

(No Model.)

A. DICKEY.

ALUMINIUM REDUCING POT AND MEANS FOR TAPPING SAME.

No. 602,575.

Patented Apr. 19, 1898.

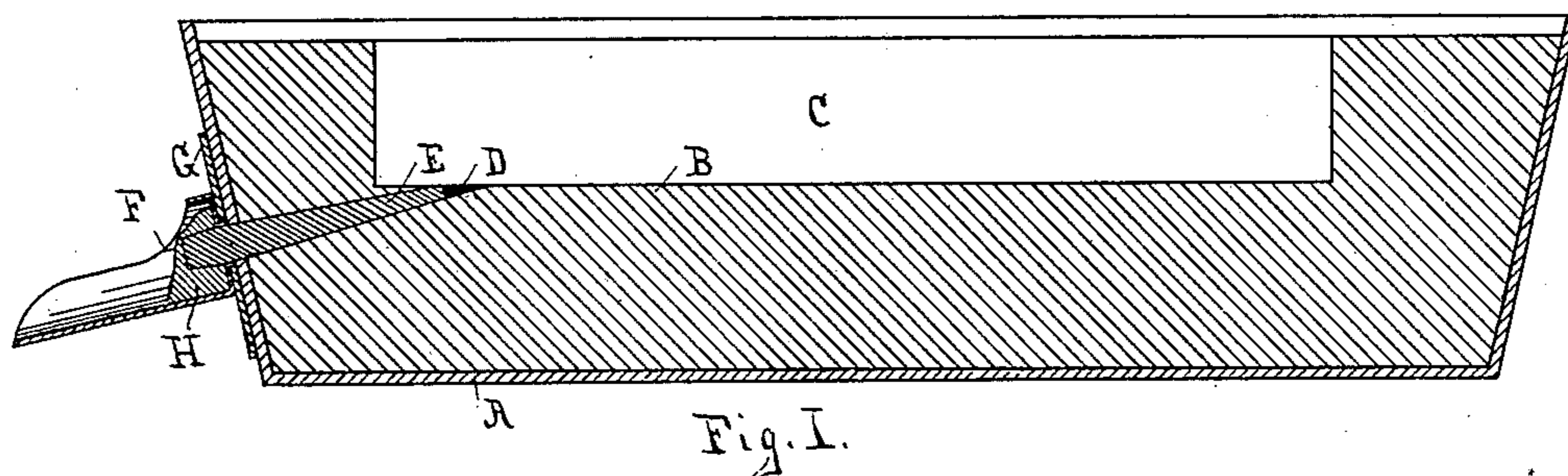


Fig. I.

