

(No Model.)

J. P. LAVIGNE.  
METHOD OF MAKING CANNON.

No. 388,696.

Patented Aug. 28, 1888.

Fig 1

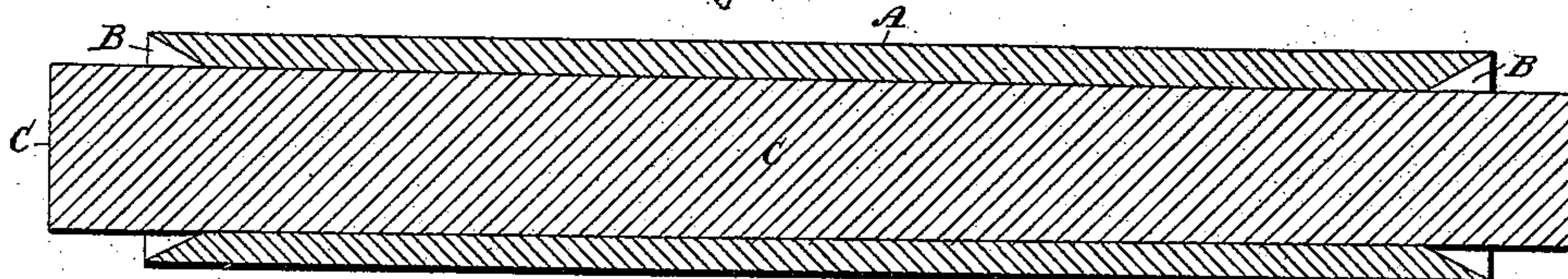


