

Jan. 27, 1948.

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2,435,136

MULTIPLE CONTACT JACK

Filed May 28, 1946

2 Sheets-Sheet 1

Fig. 1.

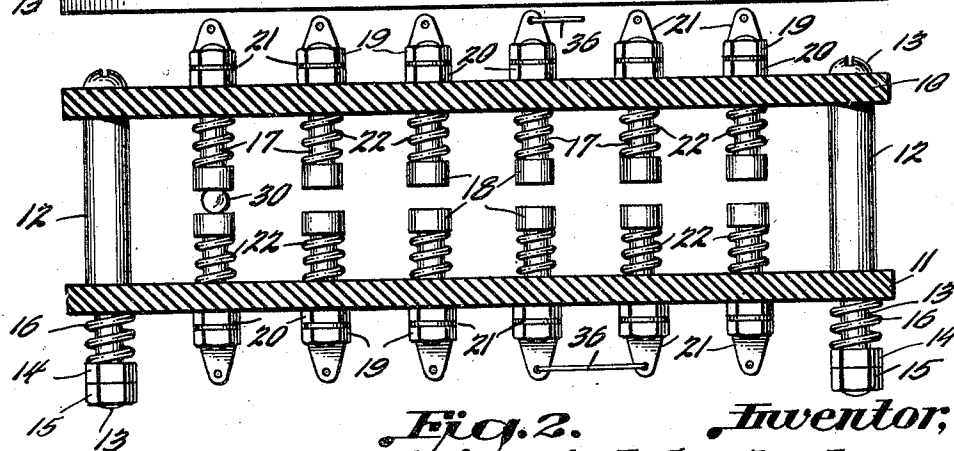
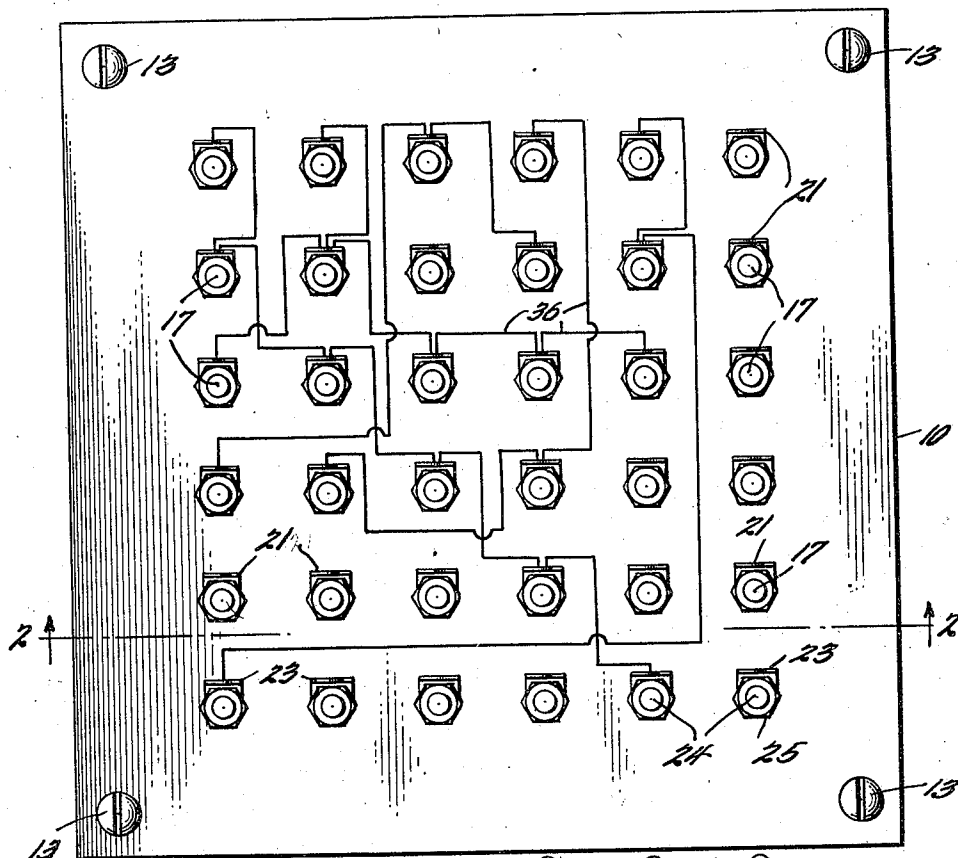


Fig. 2.

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Fig. 4.

