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MULTIWIRE CONNECTOR

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Fig. 1.

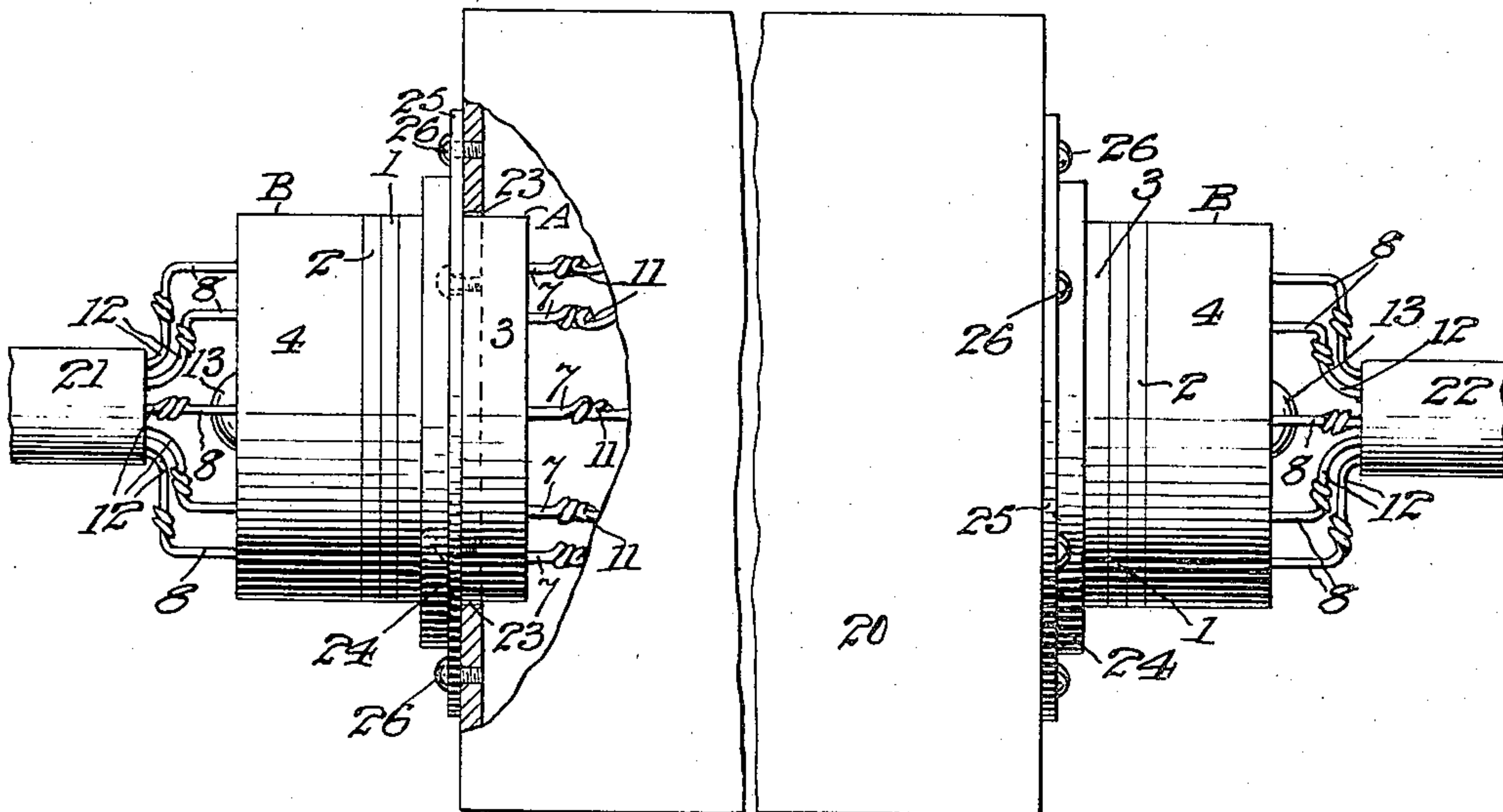


Fig. 2.

