

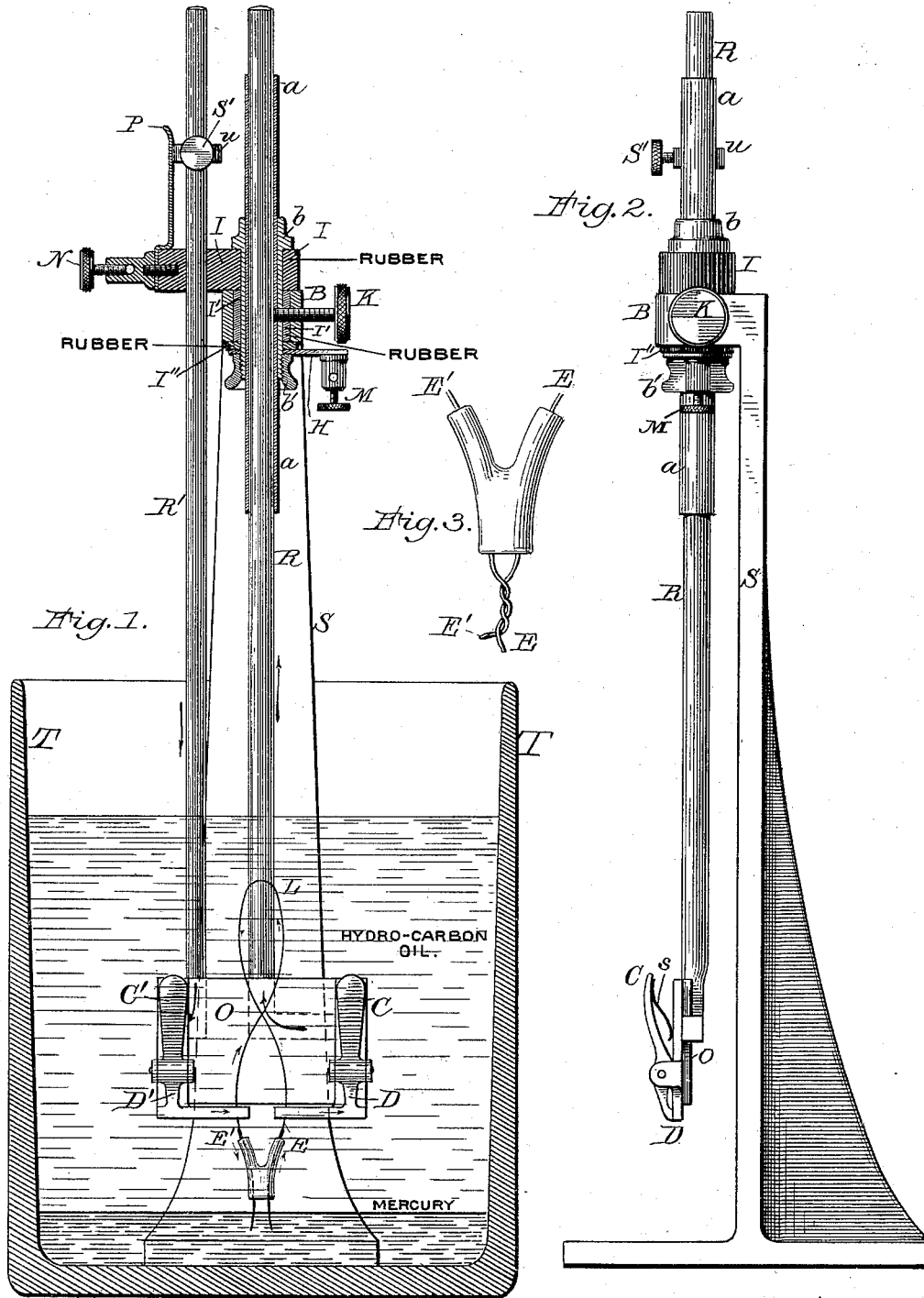
(No Model.)

J. W. PACKARD.

MANUFACTURE OF FILAMENTS FOR ELECTRIC INCANDESCENT LAMPS.

No. 383,484.

Patented May 29, 1888.



Attest:
Howell Barth
Philip F. Lamer

Inventor:
James Ward Packard
by H. A. R. A. Smith

UNITED STATES PATENT OFFICE.

JAMES WARD PACKARD, OF NEW YORK, N. Y.

MANUFACTURE OF FILAMENTS FOR ELECTRIC INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 383,484, dated May 29, 1888.

Application filed April 6, 1888. Serial No. 269,812. (No model.)

To all whom it may concern:

Be it known that I, JAMES WARD PACKARD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Incandescent - Electric - Lamp Manufacture; 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 which it appertains to make and use the same.

My invention relates to certain apparatus employed in the manufacture of incandescent electric lamps, hereinafter to be described and claimed.

In the drawings, Figure 1 shows a front view and partial section of the preferred form of my apparatus. Fig. 2 is a side view of the same, the tank being removed. Fig. 3 is a modification.

In the manufacture of incandescent electric lamps it is customary to fuse or cement the carbon strip therein used to the platinum electrodes of the lamp by immersing the said carbon strip and electrodes in a suitable carbon solution—such as hydrocarbon oil—and passing an electric current through them. The deposition of carbon at the joint is thereby produced and the connection between the electrodes and the carbon strip made complete and permanent. It is evident that it is not desirable to have the entire current to pass through the entire loop of the carbon strip. To avoid this it has been customary to place a bar of low resistance across the loop near the electrodes. In cases where a strip of small cross-section, to be used in high-resistance lamps, is being operated upon it frequently bends and breaks under the weight of the short-circuiting bar. To avoid the above-mentioned difficulty the arrangement described in Patent No. 353,158, granted to A. L. Reinmann November 23, 1886, was devised. While this avoids the difficulty, it is less effective than the original method, because the fusing or cementing current does not pass through the ends of the carbon strips which are to be cemented to the electrodes.