Fig 2

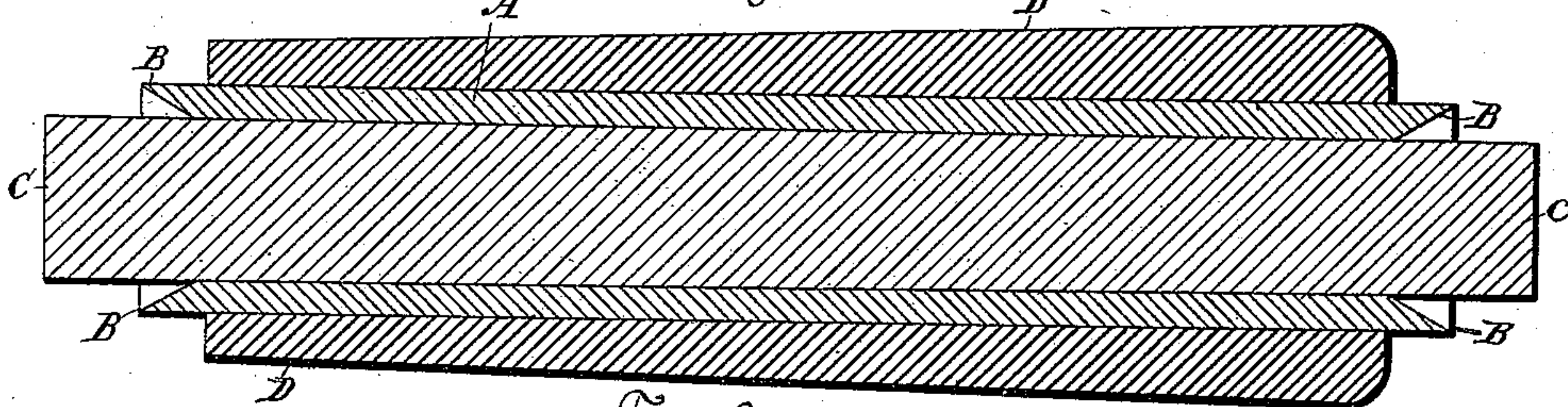


Fig 3

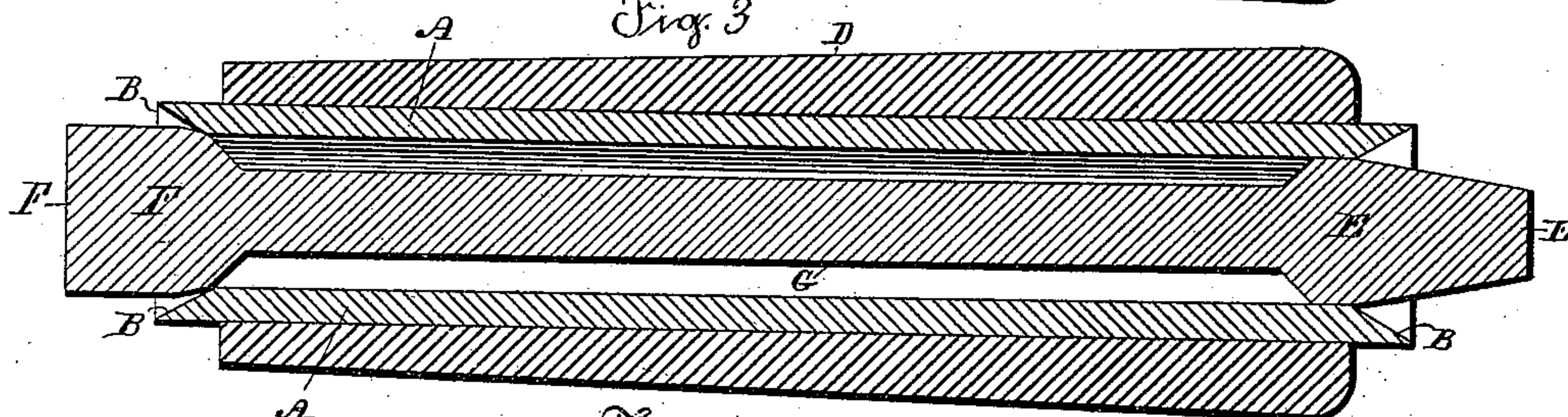


Fig 4

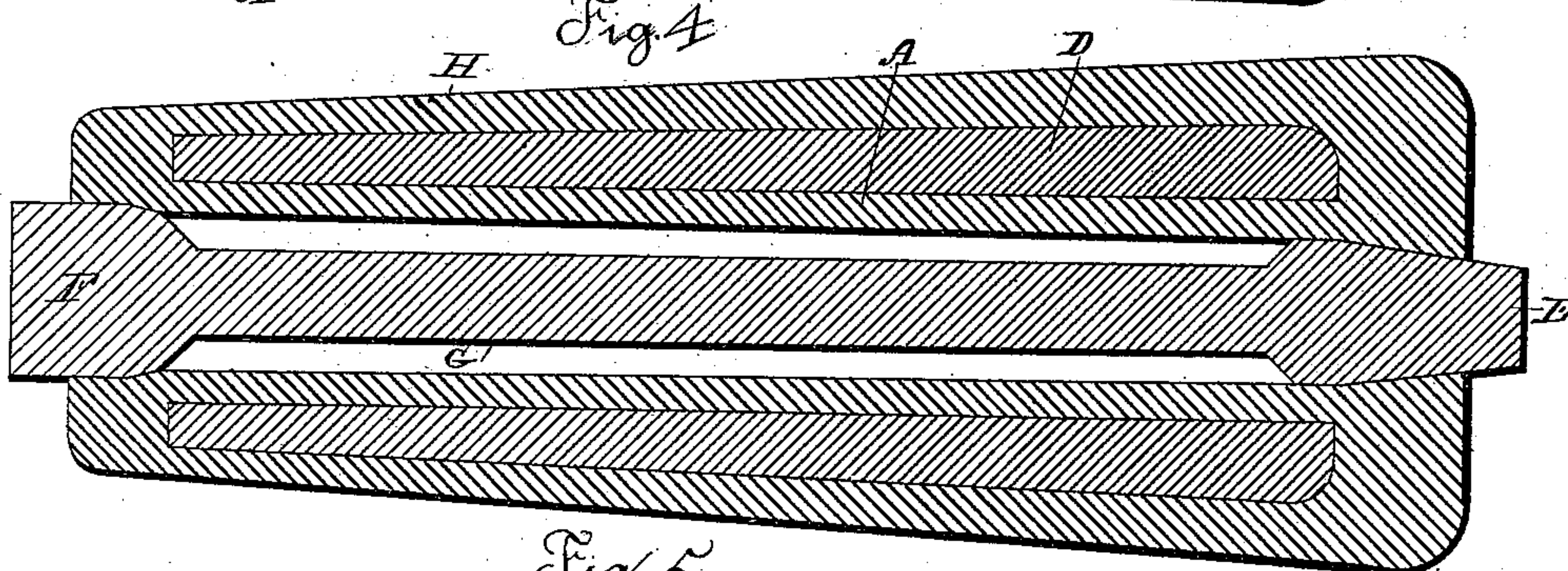