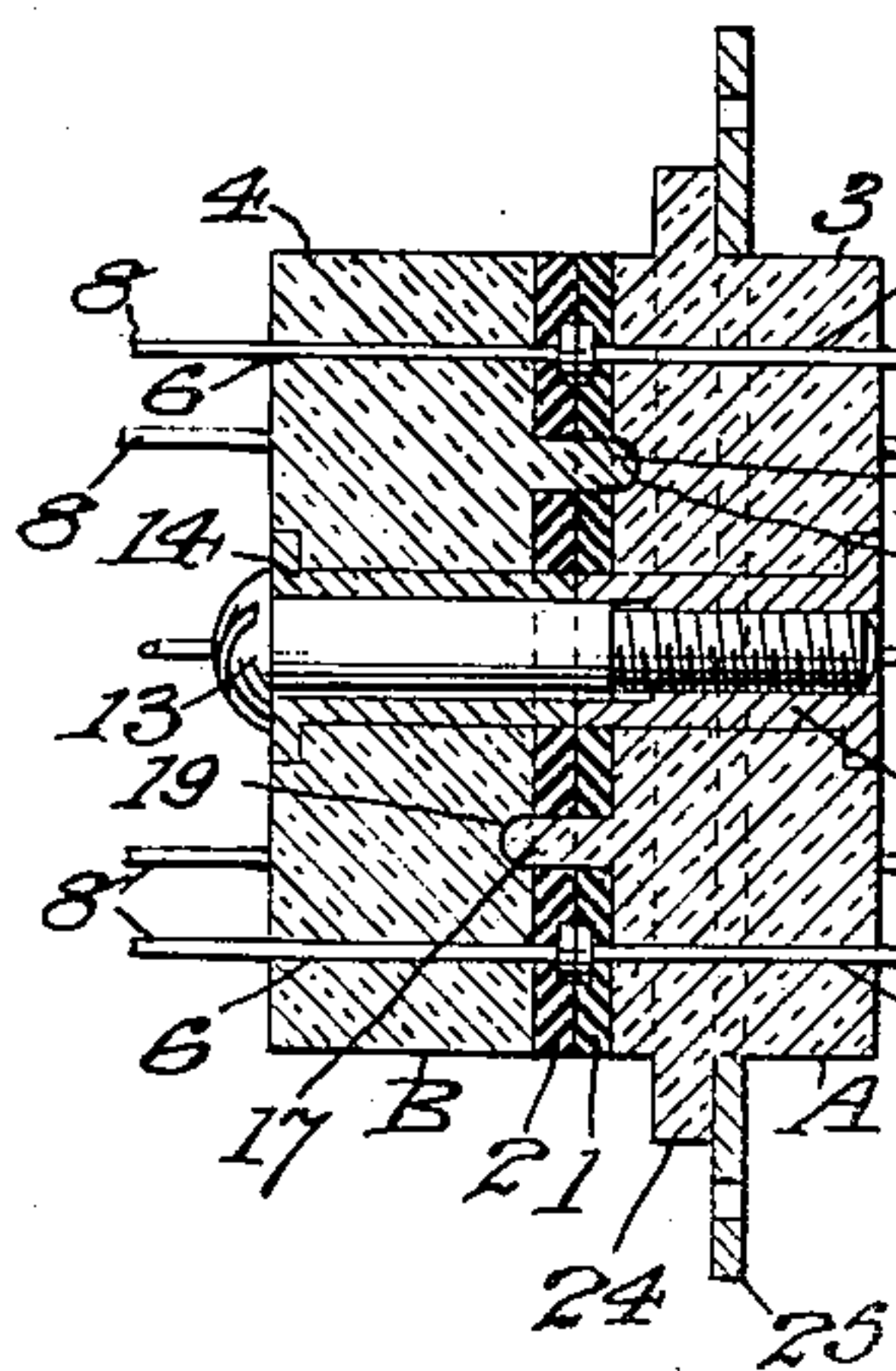


Fig. 3.

