May 26, 1936. H. G. FISCHER ET AL 2,042,334

LOW VOLTAGE GENERATOR

Original Filed March 23, 1931 · 2 Sheets-Sheet 1

Fig. 1

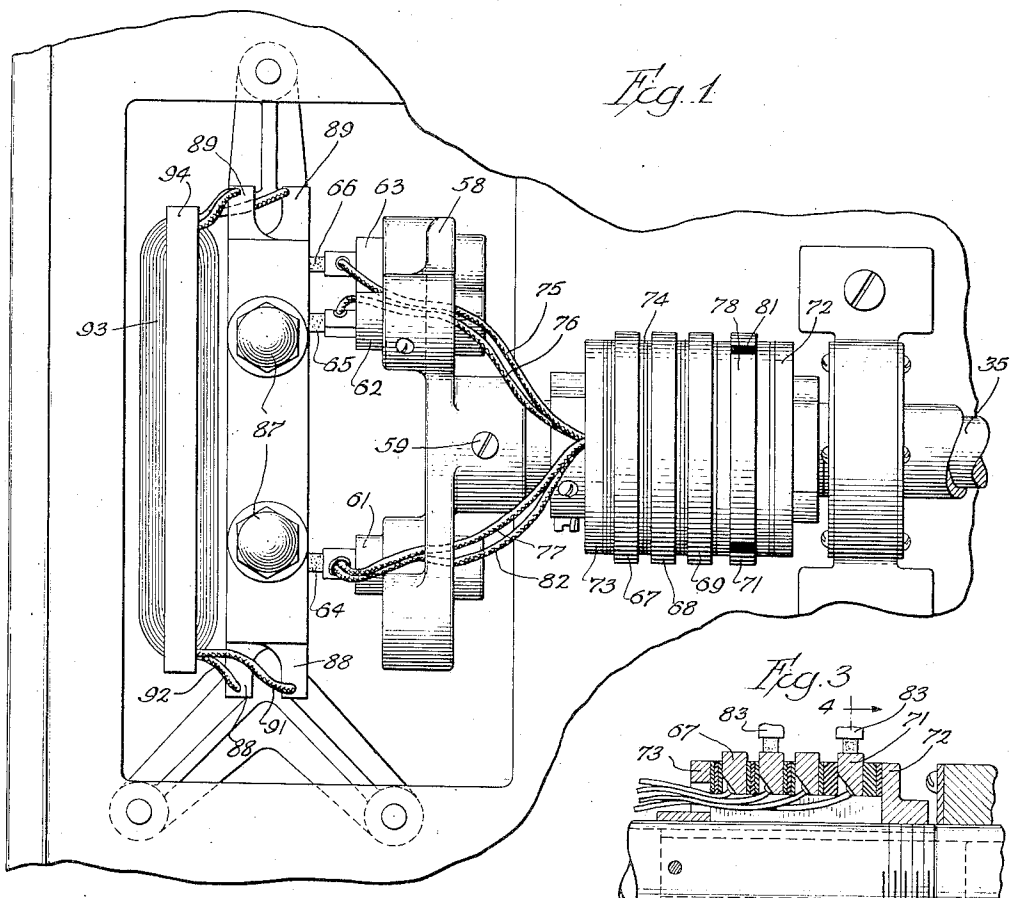


Fig. 3

Fig. 2

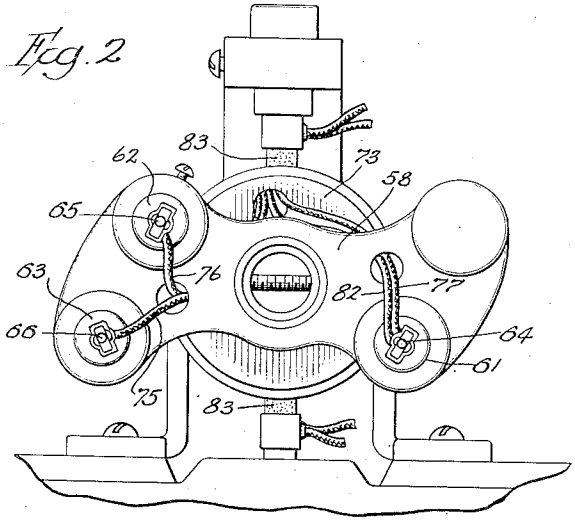
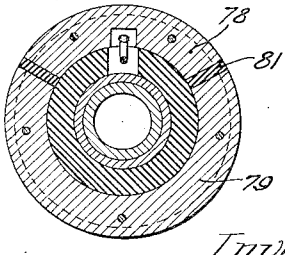


