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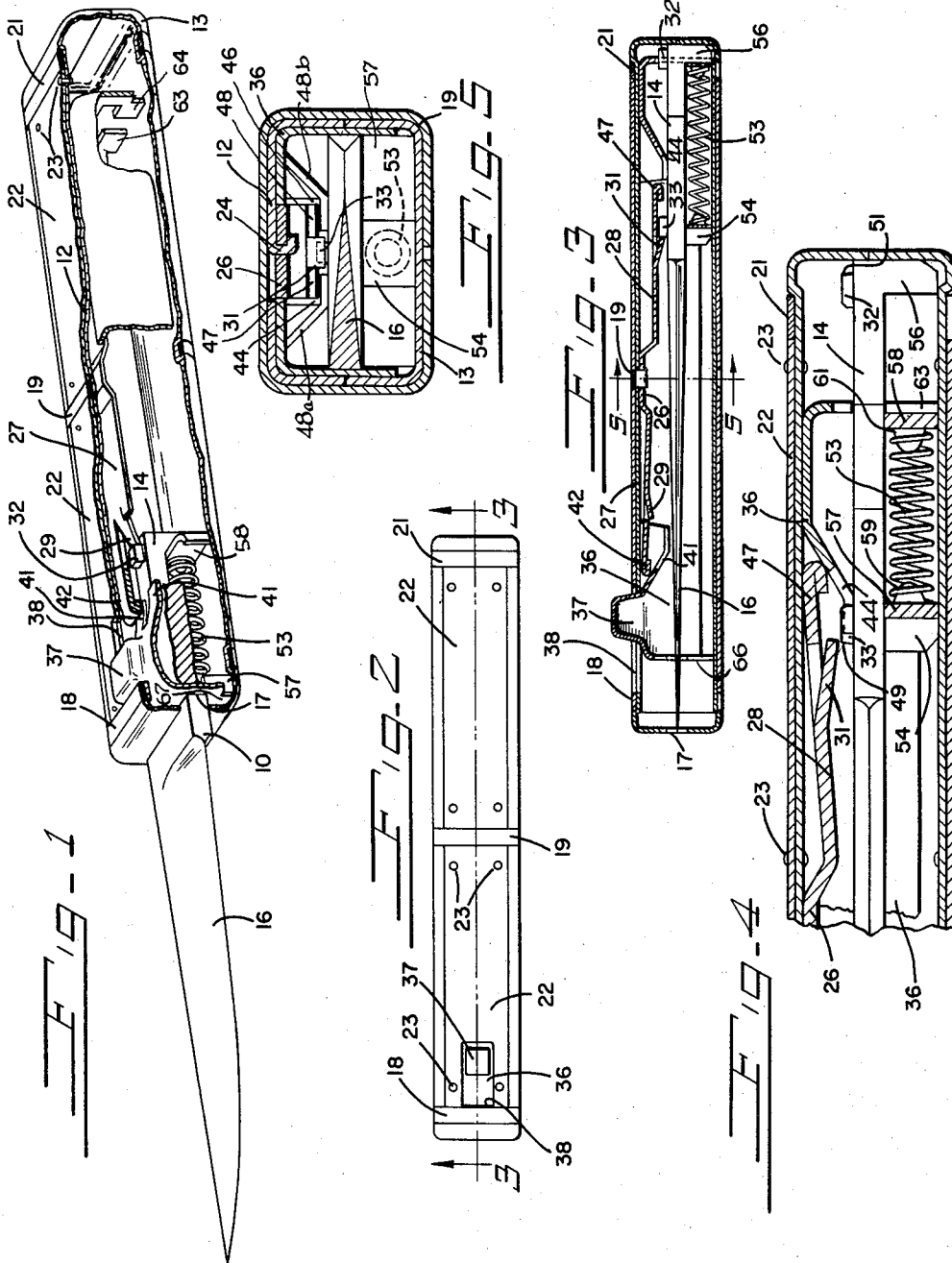
P. D. BRAVERMAN

