

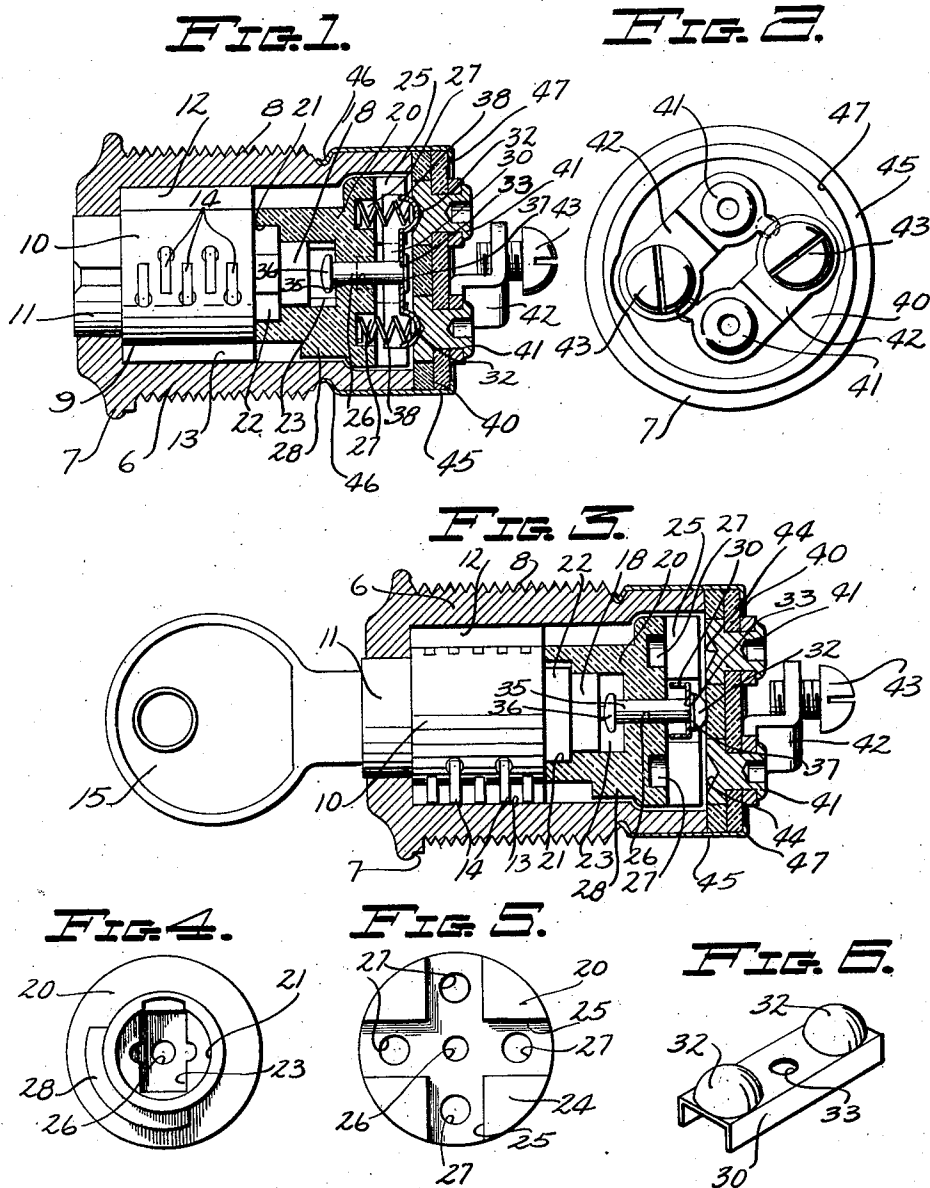
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IGNITION SWITCH, CONTACT CARRIER AND ACTUATOR

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IGNITION SWITCH, CONTACT CARRIER AND ACTUATOR

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This invention relates to improvements in ignition switches, and contact actuators and carriers therefor. It is the primary object of the invention to provide in novel and simple form parts which may be assembled to make ignition switches for control of battery or magneto ignition for the internal combustion engines of motor vehicles. More particularly stated, it is my purpose to provide a novel and improved floating contact carrier and a novel and improved contact actuator, these parts being designed for interaction in either of two distinct relative positions in which they may be assembled to perform different functions in a switch made up of otherwise standard parts.