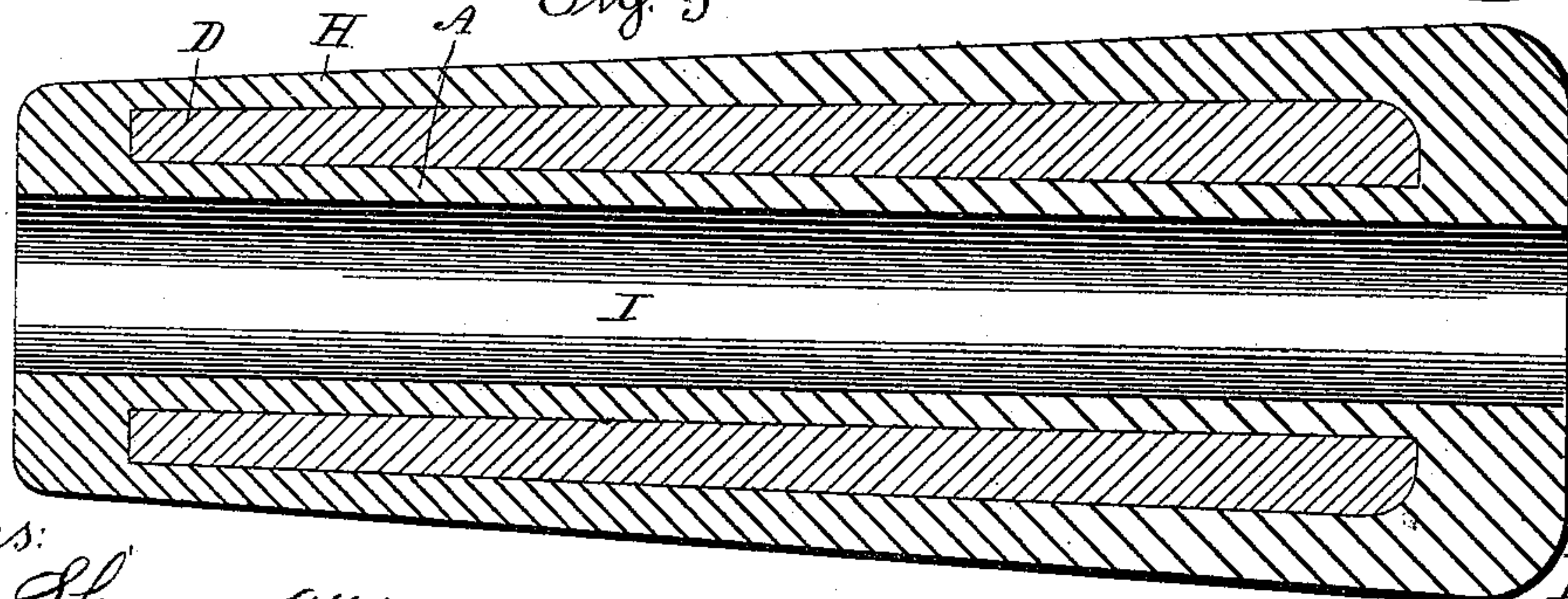


Fig 5



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## METHOD OF MAKING CANNON.

