No. 618,036. Patented Jan. 17, 1899.

H. P. HURST.

WIRE WOUND GUN.

(Application filed Sept. 29, 1888.)

(No Model.) 3 Sheets—Sheet 1.

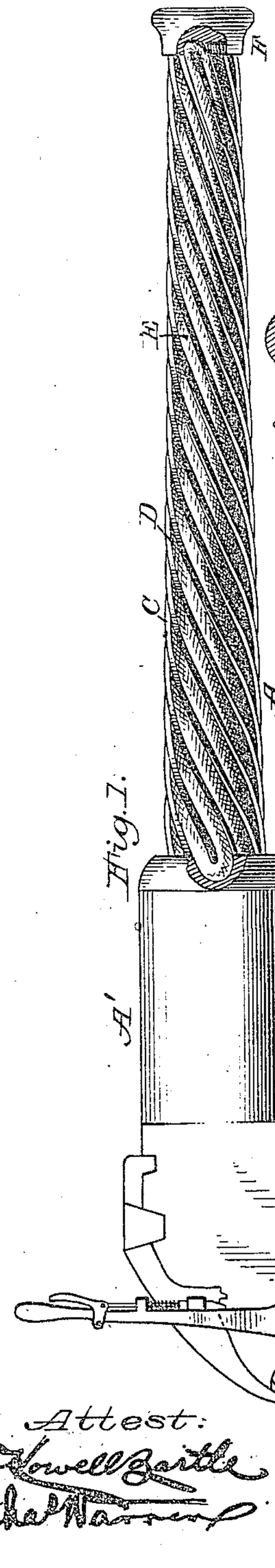


Fig. 1.

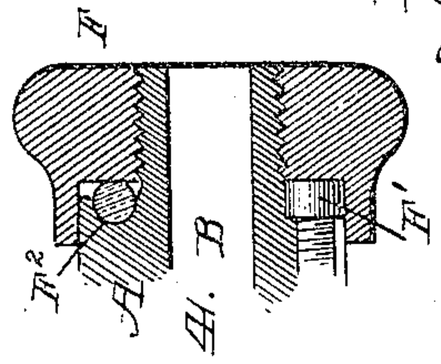


Fig. 4. B

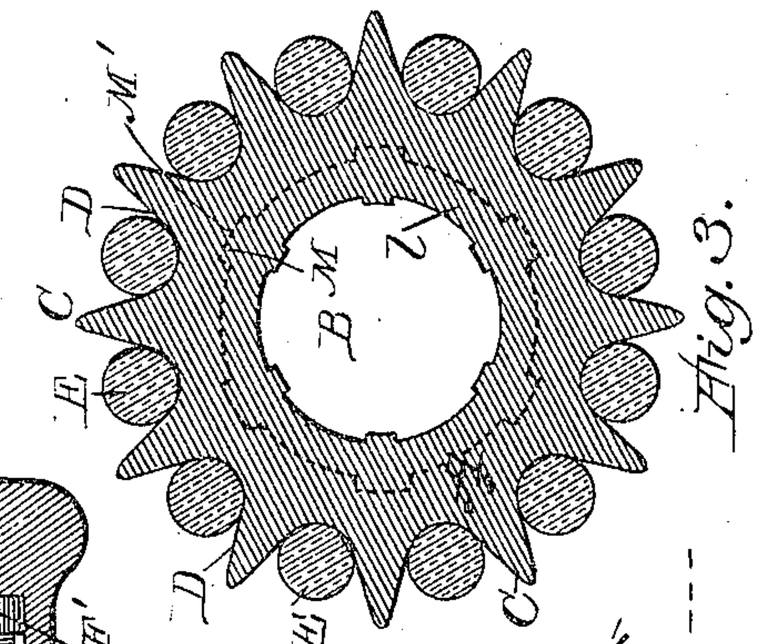


Fig. 3.

