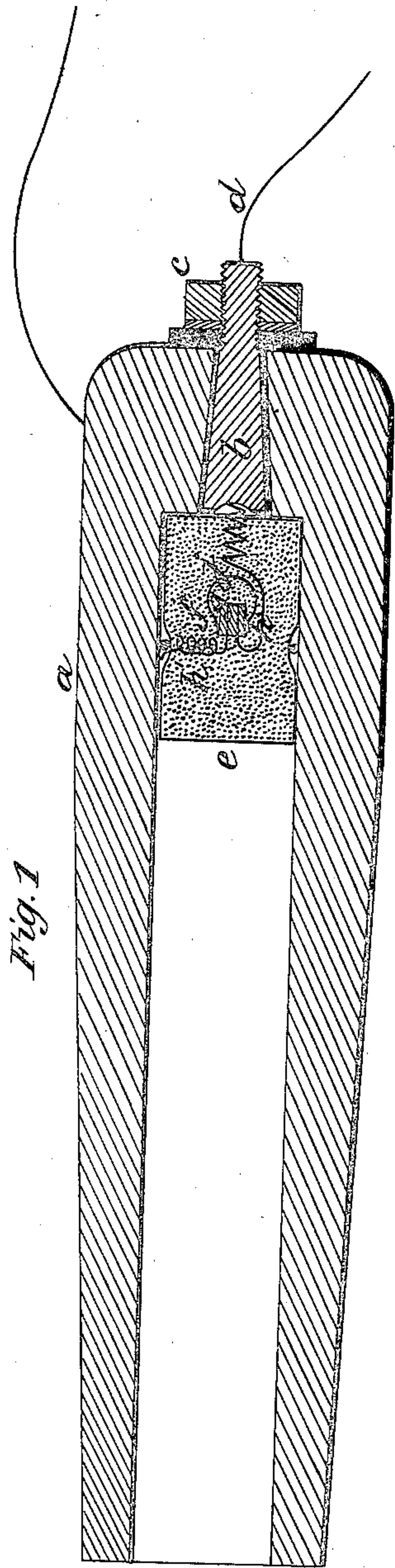
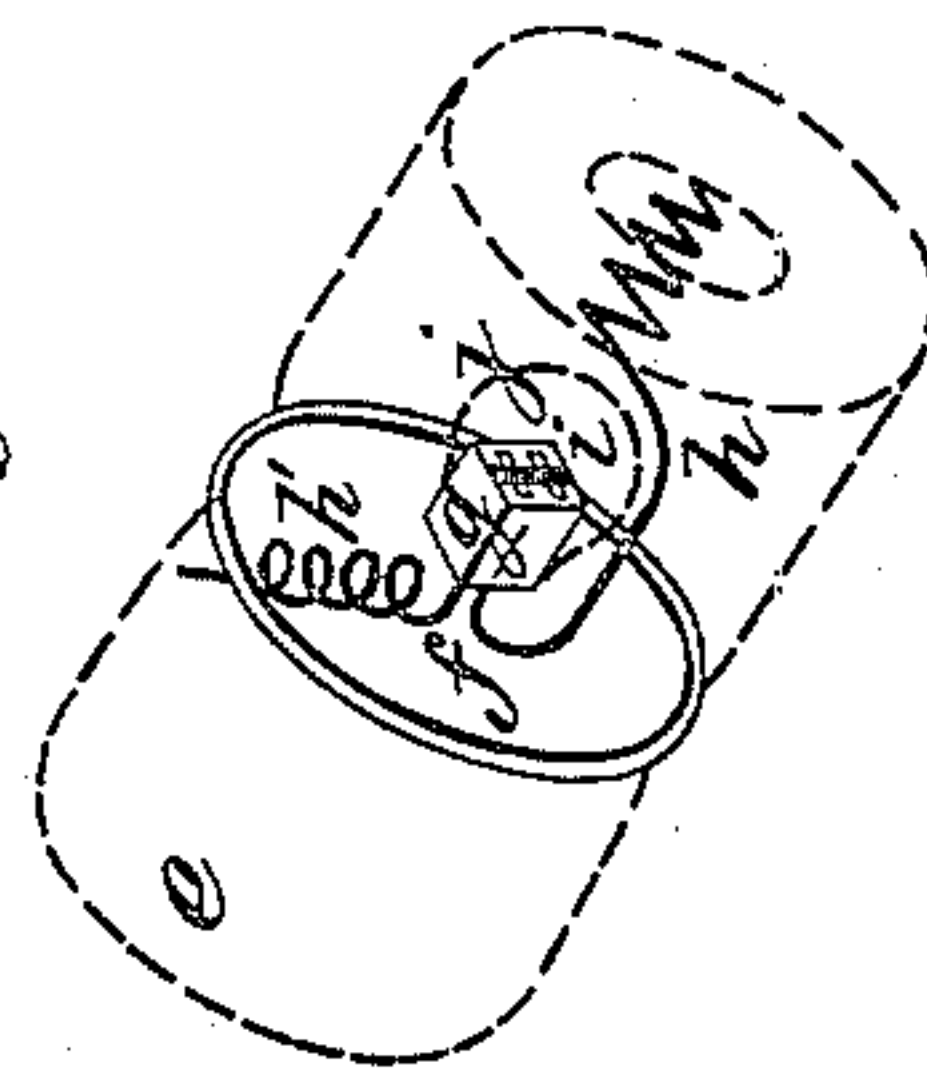


