

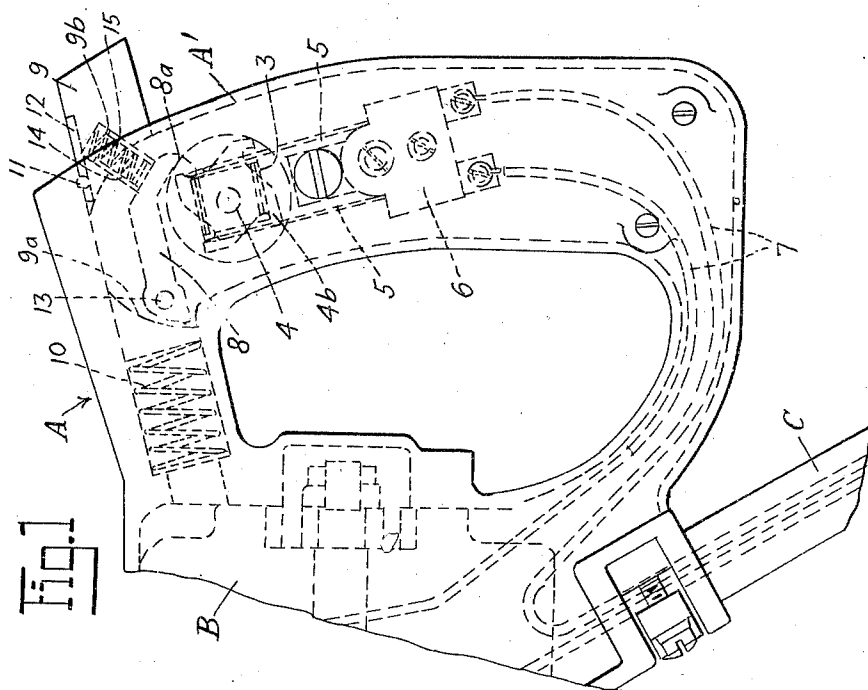
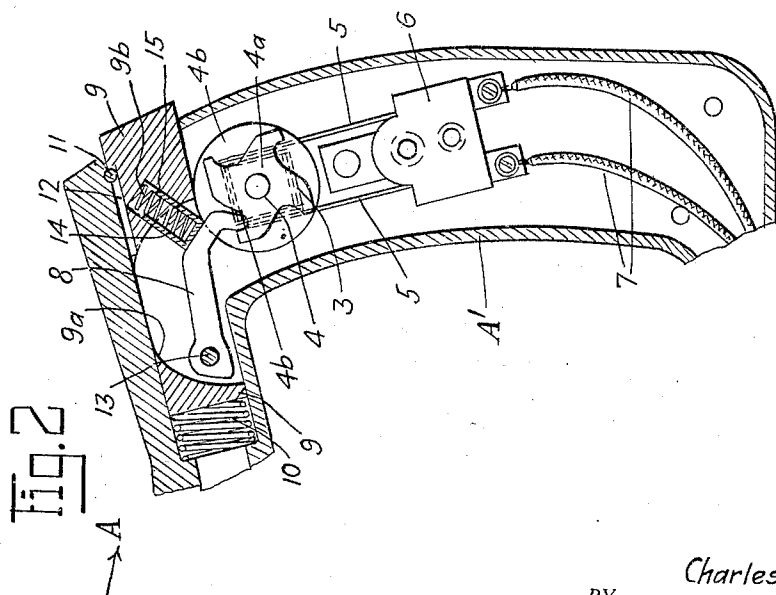
July 9, 1929.

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1,720,541

ELECTRICAL SWITCH

Filed Aug. 2, 1926



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ELECTRICAL SWITCH.

Application filed August 2, 1926. Serial No. 126,383.

This invention relates to electrical control devices or switches and is of general application although designed and intended for use on hand tools. It particularly concerns switches utilizing a rotary block engaged by spring contacts and has special reference to the mechanism which effects rotation of the switch block.

Among the objects of the invention are to provide more compact switch operating mechanism, to afford greater reliability in the operation of switches, and in general to simplify and to improve prior devices in the interests of more satisfactory and more efficient service.

The invention consists essentially in means for dragging or pulling on the rotary switch block to rotate it instead of pushing it as has been the practice heretofore. When a reciprocatory control member or plunger is used the means for rotating the switch block may be disposed within the member or plunger itself. This not only permits the mechanism to be made in a much more compact form, but simplifies it and reduces the strain upon individual parts, thereby increasing the reliability of operation and eliminating breakage.

In order to illustrate the invention a preferred embodiment thereof is shown in the accompanying drawings, in which:

Fig. 1 is a fragmentary side elevational view of an electrical tool having a handle attachment embodying the invention, the tool housing being broken away and the mechanism within the handle being shown in phantom outline;

Fig. 2 is a vertical sectional view of a portion of a handle attachment shown in Fig. 1, certain of the parts being shown in different position.

