Nov. 10, 1925.

1,560,531

W. G. BLAUVELT

AUTOMATIC SWITCH

Filed May 24, 1924

Fig. 1

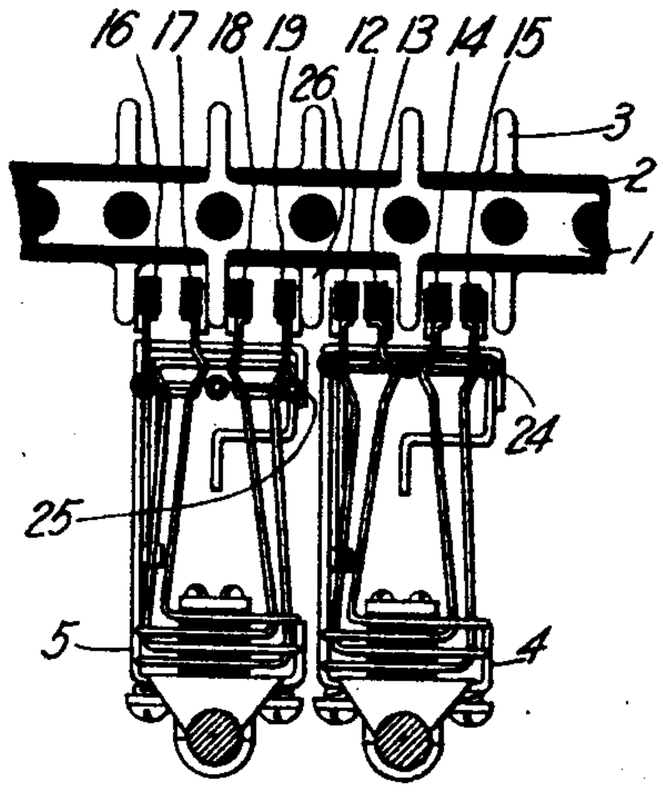
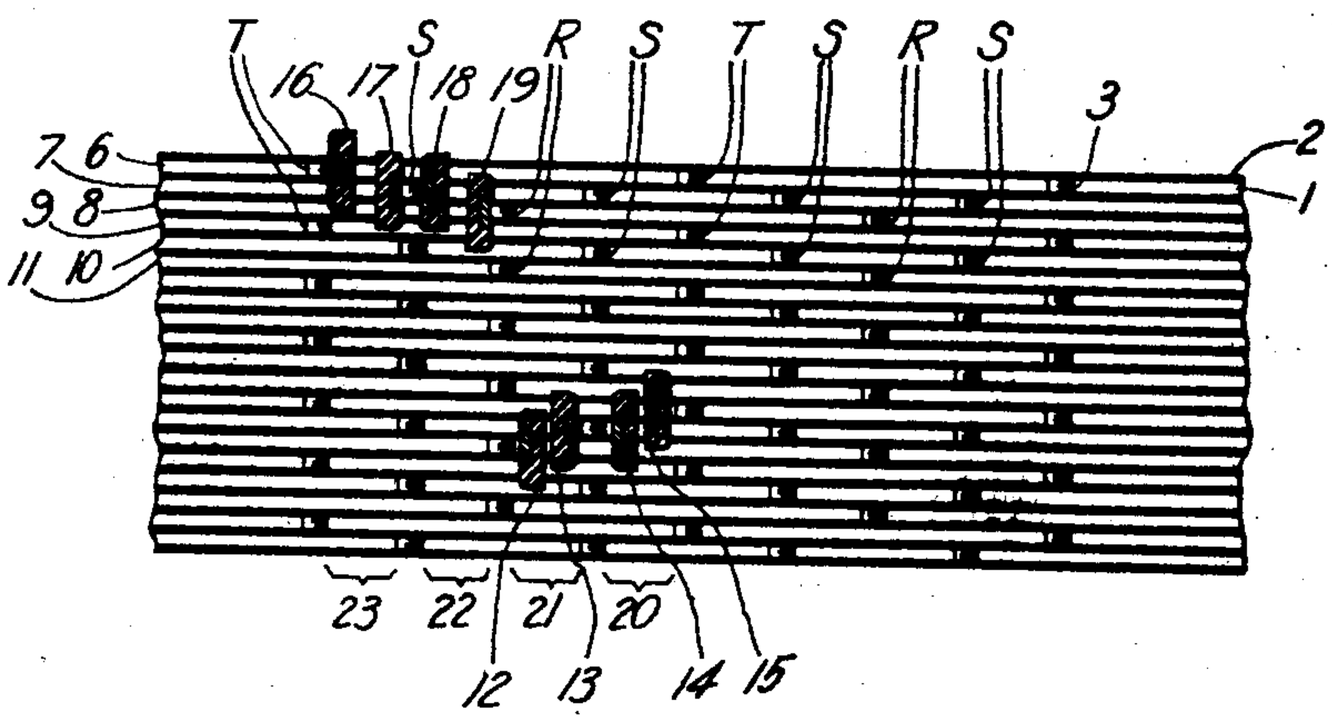


Fig. 2



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by Geo. Atty.

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UNITED STATES PATENT OFFICE.

WILLIAM G. BLAUVELT, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK.

AUTOMATIC SWITCH.

Application filed May 24, 1924. Serial No. 715,709.

