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POWER OPERATED KNIFE SAFETY SWITCH

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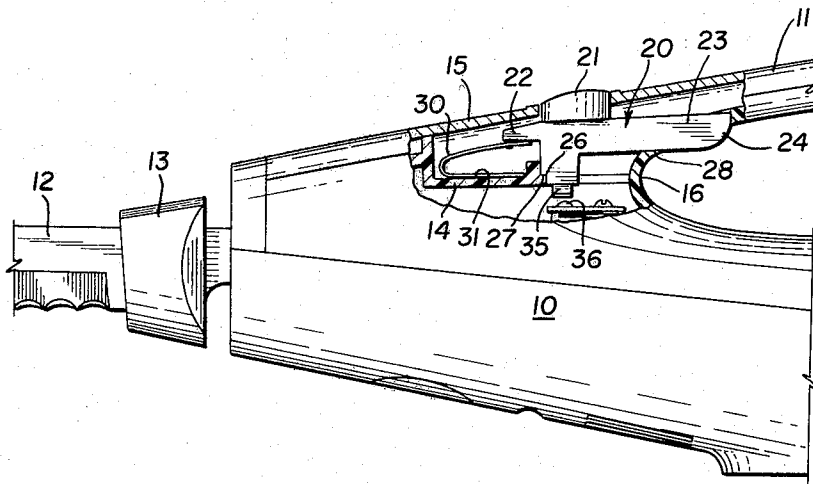


Fig. 1

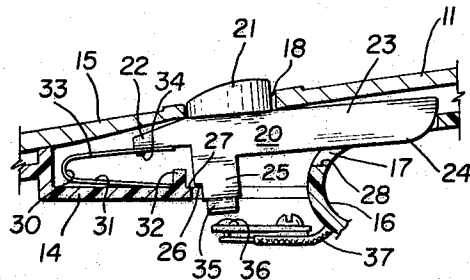


Fig. 2

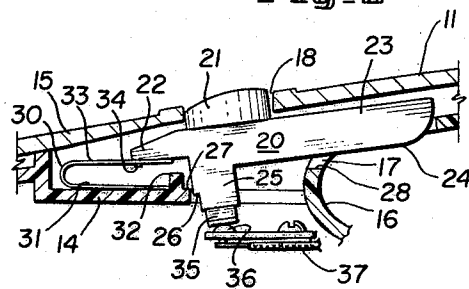


Fig. 3

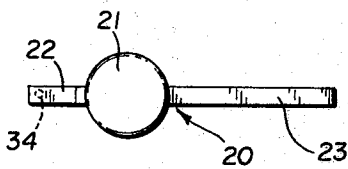


Fig. 4

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**POWER OPERATED KNIFE SAFETY SWITCH**  
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This invention relates to a safety switch for power operated knives and other tools which cannot be actuated accidentally or unintentionally to close switch contacts and thereby produce reciprocatory movement of the knife blades or undesired movement of tool parts.

The main object of the invention is to provide a switch closing device with means for automatically locking a switch actuating member in nondepressible position, whereby accidental bumping or pushing of the switch button cannot result in depression of the button and closing of the switch contacts. Another object is to provide a switch actuating member which remains in locked position until released by manual pressure applied against a trigger portion of said actuating member, followed by manual depression of the switch actuating button while pressure on the trigger is maintained by the user of the knife or other tool.

The trigger part of the switch actuating member is located on the underside of the hand grip portion of the knife handle or tool for convenient manipulation by the forefinger while the thumb is used to depress the switch button located on the upper surface of the hand grip portion. The requirement for initial manipulation of the trigger, followed by sustained simultaneous pressure in opposite directions on the trigger and button, prevents unintentional closing of the switch contacts.

In the drawings:

FIG. 1 is an elevational side view, partly in section, of the forward portion of a power operated knife embodying my safety switch, showing the switch actuating member in locked position.

FIG. 2 is an elevational side view, partly in section, showing the switch actuating member in unlocked position, as it appears after the trigger has been raised by applying pressure thereon.

FIG. 3 is a view similar to FIG. 2, showing the switch actuating member in unlocked position and the switch button depressed, as they appear when simultaneous pressure has been applied in opposite directions on said trigger and button to thereby close the switch contacts.

FIG. 4 is a top plan view of the switch actuating member.

In that embodiment of the invention shown in the drawings, 10 indicates a knife handle housing, as a whole, provided with hand grip portion 11, knife blades 12, and blade guards 13. The housing 10 has formed therein or attached thereto a horizontal platform 14 spaced from the top wall 15, and a curved wall 16 provided with an opening 17 below the hand grip portion 11. A switch button opening 18 is located in the top wall 15.

