T. E. MURRAY.

METHOD OF MAKING ELECTRIC FUSES.

APPLICATION FILED NOV. 20, 1917.

1,286,063. Patented Nov. 26, 1918.

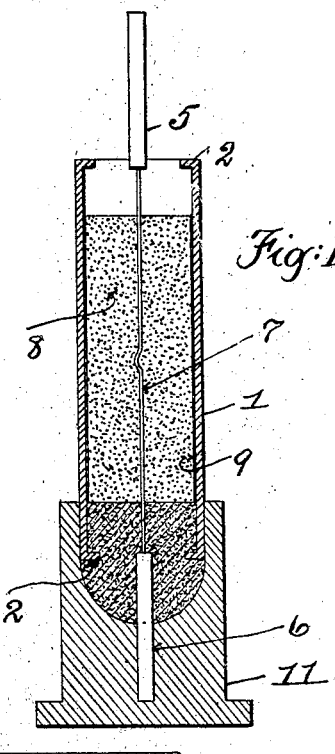

Fig: 1.

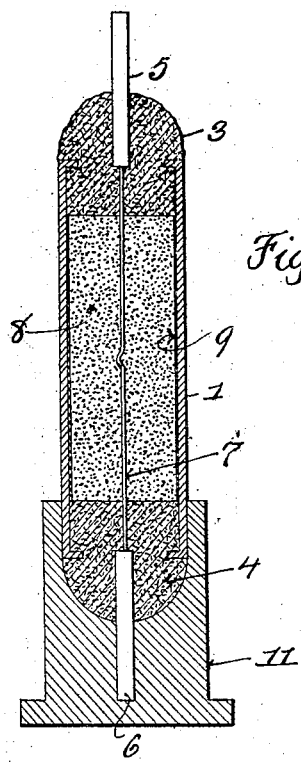

Fig: 2.

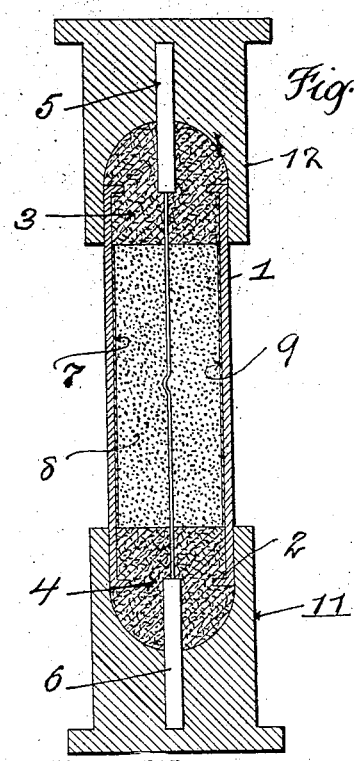

Fig: 3.

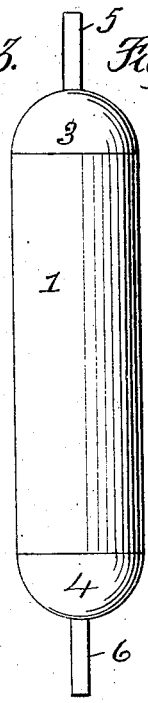

Fig: 4.

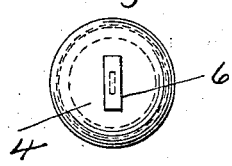

Fig: 5.

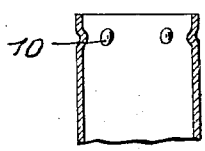

Fig: 6.

INVENTOR

Thomas E. Murray

BY

Lawrence Benjamin

his ATTORNEY

UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF NEW YORK, N. Y.

METHOD OF MAKING ELECTRIC FUSES.

1,286,063. Specification of Letters Patent. Patented Nov. 26, 1918.

Application filed November 20, 1917. Serial No. 202,949.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Methods of Making Electric Fuses, of which the following is a specification.

The invention is a method of making an electric fuse of the type more particularly hereinafter described.

In the accompanying drawings—

Figures 1, 2 and 3 illustrate respectively the different steps of my process, showing the molding apparatus in vertical section. Fig. 4 is an elevation of the fuse case. Fig. 5 is an end view thereof, and Fig. 6 shows a modification of the means for attaching the middle portion of the fuse case to the plaster of Paris ends thereof.

Similar numbers of reference indicate like parts.

