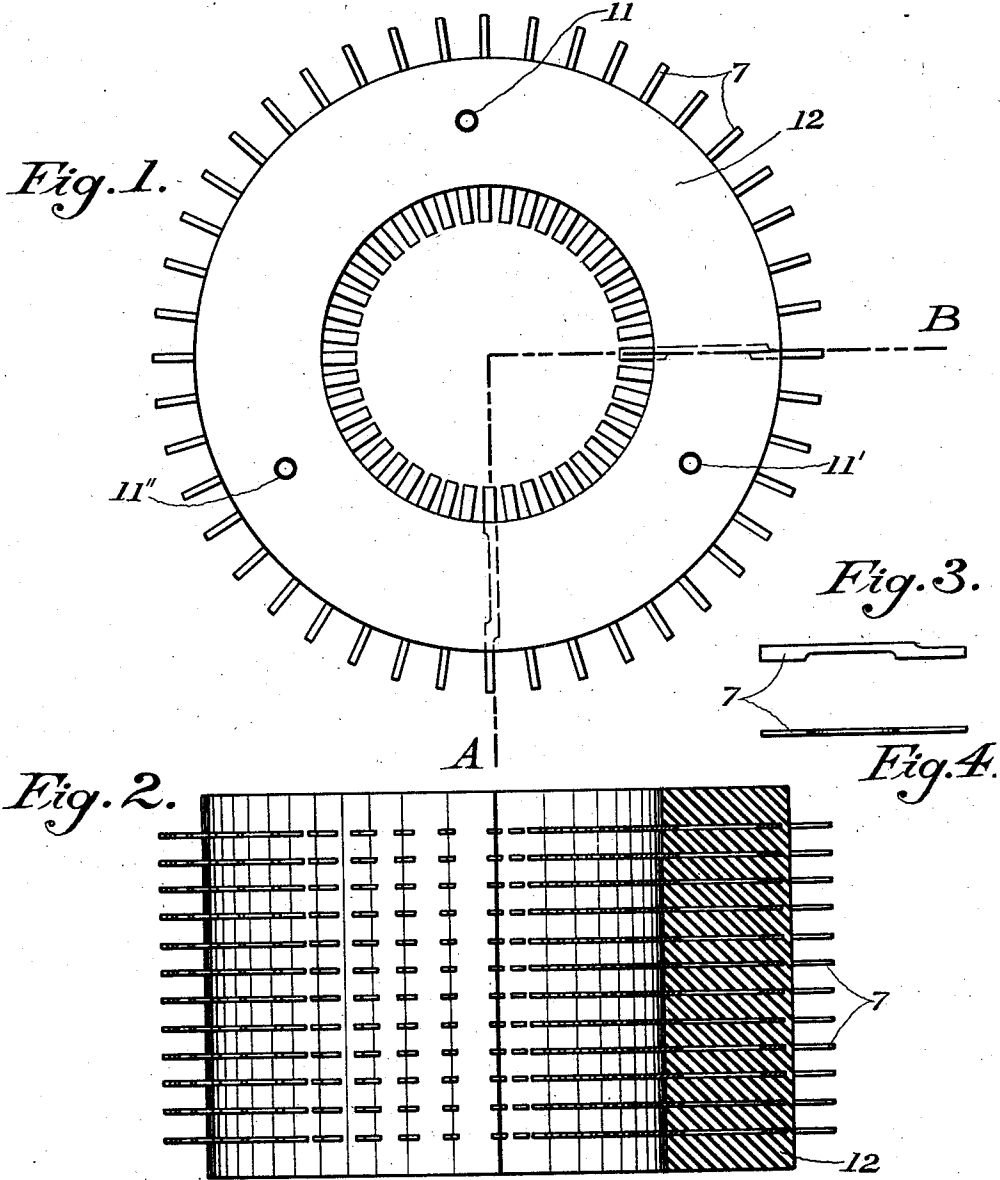


G. W. LORIMER.
MOLD FOR ELECTRICAL CONTACT BANKS.
APPLICATION FILED APR. 24, 1907.

1,009,426.

Patented Nov. 21, 1911.

4 SHEETS-SHEET 1.



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4 SHEETS—SHEET 2.

Fig. 5.