The safety switch of my invention comprises an actuating member 20 provided on its top with a switch button 21, a forward end 22 located in the space between the platform 14 and top wall 15, a rearwardly extending lever 23 having its trigger end 24 exposed through the opening 17, and a depending foot or contact member 25. The member 25 has formed on its forward face a shoulder 26 which is complementary to, and bears upon, the shoulder surface 27 on the end of the platform 14, when the trigger 24 bears on the lower edge 28 which defines the opening 17 in the housing.

A leaf spring 30, generally U-shaped in form, has part of its flat body resting on the platform 14, with the spring end 31 abutting the stop 32 on the platform. The

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upper part 33 of the spring extends toward the member 20 and has a small hole therein for engagement by a depending projection 34 on the forward end 22 of said member 20.

In the embodiment of the invention shown in the drawings, the depending contact member 25 is shown as having a contact 35 directly located thereon, for making contact with a fixed contact 36 connected to conductors 37. However, it is to be understood that the switch contacts may be separate from the actuating member 20, and that the depending member 25 may actuate a movable contact (not shown) in place of having a contact directly mounted thereon.

When the knife is not in use, the actuating member 20 is in the position shown in FIG. 1, with the spring 30 urging the forward end 22 upwardly, and the exposed trigger 24 bearing on the edge 28 of the housing wall 16. In this position, the shoulder 26 on the actuating member engages the shoulder 27 on the platform 14. The switch button 21 cannot be depressed because of the stops provided by the parts 26—27 and 24—28. Therefore accidental or unintentional pressure applied to the button 21 has no effect.

In order to actuate the switch, the user must apply pressure against the exposed trigger 24 as shown in FIG. 2, thereby raising the trigger lever and moving the shoulder 26 in a pivotal movement out of engagement with the shoulder 27. While maintaining the pressure on the trigger, the user depresses the button 21 as shown in FIG. 3, thereby moving the contact member 25 into switch closing position.

The surface of the shoulder 26 serves as a movable fulcrum for the trigger lever 23 when pressure is applied to the exposed end 24 to move the switch actuating member pivotally as a whole out of locked position so that the button 21 can be depressed and the contact member 25 moved into the position shown in FIG. 3.

As soon as pressure is withdrawn from the button and trigger, the parts are automatically restored to the position shown in FIG. 1, where the switch actuating member is again locked and actuation of the switch button 21 prevented.

Changes may be made in details of construction and arrangement of parts without departing from the scope of the invention as defined by the appended claims.

I claim:

1. In a power operated tool provided with a housing having two spaced apart openings therein, a safety switch in the housing comprising

- (a) a manually operable switch actuating member including a trigger accessible through one of said openings in the housing and a button accessible through the other opening,
- (b) a contact member on the actuating member,
- (c) a fixed support in the housing,
- (d) a bearing surface extending transversely of the actuating member for bearing on the fixed support and preventing depression of the button, and
- (e) yielding means bearing on the fixed support and urging the actuating member into support-engaging position,
- (f) said actuating member being pivotally movable about said bearing surface as a non-fixed fulcrum when the trigger is depressed relatively to the housing, whereby the actuating member is moved out of support-engaging position and depression of the button is permitted while said trigger is depressed.

2. The safety switch defined by claim 1, in which the transversely extending bearing surface is a shoulder on the contact member portion of the actuating member and complementary to the fixed support.

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3. In a power operated knife provided with a housing having a hand grip portion spaced from the housing and spaced apart openings in the housing and hand grip portion, a safety switch in the housing comprising

- (a) a manually operable switch actuating member including a trigger accessible through the opening in the hand grip portion, and a button accessible through the opening in the housing,
- (b) a contact member depending from the actuating member,
- (c) a fixed support in the housing spaced from the housing wall,
- (d) a bearing surface extending transversely of the actuating member for bearing on the fixed support and preventing depression of the button, and
- (e) yielding means bearing on the fixed support and urging the actuating member into support-engaging position,
- (f) said actuating member being pivotally movable about said bearing surface as a non-fixed fulcrum when the trigger is depressed relatively to the hand grip portion of the housing, whereby the actuating member is moved out of support-engaging position and depression of the button is permitted while said trigger is depressed.

4. The safety switch defined by claim 3, in which the

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contact member depends from the actuating member beneath said button, and the yielding means bears on the fixed support and on the forward end of the actuating member to urge the actuating member into support-engaging position.

5. The safety switch defined by claim 3, in which the actuating member has a projection on its forward end, and the yielding means is a flat spring bent into U-form with one of its arms bearing on the fixed support and the other of its arms having a hole therein which is engaged by the projection on the actuating member.

6. The safety switch defined by claim 3, in which the transversely extending bearing surface is a shoulder on the contact member portion of the actuating member and complementary to the fixed support.

#### References Cited

#### UNITED STATES PATENTS

2,390,846 12/1945 Obszarny ----- 200—157

#### FOREIGN PATENTS

619,571 4/1961 Italy.

649,986 12/1962 Italy.

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