No. 724,853.

PATENTED APR. 7, 1903.

C. R. GUTNER.

SOLDERING IRON.

APPLICATION FILED AUG. 13, 1902.

NO MODEL.

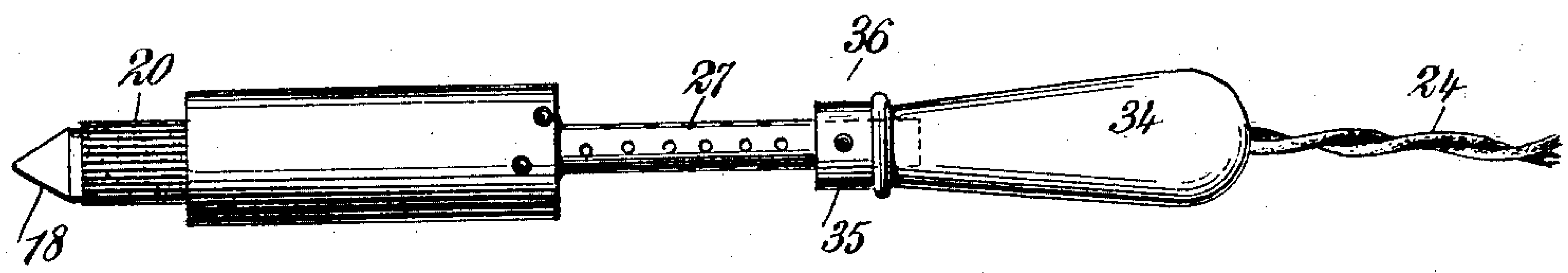

Fig. 1

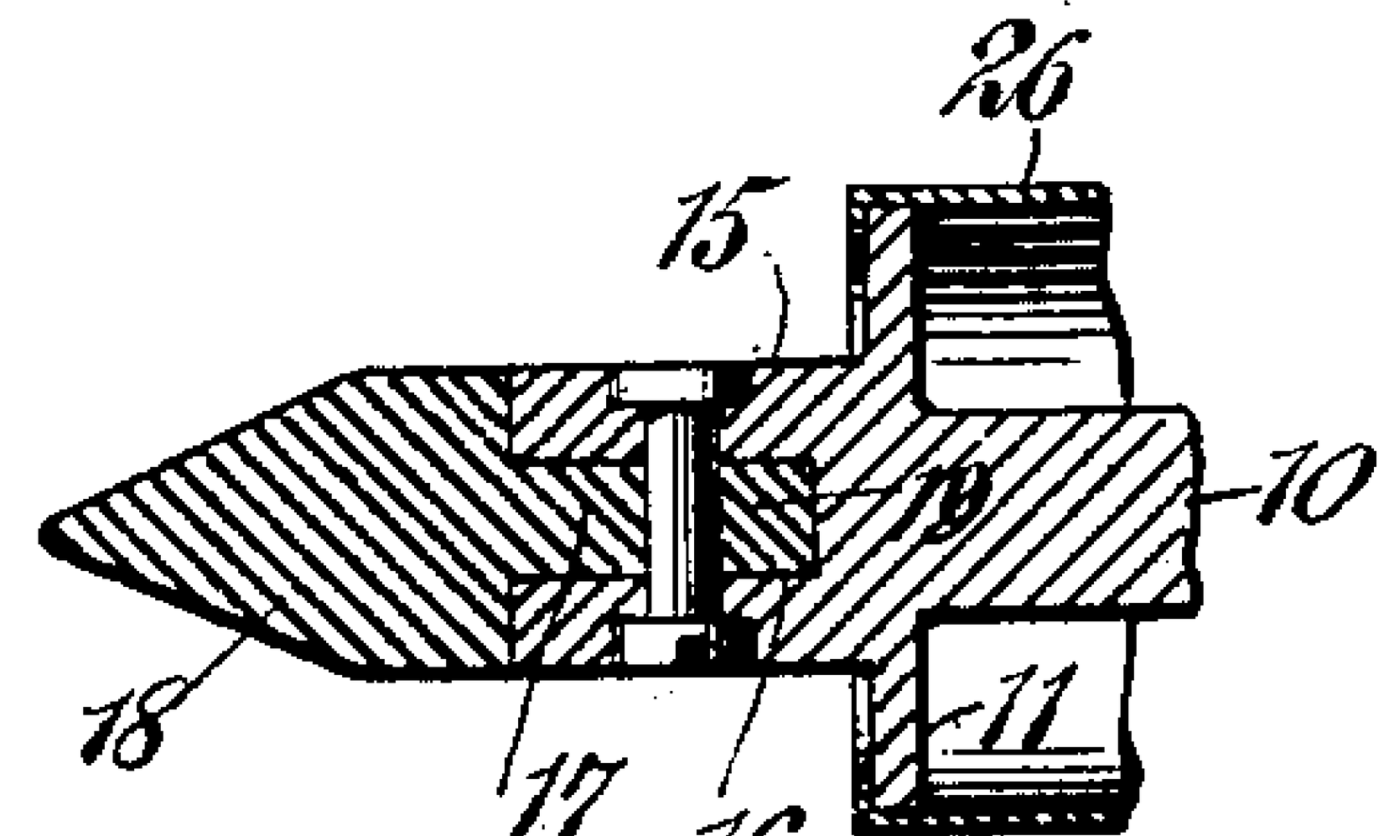

Fig. 6

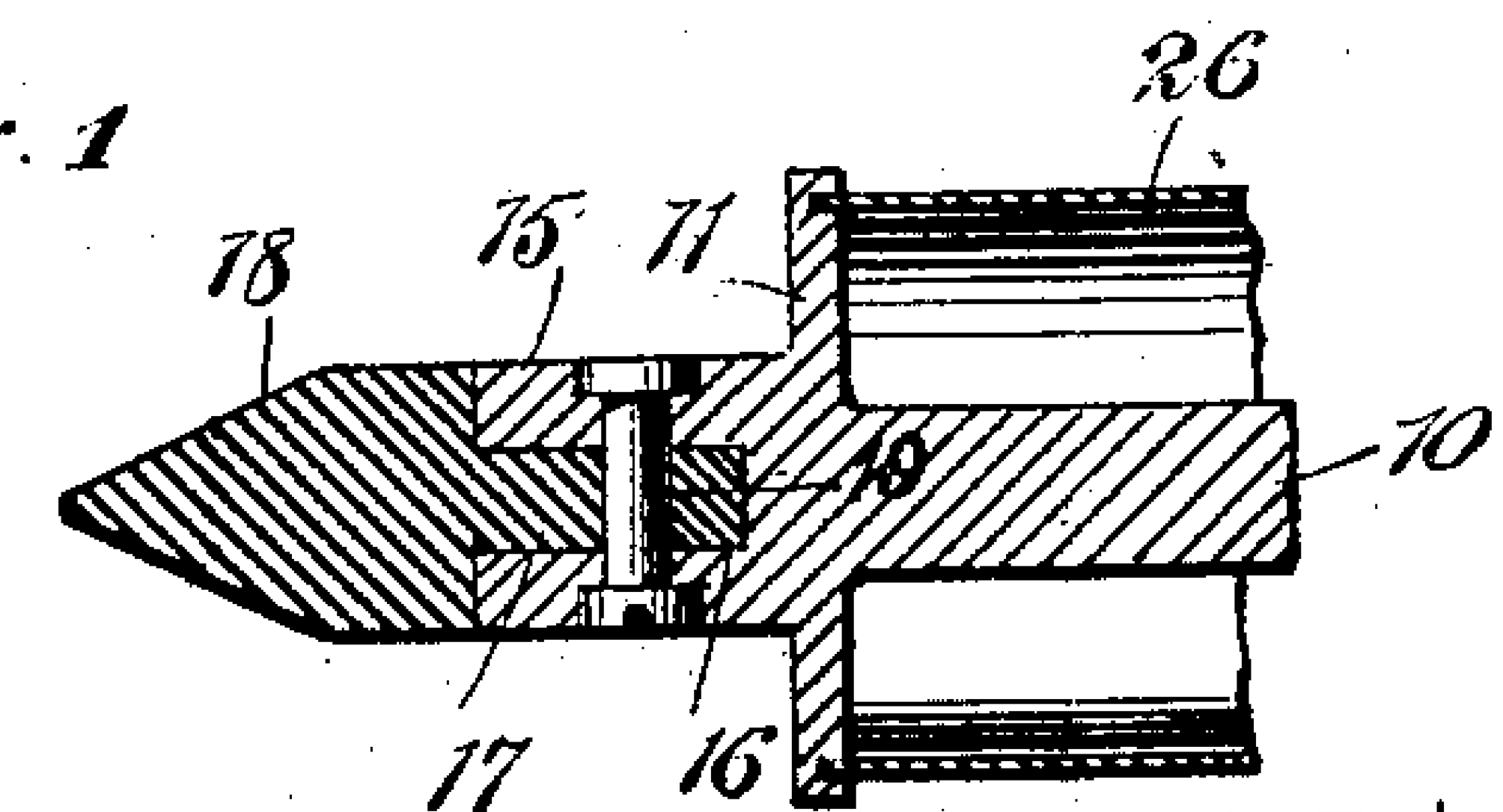

