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SUCCESSIVELY DEPRESSIBLE ALTERNATING SWITCH

Filed May 3, 1961

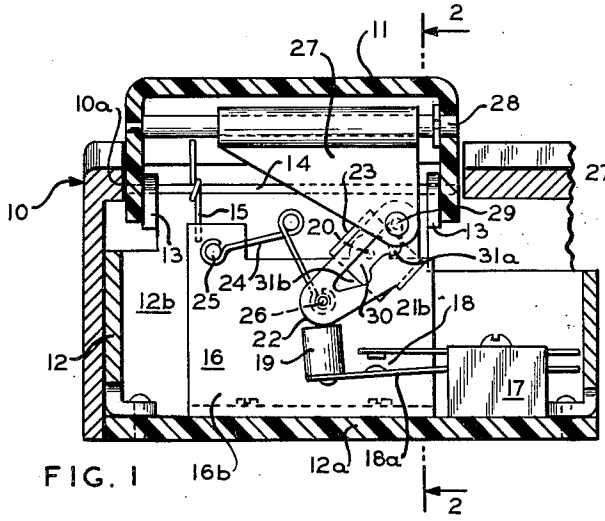


FIG. 1

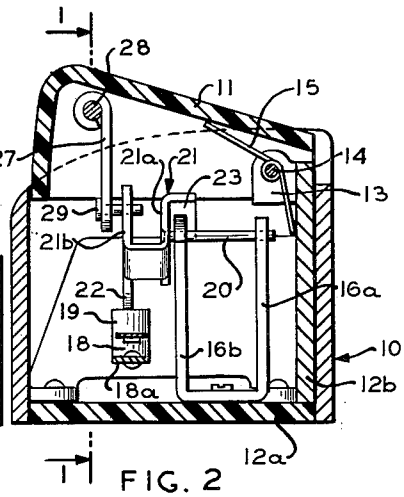


FIG. 2

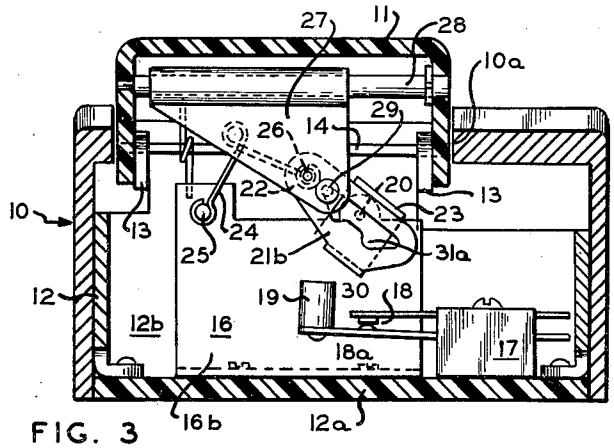


FIG. 3

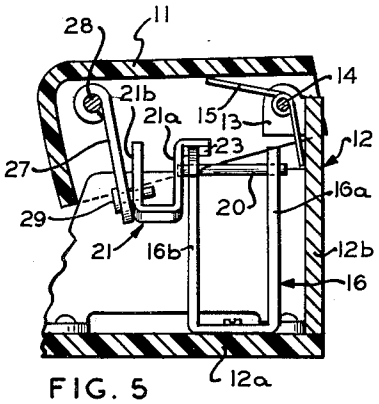


FIG. 5

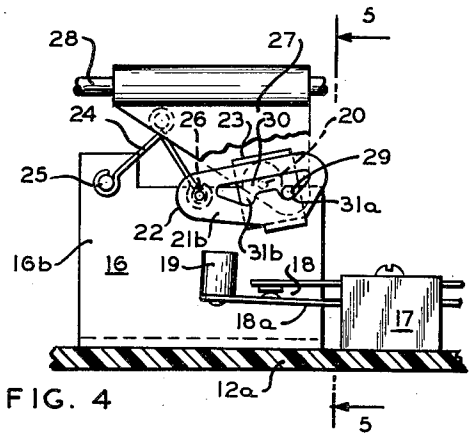


FIG. 4

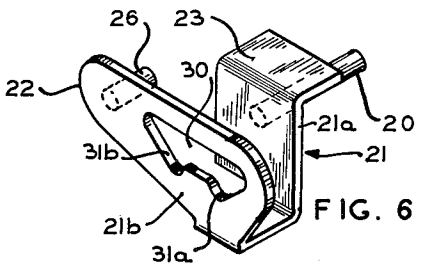


FIG. 6

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SUCCESSIVELY DEPRESSIBLE ALTERNATING SWITCH

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This invention relates to an improved switch device adapted especially for starting and stopping dictation transcribing machines, and more particularly it relates to an improved form of successively depressible alternating switch having a push button which when successively depressed shifts the switch mechanism alternately between on and off positions.

