June 28, 1932. J. F. OSBORNE 1,864,666

ELECTRIC MOLD

Filed April 4, 1930

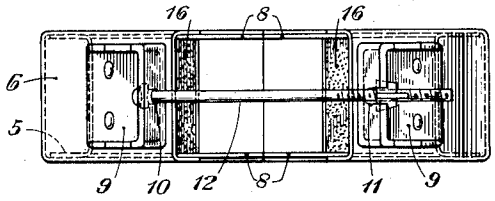

Fig. 1

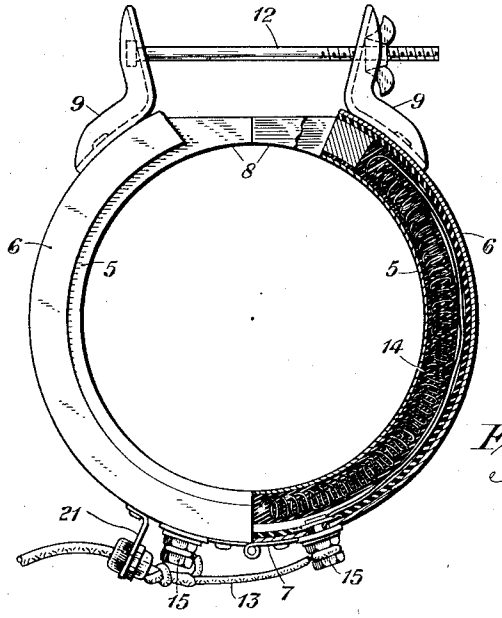

Fig. 2

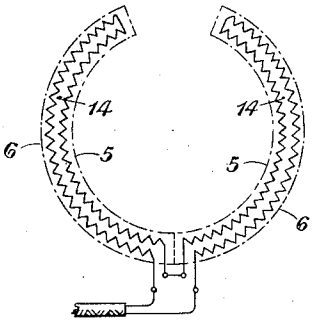

Fig. 5

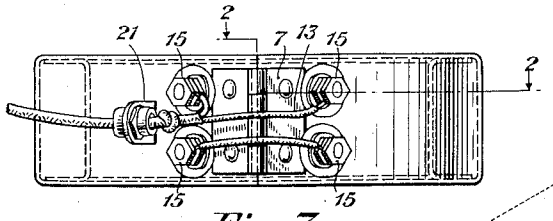

Fig. 3

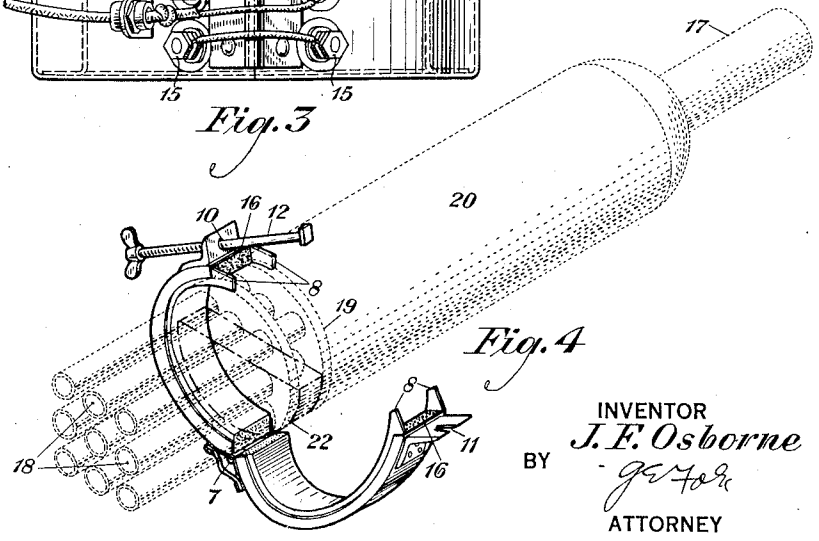

Fig. 4

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UNITED STATES PATENT OFFICE

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ELECTRIC MOLD

Application filed April 4, 1930. Serial No. 441,616.

This invention relates to molds, and more particularly to electrically heated molds.

One of the objects of this invention is to provide an electric mold to form joints between cable ends.

Another object consists in the provision of a comparatively simple and inexpensive device of the above character.

A further object consists in the provision of a mold which will present minimum hazard to workmen in connection with its use.

The novel features which are considered characteristic of this invention are set forth with particularity in the appended claims. The invention itself, both as to its organization and method of operation, together with other objects and advantages thereof, will be further explained in the following detailed description having reference to the accompanying drawing which consists of the following figures:

Figure 1 is a top plan view of the improved device.

Fig. 2 is a side elevation thereof, having a section taken on the line 2—2 of Fig. 3.

Fig. 3 is a bottom view of Fig. 2.

Fig. 4 is a perspective view of the mold showing it in semi-applied position.

Fig. 5 is a diagram representative of a circuit which may be used with the device.

The improved device is illustrated in the drawing as an annulus having two substantially semi-circular portions each provided with a heating unit. These units each comprise an inner plate 5 and an outer plate 6, and said plates may be substantially U-shaped in cross-section. The plates 5 and 6 of each unit are oppositely positioned with respect to each other and the flanges of the plates 5 fit within the flanges of the plates 6. The plates 5 and 6 of each unit are secured together, and provide a casing within the chamber of which suitable insulating material is inserted, as will be presently described.