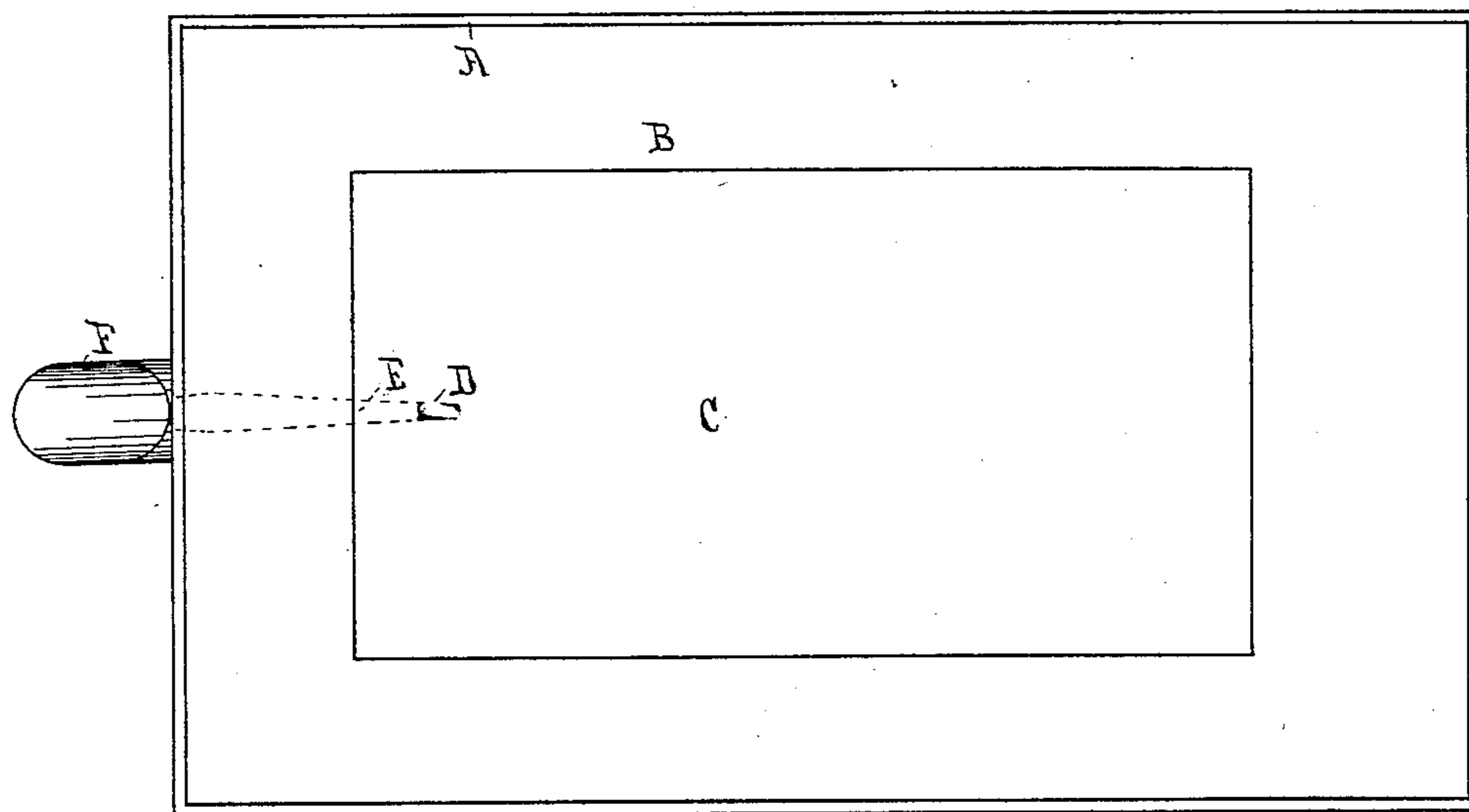


Fig. II.