Such switch devices are mounted typically at the front of the space bar on a typewriter in reach of the thumb of the hand while the fingers are in position on the keyboard. Upon the typist pressing the switch push button the machine is started and upon successively pushing the button the machine is stopped, etc.

Objects of the invention are to provide an improved form of such switch device which has a positive snap action responsive to each depression of the manual push button, which is of an improved and simplified construction and which is dependable over long periods of operation.

Other objects and features of the invention will be apparent from the following description and the appended claims.

In the description of the invention, reference is had to the accompanying drawings, of which:

FIGURE 1 is a front elevation of the present switch device with parts in section on the line 1—1 of FIGURE 2;

FIGURE 2 is a vertical section on the line 2—2 of FIGURE 1;

FIGURE 3 is a view similar to FIGURE 1 but showing the switch mechanism in its other position;

FIGURE 4 is a fractional view showing the switch mechanism in a partially operated position from the position it has in FIGURE 1;

FIGURE 5 is a fractional section on the line 5—5 of FIGURE 4; and

FIGURE 6 is a perspective view of the rocker element of the switch mechanism.

The present switch device comprises a housing **10** having a rectangular opening **10***a* in the top through which projects a manual push button **11**. The push button is hinged at the back and stands normally in an upwardly inclined position as shown. In the housing is a frame **12** comprising an insulating base **12***a* and an upstanding metal back wall **12***b* having turned over apertured ears **13** at the top supporting a cross pin **14** on which the push button is pivoted. A torsion spring **15** on the cross pin **14** normally holds the push button in its upper unoperated position.

U bracket **16** is mounted on the base **12***a* and has one upstanding wall **16***a* closely adjacent to the back wall **12***b* and another upstanding wall **16***b* about midway the front and back walls of the housing. Mounted on the base in an insulating stack **17** at the front of the intermediate wall **16***b* is a pair of laterally extending, normally closed cantilever mounted contact arms **18** the lower one **18***a* of which extends beyond the upper one and has an insulating button **19** secured to the free end thereof. Extending transversally through apertures in the top portion of the U bracket **16** is a pivot pin **20** at right angles to the hinge axis of the manual push button **11**. A U-shaped rocker **21** has the back side member **21***a* thereof staked rigidly to the forward end portion of the pivot pin **20** and has

the front parallel side member **21***b* thereof provided with an extending finger **22** operable against the switch button **19** to open the switch **18**. The back side member **21***a* of the rocker has a turned over lip **23** the end portions of which abut against the top edge of the intermediate wall **16***b* to limit the rocker to an angular range of about 90°. A toggle spring **24** has two tails extending off in a V arrangement which are pivoted at their ends respectively to a stud **25** on the intermediate wall **16***b* and a stud **26** on the finger **22**. This toggle spring is of an expanding type which serves as an over-center spring for the rocker **21** to cause the rocker always to seek its respective end position when moved over center.

A coupling is provided between the manual push button **11** and the rocker **21** in the form of a slide plate **27** having a rolled-over edge at the top which slidably and pivotally embraces a cross pin **28** mounted on the free end portion of the manual push button **11** parallel to its hinge axis. The slide plate is of a V shape having a stud pin **29** staked to the lower end portion thereof which slidably engages a slot **30** provided in the front side member **21***b* of the rocker. This slot extends through the axis of the pivot pin **20** about equal distances in opposite directions therefrom. In the lower edge of the slot at the ends thereof are notches **31***a* and **31***b*.