In the drawings:

Figure 1 is an axial section through a switch embodying this invention, the lock plug being rotated to a plane transverse with respect to the plane of the key slot therein.

Figure 2 is an end view of the switch shown in Figure 1.

Figure 3 is a section similar to Figure 1 but showing the movable parts rotated to a plane parallel to the plane of the key.

Figure 4 is a view of the inner end of the contact actuator.

Figure 5 is a view of the outer end of the contact actuator.

Figure 6 is a detailed view of the contact carrier in perspective.

Like parts are identified by the same reference characters throughout the several views.

The lock casing 6 is shouldered at 7 for engagement with the face of the dash of a motor vehicle and is threaded at 8 to receive a nut whereby a casing may be secured to such a dash.

Interiorly the casing is provided with a bore 9 for the lock plug 10 which has a key receiving extension at 11 through the casing. Extending axially of the sides of this bore are the tumbler slots 12 and 13 into which the tumblers 14 in the plug are reciprocated during insertion and removal of the key 15. All of these parts function in the usual way.

The inner end of the lock plug is provided with a square cornered extension at 18, of oblong form. This extension provides a

splined driving part for communicating movement of the lock plug to the contact actuator 20.

The contact actuator may be made of fiber or any other suitable dielectric material such as the well known decomposition products of phenol. It includes a tubular portion at 21 which slips over the reduced end 22 of the lock plug. Therewithin is an oblong opening 23 for the correspondingly formed extension 18 of the plug. The depth of opening 23, however, exceeds materially the length of extension 18 whereby space is provided within the actuator for the free movement of the head of a tubular rivet hereinafter to be described.

The contact actuator 20 is provided in its outer face 24 with a cruciform groove 25, the component parts of which are symmetrically disposed with reference to a central opening 26 leading into the recess 23. In each of the several arms of the cruciform groove or slot 25 is a socket 27.

The contact actuator 20 may, if desired, be provided with means for limiting rotation of the actuator with respect to the lock casing, such means comprising an arcuately extending segment 28 co-acting in the usual way with suitable stop means provided integrally within the casing.

The contact carrier 30 is formed integrally of light sheet metal such as brass, which is pressed to comprise a channel in cross section as shown in Fig. 3. The transverse dimension of the channel corresponds fairly closely to the transverse dimension of each of the several arms of the cruciform slot 25 whereby the contact carrier 30 may be guided for movement between the walls of the slot in either of two distinct positions with respect to the contact actuator. In the present switch these two positions are at right angles to each other, but in a switch having fixed terminals differently disposed, the parts of the cruciform slot in the actuator need not necessarily be disposed at right angles.

The central or transverse web of the channel-shaped contact carrier 30 is embossed to provide contacts 32 at each end of the carrier. This web is also centrally apertured at

33 in alignment with the opening 26 in the contact actuator 20. A single pin 35 with a head 36 disposed in recess 23 extends through opening 26 and hole 33 in the contact carrier, and is upset or riveted over the contact carrier at 37 to move the contact carrier in either part of the cruciform slot 25 in which it happens to be engaged. The length of pin 35 is such as to permit the contact carrier considerable freedom of movement in its slot with respect to the actuator 20 while confining it against such movement as would enable it to become free of the slot. The depth of recess 23 permits the requisite amount of movement to the head portion 36 of the pin.

The contact carrier with its contacts 32 is normally pressed toward the extreme position permitted it by the length of pin 35. Compression springs 38 are used beneath each of the contact bosses 32, such springs being seated in the sockets 27 of the contact actuator.

