April 22, 1952 A. W. ALBRECHT 2,594,111

ELECTRICAL APPARATUS

Filed Dec. 14, 1949

Fig. 1

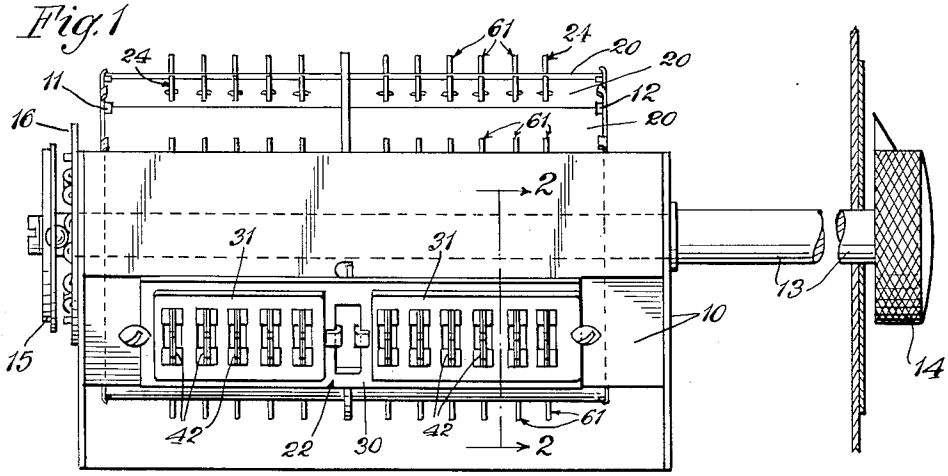


Fig. 5

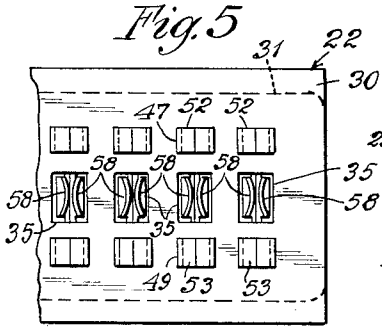


Fig. 4

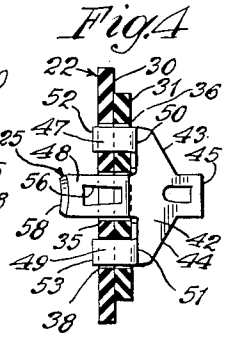


Fig. 3

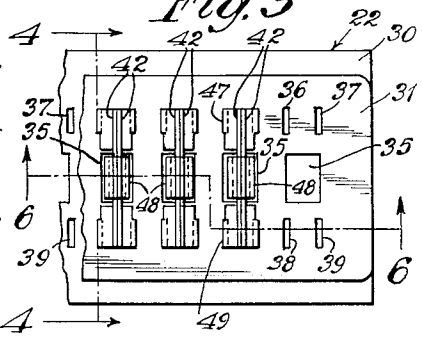


Fig. 9

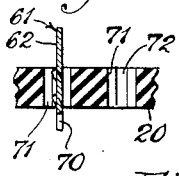


Fig. 10

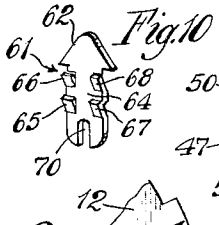


Fig. 7

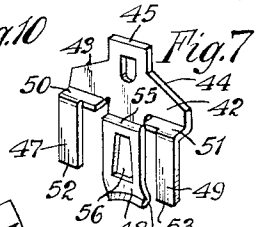


Fig. 6

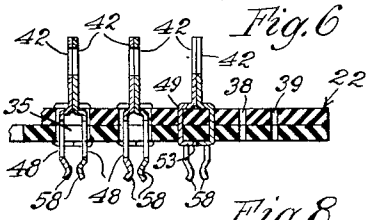


Fig. 2

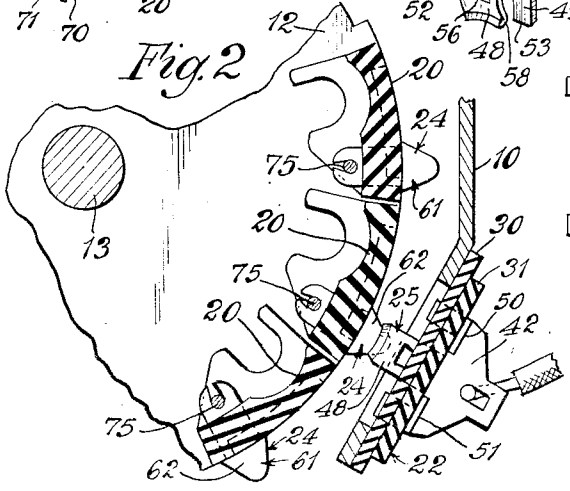
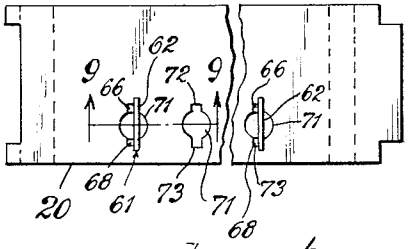


Fig. 8



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UNITED STATES PATENT OFFICE

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ELECTRICAL APPARATUS

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Application December 14, 1949, Serial No. 132,839

1 Claim. (Cl. 200—6)

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This invention relates to an electrical apparatus and particularly to a tuner construction for use with high frequency circuits such as are encountered in television. The invention pertains to that type of tuner wherein a turret or head may be indexed to a number of positions, each position providing for tuned circuits being connected to the television receiver or other device.

High frequency tuners require excellent contacts in order to maintain low ohmic resistance. In addition, it is important that the contact strips be rugged and economical. Due to the frequency with which tuners are operated and the large number of contacts used, it is important that the above requirements be met.

The invention to be described hereinafter provides a structure which makes it possible to manufacture and wire a tuner at moderate cost. In order that the invention may be explained, reference will now be made to the drawing wherein Figure 1 shows a plan view of a tuner embodying the present invention. Figure 2 is an enlarged sectional detail on line 2—2 of Figure 1. Figure 3 is a partial top view of a stationary contact strip. Figure 4 is a sectional detail on line 4—4 of Figure 3. Figure 5 is a bottom plan view of the structure of Figure 3. Figure 6 is a sectional detail on line 6—6 of Figure 3. Figure 7 is a perspective detail of a stationary contact part. Figure 8 is a detail of one of the contact strips on the rotor showing one pair of contacts in position. Figure 9 is a sectional detail on line 9—9 of Figure 8 and Figure 10 is a perspective detail of a rotor contact.