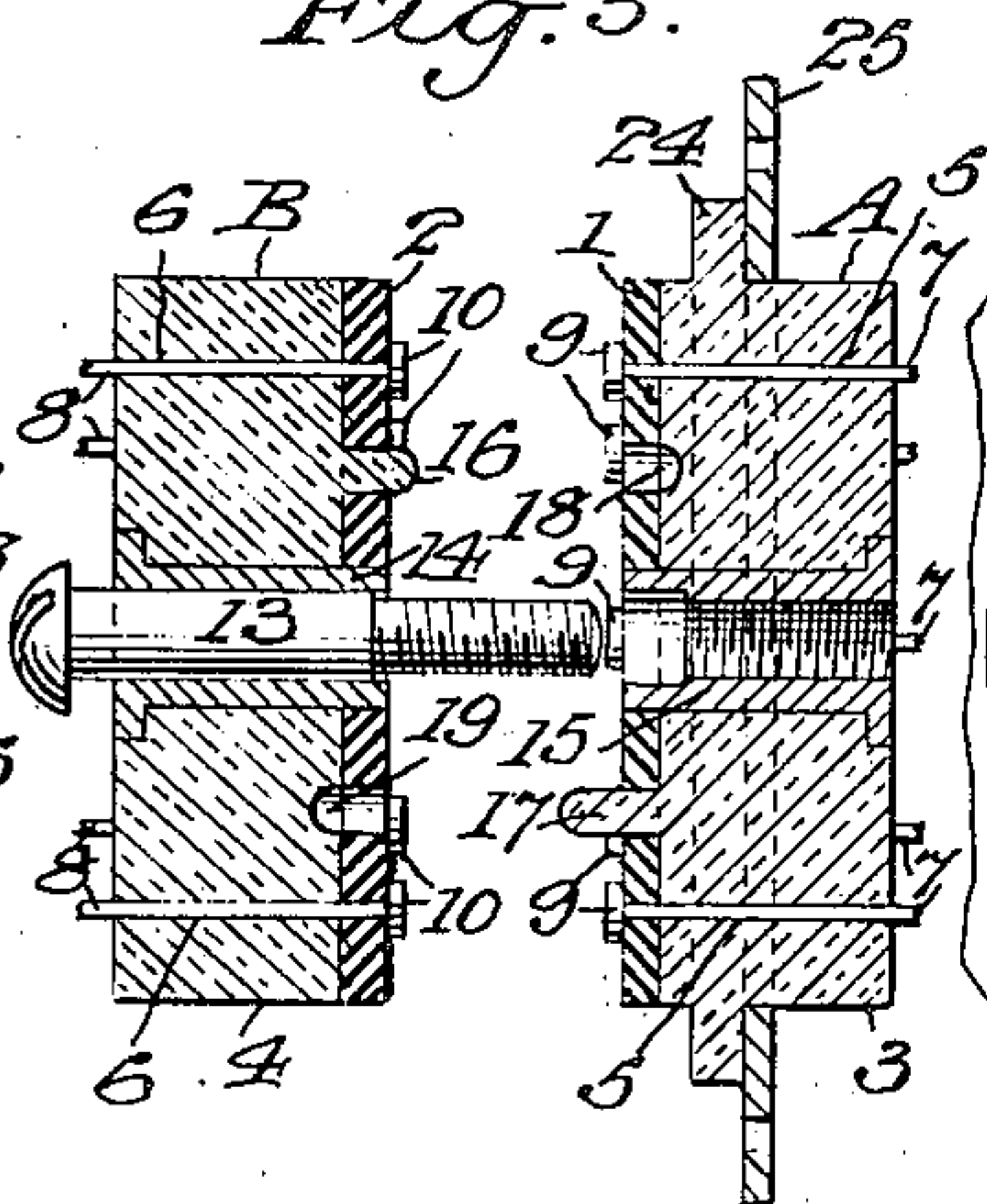
