

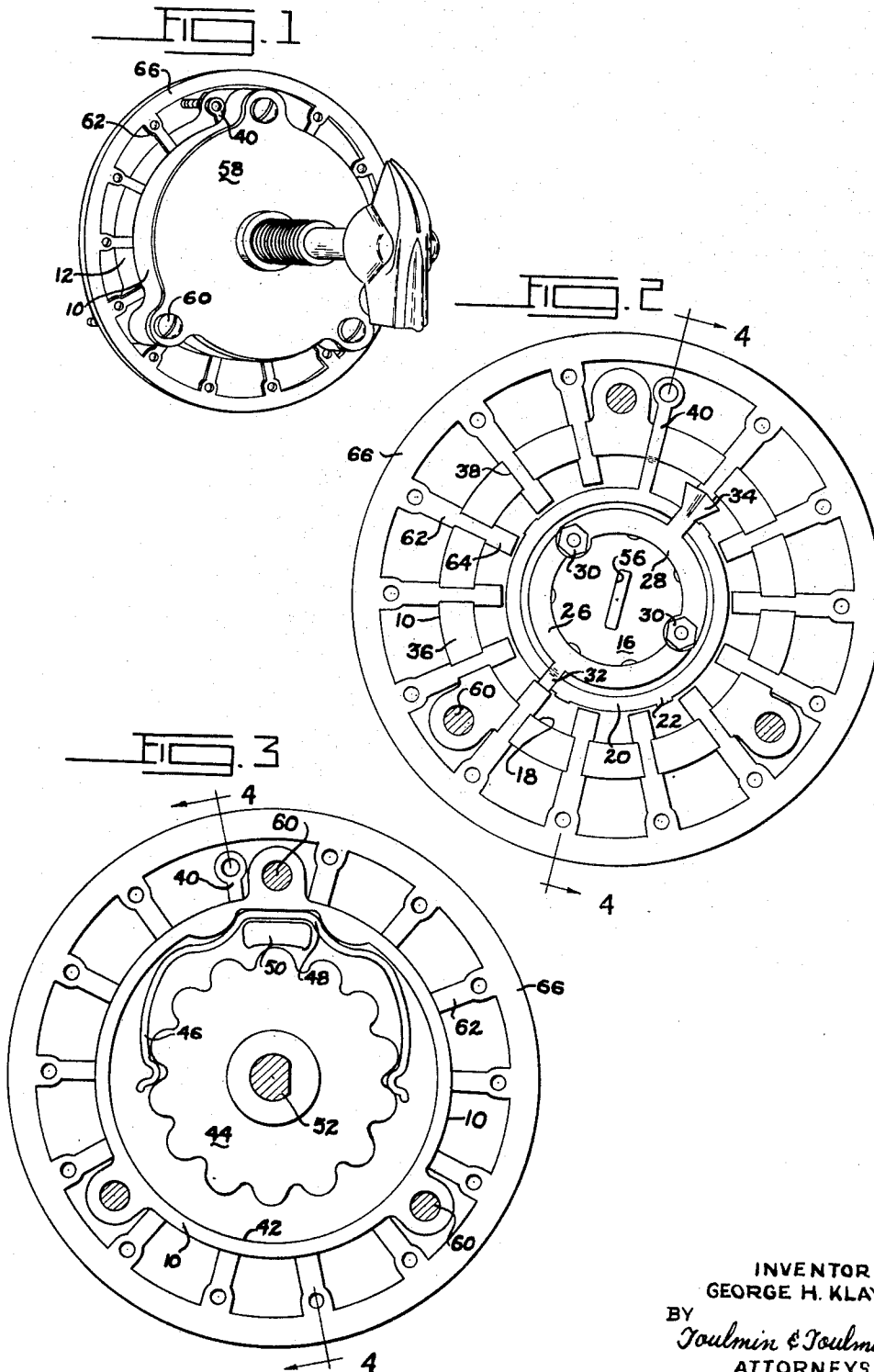
July 24, 1951

G. H. KLAY
SELECTOR SWITCH

2,561,930

Filed Jan. 30, 1948

3 Sheets-Sheet 1



