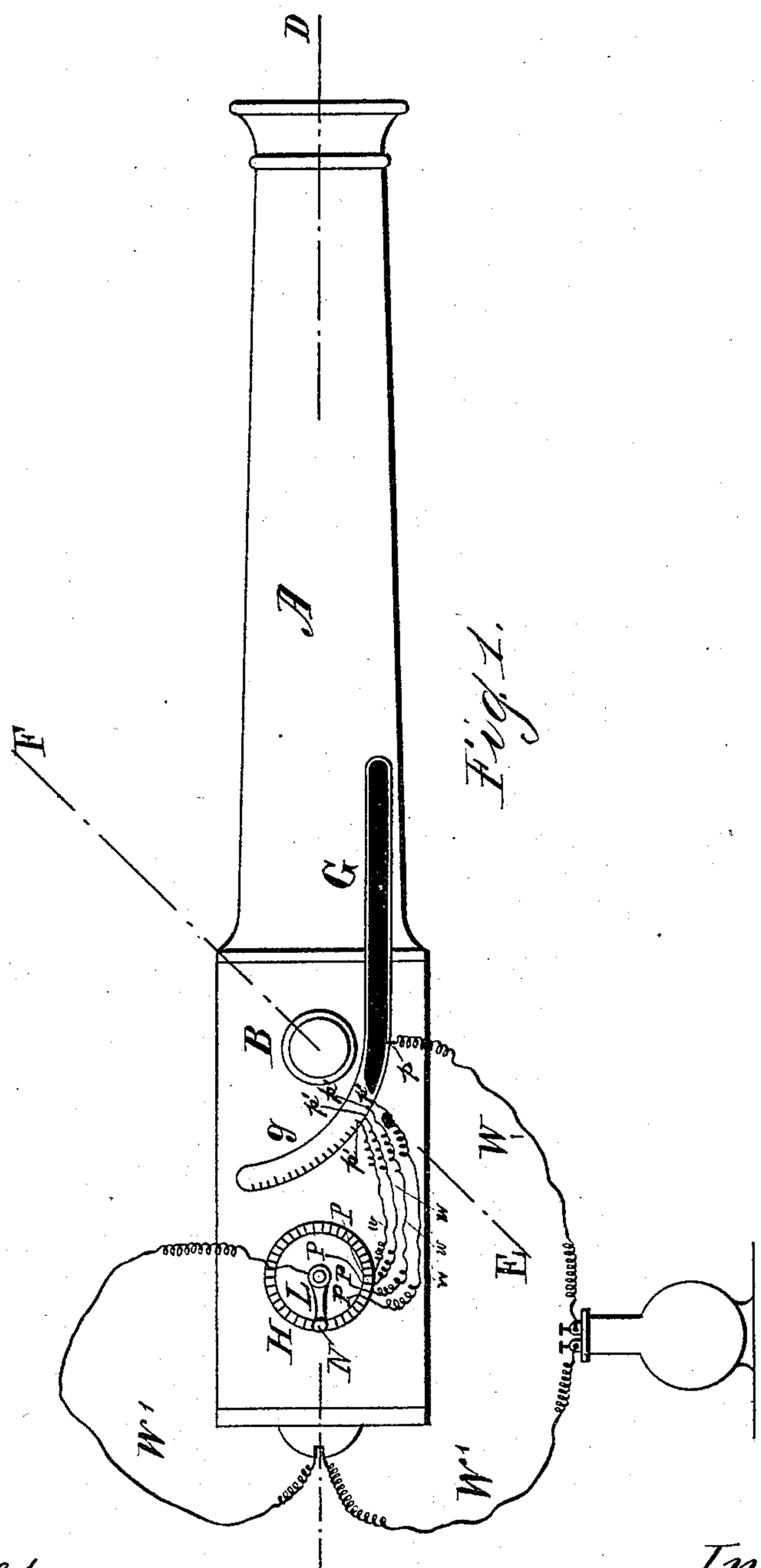
(No Model.) 2 Sheets—Sheet 1.

A. BOUILLY.

MECHANISM FOR FIRING ORDNANCE BY ELECTRICITY.

No. 289,966. Patented Dec. 11, 1883.



Witnesses
William L. Poulter.
G. W. Knotts

Inventor
Amedee Bouilly
per Henry Orth
his att'y.