2,854,745

KNIFE

Filed Dec. 26, 1956

2 Sheets-Sheet 1



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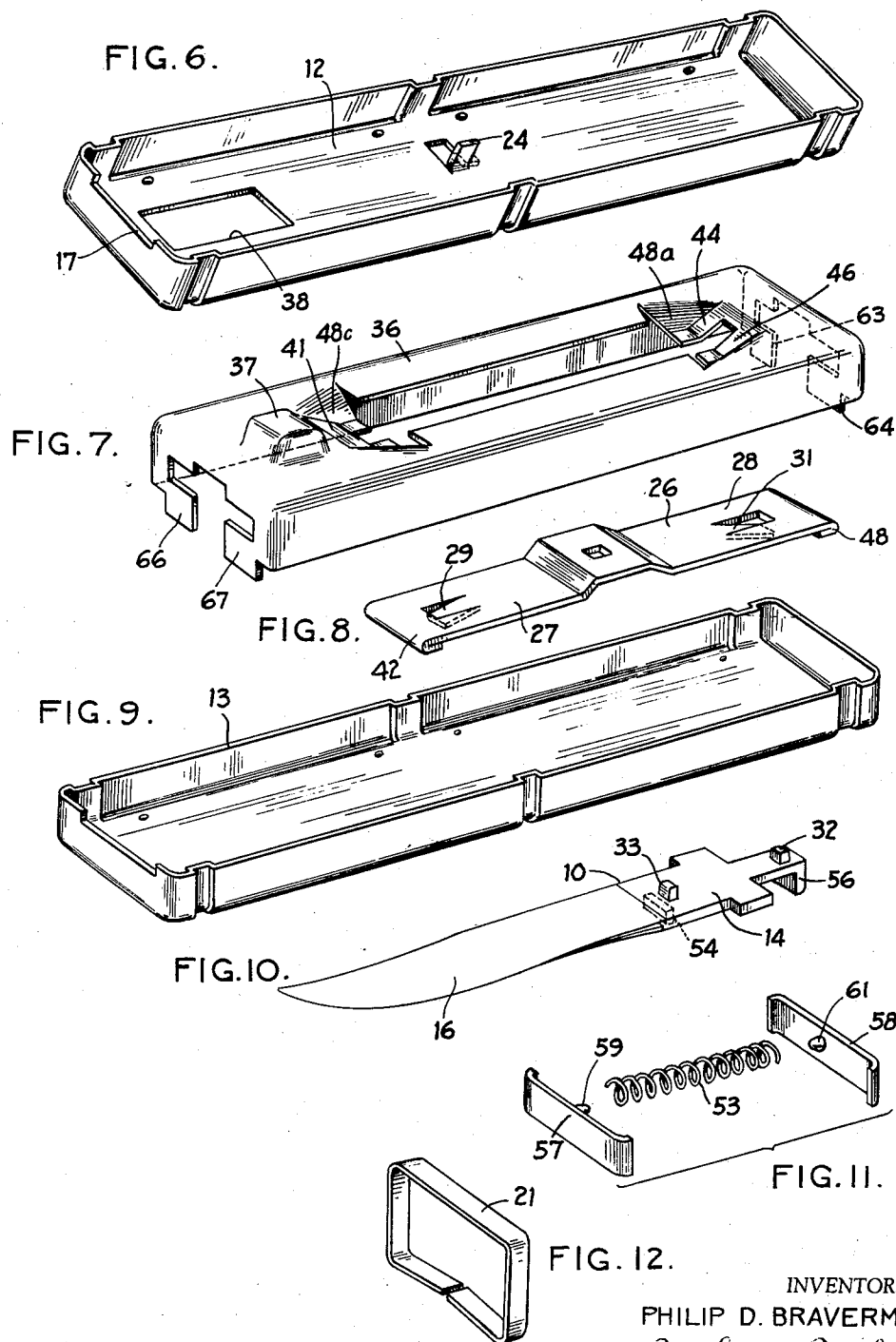
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2 Sheets-Sheet 2



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KNIFE

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Application December 26, 1956, Serial No. 630,524

4 Claims. (Cl. 30—162)

This invention relates to knives. More particularly, this invention relates to a knife having a spring-operated blade.

An object of this invention is to provide a knife having spring means for urging a blade to both open and closed positions.

A further object of this invention is to provide such a knife in which a simple thumb-operated control actuates the blade both into a case and out of the case.

A further object of this invention is to provide a knife of this type in which a single spring can be actuated to urge the blade to both open and closed positions.

A still further object of this invention is to provide a knife of this type in which a spring is mounted on the shank of the knife blade and travels with the knife blade between closed and open positions, and in which a sliding actuator member can engage and stress the spring of the knife blade in a selected direction to urge the blade in that direction when released.

The above and other objects and features of the invention will be apparent to those skilled in the art to which this invention pertains from the following detailed description and the drawing, in which:

Figure 1 is a perspective view, partly broken away and in section, showing a knife constructed in accordance with an embodiment of this invention, the blade of the knife being shown open.

Fig. 2 is a plan view of the knife with the blade being shown in closed position;

Fig. 3 is a view in section taken on the line 3—3 in Fig. 2;

Fig. 4 is an enlarged, fragmentary view in section showing the blade in closed position, the blade actuating mechanism being actuated to a position in which the blade is ready to start movement toward open position;

Fig. 5 is a view in section taken on the line 5—5 in Fig. 3;

Fig. 6 is a perspective view of an upper half of the casing of the knife;

Fig. 7 is a perspective view of a slide member which forms a part of the knife;

Fig. 8 is a perspective view of a lock member which forms a part of the knife;

Fig. 9 is a perspective view of the lower half of the casing of the knife;

Fig. 10 is a perspective view of the blade of the knife;

Fig. 11 is an exploded perspective view of a coil spring and a pair of clips which form a part of the knife; and

Fig. 12 is a perspective view of one of a plurality of split ring clips which form a part of the knife.