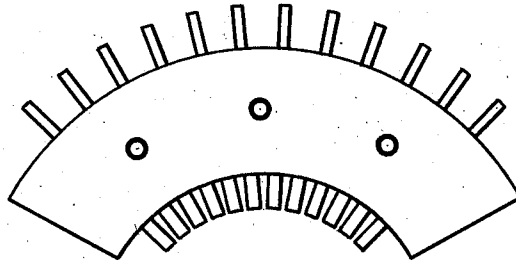
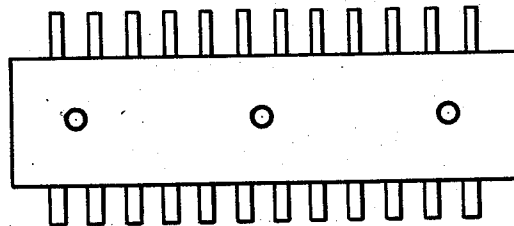


Fig. 6.



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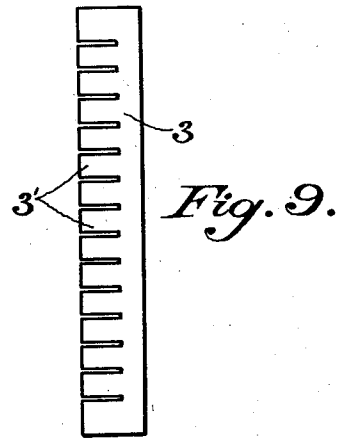
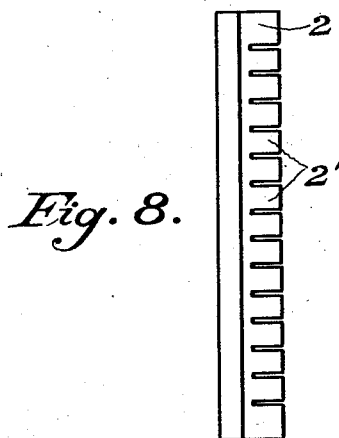
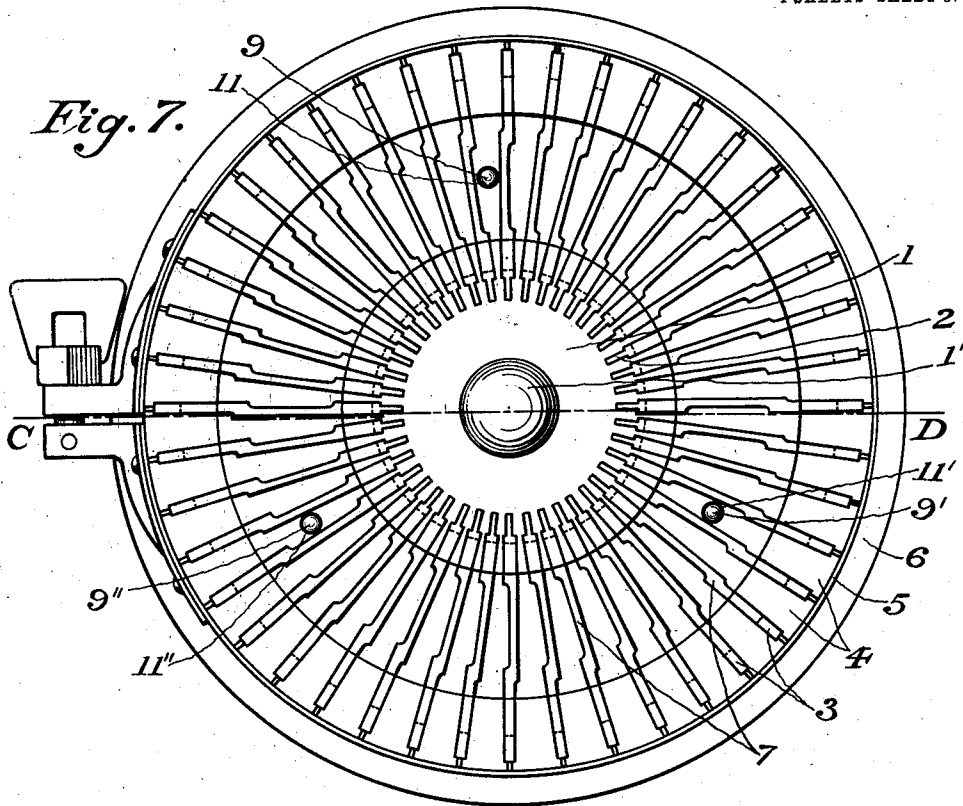
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4 SHEETS—SHEET 3.