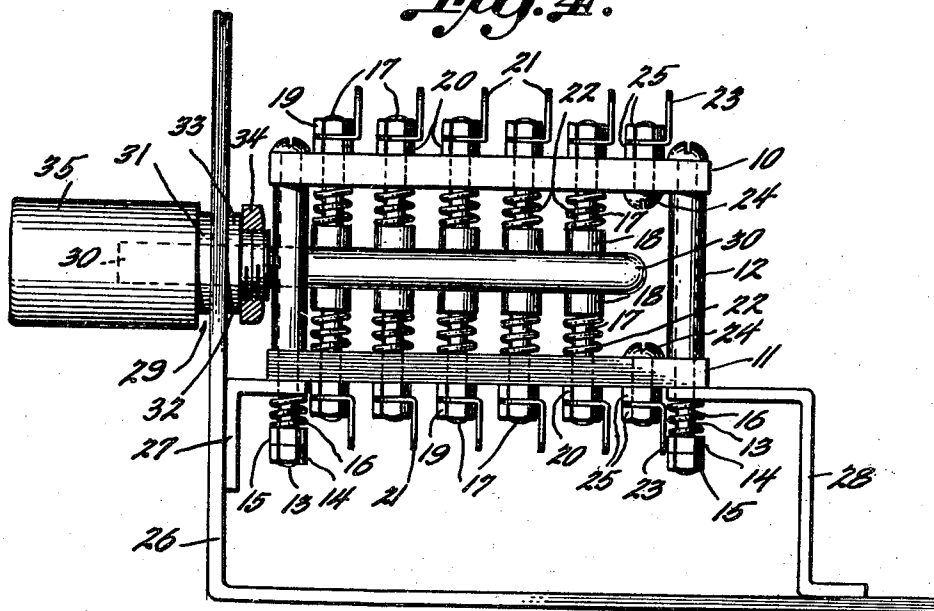
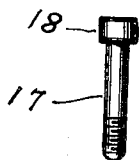


Fig. 3.



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UNITED STATES PATENT OFFICE

2,435,136

MULTIPLE CONTACT JACK

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Application May 28, 1946, Serial No. 672,753

8 Claims. (Cl. 173—328)

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This invention relates to electrical connectors, and more particularly to a multiple contact jack type of connecting apparatus.

In setting up electrical units or in preparing electrical apparatus for testing where circuits are to be connected in many varied and complicated combinations in a given sequence, considerable time and effort is required by an operator to make, break and reconnect the circuits into the desired combinations.

An object of this invention is to provide a simple, efficient and highly practical connecting apparatus for instantly and selectively establishing different predetermined combinations of electrical circuits.

With this and other objects in view, the invention comprises two spaced opposing dielectric members or panels, each having a plurality of rows of resiliently mounted contact plungers extending toward each other between the spaced dielectric panels and having individual terminals on the outside of the panels connected to the contact plungers and wired together into different desired and independent combinations of circuits. The various rows of opposing contact plungers are aligned with a plurality of spaced jack bushings mounted in a casing or panel secured to the two dielectric members. A metal plug is selectively inserted into any one of the jack bushings to force the contact plungers apart in a particular row into intimate contact with the metal plug to connect instantly a plurality of independent wires into a predetermined combination circuit, which is one of many possible combinations made available.

Other objects and advantages will be apparent from the following detailed description when taken in conjunction with the accompanying drawing, wherein

Fig. 1 is a top plan view of the connecting apparatus shown with some of the terminals connected together by wires into desired combinations of circuits;

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1;

Fig. 3 shows one of the plurality of contact plungers disclosed in the structure of Fig. 2; and

Fig. 4 is an end view of the connecting apparatus showing a metal plug inserted between opposing contact plungers in one row to interconnect them into a desired combination circuit.

In the drawings, disclosing one embodiment of the invention, the reference numerals 10 and 11 designate two dielectric members or panels made

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of any suitable insulating material, which are spaced apart by four sleeves 12. Inserted within these sleeves and passing through the two dielectric panels 10—11 are headed bolts 13 which are threaded at their lower ends to receive nuts 14—15, the latter acting as lock nuts. Positioned around the lower portion of the bolts 13 between the lower surface of the panel 11 and the upper surface of nuts 14 are helical coil springs 16 which permit resilient movement between the two insulating panels 10—11.

A plurality of plunger contacts 17 are spaced apart and arranged in opposing rows in holes provided in the panels 10—11. Each of the plunger contacts is made of any suitable metal provided with an integral contact head 18 at one end and a threaded portion at the other end on which are secured two nuts 19—20 with a wire terminal 21 clamped therebetween. Positioned around the shanks of the plungers 17 and between one of the opposing surfaces of the panels 10—11 and the contact heads 18 of the plungers are coil springs 22 which provide resilient support and permit the contact plungers 17 to be forced away from each other.

As shown in Fig. 4, an independent wire terminal 23 is secured in the panels at the end of each row of contacts by a machine screw 24 and two nuts 25 to provide for a more varied combination in the setting up of electrical circuits.

The assembly of rows of opposing plunger contacts, shown in Figs. 1, 2 and 4, is secured to a panel or casing 26 by four brackets 27—28. Mounted in holes in the casing 26 in alignment with the various rows of opposing plunger contacts 17 are a series of insulated jack bushings 29 for receiving and guiding a switch member 30 of the plug type which is inserted in any desired rows between the opposing plunger contacts 17 to interconnect them as shown in Fig. 4.