Fig. 4



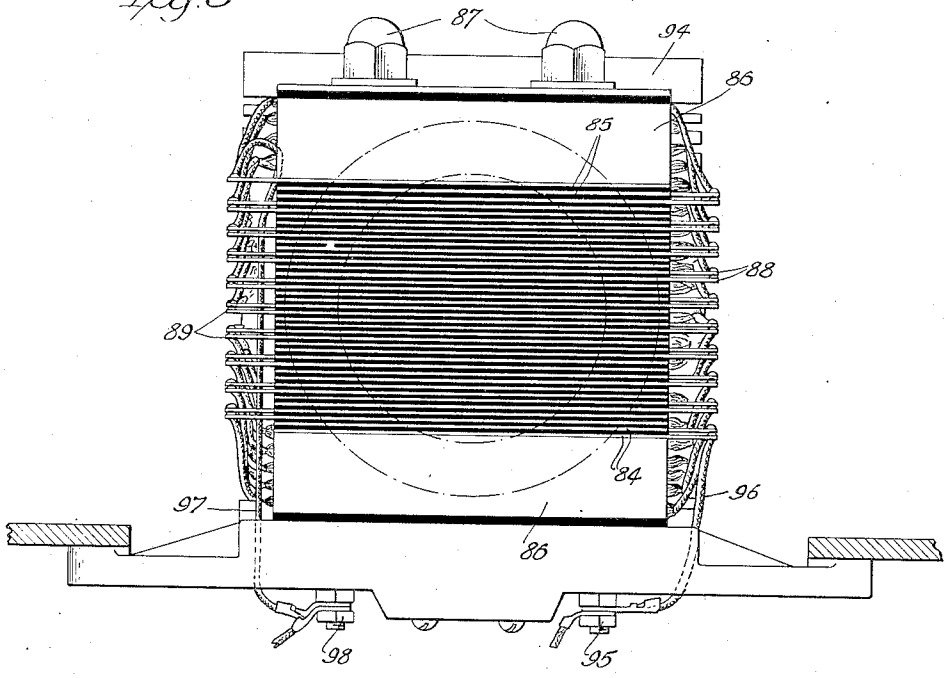
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Fig. 5



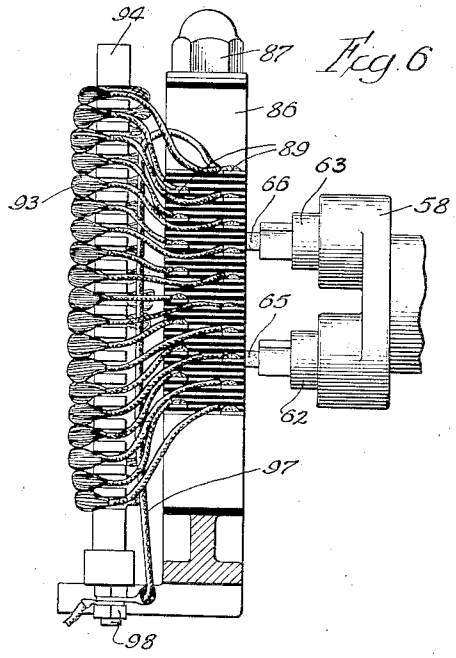


Fig. 6

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2,042,334

LOW VOLTAGE GENERATOR

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Original application March 23, 1931, Serial No. 524,530, now Patent No. 2,004,751, dated June 11, 1935. Divided and this application May 5, 1934, Serial No. 724,034

2 Claims. (Cl. 201—48)

This invention relates in general to low voltage generators and more particularly to an improved commutator assembly for use in a simple low voltage, multi-wave apparatus employed in electro-physiotherapy, such as that disclosed in our co-pending application Serial No. 524,530, filed March 23, 1931, and issued June 11, 1935, as Letters Patent No. 2,004,751, of which this application is a division.

