(No Model.)

G. W. MILLER.

POCKET KNIFE.

No. 589,738. Patented Sept. 7, 1897.

Fig. 1

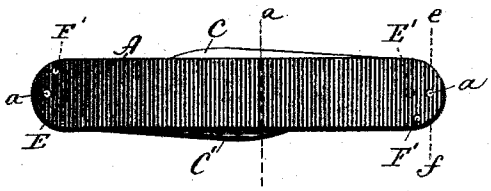


Fig. 2

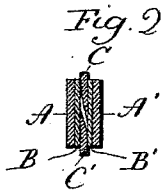


Fig. 3

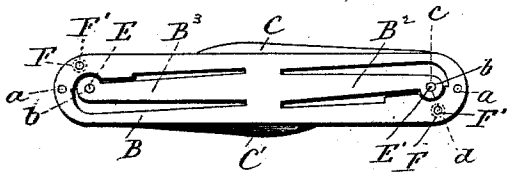


Fig. 4

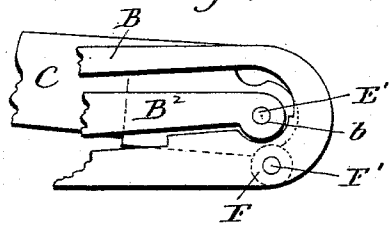


Fig. 5

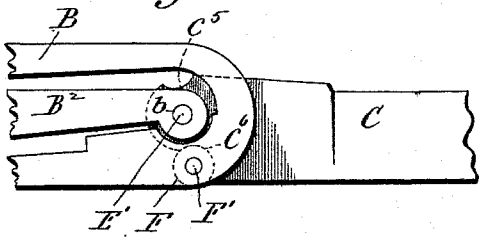


Fig. 6

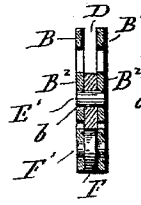


Fig. 7

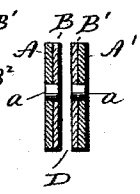


Fig. 8

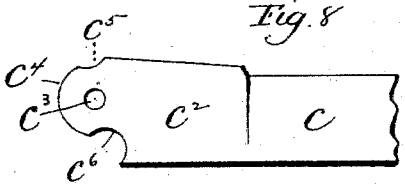
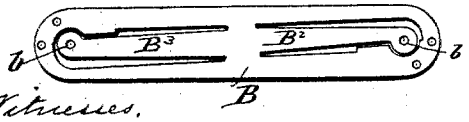


Fig. 9.



Witnesses.
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Lillian D. Kelsey.

George W. Miller.
Inventor.
By attys Earle & Seymour

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UNITED STATES PATENT OFFICE.

GEORGE W. MILLER, OF MERIDEN, CONNECTICUT.

POCKET-KNIFE.

SPECIFICATION forming part of Letters Patent No. 589,738, dated September 7, 1897.

Application filed September 28, 1896. Serial No. 607,245. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MILLER, of Meriden, in the county of New Haven and State of Connecticut, have invented a new Improvement in Pocket-Knives; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of a knife constructed in accordance with my invention; Fig. 2, a view thereof in transverse section on the line *a b* of Fig. 1; Fig. 3, a view of the knife with one of the handle-plates removed; Fig. 4, an enlarged broken view of one end of the knife with one of the handle-plates removed and showing the larger blade in its closed position; Fig. 5, a corresponding view showing the same blade in its open position; Fig. 6, a view in transverse section on the line *c d* of Fig. 3; Fig. 7, a similar view on the line *e f* of Fig. 1; Fig. 8, a broken view of one of the blades; Fig. 9, a detached view of one of the plates.

My invention relates to an improvement in pocket-knives, the object being to produce a simple, compact, and convenient knife constructed with particular reference to ease of operation and to durability in use, which is attained by reducing the friction incident to opening and closing the blades, whether the same be cutting-blades or modified to form scissors, screw-drivers, button-hooks, corkscrews, files, or any of the other instrumentalities embodied in pocket-knives.

With these ends in view my invention consists in a knife having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

For the purpose of illustrating my invention I have shown a two-bladed knife, which has the same general appearance as an ordinary knife, and comprises two handle-plates A A′, which may be of silver, steel, rubber, or any other material employed in the formation of knife-handles. The knife also comprises two sheet-steel frame-plates B and B′, located inside of the respective handle-plates and conforming thereto in shape, and two blades C and C′, of which one is larger than the other, as is usual in two-bladed knives. The said handle-plates are secured at their ends to the frame-plates by means of rivets *a a*, of which there are two at each end of the knife, as shown in Fig. 7. These rivets are short rivets and located in line with each other, but separated by a distance corresponding to the blade-space D of the knife, the said space extending throughout the length of the knife and being formed between the two frame-plates. Each of the frame-plates is longitudinally cut away to form two spring-fingers B^2 and B^3, extending in opposite directions, having rounded or knuckle-shaped outer ends, which are centrally pierced by pivot-holes *b* and adapted by the spaces along their opposite edges to be sprung edgewise in the plane of the plate. The pivot-holes *b*, formed in the outer ends of these springs, receive the opposite ends of the knife-blade pivots E E′. Thus the ends of the pivot E′ pass through the pivot-holes *b* of the springs B^2 of the respective frame-plates, while the ends of the pivot E pass through the pivot-holes *b* of the springs B^3 B^3 of the said plates.