Fig. 7

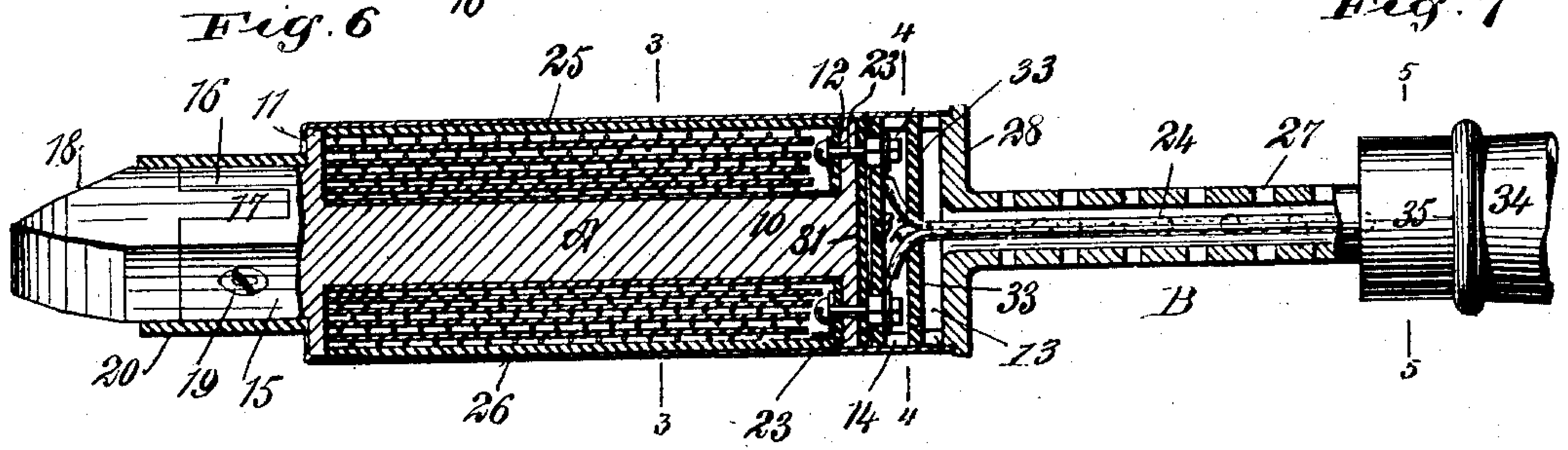

Fig. 2

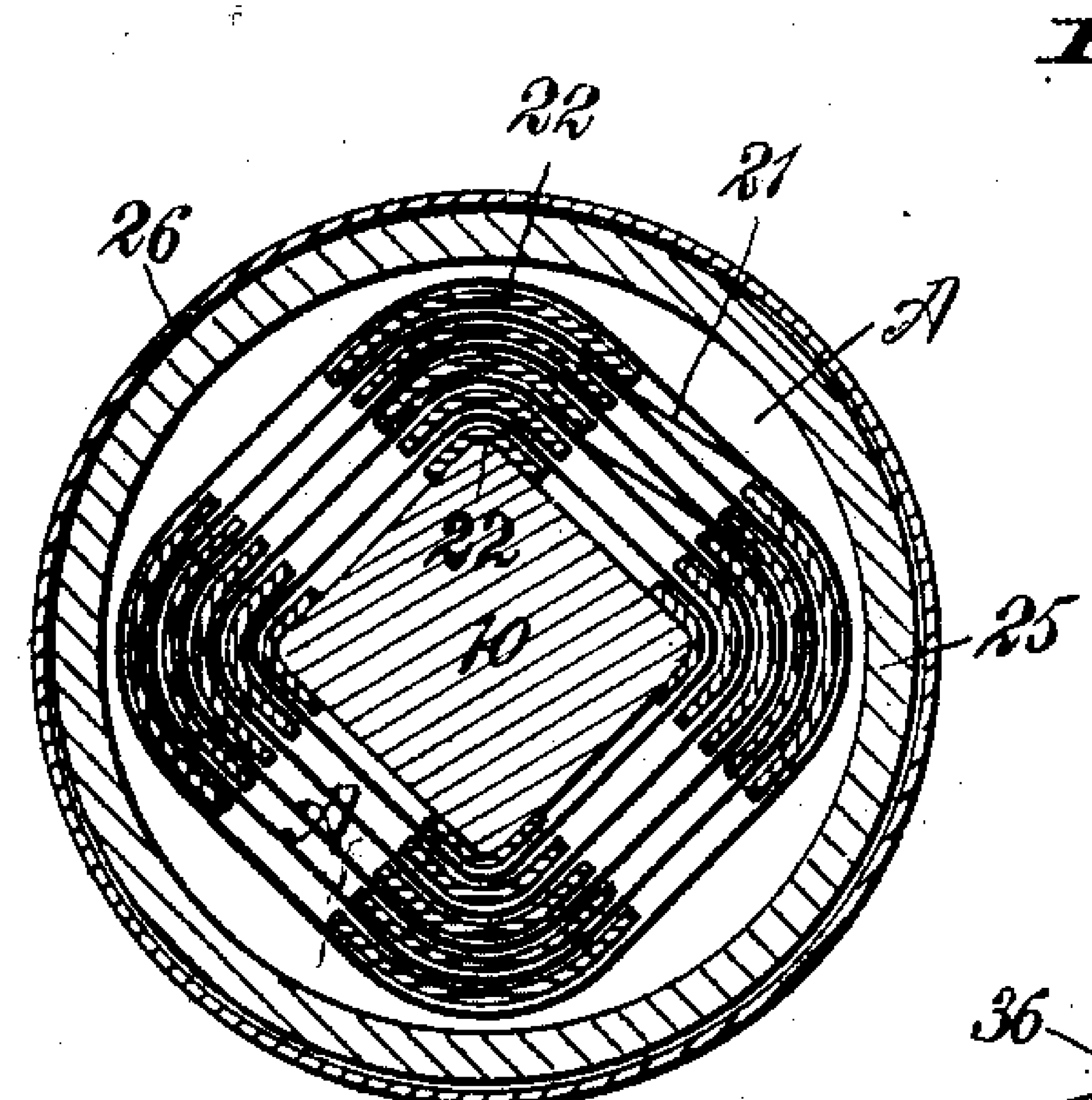