A principal object of the present invention is the provision of a commutator of the character described, which is simple, compact and rugged of construction and in which the several electrical connections may be quickly and easily effected.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, when taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

On the drawings,

Figure 1 is a fragmentary plan view of a commutator constructed in accordance with the present invention;

Fig. 2 is an end view of the brush head and associated parts;

Fig. 3 is a transverse longitudinal section through the collector rings;

Fig. 4 is a section taken substantially on the line 4—4 of Fig. 3;

Fig. 5 is a front elevation of the commutator; and

Fig. 6 is a side view of the structure shown in Fig. 5.

Referring to the drawings, a shaft 35 is provided at its left hand end with a brush head 58 secured at 59 upon the end of the shaft. This brush head in the instant embodiment of the invention is provided with three sockets, identified by reference characters 61, 62 and 63, in which are mounted brushes 64, 65 and 66, respectively. The shaft 35 is provided with four collector rings, indicated respectively at 67, 68, 69 and 71. These collector rings are mounted between collars 72 and 73 and are insulated from each other and from the surrounding structure at 74.

Wire 75 leads from brush 66 to collector ring 68. Wire 76 leads from brush 65 to collector ring 67. With particular reference to Fig. 4, it will be noted that collector ring 71 is divided into segments 78 and 79 which are insulated from each other at 81. The segment 78 is electrically connected by a wire 82 with the brush 64 so that this brush is electrically connected to both the collector rings 69 and 71. Suitable fixed brushes 83 are provided for continuous engagement with the collector rings as they rotate, and these brushes deliver and receive the current from the stationary portion of the circuit wiring (not shown).

The commutator element is mounted for engagement by the brushes 64, 65 and 66 as they rotate with the shaft 35. This commutator is built up of a plurality of intermediate parallel bars 84 arranged in superposed stacked relation and having relatively narrow side edges arranged in a single plane. The bars 84 are electrically insulated from each other at 85. Blocks or bars 86 of electrical conducting material are arranged at the ends or top and bottom of the commutator and serve to securely clamp the bars 84 together. The bars 84 and blocks 86 together with the interposed insulation 85 are tightly clamped into a single compact unit by bolts 87, with the presented edges or faces of these parts in a single plane for engagement with the brushes. The blocks 86 and the bars 84 are electrically connected to interposed resistance coils, which will now be described.

Each bar 84 is extended alternately at its ends, as may be seen by comparing Figs. 1 and 5, to provide lugs or terminal portions 88 and 89, and on adjacent bars the position of the lugs is reversed, this arrangement providing room for wires 91 and 92 to be connected to the extended ends or lugs of the bars by soldering or in any other suitable manner.

A resistance coil is arranged in the connection between each two successively arranged or adjacent bars 84. These coils, generally indicated at 93, are wound about a carrier 94 arranged back of or to the left of the unit formed of the bars 84 and blocks 86. An inlet terminal 95 is connected by a wire 96 with the lowermost bars 84, as shown in Fig. 5. This bar is in electrical contact with the bottom block 86. The wiring is such that current passing through the commutator from the terminal 95 flows first in and to the bottom bar 84 and block 86, thence serially to the successively arranged bars 84, and the interposed resistance coils 93 to the uppermost bar 84 and uppermost block 86. The last mentioned parts are connected by a wire 97 with a second or outlet terminal 98.

From the foregoing description it will be apparent that a very compact and rugged commutator structure is provided and one in which the various electrical connections may be quickly and easily effected with minimum effort.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

We claim:

1. A rheostat assembly, comprising a plurality of relatively narrow bars arranged side by side with edges thereof in a single plane, relatively narrow strips of insulating material between said bars, a plurality of brushes in fixed relation to each other, and means for imparting movement in circular paths of different diameter to said brushes, respectively while maintaining them in engagement with the edges of said bars.

2. A rheostat assembly, comprising a plurality of relatively narrow bars arranged side by side with the bare edges thereof in a single plane, strips of insulating material inserted between said bars, electric resistance coils connecting the adjacent bars of the assembly, a plurality of brushes, a carrier for said brushes, means for imparting a rotary movement to said carrier while the brushes are in engagement with the exposed faces of said bars, two of said brushes being mounted on the carrier to have the same distance from the axis of rotation, and a third brush being mounted on the carrier having a distance from the axis of rotation different from said first named brushes and adapted to come into contact with the exposed faces of the bars with which the first named two brushes do not come into contact.

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