C. H. WHITE & R. A. LETT.

TAKE-DOWN POCKET KNIFE.

APPLICATION FILED AUG. 15, 1910.

1,003,560. Patented Sept. 19, 1911.

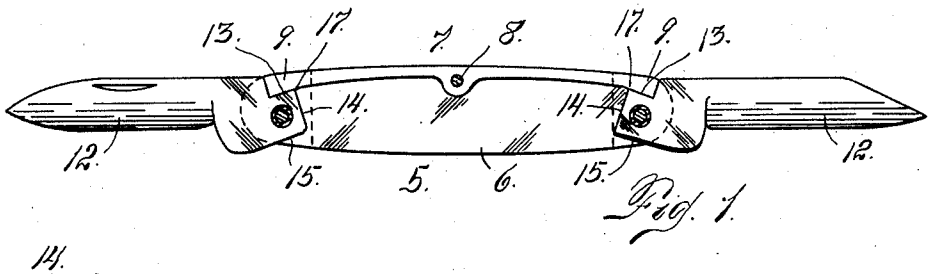

Fig. 1.

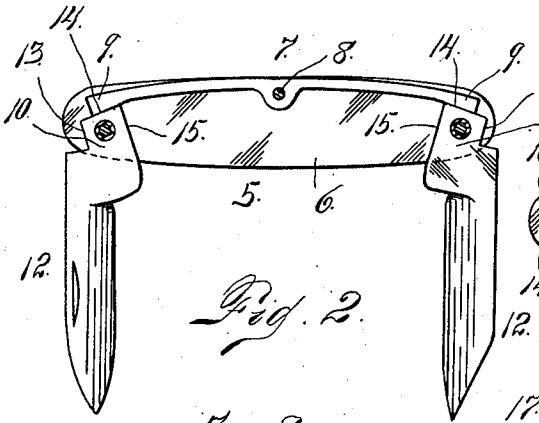

Fig. 2.

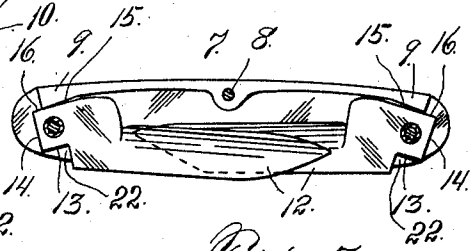

Fig. 3.

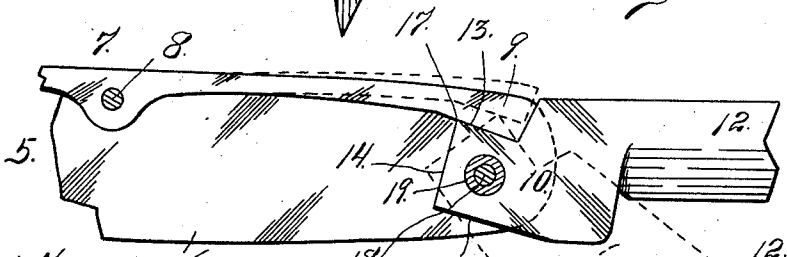

Fig. 4.

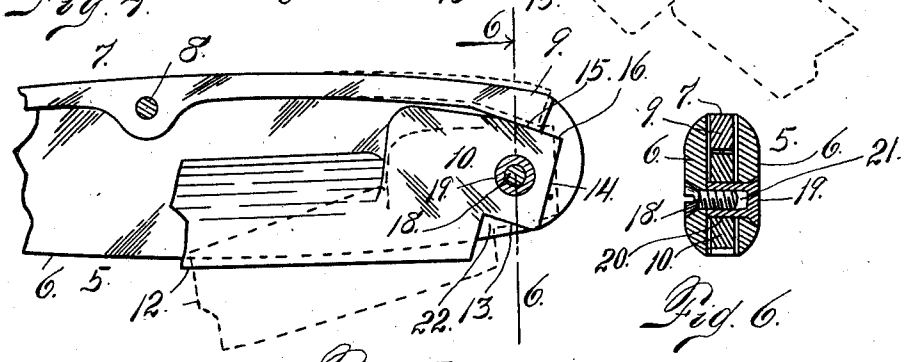

Fig. 5.

Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

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TAKE-DOWN POCKET-KNIFE.

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To all whom it may concern:

Be it known that we, CARL H. WHITE and ROYAL A. LETT, citizens of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Take-Down Pocket-Knives; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in take-down pocket knives, or knives in which the blade or blades are freely removable for the purpose of substituting perfect blades for broken ones or for the purpose of changing one blade for another when for any reason it may be desired to do so.

In our improved construction provision is made for placing the blades under the greatest spring tension when they are open and closed, the tension being least when the blade is half open or extends at right angles to the handle. This difference in tension is obtained by the peculiar construction of the inner extremities of the blades, whereby the faces of the shank of each blade which respectively engage the main spring when the blade is entirely open or closed, are farther from the pivotal center of the blade than the third face or the one which engages the spring when the blade is at right angles to the handle or midway between the open and closed positions. It is evident that by regulating the distance of these faces from the pivotal center of the blade, the tension of the blade may be regulated when in its various positions during the opening and closing movements. When the knife blade is half open it is intended that there shall be practically no tension thereon, whereby the blade may be easily removed or inserted. For instance, if the tension of the spring upon the blade were considerable, more or less difficulty would be experienced in removing the pivot pin in order to take out the blade; while in order to insert the blade considerable pressure would be required in order to bring the perforation of the blade into register with the perforations of the handle members preparatory to the insertion of the pivot pin. Hence in our improved construction we have chosen the position of the blade when at right angles to the handle as that which will be employed during the removal and insertion of the blade, since there is no disadvantage in having slight or practically no tension on the blade when in this position as the blade is never used when in said position. On the contrary when the blade is open for use, it is important that the spring action thereon shall be considerable so that it shall be firmly held. Again when the blade is closed, it is important that it shall be held securely closed so that it may not accidentally fly open. However, provision is made whereby but little strength is required in imparting the initial opening movement to the blade, since the shank of the latter when in the closed position projects beyond the adjacent extremity of the spring so that during the initial opening movement the bearing is on the extreme end of the spring. On the contrary when the blade is wide open the bearing point of the shank of the blade during the initial closing movement, acts upon the spring at some distance from its end nearer the securing rivet, which in a knife with two blades should be centrally located.

By virtue of the construction of our improved knife, whereby the tension of the blade is properly regulated as aforesaid, it becomes practicable to remove one blade and put another in its place, without the necessity of going to a mechanic to have the work done. In other words, by virtue of our improved construction the owner of the knife may remove one blade and put in another, since no skill is required in the performance. In fact it is only necessary to remove one screw in order to take out a blade. In our improved construction we employ a hollow half rivet having a threaded socket adapted to receive a screw passed through the opposite side of the handle, the screw and rivet coöperating to form a pivot pin for the blade.

Having briefly outlined our improved construction, we will proceed to describe the same in detail, reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a side eleva-

tion of a knife provided with our improvements, one side of the handle being removed and the blade pivots and handle rivet being sectionized. In this view both blades are open wide. Fig. 2 is a similar view showing the blades extending at right angles to the length of the handle. Fig. 3 is a similar view showing both blades closed. Fig. 4 is a fragmentary view similar to Fig. 1, the parts, however, being shown on a larger scale, and the blade being shown in two positions, one in full lines and the other in dotted lines. Fig. 5 is a similar view showing the blade in two positions, the blade being shown in full lines nearly closed and in dotted lines slightly more open. Fig. 6 is a cross section taken on the line 6—6 Fig. 5.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the knife handle considered in its entirety and composed of the two sides 6 between which is interposed a spring 7 centrally secured by a rivet 8 passing through the members 6 of the handle. The opposite extremities 9 of the spring, engage the shanks or pivot ends 10 of the blades 12. The shank of each blade has three faces, 13, 14 and 15. When the blade is wide open as in Fig. 1, the ends 9 of the spring engage the faces 13 of the blades. These faces are located a sufficient distance from the pivotal center or axis of the blade, to place the spring under its maximum tension when the blade is open, whereby it is locked or secured against accidental closing. Now when the blade is thrown to the position shown in Fig. 2, whereby it extends at right angles to the length of the blade, the spring end 9 engages the face 14 of the blade, which is nearer the center of the pivot pin than the face 13. Hence the end of the spring is allowed to move farther inwardly, whereby the blade when in this position, is held with less tension than when the blade is wide open, and this is as it should be, since there is no necessity for great tension when the blade is in the half closed position as it is never used while in that position. Now when the blade is closed or thrown to the position shown in Fig. 3, the end of the spring engages the face 15, and the end of the shank protrudes beyond the end of the spring as shown at 16, thus making it easy to open the blade, since the pressure during the initial opening movement acts on the extreme end of the spring where the resistance or tension is least in degree.

