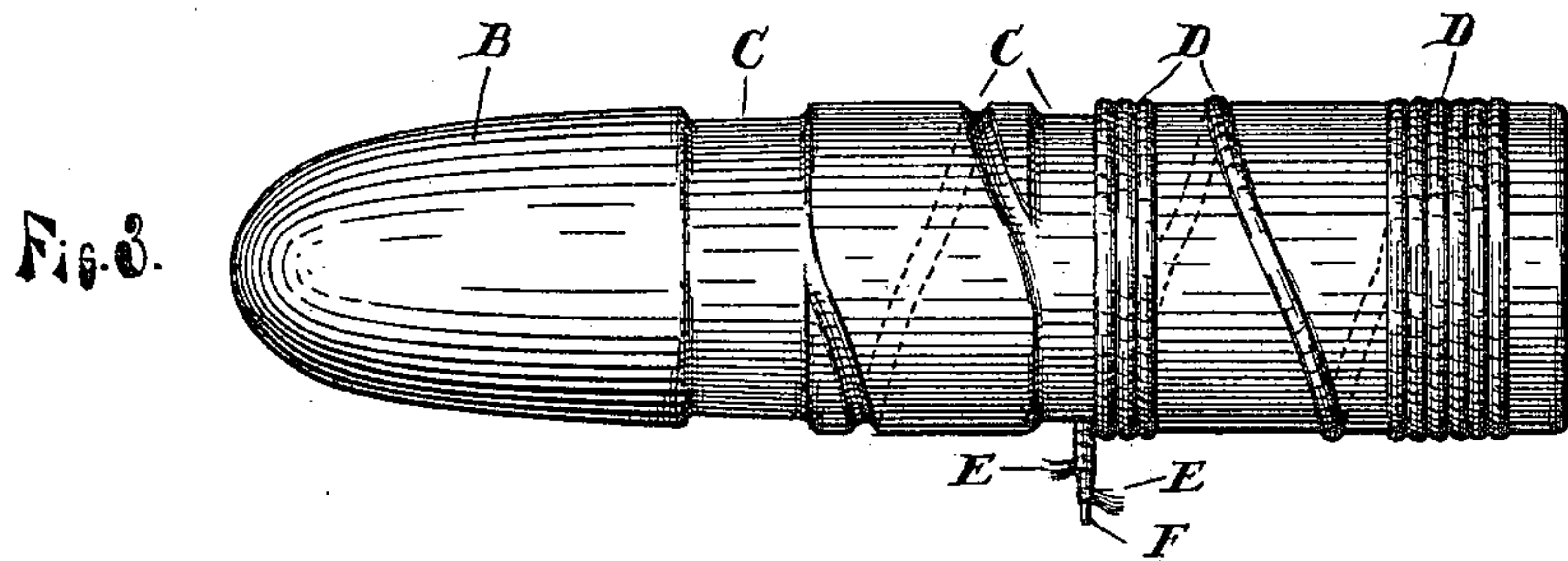
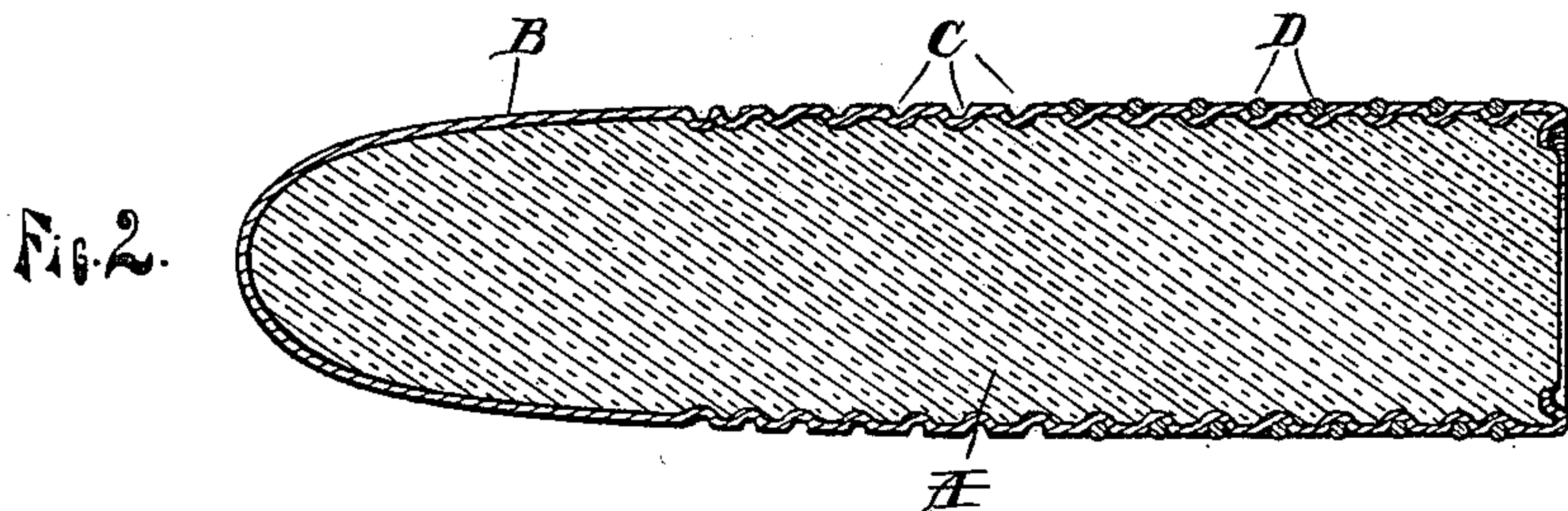
