Jan. 4, 1955 M. A. MIRANDO 2,698,480

PUNCH OPENER

Filed June 16, 1953

Fig. 1.

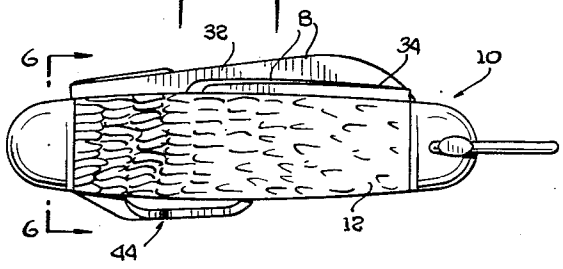


Fig. 2.

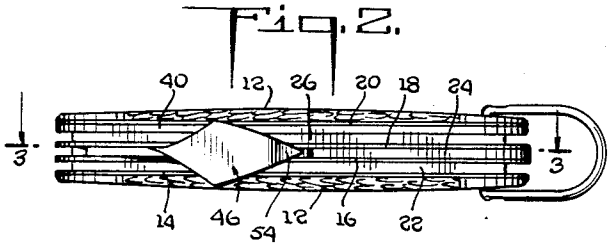


Fig. 3.

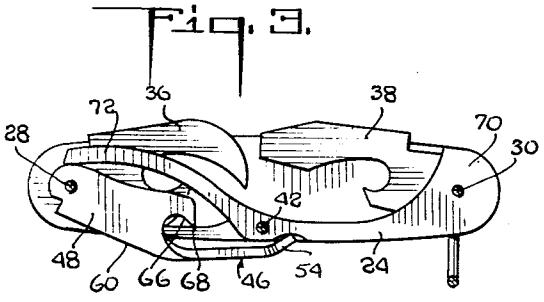


Fig. 5.

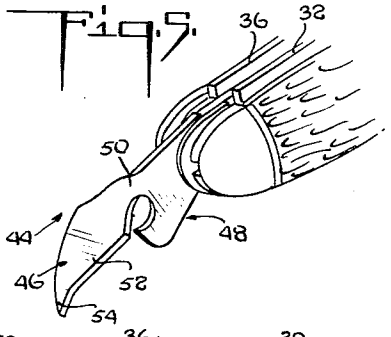
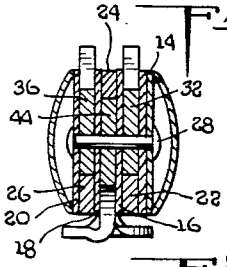


Fig. 6.



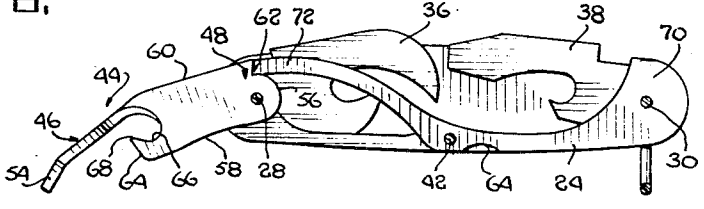


Fig. 7.

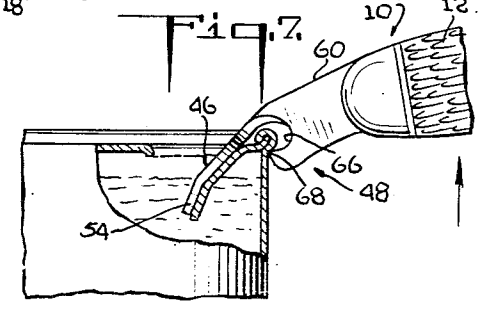


Fig. 4.

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PUNCH OPENER

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1 Claim. (Cl. 30—16)

This invention relates to punch openers, and more particularly to a general utility pocket knife having a punch opener blade.

