

(No Model.)

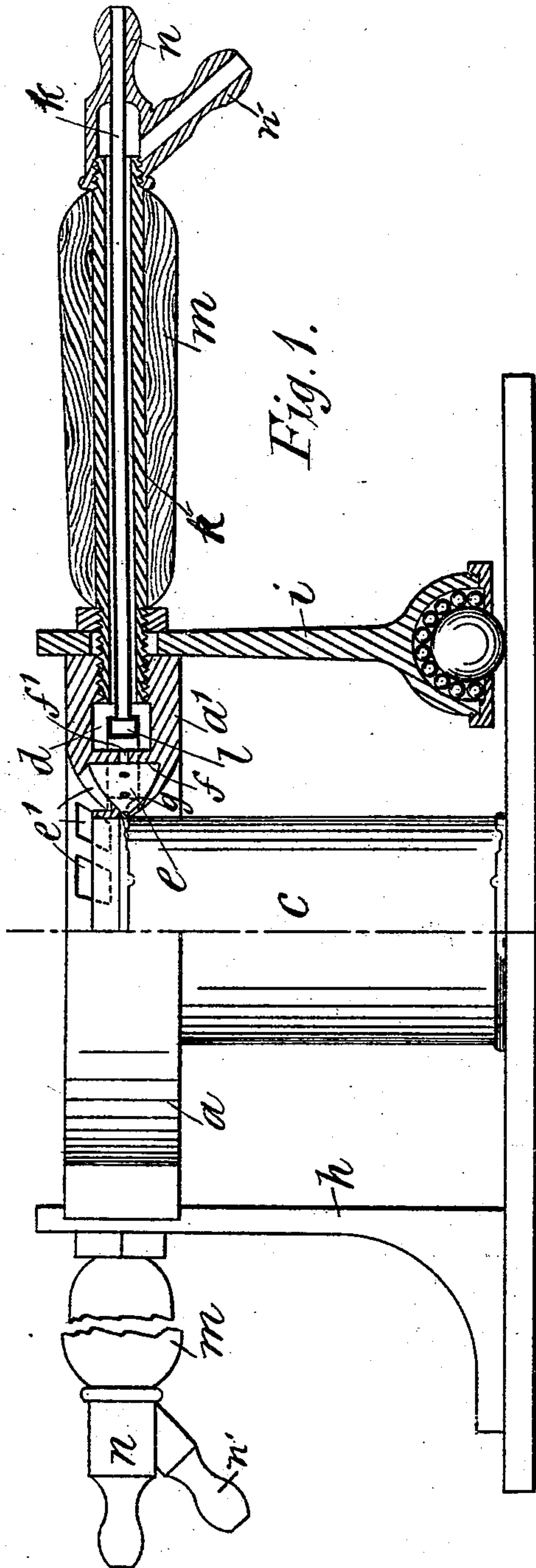
2 Sheets—Sheet 1.

J. GERSANT & A. G. BUTTIFANT.

MEANS FOR SOLDERING METAL BOXES, &c.

No. 552,117.