(No Model.) 2 Sheets—Sheet 2.

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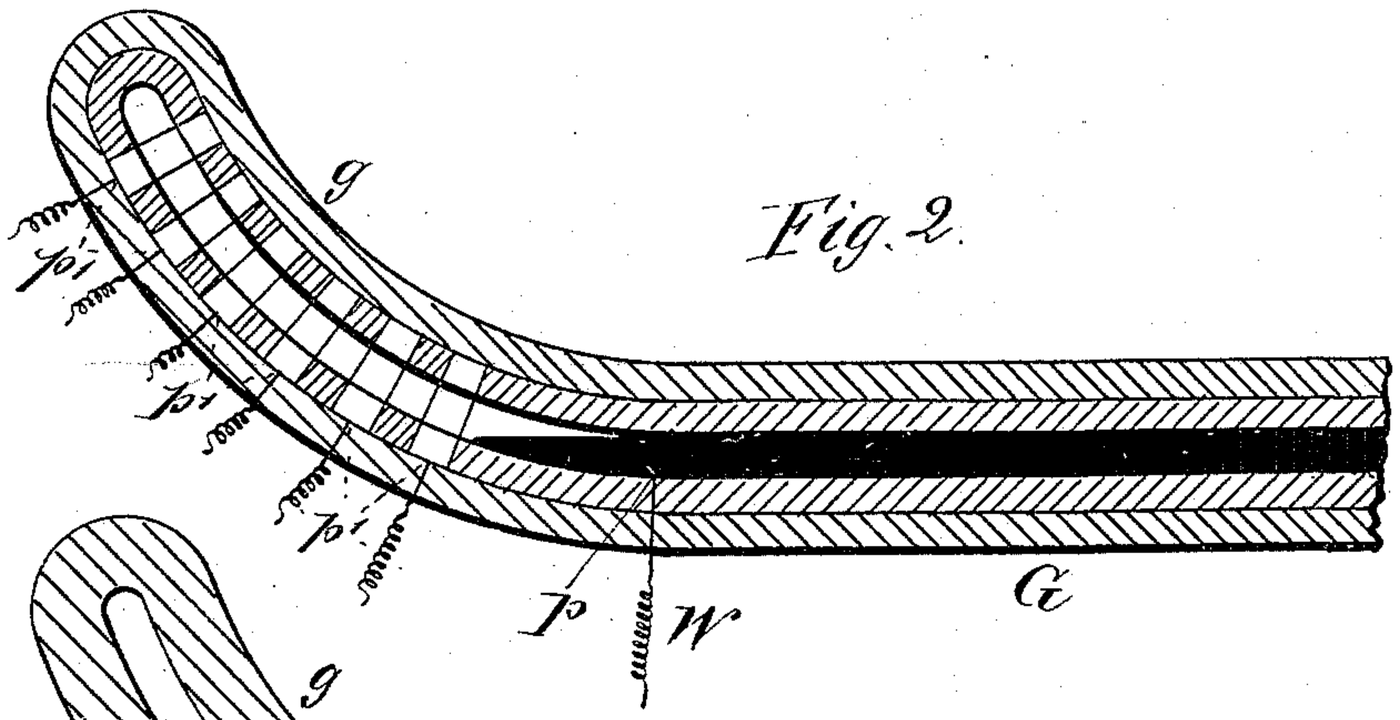

Fig. 2.