By "punch opener" there is denoted a container opener having a cutter punch head generally similar to that shown and described in U. S. Letters Patent No. 1,996,550 to Dewitt F. Sampson issued April 2, 1935; in other words, a cutter punch head with a narrow tip and a base of appreciable breadth so that, a unlike flat can openers, the punch will produce a wide complete pouring opening in a single stroke of the punch.

Due to the fact that the blades of a general utility pocket knife are mounted to turn about a rivet and hence are adapted only to withstand substantial stresses applied in a plane perpendicular to the rivet, being ill-designed to withstand stresses in a plane including the rivet, it has, until the present invention, been impractical, although desirable, to incorporate a punch opener blade in a general utility pocket knife.

It is an object of the present invention to provide a punch opener blade of unique construction which particularly lends itself to incorporation in a general utility pocket knife.

It is another object of the invention to provide a blade of the character described whose construction is such that the requisite pressure can be applied by the blade without damaging the knife.

It is a further object of the invention to provide a general utility pocket knife having a punch opener blade which does not interfere with the other knife blades.

It is an additional object of the invention to provide a general utility pocket knife having a punch opener blade of rugged yet pleasing appearance which withal is capable of operating in an efficient and positive manner.

Other objects of the invention will in part be obvious and in part will be pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the device hereinafter described and of which the scope of application will be indicated in the appended claim.

In the accompanying drawings in which is shown one of the various possible embodiments of the invention,

Fig. 1 is a side view of a pocket knife having a closed punch opener blade constructed in accordance with the present invention;

Fig. 2 is a back view of the knife;

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 2 and illustrating the internal construction of the knife in the plane of the punch opener blade;

Fig. 4 is a view similar to Fig. 3 but showing the punch opener blade open;

Fig. 5 is a perspective view of an end of the knife with the punch opener blade extended;

Fig. 6 is an enlarged sectional view taken substantially along the line 6—6 of Fig. 1; and

Fig. 7 is a fragmentary partially sectional view through a can having a pouring opening being cut through its top by a punch opener blade embodying the instant invention.

Referring now in detail to the drawings, the reference numeral 10 denotes a pocket knife of the type commonly known as a "jack-knife." The same includes a body 12 of standard construction including several parallel lining plates 14, 16, 18, 20 spaced from one another by back springs 22, 24, 26 and held together in

conventional manner at the ends of the knife by rivets 28, 30. The back springs 22, 24, 26 and the intermediate lining plates 16, 18 are cut away at the front of the knife, as is well known, to provide a blade-receiving compartment wherein the several blades B are located when folded into closed position.

Each of said blades includes a shank, the several shanks being pivoted on the rivets 28, 30. By way of example, a typical set of blades includes a cutting blade 32, a reaming blade 34, a flat can opener blade 36 and a screw driver blade 38. Two of these blades pivot about one of the rivets and the other two about the other rivet. It may be mentioned that in order to increase the size of the blade-receiving compartment, if desired, there may be included an additional thick lining plate 40 disposed intermediate the outer lining plate 20 and the adjacent back spring 26. In the form of the invention shown herein two blades are located on one side of the central back spring 24, these being the knife blade 32 and reaming blade 34 and the other two blades 36, 38 lie on the other side of the back spring 24.

It may be mentioned that in accordance with usual practice the back springs are anchored by means of a rivet 42 which passes through all of the back springs and all of the lining plates, said rivet being located near the back of the knife and midway between the two ends thereof. The ends of the outer back springs 22, 26 are free and rub against the inner ends of the shanks of the knife blades 32, 34, 36, 38 cooperating therewith to hold the blades either in fully open or fully closed position. It will be observed that, as is customary, the ends of both of said springs 22, 26 are on the back side of the rivets 28, 30.

In accordance with the present invention, a punch opener blade 44 is provided which includes an operative portion, i. e. cutter punch head 46, and a mounting portion, i. e. shank 48. The entire blade including both head and shank is made from a single flat piece of a strong tough metal, e. g. steel, which is cut and formed to the indicated shape. It will be observed from the several figures that the head 46 is substantially planar and that the shank 48 likewise is substantially planar. Moreover, pursuant to a principal feature of the invention, the planes of the head and shank are perpendicular to one another, said head and shank being unitarily joined by a 90° twist 50.