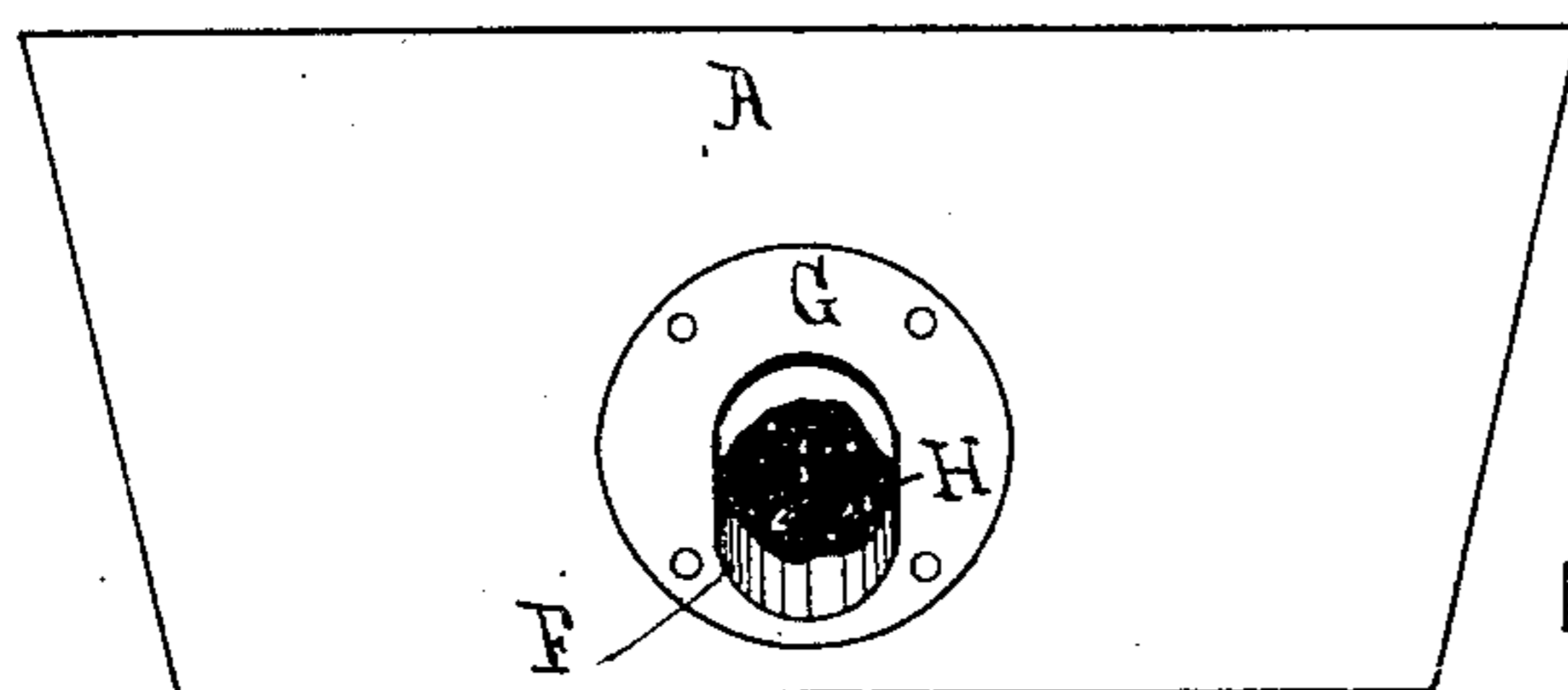


Fig. III.

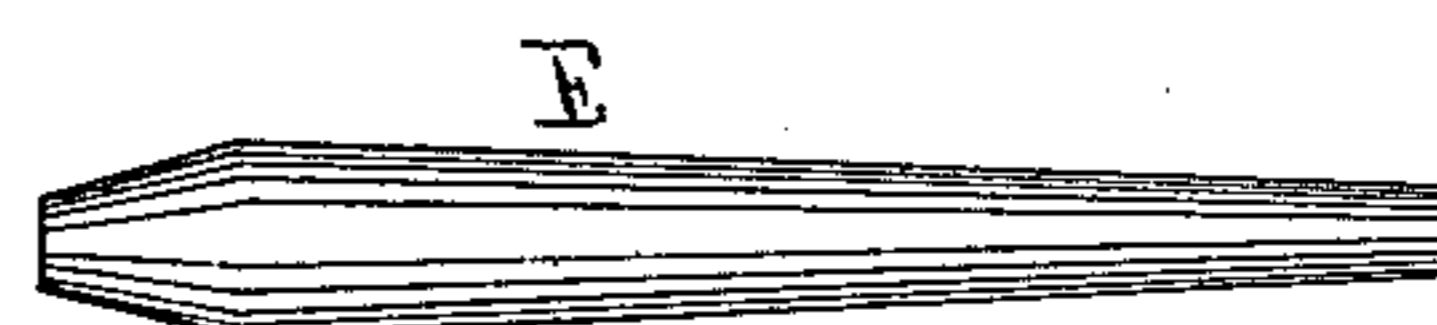


Fig. IV.

Witnesses:
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UNITED STATES PATENT OFFICE.

ANDREW DICKEY, OF NIAGARA FALLS, NEW YORK.

ALUMINIUM-REDUCING POT AND MEANS FOR TAPPING SAME.

SPECIFICATION forming part of Letters Patent No. 602,575, dated April 19, 1898.

