Feb. 26, 1935. A. S. PINKUS 1,992,924

STARTING SWITCH

Filed May 22, 1933

Fig. 1.

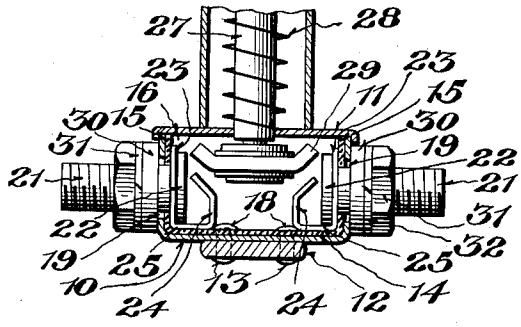


Fig. 4.

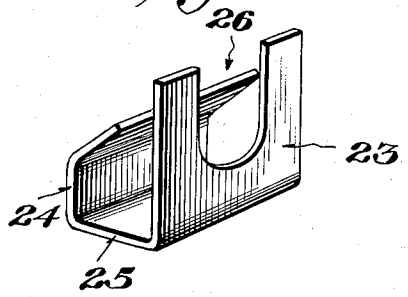


Fig. 2.

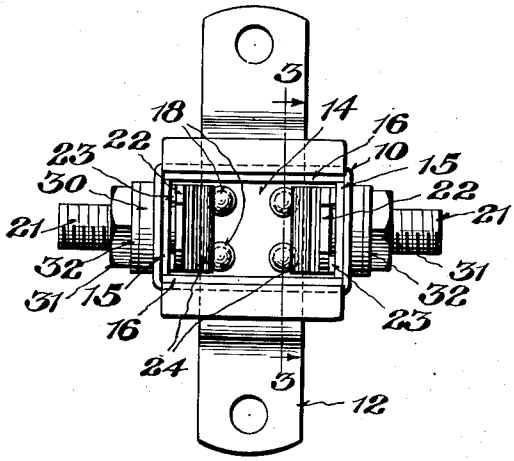


Fig. 5.

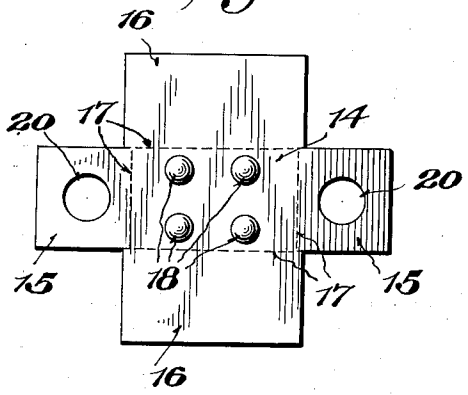
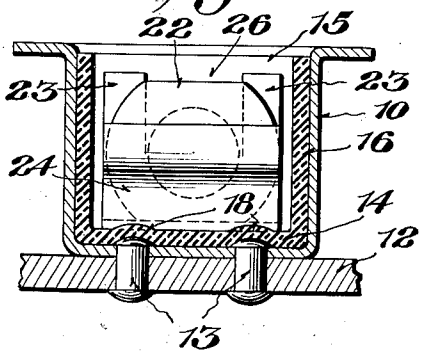


Fig. 3.



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Patented Feb. 26, 1935 1,992,924

UNITED STATES PATENT OFFICE

1,992,924

STARTING SWITCH

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Application May 22, 1933, Serial No. 672,326

2 Claims. (Cl. 200—159)

This invention relates to electric switches and has special reference to the type of switch operated by a plunger and commonly used in automobiles to control the operation of the starting motor.

In the construction of certain types of such switches it is common to provide a casing which is riveted to a supporting bar or bracket by means of which the switch is secured in desired position on an automobile. Also such switches are usually provided with an insulating lining. Since the metal of the casing is rather thin the rivets cannot well be countersunk and in the constructions hitherto used the insulating lining must either rest on the rivet heads, which interferes with its proper fit, or it must be provided with holes through which the rivet heads are exposed and in this case if, due to wear, metal particles come in contact with the rivet heads they may bridge the space between such heads and the switch contacts so that short circuit will eventually occur. Also, if the rivet heads are exposed water may accumulate in contact therewith and produce a similar short circuit.

One important object of the invention is to provide an improved arrangement of insulating lining whereby the rivet heads may be covered without preventing the proper fit of the lining against the wall of the casing through which said rivets extend.

In such switches it is common to provide a pair of fixed contacts on opposite walls of the casing and these fixed contacts are adapted to be bridged by a movable contact carried by a plunger. It has been common to make the three contacts of heavy unyielding metal because of current carrying conditions, the contacting portions being coactingly bevelled to obtain good contact. Such construction is open to the objection that it is impractical to fit the parts so carefully as to ensure perfect contact owing to the cost of such refinements in fitting and, if most carefully fitted, the natural wear resulting from the rough usage to which such switches are naturally submitted will quickly destroy the proper fitting.

