May 7, 1940.

F. H. GREVE

2,199,430

POCKETKNIFE

Filed Jan. 17, 1939

Fig. 2.

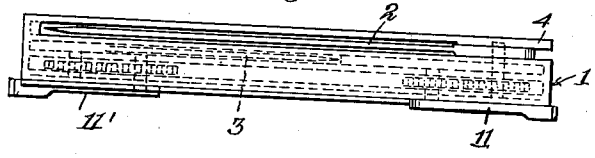


Fig. 3.

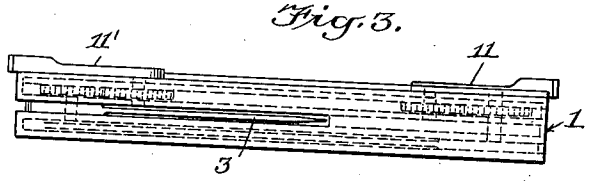


Fig. 1.

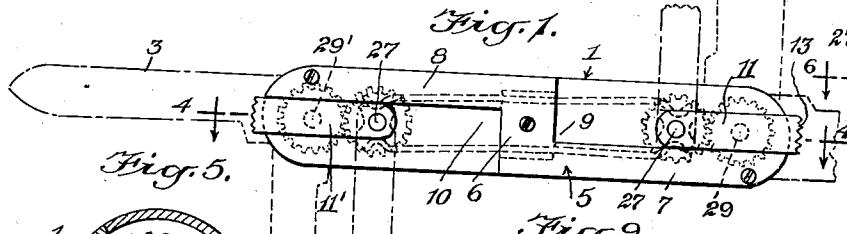


Fig. 4.

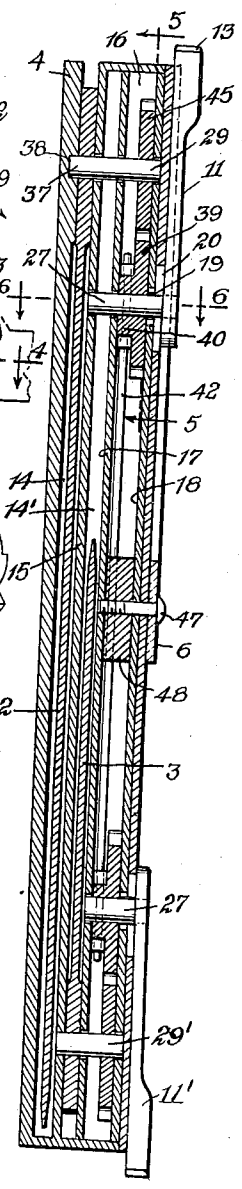


Fig. 5.

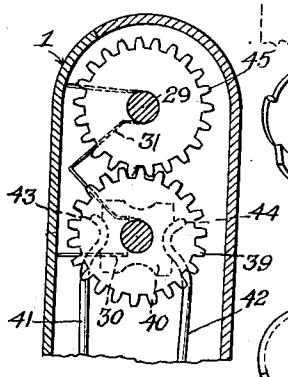


Fig. 9.

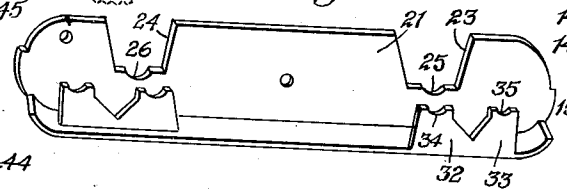


Fig. 11.

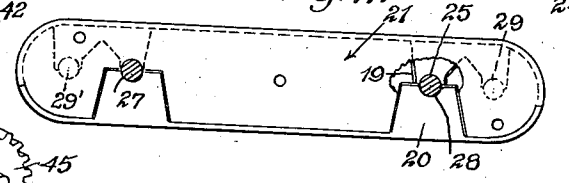


Fig. 7.

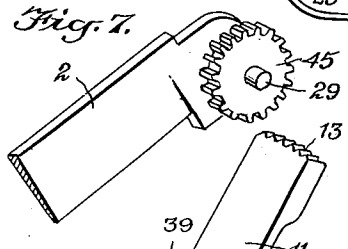


Fig. 8.

Fig. 10.

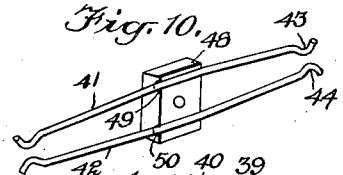


Fig. 12.

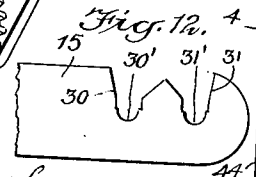
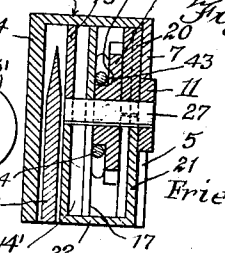


Fig. 6.



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UNITED STATES PATENT OFFICE

2,199,430

POCKETKNIFE

Friedrich Hanns Greve, La Salle, Ill.

