

Jan. 30, 1940.

G. SCHRADE

2,188,762

POCKETKNIFE

Filed Aug. 15, 1938

2 Sheets-Sheet 1

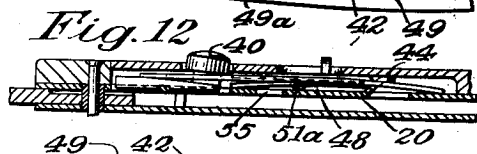
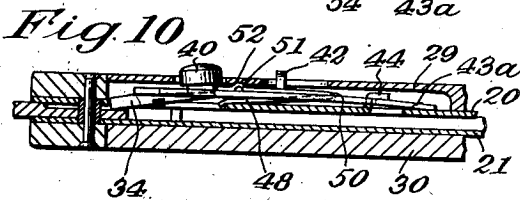
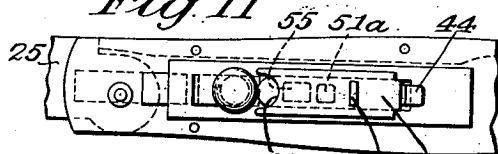
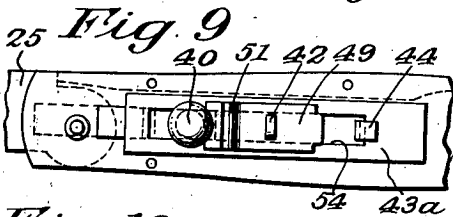
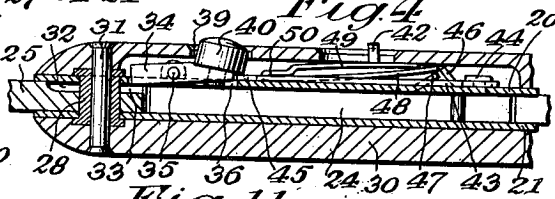
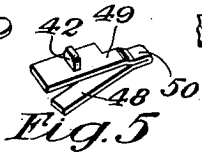
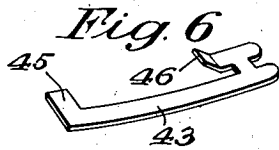
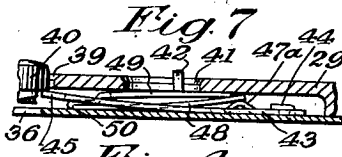
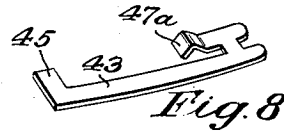
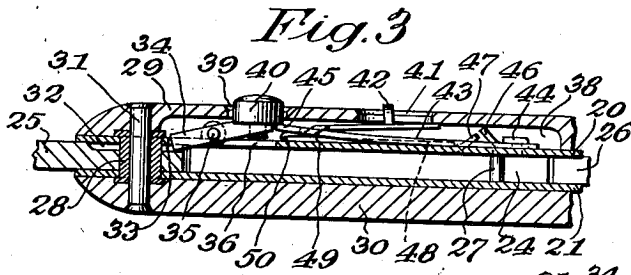
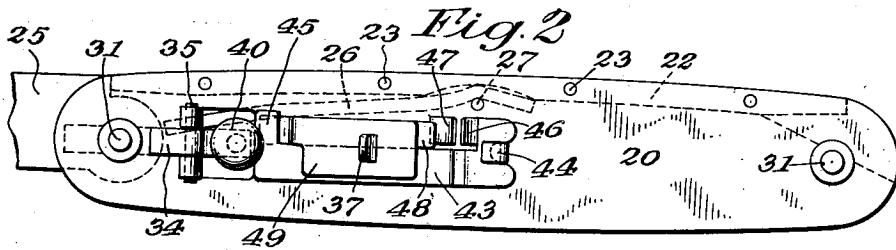
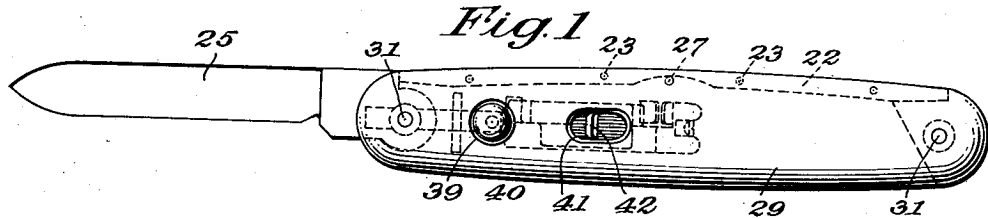