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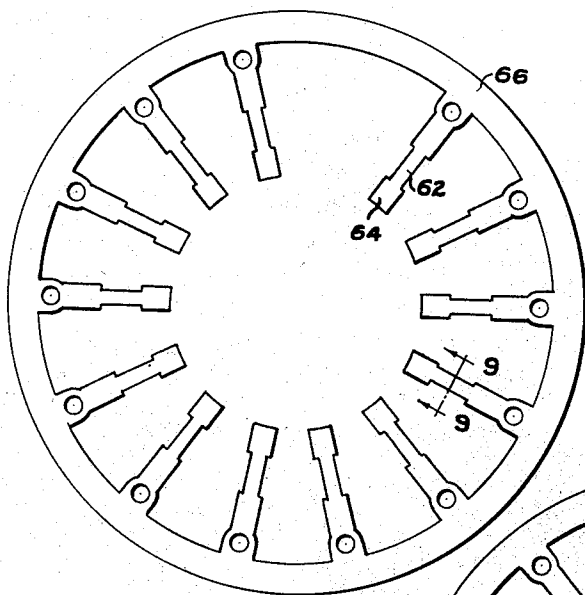


FIG. 5

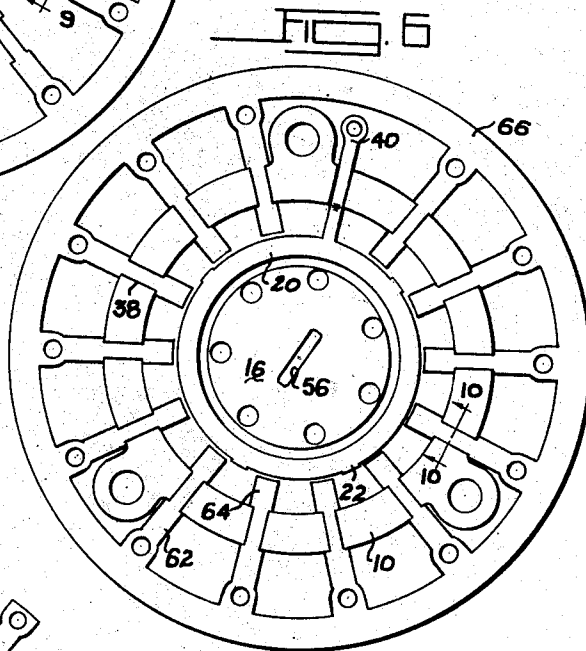
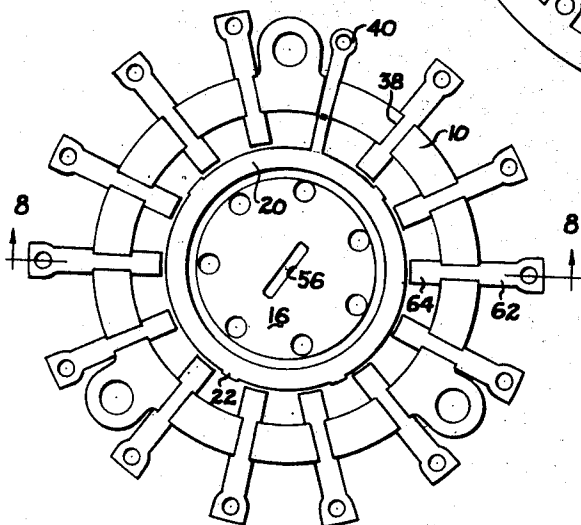