The composite terminal head 40 comprises a pair of dielectric discs made of fiber or the like, through which extend two terminal rivets 41. Each of these rivets carries a terminal member 42 having an offset portion tapped to receive a terminal screw 43. The rivets are countersunk at 44 in the usual manner to receive the contact bosses 32 of the contact carrier 30.

A metal band 45 is pressed at 46 into an annular channel in the lock casing 6 and is spun or otherwise upset at 47 over the terminal head 40 to secure the terminal head rigidly upon the lock casing, thereby completing the assembly of the switch in the assembled position of the parts.

Springs 38 under the contacts will be compressed somewhat beyond the degree of compression exerted by pin 35; thus the pin will be caused to yield slightly so that its head 36 will be free within recess 23 as shown in Figs. 1 and 3. In this position of the parts the contact carrier is full-floating, being free to tilt, turn or move axially so far as pin 35 is concerned. Rotative motion is communicated thereto through the side walls of the particular transverse slot in which the carrier is engaged.

There being but two of the contact members 41, and these being disposed diametrically opposite each other as shown in Figs. 1 and 2, it will be obvious that within the degrees of movement permitted to the rotative parts of the device, the contact bosses 32 may either be brought into exact register with the stationary contacts 41, or may be turned at right angles to lie intermediate the stationary contacts and thereby to break the circuit which is established through the contact carrier when the bosses thereof engage the stationary contacts.

It will be noted further that the estab-

lishment of an electrical connection between the stationary contacts may take place in the unlocked position of the lock plug 10 as shown in Fig. 1, or may take place in the locked position of the plug, according to which portion of the cruciform slot 25 has received the contact carrier. In other words, the parts are designed for assembly in two distinctly different relations in either of which the same parts are employed. The same pin 35, extending through the same openings in the contact actuator and contact carrier, holds the parts assembled in either of their possible relative positions. By virtue of this arrangement it is possible to assemble the switch for use either in a magneto ignition circuit in which the stationary contacts are grounded when the lock plug is in its locked position or, if desired, in a battery ignition circuit in which the circuit between stationary contacts 41 is necessarily open when the plug 10 is in its locked position. Obviously this result contributes to the standardization of parts of switches for this purpose, since the identical parts may be assembled to serve two distinct purposes without requiring any change whatever in the construction of the parts themselves.

I claim:

1. In a switch, the combination with a contact carrier, of a contact actuator channeled to receive the carrier, central means for holding the carrier within the channeled actuator, and compression spring means between the actuator and carrier.

2. In a lock switch in which the actuator may be locked in a predetermined position, the combination with a contact carrier, of a contact actuator channeled to receive the carrier, central means for holding the carrier within the channeled actuator, and compression spring means between the actuator and carrier, said actuator being provided with a second channel angularly disposed with reference to the first and alternatively adapted to receive and guide the contact carrier.

3. In a switch the combination with a contact carrier, of a contact actuator having a transversely slotted face in which the contact carrier is receivable for guidance in rotative movement with respect to the terminal head, a central pin securing the contact carrier in the transverse slot of the actuator, and spring means urging said carrier from said actuator, said actuator being provided with a second slot intersecting the first mentioned slot substantially at said pin whereby said carrier may be assembled to said actuator in either of two angular relations.

4. In a lock switch provided with a key controlled means for securing its contact actuator in a predetermined position, the combination with a contact carrier, of a contact actuator having a transversely slotted face in which the contact carrier is receivable for

guidance in rotative movement with respect to the terminal head, a central pin securing the contact carrier in the transverse slot of the actuator, and spring means urging said carrier from said actuator, said actuator being provided with a second slot intersecting the first mentioned slot substantially at said pin whereby said carrier may be assembled to said actuator in either of two angular relations.