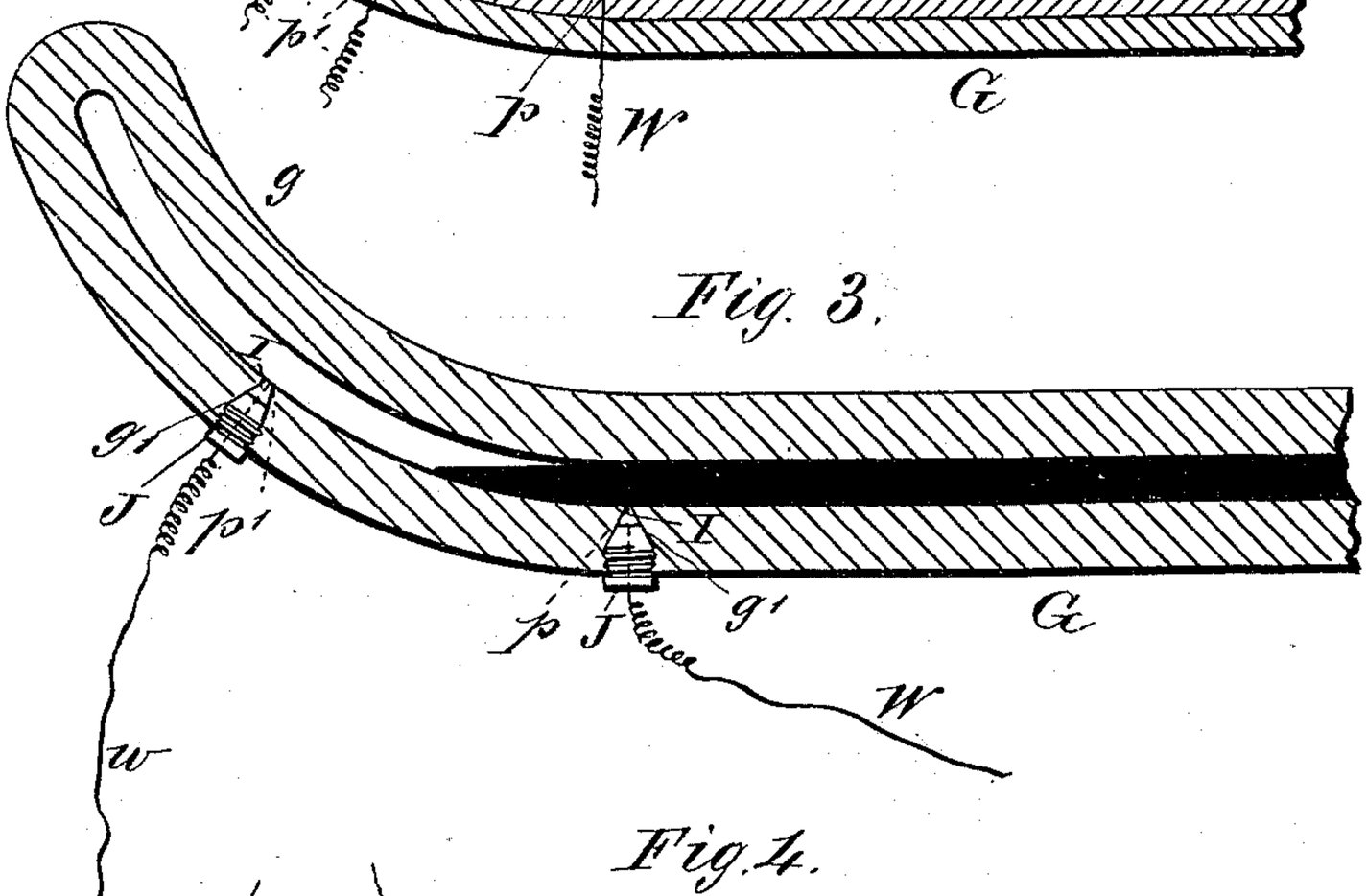

Fig. 3.