In the following detailed description, and the drawing, like reference characters indicate like parts.

As shown in the drawing, a knife blade 10 is mounted in a case consisting of upper and lower case halves indicated at 12 and 13, respectively. The blade includes a shank 14 which slides inside the case and a main or sharpened portion 16 which slides through a slot 17 formed between the case halves at one end of the case. The case halves are held together in assembled relation

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by resilient, split-ring clips or bands 18, 19 and 21 which extend around and embrace the case halves. Decorative facing plates 22 are attached to the case halves by rivets 23. The facing plates are mounted between the clips and serve to hold the clips in place.

A portion of the upper case half 12 is cut away to form a tab 24, which is bent downwardly as shown in Fig. 5 and extends through an opening in and engages the center of a lock member 26 to hold the lock member in assembled relation with the upper case half. The lock member has resilient portions 27 and 28 which extend in opposite directions along the case from the tab 24. Stop arms 29 and 31 are mounted on portions 27 and 28, respectively, adjacent the ends thereof. The stop arm 29 is engageable with a lug 32 on the shank of the blade to hold the blade in open position, as shown in Fig. 1. The stop arm 31 is engageable with a second lug 33 on the shank of the knife blade to lock the blade in closed position.

The stop arms 29 and 31 may be released from the lugs 32 and 33, respectively, by action of a knife actuating slide member 36. The member 36 is mounted inside the case and can slide back and forth parallel to the direction of sliding of the knife blade. A push button 37 is formed integrally with the slide member 36 and projects through an opening 38 in the case to a position to be engaged by the thumb of the operator of the knife. When the push button and slide are moved from the position shown in Fig. 1 to the position shown in Fig. 3, sloping portions 41 of the slide 36 engage an extension 42 of portion 27 of the lock member 26 to raise the stop arm 29 from the lug 32 and release the knife blade. Similarly, when the slide is moved from the position shown in Fig. 3 to the position shown in Fig. 1, sloping portions 44 and 46 (see Fig. 5) on the slide engage portions 47 and 48 of an extension on the portion 28 of the lug member to raise the stop arm 31 from the position shown in Fig. 3, to that shown in Fig. 4, and release the blade. As shown in Figs. 5 and 7, the sloping portion 44 is connected to the main portion of the slide member 36 by a sloping section 48a. The sloping portion 46 is connected to the main portion of the slide member 36 by a sloping portion 48b (Fig. 5). The sloping portions 41 are similarly connected to the main portion of the slide member by sloping sections 48c (Fig. 7) (only one of which is shown). As shown most clearly in Fig. 4, the faces 49 and 51 of the stop lugs on the shank of the blade, which can be engaged by the stop arms, slope sufficiently with respect to the direction of the sliding of the knife blade, so that when one of the lugs is engaged by one of the stop arms, that face which is engaged is parallel to the direction of the swinging of the stop arm as it swings between locking and released positions. The lock member is resilient, and the resilience of the lock member holds the stop arms in position for engagement with the stop lugs when not actuated to released position by the sloping portions of the slide.

Movement of the slide not only acts to release the knife blade, but also to compress a spring 53. The spring 53 is mounted between lugs 54 and 56 which are integrally formed with the shank of the blade and are so arranged that the axis of the spring extends parallel to the direction of sliding of the blade. Clips 57 and 58 are mounted on opposite ends of the spring 53 and central portions of the clips 57 and 58 normally engage the lugs 54 and 56, respectively. Projections 59 and 61 on the clips 57 and 58, respectively, are received inside the ends of the spring to hold the spring and clips in assembled relation.

As shown in Fig. 1, ends of the clips project on oppo-

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site sides of lugs 54 and 56. As shown most clearly in Fig. 1, the slide member 36 carries clip-engaging arms 63 and 64 at the end thereof remote from the push button 37. The arms 63 and 64 are adapted to be advanced past the lug 56 on opposite sides thereof to the position shown in which the arm 63 is shown in Fig. 4 to engage the clip 58 to advance the clip 58 to the left, as shown in Fig. 4, and stress the spring 53 in compression as the slide member 36 is moved from the Fig. 3 position to the Fig. 4 position. Then when the stop arm 31 is released from the stop lug 33, the spring 53 propels the blade rapidly to the Fig. 1 position in which the blade is locked in open position by engagement of the stop arm 29 with the stop lug 32. Similarly, the slide is provided with clip-engaging arms 66 and 67 at the opposite end thereof which can engage the clip 57 when the slide is moved from the Fig. 1 position toward the Fig. 3 position to stress the spring in compression until the stop arm 29 is released from the stop lug 32, whereupon the spring propels the blade to closed position.