Fig. 3

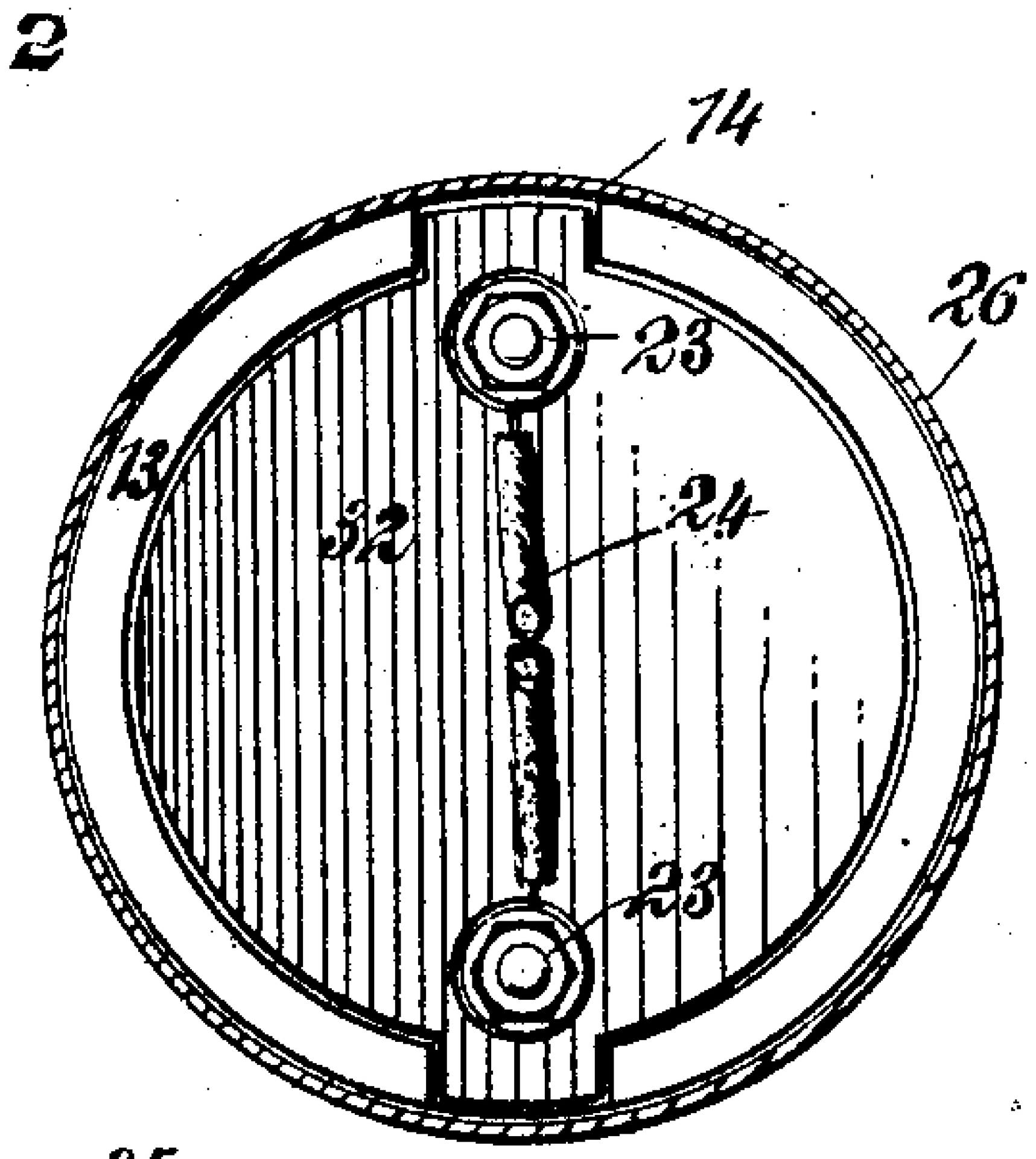

Fig. 4

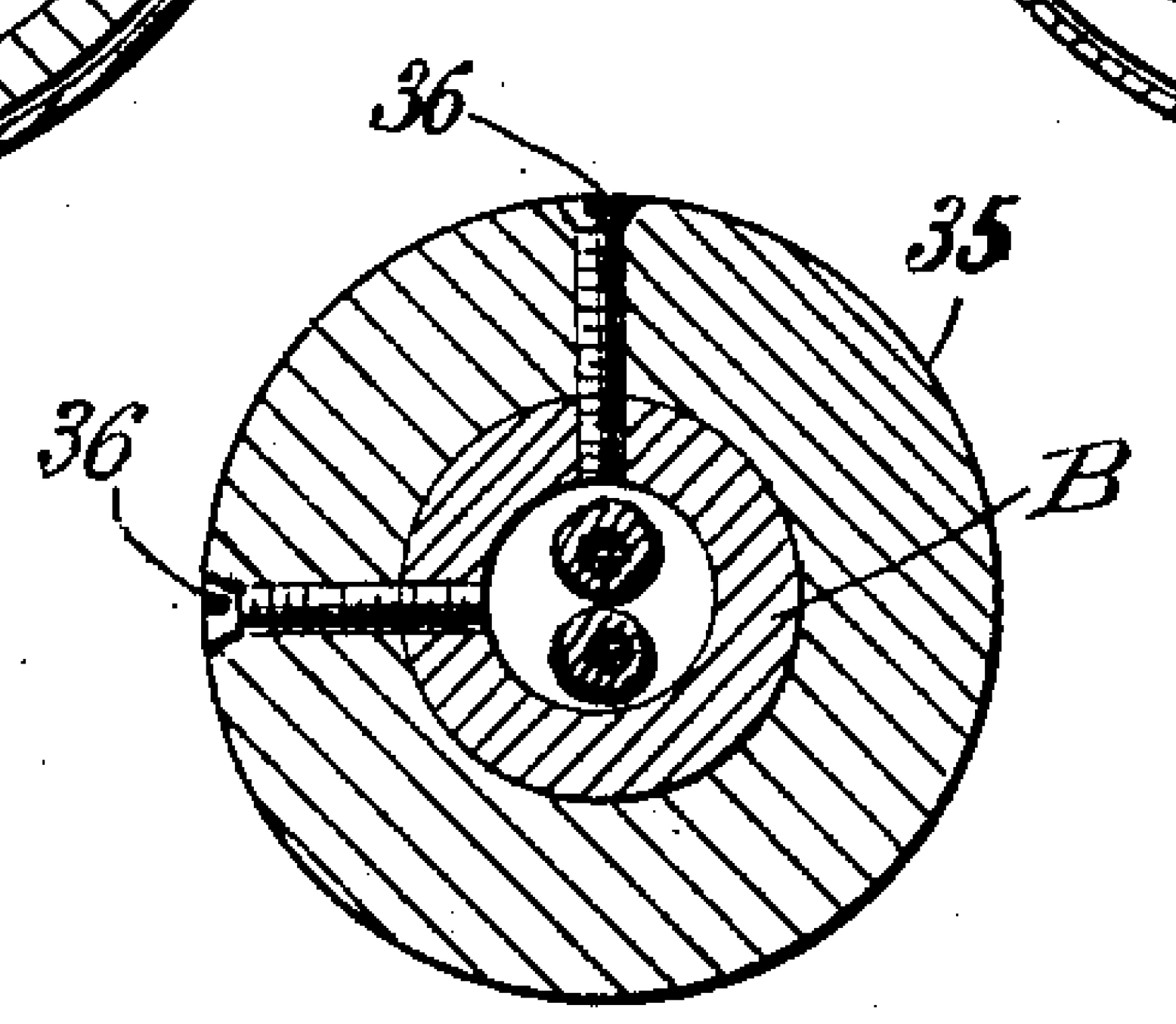

Fig. 5

WITNESSES:

INVENTOR

Charles R. Gutner

BY Munn & Co.

ATTORNEYS.

THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES R. GUTNER, OF BROOKLYN, NEW YORK.

SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 724,853, dated April 7, 1903.

