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R. E. BROWN

1,888,488

KNIFE

Filed Sept. 5, 1931

Fig. 1.

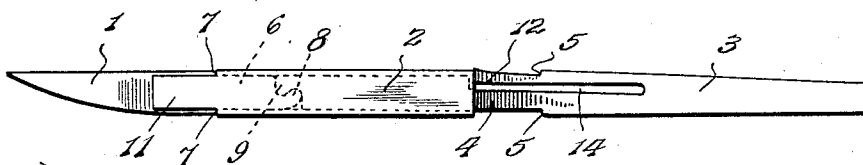


Fig. 2.

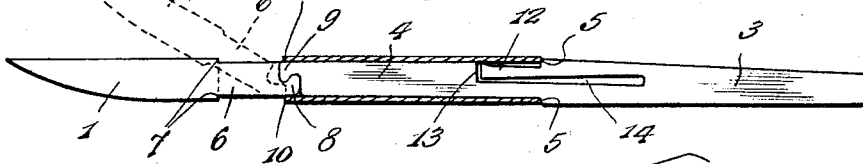


Fig. 3.

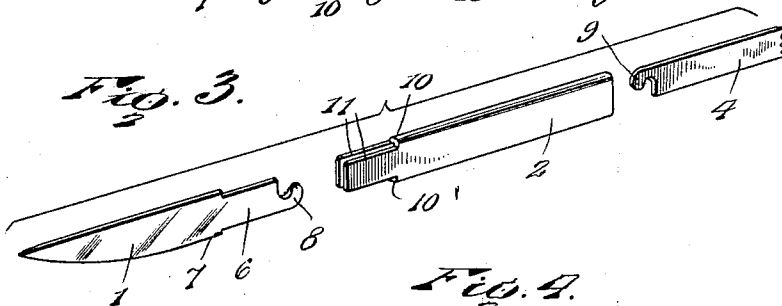


Fig. 4.

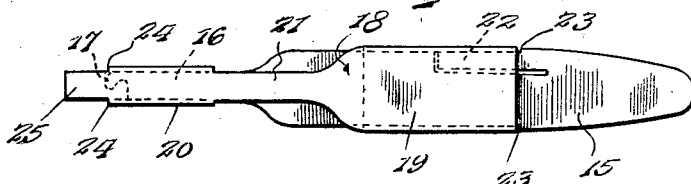


Fig. 5.

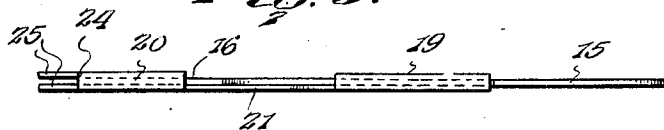


Fig. 6.

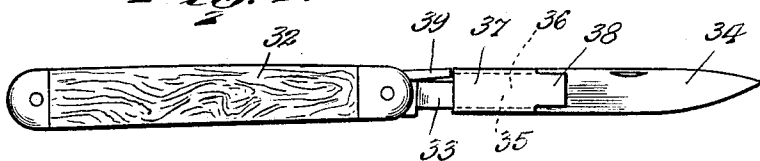
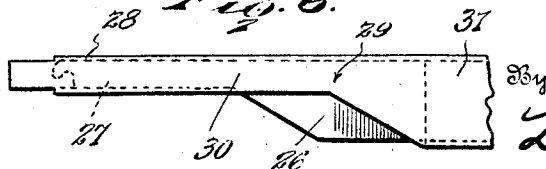


Fig. 7.



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KNIFE

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This invention relates to knives and more particularly to a knife having a removable blade.

One object of the invention is to provide a knife, the blade of which is normally firmly held in place but is capable of being easily and quickly removed to permit the insertion of a new blade or to allow the blade and other portions of the knife to be thoroughly cleaned and sterilized before the knife is again used.

Another object of the invention is to so construct the blade retainer, that, while it may be easily slid longitudinally into and out of a blade securing position, it will be releasably held in an extended or operative position and thereby prevented from slipping and accidentally releasing the blade.

Another object of the invention is to form a device of this character in which the blade retainer serves the dual function of securing the blade and bracing said blade against transverse movement when in use.

Another object of the invention is to provide a knife which is simple in construction, efficient in use and very cheap to produce.

While the invention has been shown embodied in a knife having a removable blade, it will be understood that other implements, such as screw drivers and compound tools in which various types of blades are to be removably applied to a handle, may be constructed in accordance with the invention.