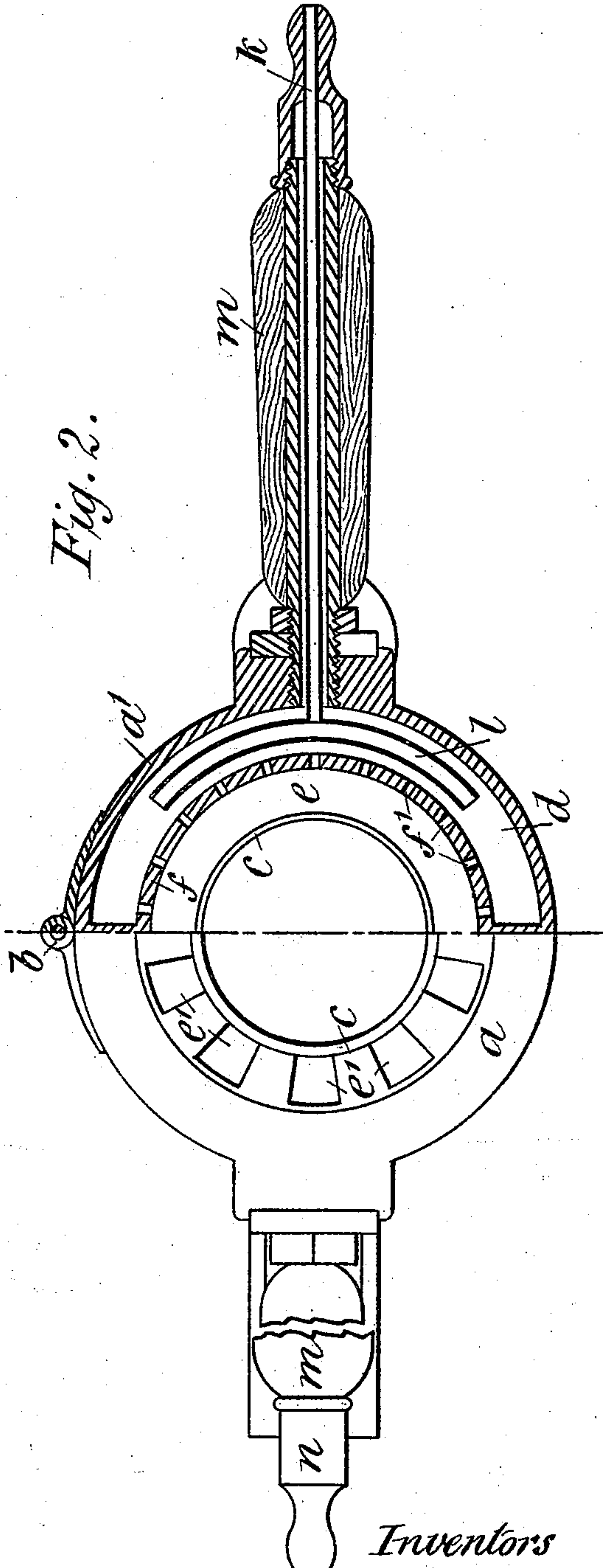
Patented Dec. 31, 1895.



Witnesses

J. J. Rowley

E. R. Phos



Inventors

Jules Gersant

Archibald George Buttifant

by Geo. Hughes atty.

(No Model.)

2 Sheets—Sheet 2.

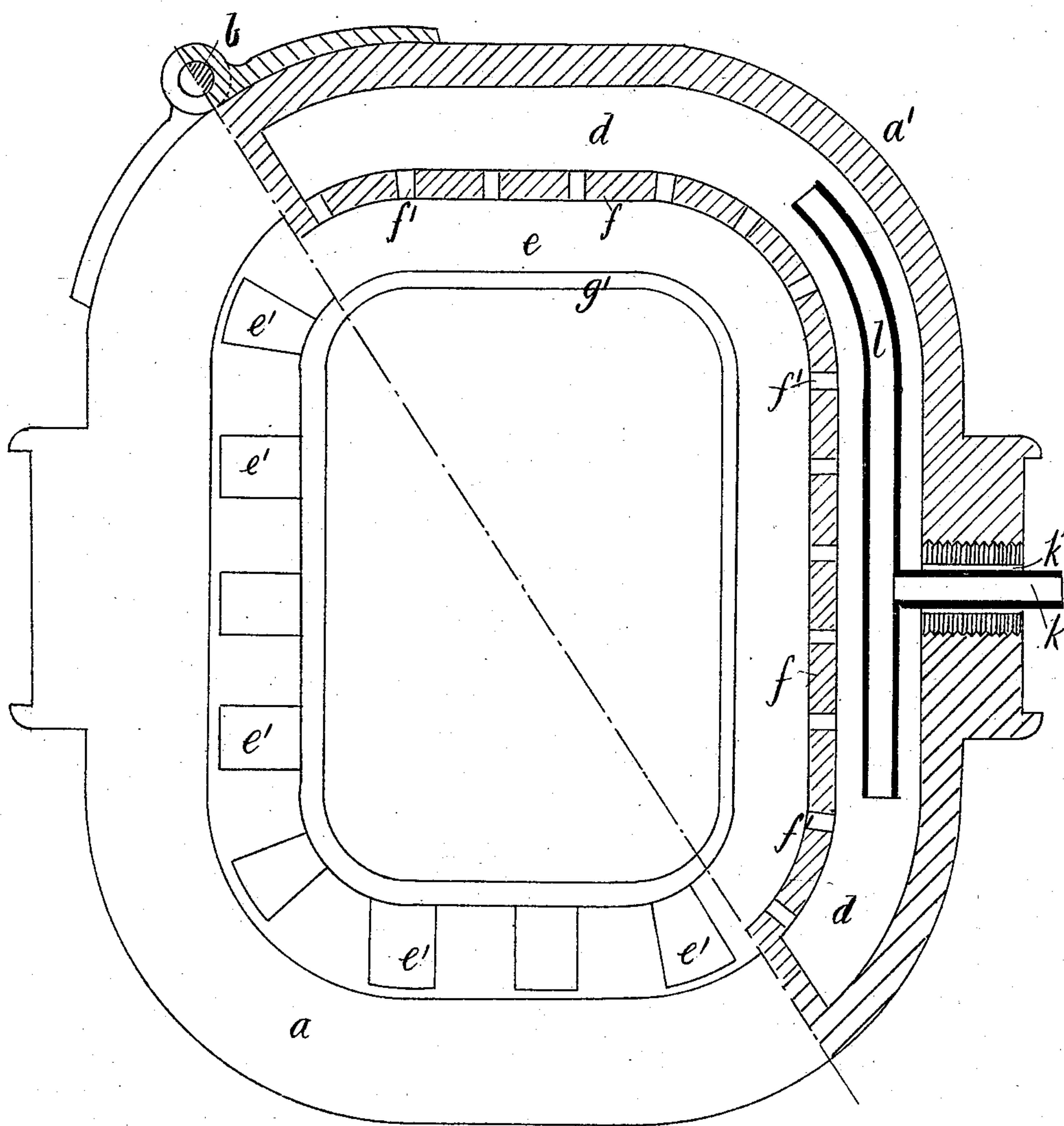
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FIG. 3.