A second important object of the invention is to provide a novel arrangement of contacts in such a switch whereby the stationary contacts will automatically adjust themselves to proper contact with the movable contact.

With the above and other objects in view, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the drawing and specifically claimed.

In the accompanying drawing like characters of reference indicate like parts in the several views, and:—

Figure 1 is a vertical section through a switch constructed in accordance with this invention with the upper part of the switch omitted.

Fig. 2 is a top plan view of the lower part of the switch, the cover or lid and the parts carried thereby being omitted.

Fig. 3 is an enlarged detail section on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of one of the stationary contact members.

Fig. 5 is a plan view of the blank from which the insulating lining of the switch is made.

In the present embodiment of the invention there is provided a casing having a lower part or body 10 in the form of a substantially elongated rectangular box having an open top. On this top is secured a cover or lid 11. The body 10 rests on a bar or bracket 12 and through the bar 12 and bottom of the box or casing extend the rivets 13 which are headed on the interior of the casing as shown in Figure 3. The lower part of the casing is lined with a one piece lining of sheet insulation, the blank for which is shown in Figure 5. As will be there seen, this blank includes an elongated rectangular bottom portion 14 from which extend end portions 15 and side portions 16 all defined from the bottom portion by fold lines 17. The bottom portion is provided with domes 18 to receive the heads of the rivets 13, these domes being preferably formed by embossing the sheet from which the blank is formed. The ends and sides are bent up at right angles to the bottom to form an open topped box which is so proportioned as to fit snugly into the body 10 of the casing. By means of the domes the insulation may be fitted properly against the casing bottom with the rivet heads concealed and protected.

In each end of the body 10 is formed a stud receiving opening 19 and in the end portions 15 of the lining are formed similar but slightly smaller openings 20 which, when the lining is in place, will register concentrically with the openings 19. Studs 21 pass through these openings and are held from contact with the casing by the lining. Each stud has a head 22 within the casing. Each stud has associated therewith a fixed contact member consisting of a strip of conductive metal bent to substantially U-shape to provide two legs 23 and 24 and a connecting web 25. The leg 23 is provided with a slot 26 so as to form a yoke which fits around the respective

stud 21 beneath the head 22 and the web 25 rests on the bottom of the casing. The other leg 24 is bent intermediate its length for purposes presently to be set forth, and extends upward in spaced relation to the head 22, the bend causing the upper portion of this leg to be inclined toward said head.

Projecting through the top 11 is a plunger 27 which is normally held upward by a spring 28 and which carries on its lower end a movable contact 29 in the form of a heavy metal bar having its ends bent or bevelled to cooperate with the bent ends of the legs 24 of the fixed contacts between which the movable contact fits when the plunger is depressed. The movable contact is of course insulated in a suitable manner from the casing. By means of this construction the movable contact springs the arms 24 when depressed so that they make proper contact with the movable contact even though the fitting may not be exact.

Outside of the casing on each stud is an insulating washer 30 which rests against the casing and is clamped thereagainst by a nut 31 between which and the insulating washer is a lock washer 32.

There has thus been provided a simple and efficient device of the kind described and for the purposes specified.

It is obvious that changes may be made in the form and construction of the invention without departing from the material principle involved. It is not therefore desired to confine the invention to the exact construction herein shown and described, but it is desired to include all such as properly come within the scope claimed.

What is claimed is:—

1. In a switch of the class described, a casing of rectangular form, studs passing through opposite walls of the casing and having heads within the casing, fixed contacts consisting of substantially U-shaped strips of resilient metal each having one end secured beneath a respective stud head and the remaining end extending upwardly in spaced relation to the stud head, said U-shaped strips having a flat base portion, an insulating member in the bottom of said casing against which the flat base portions of the U-shaped strips rest whereby stress on the connection of the studs and strips is relieved, a plunger mounted to slide through the top of the casing, and a movable contact fixed on the lower end of said plunger and positioned to engage the second mentioned arm of each contact.

2. In a switch of the class described, a casing of rectangular form, studs passing through opposite walls of the casing and having heads within the casing, fixed contacts consisting of substantially U-shaped strips of resilient metal each having one end secured beneath a respective stud head and the remaining end extending upwardly in spaced relation to the stud head, said U-shaped strips having a flat base portion, an insulating member in the bottom of said casing against which the flat base portions of the U-shaped strips rest whereby stress on the connection of the studs and strips is relieved, a plunger mounted to slide through the top of the casing, and a movable contact fixed on the lower end of said plunger and positioned to engage the second mentioned arm of each contact, the contacting portions of the movable and fixed contacts being correspondingly bevelled to produce a wedging engagement of the movable contact with the fixed contacts.

ABRAHAM S. PINKUS.