Operation of the single, thumb-actuated button 37 makes possible both spring-urged opening and spring-urged closing of the knife blade. When the button 37 is moved to the left, the spring is compressed to urge the blade to the left to open position, and, when the blade is released, the blade rapidly slides to open position. Similarly, when the push button is moved to the right, the spring is compressed and urges the knife blade toward closed position, so that, when the blade is released, the blade is rapidly propelled to closed position.

The knife illustrated in the drawing and described above is subject to structural modification without departing from the spirit and scope of the appended claims.

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

1. A knife which comprises a hollow case, a knife blade having a shank slidably mounted in said case for sliding therein between an open position in which the blade projects from the case and a closed position in which the blade is housed inside the case, a pair of spaced lugs on said shank, a spring extending between said lugs, the axis of the spring being substantially parallel to the direction of sliding of the blade, a clip member mounted on each end of the spring and extending on opposite sides of the lug adjacent the clip, means for latching the blade in open position, means for latching the blade in closed position, a knife actuating slide member mounted in the case and slidable parallel to the direction of sliding of the blade, means on the slide member engageable with one of the clips when the blade is closed, means for advancing the actuating slide member toward blade open position to engage said one of the clips and stress the spring, means for releasing the means for latching the blade in closed position when the actuating slide member has been advanced toward blade open position, whereby the spring is adapted to drive the blade to open position, means on the slide member engageable with the other clip when the blade is in open position, means for advancing the slide member toward blade closed position to engage said other clip and stress the spring, and means for releasing the means for latching the blade in open position when the slide member has been advanced toward blade closed position, whereby the spring is adapted to drive the blade to closed position.

2. A knife which comprises a hollow case, a knife blade having a shank slidably mounted in said case for sliding therein between an open position in which the blade projects from the case, and a closed position in which the blade is housed inside the case, a pair of spaced lugs on said shank, a compression spring normally extending between said lugs, the axis of the spring being substantially parallel to the direction of sliding of the blade, a clip member mounted on each end of the spring and extending on opposite sides of the lug adjacent the clip, means for latching the blade in open position, means for latching

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the blade in closed position, a knife actuating slide member mounted in the case and slidable parallel to the direction of sliding of the blade, means on the slide member engageable with one of the clips when the blade is closed, means for advancing the actuating slide member toward blade open position to engage one of the clips and stress the spring, means on the slide member for releasing the means for latching the blade in closed position when the actuating slide member has been advanced toward blade open position, whereby the spring is adapted to drive the blade to open position, means on the slide member engageable with the other clip when the blade is in open position, means for advancing the actuating slide member toward blade closed position to engage the other clip and stress the spring, and means on the slide member for releasing the means for latching the blade in open position when the slide member has been advanced toward blade closed position, whereby the spring is adapted to drive the blade to closed position.

3. A knife which comprises a hollow case, a knife blade having a shank slidably mounted in said case for sliding therein between an open position in which the blade projects from the case, and a closed position in which the blade is in the housing inside the case, a spring mounted on the shank of the blade, means for latching the blade in open position, means for latching the blade in closed position, a knife actuating slide member mounted in the case and slidable parallel to the direction of sliding of the blade, means on the slide member for stressing the spring toward blade open position when the blade is closed, means for advancing the slide member toward blade open position to stress the spring, means for releasing the means for latching the blade in closed position when the slide member has been advanced toward blade open position, whereby the spring is adapted to drive the blade to open position, means on the slide member for stressing the spring toward blade closed position when the blade is in open position, means for advancing the slide member toward blade closed position to stress the spring, and means for releasing the means for latching the blade in open position when the slide member has been advanced toward blade closed position, whereby the spring is adapted to drive the blade to closed position.

4. A knife which comprises a hollow case, a knife blade having a shank slidably mounted in said case for sliding therein between an open position in which the blade projects from the case, and a closed position in which the blade is housed inside the case, means for latching the blade in open position, means for latching the blade in closed position, a knife actuating slide member mounted in the case and slidable parallel to the direction of sliding of the blade, spring means adapted to interconnect the slide member and blade when the blade is closed, means for advancing the actuator member toward blade open position to stress the spring, means for releasing the means for latching the blade in closed position when the slide member has been advanced toward knife open position, whereby the spring is adapted to drive the blade to open position, the spring means being adapted to interconnect the slide member and blade when the blade is in open position, means for advancing the actuator member toward blade closed position to stress the spring, and means for releasing the means for latching the blade in open position when the slide member has been advanced toward blade closed position, whereby the spring is adapted to drive the blade to closed position.

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