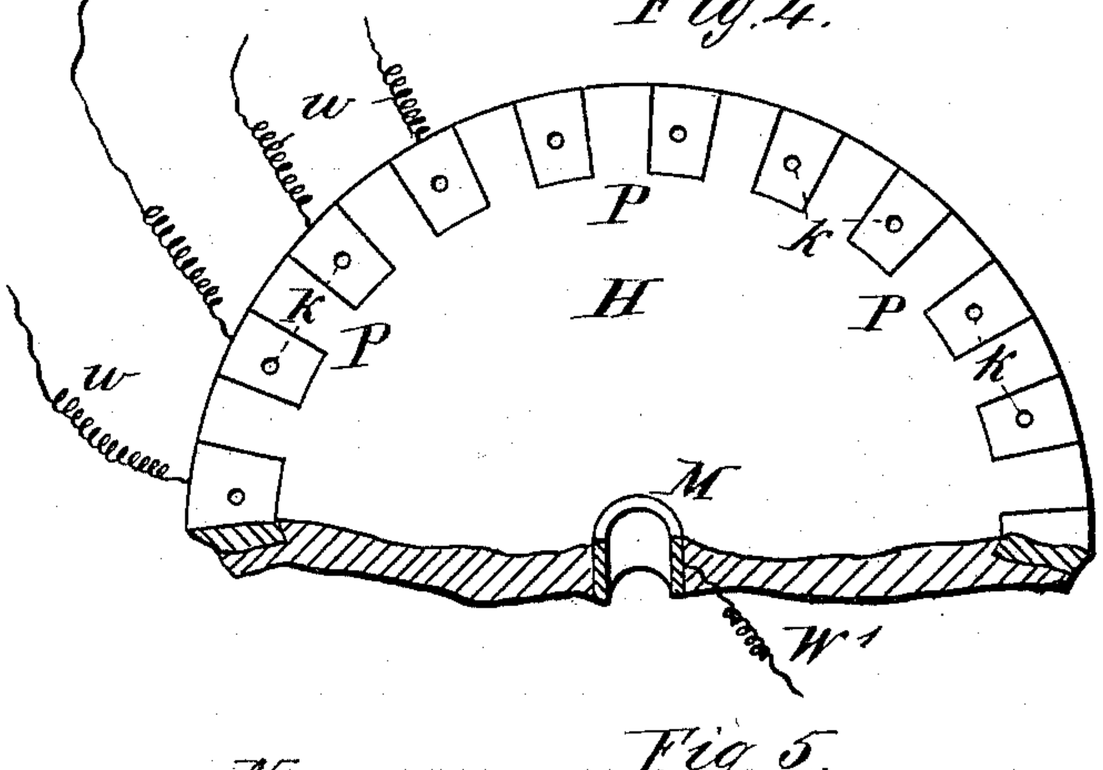

Fig. 4.

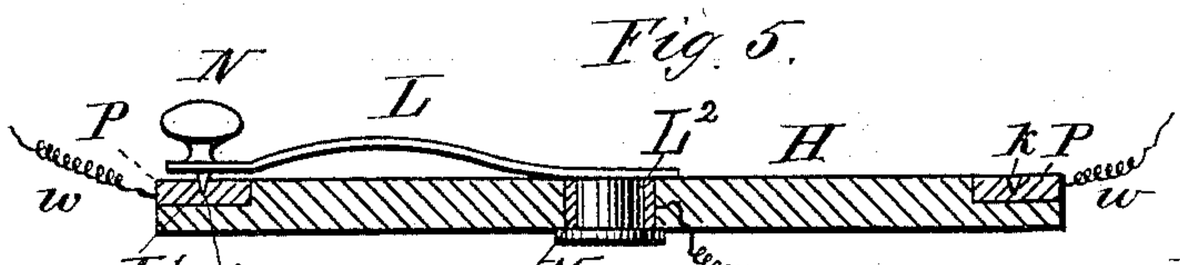

Fig. 5.

Witnesses.
H. E. Boulter.
G. W. Knotts

Inventor
Amédée Bouilly
per Henry Orth
his att'y

UNITED STATES PATENT OFFICE.

AMÉDÉE BOUILLY, OF SAUMUR, FRANCE.

MECHANISM FOR FIRING ORDNANCE BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 289,966, dated December 11, 1883.

Application filed March 17, 1883. (No model.) Patented in France October 5, 1882, No. 151,374; in Belgium February 17, 1883, No. 44,078; in Germany February 20, 1883, No. 7,792, and in England February 20, 1883, No. 928.

To all whom it may concern:

Be it known that I, AMÉDÉE BOUILLY, a citizen of the French Republic, and resident of Saumur, in the French Republic, have invented certain new and useful Improvements in Means for Automatically Pointing and Firing Ordnance, (for which I have obtained Letters Patent in France, No. 151,374, dated October 5, 1882; in Belgium, No. 44,078, dated February 17, 1883; in Germany, No. 7,792, dated February 20, 1883, and in England, No. 928, dated February 20, 1883;) 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 make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in means for automatically pointing and firing ordnance, as hereinafter fully described, and as shown in the accompanying drawings, in which—

Figure 1 shows a gun and the appliances for automatically pointing and firing the same. Figs. 2 and 3 show the mercury-chamber in section and the arrangement of the contact-points. Fig. 4 is a plan view of the contact-disk, partly in section; and Fig. 5 is a transverse section of the latter.

A represents a gun, the axis of which corresponds with a horizontal line. It is provided with means for supporting it at the breech, of any suitable character and construction. The weight of the gun is so distributed that when the support is suddenly removed said gun will swing on its trunnions B from the horizontal line C D to the line E F, or through all the angles of firing.