Fig. 13: Detail view of a component, likely a thumb hole or thumb hole, showing its shape and internal features. It is labeled 49a, 51a.

INVENTOR  
George Schrade  
BY  
C. M. Newman  
ATTORNEY

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Fig. 14

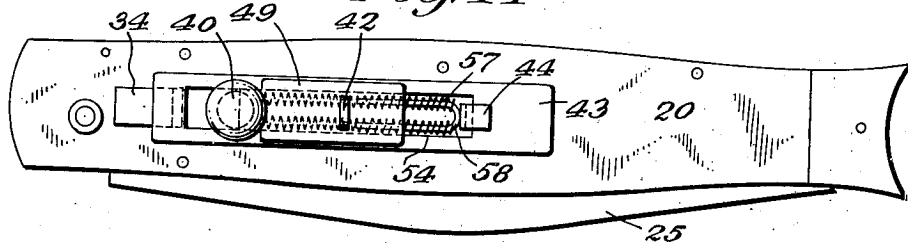


Fig. 15

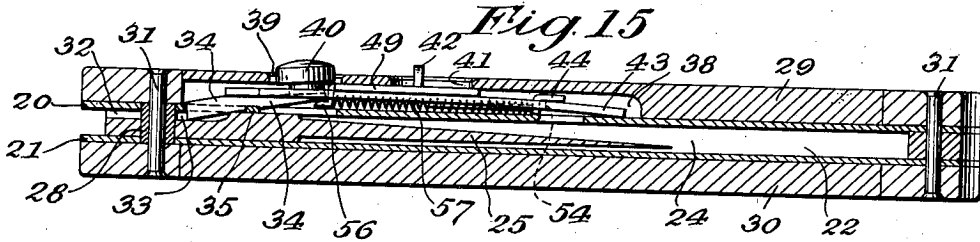


Fig. 16

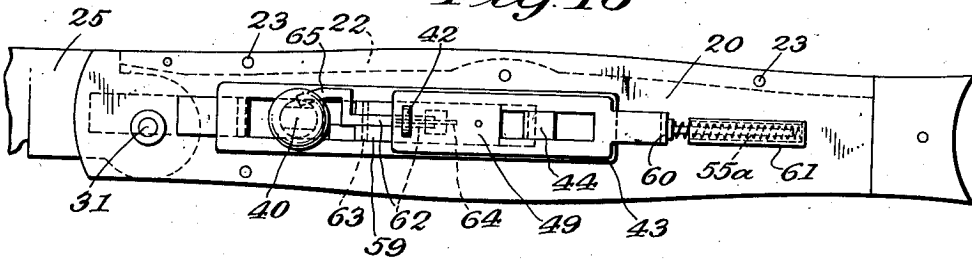


Fig. 17

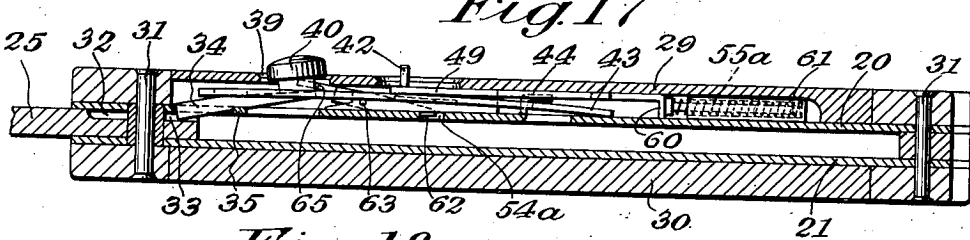


Fig. 18

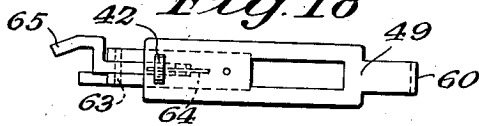
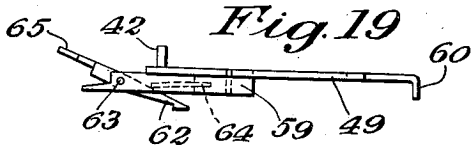


Fig. 19



INVENTOR  
George Schrade  
BY  
E. M. Hamer  
ATTORNEY

# UNITED STATES PATENT OFFICE

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## POCKETKNIFE

George Schrade, Bridgeport, Conn.

Application August 15, 1938, Serial No. 224,982

4 Claims. (Cl. 30-160)

My invention relates to pocketknives of the automatic fly-open-blade type and comprises improvements on several knives of this type previously patented by me and operated by a push button which normally serves to lock the blade in a closed position and to release the blade when the push button is pressed in.

The present invention is directed more particularly to means for locking the blade or blades in both a closed and opened position, as against accidental opening since I find that with some types of fly-open-blade knives, when carried in a pocket along with other articles such as keys, coins, and the like, the push button is liable to be pressed in, in a way to release the blade, which is liable to cause damage to the clothing or injury to the wearer.

I have therefore now designed a dependable lock to prevent accidental releasement of the blade and to provide means for locking the blade not only in a closed position but likewise in an open position.

The invention further includes mechanisms which can be operated by the thumb of the hand supporting the knife, and whereby the movement of the thumb serves first to release the safety slide and then to press the button which releases the blade. This locking means includes in part a safety slide which is closely associated with the push button and a spring whereby the safety slide may be positioned in engagement with the button to prevent its operation and then moved to release the button and blade. The invention further includes a novel form of locking safety slide that engages either the handle or the lining of the knife to retain the slide in its adjusted position with respect to the button.