The tuner to which this invention pertains comprises frame 10 of any suitable construction having spiders 11 and 12 mounted on shaft 13 rotatable in suitable journals in end plates not shown. Shaft 13 carries knob 14 at one end thereof and carries index mechanism 15 cooperating with stationary index plate 16 at the other end thereof.

Spiders 11 and 12 form part of a rotor carrying a number of rotor contact strips 20. As is well known in this type of tuner, each rotor contact strip corresponds to one index position with the rotor generally cooperating with stator contact assembly generally indicated by numeral 22.

Each rotor strip is of suitable insulating material and carries a strip of rotor contacts 24 extending parallel to shaft 13. Each rotor strip 20, in practice, may have a number of

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inductance and capacitive elements connected to the series of contact clips and forming one or more tuned circuits, all well known in the art. Stator strip 22 carries a series of stator contacts 25 which are adapted to be engaged by one series of rotor contacts at any one time. The stator contacts are connected to various amplifiers and circuits for cooperation with the tuner circuits in the rotor.

Referring now to the stator strips, this comprises base strip 30 of insulating material extending for the full length of a rotor and anchored to frame 10 in any suitable manner. Each insulating strip 30 has disposed thereon one or more insulating strips 31. The superimposed insulating strips 30 and 31 are provided with a number of registering groups of apertures, each group corresponding to one contact position. Inasmuch as the various groups are similar, only one will be described in detail. Thus, the two insulating strips have rectangular aperture 35 symmetrically disposed with respect to the long side of the insulating strips. On each side of rectangular aperture 35 are slots 36 to 39 inclusive. As is clearly indicated in Figure 3, slots 36 to 39 inclusive have a long side extending transversely of the insulating strips with the slots being disposed generally in line with the transverse sides of aperture 35.