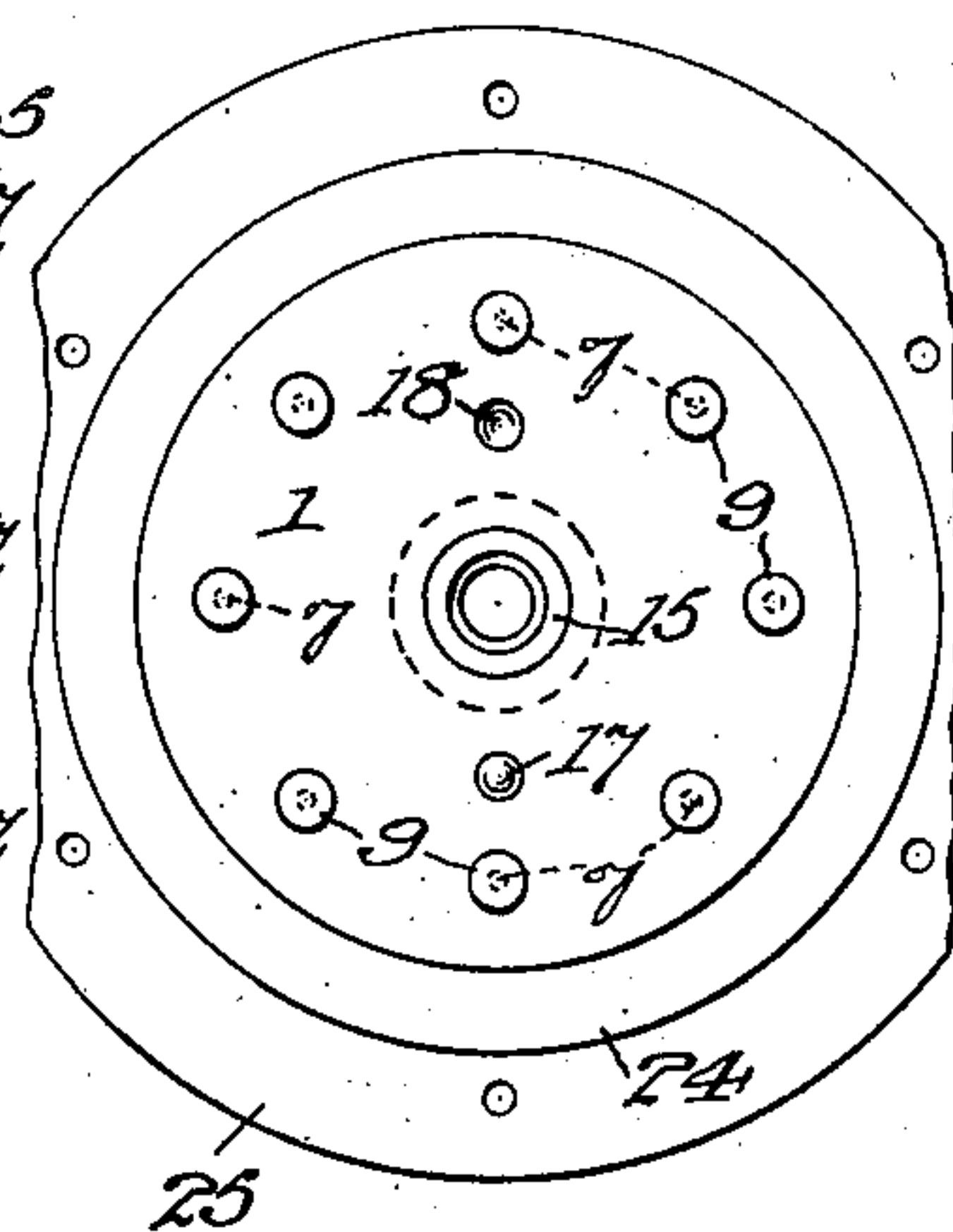