My invention is obviously adapted for either a one- or two-bladed knife since the mechanism employed for the one blade and positioned adjacent thereto on the one side can be duplicated on the other side for the other blade. Therefore, for the purpose of simplifying and clarifying the drawings I have used a one-bladed knife for illustrating purposes.

Throughout the several figures of the accompanying drawings similar characters of reference will be found to denote like or corresponding parts throughout the several figures.

Fig. 1 shows a side elevation of a one-bladed pocket knife, in an open position, embodying my invention.

Fig. 2 shows a side view of the same knife on a slightly enlarged scale, the blade being broken away and the handle member being removed from the side covering the blade locking mechanism.

Fig. 3 shows a central longitudinal sectional elevation through one end portion of the knife better to illustrate the push button and its locking means.

Fig. 4 is a somewhat similar sectional view showing the locking slide in a disengaged position.

Fig. 5 shows a detached perspective view of the locking slide as seen from the opposite side from that shown in Figs. 2 to 4 inclusive.

Fig. 6 shows a detached perspective view of a spring forming the frictional runway for the locking slide and including a stop for the slide shown in Figs. 2, 3 and 5.

Fig. 7 shows a detailed longitudinal sectional view somewhat like Figs. 3 and 4 though including a slightly modified form of spring such as is also shown in Fig. 8.

Fig. 8 shows a detailed perspective view of the spring shown in Fig. 7 and which differs only slightly from that shown in Fig. 6.

Fig. 9 shows a side view of a portion of a knife, the handle being removed, illustrating a slightly modified form of button locking means, in a locked position.

Fig. 10 is a central vertical longitudinal section of the knife operating mechanism in a locked position, as shown in Fig. 9, including a locking slide which has a lug on top side to engage a recess in the handle.

