(No Model.)

G. W. MILLER.

POCKET KNIFE.

No. 351,787. Patented Nov. 2, 1886.

Fig. 1

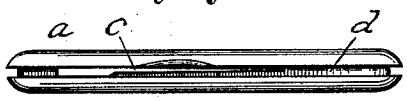


Fig. 2

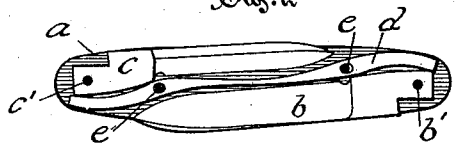


Fig. 3

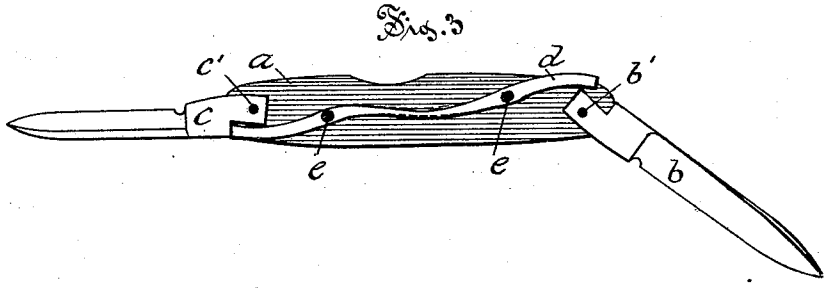


Fig. 4

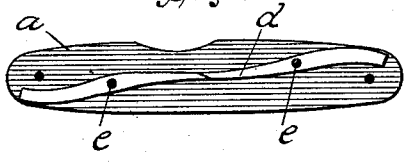


Fig. 5

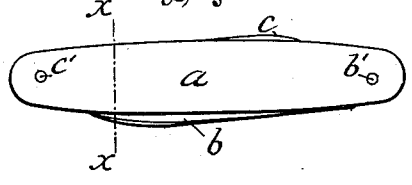
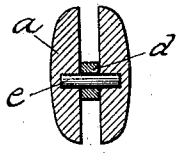


Fig. 6



Witnesses:

W. M. Byerkman.

H. R. Williams.

Inventor

George W. Miller,

by Simonds & Burdett,

attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GEORGE W. MILLER, OF MERIDEN, CONNECTICUT.

POCKET-KNIFE.

SPECIFICATION forming part of Letters Patent No. 351,787, dated November 2, 1886.

Application filed December 10, 1885. Serial No. 185,210. (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 certain new and useful Improvements in Pocket-Knives, of which the following is a full, clear, and exact description, whereby a person skilled in the art can make and use the same.

My invention relates to the class of two-ended or double-ended knives of the kind having folding blades that adapt them for carriage in the pockets of wearing-apparel, and its object is to provide such a knife so constructed as to the several parts and their combination as to avoid many of the objections present in the older forms that affect unfavorably their durability, cost, and utility.

My invention consists in an improved knife having supporting sides or handle parts with a blade or the like folding member pivotally held between them at each end and closing on opposite edges, and a spring lying in a diagonal position between the sides and the blades and having two points of support peculiarly located.

It further consists in a knife having the sides or handles, blades at each end, diagonal spring, and rivets only as component parts; in a knife having the diagonal spring with the point of support so placed that it forms an effective stop against further closing of the blades when shut, and in other details of the several parts and their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is an edge view of a two-ended knife with the blades or like folding members closed. Fig. 2 is a side view of a knife with the side removed to clearly show the relative position of the spring and the blades. Fig. 3 is a side view of the knife with one side removed, one blade opened, and the other partly opened. In this view the normal position of the spring is shown in dotted lines. Fig. 4 is a side view of one side, with the diagonal spring shown as in two parts, the blades not shown. Fig. 5 is a side view of the knife. Fig. 6 is a detail view, on enlarged scale, in cross-section, of the knife on plane denoted by line *x x* of Fig. 5.