Each group of apertures comprising aperture 35 and slots 36 to 39 inclusive, has a pair of contact members cooperating to form a stator contact clip. Thus referring to Figure 7, one such contact member is shown. This member comprises body 42 having sloping shoulders 43 and 44 with soldering lug 45. Below body 42, the contact clip portion has three depending portions 47, 48 and 49 respectively. Portions 47 and 49 are for fastening and are similar. Thus portions 47 and 49 are both offset laterally of body 42 at parts 50 and 51 respectively. The offsets for portions 47 and 49 are in the same direction. Fastening portions 47 and 49 are long enough to extend through a pair of slots such as 36 and 38 for example, with end portions 52 and 53 protruding beyond two thicknesses of insulation and being bent along the surface of the insulating plate. Contact portion 48 has a slight offset at 55 in the same direction as offsets 50 and 51. Contact portion 48 has cutout 56 and has active contact portion 58 at the tip shaped as shown in the various figures. Thus contact portion 58 is curved as shown in Figure 5, for example, so that a pair

of contact tips 58 provide a sort of hour-glass region between them.

As is clearly indicated in the drawing, a pair of contact clips cooperate to provide a stator contact, the two clips being arranged so that opposite offsets 50 and 51 extend away from each other. Tip portions 52 and 53 of one clip are bent toward the other clip as shown in Figure 6. Thus, a rigid stator contact having a pair of jaws is provided, said contact as a whole providing rigidity in a direction transverse to the mounting strips with resilience in a direction lengthwise of the mounting strips and parallel to shaft 13. Spaced offsets 50 and 51 of each portion of the contact, together with massive shoulders 43 and 44 tend to endow the contacts with great rigidity as well as enabling the contacts to dissipate heat from a soldering iron. Contact portion 48 has substantial spring thereto and makes it possible for a pair of opposed contact members to have good wiping action.

Referring now to the rotor contacts, each pair of stator contact members forming one complete contact unit cooperates with a rotor contact clip shown in detail in Figure 10. This rotor contact clip, generally indicated by numeral 61, has contact tip 62 having the general shape of a flat arrowhead. Head 62 is carried by body 64 preferably somewhat narrower than the base of head 62. Body 64 has a number of spines 65 to 68 inclusive formed thereon, these spines being bent out of the plane of body 64. Body 64 at the bottom terminates in soldering lug 70.

Each rotor contact member 61 is mounted in a suitably shaped aperture in rotor contact strip 20 of insulating material. Thus referring specifically to Figure 8, an aperture for a rotor contact clip consists of circular portion 71 with diametrically opposed wings 72 and 73 extending transversely of body 20. Each aperture for mounting a contact is so designed that spines 65 to 68 inclusive will lie in wings 72 and 73. The transverse dimension of the wings is made small enough so that the spines will bite into the insulating material of which strip 20 is made.

It will be noted that lug portion 70 of a rotor contact has substantially the same width as body portion 64 so that a rotor contact clip may be inserted, lug first, and pressed home into position. As a rule, heavy copper wires 75 may be disposed in the slot of a soldering lug and prevent the rotor contact from working outwardly.

Furthermore, the spines stamped out of the body of the contact prevent the contact from working out. The plane of contact portion 62 of a rotor contact is transverse of the mounting strip so that contact portion 62 may cooperate with a pair of spring jaws in the stator contact assembly.

What is claimed is:

In a turret type high frequency tuner, the combination of a stator contact unit and rotor contact unit, each stator contact unit consisting of two similar opposed clip portions, each clip portions comprising a pair of massive shoulder portions and a solder lug portion, said shoulder and lug portions of the two clip portions being adapted to lie against each other, each clip portion having a pair of spaced fastener portions offset transversely away from the other clip portion, each clip portion having a central contact portion, a pair of cooperating clip portions being mounted in an insulating support having a central aperture for the contact jaws and spaced slots for the fastener portions, said fastener portions extending through the insulating support and being bent toward each other, each contact jaw being shaped so that a pair of cooperating jaws provide a generally hour-glass-shaped region, said rotor contact comprising a body portion having a flat arrow-head-shaped portion as the active contact portion at one end and a soldering lug portion at the other end, said body portion having a number of spines formed therefrom, said body and soldering portion being substantially the same width and said rotor contact being mounted on a rotor insulating support, each rotor contact being insertable in said support lug portion first, said contact portion functioning as a stop for the contact in its travel into the insulating support, said spines being pointed toward the contact portion to prevent withdrawal.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,670,189	Christie	May 15, 1928
1,841,736	Jones	Jan. 19, 1932
1,992,806	Benander	Feb. 26, 1935