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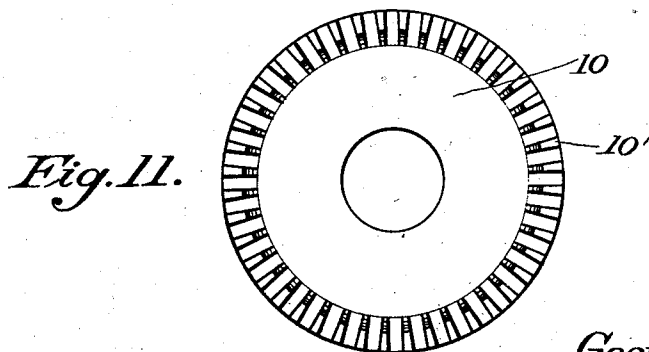
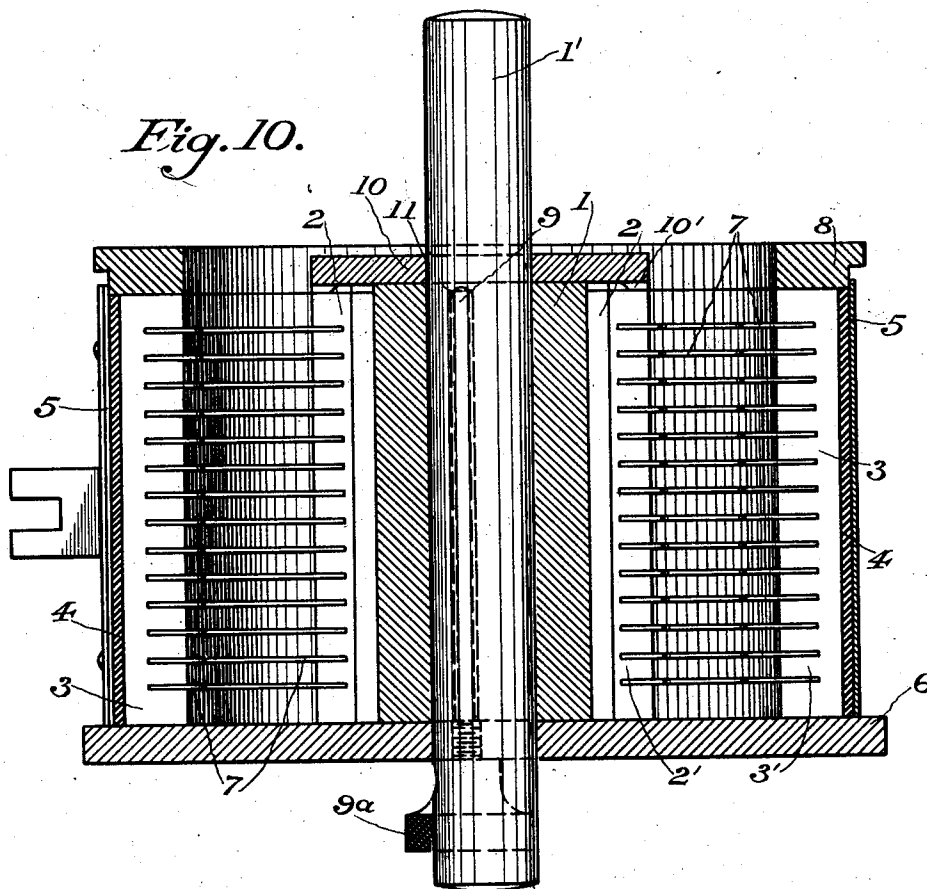
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE

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MOLD FOR ELECTRICAL-CONTACT BANKS.

1,009,426.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Application filed April 24, 1907. Serial No. 370,045.

To all whom it may concern:

Be it known that I, GEORGE W. LORIMER, a citizen of the United States of America, and a resident of Piqua, county of Miami, and State of Ohio, have invented a new and useful Improvement in Molds for Electrical-Contact Banks, of which the following is a specification.

My invention comprises means for making a casting designed particularly for use in automatic telephone exchanges, the commonly accepted name for the finished product being "bank of contacts."

