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W. D. WEIR.

SWITCHBOARD.

APPLICATION FILED OCT. 2, 1905.

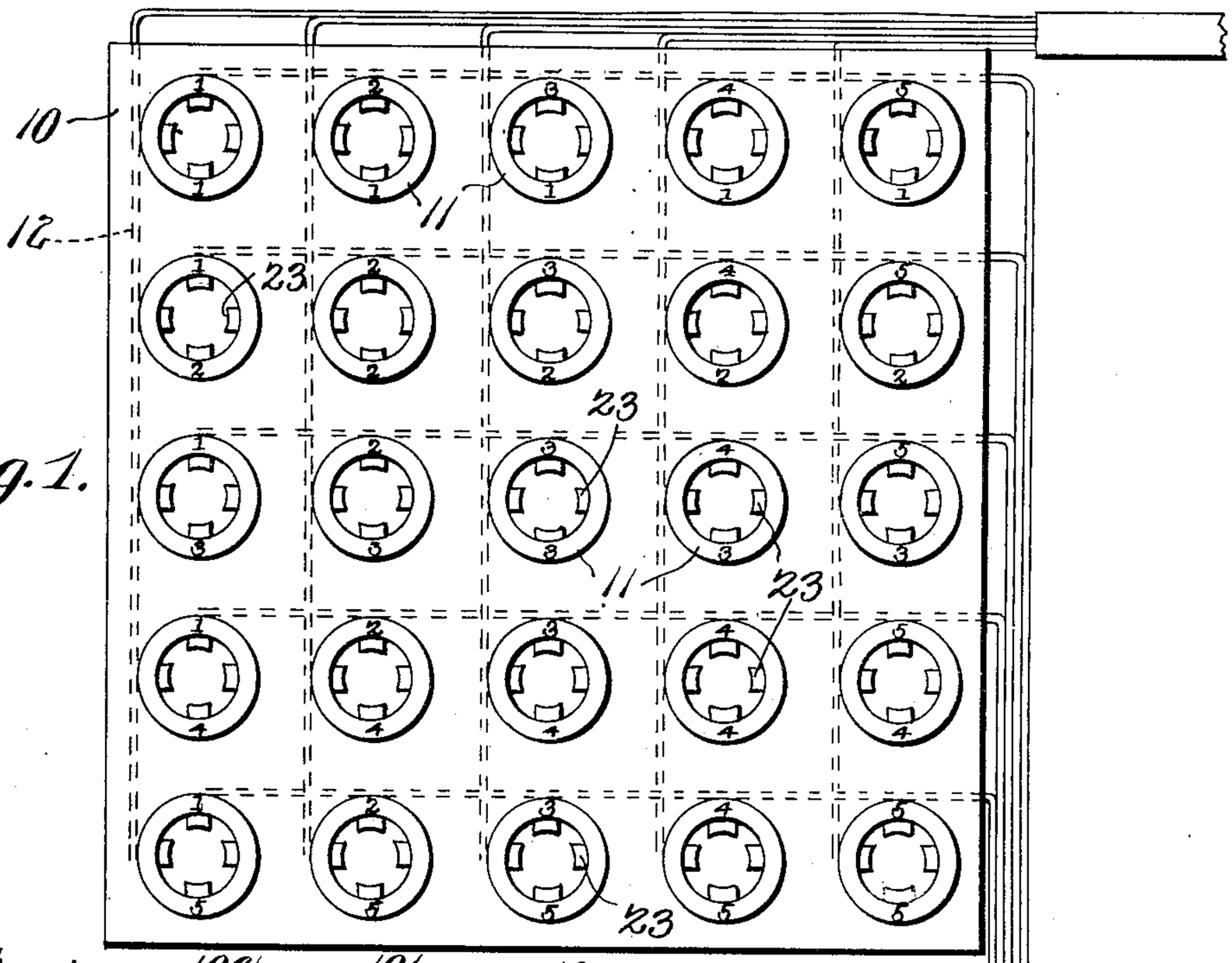

Fig. 1.