Application filed August 13, 1902. Serial No. 119,508. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. GUTNER, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Soldering-Iron, of which the following is a full, clear, and exact description.

My invention relates to soldering-irons of that type which are electrically heated; and the purpose of the invention is to so construct the iron that the body of the iron, which is in the form of an electric coil, will have an aluminium core, which will render said body exceedingly light, and to provide means whereby the copper or sealing tip is detachably connected to the core of the coil, enabling a short piece of copper to be used and the soldering tip or point economically replaced when unduly worn.

Another purpose of the invention is to so construct a core for the electric coil that acid from the sealing point or tip cannot reach it to scale off the metal and short-circuit the wire wound adjacent to the core.

Another purpose of the invention is to provide a mica insulation between the layers of the coil and to provide for a supply of air to the coil and means for connecting the iron to the handle without interfering with the wires leading from a source of electric supply and extending through the handle to the coil.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improved soldering-iron. Fig. 2 is a longitudinal section through the said iron, the soldering or smoothing tip or point being shown in perspective and a portion of the handle in side elevation. Fig. 3 is a transverse section through the body of the soldering-iron, the section being drawn on an enlarged scale and taken substantially on the line 3 3 of Fig. 2. Fig. 4 is a transverse section drawn on a similar scale to the section shown in Fig. 3, the section in Fig. 4 being taken substantially on the line 4 4 of Fig. 2. Fig. 5 is an enlarged transverse section through the handle, taken practically on the line 5 5 of Fig. 2. Fig. 6 is a detail longitudinal section through the forward portion of the body and the soldering or smoothing point or tip, illustrating the manner in which the two parts are connected and one way in which the casing for the body is attached to the forward flange or disk section of the body; and Fig. 7 is a view similar to Fig. 6, showing another way in which the casing for the body may be attached to the flange or disk of the core of the body.

The body of the soldering-iron consists of a core A. This core in the interest of lightness is made of aluminium and comprises a central longitudinal bar-section 10 more or less rectangular in cross-section, a forward disk section 11, and an inner or rear disk section 12, the disk section 12 being provided with a marginal flange 13, extending inward from the disk, and the said flange is provided, preferably, with opposing recesses 14 therein, as is shown in Figs. 2 and 4.

A bar member 15 extends from the outer or forward disk 11 of the core, being preferably integral with said forward disk 11, and in this bar member a longitudinal slot 16 is produced, into which slot a shank 17, forming an integral portion of a soldering tip or point 18, of copper, is introduced and secured, preferably by means of a bolt 19, as is shown in Figs. 2, 6, and 7, so that the only copper necessary in the construction of the iron is that which constitutes the tip or point 18, and this tip or point when it becomes unduly worn may be readily detached from the body and a perfect tip or point substituted instead.

In order to keep in as much heat as possible at the bar extension of the body and at the soldering or smoothing tip or point 18, a portion of the tip or point and the bar extension 15, in which it is fitted, are incased in a removable sleeve 20, of asbestos or other non-conductor of heat.

The body of the soldering-iron is in the shape of an electric coil, and to that end wire 21 is wound around the bar member 10 of the

core between the flanges or disks 11 and 12 in any desired number of successive layers, as is shown in Figs. 2 and 3, and the layers of wire 21 are separated from the bar member 10 of the core and from each other by non-conducting strips 22 of mica.

The wiring of the coil is connected with binding-posts 23, which pass through the rear disk 12, a suitable non-conducting strip 31 of mica being located at the inner side face of the said disk 12, as is shown in Fig. 2. These binding-posts 23 are connected with wires 24, which wires are adapted for attachment to any source of electric supply, and the said wires are covered with an insulating material and are preferably brought close together adjacent to the binding-posts and are wrapped where they are brought in engagement with strips of asbestos. Over the asbestos strips the ordinary sealing-tape is placed, so that the wires are not likely to become uncovered when the shank B is operated, which shank is to be hereinafter described and constitutes a continuation of the body just described.