Witnesses:

ER Short

W. H. Hillier

Inventors:

Jules Gersant

Archibald George Buttifant

by Attorney: *Geo. Hughes*

UNITED STATES PATENT OFFICE.

JULES GERSANT, OF DEAL, AND ARCHIBALD GEORGE BUTTIFANT, OF
LONDON, ENGLAND.

MEANS FOR SOLDERING METAL BOXES, &c.

SPECIFICATION forming part of Letters Patent No. 552,117, dated December 31, 1895.

Application filed November 6, 1894. Serial No. 528,104. (No model.) Patented in England September 13, 1894, No. 17,442.

To all whom it may concern:

Be it known that we, JULES GERSANT, engineer, of 71 College Road, Deal, and ARCHIBALD GEORGE BUTTIFANT, accountant, of 8 St. Benets Place, Gracechurch Street, London, E. C., England, subjects of the Queen of Great Britain and Ireland, have invented certain new and useful Improvements in Sealing Metal Boxes, Canisters, Tins, or the Like, of which the following is a specification.

Letters Patent for this invention have been obtained in Great Britain, No. 17,442, dated September 13, 1894.

This invention relates to improvements in the means for hermetically sealing metal boxes, tins, or cans, such as those intended for preserving alimentary substances and other articles, and in the machinery necessary for effecting this result, and relates to such boxes, tins, or cans as are composed of iron, steel, or other plates having a coating or coatings of tin or other fusible metal or material thereupon.

The invention consists essentially in fusing by means of a direct flame a portion of the coating of tin or other fusible metal or material at the junctions of the plates. In this way the tops and bottoms can be joined with the bodies of the boxes, tins, or cans aforesaid so as to form a hermetically-sealed joint without the employment of a soldering-iron or solder or any soldering composition. The operation of hermetically sealing the joints is thus much facilitated and a considerable saving in the cost of production and labor is effected.

To carry out this our invention we use a frame of metal or other suitable composition taking the shape or form of the box, tin or can to be hermetically sealed. This frame consists of two or more parts which are connected by one or more hinge or hinges or otherwise made movable relative to one another, so as to permit of the frame being opened and closed at will whereby the box, tin or can can be inserted or withdrawn as required. These parts of the frame are divided concentrically by a partition into two compartments, the outer of which is intended for the admission of the gas and current of air (which is sent in from a fan or other arrangement, not

shown, for supplying it under suitable pressure) to be used in the process of hermetically sealing. From this outer compartment through a series of holes or apertures formed in the partition or dividing wall the gas and air enter into the second or inner compartment, where the gas and the air combined are ignited and become blowpipe-jets. These blowpipe-jets, passing through spaces or slots suitably formed in the inner inclosing wall, play upon that part of the box, tin, or can where it is to be hermetically sealed, and the intense heat produced at the line of contact by the ring of flame melts the layer or coating of tin or other fusible metal which covers the plate of iron, steel, or other metal of which the box, tin, or can is composed, and thereby causes the same to become hermetically sealed. The other part of the box, tin, or can, not being directly in contact with the flame, will not be heated sufficiently to cause a reaction on the interior air. The box, tin, or can can therefore be closed in the ordinary manner, and afterward hermetically sealed by being subjected to the action of the heat produced by the apparatus herein described.