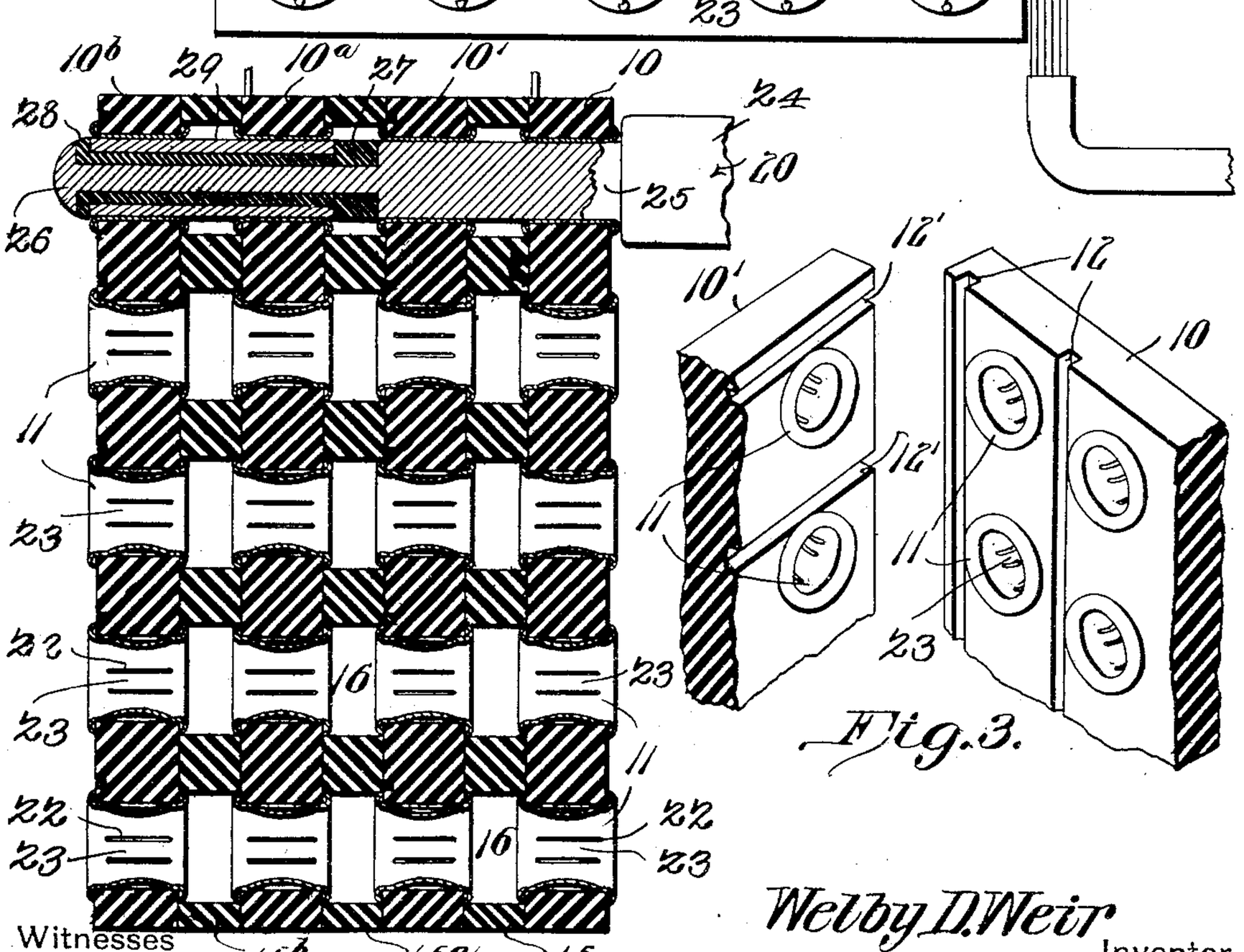

Fig. 2.

Fig. 3.

Witnesses

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SWITCHBOARD.

No. 840,537. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed October 2, 1905. Serial No. 280,953.

To all whom it may concern:

Be it known that I, WELBY D. WEIR, a citizen of the United States, residing at Winnsboro, in the county of Wood and State of Texas, have invented a new and useful Switchboard, of which the following is a specification.

This invention relates to switchboards for use in telephone-exchanges and electrical plants, and has for its principal object to provide a board of simple and economical construction and of such nature that any wire may be instantly connected to any other wire in order to complete a circuit between the line and jack wires of a telephone central station or for the purpose of completing circuits of any description.

A further object of the invention is to provide a board in which all short circuits may be prevented and in which the parts are of such nature as to permit ready construction and assemblement at minimum expense.

A still further object of the invention is to provide a switchboard having rings or similar socket members of such construction as to retain the circuit-closing plug in position and to insure good rubbing contact with the plug, so that the parts shall be bright and clean and good electrical connections made certain.

A still further object of the invention is to provide a novel form of plug for use in connection with switchboards of this type.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation of a switchboard constructed in accordance with the invention. Fig. 2 is a vertical section of the same, showing a connecting-plug in place. Fig. 3 is a detail perspective view of parts of the board detached.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In carrying out the invention the board 10, formed of wood or any suitable non-conducting material, is provided with a large number of openings, these being preferably arranged at regular intervals in cross-rows, and through each opening is placed a contact-ring 11, formed of metal, the opposite edges of the ring being flanged or turned, as indicated in Fig. 2, in order to prevent movement of the ring from position. These rings may be formed of light sheet metal and rapidly placed in position by a suitable flanging-machine acting on a single ring or a number of rings simultaneously.