Fig. 11 shows a locking mechanism very similar to that shown in Figs. 9 and 10 except that the locking slide has its friction lug on the underside to engage a hole in the knife lining rather than in the handle as shown in Fig. 10.

Fig. 12 is a central longitudinal sectional view of the knife locking mechanism shown in Fig. 11.

Fig. 13 shows a detached plan view of the locking slide employed in Figs. 11 and 12.

Fig. 14 shows a side view of a knife, the handle being removed, the blade in a closed position, and employing a slightly different form of spring actuated locking slide.

Fig. 15 shows a central longitudinal section through the knife shown in Fig. 14, the blade being in a closed locked position.

Fig. 16 is a plan view of a knife embodying my invention the handle being removed and the blade in an open locked position, illustrating a further modified form of spring actuated slide for locking the push button, in an opened and closed position.

Fig. 17 is a central vertical longitudinal section through the knife shown in Fig. 16.

Figs. 18 and 19 show a detached plan and a side view respectively of the locking slide shown in Figs. 16 and 17.

Referring in detail to the characters of reference marked upon the drawings, 20 indicates the knife lining to which the operating mechanism is attached, and 21 the opposite lining the two said linings being secured to the knife back 22 by rivets 23 and made to form a pocket 24 there-between to receive the knife blade 25. A

spring 26 is secured in this pocket, see Fig. 2, by a special rivet 27, the free end of which extends forward for engagement by the knife blade when closed against the action of the spring.

5 The knife blade is hingedly supported in one end of the knife on a bushing 28 that is secured between two handle members 29 and 30 by a rivet 31. One side of the hinged end of the knife blade is provided with aligned notches 32 and 10 33 to be engaged by the locking lever 34 pivotally supported on a pin 35 secured in the upper lining 20 which as will be seen is cut out as at 36 to receive the said lever 34. The handle members 29 and 30 are secured to the outer face of 15 the two lining members by rivets 31. The upper handle member 29 is suitably recessed as at 38 to receive and enclose the operating mechanism and in addition is provided with opening 39 for the push button 40 and an opening 41 for the thumb piece 42 on lock slide 49.

20 A spring plate 43 is secured to the top lining member 20 by a small clip 44 that is struck up out of the upper lining member and then pressed down upon the notched end portion of the 25 spring. The forward end 45 of this spring plate engages the underside of the push button 40 in a way to hold the same in an extended position. The rear end portion of the spring is provided with a stop 46 which is bent up from the metal 30 of the spring while the knife lining has a stamped up incline 47 upon which the lower leg 48 of the slide 49 rides. This locking slide, as will be seen from Fig. 5, is formed from a strip of spring sheet metal that is bent back upon itself 35 to form two yieldable spring members, one forming the upper member and the other the lower member 48 that slides on the lining 20 and against the inner edges of the spring member 43. The forward pointed end portion 50 of this slide, as will be seen from Fig. 3, serves to nose in under the enlarged end portion 45 of the 40 spring which in turn is shoved up against the underside of the push button 40 to lock the same and to prevent it from being depressed and the blade unlocked. This locking slide is provided 45 on the top side of its upper portion with a thumb piece 42 that projects up through the opening 41 in the top handle member for engagement by the operator, when desired, to move the slide forward or backward in the locking or un- 50 locking of the button and blade. In Fig. 4 the locking slide is positioned on the lock spring 43 which exerts its energy upward against the button as shown in Figs. 3 and 7, the slide being shown 55 withdrawn and resting lightly on the incline 47 against the stop 46, so that a slight engagement of the thumb piece accidentally or purposely would insure it moving forward down the incline 47 so that its pointed end would move in under the button to lock the same thereby forming a 60 safety blade locking device.

65 Fig. 6 shows the lock spring with stop 46 formed of the metal of the spring 43 and against which the lower arm of the locking slide abuts. This form of spring is used, see Fig. 4, where the 70 incline 47 is formed out of the lining 20. In the form shown in Fig. 8 both the incline 47a and its supporting portion 46 are formed integral with and as a part of the spring. When this form of spring 43 is used no stop is required as 75 the end of the lower part of the slide rests on top of the incline 47a as shown in Fig. 7 so that when the safety slide is pulled back away from the button to unlock the blade no stop is required but if the safety slide is moved slightly it shoots forward into the locked position.