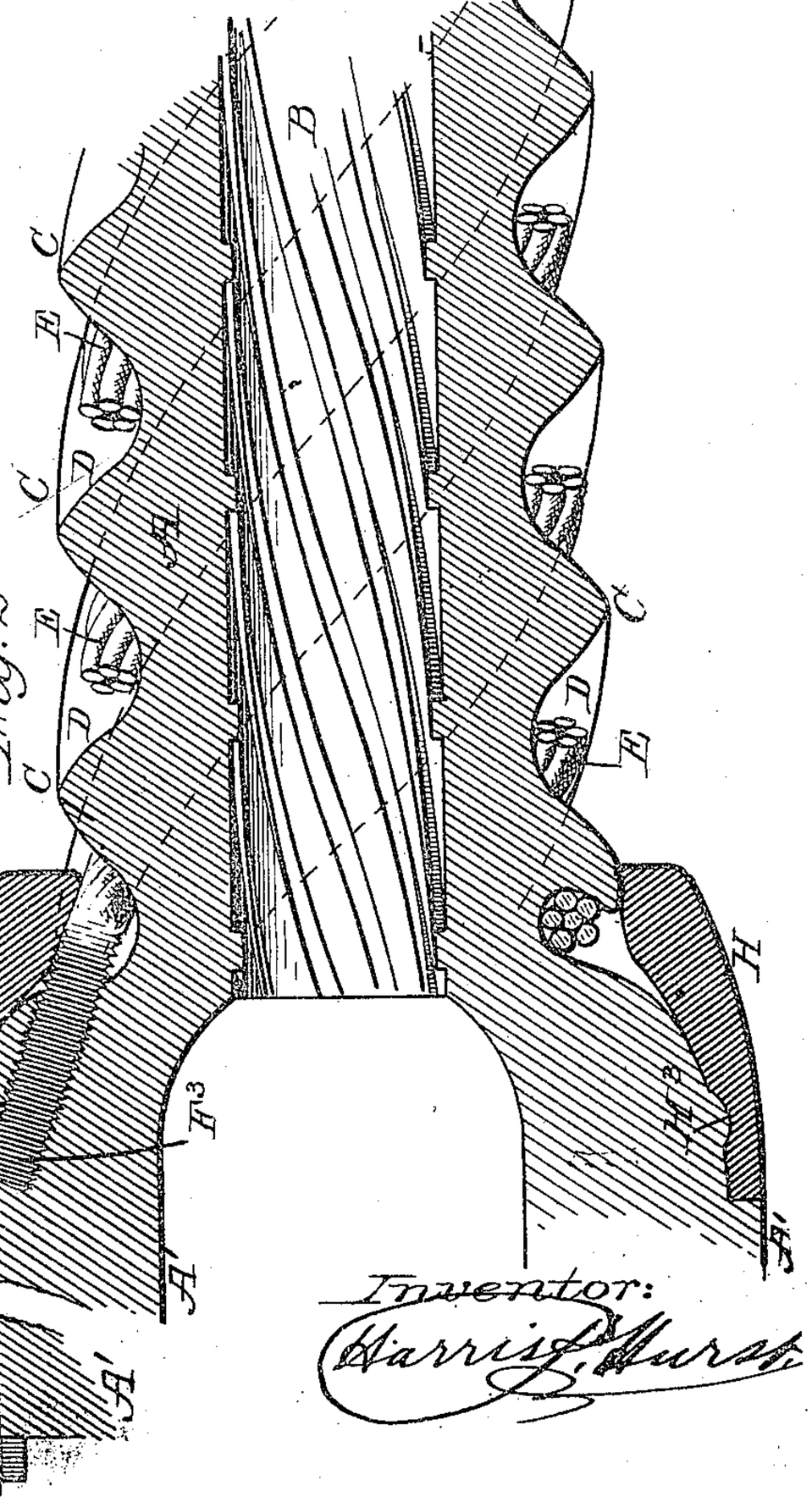
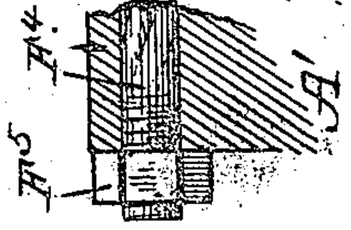


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

Fig. 5.

