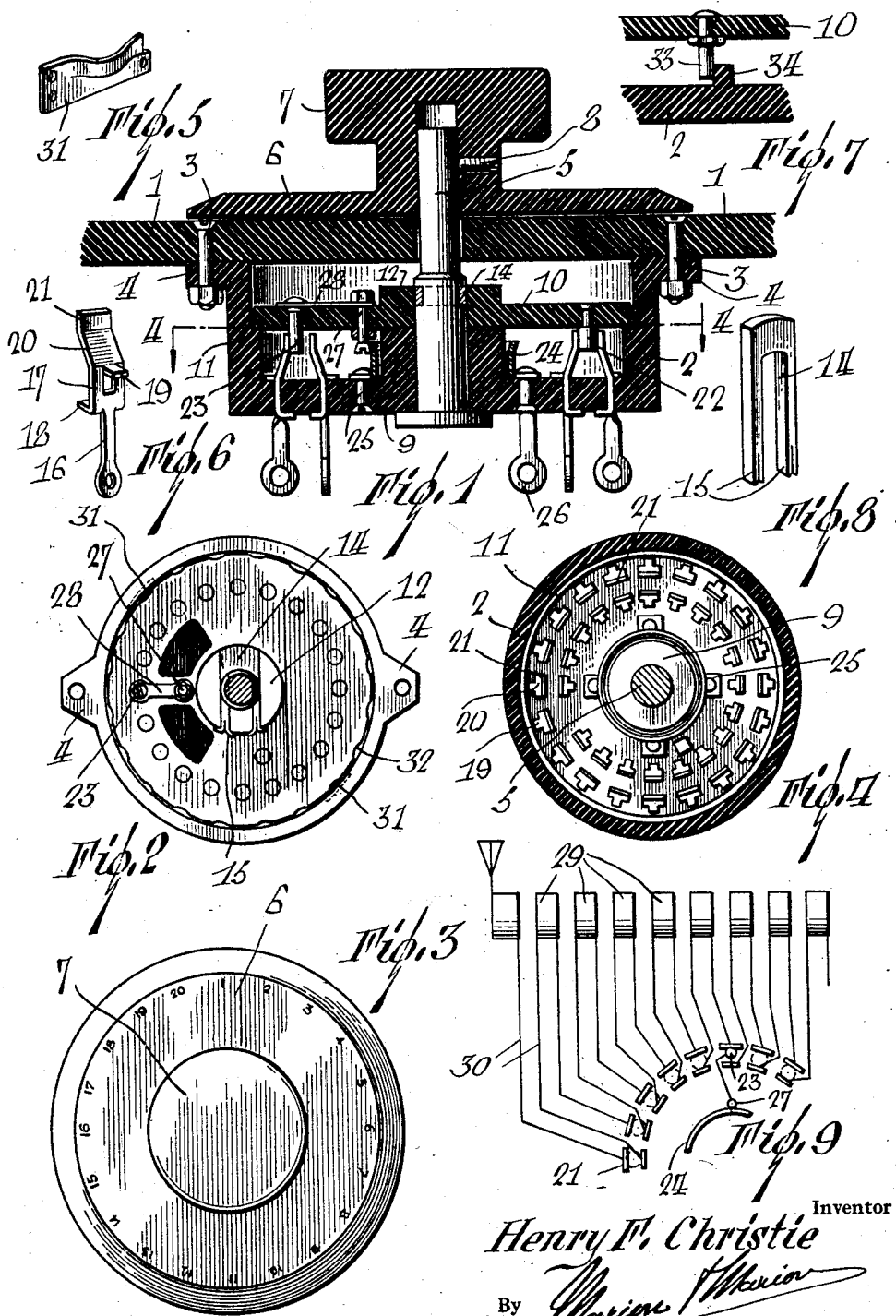


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MULTIPLE TAP SWITCH

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MULTIPLE-TAP SWITCH.

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The present invention pertains to a novel multiple tap switch designed to control the use of electrical and radio apparatus.

The principal object of the invention is the provision of a device of this character which eliminates the dead end losses that result in the present method of tapping inductance coils.

This object is accomplished by dividing the induction coil into a series of units, each having a pair of leads, and providing a switch which will place any desired number of units in series and connect them to the apparatus, the remaining units being disconnected. The switch consists essentially of a stationary base carrying pairs of fixed contacts, and a movable portion carrying contacts positioned in a manner to connect the members of the pairs of fixed contacts. These movable contacts are less by one in number than the pairs of fixed contacts, so that at all times the members of one of the pairs of fixed contacts are disconnected. The leads from the coil units are connected to the fixed contacts, and the units are placed in series by means of the movable contacts as far as the pair of disconnected fixed contacts. One of the members of this pair is engaged by a leading contact carried by the disc, and a suitable device is provided for joining the leading contact to the apparatus under control.

This device consists preferably of a wiping brush carried by the disc, joined to the leading contact, and in permanent engagement with a contact ring secured to the base. From this ring is extended a binding post or terminal for enabling connection to the apparatus.