Application filed November 12, 1897. Serial No. 658,232. (No model.)

To all whom it may concern:

Be it known that I, ANDREW DICKEY, a citizen of the United States, residing at Niagara Falls, in the State of New York, have invented certain new and useful Improvements in Aluminium-Reduction Pots and Means for Tapping the Same, of which the following is a full, clear, and exact description.

Heretofore in the reduction of aluminium by the electrolytic process serious difficulty has arisen in removing the reduced metal from the bath. The most common method has been to uncover the bath and dip the metal out; but this method involves large loss, because in uncovering the bath and in dipping out a considerable amount of the metal is oxidized and consequently lost. On the other hand, it has heretofore been considered impossible to provide the pot with a tap-hole or vent for drawing off the metal for the reason that it has been found impossible to plug the same by any known means, since the heat is too intense to permit of the use of a metal plug, and the use of clay or porcelain would result in the disintegration and absorption of the silica and consequent destruction of the quality of the aluminium. In fact, the presence of a small amount of silica renders the use of clays impossible, and to allow even a very slight amount of silica to be absorbed would defeat the end of the process.

I have found by experiment and trial a means whereby I am enabled to provide such a reduction-pot with a tap-hole or vent, so that the metal may be drawn off at will without large loss by oxidation, and whereby I am enabled to effectively plug the tap-hole without any injury to the quality of the metal.

By reference to the drawings herewith, consisting of one sheet, in which like letters refer to like parts, I will now explain the means which I employ to accomplish that end.

Figure I is a vertical longitudinal section showing a reduction-pot provided with my invention. Fig. II is a top plan view of the same. Fig. III is an end elevation. Fig. IV is an enlarged view of my plug, hereinafter more fully described.

A is the metal casing of the pot, made in any desired form.

B is the carbon lining of the pot, which constitutes the cathode.

C is the bath which contains the metal and the ore to be reduced and into which the carbons which constitute the anode dip.

D is the tap-hole or vent, which opens interiorly within the bath C and exteriorly without the metal casing A. This tap-hole is given sufficient incline to afford free flow of the metal and is tapered, so as to receive a taper-plug from the outside.

E is a taper-plug made, preferably, of wood, but which may be made of charcoal, having a taper corresponding to that of the tap-hole.

G is a reinforcing-flange which is secured to the metal casing A and to which is secured a metal spout F.

When the plug E is inserted within the tap-hole, a sufficient amount of plastic clay or similar material is placed over the outer end, so as to cover it and exclude the oxygen of the air, as indicated at H. Immediately when the process is started the plug E begins to be converted into charcoal, a material which is not attacked in the electrolysis and which is not injurious to the aluminium.

When it is desired to draw off the charge, the clay is first carefully removed, and then the plug E, which has become pure charcoal, may be readily picked out. When the charge has been drawn, or so much of it as is desired, a fresh plug is inserted and capped with clay, and thus the process proceeds.

Having thus described my invention, and without limiting myself to the precise means employed, what I claim is—

1. A reduction-pot for the reduction of aluminium provided with a taper tap-hole and a wooden or charcoal plug fitted to said taper, and means for excluding said plug from contact with air, substantially as and for the purposes set forth.

2. A reduction-pot for the reduction of aluminium provided with a tap-hole, a wooden or charcoal plug fitting into said tap-hole, and means for preventing oxidation of said plug, substantially as and for the purposes set forth.

3. In an aluminium-reduction pot, the combination of a pot provided with a tap-hole, with a wooden or charcoal plug removably inserted therein, and a coating of clay or equivalent material for excluding the exposed end of said plug from the air, substantially as and for the purposes set forth.

4. In an aluminium-reduction pot, the combination of a pot provided with a taper tap-hole, with a taper wooden or charcoal plug, a plastic cap covering the exposed portion of
5 said plug, and a spout surrounding the exterior opening of said tap-hole, substantially as and for the purposes set forth.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

ANDREW DICKEY.

Witnesses:

HARRY HIGHLAND,
W. LIVINGSTONE.