Fig. 4.



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## UNITED STATES PATENT OFFICE

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## MULTIWIRE CONNECTOR

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6 Claims. (Cl. 173—328)

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The object of my invention is to provide improvements in multi-wire connectors of the quick detachment type, in which a considerable number of line wires may be quickly and easily assembled and disassembled without disturbing the line wire connections with the separable members of the connectors.

A further object of my invention is to provide a multi-wire connector in which an accurate and extended electrical contact is ensured between the contact ends of two alined wire sections, said sections being efficiently protected at their contact point.

A further object is to produce a multi-wire connector of simple form and inexpensive construction.

A still further object is to provide multi-wire connectors which may be readily combined, for instance, with switch boxes so that when trouble occurs in a switch box, the box together with its adjacent members of the connectors on the inlet and outlet side of the switch box may be removed as a unit to be inspected and repaired, and a new switch box and its connector members may be quickly and easily installed for reducing the loss of service maintenance to a minimum.

A practical embodiment of my invention is represented in the accompanying drawings in which

Fig. 1 represents in side elevation, partly in section, two of my improved multi-wire connectors attached to the inlet and outlet cables and their interposed switch box;

Fig. 2 represents in longitudinal central section one of my connectors with its separable members assembled as in use;

Fig. 3 represents a similar section with the members disassembled and separated; and

Fig. 4 represents a contact face view of one of the connector members.

The multi-wire connector consists of two matching members A and B of insulating materials, said members comprising resilient contact discs 1 and 2 secured, as by an adhesive, to their respective non-resilient backing blocks 3 and 4.

Any desired number of alined holes 5 and 6 within the capacity of the connector, are formed through the discs 1 and 2 and backing blocks 3 and 4 of the matching members A and B. Pairs of alined pins 7 and 8 of conducting material, as, for instance, brass, have a sliding fit in their respective pairs of alined holes 5 and 6. The flat heads 9 and 10 of these pins when pressure is not applied thereto normally project beyond and overlap the contact faces of the discs 1 and 2. The ends of these conducting pins 7 and 8 project beyond the outer faces of their respective blocks 3 and 4 in position to be secured, as by twisting and soldering to the conducting line wires 11 and 12.

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The means which I have shown for removably assembling the two members A and B of the connector is a screw bolt 13 which passes freely through a central sleeve 14 in the member B into threaded engagement with an alined sleeve 15 in the member A. It will be observed that as the bolt 13 is screwed home the two members A and B will be drawn tightly together, thereby imbedding the heads 9 and 10 of each pair of alined pins 7 and 8 in their respective resilient discs 1 and 2 and also compressing the said discs sufficiently to ensure a water-tight contact between the two connector members.

The means which I have shown for ensuring the proper assembly of the two members of the connector with their pairs of pins 7 and 8 in alinement and for ensuring the movement of the members in a right line with respect to each other, comprises lugs 16 and 17 projecting respectively from the blocks 3 and 4 through the discs 1 and 2 into their matching sockets 18 and 19 in the blocks 3 and 4 respectively.

These connectors are well adapted for use in systems where the connectors may be located between a switch box 20 and their respective inlet and outlet cables 21 and 22. In this use of the connectors the members A may be inserted through openings 23 in the sides of the box 20 and secured firmly therein as by providing the blocks 3 with peripheral flanges 24 to which flanges annular plates 25 of metal may be secured, as by glue. Screws 26 may be used to secure these annular plates 25 to the side walls of the box 20 around the openings 23.

When the connectors are used in connection with a switch box, if trouble arises in the switch box the members A may be released from the members B of the two connectors by unscrewing the bolts 13. The switch box 20 and its attached members A may then be removed as a unit and the trouble located and eliminated. In the meantime another switch box with its attached connector members A may be substituted as a unit for the removed box and its connector members and the substituted members A secured to their respective connector members B, thereby reducing the loss in service maintenance to a minimum.