To more fully describe the construction of this apparatus and its mode of operation, we will refer to the accompanying drawings, upon which—

Figure 1 is a side elevation, partly in section, of an apparatus constructed in accordance with this invention for the purpose of hermetically sealing a round tin, box or can, such as is used for canning meats, milk, or other articles of an alimentary nature. Fig. 2 represents the same apparatus in plan view, also partly in section. Fig. 3 is a view in plan, partly in section, of an apparatus intended for use in hermetically sealing boxes, tins, or cans of a rectangular shape, such as sardine-tins.

Similar letters of reference indicate like parts in each of the figures.

a a' are the two parts of the frame, which, as shown in Figs. 1 and 2, can either be of a circular shape, adapted for the reception of round boxes, tins, or cans, or they can be of a rectangular shape, adapted for the reception of boxes, tins, or cans, such as sardine-tins, as shown in Fig. 3. Other shapes may of

course be made use of, if desired. These two parts $a a'$ may be, as shown in Figs. 2 and 3, hinged together at b , so as to allow them to be opened or closed at will to permit of the insertion or withdrawal of the box, tin, or can C when desired, and so as to afford a secure holding of the box, tin, or can when in position for being hermetically sealed.

d and e are the concentric compartments into which the frame $a a'$ is divided, as aforesaid, f being the partition or dividing-wall, which is pierced with apertures f' , through which the current of gas and air passes, as above mentioned, from one compartment to the other.

The inner compartment or combustion-chamber e is formed with a slot or space g in its inner inclosing wall, which allows the flame to play regularly upon the exact part desired of the box, tin, or can. (See more particularly Fig. 1.)

The one portion a of the frame may be attached to a fixed standard h and the other portion a' carried upon the movable support i , which for facility of operation may be fitted upon a ball-bearing or a caster, as shown.

k is the inlet tube for the gas and k' for the air. The tube k may terminate, as shown, in the curved branch l within the chamber or compartment d of the frame of the apparatus. The tube k' may terminate in the chamber or compartment d of the apparatus. The tube k may conveniently pass through the arm m and terminate at its outer end in a nozzle n . The tube k' may conveniently pass through the arm m , and terminate at its outer end in nozzle n' . An india-rubber or other tube to conduct the gas may be connected to nozzle n and also to nozzle n' to conduct the air. It is preferable to employ tubes for the admission of the gas and air entering each of the parts $a a'$ of the frame of the apparatus. The top or covering of the inner compartment or combustion-chamber e , in which the gas is ignited, is formed with apertures or openings e' therein, in order to admit air to facilitate combustion. In lieu of a gas-flame, it is obvious that a spirit or hydrocarbon oil flame may be employed, if so desired.

In order more particularly to explain the operation of the apparatus and the method of thereby hermetically sealing the boxes, tins, or cans in accordance with this invention, we will describe the process as applied to ordi-

nary boxes, tins, or cans for preserving alimentary substances. The top and bottom of the box, tin, or can, the outer rims or edges having first been wiped with the usual flux, are then fixed to the body of the box, tin, or can by means of the ordinary seaming-machine or other machine of a like character. The current of gas and air having been ignited, the frame $a a'$ is opened and the box, tin, or can placed therein. The frame is then closed, and the top or bottom edge of the box, tin, or can, or other part or parts thereof intended to be hermetically sealed are subjected to the direct action of the heat. The intense heat in contact with the parts of the box, tin, or can intended to be hermetically sealed melts at the point of contact the tin or other fusible coating on the iron, steel, or other plate of which the box, tin, or can is composed, and there hermetically seals the same.

What we claim is—

1. In an apparatus for sealing metallic vessels, the combination, with a frame provided with an outer compartment d and an inner compartment e separated by a partition provided with perforations f , said inner compartment having converging upper and lower portions, a slot g , between the said portions and air holes e' , in its upper portion; of pipes for admitting air and gas into the said outer compartment, the said pipe for gas being passed through the said pipe for air and provided with branches inside the compartment d , substantially as set forth.

2. In an apparatus for sealing metallic vessels, the combination, with a frame formed of two halves hinged together, each half frame being provided with an outer compartment d and an inner compartment e separated by a partition provided with perforations f , said inner compartments having converging upper and lower portions, slots g , and air holes e' in their upper portions; of separate pipes for admitting air and gas into each said outer compartment, a stationary support secured to one half of the frame, and a slidable support secured to the other half of the frame, substantially as set forth.

JULES GERSANT.

ARCHIBALD GEORGE BUTTIFANT.

Witnesses:

E. R. SHORT,
GEO. HUGHES.