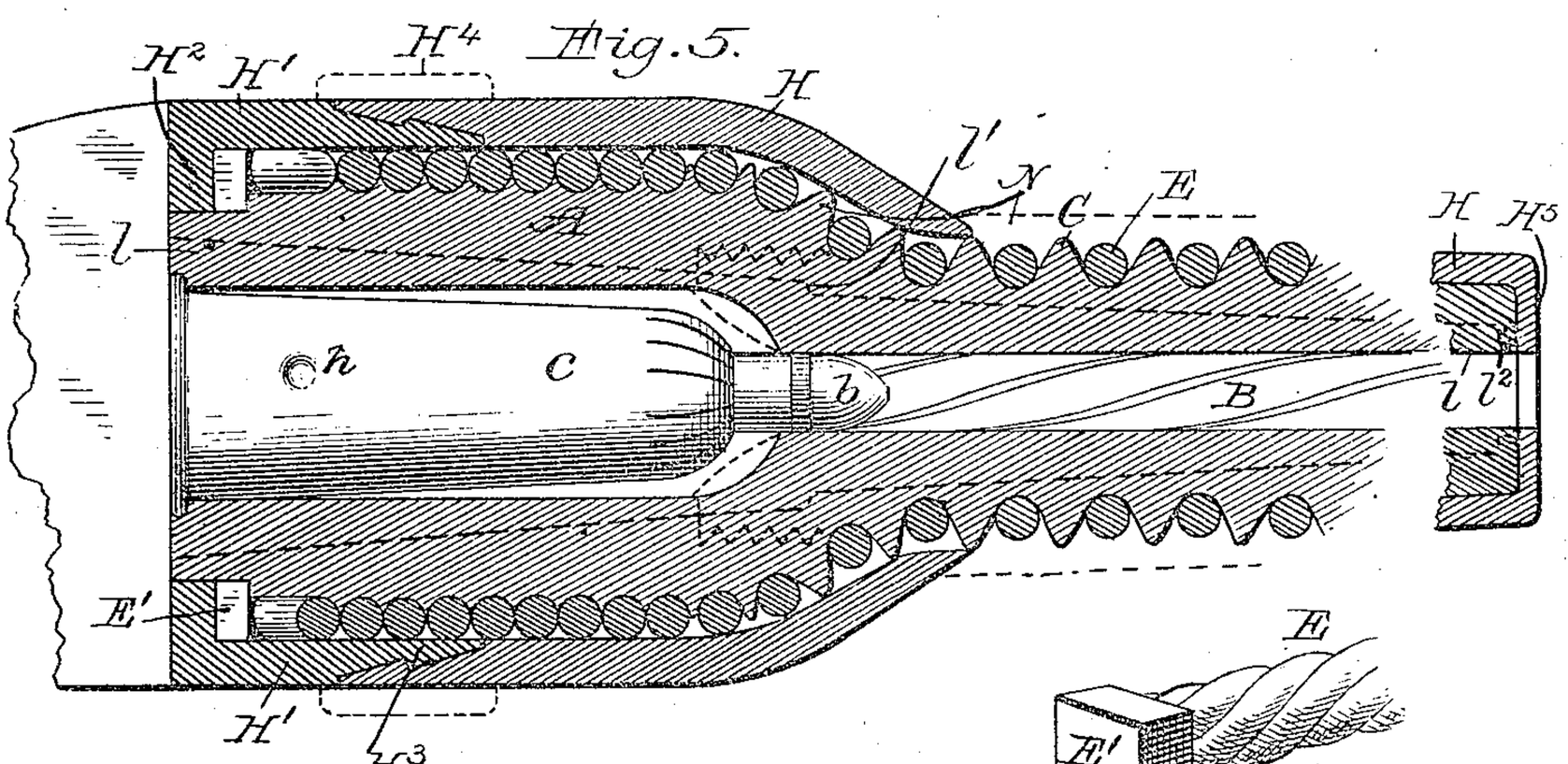
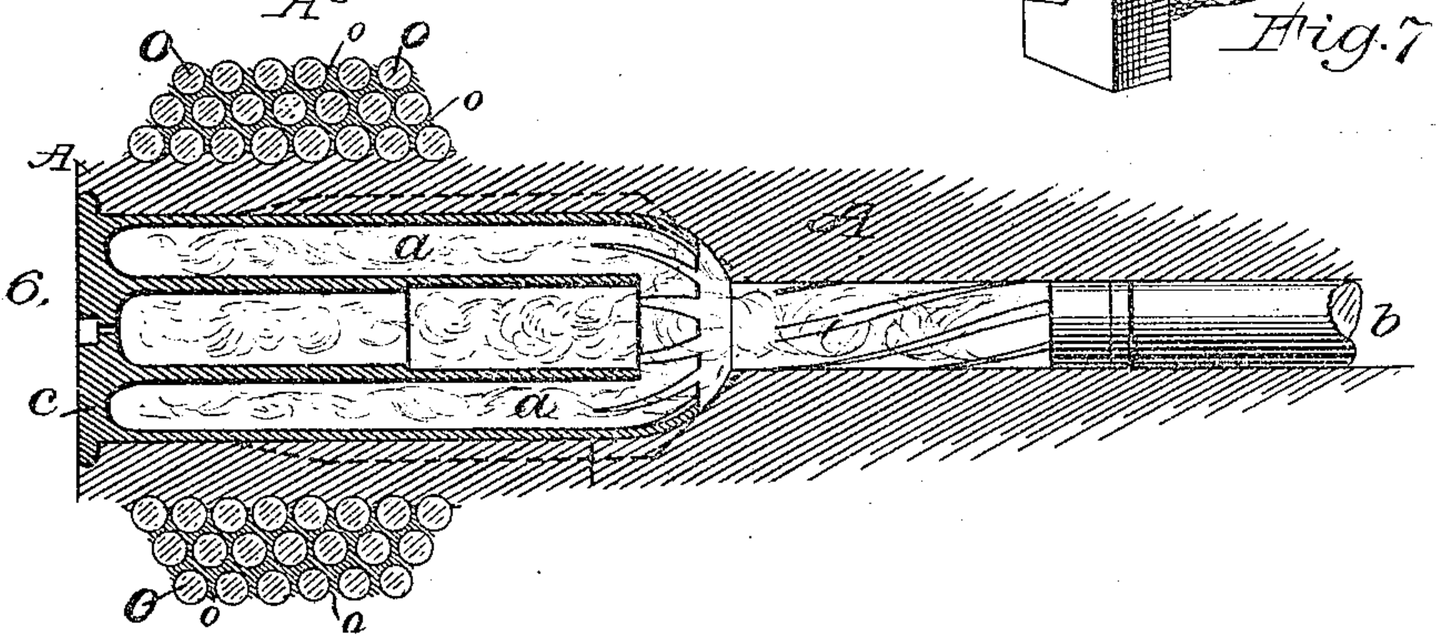