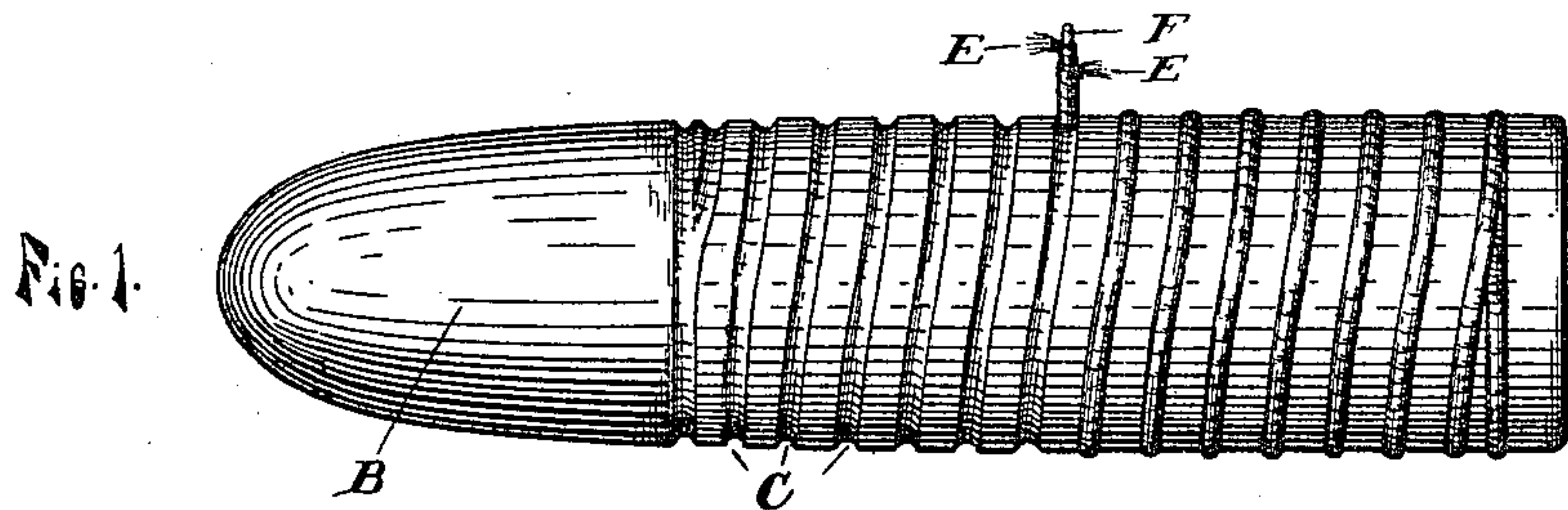
No. 621,698.