The invention is illustrated as embodied in the manual control handle A for a portable electric tool of which a portion of the casing B thereof is indicated in Fig. 1. The control switch mechanism is mounted in the grip portion A' of handle A which is hollow for this purpose. The switch mechanism comprises the block 3 mounted for rotation on a pivot 4 supported in the handle and having diametrically opposed plain surfaces engaged by spring contacts 5 supported on a fixed insulated block 6. Rotatable block 3 has two of its opposed faces of conducting material which may be interconnected by

suitable means such as a transversely disposed plate (not shown). The leads 7 to and from the spring contacts 5 may pass through a bore in the lower portion of the handle A, the power for operating the tool being received through a cable C.

Suitable means are provided for stepping the block 3 around in order to operate the switch at will. The means on block 3 for this purpose may comprise a ratchet wheel 4^a presenting teeth or shoulders 4^b forming sockets to be engaged in accordance with the usual practice by a suitable pawl member 8. The pawl 8 is carried by a plunger 9 mounted adjacent block 3 for reciprocatory movement in a suitable bore in the upper portion of the handle A. The end of plunger 9 normally projects beyond the handle through the action of a spring 10, the amount of the projection and the extent of movement of plunger 9 being limited by suitable stop means such as a pin 11 engaging a groove 12 in the plunger.

While the elements heretofore described are well known, the mounting of pawl 8 and the manner of its operation differs quite radically from established practice. Instead of being mounted upon the plunger 9 so as to produce a pushing action upon ratchet teeth 4^b, the pawl 8 is pivoted to plunger 9 at a point beyond switch block 3 so as to operate as a drag link causing rotation of the block by a pulling action. By preference pawl 8 is mounted upon plunger 9 intermediate the ends thereof and disposed within plunger 9. To this end the plunger has a recess or slot 9^a therein or therethrough of sufficient extent entirely to house pawl 8 and the resilient means by which it is maintained in contact with ratchet wheel 4. Pawl 8 is pivoted at 13 within recess 9^a and its hook end 8^a projects laterally beyond the plunger to a sufficient extent to engage in the sockets provided by the teeth 4^b on block 3. The pawl is maintained in yielding contact with the block by suitable means disposed within plunger 9 itself. To this end a cup shaped member or plunger 14 is slidably received in a bore 9^b in plunger 9 intersecting recess 9^a. Member 14 engages a plane surface on the free end of pawl 8 and applies a yielding force thereto through the action of a coiled spring 15 seated within the member and within the bore 9^b.

The operation of the switch mechanism

will be apparent from Figs. 1 and 2. With the parts in the position shown in Fig. 1 pressure on the plunger 9 by the thumb of the operator forces the plunger inwardly against the pressure of spring 10. As the plunger advances the hook end 8^a of pawl 8 drags upon the tooth 4^b engaged thereby rotating switch block 3 in a counter-clockwise direction. As the block rotates pawl 8 swings upon its pivot up into recess 9^a compressing spring 15 until the block snaps into its next position (Fig. 2). When the pressure on plunger 9 is released it moves rearwardly under the action of spring 10 causing hook end 8^a of the pawl to slide rearwardly over the next tooth 4^b until it drops behind the tooth in the position shown in Fig. 1.

While but one form of the invention has been herein shown and described, it is to be understood that the invention is not limited to the specific details thereof but covers all changes, modifications, and adaptations within the scope of the appended claims.

I claim as my invention:

1. In a handle attachment for portable electrical tools having a grip portion, a switch within said portion comprising a rotatable block and yielding contacts engaging opposite faces thereof, said block having ratchet teeth, manual means for stepping said block around comprising a spring pressed plunger

disposed tangentially of said block and immediately thereabove, said plunger having a recess intermediate its ends, a pawl member pivoted within said recess, a spring pressed member mounted in a bore in said block opening into said recess and engaging said pawl member yieldingly to maintain it in contact with said ratchet teeth, said pawl member serving to rotate said block by a dragging action when said plunger is advanced.

2. In a handle attachment for portable electrical devices having a grip portion, a reciprocable plunger within said grip with a portion projecting therefrom for manual actuation, a rotatable switch block immediately adjacent said plunger and within a vertical projection of the latter, the axis of movement of said plunger being transverse to the axis of rotation of said block, and co-operating means on said plunger and said block for stepping the latter around with a dragging action when said plunger is actuated including a drag link pivotally mounted within a recess in said plunger and having its free end projecting laterally therefrom to engage said block.

Signed by me at Cleveland, in the county of Cuyahoga and State of Ohio, this 24th day of July, 1926.

CHARLES B. COATES.