Fig. 7.

Fig. 6.



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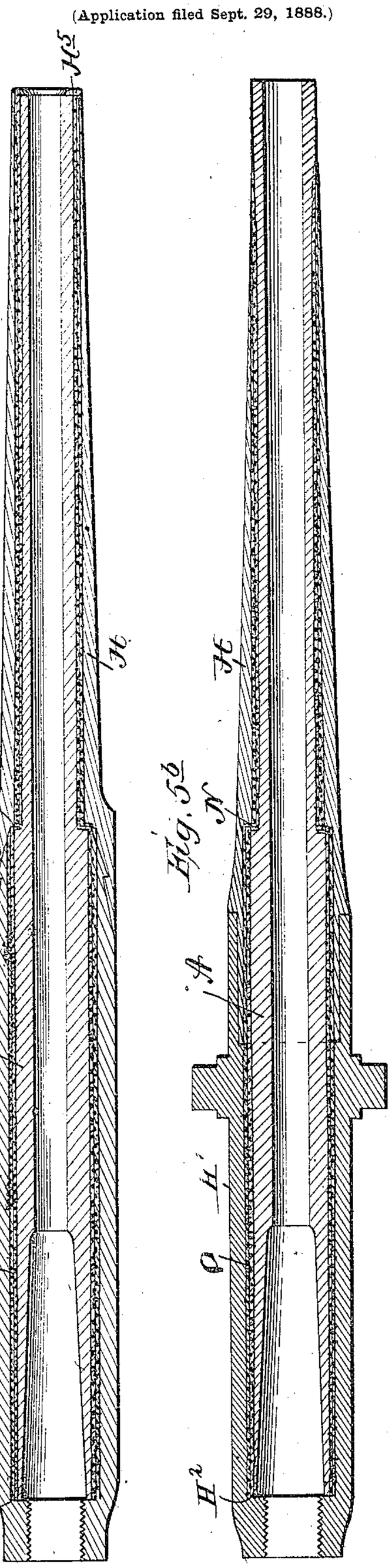
(No Model.) 3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

HARRIS P. HURST, OF SUMMIT, MISSISSIPPI.