The invention is fully disclosed in the following description and in the accompanying drawings in which;

Figure 1 is a diametrical section of the apparatus;

Figure 2 is a plan view of the stationary cylinder;

Figure 3 is a plan view of the dial;

Figure 4 is a section on the line 4-4 of Figure 1;

Figure 5 is a perspective view of the spring stop;

Figure 6 is a perspective view of one of the contact members;

Figure 7 is a detail section;

Figure 8 is a perspective view of the forked key; and

Figure 9 is a wiring diagram.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

The device comprises a stationary base comprising a board or panel 1 having a cylinder 2 secured to the lower or rear face thereof. The cylinder is maintained in this position by means of bolts 3 passed through ears 4 and into the base, but obviously the parts are not thus joined until the assembly within the cylinder has been completed.

A shaft or spindle 5 is passed through the cylinder and panel and is fitted exteriorly of the panel with a dial 6 provided with a turning knob 7. The dial and knob are locked to the spindle by means of a set screw 8. The panel 1 carries a pointer or similar device (not shown) for co-operating with the dial 6.

The base or end wall of the cylinder 2 is formed with a boss 9 surrounding the spindle. Upon this boss is mounted a disc 10 which constitutes the movable part of the switch. For convenience, a shoulder 11 is formed in the wall of the cylinder for aiding in the support of the disc. The disc also is formed with a boss 12 and is secured to the spindle by means of a forked key 14 passed through the boss and spindle. The ends of the fork prongs are split as at 15 and finally spread against the surface of the boss 12 as shown in Figure 2.

Within the cylinder 2 is mounted a number of spaced contacts arranged in pairs so that two circular series are formed as shown in Figure 4. Each contact member is stamped from a blank of metal into the shape shown in Figure 6. The various parts of each contact are a binding post 16, a body 17 lying in the wall of the cylinder; lugs 18 and 19 extending in opposite directions and engaging the faces of the wall, an angular portion 20 and finally the contact end 21. The contacts are inserted in such a manner that the inclined portions 20 of opposed members converge upwardly to form a spring clip.

The rotatable member 10 carries a circular series of contacts 22 receivable between the members of the pairs of fixed contacts as shown in Figure 1. The movable contacts 22 are less by one in number than the pairs of fixed contacts, so that in any adjustment of the device the members of one of the pairs of

fixed contacts are disconnected. For this remaining pair the disc 10 carries a leading contact 23 adapted to engage only one of the members of this pair.

5 The boss 9 within the cylinder is surrounded by a contact ring 24 secured to the bottom or end wall of the cylinder by a number of studs 25. One of the studs is provided with an outer binding post 26 for connection to an electrical apparatus such as a radio set. The disc 10 further carries a wiping contact 27 permanently engaging the ring and connected to the leading contact 23 by a link 28.

15 The switch is designed to control an induction coil divided into a number of units 29 by connecting the leads 30 thereof to the pairs of fixed contacts in such a manner that the members of each pair are connected to leads of adjacent units as shown in Figure 9. Any desired number of units may be tapped by adjustment of the knob 7. The circuit is broken at the pair of contacts containing the leading contact 23, but the units in advance of the leading contact are joined in series by the movable contacts 22. One of the fixed contacts adjacent the leading contact 23 is connected to the apparatus through the link 28, wiping contact 27, ring 24 and terminal 30 26.

In order to maintain the movable member 10 in any adjusted position, spring stops 31 are secured to the cylinder 2 for reception in dents 32 formed in the edge of the movable member as shown in Figure 2. Movement of the stationary member is limited by a pin 33 carried thereby and engageable against a stop 34 formed in the bottom of the cylinder 2 as shown in Figure 7. The stud 33 may be adjusted with reference to the movable member 10 in order to define the maximum angle through which this member is permitted to turn.

45 While a specific embodiment of the invention has been illustrated and described, it is to be understood that various alterations in the details of construction may be made without departing from the spirit of the invention as indicated by the appended claims.

Having thus fully described the invention, 50 what I claim as new and desire to protect by Letters Patent is:

1. A multiple tap switch comprising a fixed base and a movable portion, pairs of contacts secured to the base in a circular series, single contacts carried by the movable portion and adapted to bridge the lower pairs of contacts, and a single leading contact adapted to engage only one contact of any pair whereby both connections of any apparatus connected to the switch and ahead of the leading contact are completely disconnected from those already actuated by the switch behind said leading contact.

2. A multiple tap switch comprising a fixed base, a movable element rotatable therein, pairs of contacts secured to the base in a circular series, single bridging contacts carried by the movable portion and adapted to bridge the pairs of fixed contacts independently of each other whereby the electrical devices connected to the fixed contacts will be connected in series and a single leading contact adapted to engage only one of any of said fixed contacts and ahead of the single contact whereby the remaining apparatus connected to the switch will have both of their leads disconnected from the rest of the devices.

3. A multiple tap switch comprising a fixed base and a rotatable disc mounted therein, pairs of contacts secured to said base, single contacts carried by said disc and adapted to connect the members of said pairs, said single contacts being less by one in number than said pairs, a leading contact carried by said disc and adapted to engage only one of the members of said pairs, a conducting ring fixed to said base, a wiping contact carried by the disc and engaging said ring, an electrical connection between said wiping contact and leading contact, and a conducting member extending from said ring.

In witness whereof I have hereunto set my hand.

HENRY F. CHRISTIE.