The end of one semi-circular unit is suitably hinged at 7 to an end of the other unit. At the free ends of the semi-circular units each of the inner plates 5 is provided with parallel extensions 8 and the outer plates 6 are provided with angular brackets 9. The brackets are positioned on the outer surface of the plates 6 and secured by one of their legs to said plates. The other legs of the brackets extend upwardly from said plates in oppositely inclined directions with respect to each other, and one leg is provided with an opening 10, while the other leg is provided with a slot 11. The opening and slot are adapted to receive a bolt 12, equipped with a head and a wing nut, which serve to clamp the free ends of the semi-circular elements together. When so clamped the parallel extensions 8 on one of the inner plates abut coinciding extensions of the opposite plate, and an opening is provided between the parallel abutting extensions through which molten solder compound is introduced to form a joint about the cable ends, as will be presently described.

The semi-circular portions are each provided with a pair of heating elements arranged in parallel positions.

These elements may be of well known type for heating where the coiled wire of resistance for carrying the current used for heating purposes exhibits a high resistance per unit of length. The current for heating the resistance units may be either direct or alternating, and flows from its source and returns over conductors (Fig. 5) through the coiled resistance elements 14, causing these elements to be heated in a manner well understood. Terminals 15 for the conductors may be affixed to the plates 6 in any suitable manner, and a bracket 21 carrying a bushing may be also affixed to one of the plates 6 to support a cable carrying said conductors.

The material 16 which is positioned in the chambers between the plates 5 and 6 is a highly dielectric substance, and is so molded about the resistance elements 14 as to maintain them properly separated from each other so that they cannot become displaced and cause any short circuit between each other or the casing. The molded material as stated covers the resistance coils 14, and a relatively thin layer of the material is provided between the coils and the inner plates 5 to permit heat generated by the coils to

be transmitted therethrough. A relatively thick layer of the molded material is applied to the ends and to the inner sides of the plates, and a sheet of asbestos may be applied to the inner top portions of the plates to provide insulation to restrict the escape of heat generated by the coils outwardly from the casing. A space may be provided between the encased coils and the asbestos lining for tubing of any suitable character carrying conductors connected to the ends of the coils.

To show an example of one use of the improved device, it is illustrated in Fig. 4 in the operation of being applied to form a joint between a large cable 17 and a series of small cables 18. The conductors within these cables will be considered as being properly spliced together, and the smaller cables extend through perforations in a disk 19, which is applied to the end of the sleeve 20. A second disk 22 having perforations through which the smaller cables extend is spaced a suitable distance from the disk 19 to form a joint at this point. The disks may be composed of lead or other suitable material, and may be made in sections if desired so that they may be removed after the joint is completed. Fibre or muslin filling may be placed in back of the inner disk to prevent molten solder from running into the sleeve. The distance between the disks is slightly less than the thickness of the mold so that it completely covers the space between the disks. The improved device is positioned by bringing the two semi-circular portions together over the space between the two disks, and the free ends of the device are clamped together so that they assume a position as indicated in Fig. 2. When the mold is in position current is applied to heat the resistance coils to the desired degree of temperature. The molten solder compound is then poured through the opening between the extensions 8 at the top of the device. The disks in their initial set-up act as a container to hold the poured solder in place. The pouring of the molten solder compound is continued until it penetrates the spaces between the smaller cables, and completely fills the space between the disks so that a joint is formed of a diameter equal to that of the disks. After the molten solder is poured into the cavity between the two disks they become a part of the joint. When the inside faces of the disks and sheathing of the small cables have become heated to a molten stage, the current is turned off, and after the solder has cooled sufficiently, the bolt securing the two free ends of the mold is removed to permit the mold to be disengaged. The mold thus functions to form the joint, and also maintains a constant and even temperature at the various points so that the solder circulates and thoroughly penetrates all the spaces between the elements.

While the arrangements of this invention have been illustrated in a certain specific form, it will be understood that they are capable of embodiment in other forms. It will also be understood that while the improved device is shown as applied to form a joint between certain types and sizes of cable, it is also adapted to form joints between other types and various sizes of cables or the like.

What is claimed is:

1. An electric mold for forming joints between cables comprising disks laterally spaced from each other and perforated to receive and be permanently united with the cable ends, an annulus having two pivoted sections, means for clamping said sections together over the edges of said disks to hold the disks in place, and heating elements associated with each section.

2. An electric mold for forming joints between cables comprising spaced disks formed of fusible material and perforated to receive and be permanently united with the cable ends, two substantially semi-circular sections pivotally associated at one of their ends and clamped together at their other ends for engaging the peripheries of the disks and forming therewith a chamber, said clamped ends having an opening therethrough for the introduction of molten solder, said solder forming with the disks a joint for the cable ends, and heating elements associated with each section maintaining a constant temperature for the solder.

3. An electric mold for forming joints between cables comprising disks formed of fusible material and being perforated to receive and be permanently united with the cable ends, two substantially semi-circular sections for engaging the peripheries of the disks to form therewith a chamber, each section having oppositely positioned plate members so related to form a casing, means for pivotally connecting said sections together at one end and clamping them together at the other end, said clamped ends having an opening therethrough for the admission of molten solder into the chamber, heating elements positioned in the casing of each section for maintaining the molten solder at a desired temperature, and insulating means for said heating elements.

4. An electric mold for forming joints between cable ends comprising disks formed of fusible material and being perforated to receive and be permanently united with the cable ends, two substantially semi-circular casing sections for engaging the peripheries of the disks to form therewith a chamber, means for pivotally connecting said sections together at one end and clamping them together at the other end, said clamping end having an opening therethrough for the admission of molten solder into the chamber, resistance units comprising heating elements

in each casing section for maintaining the molten solder at a desired temperature, and means for electrically insulating said resistance units from said casings.

In testimony whereof, I have signed my name to this specification this 2nd day of April, 1930.

JOHN F. OSBORNE.