My invention provides a mold suitable for casting a solid of insulating material having embedded in it, in the desired positions, the desired number of "contacts," the mold being specially designed to facilitate its removal from the cast product without injury either to the product or to the mold. In the operation of removal from the cast product, the mold is separated into its parts and the parts separately removed and reassembled, when the mold is again ready for another cast to be made from it; thus one mold may serve for a plurality of casts, and give continuous service.

Having reference to the accompanying drawings, I describe, first, the product desired and, second, the means for producing it.

Figure 1 shows plan of an annular contact-bank consisting of a casting of insulating material, such as plaster of Paris, having embedded in it in vertical and horizontal rows a large number of electrical contact pieces, each of which extends entirely through the casting, projecting both inside and outside.

Fig. 2 shows elevation of the electrical contact-bank shown in Fig. 1, the contact-bank being sectioned on the line A—B, whereby the outer surface of the casting is shown at the left of the vertical central line, the inner surface of the casting is shown between the vertical central line, and the wall at the right is shown in section, with section of the embedded contact clips on that plane. Fig. 3 shows plan view of the clip used for the embedded contact pieces of Fig. 1. Fig. 4 shows edge view of the clip of Fig. 3. Fig. 5 shows plan of a contact-bank in which the contacts are disposed in a limited arc instead of in a complete circle as in Fig. 1. Fig. 6 shows a rectilinear contact-bank; Fig. 7 shows plan view of the mold for making the casting of Fig. 1, the inserted clips being

shown in place, ready for pouring the plaster of Paris in which, when the mold is removed, the clips are to remain embedded. Fig. 8 shows detail of a clip-holding toothed bar for the inner wall of the mold of Fig. 7. Fig. 9 shows detail of a clip-holding toothed bar for the outer wall of the mold of Fig. 7. Fig. 10 shows sectional view of the mold of Fig. 7, taken on the line C—D of Fig. 7. Fig. 11 shows a view of the under surface of the cap plate 10 of Fig. 10.

Contact banks of the types shown in Figs. 1, 5 and 6 are used in automatic telephone equipment to terminate conductors in such a manner that a movable conductor-terminal under proper control may be caused to rest in electrical connection with any contact in the contact-bank, or that a set of movable conductor-terminals under proper control may be caused to rest in electrical connection with any set of contacts in the contact-bank. To this end, the contact-pieces in the contact-bank are arranged in horizontal and vertical rows, that a movable terminal may pass along a row, either horizontally or vertically as the construction of the contact bank may require, and may stop in electrical connection with any contact-piece of that row. Fig. 2 illustrates the arrangement of contact-pieces in the contact-bank with this use in view, the design of this contact-bank being such that movable terminals carried upon a shaft at the axis of the annular contact-bank may be carried around the layers of contact-pieces by the revolution of the axial shaft, making electrical contact with all of the contact-pieces in that terminal's layer, successively.

Figs. 7 and 10 represent in assembly and section the mold for casting the product illustrated in Fig. 1. An inner cylindrical wall is presented by the surface of the cylinder 1, the surface of this cylinder being slotted to hold the bars 2; when the bars are in place in the slots of the cylinder a cylindrical surface is presented which is smooth except for the openings between the teeth 2' of the bars 2. The cylinder 1 has a central rod 1' which serves at the same time as a handle and as a guide in assembling the mold. An outer surface for forming the casting is presented by the assembly of toothed bars 3 and space bars 4 within the clamping band 5, as shown most clearly in Fig. 7. The mold is assembled upon the base plate 6. The central cylinder 1 is