The invention is illustrated in the accompanying drawing wherein

Figure 1 is a side elevation of the improved knife,

Fig. 2 is a view showing the blade retainer or sleeve moved to a retracted position, the dotted lines indicating the manner in which the blade is detached from the shank of the handle,

Fig. 3 is a perspective view showing the blade, the retainer sleeve and the forward portion of the handle separated,

Fig. 4 is a side elevation of a modified form of knife handle and retainer,

Fig. 5 is a view looking down upon Fig. 4,

Fig. 6 is a fragmentary view in side ele-

vation of another modified form of handle and retainer, and

Fig. 7 is a view in side elevation showing the invention embodied in a pen knife.

The knife illustrated in Figs. 1, 2 and 3 is of the type generally used by dentists and surgeons as a lance and consists briefly of a blade 1, a retainer or sleeve 2 and a handle 3, the forward portion 4 of which constitutes a shank. It should be noted that shoulders 5 are formed at the inner end of the shank to limit rearward movement of the sleeve or retainer 2 and prevent this sleeve from being moved rearwardly beyond the position shown in Fig. 2. It should also be noted that the rear portion 6 of the blade is reduced in width to form shoulders 7 serving to engage the forward end of the sleeve and prevent the sleeve from being moved forwardly along the blade beyond the position shown in Fig. 1. Therefore, when the blade is in place, longitudinal movement of the sleeve will be limited by the shoulders 5 and 7, but, when the blade is removed, the sleeve may be entirely withdrawn from the shank and the blade, sleeve and handle thoroughly cleaned and sterilized.

The fact that the sleeve bears against the shoulders 7, when moved forwardly to an extended or operative position, will also cause the blade to be urged forwardly and the hook or bill 8 at the rear end of the blade will be firmly held in interlocking engagement with a companion hook or bill 9 formed at the front end of the shank 4, and the blade will be prevented from having longitudinal movement relative to the shank when the knife is in use.

The hooks or bills 8 and 9 extend transversely of the blade and shank in opposite directions and are curved, as shown clearly in Figs. 1 and 2. Therefore, the blade may be disposed in the position indicated by dotted lines in Fig. 2 and then tilted towards the position shown in full lines in this figure to move the bill of the blade into interlocking engagement with the bill of the shank.

The flattened tube from which the sleeve is formed is preferably cut from its front end along its side edges thereby forming shoul-

ders 10 to bear against the shoulders 7 and also defining tongues 11 which extend along opposite side faces of the blade, as shown in Fig. 1, and serve to brace the blade against transverse movement when the knife is in use. It should be noted, however, that these tongues are not of sufficient length to prevent the knife from being effectively used as a lance.

When the sleeve is moved to the extended or operative position shown in Fig. 1, it is to be securely but releasably held in this position and in order to do so there has been provided a latch 12 which is formed by cutting the shank transversely from one side edge in advance of the shoulder 5, as shown at 13, and then cutting the shank and handle longitudinally, as shown at 14. The shank and handle are formed of resilient metal and therefore the latch may be sprung inwardly a sufficient distance to permit the sleeve to be moved rearwardly to the retracted position shown in Fig. 2, but will normally remain in the position shown in Fig. 1, and when the sleeve is slid forwardly to its extended position, the latch will return to the position shown in Fig. 1 and its front end will engage the rear end of the sleeve and very effectively prevent the sleeve from accidentally slipping rearwardly. It will be noted that the sleeve 2 always projects beyond the front end of the shank 4 so as to form a terminal socket for the bill 8 of the cutting blade and that when said blade is tilted laterally and inserted within the projecting end of the sleeve 2, said bill will bear against the wall of the sleeve at said socket and be guided thereby into the socket and into engagement with the mating bill on the shank.

In Figs. 4 and 5, there has been shown a handle and retainer of a modified construction. The handle, which is indicated by the numeral 15, is of greater width than the handle shown in Figs. 1 and 2 and at its forward end is gradually reduced in width and merges into a shank 16 formed with a bill 17 at its forward end corresponding to the bill 9.

The retainer 18 has front and rear sleeves 19 and 20 joined by a strip 21 of approximately the same width as the shank 16. A latch 22 is formed at one side of the handle to engage the rear end of the sleeve 19 and releasably secure the retainer in an extended position and the handle is also formed with shoulders 23 corresponding to the shoulders 5 and serving to limit rearward movement of the retainer. When the retainer is in a retracted position, the forward end portion of the sleeve 20 projects beyond the front end of the shank 16 and this forward end portion of the sleeve has its side edge portions cut to form shoulders 24 and tongues 25 corresponding to the shoulders 7 and tongues 11. By having the retainer shaped as shown in Fig. 4, the forward end of the sleeve 19 will

conform to the shape of the forward end of the handle 15 and the strip 21 will conform to the width of the shank 16. Therefore, when the retainer is moved to its extended or operative position to secure a blade such as shown in Fig. 3 in engagement with the shank 16, the knife may be easily held.

