C. F. JACOBS.

MOLD OR FORM FOR UNITING METAL PIECES.

APPLICATION FILED JULY 24, 1915.

1,176,899. Patented Mar. 28, 1916

Fig. 1.

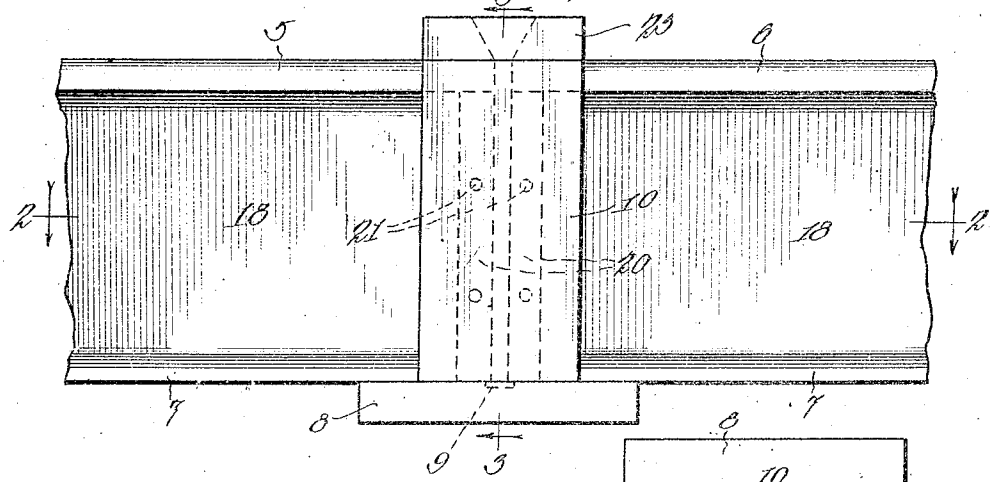


Fig. 2.

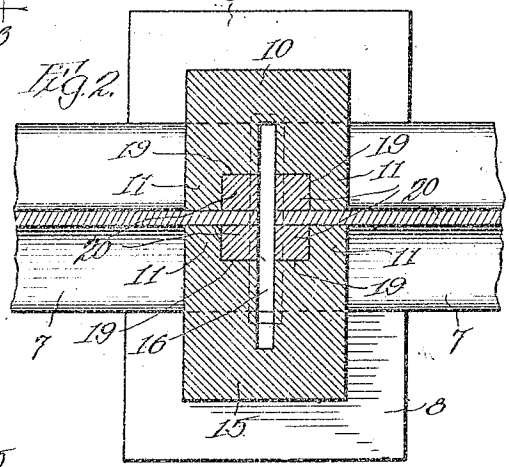


Fig. 3.

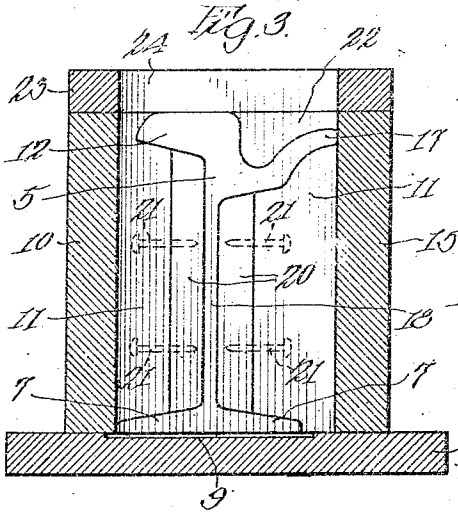
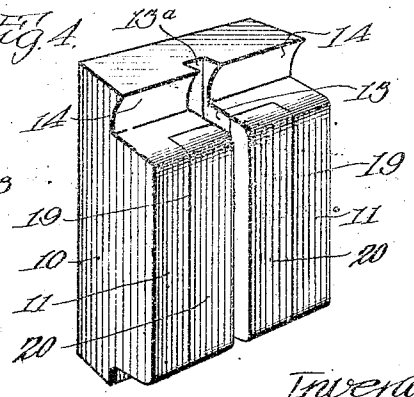


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MOLD OR FORM FOR UNITING METAL PIECES.

1,178,869. Specification of Letters Patent. Patented Mar. 28, 1916.

Application filed July 24, 1915. Serial No. 41,628.

To all whom it may concern:

Be it known that I, CHARLES F. JACOBS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Molds or Forms for Uniting Metal Pieces, of which the following is a specification.