In response to the upward biasing of the manual push button **11** the slide plate **27** is held normally in an end position wherein the stud pin **29** engages the end of the slot **30** and holds the rocker **21** in an end position with the slot **30** standing at about 45° with the vertical. Say this initial position of the rocker **21** is its counterclockwise position shown in FIGURE 1 wherein it holds the switch **18** open. Upon depressing the manual push button **11** the stud pin **29** engages the notch **31***a* and shifts the rocker **21** over center in a clockwise direction. This clockwise movement of the rocker over center closes the switch **18**. Upon next releasing the manual push button **11** the slide plate **27** is cammed to the left by the stud pin **29** riding up the obliquely positioned slot **30** and coming to rest with the stud pin engaging the left end of the slot. Upon next depressing the manual push button **11** the stud pin **29** first engages the other notch **31***b* and turns the rocker over center in a counterclockwise direction to cause the finger **22** to come to bear against the switch button **19** and again hold the switch open. Upon now releasing the push button **11** the slide plate is cammed to the right until the stud pin **29** again engages the right end of the notch **31**. When the manual push button **11** is again depressed the stud pin will next engage the notch **31***a* and turn the rocker clockwise over center again to close the switch **18** as before-described. Thus, upon successively pressing the manual push button **11** the switch **18** is alternated between its open and closed position. A feature of the present construction is that in each such operation of the switch device there is a positive over center action. To the operator there is a hard spot in the central portion of each downward depression of the push button which is followed by a released snap movement to provide a positive feel as to when the switch is operated. The invention provides therefore not only a simple and positively acting switch device but one which is also normally operated in a positive manner by the user to provide a positive and dependable switch operation.

The particular embodiment of my invention herein shown and described is intended to be illustrative and not necessarily limitative of the invention, since the same is subject to changes and modifications without departure from the scope of my invention which I endeavor to express according to the following claims.

I claim:

1. A successively depressible alternating switch device

for a dictation transcribing machine comprising a manually operable push button biased into an unoperated position, an electrical switch, a pivoted rocker, means biasing said rocker over-center into one position wherein it bears against said switch to hold it in one position and into a second position wherein it is free of said switch and the switch assumes its other position, a guide slot in said rocker on a diameter line of the pivot axis thereof, limit stops for said rocker limiting the movement thereof to one end position wherein said slot is oblique in a clockwise direction to the direction of movement of said manual push button and to a second end position wherein said slot is oblique in a counterclockwise direction to the direction of movement of said push button, said slot having notches at the ends thereof in the edges at the far side from said push button, and a slide member on said push button having a pin engaging said slot for holding said slide member in an end position to engage one of said notches and shift said rocker over center in one direction as the manual push button is depressed and for camming said slide to its other end position upon release of the push button to place said pin in position to engage the other of said notches and shift said rocker over center in the other direction as said push button is again depressed whereby successive depressions of said manual push button cause said switch to be shifted alternately between open and closed positions.

2. The switch device set forth in claim 1 wherein said manual push button is pivotally mounted along one edge thereof, said rocker is pivotally mounted on an axis transverse to the pivot axis of said manual push button, and said slide member is mounted on said push button for movement in directions parallel to the pivot axis of the push button.

3. The switch device set forth in claim 1 wherein said electrical switch is biased closed and is held open by the over-center biasing force exerted on said rocker when the rocker is in its end position engaging said switch.

4. A successively depressible alternating switch device for a dictator's transcribing machine comprising a frame having a base, an upstanding side wall and an upstanding intermediate wall parallel to the side wall, an electrical switch, means mounting said switch on said base for actuation in directions normal thereto, a rocker pivoted to said intermediate wall on an axis normal thereto for movement against said switch to operate the same, means biasing said rocker over center between switch operating and non-operating positions, a manual push button hinged to said sidewall and biased into an upward unoperated position, a crosspin on the free end portion of said manual push button, a coupling member movable slidably and pivotally on said crosspin in directions parallel to the hinge axis of the manual push button, said rocker having a slot crosswise to the pivot axis thereof provided with notches at the ends thereof in the edges of the slot remote from the manual push button, and a pin on said coupling member engaging said slot and responsive to the over-center biasing of said rocker and the upward biasing of said manual push button for causing said coupling member to be held normally in an end position wherein upon depressing said manual push button said pin engages the adjacent notch in said slot and turns said rocker over center to its other position and wherein upon releasing said manual push button said coupling member is cammed to its other end position for engaging the other notch in said rocker and turning the rocker over center in the other direction when said manual push button is again pressed.

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