*G. W. Beardslee.*  
*Firing Cannon by Electricity.*  
*N<sup>o</sup> 39,543.      Patented Aug. 18, 1863.*



*Fig. 1*



*Fig. 2.*

*Witnesses.*  
*Samford.*  
*Chas. H. Shelly*

*Inventor.*  
*George W. Beardslee*



# UNITED STATES PATENT OFFICE.

GEORGE W. BEARDSLEE, OF COLLEGE POINT, NEW YORK.

## IMPROVEMENT IN FIRING CANNON BY ELECTRICITY.

Specification forming part of Letters Patent No. 39,543, dated August 18, 1863.

*To all whom it may concern:*

Be it known that I, GEORGE W. BEARDSLEE, of College Point, Long Island, in the State of New York, have invented a new and useful Method of Firing or Discharging Cannon and Other Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal section of a cannon adapted to my improved method of firing the charge, and Fig. 2 a perspective view of the fuse, the wrapper being represented as transparent.

The same letters indicate like parts in both the figures.

My said invention relates to the firing of cannon and other fire-arms by currents of electricity, and without a vent or touch hole.

The use of a vent or priming hole in fire-arms, and specially in cannon, is known to be objectionably for reasons so well understood that it is deemed unnecessary to state them herein; and the object of my said invention is to avoid the use of such vent or priming hole in fire-arms, and specially in cannon.

The mode of construction for the application of my said invention I will describe as applied to a cannon, as from that any one skilled in fire-arms may readily make the application to other fire-arms.

In the rear end or breech of the cannon *a*, and in line with the axis of the bore, I bore or otherwise form a hole extending entirely through to the bore, and this I ream out to a conical form with the greater diameter inside. To this hole is accurately fitted a conical plug of metal, *b*, the periphery of which is to be coated with some suitable non-conductor of electricity. I have found that enameling the surface of the plug in the same way and by the same means used for enameling iron wire, and therefore not necessary to be described, answers a good purpose.

The metallic surface of the inner end of the plug, or at least a portion of it, should be left uncovered. This metallic plug is to be accurately fitted and driven forcibly into the conical hole and secured by a nut, *c*, or other suitable means, on the outside, a washer of india-

rubber or other suitable non-conducting substance being interposed between the nut and butt of the cannon.

The force of the discharges, acting on the inner end of this plug, will tend to drive it in tighter. To the outer end of this plug is attached a conducting-wire, *d*, leading to a magneto-electric machine or battery, or other source of electricity.