Application January 17, 1939, Serial No. 251,293

4 Claims. (Cl. 30—158)

This invention relates to an improved pocketknife wherein levers are arranged adjacent the respective ends for actuating the blades to move them into and out of the knife casing.

A further object of the invention is to provide a pocketknife which may be opened and closed with one hand, the structure being such that the opening and closing means may be held against movement when the blade is opened so as to prevent accidental closing of the blade.

In the accompanying drawing—

Fig. 1 is a side view of a pocketknife disclosing an embodiment of the invention, the blades being shown half opened in dotted lines and fully opened in dot-and-dash lines;

Fig. 2 is a top plan view of the structure shown in Fig. 1;

Fig. 3 is a bottom plan view of the structure shown in Fig. 1;

Fig. 4 is an enlarged sectional view through Fig. 1 approximately on the line 4—4;

Fig. 5 is an enlarged fragmentary sectional view through Fig. 4 approximately on the line 5—5;

Fig. 6 is a transverse sectional view through Fig. 4 approximately on the line 6—6;

Fig. 7 is a detail perspective view of the large blade shown in Fig. 1, together with an actuating gear connected therewith;

Fig. 8 is a perspective view of the lever, gear and associated parts used in swinging the large blade to an open and a closed position;

Fig. 9 is an inverted perspective view of a cover member forming one of the sides and an extension or flange forming part of the top covering plate;

Fig. 10 is an enlarged detail perspective view showing a pair of springs and holding block disclosing certain features of the invention;

Fig. 11 is a side view of the knife similar to Fig. 1 but with the side plate removed; and

Fig. 12 is a side view of one end of one of the division plates.

Referring to the accompanying drawing by numerals, 1 indicates the body of the knife, while 2 indicates a large blade and 3 a small blade. These blades are hingedly mounted in the body 1, as hereinafter described, and arranged to be opened from the front and back of the body, respectively. As indicated in Fig. 6, the body 1 is provided with a rear side 4 and a front side plate 5. The front side plate 5 is shown in elevation in Fig. 1 and appears as a distorted Z-shaped formation with the central section 6 extending transversely of the body 1 centrally thereof, and with arms 7 and 8 extending in opposite directions to the opposite ends of the body 1. By reason of this construction there are provided recesses or offset portions 9 and 10 in which operate the respective levers 11 and 11'. Each of these levers is provided with a roughened end 13 and is adapted to be operated by the thumb of the person opening the knife. Lever 11 is adapted to swing the blade 2 open and closed, while lever 11' performs the same function in the same way in respect to the small blade 3.

As indicated in Fig. 4, there are provided blade chambers or compartments 14 and 14' arranged side by side with a division wall 15 therebetween. A third compartment 16 is provided by additional division walls 17 and 18. Division wall 18 is provided with a notch 19 at each end and also a thickened portion 20 at each end, or rather adjacent each end, as shown in Figs. 4 and 11. A cover plate 21 is arranged exterior of the wall 18 and this cover plate is provided with a flange 22 which overlaps all the compartments and also wall 15 so as to provide a top cover, as indicated particularly in Fig. 6. On top of the cover plate 21 the front side plate 5 is arranged and held in place by suitable rivets or screws.

It will be observed from Fig. 9 that the cover plate 21 is provided with identical notches 23 and 24, said notches at their bottom being formed with arc-shaped bearing portions 25 and 26. As indicated in Fig. 4, the shaft 27 rigidly secured to lever 11 is rotatably mounted in the bearing portion 25 and also in the bearing 28 of the thickened part 20. This shaft, as well as shaft 29, is rotatably mounted in the division plate 15, which plate has notches 30 and 31 with arc-shaped portions 30' and 31'. Member 32 of plate 21 fits into the notch 30, while member 33 fits into notch 31 and by reason of the rounded recesses 34 and 35 coacting with the bearing portions 30' and 31', circular openings are provided for the respective shafts 27 and 29. Shaft 29 is formed integral with or rigidly secured to the large blade 2 and, as shown in Fig. 4, shaft 29 has a short projection 37 rotatably fitting into a shallow bore 38 in the rear side 4. Shaft 29 extends through the division walls 15, 17 and 18 but not through the front side plate 5. Shaft 27 extends through all these walls and across the top of the thickened portion 20, as shown in Figs. 4 and 11, so that it may be rigidly secured to the lever 11. A pinion 39 is rigidly secured to shaft 27 and also to a star wheel 40. As indicated in Figs. 5 and 10, there are provided spring arms 41 and 42 having arc-shaped ends 43 and 44 which fit into

the star wheel 40 and prevent accidental movement of lever 11 and connected parts. However, when lever 11 is forcibly moved spring arms 41 and 42 will move out of the way and allow star wheel 40 and pinion 39 to rotate. Pinion 39 continually meshes with a gear wheel 45 which is keyed or otherwise rigidly secured to shaft 29. As shaft 29 is keyed or otherwise rigidly secured to the large blade 2, any rotation of the gear wheel 45 will cause a corresponding movement of the blade.