Patented Mar. 21, 1899.

G. H. NEWELL.
PROJECTILE.

(Application filed Dec. 31, 1898.)

(No Model.)



WITNESSES:

Everett S. Conshock
H. H. Alger

INVENTOR:

George H. Newell.

By

Moulton & Standers
Attorneys-

UNITED STATES PATENT OFFICE.

GEORGE H. NEWELL, OF GRAND RAPIDS, MICHIGAN.

PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 621,698, dated March 21, 1899.

Application filed December 31, 1898. Serial No. 700,810. (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 Projectiles; 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 projectiles; and its object is to provide the same with certain new and useful features hereinafter more fully described, and particularly pointed out in the claim. Heretofore it has been proposed to cover the soft-metal body of the projectile (usually of lead) with a jacket of harder and tougher metal (usually of soft steel) to hold more firmly to the lands of the gun and to keep the projectile from changing form too much upon impact with the target. These projectiles are objectionable on account of the absence of lubricant, the heat generated by friction, and the wear on the interior of the gun-barrel. Soft-metal rings have been applied at intervals to the outside of these steel jackets; but such rings are not strong enough to withstand the high pressure and rapid twist and do not hold well in the lands and also are melted by the heat due to friction and lead the gun-barrel. Various attempts have been made to apply a cord or other material wound spirally about the soft body and dispensing with the metal jacket. These are not substantial enough and cannot be applied to cover and keep the rounded forward end of the projectile in shape, the soft body being here exposed and flattening out at once upon impact with the target, thus reducing the penetration. I overcome all of these difficulties and objectionable features by using the metal jacket and depressing portions of the same circumferentially and winding outside these depressed portions a cord of vegetable fiber or analogous material sufficiently porous to contain a lubricant and which at alternate intervals with the metal jacket engages the lands of the gun-barrel. The interior of the gun-barrel is thus sufficiently lubricated and wiped to avoid the difficulties of using the plain metal jacket, while I retain and secure all of its ad-

vantages. This winding of fiber may be strengthened and further held in place by a core of wire either of soft steel, copper, or other suitable material.

Referring to the accompanying drawings, Figure 1 is a side elevation, on an enlarged scale, of a device embodying my invention; Fig. 2, a longitudinal section through the axis of the same; Fig. 3, a side elevation of a modified form of the same, and Fig. 4 a longitudinal section of the same.

Like letters refer to like parts in all of the figures.

A represents the soft-metal body, preferably of lead.

B is the metal jacket inclosing the soft-metal body and made, preferably, of thin, soft, and tough steel or copper. This jacket is provided with a spiral depression C to receive the cord D, the jacket B being pressed inward to form the grooves without reducing its material along this line. The cord D is of cotton, hemp, or other suitable vegetable fiber and saturated with a suitable lubricant and laid in the groove C, the turns of which groove are sufficiently apart to leave plain interspaces in the jacket B to permit the same to engage the lands of the gun at alternate intervals with the cord D. In the modified form shown in Figs. 3 and 4 the groove is broadened out at intervals, and in these broadened portions the winding is solid—that is to say, the turns of the cord D are in contact and wholly cover the jacket B—and the intermediate spiral parts of the groove are more open than is shown in Figs. 1 and 2 or may be omitted entirely. This cord D is further strengthened and held in place by a core F, of soft steel or copper wire, which core is covered with the fiber E, wound spirally around the same. In the event that the turns of this fiber should be severed in running over the lands of the gun-barrel the wire will hold them in place, so that they will not become detached and interfere with the flight of the projectile. The jacket B serves to hold the soft-metal body in shape and also engages the lands of the gun and is sufficiently strong to withstand the high pressure and rapid twist of modern rifles, and at the same time the fiber winding carries and applies lubricant enough to prevent heating and

wear of the barrel and also takes a part of the duty off the jacket, and thus aids the same in performing its function.

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

In a projectile, a soft-metal body, a harder and stronger metal jacket inclosing the same, a spiral groove in said jacket, and plain inter-
10 spaces between the grooves, a cord wound in

said grooves, and consisting of a fiber covering wound spirally around a wire core, substantially as described.

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

GEORGE H. NEWELL.

Witnesses:

LUTHER V. MOULTON,
LEWIS E. FLANDERS.