The fuse case and fuse which are made by my process comprise a hollow tubular body portion 1, having at its ends inturned flanges 2. The extremities of the body portion 1 are closed by plaster of Paris plugs 3, 4, in which the flanges 2 are embedded. Metal rods 5, 6, which form the fuse terminals, are embedded in the end plugs 3, 4. Between said terminals extends the fuse strip 7, passing through the plugs 3, 4 and through a mass 8 of comminuted refractory material, such as dry plaster, which fills the space within the tubular body portion 1 and between the plugs 3, 4. If desired, the tubular body portion 1 may be provided with a paper lining 9.

Instead of making flanges 2 at the ends of the tubular body portion 1, I may form struck up projections 10 on the inner side of said body portion near the extremities thereof, which projections engage with the plaster of Paris plugs.

I carry out my method of making this fuse in the following manner:

Having prepared a mold 11, having a socket in its upper face conforming to the shape of the plug 4, and below said socket a recess conforming to the shape of the terminal 6, I first insert into said socket the tubular body portion 1 for a distance about one-half the depth of said socket. I also insert the terminal 6 in the recess below said socket. The fuse strip carrying the terminal 5 at its upper end should be sufficiently rigid then to stand up in vertical position. Into the open upper extremity of the tubular body portion 1, I pour liquid plaster of Paris, until the socket in the mold 11 is filled up to about the level of the top of the mold, as shown in Fig. 1. In the plug 4 so formed are embedded the flanges on the lower end of tube 1, a portion of the terminal 6 and a portion of the fuse strip 7. Preferably after the plaster plug 4 has become hard, I fill into the tube 1 the comminuted mass of refractory insulating material—which may be dry plaster—shown at 8, to a level about the same distance from the upper flanges of tube 1 as the upper face of plug 4 is from the lower flanges of said tube. The resulting condition of the parts is then as shown in Fig. 1. I then put into the open end of tube 1 above the comminuted material 8 a quantity of plaster of Paris in a viscous or moldable state, to form roughly a plug of about the same length as the mold plug 4. The convex top or outer end of this plug, as shown in Fig. 2, may be roughly shaped by hand. In this plug is embedded the flanges at the upper extremity of tube 1, a portion of the fuse strip 7 and a portion of the upper terminal 5. The fuse is electrically and mechanically complete in this condition, and, if desired, may be removed from the mold 11, and put into use; but in order to obtain a better finish, I prefer to apply to the roughly shaped body of plaster now forming the plug 3 and while said plaster is soft, and hence before it has set, another mold 12, Fig. 3, similar in all respects to the mold 11, so that when said mold is pressed downwardly, the exposed portion of the viscous plaster assumes the same shape as the exposed or end portion of the plug 4, so that both ends of the fuse are nicely rounded. After all the plaster has firmly set, the molds 11 and 12 are taken away, and the fuse appears as in Fig. 4, ready for use.

It is to be especially noted that the joints between fuse strip and terminal rods are completely embedded in the plaster end plugs, and so protected; also that the plugs extend beyond the extremities of the casing, thus guarding said extremities and preventing any possible short-circuiting of the fuse, as may happen when the casing is closed or covered at its ends by metallic caps: so that the casing and plugs are united simply by inwardly turned projections on the casing,

such as the flanges 2 or struck up projections 10, and also that the casing ends register in outside diameter with the shoulders on the plugs, so that the exterior of the fuse presents a smooth finish.

I claim:

1. The method of making a fuse of the construction set forth, which consists in, first, inserting into a suitable socket in a mold and for a predetermined distance the tubular body portion of said fuse, and also inserting into a recess in the bottom of said socket a fuse terminal and the fuse connected thereto, the said fuse carrying at its upper end the opposite fuse terminal; second, pouring liquid plaster into the upper open end of said body portion until said plaster rises to a sufficient height in said socket to embed a portion of said tubular body, and to cover the inner end of the fuse terminal therein; third, packing comminuted refractory material into said tubular portion to partly fill the same, and fourth, introducing plaster in a viscous state into the unfilled portion of said tubular body to fill said body, and to extend beyond the same so as to embed the end of the fuse strip and a portion of the upper fuse terminal.

2. The method as in claim 1, with the further step of applying to the upper end of said tubular body a mold having a socket and recess conforming to the shape of the first-named mold, and pressing the same down upon the protruding mass of viscous plaster to mold said body of plaster into the same shape as the body of plaster at the opposite end of said fuse.

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

THOMAS E. MURRAY.

Witnesses:

GERTRUDE T. PORTER,

MAY T. MCGARRY.