When the parts are in the position shown in Figs. 2 and 4, the blade is closed and the corrugated end 13 of the lever 11 is projected beyond the end of the knife a short distance. When this corrugated end is swung to the dot-and-dash position shown in Fig. 1, pinion 39 will be rotated through a quarter revolution and gear wheel 45 will also be rotated so as to swing the blade 2 outwardly to the position shown in dotted lines in Fig. 1. Preferably pinion 39 and gear wheel 45 are the same size so that a quarter revolution of the lever 11 will result in a quarter rotation of the blade 2. By continuing the movement of lever 11, as indicated by the arrow 46 in Fig. 1, the blade 2 will be swung to its full open position, as indicated in dot-and-dash lines in Fig. 1. When the blade 2 is in its fully open position, lever 11 will be swung from the position shown in Fig. 4 to the diametrically opposite position or through an arc of 180°. The same arrangement is provided at the opposite end of the body 1 to that shown in Fig. 4 for the small blade 3. This opposite structure is identical with the structure just described except that the shaft 27' does not extend through the compartment 14', though the shaft 29' extends through this compartment and is keyed or otherwise rigidly secured to the small blade 3. The arrangement of pinion and gear and lever 11' is the same so that additional reference numerals will not be needed.

Arranged centrally of the body 1 and held in place by a screw 47, is a spring retaining block 48 which has a pair of grooves 49 and 50 which accommodate the center portion of the respective springs 41 and 42, as illustrated in Fig. 10. Whenever the blade is fully opened at each end and the body 1 of the knife grasped, the fingers will encircle lever 11 or 11', as the case may be, and thereby prevent any accidental closing of the blade. When both blades are closed and it is desired to open the large blade, one hand may be used to accomplish this result. The body 1 may be grasped or held in the hand and the thumb pressed against the roughened end 13 in such a direction as to swing lever 11 to the dotted position shown in Fig. 5. This action may be continued until the blade 2 is fully opened. A reverse action naturally will close the blade or, if desired, the back of the blade may be pressed against an object and closed in that manner. When the blade is closed in the manner just described, gear wheel 45 will rotate pinion 39 and swing lever 11 back to the position shown in Fig. 1. Blade 3 is opened and closed in the same manner and may be opened at the same time as the big blade or at a different time as preferred. It will be noted that the two blades swing, respectively, from the front and the rear of the body 1.

Through the use of one hand either blade may be opened or closed readily and when opened may be used in the usual manner or in any desired manner. It will be evident, of course, that two hands may be used for opening and closing the blades but the structure is such that one hand may readily perform this function.

I claim:

1. A pocketknife comprising a body, a blade adapted to swing into and out of said body, a shaft journaled in the body rigidly secured to said blade, a gear wheel rigidly secured to said shaft, a pinion meshing with said gear wheel, a swinging lever arranged exteriorly of said body, a star wheel rigidly secured to said pinion and a spring having one end pressing against said star wheel for resiliently locking the pinion each time the end of the spring enters a depression in the star wheel, and means for rigidly connecting one end of said swinging lever to the center of said pinion whereby upon the swinging of said lever through an arc of 180° said blade will be swung to a fully open or closed position.

2. A pocketknife of the character described including a body, a blade adapted to be swung into and out of said body, a shaft connected to said blade near one end, said shaft rotatably connecting the blade with the body, a gear wheel rigidly secured to said shaft, a pinion continually meshing with said gear wheel, said pinion on one face being provided with a star wheel, a lever having one end rigidly secured to said pinion, and spring-pressed members frictionally engaging said star wheel for resisting rotation of the pinion and for resiliently locking said pinion in different positions, said lever being arranged exteriorly of said body so that as it is swung in one direction said blade will be opened and as it is swung in the opposite direction said blade will be closed.

3. A pocketknife of the character described including a body, a pair of blades swingable into and out of said body, each of said blades having a shaft rigidly secured thereto, said shafts being arranged at opposite ends of said body, means at each end of the body for swinging the respective blades in opposite directions into and out of said body, each of said means including a gear wheel connected to the shaft of the blade at that end of the body, a pinion meshing with said gear wheel, an actuating lever rigidly secured to said pinion, a star wheel secured to each of said pinions, said star wheels being each provided with four recesses and a pair of double-ended springs positioned so that one end of each spring will fit into certain recesses of each star wheel for resiliently locking the pinions against rotation, said recesses and star wheels being positioned so that said blades will be resiliently locked in their fully open position, their fully closed position, and their half-open position.

4. A knife of the character described comprising a body, a pair of blades movable into and out of the body, a shaft rigidly secured to each of said blades near one end thereof, said shafts being arranged at the respective ends of the body, a train of gears for each of said shafts, each train of gears having a pinion formed with a star wheel, a pair of springs connected to said body centrally, said springs at the respective ends having bent portions fitting into the respective star wheels for resiliently resisting rotation of the respective trains of gears, and a thumb-operated lever rigidly secured to each of said pinions, said levers being adapted to move said gears against the resistance of said springs for swinging the respective blades into and out of said body.

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