5. A switch for ignition comprising in combination, an actuator having a face provided with a plurality of guide means, a contact carrier adapted for assembly alternatively in a plurality of positions in said guide means, spring means effective to support the carrier resiliently from the actuator in any of said positions, and limiting means effective in any of the carrier positions to limit the movement of the carrier from the actuator under the pressure of the spring means.

6. A switch comprising in combination, a contact actuator provided with angularly disposed guides, a contact carrier adapted for assembly alternatively in any of said guides to occupy any one of different angular positions with respect to the actuator, and identical spring means and anchoring means effective to secure the carrier to the actuator for floating operation in any of said positions.

7. A switch comprising in combination, a rotatable actuator having a face provided with intersecting slots and an aperture at the intersection of the slots, a carrier alternatively receivable for assembly in any of said slots, a pin receivable in the aperture and adapted to limit movement of the carrier from the actuator irrespective of the slot in which the carrier is positioned, and springs supporting the carrier from the actuator at either side of the pin, said actuator being adapted to receive said springs irrespective of the slot in which the carrier is engaged.

8. As a new article of manufacture, a switch actuator comprising a part having a face provided with intersecting channels and a fastening means disposed at the intersection of the channels and adapted to secure to said actuator a contact carrier receivable alternatively in either of the channels.

9. As a new article of manufacture, a channel-shaped contact carrier having side flanges constituting guide surfaces and provided in its central web with contacts.

10. As a new article of manufacture, a channel-shaped contact carrier having side flanges constituting guide surfaces and provided in its central web with contacts and a central aperture, said contacts being embossed integrally from the material of the carrier.

11. As a new article of manufacture, a contact actuator provided with means at its end for receiving the connection with a lock plug, and having its opposite end provided

with intersecting channels in which spring sockets are provided in corresponding locations.

12. In a switch, the combination with an actuator having a channeled face, of a contact carrier floating in the channel of said face and provided at its sides with guide surfaces bearing at the sides of the channel, means projecting the carrier from the channel and means limiting the carrier to a predetermined projection from the channel.

13. In a device of the character described, the combination with a contact actuator having a face provided with intersecting slots, and sockets correspondingly disposed in said slots at either side of the intersection thereof, of a contact carrier guided in one of said slots and adapted alternatively to be disposed in either, said carrier having supporting springs receivable alternatively in the sockets of either slot, and a limiting pin extending through the carrier and connected with the actuator at the intersection of said slots.

14. In a switch, the combination with a handle provided with guide means and retaining means, of a contactor resiliently supported from said handle and constrained by said guide means to turn therewith, said retaining means being adapted to hold said contactor within said guide means in either of two distinct positions of said contactor with respect to said handle whereby said contactor may be assembled either to make or break contact in a given handle position.

15. In a switch, the combination with a contact actuator providing spring seats, guide means and retaining means, of a contactor provided with supporting springs and receivable upon said guide means in either of two distinct positions with respect to said actuator, said retaining means being operative in both of said positions.

16. In a lock switch having an actuator and means for locking said actuator in a predetermined off position, the combination with said actuator, of a contactor interchangeably adapted for assembly with said actuator in either of two distinct positions, and guide means for operatively connecting said contactor with said actuator in either of its aforesaid positions of assembly thereon.

ROBERT K. WINNING.

DISCLAIMER

1,809,368.—*Robert K. Winning*, Wauwatosa, Wis. IGNITION SWITCH, CONTACT CARRIER, AND ACTUATOR. Patent dated June 9, 1931. Disclaimer filed February 29, 1932, by the assignee, *Clum Manufacturing Company*.

Hereby disclaims the subject matter of claim 9 of said patent except in so far as the expression "channel-shaped contact carrier having side flanges" in said claim is interpreted in accordance with the specification and drawings of said patent as referring to a contact carrier having substantially rectilinear and parallel side flanges, whereby to be of the form commonly known to those skilled in the art as channel-shaped.

[*Official Gazette March 22, 1932.*]