WIRE-WOUND GUN.

SPECIFICATION forming part of Letters Patent No. 618,036, dated January 17, 1899.

Application filed September 29, 1888. Serial No. 286,814. (No model.)

To all whom it may concern:

Be it known that I, HARRIS P. HURST, a citizen of the United States, residing at Summit, in the county of Pike and State of Mississippi, have invented certain new and useful Improvements in Wire-Wound Guns; 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.

This invention relates to gun-barrels, large and small, and especially to high-power guns and other rifled guns liable to great torsional as well as longitudinal and radial or bending or drooping strain.

The invention consists in the construction of a gun-barrel and the combination of the parts composing the same in the manner substantially as hereinafter stated.

The object of the invention is to combine in a gun-barrel a great degree of longitudinal strength with little weight and to make a barrel strong against torsional strain; also, to secure the wire coils firmly to each other and to the gun and to provide a chamber which will give an air-space around a cartridge-shell and permit the ignition of the second or third charge of an accelerating-cartridge within said chamber after the projectile is in motion along the barrel; also, to provide a suitable lining and outer jacket for said guns.

Figure 1 is a side elevation of a gun having a barrel of my improved construction, a part being broken away. Fig. 2 is a longitudinal section of a part of the barrel, a modified detail being shown detached. Fig. 3 is a cross-section of the barrel, showing the lines grooved and notched. Fig. 4 is a longitudinal section at the muzzle. Figs. 5 and 6 are sections longitudinally of the chamber and base of the bore, showing a cartridge in position. Fig. 5^a is a longitudinal section of a wire-wound gun, showing one form of jacketing the same. Fig. 5^b is a horizontal section showing a modified form of Fig. 5^a, in which the forward portion of the jacket or sleeve is fitted loosely over the wire. Fig. 6 has a section showing my method of wire-wrapping the tube A and securing the same to the gun. Fig. 7 is a perspective detail of cable and fastening.

The letter A denotes the initial tube of the gun. This tube may be cast or forged of steel, aluminium bronze, or other strong metal. The tube is rifled in the bore B with a very rapid twist and is therefore subject to great torsional strain in firing. The tube has external ribs or spiral flutes C extending from the expanded base A′ to the muzzle or near the muzzle. These spiral ribs should have nearly the same twist as the rifling, but should turn in the opposite direction. The ribs may be cast or forged on the tube, or a solid cylinder may be shaped to leave the ribs.

Between each pair of ribs C C, I place a rod or cable E, preferably of steel and anchored firmly to the base A′ of the barrel and also to the muzzle-ring F or held between the muzzle and its ring.

The strengthening rod or cable E may be held by a screw-thread in the base-piece, as at E^3, or may pass through, as at E^4, and be secured by a nut E^5. So at the front a nut E′ may be attached to the rod or cable and this covered by the muzzle-ring F. Thus a continuous length of wire or cable may be used, or the pieces may be of such length as to extend nearly from the breech to the muzzle and be fastened at each end, the muzzle-nut affording a means of putting an initial strain on the cable at all times.

A sleeve H is applied to the base to cover all the attachments of the spiral wires or rods, and this sleeve extends to the muzzle, as shown in dotted lines, Fig. 5, and has a shoulder H^5 extending over the lining at the muzzle, if one is used. This sleeve can be readily shrunk on either to the base A′ and held by a ridged joint H^3, Fig. 2, or a sleeve H′, which surrounds said base at the rear and has a shoulder H^2 to prevent forward movement, as in Fig. 5. In the latter figure the rods are brought into contact with each other around the chamber and inside the sleeve, the spiral ribs being omitted from the base of the tube around the chamber.