In boards of the most simple construction two boards 10 10′ are employed, each provided with alined openings. The rear face of one of these boards—the board 10, for example—is provided with a series of vertically-arranged grooves 12 for the reception of one set of wires—as, for instance, the jack-wires—and these are soldered each wire to a single vertical row of circuit-closing rings. The other board 10′ is provided with a series of horizontal grooves 12′ for the reception of the other set of wires—for example, the line-wires—and these are soldered each to a horizontal row of circuit-closing rings on said board 10′. Between these two boards is placed a third board 15, having openings 16 in alinement with the openings of the other boards and preferably of such diameter as to permit the entrance of the flanged ends of the circuit-closing rings, as will be seen on reference to Fig. 2. These spacing-boards are of sufficient thickness to prevent contact between the rings of the two boards, so that short-circuiting is prevented.

With a board constructed as described it will be seen that by inserting a suitable circuit-closing member—for example, a plug—in two alined openings of the boards 10 10′ a circuit will be closed between a line-wire and a jack-wire, and owing to the arrangement of the line-wires any line-wire may be connected to any jack-wire.

Where the switchboard is intended for controlling metallic return-circuits of telephone-lines or for other similar purposes, the

number of boards may be increased, as shown in Fig. 2, which illustrates the employment of four ring-containing boards 10, 10′, 10^a, and 10^b, these being separated from each other by spacing-boards 15, 15^a, and 15^b. The several ring-containing boards are of uniform construction, and the spacing-boards are of like construction, so that by inserting a plug of suitable character through four alined rings two separate metallic circuits may be closed. In a construction of this character it is preferred that the boards 10 10^a be grooved for the reception of jack-wires and the boards 10′ and 10^b be provided with horizontal grooves for the reception of the line-wires. On the insertion of a plug 20 it will be seen that two circuit-closing rings of the boards 10 and 10′ are electrically connected, and two circuit-closing rings of the boards 10^a and 10^b are connected.

For the convenience of the operator the front board is provided with a series of sets of numerals, one set being arranged above the circuit-closing rings to indicate the numbers of the jack-wires and the other below said rings for the purpose of indicating the numbers of the line-wires.

In order to insure good electrical contact between the circuit-closing plug and the rings, the latter are provided with slits 22, between which are formed tongues 23, the tongues being bent inward toward the center of the ring and being elastic, so that when a plug is inserted they will tend to bind against the plug and firmly hold the latter in circuit-closing position. These tongues are, furthermore, so arranged that the friction due to the insertion of the plugs will keep the tongues bright and clean, and good electrical contact is thus made certain.

The plug 20 comprises a handle member 24, from which projects a suitable shank 25, that is formed of metal and is designed to close a circuit between the rings of the boards 10 and 10′. From the shank portion projects a spindle 26, on which is mounted an insulating-collar 27 and an insulating-sleeve 28, the latter serving as a support for a sleeve 29, formed of metal, so that when the plug is inserted the rings of the boards 10^a and 10^b will be electrically connected.

Having thus described the invention, what is claimed is—

1. In a switchboard, the combination with a pair of parallel boards, each having a plurality of openings, circuit-closing rings arranged in said openings and provided with flanged end portions projecting beyond the faces of the boards, and a spacing member formed of insulating material arranged between the boards and having openings of larger diameter than the circuit-closing rings for the reception of the flanged ends of the rings and serving to maintain the latter in spaced relation.

2. The combination in a switchboard, of a pair of boards, each provided with a plurality of openings arranged in intersecting rows, and each having wire-receiving grooves in one of its faces, rings arranged in the openings, and conductors arranged within the grooves and electrically connected to said rings and a spacing member arranged between the boards and having openings in alinement with those of the boards.

3. In switchboard constructions, a circuit-closing ring formed of metal, the ring having solid ends and its intermediate portion being slit to form tongues that are bent inward toward the center of the ring.

4. The combination in a switchboard, of a plurality of boards arranged in parallel relation and provided with alining openings, ring contacts arranged within said openings and provided with solid ends and intermediate inbent integral tongues arranged to bind against and hold a circuit-closing plug, and a spacing member formed of insulating material arranged between the boards and having openings of larger diameter than said ring contacts.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WELBY D. WEIR.

Witnesses:
CLAUDE V. WEIR,
H. J. JOHNSON.