Each of the insulated jack bushings 29 (Fig. 4) is provided with an integral collar portion 31, which engages the outer face of the casing or panel 26, and a threaded shank 32 on which is threaded a sleeve 33 and a lock nut 34. The threaded sleeve 32 engages the inner surface of the casing 26 and holds the bushing 29 in rigid alignment with a row of the spring pressed opposing plunger contacts 17. A guide bushing is provided for each row of contacts. The bushings are elongated sufficiently to hold the plug accurately in line with the corresponding series of contacts.

The plug or switch member 30 has secured to

one end a handle 35 made of any suitable insulating or dielectric material and the free end of the plug is rounded so that it may readily press the plunger contacts apart when the plug is inserted as shown in Fig. 4. Also, the entrance ends of the bushings 29 are chamfered so that the plug or switch 30 may be easily inserted therein.

In the operation of the apparatus, the terminals 21 and 23 on panels 10 and 11, as indicated in Fig. 1 by way of example may be interconnected into various predetermined circuit combination by electrical wiring 36 and connected to any electrical units to be tested or controlled as desired. Then by inserting the switch member or plug 30 through one of the insulated jack bushings 29, a row of the opposed plunger contacts 17 are pressed into intimate engagement with the metal plug 30 to interconnect the terminals and wires into a desired combination circuit.

The plug 30 may be connected to one side of the source of power by any suitable means so that all contact plungers 17 in alignment with a jack bushing 29 may be contacted and connected at once to power.

By removal of the plug 30 and inserting it into another jack bushing 29, an entirely separate combination of circuits is set up. Thus various and separate combinations of circuits can be selected by inserting the plug 30 into the plurality of jack bushings 29 to interconnect particular rows of plunger contacts 17 and predetermined wire terminals 21 connected thereto.

The embodiment of the invention herein disclosed is merely illustrative and may be modified and departed from in many ways without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. An electrical connecting apparatus including two dielectric members, means for supporting the dielectric members in spaced relationship, plunger contacts resiliently mounted in each of the dielectric members and arranged in a plurality of spaced opposed rows, and conducting means selectively insertable in any row between opposed plunger contacts to interconnect them through the conducting means.

2. An electrical connecting apparatus including opposed spaced dielectric members, terminals spaced apart in an aligned row on the outer surface of each dielectric member, spring pressed plungers connected to said terminals and projecting through the dielectric members to form a row of opposed contacts therebetween, and a removable switch member insertable in the row between the opposed plungers to interconnect them into a predetermined combination circuit.

3. An electrical connecting apparatus including a pair of insulating members, resilient means for supporting the insulating members in spaced relationship and permitting relative movement therebetween, electrical contacts mounted in the insulating members and extending towards each other, and a removable conducting plug insertable between the opposed electrical contacts to interconnect them.

4. An electrical connector comprising a dielectric member, a plurality of resiliently mounted spaced contacts arranged in a plurality of rows

in the dielectric member, and having individual terminals adapted to be connected to electrical circuits, a plurality of insulated jack bushings mounted in alignment with the rows of contacts and a metal plug selectively insertable through any one of the jack bushings into engagement with a selected row of the resiliently mounted contacts to interconnect the contacts through the metal plug to form a combination circuit.

5. An electrical connecting apparatus including spaced dielectric members mounted for movement relative to each other, plunger contacts mounted in the dielectric members in opposed rows and having terminal ends adapted to be connected to electrical units in a plurality of combination circuits, springs engageable with the plunger contacts to maintain the contacts in a normal position, and means selectively positionable between any one of the rows of opposed contacts to force them apart against the action of their springs and interconnect them into one of the said combination circuits.

6. In a multiple contact jack type of connecting apparatus, a casing, a plurality of spaced jack bushings mounted in the casing, a plurality of rows of spaced resiliently mounted and insulated contacts arranged in opposed rows in individual alignment with the jack bushings, and a conducting plug selectively insertable in any one of the jack bushings to engage and interconnect the opposed contacts in that row.

7. An electrical switching device comprising a pair of dielectric members, means for supporting the dielectric members in spaced parallel relationship, a plurality of resiliently mounted contacts carried in the dielectric members and forming opposed rows therebetween, and a conducting switch member adapted to be forced between the opposed resiliently mounted contacts in any row to interconnect them through the switch member.

8. An electrical connector comprising a panel, a plurality of spaced jack bushings insulatively mounted in the panel, a pair of dielectric members secured in spaced relationship to the panel, a plurality of rows of opposed resiliently mounted contacts carried in the dielectric members in alignment with the spaced jack bushings, conductor connecting terminals positioned on the outer surface of each dielectric member and individually connected to the contacts, and a plug having a conducting portion selectively insertable into anyone of the jack bushings to engage and electrically interconnect the opposed contacts in that row.

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REFERENCES CITED

The following references are of record in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
255,056	Vail	Mar. 14, 1882
1,946,889	Wessel	Feb. 13, 1934
2,016,441	Kelley	Oct. 8, 1935

FOREIGN PATENTS

Number	Country	Date
227,590	Great Britain	Jan. 22, 1925