The forward end of the spring member 43a as shown in Fig. 10 exerts its energy downward against the forward end of the locking lever 34, whereas the spring 43 shown in Fig. 4 exerts its energy upward against the button which obviously has the same effect of forcing the locking lever into the notches of the blade. 5

In the form shown in Figs. 11 and 12, the slide is disconnected from the button and is free to operate automatically by reason of the fact that 10 the end of the lower leg is positioned upon the incline 47 and when released will automatically slip forward beneath the spring 43 and lock the button.

15 The construction shown in Figs. 9 and 10 differs but slightly from that shown in the preceding figures in that the locking slide is provided with a friction lug 51 on the top side of its upper member for engagement with the pocket 52 in 20 the inner face of the handle member 29 to prevent the slide from moving easily. This lug, as shown more clearly in Fig. 10, is located adjacent to the forward end of the locking slide which engages the underside of the head of the push button and is normally held in such 25 engagement by the seating of the lug in the pocket. On the other hand it can readily be drawn out and the button released by engaging the thumb piece 42 on the slide and shoving it back on the lining member 20. The slide in this 30 form, Fig. 10, is mounted upon and guided by a spring member 43a which has a central longitudinal opening 54 formed therein which, like the spring member 43, is secured to the lining by a clip 44 stamped up from the lining. 35

The forward end of this spring member 43a extends forward of the shank of the button 40 which is mounted on the locking lever 34 which is partially positioned in the end portion of the longitudinal opening 54. In the mounting of 40 this slide the lower member 48 is guided in the opening while the wider upper member is mounted upon the top edge portion of the spring 43a thus forming a substantial bearing for the operation of the slide which is shoved forward and backward through the engagement of its thumb 45 piece.

50 Figs. 11, 12 and 13 show a construction that is substantially like that shown in Figs. 9 and 10 except that the friction lug 51a carried by the slide is formed on the underside of the lower member 48 of the slide and serves to engage an opening 55 in the lining member 20. The forward end of the upper member of this slide, see 55 Figs. 11 and 13 includes a circular pocket 49a to receive the shank of the push button to better engage the underside of the button. This slide is manually operated through the engagement of its thumb piece 42 which projects up through the handle member 29, not shown in these views. 60

65 Figs. 14 and 15 show a spring actuated form of a safety-blade locking means which normally rests in a locked position and must be held back in the unlocked position while the button is pressed to open or close the blade, and when 70 the button is pressed the locking slide is released and locks the button in either an open or closed position. This assembly, like that shown in Figs. 9 to 12 inclusive includes a sheet metal spring guide plate 43 having a central longitudinal opening 54 therein and is secured to the 75 lining member by a clip 44 struck up from the said lining member. The forward end of this central elongated opening 54 forms a pocket and guide for the locking lever 34 which is pivotally supported at 35 to the lining member 20. The 75

locking slide 49 as employed in this form of the invention is formed of an elongated piece of sheet metal having a thumb piece 42 upon its top side that protrudes through the opening 41 of the handle and has its forward end bent down, see Fig. 15, and deflected forward, terminating in a knife edge 56 for engagement with the inner end portion of the lever 34 supporting the push button 40. This downwardly deflected portion of the slide also forms a shoulder for a spring 57, one end of which is seated thereagainst and the other end against the upturned end of the lining that terminates in the clip 44 which attaches the spring guide plate 43. In this form, like those of the preceding forms of my invention, the mechanism referred to is enclosed in the pocket 38 of the handle which protects it from injury and disarrangement. The spring 57 which normally retains the slide in the forward position may be provided with a U-shaped guide wire 53 for supporting the spring. This direct spring action on the slide obviously serves to normally retain the slide in engagement with the shank of the push button is a way to hold the forward end of the button lever down to engage a notch of the blade when either in an open or closed position. This can thus properly be termed an automatic safety locking slide since it readily snaps into position the moment the notches of the blade are brought to register with the locking lever 34. On the other hand, when the button is pressed it unlocks the blade which automatically is thrown open by the action of the spring 26 within the pocket 24 of the knife. By this construction the knife blade is always locked in either an open or closed position.