The knife shown in Fig. 6 is somewhat similar in construction to that shown in Figs. 4 and 5, but the handle 26, instead of being reduced in width from both side edges is tapered from only one side edge and the shank 27 has one side edge extending flush with the corresponding side edge of the handle.

The sleeve 28 of the retainer 29 is similar to the sleeve 20 and is connected by a strip 30 with a rear sleeve 31 corresponding to the sleeve 19 but conforming to the shape of the handle 26. It will thus be seen that the only difference between the construction shown in Fig. 6 and that shown in Fig. 4 resides in the shape of the handle and retainer.

The invention may be embodied in a pen knife as well as a lance and referring to Fig. 7, it will be seen that the handle 32 of the pen knife is of a conventional construction. This pen knife may be provided with as many blades as desired, one of which has been shown in an opened position. The inner portion 33 of the blade is pivotally mounted in the handle in the usual manner and takes the place of the shank 4 in Figs. 1 and 2. The outer portion 34 corresponds in construction to the blade 1 and at its rear end is formed with a bill 35 to have interlocking engagement with a bill 36, corresponding to the bill 9, and formed at the outer end of the shank 33. A sleeve 37 corresponding to the sleeve 2, but shorter than this sleeve, slidably fits upon the shank 33 and when in an extended position, serves to securely but releasably hold the blade 34 in engagement with the shank 33. Tongues 38 are provided upon the sleeve 37 to brace the blade 34 and the shank is formed with a latch 39, corresponding to the latch 12, and serving to engage the inner or rear end of the sleeve 37 and releasably secure the sleeve in an extended position. By this arrangement, the blade 34, if broken, may be removed and a new blade set in place and also, when the blade 34 has become worn by repeated sharpening, it may be removed and a new blade substituted.

As previously stated, the invention could be embodied in a screw driver or similar compound tool wherein blades of different types or sizes are to be used in connection with a single handle and a blade of the desired type or size set in place, as needed.

What is claimed is:

1. An implement comprising a shank, a blade, the front end of said shank and the rear end of said blade being formed with bills facing in opposite directions transverse-ly of the shank and a sleeve slidably carried

by said shank and movable longitudinally thereon in one direction to permit insertion and interengagement of said bills within the sleeve and movable in another direction to overlap and bear against the blade and hold said blade rigidly in alignment with the shank, the rear portion of the blade being reduced in width to form shoulders for engaging the sleeve and limiting forward movement thereof, the shank being formed of resilient material and split longitudinally and transversely to form a latch having its free end facing forwardly to engage the rear end of said sleeve and releasably secure the sleeve in an extended position.

2. A cutting implement comprising a shank, one end of which forms a handle, a sleeve slidably mounted on the shank and always projecting beyond the other end of said shank to form a terminal socket, a removable blade having a reduced extension fitting within the projecting end of the sleeve, the extension of the blade and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to fit over the blade extension and hold said blade in longitudinal alignment with the shank, and in the opposite direction to permit removal of the blade.

3. A cutting implement comprising a shank, one end of which forms a handle, a longitudinally slotted sleeve slidably mounted on the shank and having its slotted end projecting beyond the other end of the shank to form a socket, a removable blade having a reduced extension insertable within the projecting end of the sleeve through the slot therein, said extension of the blade and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to embrace the blade extension and hold said blade in longitudinal alignment with the shank and in the opposite direction to expose said extension and permit removal of the blade.

4. A cutting implement comprising a relatively thin, flat shank, one end of which forms a handle, a sleeve slidably mounted on the shank and always projecting beyond the other end of said shank to form a terminal socket, a removable blade having a reduced extension fitting within the projecting end of the sleeve, said extension of the blade and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, the sleeve being movable in one direction to fit over the blade extension and hold said blade in longitudinal alignment with the shank, and in the opposite direction to permit removal of the blade, and means for limiting the sliding movement of the sleeve in either direction.

5. A cutting implement comprising a

shank, one end of which forms a handle, a sleeve slidably mounted on the shank and projecting beyond the other end of said shank to form a terminal socket, the handle portion of the shank being split longitudinally and transversely to form a resilient latch, a blade having a reduced extension fitting within the projecting end of the sleeve and defining a shoulder, the end of the extension and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to embrace the blade extension and bear against the shoulder and latch respectively, and in the opposite direction to expose the shank and permit removal of the blade.