It will be noticed that in addition to the fact that the distance from the center of the pivot to the face 13 is considerable, whereby the end of the spring is forced out flush with the members of the handle when the blade is wide open, when an effort is made to close the blade, the corner 17 thereof acts upon the spring and is consequently resisted by the tension of the latter, and this point during the initial closing action acts upon the spring at a considerable distance from the outer extremity thereof, where the tension of the spring is greater than at its extreme outer end upon which the face 15 acts during the initial opening movement of the blade.

Each blade is secured in place in the handle by a pivot composed of male and female screw members 18 and 19 respectively. The female member passes through one side or member of the handle, through a perforation 20 formed in the blade, and abuts against the inner surface of the opposite side or member of the handle; while the male screw 18 passes through a perforation in one side or member of the handle in which its head is countersunk, the shank of the screw being threaded into a correspondingly threaded socket 21 with which the female screw is provided.

When it is desired to remove one blade and insert another, the blade to be removed is thrown to the position shown in Fig. 2 or that in which the outward pressure on the end of the spring is least. The male screw is then removed, after which the female screw is loose and will drop out. This unfastens the blade and a new blade may then be inserted and secured by the pivot formed of the male and female screw members, but little pressure upon the end 9 of the spring being necessary in order to bring the perforation in the shank of the blade into register with the perforations in the opposite sides or members of the handle.

Attention is called to the fact that the two faces 13 and 15 should be the same distance from the pivotal center of the blade, since it is desirable that the outer edge of the spring shall be flush with the adjacent edges of the handle members when the blade is in the closed or wide open positions.

In order to more securely lock the knife in the wide-open position, the angular recess 22 of the blade into which the free extremity 9 of the spring projects, has one of its sides, namely, that which coincides with the face 13, extending in a direction out of parallel with the length of the blade, while the spring extremity which engages the face 13, is shaped to fit the said face. By reason of this peculiar shape of the recess, the spring affords better resistance or gives the blade better resisting strength when in use. The face 15 is formed parallel with the face 13, so that the face 15 may fit the extremity of the spring when the blade is in the closed position.

Having thus described our invention, what we claim is:

1. In a pocket knife, the combination with a handle having a main spring interposed

between the sides of the handle and secured in place, of a blade pivotally connected with the end of the handle and having three faces adapted to respectively engage the end of the spring when the blade is in the wide-open, half-open and closed positions, the faces of the blade engaged by the spring when the blade is in the wide open and closed positions being farther from the pivotal center of the blade than the face engaged by the spring when the blade is in the half-open position for the purpose set forth.

2. A pocket knife composed of a handle having a main spring interposed between the sides of the handle and centrally secured in place by a pin, and blades pivoted in the extremities of the handle and having faces which respectively engage the extremities of the spring when the blades are in the wide-open, half-open and closed positions, the face of the blade engaged by the spring when the blade is in the half-open position being nearer the pivotal center of the blade than the other two faces, for the purpose set forth.

3. A knife composed of a handle having a main spring interposed between the handle members and centrally secured by a rivet pin, and blades pivotally connected with the ends of the handle and having faces adapted to respectively engage the spring extremities when the blades are in the wide-open, half-open and closed positions, the face of the blade which engages the spring when the blade is wide open, being located farther from the center of the pivot than the adjacent face, for the purpose set forth.

4. A pocket knife composed of a handle having a spring interposed between the handle members and centrally secured in place, and blades pivotally connected with the handle extremities, the shank of the blade having three faces which respectively engage the corresponding end of the spring when the blade is in the wide-open, half-open and closed positions, the face of the end of the shank of the blade being nearer the pivotal center of the blade than the other two faces, for the purpose set forth.