This invention relates to improvements in a mold or form, which is especially intended to be used in the art or process of electrically uniting metal pieces and particularly for uniting the rails of electric railways, and it consists in certain peculiarities of the construction, novel arrangement and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

As is well known to those skilled in the art to which my invention pertains, the rails of electric railways are of irregular shape in cross-section, that is to say, the upright web or rib, the head or tread-flanges and the base of each rail, are of different cross-sectional areas, and that in heating the adjacent ends of the rails so that they may be united to afford a continuous rail with perfect and permanent electric conductivity, the parts having the smaller area will be more quickly heated to the required degree of temperature for welding or unition, by the action of the electric current and flux employed in the process, than those parts or portions of the rails having larger areas. Thus, it will be seen and understood, that if the pieces to be united, are of irregular shape in cross-section, the heating thereof to the required degree of temperature for their union into one continuous piece, whether for electric conductivity or for any other purpose, will not be uniform, that is to say, the thinner portions will be overheated while the thicker portions are being raised to the proper degree of temperature.

To overcome this difficulty or objection, and to provide simple, inexpensive and efficient means for application to the juncture of the rails or pieces to be joined, whereby they may be quickly and substantially uniformly heated to the required degree of temperature for unition, in the process of uniting said pieces, is the principal object of the present invention.

Other objects and advantages thereof will be disclosed in the subjoined description and explanation.

In the accompanying drawing which serves to illustrate an embodiment of the invention—Figure 1 is a side view of a portion of two railway-rails showing my improved mold or form applied thereto and surrounding a portion of each of said rails at their adjacent ends. Fig. 2 is a plan sectional view taken on line 2—2 of Fig. 1 looking in the direction indicated by the arrows. Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1 looking in the direction indicated by the arrows. Fig. 4 is a detached perspective view of one of the sides of the mold, showing the construction and arrangement of its parts on the inner surface thereof.

Like numerals of reference refer to corresponding parts throughout the different views of the drawing.

The reference numerals 5 and 6 indicate portions of the metal pieces to be joined together, which pieces in the present instance, are shown as being rails of the electric railway type, but which pieces may be those used for any other purpose, but which it is desirable to unite at their adjacent ends in close and perfect union. As shown in Figs. 1 and 2 of the drawings, the rails or pieces 5 and 6 are located in alinement with one another, yet slightly separated at their adjacent ends, for the reception and retention of a suitable flux while in a molten or fused condition, which flux is employed in the process of uniting the metal pieces, and co-acts with the electric current, (which current may be applied to said pieces in any suitable manner) to the end that by reason of the resistance of the flux, the ends of the rails or pieces 5 and 6 will become heated to a suitable degree, when said pieces may be moved into intimate contact with one another, or otherwise united together.

Located on and against the lower surface of the base 7 of each of the pieces 5 and 6 and extended transversely thereof, as well as on each side of the space between said bases, is the base of the mold, which base is by preference, made of fire-clay, but of course can be made of any other suitable material. The base 8 of the mold is provided in its upper surface with a depression 9, which depression extends slightly under the free end of each of the bases 7 of the pieces 5 and 6, as is clearly shown in Fig. 1, and said depression also extends a slight distance outwardly from each side of the bases

7 as is clearly shown in Fig. 3 of the drawing. This arrangement will permit the molten flux when it is placed between the ends of the pieces 5 and 6 to pass slightly under the bases of said pieces and slightly to each side thereof as is obvious. Mounted on the upper surface of the base 8 of the mold, and on one side of the pieces 5 and 6 is one of the side pieces 10 of the mold which side piece is also by preference, made of refractory material and has the main portion of its inner surface formed to correspond with that side of the metal pieces to which it is applied. That is to say, said side piece of the mold has inwardly extended portions 11 which are of such shape as to correspond with the shape of the rails or metal pieces between the bases 7 and the flanges 12 thereof at their upper portions. The portions or parts 11 are separated at their outer portions by means of a vertical slot 13 which slot extends from the upper end of the piece 10 to the lower outer portions of the parts 11 as will be readily understood by reference to Figs. 3 and 4 of the drawing. The upper portion of the piece 10 is provided above the upper ends of the parts 11 with an inward extension 14 which lies over the edges of the head flanges 12, but said extension is provided with a vertical slot 13^a which communicates or registers with the slot 13. On the opposite side of the pieces 5 and 6 or rails, is located another piece 15 of the mold; which rests at its lower end on the base 8 of the mold, and has the main portion of its inner surface provided with inwardly projecting portions or extensions 11 which portions also correspond with the shape of the sides of the pieces 5 and 6 against which the piece 15 of the mold is applied. The parts or portions 11 of the piece 15 are also separated by means of a vertical slot 16 which extends from the upper ends of the portions 11 to and through the lower ends thereof as will be understood by reference to Figs. 2 and 3 of the drawing, in the latter of which figures it will be seen that the upper ends of the portions 11 of the side piece 15 terminate below but rest against the lower surface of the head flanges 17 which are extended laterally from the upper portions of the web or rib 18 of the rails.