SPECIFICATION forming part of Letters Patent No. 388,696, dated August 28, 1888.

Application filed January 30, 1888. Serial No. 262,445. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH P. LAVIGNE, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Methods of Making Cannon; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved method of making cast cannon, the object being to cheapen the construction of this class of guns without impairing their strength or efficiency.

With these ends in view my invention consists in hermetically inclosing a cheap metallic filling between the inner and outer walls of a gun.

My invention further consists in inclosing a cheap metallic filling between the inner and outer walls of a gun by casting such filling upon a tube forming the inner wall of the gun and preparing the ends of such tube so as to be fused when an envelope forming the outer wall of the gun is cast over it and the filling.

My invention further consists in a method having certain other details, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of a tube and a solid core, the tube forming the inner wall of my improved cannon, and having its ends beveled so as to be readily fusible at such points. Fig. 2 is a similar view showing a filling cast around the tube, the ends of which are exposed. Fig. 3 is a view showing the tube and filling and a skeleton core in the tube. Fig. 4 is a view of the skeleton core, tube, filling, and envelope, showing how the metal of the envelope has melted and obliterated the beveled ends of the tube; and Fig. 5 is a sectional view of a cannon made under my invention.

In carrying out my improved method a tube, A, of brass, bronze, or other material suitable to form the inner wall of the gun, is beveled at each end, as at B B, to reduce the amount of metal at such points to that degree insuring their being melted when enveloped in fluent metal. Into this tube is driven a solid metallic core, C, made slightly tapering, so as to be readily driven out. The tube and core so prepared are placed in a mold, and a

filling, D, of iron or other cheap metal is cast around the tube, so as to leave the beveled ends thereof exposed, and so as to be thickest at the breech end of the gun and gradually taper forward toward the muzzle end thereof. The spindle C, having fulfilled its function of preventing the tube from running, if melted by the casting of the filling upon it, or from being distorted if softened by heat absorbed therefrom, is removed. A skeleton core having beveled heads E and F and a shank, G, is then driven into the tube, which, with its filling, is again placed in a mold, and an envelope, H, of brass or bronze or other suitable material, cast upon them, so as to completely envelop them, as shown. In this operation the heat of the fluent metal melts the thin beveled edges B B of the tube, so that the same virtually forms one piece with the said envelope. The filling D is therefore hermetically sealed in between the tube A and the envelope H, respectively forming the inner and outer walls of the gun and protected from the action of air and moisture. The skeleton core is now removed from the gun, which is then reamed out to form the smooth bore I, as shown by Fig. 5 of the drawings.

Under the described method a cannon is produced having the firing merit of a gun cast from brass or bronze alone, and much cheaper than such a gun, in being composed in part of a much less expensive metal.

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

1. A method of making cannon, consisting in preparing a tube to form the inner wall of the gun, then casting a filling over such tube, and then casting an envelope forming the outer wall of the gun over the tube and filling, so as to hermetically seal the latter between the tube and envelope, substantially as set forth.

2. A method of making cannon, consisting in preparing a tube to form the inner wall of the gun, then casting a filling over such tube, and then casting an envelope forming the outer wall of the gun over the tube and filling, the ends of the tube being fused by the envelope, substantially as set forth.

3. A method of making cannon, consisting in hermetically inclosing a cheap metallic filling between the inner and outer walls of a gun

by beveling the ends of a tube forming the inner wall of the gun, then casting the filling over such tube, then casting an envelope forming the outer wall of the gun over the tube and filling, the beveled ends of the tube being fused in the last step, whereby the tube and envelope are virtually transformed into one piece of metal, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH P. LAVIGNE.

Witnesses:

CHAS. B. SHUMWAY,  
HARRY HALL.