The modified structure disclosed in Figs. 16 to 19 inclusive resides principally in the form of the locking means. In this case the locking slide 49 is mounted to slide on spring plate 43 and is held thereon in part by the handle member covering the mechanism and in part by a rib 59 formed on the underside of the slide. This slide is provided with a thumb piece 42 and a shouldered end portion 58 against which a spring 55a is supported in a tubular casing 61. The lining member 20 is provided with an opening 54a for the engagement of a spring actuated trigger 62 that is pivoted to the rib of the slide as at 63 and actuated by a small spring 64 which normally tends to retain the forward end 65 of the trigger in a raised position to engage the underside of the push button so that when so engaged the notch in rear end of the trigger will engage the edge of the lining at the opening 54a and hold the slide against forward movement. The only way to release this automatic safety lock slide shown in Fig. 16 is by pressing the button, as it can not be released by bringing pressure on the thumb piece 42, but readily releases when pressure is applied to the thumb piece to press it back against the action of the spring 55a. This again produces a fly-open-blade knife of the class described having an automatic safety slide which in this instance is pulled away from the push button to release the same to be acted upon so as to permit it to be pressed in to release the blade. The same spring actuated slide again serves to lock the blade when the blade is either opened or closed.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A pocketknife of the class described, comprising lining and handle members, a blade hingedly mounted therein, a locking lever pivotally mounted in the lining to engage and lock the blade and carrying a push button, a sheet metal spring member having one end portion secured to the lining and the other disposed beneath the push button, a slide mounted on the spring having a thumb piece secured thereon and having one end adapted to engage the underside of the movable end of the spring the said lining having an inclined runway formed thereon in the path of movement of the slide for the frictional engagement of the latter, the said spring member also having a stop formed thereon in the path of movement of the slide.

2. A pocketknife of the class described, comprising linings, a back and handle portions, a blade hingedly supported intermediate the linings and having notches formed in its hinged end portion, a spring to throw the knife blade open, a lever pivotally mounted in the lining for engagement with the notches of the knife blade and carrying a push button, a locking slide mounted on the lining and carrying a thumb piece remote from the push button, means to normally hold the button in an extended position, spring means to normally hold the locking slide in engagement with the push button, means carried by the slide to engage the lining and retain the slide in a locked position.

3. A fly-open pocketknife of the class described comprising linings, back and handle portions, a blade hingedly supported intermediate the linings and having notches formed in its hinged end portion, a lever pivotally mounted in the lining for engagement with the notches of the knife blade and carrying a push button, an elongated sheet metal spring positioned on the lining to normally hold the lever in engagement with the blade, a locking slide to engage the lever and button and including a pair of integral yieldable members disposed at an acute angle to each other, one member adapted to slide upon the lining for engagement with the lever and button, an inclined runway in the path of movement of the slide, means to permit of the operation of the slide to lock and release the push button and a stop to limit its backward movement.

4. A fly-open pocketknife of the class described, comprising linings, back and handle portions, a blade hingedly supported intermediate the linings and having notches formed in its hinged end portion, a lever pivotally mounted in the lining for engagement with the notches of the knife blade and carrying a push button, an elongated sheet metal spring positioned on the lining to normally hold the lever in engagement with the blade, a locking slide formed of sheet metal bent back upon itself substantially midway of its length to form two yieldable opposed members disposed at an acute angle to each other, one member engaging the lining and the other member engaging the handle and having a thumb piece extending through the handle for operation of the slide and means to retain the slide in a disengaged position.

GEORGE SCHRADE. 70