To avoid both the objections to the above-described methods I have devised the apparatus illustrated.

T is the tank containing the hydrocarbon oil, and also a certain quantity of mercury, as clearly shown in Fig. 1.

S is a standard having the bracket B.

O is a block of insulating material, to which the clamps of any suitable conducting material, and the rods R R', also of conducting material, are attached. The clamps, as clearly shown in Figs. 1 and 2, consist of the parts D D', attached to the block O and connected, respectively, by suitable conducting-strips with the rods R R', together with the hinged parts C C', controlled by the springs s s'. Within the bracket B is the collar I', of rubber or other suitable insulating material. The parts I and I'', also of insulating material, completely insulate the sleeve a and the parts b b', surrounding the rod R, from the bracket B. The parts a b b' are of conducting material, and, being in contact with the bracket H, supporting the binding-post M, they afford electric connection from the said binding-post to and through the rod R to the clamp C.

Upon the bracket I, which is of insulating material, is supported the binding-post N and the spring contact-piece P. When the metallic collar U, which is held adjustably upon the rod R' by the set-screw S', comes in contact with the spring-piece P, metallic connection is completed between the binding-post N and the clamp C'. The carbon strip formed into a loop, L, has one of its ends held by the clamp C, the other by the clamp C'. The platinum electrodes E E' are attached mechanically to the ends of the carbon strip, as shown in Fig. 1.

The operation of my device is as follows: The carbon strip L is held by the clamps C C' as close as possible to the ends which are to be cemented to the electrodes E E'. The clamp-holding frame, consisting of the rods R R' and the insulating-block O, is then pushed downward through its bearings in the insulating-standard S until the other extremities of the platinum electrodes touch the mercury at the bottom of the tank. The collar U is so adjusted upon the rod R' that, simultaneously with the immersion of the ends of the electrodes in the mercury, it touches the spring contact-piece P. Consequently the current from any suitable external source enters through

the binding-post N, through the rod R', as indicated by the arrow, through the clamp C, through a small portion of the carbon strip at one of its extremities, through the platinum electrode E', the mercury, the other electrode, E, and out through a small portion of the carbon strip at its other extremity by way of the clamp C, the rod R, its surrounding sleeve, and the bracket H, to the binding-post M. Thus the fusing or cementing current passes directly through the ends of the carbon strip and the ends of the platinum electrodes which are to be cemented together, producing that intimate contact between the two surfaces necessary to produce the best joint. At the same time the loop L of the carbon strip is free from any weight which might break or bend it, and is subjected to the influence of a small fraction of the current, just sufficient in quantity to heat it to the point of cleansing it from all moisture, grease, and other impurities.

If desirable, the mercury may be dispensed with and the platinum electrodes E E' short-circuited by twisting them together, as shown in Fig. 3, or by any other method desired.

Another advantage of my apparatus is that the circuit is not completed for the passage of the current until the electrodes are short-circuited by their immersion in the mercury, and consequently all danger of igniting the hydrocarbon vapor by the passage of the current through the high resistance offered by the carbon loop L before its immersion is avoided.

No claim is here made to the method herein described. Such method will be claimed in a separate application filed by me of even date herewith.

Having therefore described my invention both in essence and detail, what I claim as new, and desire to protect by Letters Patent, is—

1. The combination of the insulating-standard having suitable binding-posts upon it, the spring contact-piece connected to one binding-post, and the clamp-holding frame adjustable upon the standard and having clamps insulated one from the other upon it, one of said clamps having continuous electrical connection with one binding post, while the other clamp is electrically connected with the second bind-

ing-post through the spring contact-piece only when the clamp-holding frame is at one position of its adjustment, substantially as described.

2. The combination of the receptacle containing mercury and a solution of carbon, the insulating-standard, the clamps and clamp-holding frame adjustable upon said standard, and suitable contact-pieces upon the standard and clamp-holding frame, contact between which said pieces can only occur when the ends of the electrodes held in the clamps are immersed in the mercury and thereby short-circuited, substantially as described.

3. The combination of the insulating-standard having the clamp-holding frame adjustable upon it, and having also suitable contact-pieces connected to an external electric circuit, together with the clamps insulated one from the other upon the clamp-holding frame, and the electrical connections upon the clamp-holding frame, by which the internal circuit from one contact-piece upon the standard through the clamps and the object held by them to the second contact-piece upon the standard can be complete only when the clamp-holding frame is between certain positions of its adjustment, substantially as described.

4. The combination of an insulating-standard, a frame bearing clamps of suitable conducting material insulated one from the other, and a receptacle for liquids, the said frame and receptacle being relatively adjustable one to the other, together with suitable contact-pieces on the standard and on the frame, between which pieces contact can occur, and the clamps and the object held by them be thereby brought in circuit with an external source of electricity only when the clamp-holding frame and the liquid-receptacle are between such positions of their relative adjustment that the clamps are immersed in the liquid, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES WARD PACKARD.

Witnesses:

A. P. SMITH,
JOHN J. ENNIS.