FIG. 6

FIG. 7



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FIG. 11

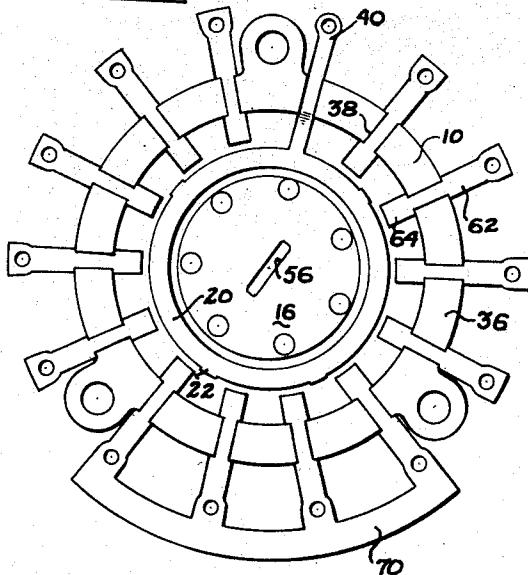


FIG. 9



FIG. 10

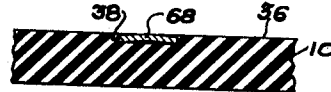


FIG. 8

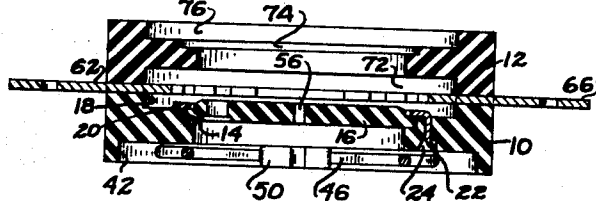
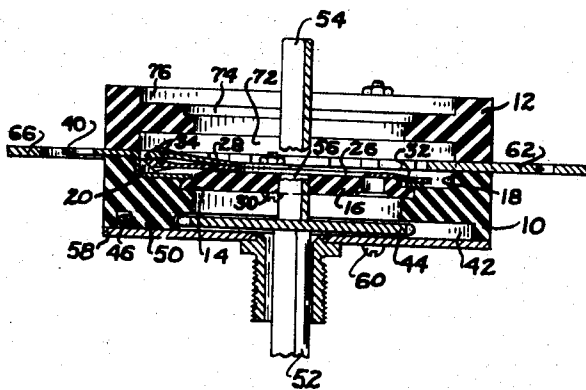


FIG. 4



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SELECTOR SWITCH

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Application January 30, 1948, Serial No. 5,217

2 Claims. (Cl. 200—11)

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This invention relates to switches, and particularly to rotary type electrical switches in which a rotatable collector member is adapted for selectively making contact with any of a plurality of stationary contacts.

Switches of the nature referred to above are often employed in connection with instruments such as radio tube testers and the like.

Formerly it has been customary to secure the fixed contacts in position on a suitable insulating member by riveting and then to arrange the disc assembly in relationship to a rotary contact member such that contact between a rotary member and the fixed contacts can selectively be made.

Ordinarily, a suitable detent mechanism is associated with the rotary member so that it has a plurality of rest positions wherein contact is made.

One of the principal difficulties encountered in constructing a switch according to the prior art is that the assembling of the fixed contacts is a laborious procedure and the arrangement thereof so that they all lie in the proper plane is difficult to accomplish.

The primary object of the present invention is to provide an improved type rotary selector switch which is at one time easier to assemble than switches according to the prior art and which is more inexpensive in that it involves less assembly time and labor.

Another object of this invention is to provide an arrangement for a rotary type selector switch wherein a certain number of the switch connections can be made at the time of assembling the switch and thus eliminating external wiring and soldering.

Still another object is the provision of a rotary type selector switch which is sealed against the introduction of dirt to the contact chamber.

Still another object of this invention is the provision of a rotary type selector switch wherein the contacts are firmly anchored so that the connection of wires thereto does not disturb their alignment with each other.