To all whom it may concern:

Be it known that I, WILLIAM G. BLAUVELT, residing at New York, in the county of New York and State of New York, have invented certain Improvements in Automatic Switches, of which the following is a specification.

The present invention relates to telephone systems and more particularly to switches for use in the automatic establishment of connections in such systems.

The invention is particularly applicable to switches of the type having terminal banks in the form of a panel with contact terminals projecting therefrom. It is customary to arrange these terminals in rows both vertically and horizontally, each horizontal row being connected to a particular outgoing conductor. These outgoing conductors are arranged into sets which make up the various outgoing trunks or lines. These outgoing trunks or lines usually require three conductors identified as tip, ring and sleeve, Occasionally four conductors are necessary. The brushes which make contact with these contact terminals usually move in a vertical direction and are provided with a tripping means which normally holds them out of engagement with the contact terminals, but may be released to cause them to rub over the terminals. The terminals connected to the corresponding conductors of the trunks of a group are arranged in a vertical row and heretofore there has been a terminal for each conductor of a trunk for each brush set.

It is an object of the present invention to provide a novel arrangement of the elements of such a switch.

A feature of the invention lies in making the channels formed by the contact terminals individual to the brush sets moving in them.

Another feature of the invention lies in the use of certain rows of contact terminals in common by adjacent brush sets.

The invention has been disclosed in connection with a switch of the type described and claimed in U. S. Patent 1,123,695 to E. B. Craft and J. N. Reynolds, granted January 5, 1915.

In the drawing Figure 1 is a cross-section through the panel bank and the brush sets. Fig. 2 is a face view of the panel showing the tips only of the brushes.

The panel bank shown is made of alternate strips of metal 1 and insulation 2, the metal strips having projecting lugs for the purpose of being engaged by the brush sets 4 and 5. Referring to Fig. 2 strips 6, 7 and 8 are connected with one outgoing trunk, strip 6 with the tip, strip 7 with the sleeve and strip 8 with the ring conductors of that trunk (not shown). Similarly strips 9, 10 and 11 are connected with the conductors of a second outgoing trunk and so on. These strips are so disposed that the lugs or contact terminals are arranged in vertical rows projecting from the panel.

An inspection of the drawing will show that the lugs on the tip and ring strips 6, 8, 9 and 11 are twice as far apart as the lugs on the sleeve strips 7 and 10 and are alternately disposed between the sleeve lugs. This arrangement forms channels 20, 21, 22 and 23 within which the tips of brushes 12 to 15 and 16 to 19 move. It is to be noted that channels 20 and 21 are individual to brush set 12 to 15 and channels 22 and 23 to brush set 16 to 19.

Referring now to Fig. 1, it will be noted that brushes 12 to 15 and 16 to 19 are so mounted that the inner pairs 13, 14 and 17, 18 tend to move toward one another while the outer pairs 16, 19 and 12, 15 tend to move outward so as to engage the inside of the corresponding terminal lugs. Devices 24 and 25 are provided for controlling the engagement of the brushes with the terminal lugs. Device 24 is shown in its normal position holding the brushes 12 to 15 away from the contact lugs. Device 25 is shown in its tripped position permitting the brushes 16 to 19 to engage the contact lugs. Brushes 19 and 12 are so arranged as to make contact with the opposite sides of the same lug 26. Supposing that lug 26 is on a strip connected with the tip conductor of the trunk, then both brushes 19 and 12 must be wired to the tip of the incoming trunk. It is, therefore obvious that the wiring of adjacent brush sets must be in reverse order.

From the foregoing it is clear that the arrangement of the present invention provides a pair of channels individual to each brush set and, therefore, there is no chance of adjacent brush sets interfering with one another in their movement over their corresponding terminals. It also provides for the common use of certain rows of terminal

lugs by adjacent brush sets thus permitting the switch structures to be mounted on closer centers. Where this is not desirable it permits making the contact terminals wider and hence stronger and less subject to wear. The present invention, therefore, is especially useful in producing economies in telephone systems by permitting either more switches for a given terminal bank area or by increasing the life of the terminal banks. It further produces economy in reducing the likelihood of accident or damage to the switches. It reduces the amount of metal in two-thirds of the terminal strips, which saving, although small in the individual strip, when multiplied by the number of strips necessary for even a single office, amounts to a considerable sum.

What is claimed is:

1. In an automatic switch, a terminal bank comprising a plurality of projecting contact lugs arranged in rows forming channels therebetween, and a plurality of brush sets for engaging said terminal lugs and having their tips positioned for travel in said channels, a pair of said channels being individual to each said brush set.

2. In an automatic switch, a terminal bank comprising a plurality of projecting contact lugs arranged in rows, and a plurality of brush sets for making contact with said terminal lugs, certain rows of said lugs being accessible in common to adjacent brush sets.

3. In an automatic switch, a terminal bank comprising a plurality of projecting contact lugs arranged in rows forming channels therebetween, and a plurality of brush sets for engaging said terminal lugs and having their tips positioned for travel in said channels, a pair of said channels being individual to each said brush set and certain rows of said lugs being accessible in common to adjacent brush sets.

In testimony whereof, I have signed my name to this specification this 17th day of May, 1924.

WILLIAM G. BLAUVELT.