placed in position by means of the guide formed by the lower end of the central rod 1' passing through a central opening in the base plate 6. Pairs of toothed bars, 2 and 3, facing each other as the bar 2 of Fig. 8 faces the bar 3 of Fig. 9 in the sheet of drawings, are filled with clips or contact pieces 7, the inner end of each clip being placed between two teeth of the bar 2 and the other end of the clip being placed between the corresponding teeth of the bar 3, as shown most clearly in Fig. 10. The pairs of bars thus filled with clips are placed in position in the partially assembled mold by inserting the bars 2 in the slots of the cylinder 1, thus completing the cylinder and at the same time bringing the bars 3 into position. The spaces between the bars 3 are filled with space bars 4, as shown most clearly in Fig. 7 and the whole is bound together by the clamping band 5. A mold for the annular casting thus is formed by the inner and outer walls as described, the space between them being closed by the base plate 6, upon which both inner and outer walls rest. The cap plate 10 and cap ring 8 are placed in position as shown in Fig. 10, extending the walls of the mold to provide a greater latitude in filling the mold to the proper height, and to assist to some extent in holding in place the elements of the two walls of the mold. The cap plate 10 has upon its under surface teeth 10' registering with the bars 2; this detail is shown in Fig. 11. The rods 9 9' 9'' are passed through the base plate 6 and screwed into place; upon each of these rods is placed the sleeve 11 11' 11'' of insulating material. The mold is now ready to pour. A liquid capable of subsequent hardening into an insulating solid, such as a fluid paste of plaster of Paris, is poured into the mold, forming the cast 12 of Fig. 1, in which the clips 7 are embedded, the clips being irregular in outline to prevent their possible loosening and withdrawal as might occur if the clips were of a simple geometrical shape. The cast being thus completed, the mold is removed in the following manner: The cap plate 10 and cap ring 8 are lifted off; the rods 9 9' 9'' are removed by means of knurled heads 9^a; the base plate 6 is lifted off; the cylinder 1 is forced out of the cast, leaving behind it the bars 2; the bars 2 are taken from the inner ends of the contact-pieces one by one; the clamping ring 5 is loosened and removed, the spacing bars 4 thus are released and are removed and lastly the bars 3 are taken from the outer ends of the contact pieces, leaving the cast free from the mold, and leaving all parts of the mold in condition for reassembly for another cast. The clips 7 remain a part of the cast product, as do also the insulating tubes 11 11' 11''. The holes through

the tubes 11 11' 11'' furnish means for mounting the contact-bank by means of rods or screws, and the insulating tubes constitute insulating bushings for those holes to prevent any accidental contact between any clip 7 and a mounting element which might be of conducting material.

The process and product are claimed in my application, Serial No. 370,046, filed April 24, 1907.

In this application, what I claim is:

1. In a mold for annular castings, an inner wall of cylindrical form and having channels therein; clip-holding strips adapted to fit in the channels of said inner wall; and an outer wall adapted to hold the alternative ends of the clips held by said strips, substantially as described.
2. In a mold for castings, a wall having channels therein; clip-holding strips adapted to fit in the channels in said wall; and an opposite wall adapted to hold the alternative ends of the clips held in said clip-holding strips, substantially as described.
3. In a mold for castings, two mold walls oppositely situated; removable bars in pairs in said mold walls, a pair of bars comprising a bar in each of said mold walls and located opposite each other; and clip holding spacing teeth in said bars, substantially as described.
4. In a mold for annular castings, an inner wall of cylindrical form, and having channels therein; bars adapted to fit in the channels in said inner wall; and a cap plate fitting upon said inner wall, substantially as described.
5. In a mold for annular castings, an inner wall having bar-holding slots, and outer wall having bars in its concave surface, a cap plate for said inner wall, and a cap ring for said outer wall, substantially as described.
6. In a mold for castings, a curved wall member having grooves in the cast-forming face thereof, and clip-holding means placed slidably in said grooves; said wall member being slidable with reference to the cast and all of said clip-holding means after the pouring and setting of the cast, substantially as described.
7. In a mold for castings, a curved wall member having grooves in the cast-forming face thereof; and clip-holding toothed bars placed slidably in said grooves; said wall member being slidable with reference to the cast and all of said clip-holding bars after the pouring and setting of the cast, substantially as described.
8. In a mold for castings, a curved wall member having grooves in the cast-forming face thereof; clip-holding toothed bars placed slidably in said grooves; said wall member being slidable with reference to the cast and all of said clip-holding bars after

the pouring and setting of the cast; and an opposite wall adapted to sustain the other ends of clips held by said bars, substantially as described.

inner-wall member, said cylindrical inner-wall member being slidable with respect to all of said clip-holding bars and the cast when formed, substantially as described.

Signed by me at Piqua, county of Miami, State of Ohio, in the presence of two witnesses.

GEORGE W. LORIMER.

Witnesses:

GEORGE A. VAUGIER,
LEE R. DRAKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."