These and other objects and advantages will become more apparent upon reference to the following description taken in connection with the accompanying drawings in which:

Figure 1 is a perspective view of a switch constructed according to this invention;

Figure 2 is a view looking in at the bottom of the switch shown in Figure 1;

Figure 3 is a view similar to Figure 2 but looking down from the knob end of the switch in

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Figure 1 and with the cover plate removed therefrom;

Figure 4 is a vertical section through the switch and is indicated by the lines 4—4 on Figures 2 and 3;

Figure 5 is a plan view showing the member from which the fixed contacts are cut and before assembly of the member with the switch body;

Figure 6 shows the member including the fixed contacts in assembled position with the switch body;

Figure 7 is a view like Figure 6 but showing the fixed contacts separated from each other;

Figure 8 is a sectional view located by the line 8—8 on Figure 7 and showing how adjacent parts of the switch body serve to clamp the fixed contacts in position;

Figure 9 is a sectional view indicated by the line 9—9 on Figure 5 and showing the configuration of the fixed contacts at the point where they engage the switch body;

Figure 10 is a sectional view indicated by the line 10—10 on Figure 6 and illustrating the appearance of the fixed contacts after they have been pressed into the switch body; and

Figure 11 is a view similar to Figure 7 but showing some of the fixed contacts connected by the ring with which they are formed.

Referring to the drawings, a switch constructed according to this invention comprises a body consisting of the parts 10 and 12. The construction of the parts 10 and 12 will be seen in Figures 1 through 4. The part 10 is recessed as at 14 for receiving a rotor 16 and a somewhat enlarged counter-bore 18 surrounds the said recess.

The rotor 16 is adapted for being retained in position in the recess by an annular contact member 20 which is releasably retained in overlapping position with the periphery of the rotor by the spring fingers or tongues 22 thereof which extend through slots 24 spaced around the periphery of the recess 14.

The rotor also carries the spring contacts 26 and 28 which are retained in position by the screws and nuts 30. The spring contact 26 includes a resilient finger 32 which rides on the ring 20 and both the contact members 26 and 28 include the spring fingers 34 which are adapted for engagement with the fixed contacts as will be seen hereinafter.

The rim 36 of the body part 10 has a plurality of radially extending grooves or slots therein as indicated at 38. These grooves or slots are for

the purpose of receiving the stationary contacts and at least one of the said slots provides a passage for the arm 40 on the fixed contact ring 20 by means of which a connection can be made to the ring externally of the switch.

According to this invention the body part 10 is recessed as at 42 on the side opposite the recess 14 and mounted in the said recess is a notched index plate 44. As will be seen in Figure 3 the notched index plate is engaged on opposite sides by the rounded ends of a C-shaped spring 46 which has its center part bent out as at 48 to fit between a lug 50 and the periphery of the recess 42.

The arrangement at the middle part of the spring prevents the same from shifting angularly within the recess 42 and thus accurately locates the index plate in its several indexed positions.

The index plate is mounted on a shaft 52 which has a flat blade 54 thereon that extends through a rectangular notch 55 in the rotor 16. It will be apparent that indexing movements of the shaft will be accompanied by indexing movements of the rotor.

The shaft and index plate are retained in position by a cover plate 58 which is secured to the face of the body part 10 by the screws 60 which extend through lugs on the body parts 10 and 12 and thus retain the entire switch assembly rigidly together.

Returning to the fixed contact arrangements, these will be seen to comprise a plurality of radially extending fingers 62, the inner ends of which as at 64 lie in the path of the resilient fingers 34 carried by the rotor, and the outer ends of which are interconnected by a ring 66.

It will be apparent that the entire fixed contact group can be formed in one integral part by a stamping operation. The advantage of so forming the fixed contacts is that they can be assembled with the switch body as a single piece. The sequence of steps in the assembling of the fixed contacts with the switch body is illustrated in Figures 5, 6 and 7.