To one side of the gun is secured a tube, G, that is bent upwardly at its rear end, *g*, and contains a sufficient quantity of mercury to maintain the contact-point *p* constantly immersed. This point *p* is connected by wire W with the positive pole of a battery or other source of electricity; and *p' p' p'* are contact-points adapted to be successively immersed in the mercury as the gun swings from C D to E F, said contact-points being connected by wires *w w w*, &c., to contact-plates P of a disk, H, the lever of which is connected by wire W' with the negative pole of said source of electricity.

As shown in Figs. 3 and 4, the metallic contact with the mercury in chamber G and the contact-disk H is established by passing the wires W and *w w w*, &c., through the walls of the chamber and isolating the same therefrom. This is preferably effected as follows: Along the under side of the rear end of the chamber G are formed a series of openings, *g'*, the inner ends of which are cone-shaped, for the reception of a conical plug, I, of suitable non-conducting material, preferably of ivory, and a rubber screw-plug, J, both plugs being perforated for the passage of the wire.

The disk H is made of non-conducting material—such as rubber—and in its face are secured a series of contact-plates, P, of metal, provided with conical recesses *k*. As shown in Fig. 4, the plates are arranged around the periphery of the disk and equidistant, and consequently isolated from each other.

The contact-lever L is made of metal. It is provided with a rubber handle, N, and a conical pin, L', that fits into the conical recesses of the plates P, and with a pivot-pin, L^2, that rotates in a sleeve, M, of metal, secured axially in the disk H, said sleeve being in metallic connection with the negative pole of the source of electricity by a wire, W', that passes through a fuse in the breech of the gun.

The operation of the device is as follows: If it is desired to fire the gun at a desired angle, the lever L is placed in contact with the plate P, that corresponds with that angle or which is in metallic contact through one of the wires *w* with that contact-point *p'* of the mercury-chamber that corresponds with the angle at which the gun is to be fired. So long as this point is not immersed in the mercury the circuit remains broken; but when the gun is allowed to swing on its trunnions until the mercury covers said contact-point the circuit will be closed and the gun will be automatically fired. It will therefore be seen that by means of the described arrangement of appliances the gun is pointed and fired automatically, the angle of firing having once been ascertained and the contact between the contact-point of the predetermined angle of firing and the con-

tact-disk established by simply allowing the gun to swing on its trunnions.

Having described my invention, what I claim is—

1. The combination, with a piece of ordnance weighted at the breech to automatically swing on its trunnions, and a suitable source of electricity, of a tube containing mercury which is in constant connection with one pole of the electrical source, said tube being provided with contact-points at different elevations corresponding to the various angles of firing, said contact-points being adapted to be immersed successively as the gun swings on its trunnions, as described.

2. The combination, with a piece of ordnance weighted, as described, to automatically swing on its trunnions, and a suitable source of electricity, of a mercury-chamber the mercury of which is in constant connection with said electrical source, and is provided with contact-points at various elevations that correspond with the various angles of firing, and are arranged to be successively immersed as the gun swings on its trunnions, a contact-disk provided with isolated contact-points in metallic connection with the contact-points of the mercury-chamber, and a lever in connection with the electrical source, as described, for the purposes specified.

3. A gun provided with a chamber containing mercury, a contact-point, *p*, in permanent connection with one pole of an electrical source through the mercury bath, and a series of contact-points, *p'*, arranged at different elevations on said chamber above the normal level of said bath, and adapted to be successively immersed in the mercury as the gun swings on its trunnions, in combination with appliances to close the electric circuit through one of said contact-points *p'* and the firing-fuse of the gun, as described.

4. A gun provided with a chamber, G, containing mercury, a contact-point, *p*, in permanent connection with a battery through the mercury bath, and a series of contact-points, *p'*, arranged at different elevations on said chamber above the normal level of the mercury, but adapted to be successively immersed when the gun swings on its trunnions, in combination with a contact-disk, H, having isolated contact-plates P, and a lever, L. said plates being in metallic connection with the contact-points *p'* and the lever with the battery through the firing-fuse of the gun, as described, for the purposes specified.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of February, 1883.

AMÉDÉE BOUILLY.

Witnesses:
F. MATRAY,
ROBT. M. HOOPER.