5. A knife composed of a handle, a main spring, and a blade pivoted in the handle, the pivoted extremity of the blade having faces which respectively engage the spring when the blade is in the wide open intermediate and closed positions, the face engaged by the spring when in the intermediate position being located nearer the pivotal center of the blade than the other faces, substantially as described.

6. A knife composed of a handle, a main spring interposed between the sides of the handle and secured therein, a blade removably pivoted to the handle extremity by means of male and female screw members, the female member of the screw passing through a perforation in one side of the handle and a perforation in the blade, its inner extremity abutting against the inner surface of the opposite handle member, while the male screw enters a perforation in one handle member and enters a threaded socket with which the female member of the screw is provided, the pivotal end of the blade having faces adapted to respectively engage the end of the spring when the blade is in the wide-open, half-open and closed positions, the faces respectively engaged by the spring when the blade is in the closed and wide open positions being farther from the pivotal center of the blade than the face engaged by the spring when the blade is in the half-open position.

7. A knife composed of a handle, main spring, and a blade pivoted at one extremity of the handle, the pivoted extremity of the blade having three faces which respectively engage the end of the spring when the blade is in the wide-open, intermediate and closed positions, the faces which are engaged by the spring when in the wide-open and closed positions being equi-distant from the pivotal center of the blade and farther from said center than the third face, for the purpose set forth.

8. A knife composed of a handle, a main spring interposed between the sides of the handle, a blade pivotally connected with one end of the handle, the pivot end or shank of the blade having three faces which respectively engage the end of the spring when the blade is in the wide-open, intermediate and closed positions, the two faces of the blade which respectively engage the spring when in the wide-open and closed positions being equi-distant from the pivotal center of the blade and farther therefrom than the third face, for the purpose set forth.

9. A knife composed of a handle, a main spring and two blades pivotally connected with the opposite ends of the handle, the pivoted extremity of each blade having three faces which respectively engage the end of the spring when the blade is in the wide-open, intermediate and closed positions, the two faces which engage the spring when in the wide-open and closed positions being equi-distant from the pivotal center of the blade and farther therefrom than the third face, for the purpose set forth.

10. A knife composed of a handle, a main spring and a blade removably pivoted in the handle, the pivoted extremity of the blade having three faces which respectively engage the end of the spring when the blade is in the wide-open, intermediate and closed positions, the two faces which respectively engage the spring when in the wide-open and closed positions being equi-distant from the pivotal center of the blade and farther

therefrom than the third face of the blade, for the purpose set forth.

11. A knife provided with a main spring and a blade whose pivoted extremity is provided with three faces adapted to respectively engage the end of the spring when the blade is in the wide-open, half-open and closed positions, the two faces which respectively engage the spring when in the wide-open and closed positions being farther from the pivotal center of the blade than the third face of the blade, for the purpose set forth.

12. A knife provided with a main spring and a blade whose pivoted extremity is provided with three faces which respectively engage the end of the spring when the blade is in the wide-open, half-open and closed positions, the two faces which respectively engage the spring when in the wide-open and closed positions being equi-distant from the pivotal center of the blade and farther therefrom than the third face of the blade, for the purpose set forth.

13. A knife provided with a spring and a blade whose pivoted extremity is provided with three faces adapted to respectively engage the end of the spring when the blade is in the wide-open, half-open and closed positions, the two faces of the blade which respectively engage the spring when in the wide-open and closed positions being equi-distant from the pivotal center of the blade and farther therefrom than the third face, for the purpose set forth.

14. A knife composed of a handle, a spring and a blade whose pivoted extremity is provided with three faces adapted to respectively engage the spring of the handle when the blade is in the wide-open, half-open and closed positions, the two faces which respectively engage the spring when in the wide-open and closed positions extending at an angle to the length of the blade, the said faces being equi-distant from the pivotal center of the blade and farther therefrom than the third face of the blade, the last named face extending at right angles to the other two faces, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

CARL H. WHITE.
ROYAL A. LETT.

Witnesses:
A. J. O'BRIEN,
F. E. BOWEN.