In Figure 5 the stamping member, including the fixed contacts and their supporting ring, is shown.

In Figure 6 this member is assembled with the switch body as a unit.

In Figure 7 the ring part of this member has been severed between the individual contact fingers so that they can have individual wires connected therewith.

In order firmly to fix the individual contacts to the switch body an intermediate portion of each finger, that is the portion which extends across the rim of the switch body, is formed to a non-planar configuration as indicated at 68 in Figure 9. The width of the portion 68 will be seen to be substantially the same as the width of the slots 38.

In assembling the fixed contacts with the switch body the fixed contact member is placed on the switch body with the parts 68 of the individual fingers of the member resting in their corresponding slots 38. Thereafter pressure is applied to the fixed contact member and it is deformed into the position indicated in Figure 10. The deforming of the contact fingers causes them to spread laterally and thereby to dig into the side walls of the slots 38 and to hold the said fingers tightly in position. Thereafter the body part 12 is assembled on the body part 10 and this additionally serves to clamp the fingers in posi-

tion. The severing of the ring 66 between the contact fingers may be carried out at the same time the said fingers are pressed into their slots 38 if desired, or this operation may be carried out after the switch has been completely assembled.

As shown in Figure 11 some of the contact fingers may be left interconnected as indicated by the partial ring at 70 which is not clipped from the contact fingers. This permits certain connections to be made between the fingers without the use of wire and solder and materially reduces the time of installation of the switch in the circuit with which it is used.

It will be apparent that the clamping together of the body parts 10 and 12 not only serves to tighten and hold the contact fingers in proper position relative to the body part so that the rotary contacts will properly engage each and every one thereof, but also serves to exclude dust and dirt from the contact chamber formed by the recess and counter-bore in the body part 10 and the recess 12 in the body part 12.

One advantage incident to the clamping action of the body parts on the contact fingers is that bending of the said fingers externally of the switch when connections are made thereto, does not change the position of the inner end of the contact finger. This is a distinct advantage over the usual types of mounting for contact fingers which are such that bending of the fingers anywhere will bring about shifting of all other parts thereof.

The switch illustrated in the drawings is a single deck switch, but it will be apparent that as many decks could be employed as desired. As best seen in Figures 4 and 8 the body part 12 is also recessed and counter-bored as at 74 and 76, respectively, in the same manner as the body part 10 is recessed and counter-bored at 14 and 18. Thus, if desired, a rotor could be mounted in the recess 74 and a contact ring mounted on the face of the body part 12 and clamped thereagainst by still another body part.

In a double deck arrangement of this type a single detent mechanism is sufficient so that all that would have to be added to the body part 12 would be the rotor, the fixed contacts, and a closure or clamping member such as another body part. It will be evident that as many decks as were necessary could be built up in this manner and that each of the said decks would retain the advantages set forth in connection with the single deck switch illustration.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions and, accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. In a switch; a body of electrical insulating material having a shouldered recess therein, a rotor also of insulating material rotatably mounted in the shouldered part of said recess, a stationary contact ring mounted in said recess and releasably secured in position by resilient members which extend through slots in said body member parallel to said shouldered recess, said contact ring contacting said rotor periphery in sliding engagement to retain the rotor in trapped position between contact ring and the shouldered portion of said recess, and a resilient contact finger secured to said rotor and slidably engaging said fixed stationary contact ring.

2. In a switch; a body of electrical insulating material having a shouldered recess therein, a rotor also of insulating material rotatably mounted in the shouldered part of said recess, a stationary contact ring mounted in said recess and releasably secured in position by resilient members which extend through slots in said body member parallel to said shouldered recess, said contact ring contacting said rotor periphery in sliding engagement to retain the rotor in trapped position between contact ring and the shouldered portion of said recess, a resilient contact finger secured to said rotor and slidably engaging the face of said stationary contact ring, and other resilient contact means carried by said rotor and connected with said finger.

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