In the accompanying drawings, the letter *a* denotes the handle parts or sides of a double-ended knife; *b* and *c*, the blades, held between these sides at opposite ends by the rivets *b'* and *c'*, respectively. These parts may be of ordinary material and construction, the handles or sides being of metal, wood, bone, hard rubber, or other suitable material, and the blades or like folding members of metal, as steel, or of such other material as the use to which they are adapted may suggest.

The spring *d* is preferably of tempered steel, and is held in a diagonal position across and between the handles from end to end, so that a socket or space for a folding member is left along both edges of the knife, the blades or like parts opening in opposite directions. This spring is held by pins *e*, or like supports, at two points on opposite sides of its center, substantially as shown in Figs. 2, 3, and 4, and is so made as to thickness that the thin or yielding part is located between these pins or supports and at and beyond them. Each end is a comparatively rigid bar or lever. The pins or pivots *e*, by this construction and arrangement of the spring, are located much nearer the center of the handle between its edges than in the old form of double-ended knife, and thus there is less chance of breaking out a piece of the handle along the edge outside the rivet-hole; and in my improved form these rivets or pins are preferably held in sockets that extend from the inside but part way through the handles, as shown in sectional view in Fig. 6.

In the old form of double-ended knife the spring is located along the back of the knife between the handles, is held by a single rivet near its center, and is operative only when both blades or their shanks are held by the rivet or pin in place, to serve as the stop for the farther end of the spring when either blade is opened. The force of the spring in holding the blade closed or opened is about the same in such prior knives, and a side lining, usually of sheet metal, is commonly used to support the parts.

In a knife embodying my invention, as shown in Fig. 3, either blade can be used and is supported by the spring, whether the other is in place or not, owing to the peculiar shape of the spring, the location of its yielding part, and the use of the two pins or supports out-

side of this part. The blade opens easily as compared with the force required to close it, and no lining for the sides or handle parts is required.

A further advantage of my device is the positive stop for the closing blade formed by contact of the kick of the blade with the spring near the point of least motion of the latter at or near the pin, as illustrated in Fig. 2. This prevents dulling of the blade against the spring.

The spring is preferably made in one piece from end to end; but many of the advantages arising from my invention are present when the spring is made in two pieces lapping or engaging at the center of the knife, as shown in Fig. 4.

In the larger sizes of knives made in accordance with my improvement some allowance for the change of length of the spring in bending must be made, and this is done by making the pivot-holes oblong, as shown in Figs. 2 and 3. In the latter view the larger blade is so opened as to illustrate the operation of the spring, the full and dotted lines showing the extreme limits of the play of the yielding part.

I am aware that a double-ended knife having a diagonal spring and the opposite folding blades is shown in patent to Mayland of June 13, 1865, and such I do not broadly claim.

I claim as my invention—

1. In combination, in a double-ended knife, the handle formed of the side parts, *a*, the diagonal spring *d*, having a thin central portion between the two pins *e*, that support the spring between the side parts, the said pins extending but part way through the sides, and the blades *b* and *c*, pivoted to opposite ends of the handle by rivets *b'* and *c'*, respectively, and folding into the blade-sockets on the opposite edges of the handle, all substantially as described.

2. In a double-ended knife, the combination of the side parts, *a*, the blades *b c*, pivoted to the opposite ends of the handle and closing into sockets in opposite edges thereof, and the diagonal spring *d*, held crosswise between the blades, and having a yielding central part between the pins *e*, that form its supports, and having also rigid end parts beyond these pins, and the pins *e*, all substantially as described.

3. In a double-ended knife, in combination with the side parts, *a*, of the handle, the diagonal spring *d*, having its central portion only elastic, and two points of support beyond this yielding part, the pins *e*, that support the spring on the side parts of the handle, and the blades *b* and *c*, pivotally attached to opposite ends of the handle and closing into sockets on opposite edges of the handle, respectively, each blade having the kick or point of contact with the spring opposite one of the pins *e*, whereby a positive stop is formed, all substantially as described.

GEORGE W. MILLER.

Witnesses:
A. C. TANNER,
H. R. WILLIAMS.