The construction of the cutter punch head is essentially conventional. As such it includes a body portion 52 which is approximately diamond-shaped in contour, the outwardly extending section of said body being of triangular outline with its vertex 54 at the tip of the blade and its base constituting the maximum transverse width of the diamond. Said triangular portion is the active part of the punch which is adapted to cut a pouring opening in a can. The vertex 54 desirably is angled downwardly to a slight extent as best seen in Fig. 4 in order to facilitate ease of entry of the punch opener into a can top.

The shank 48 is provided with a through opening which passes the rivet 28. The inner edge 56 of the shank is rounded, smoothly joins the under edge 58 of the shank and is connected to the upper edge 60 of the shank by a shoulder 62. The outer edge 64 of the shank is formed with an inwardly and downwardly extending notch 66 which provides a cusped can-bead-engaging point 68 located slightly forwardly of the twist 50 and approximately below the base of the triangular cutting part of the punch.

The central back spring 24 is conventional in that it is held at its middle by the rivet 42 and in that, like knives having blades mounted to pivot on one end only of a frame, the non-functioning end 70 of said spring is anchored on the rivet 30. The active end 72 of the spring is free. However, said spring 24 is unconventional in that its said free end 72 instead of being located on the back side of the rivet 28 is located on the front side thereof as best seen in Figs. 3 and 4.

The free end of the spring rests on the front side of the rounded inner edge 56 of the shank 48. When the punch opener blade 44 is in the closed position illustrated in Fig. 3 said free end 72 of the spring rests on the portion of the rounded inner edge 56 adjacent the under

edge 58. At this time substantially the entire shank 48 is received within the body of the knife 12 It will be observed that the back edge of the end 72 of the spring is cut away to accommodate said shank of the blade in infolded position. It also will be observed from inspection of Fig. 3 that in such closed position the shank is received substantially all the way up to the twist 50. Further movement of the blade into the body of the knife is prevented by abutment of the vertex 54 against the outer surface of the central back spring 24.

To enable the blade to be closed to such an extent that the head 46 is substantially flat against the back of the knife said spring 24 is provided with a depression 74 in registration with the vertex 54 when the blade is closed.

As the punch opener blade is swung toward open position the tip of the end 72 of the central back spring frictionally rides against the inner edge 58 of the blade until said tip is struck by the shoulder 62 thus defining the fully opened position of the blade. Such engagement between the spring and shoulder transmits any further opening torque, created for instance when the blade is used, directly into the body of the knife.

To employ the blade the tip 68 is hooked beneath the bead of a can as shown in Fig. 7 and the blade is rocked so as to raise the body of the knife, thus causing the punch opener to function in a conventional manner first by piercing the top of the can with the vertex 54 and subsequently by shearing through the can with the flaring side edges of the head 46.

It thus will be seen that there is provided a device which achieves all the objects of the invention and is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made

in the embodiment above set forth, it is to be understood that all matter herein described, or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

Having thus described the invention there is claimed as new and desired to be secured by Letters Patent:

A general utility pocket knife comprising a pair of lining plates spaced by a spring and providing between them an elongated compartment, a rivet bridging said plates adjacent an end of said compartment, a punch opener blade comprising a shank and a head composed of a single piece of metal, said shank and said body individually being substantially flat and lying in planes which are mutually perpendicular, a 90° twist unitarily joining said shank and said head, said shank having a tip projecting upwardly toward the underside of said head forwardly of the twist and being adapted to engage the beaded edge of a can, said head being broad and tapering forwardly to a tip, said shank having a transverse opening through which the rivet passes to pivotally mount the blade on the knife, said shank being substantially fully received in the compartment when the blade is in closed position and the body bridging the compartment at such time.

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