It will be seen that the two members A and B of the connector are caused to move in a right line with respect to each other as they are assembled and disassembled, thereby eliminating rotative movement of one member with respect to the other member. This right line movement, caused by the sliding engagement of the lugs 16 and 17 with their sockets 18 and 19 permits the heads 9 and 10 of the connector pins 7 and 8 to be initially located beyond the contact faces of the resilient discs 1 and 2, and imbedded in said



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discs as the members are drawn into snug contact with each other. Furthermore it will be seen that by providing the pins with flat heads an extended contact is ensured between the two alined pins when the members A and B of the connector are assembled.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described, but what I claim is:

1. In a multi-wire connector, two separable members having alined central bores, each member comprising a backing block of non-resilient insulating material and a contact disc of resilient insulating material permanently secured to the inner face of the backing block, pairs of coaxing alined conducting pins slidable in their respective backing blocks and contact discs and having their contact ends provided with flat heads normally projecting beyond and overlapping the contact faces of said discs, and a screw bolt slidable in the bore of one member and threaded into the bore of the backing block of the other member for drawing the members together in a right line, to imbed the contact ends of the alined pins in said discs and compress the discs for ensuring a water-tight contact between the two members.

2. In a multi-wire connector, two separable members having alined central sleeves, each member comprising a backing block of non-resilient insulating material and a contact disc of resilient insulating material permanently secured to the inner face of the backing block, pairs of coaxing alined conducting pins slidable in their respective backing blocks and contact discs and having their contact ends provided with flat heads normally projecting beyond and overlapping the contact faces of said discs and a screw bolt slidable in the sleeve of one member and threaded into the sleeve of the other member for drawing the members together in a right line to imbed the contact ends of the alined pins in said discs and compress the discs to ensure a water-tight contact between the two members.

3. In a multi-wire connector, two separable members having alined central sleeves, each member comprising a backing block of non-resilient insulating material and a contact disc of resilient insulating material permanently secured to the inner face of the backing block, pairs of coaxing alined conducting pins slidable in their respective backing blocks and contact discs and having their contact ends provided with flat heads normally projecting beyond and overlapping the contact faces of said discs, and a screw bolt slidable in the sleeve of one member and threaded into the sleeve of the other member for drawing the members together in a right line to imbed the contact heads of the alined pins in said discs and compress the discs to ensure a water-tight contact between the two members.

4. In a multi-wire connector, two separable members having alined central bores, each member comprising a backing block of non-resilient insulating material and a contact disc of resilient insulating material permanently secured to the inner face of the backing block, pairs of coaxing alined conducting pins slidable in their re-

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spective backing blocks and contact discs and having their contact ends provided with flat heads normally projecting beyond and overlapping the contact faces of said discs, a screw bolt slidable in the bore of one member and threaded into the bore of the backing block of the other member for drawing the members together in a right line, to imbed the contact ends of the alined pins in said discs and compress the disc for ensuring a water-tight contact between the two members, and means for accurately alining the pairs of pins and for ensuring the right line movement of the said members.

5. In a multi-wire connector, two separable members having alined central bores, each member comprising a backing block of non-resilient insulating material and a contact disc of resilient insulating material permanently secured to the inner face of the backing block, pairs of coaxing alined conducting pins slidable in their respective backing blocks and contact discs and having their contact ends provided with flat heads normally projecting beyond and overlapping the contact faces of said discs, a screw bolt slidable in the bore of one member and threaded into the bore of the backing block of the other member for drawing the members together in a right line, to imbed the contact ends of the alined pins in said discs and compress the discs for ensuring a water-tight contact between the two members, and annular plates of rigid material secured around the backing blocks for use in attaching the members to another element.

6. In a multi-wire connector, two separable members having alined central bores, each member comprising a backing block of non-resilient insulating material and a contact disc of resilient insulating material permanently secured to the inner face of the backing block, pairs of coaxing alined conducting pins slidable in their respective backing blocks and contact discs and having their contact ends provided with flat heads normally projecting beyond and overlapping the contact faces of said discs, and a screw bolt slidable in the bore of one member and threaded into the bore of the backing block of the other member for drawing the members together in a right line, to imbed the contact ends of the alined pins in said discs and compress the discs for ensuring a water-tight contact between the two members, said backing blocks having peripheral flanges and annular plates of rigid material secured to said flanges for use in attaching the members to another element.

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