Each of the parts 11 of each of the side pieces 10 and 15 of the mold, is provided in its portion adjacent to the webs 18 of the rails with vertical recesses 19 in each of which recesses is located an insert or piece 20 of metal, which pieces may be held in position by means of chaplets 21 embedded in the portions 11 and engaging the inserts or metal pieces. The upper ends of the side pieces 10 and 15 of the mold are located flush with the upper surface of the flange 12 as shown in Figs. 1 and 2 of the drawing. In the grooves or spaces formed by the flanges 17 and the upper portion of each of the rails is located a block 22 the adjacent ends of which terminate at the adjacent ends of the pieces 5 and 6, thus leaving an open space between said blocks 22 in register with the slot 16 in the side piece 15 of the mold, which latter slot communicates with the slots 13 and 13^a in the other side piece of the mold.

Located on the upper ends of the side pieces 10 and 15 as well as on the upper surfaces of the blocks 22 is a cap piece 23 which is provided with an upwardly flared opening 24 the lower portion of which opening registers or coincides with slots 13, 13^a and 16 as well as the space between the adjacent ends of the pieces 5 and 6 which are to be united. Through the opening 24 in the cap piece 23, the molten flux may be poured, when it is obvious that a portion of the flux will be located under the adjacent ends of each of the pieces 5 and 6 and that the adjacent ends of said rails as well as the adjacent surfaces of the inserts or pieces 20 will be in contact with said flux, thus substantially equalizing in cross-section the parts of the pieces or rails which are to be heated in the process of uniting the same.

It is obvious that the pieces or parts of which the mold is formed can be clamped or held in position, on the pieces which they surround by any suitable means.

It is apparent, that the slots in the pieces of the mold, and also the inserts can be enlarged or reduced to meet different conditions and could be extended with metal all together to the full width of the cross-section of the rails or other metal pieces. It is also manifest that the mold of refractory material having slots communicating with the depression in the base of the mold can sometimes be used without the inserts, and various other modifications in the construction of the mold, may be made without departing from the spirit of the invention.

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

1. A mold or form surrounding two spaced apart pieces at their approximated ends and having a vertically disposed slot open at its upper end and in communication with the space between said pieces, and provided on each side of said pieces at the adjacent ends thereof and on the adjacent faces of said slot with an insert or piece adapted to contact with the first named pieces.

2. A mold or form adapted to surround two spaced apart pieces at their approximated ends and having a vertically disposed slot open at its upper end and adapted for communication with the space between said

pieces, said mold also having in the bottom of its cavity a depression adapted to underlie the adjacent ends of the bases of said pieces and provided on the adjacent faces of said slot with a pair of spaced apart inserts or pieces.

3. A mold or form consisting of a pair of side-pieces joined together at their lower portions and each having a vertical slot in its inner surface, and an insert or piece located on the inner surface of each side-piece and on each side of the slot therein and flush with the adjacent faces of said slots.

4. A mold or form consisting of a base having a depression in its upper surface, a pair of side-pieces mounted thereon and each having in its inner surface an open ended vertical slot in communication with said depression, and an insert or piece located on the inner surface of each side-piece and on each side of the slot therein.

5. A mold or form consisting of a base having a depression in its upper surface, a pair of side-pieces mounted thereon and each having in its inner surface a vertical slot in communication with said depression, an insert or piece located on the inner surface of each side-piece and on each side of the slot therein, and a cap having an opening to communicate with said slots and mounted on the upper ends of the side pieces.

6. A mold or form consisting of a pair of side-pieces joined together at their lower portions and each having a vertical slot in its inner surface, an insert or piece located on the inner surface of each side piece and on each side of the slot therein, a pair of filling blocks located horizontally on the inner upper portion of one of said side pieces, and a cap-piece having an opening to communicate with said slots and mounted on the upper ends of said side pieces.

7. A mold or form consisting of a pair of side pieces joined together at their lower portions and each having a vertical slot in its inner surface, the bottom of said mold having on its inner or upper surface a depression communicating with said slots at their lower ends and adapted to underlie the adjacent ends of the bases of the pieces to be joined together.

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