The layers of wire 21 are surrounded by an asbestos jacket 25, and outside of said asbestos jacket a metal casing 26 is placed, which casing constitutes the outer portion of the body of the iron, and the forward edge of the jacket 26 may be carried over the outer disk 11 of the core, as is shown in Figs. 2 and 6, or may be introduced into an annular recess produced in the inner surface of the said disk 11, as is shown in Fig. 7.

The shank B, heretofore referred to, is tubular and is also made of aluminium for lightness and is provided with a series of apertures 27 for the admission of air to the wires 24, which pass through the said shank, and the tubular section of the shank is provided with a disk head 28 at its forward end. The said disk-head 28 constitutes practically the inner end portion of the coil-body, as is shown in Fig. 2. Between the head 28 and the rear disk section 12 of the core A an asbestos washer 32 is located, which is cut out to permit the binding-posts 23 to extend through, and said washer has marginal projections to enter the recesses or openings 14 in the flange 13 of the said rear disk section 12 of the core A, and a second asbestos washer 33 is employed through which the wires 24 pass. This second washer 33 is preferably carried close to the outer ends of the binding-posts 23 and has projections which enter openings or recesses 14 in the said flange 13, as is also shown in Fig. 2. The body-casing 26 is secured to the exterior portion of the head 28 of the tubular shank B and to the flange 13 of the rear disk section 12 of the core by means of suitable screws, as is shown in Fig. 1, although other suitable fastening devices may be employed.

A tubular handle 34, of aluminium, receives the inner end of the tubular shank B, and the wires 24 pass out through the handle 34, and the ferrule portion 35 of the handle is provided with screws 36, located at angles to one another, as is shown in Fig. 5. These screws enter suitable openings in the tubular shank B and serve to hold the shank to the handle without the danger of the said screws chafing or otherwise interfering with the wires 24, passing through the shank.

An iron constructed as above described is made with a minimum amount of copper, and the construction of the core A, which is of aluminium, serves to prevent scaling should acid gain access thereto, thus preventing the first layers of wire from becoming short-circuited.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an electrically-heated soldering-iron, a coil consisting of an aluminium core comprising a bar-section and integral disk sections at its ends, wiring in layers located around the body-section of the core between the end disks, mica strips separating the wire layers from the core and from each other, an asbestos jacket surrounding the wiring, and a metal casing surrounding the said jacket, an extension from the outer disk of the core having a recess therein, a soldering or smoothing tip of copper having a tongue entering the said recess, a locking-bolt for detachably connecting the tip and the said extension, a tubular apertured shank extending from the rear portion of the coil, binding-posts extending through the inner core-disk, insulating-disks through which the said binding-posts pass, an asbestos disk located between the said apertured shank and the binding-posts, engaging with the latter, and electric conducting-wires passed through the said shank and through the said asbestos disk to the said binding-posts, for the purpose described.

2. In an electrically-heated soldering-iron, a coil consisting of an aluminium core comprising a bar-section and integral disk sections at its ends, wiring in layers located around the body-section of the core between the end disks, mica strips separating the wire layers from the core and from each other, an asbestos jacket surrounding the wiring, and a metal casing surrounding the said jacket, an extension from the outer disk of the core having a recess therein, a soldering or smoothing tip of copper having a tongue entering the said recess, a locking-bolt for detachably connecting the tip and the said extension, a tubular apertured shank extending from the rear portion of the coil, binding-posts extending through the inner core-disk, insulating-disks through which the said binding-posts pass, an asbestos disk located between the said apertured shank and

the binding-posts, engaging with the latter, and electric conducting-wires passed through the said shank and through the said asbestos disk to the binding-posts, an asbestos jacket for the extension from the core and adjacent portion of the soldering-tip, which jacket is removable, a tubular handle connected with the shank, through which handle the conducting-wires pass, and set-screws for detachably connecting the said handle with the said shank, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES R. GUTNER.

Witnesses:

J. FRED. ACKER,

EVERARD BOLTON MARSHALL.