The tangs C^2 of the knife-blades C and C′ are alike, and therefore only one of them is shown, that being the tang of the blade C. The heels of the tangs C^2 of the blades are formed with pivot-holes C^3 for the reception of the pivots E and E′, with segmental bearing-surfaces C^4, concentric with the pivot-holes C^3, and with two locking-notches C^5 and C^6, of which the latter is deeper than the former. The said notches are located opposite each other in a line slightly inclined to the longitudinal axis of the blade. The bearing edges C^4 and notches C^5 and C^6 coact with antifriction-rolls F F, respectively, located near the ends of the knife, mounted upon pivots F′ F′, extending through suitable perforations formed for them near the ends of the handle and frame-plates. The construction of the parts is such that normally the blade-springs B^2 and B^3 of the two frame-plates are not under tension. Thus when the blade C is in its closed position, as shown in Fig. 4, the antifriction-roll F is entered into its locking-notch C^5, with which it coacts to hold the blade shut, while when the blade is open the said antifriction-roll is entered into

its notch C^6, with which it coacts to hold the blade open. When, however, the blade is seized and its opening movement begun, the inner shoulder of the notch C^5 is impinged against the antifriction-roll, which, being mounted upon an unyielding pin, does not move, but causes the two blade-springs B^2 B^2, carrying the pivot E′ and hence the blade C, to be sprung so as to permit the roll to ride out of the notch C^5 and upon the bearing edge C^4, on which it will turn as the blade is drawn round nearly to its open position, the said springs being all this time under tension, but the friction of the operation of the knife being reduced to the minimum by the roll. Then when the roll drops off the inner shoulder of and into the notch C^6 of the blade, the two springs B^2 B^2 reassert themselves to return to their normal position, which they at once do, automatically throwing the blade into its full-open position and maintaining it therein until it is manually closed. The beginning of the closing movement of the blade requires the exertion of sufficient force to crowd the inner shoulder of the notch C^6 against the antifriction-roll to effect the springing of the springs B^2 B^2 sufficiently to permit the roll to ride out of the said notch, after which it rolls over the bearing edge C^4 until the blade is nearly in its shut position, when the roll passes over the inner shoulder of and into the notch C^5, and then the springs reassert themselves, and in returning to their normal positions automatically complete the closing of the blade. The construction and operation of the blade C′ being identical with the construction and operation of the blade C, it is of course unnecessary to speak further of the blade C′.

It will be seen from the foregoing that the antifriction-rolls reduce the friction and operation of the blades to the minimum, and hence prolong greatly the proper action of the knife, for it is well known that in ordinary knives in which the blade-springs come in direct contact with the heels of the blade-tangs the corners of the heels soon wear away, after which the blades will neither be held in their fully-open or fully-closed positions.

I would have it understood that I do not limit myself to the exact construction herein shown, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention. Thus I may employ my invention in connection with knives provided with one or more convenient tools, including a file, button-hook, and other instrumentalities before referred to. In case a plurality of such devices are employed the number of frame-plates in the knife would have to be increased, as they would also if the knife were provided with more than two blades.

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

1. A knife having a metal frame-plate constructed to form a longitudinally-arranged spring yielding edgewise in the plane of the plate, a knife-blade having its tang pivotally connected with the outer end of the said spring, and an antifriction-roll coacting with the tang of the blade which yields or moves with the spring under the action of the roll which places the spring under tension.

2. A knife having two frame-plates, each longitudinally cut away to form a spring adapted to yield edgewise in the plane of the plate, a knife-blade having its tang secured to the said springs by means of a pivot passing through it and into the ends of the springs, and an antifriction-roll with which the heel of the tang of the blade coacts and which places the springs under tension.

3. A knife having two frame-plates, each cut away to form two springs extending in opposite directions, and yielding edgewise in the plane of the plate, and having their outer ends pierced to form pivot-holes, knife-blades pivotally hung in the outer ends of the said springs, the pivot of each blade passing into a spring of each plate, and two antifriction-rolls mounted between the plates in position to be engaged by the heels of the tangs of the blades, the said rolls placing the springs under tension and coacting therewith to firmly hold the blades in their open and shut positions.

4. A knife having the tang of its blade formed with two notches, and with a curved bearing-surface located between the said notches, a yielding spring to which the said blade is pivoted, and an antifriction-roll mounted upon a stationary pivot and coacting with the said bearing-surface and notches for holding the blade in its open and shut positions and reducing the friction of its action.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEO. W. MILLER.

Witnesses:
GEORGE D. SEYMOUR,
LILLIAN D. KELSEY.