The cartridge or charge of powder *e* is provided with a fuse, *f*, which I prefer to make on a plan invented by Frederick E. Beardslee, and for which I am informed he has made application for Letters Patent. It is constructed as follows, viz: In the accompanying drawings, *g* represents a block of wood, which is termed the "holder," and into which are inserted two copper wires, *h h'*, of about No. 16 wire gauge, and about three-sixteenths of an inch apart from center to center.

The edges of the extreme ends of the wires should be completely in contact with the wood. The other end of the wires are left to project from the block to a sufficient length for a purpose to be presently described.

The feeble conductor connecting the extreme end of the two copper wires *h h'* the inventor prefers to make by a pencil-mark, *i*, on the end of the holder, extending from one wire to the other, and made with a pencil of the softest and purest plumbago.

The holder is surrounded with paper extending sufficiently beyond the end of the holder to form a small case, *j*, to hold a small charge of powder in contact with the feeble conductor, the inventor preferring to use meal-powder. When a current of electricity is induced in passing through the plumbago-mark, or equivalent feeble conductor, it will ignite a portion of it, producing a break with an intense flash, which will ignite the contained charge of powder.

To protect the ends of the conducting-wires *h h'* and the plumbago-line from oxidation and injury, they may be coated with collodion or other equivalent substance. The fuse *f*, thus formed, is placed, by preference, at about the center of the cartridge or charge of powder *e*, with one of the conducting-wires, *h*, extending in a slight coil through, so as to project slightly from the rear end of the cartridge or charge



of powder to insure its coming into contact with the metallic face of the plug *b* at the breech of the cannon when the cartridge is rammed home. The other conducting-wire, *h'*, is extended through to project from the side or periphery of the cartridge, and to such an extent as to insure its being in contact with the bore when charged into the cannon.

As one of the conducting-wires of the fuse *f* is in contact with the inner end of the conical plug *b*, which plug is in connection with the conducting-wire *d*, leading to one pole of a magneto-electric machine or galvanic battery, or other suitable means for inducing currents of electricity, and the other conducting-wire, *h'*, of the fuse is in contact with the bore of the gun, and the two wires are insulated by the non-conducting coating of the conical plug, it follows that when the body of the cannon is connected with the other pole of a magneto-electric machine or battery, either by the ground connection or by another conducting-wire, and the electric circuit is established, the current, on reaching the point of one of the wires, will be conducted to the other wire, *h'*, of the fuse by the pencil-mark *i*, or equivalent feeble conductor, causing a flash or spark, which instantly ignites the charge of powder.

By the foregoing means cannon or other fire-arms can be instantly fired by simply closing the electric circuit, or, what is the same thing, by simply turning the magneto-electric machine, thus dispensing with the necessity of using a vent or priming hole and avoiding all

the objections thereto; and although I deem it best to use fuses on the plan herein described, I do not wish to be understood as restricting myself to the use thereof, as other means for causing the electric current to fire the charge of powder may be substituted.

When but one cannon is required to be fired at a time it has been found that bass-wood and the substance known as the hard compound of "vulcanized india-rubber," will answer a good purpose for making the holder of the fuse; but when it is desired to fire several at the same, or near the same, instant of time, and all connected in one electric circuit, it will be best to make the holders of some non-conducting substance which is not combustible, such as glass, ivory, bone, &c. These suggestions will indicate that other and equivalent means may be substituted.

What I claim as my invention, and desire to secure by Letters Patent for firing cannon and other fire-arms by currents of electricity, is—

Combining with the barrel of the cannon or other fire-arm an insulated plug extending through the metal from the bore to the outside, substantially as specified, to be used with a cartridge having a fuse provided with two conducting-wires, so that when inserted in the bore one will be in contact with the bore and the other with the insulated plug, as described.

GEO. W. BEARDSLEE.

Witnesses:

JAS. DUNFORD,  
CHAS. H. SHELLEY.