The detail Fig. 7 shows an enlargement E′ at the end of the cable or rod E, said enlargement being polygonal, so as to rest in a recess near the base of the gun and so as not to turn therein.

The effect of the ribs C will be to strengthen the tube against torsional strain. The cables

or rods E will give still further strength, and by tightening these cables or rods an initial torsional strain in a direction the reverse of the rifling may be put on the tube.

For the wire wrapping of the breech and barrel, Fig. 5, for certain classes of guns I intend to wrap either singly or two or more wires twisted together or in cables close together, as shown in base, Fig. 5, and after one or more layers of wire have been put on the whole gun may be put into a bath and subjected to the electroplating process and suitable metal deposited on the wire wrapping and the gun, so as to secure the coils firmly to each other and to the gun. Another layer of wire will then be wrapped over that already secured to the gun by the electro process and the gun again subjected to the electroplating process and the second layer of wire coils secured firmly in place. Additional layers of coiled wire of any desired form, either large or small, will be put on in the same manner and by the same process until sufficient wire has been put on and all secured by electroplating and all crevices and cracks filled by the plating process. The outside of the gun may then be turned down and a light jacket or tube put on, which extends to the muzzle and has shoulders H^2 and H^5, as shown in dotted lines and in section, Figs. 5 and 5^a, and which jacket forms the support for the breech-block at the rear. Fig. 5^b also shows the rear portion of the jacket carrying the breech-block support. The jacket will be made in sections and united by a locking-joint, as shown in Figs. 5, 5^a, and 5^b, and a hoop H^4 will preferably be secured over the joint, as shown in dotted lines in Fig. 5.

The great advantage of securing the coils of wire on the gun by the electroplating process, using either copper, nickel, aluminium bronze, or other suitable metal, is that the fine temper of the wire, which is preferably of steel or aluminium bronze, is not injured in the least, and it can be more firmly secured by the electroplating process than any other I know of. The end of the wire in the beginning can be firmly anchored, and after the first wrapping the wire need not be cut or broken; but the electric current may be put on by using the coil of wire which is being wrapped on the gun as the conductor, if so desired, and after the first coils have been made integral with the gun and each other by the metal electrodeposited other and continuous layers of wire can be put on without a break, if so desired, in the wire until the wrappings are completed.

In Fig. 6 the tube A has a series of coils of wire O wound around it and secured to the gun and each other by the metal *o o* electrodeposited thereon.

I am not aware that any one has heretofore made, shown, or described a wire-wound gun having the wire winding extending from the breech to the muzzle and a covering or jacket superimposed over the wire, and I desire protection, broadly, for my invention without regard to the means I employ for covering said wire, the rear portion of said jacket forming a support for the breech-block of the gun.

It is apparent that many modifications may be made of this invention without departing from the letter and spirit and scope of the same.

I claim—

1. A wire-wound gun having the wire covered by a jacket extending from the muzzle to the breech end of the gun, said jacket being arranged to support the breech-block and take the strain caused by the discharge of the gun.

2. A gun having spiral ribs on the outside of the barrel, the spaces between the same being wire-wrapped, and means for securing the terminals of said wire and applying tension thereto, as set forth.

3. A jacket for wire-wound guns having the wire extending from the breech to the muzzle-section, composed of two or more tubular sections united and extending over said wire from the muzzle-section to the breech of the gun.

4. In a gun, a central core wire-wound or wire-wrapped, and a casing or covering consisting of a jacket united to a tube superimposed over said wire and extending to and secured to the muzzle-section of said gun.

5. A wire-wound gun covered by two or more uniting interlocking jackets, hoops or tubes superimposed thereon, one of which projects rearward therefrom carrying the breech-block support and the other projecting to the muzzle-section of said gun.

6. A gun provided with or composed of a central core, tube or barrel and having thereon an overlying seamless tube or casing with outwardly-extending ribs or fluting thereon, said casing extending to or near the muzzle, substantially as described.

7. A gun having spiral ribs on the outside of the barrel the spaces between the same being wire-wrapped and means for securing the terminals of said wire, substantially as described.

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

HARRIS P. HURST.

Witnesses:
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S. S. EDMONSTON.