6. A cutting implement comprising a relatively thin, flat resilient shank, one end of which forms a handle, a sleeve slidably mounted on the shank and projecting beyond the other end of said shank to form a terminal socket, the handle portion of the shank being split longitudinally and transversely to form a resilient latch provided with a shoulder, a blade having a reduced extension fitting in the projecting end of the sleeve and defining a shoulder, the end of the extension and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to embrace the blade extension and engage the shoulder on the blade and the latch respectively, and in the opposite direction to expose the blade extension and engage the shoulder on the latch to permit removal of the blade.

7. A cutting implement comprising a relatively thin, flat shank, one end of which forms a handle, a sleeve slidably mounted on the shank and, always projecting beyond the other end of said shank to form a terminal socket, a removable blade fitting within the projecting end of the sleeve, a rear end of the blade and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to fit over the rear portion of the blade and hold said blade in longitudinal alignment with the shank, and in the opposite direction to permit removal of the blade.

8. A cutting implement comprising a shank, one end of which forms a handle, a sleeve slidably mounted on the shank and always projecting beyond the other end of said shank to form a terminal socket, a removable blade fitting within the projecting end of the sleeve and provided with a shoulder, the rear end of the blade and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to embrace the blade and bear against the shoulder thereof for holding the

blade in longitudinal alignment with the shank, means carried by the shank for engaging the sleeve and holding said sleeve in extended position, said sleeve being movable in the opposite direction to permit removal of the blade.

9. A cutting implement comprising a relatively thin, flat, resilient shank, one end of which forms a handle, said handle portion being provided with intersecting longitudinal and transverse slits to form a resilient latch, a longitudinally slotted sleeve slidably mounted on the shank and having its slotted end projecting beyond the other end of the shank to form a terminal socket, a blade having a reduced extension insertable laterally within the projecting end of the sleeve through the slot therein, the extension of the blade and the adjacent end of the shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to embrace the blade extension and hold said blade in longitudinal alignment with the shank with the latch bearing against the adjacent end of the sleeve and movable in the opposite direction to expose the blade extension and permit removal of the blade laterally through the slotted portion of the sleeve.

10. A cutting implement comprising a relatively thin, flat shank, one end of which forms a handle, a correspondingly shaped sleeve slidably mounted on the shank and always projecting beyond the other end of said shank to form a terminal socket, said sleeve having one end thereof longitudinally slotted to form oppositely disposed lips, a removable blade fitting in the projecting end of the sleeve, said blade and shank being provided with interengaging parts, one of which fits within said socket, said sleeve being movable in one direction to fit over the blade with the lips bearing against the adjacent sides of said blade to hold the blade in longitudinal alignment with the shank and in the opposite direction to permit removal of the blade from the shank, and means for limiting the movement of the sleeve in either direction.

11. A cutting implement comprising a shank having one end thereof provided with a blade-engaging member, a sleeve slidably mounted on the shank and projecting beyond the blade-engaging member to form a terminal socket, and a removable blade fitted within the projecting end of the sleeve and provided with a companion engaging member adapted to enter the socket and engage the blade-engaging member of the shank, the inner wall of the sleeve at said socket serving to guide the companion member on the blade into engagement with the blade-engaging member on the shank when said blade is tilted laterally and inserted within the projecting end of the sleeve, said sleeve being movable in one direction to fit over the adjacent end

of the blade and hold said blade in longitudinal alignment with the shank and in the opposite direction to permit removal of the blade.

12. A cutting implement comprising a shank having one end thereof provided with a hook, a sleeve slidably mounted on the shank and projecting beyond the hook to form a terminal socket, a removable blade fitting within the projecting end of the sleeve and provided with a hook adapted to enter the socket and engage the hook on the shank, a side portion of the hook of the blade opposite the bill thereof being curved, the inner wall of the sleeve at said socket by engagement with the curved side portion of the hook of the blade serving to guide the hook on the blade into engagement with the hook on the shank when said blade is tilted laterally and inserted within the projecting end of the sleeve, said sleeve being movable in one direction to fit over the adjacent end of the blade and hold said blade in longitudinal alignment with the shank and in the opposite direction to permit removal of the blade, and means for limiting the sliding movement of the sleeve in either direction.

In testimony whereof I affix my signature.

ROBERT E. BROWN. [L. S.]