March 23 , 1926. 1,577,880

A. A. S. STUART

SURGICAL KNIFE

Filed Oct. 31, 1925

Fig. 1.

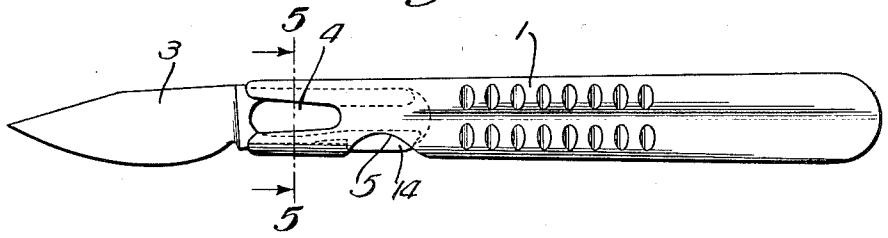


Fig. 2.

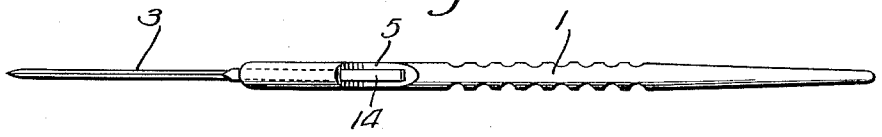


Fig. 3.

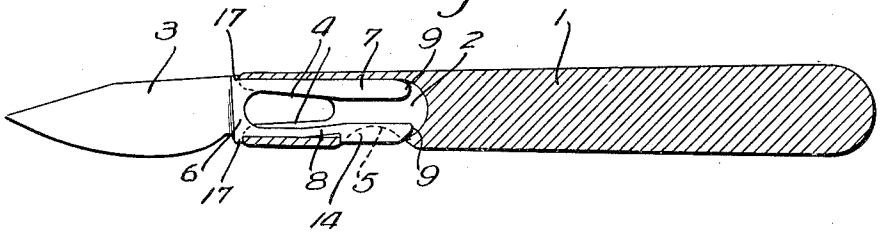
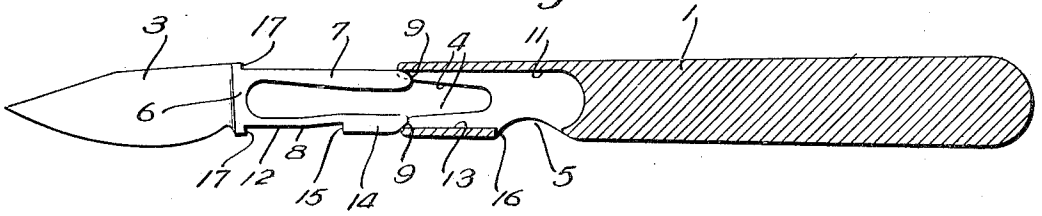


Fig. 4.



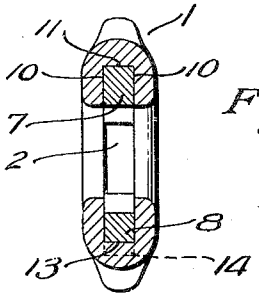


Fig. 5

INVENTOR

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UNITED STATES PATENT OFFICE.

ALEXANDER A. S. STUART, OF HARRISBURG, PENNSYLVANIA.

SURGICAL KNIFE.

Application filed October 31, 1925. Serial No. 66,015.

To all whom it may concern:

Be it known that I, ALEXANDER A. S. STUART, a citizen of the United States, and resident of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Surgical Knives, of which the following is a specification.

The main object of this invention is to generally improve the construction of surgical knives having detachable blades.

In the drawings:

Fig. 1 is a side elevation of a knife constructed in accordance with this invention;

Fig. 2 an edge view of the knife;

Fig. 3 a longitudinal sectional view taken through the knife handle;

Fig. 4 a view similar to Fig. 3, showing the manner of attaching the blade to the handle; and

Fig. 5 an enlarged transverse section taken on the line 5—5 of Fig. 1.

Referring to the various parts by numerals, 1 designates the knife handle which is preferably formed of one piece of suitable metal. The handle is comparatively thin and flat, but, of course, it may be of any suitable shape to adapt it to the use for which it is designed. The blade-receiving end of the handle is hollowed to form a longitudinal cavity or socket 2 which extends inwardly for a material distance from said end of the handle and is adapted to receive the shank of the blade 3. An elongated, substantially V-shaped cleft 4 is formed in the blade-receiving end of the handle and extends longitudinally inward to a point substantially midway the depth of the socket 2. This cleft is disposed transversely to the plane of the blade and extends through the flat sides of the handle at opposite sides of the socket. Formed upon the lower edge of the handle, just inwardly of the cleft 4, is a notch 5 which opens into the lower side of the socket 2.

The knife blade 3 is integrally formed with a shank 6 which is adapted to enter the handle socket. The shank is made thicker than the blade and is bifurcated longitudinally to form a pair of spaced spring fingers 7 and 8. These spring fingers, when free, are expanded so that their outer longitudinal edges are spaced apart a distance greater than the width of the socket 2. To facilitate their insertion into the socket the free ends of the fingers are tapered or rounded as at 9. The opposite side faces of the fingers are flat and are adapted to snugly fit between the flat sides 10 of the socket, as will be seen in Fig. 5. The outer longitudinal edge of the upper finger 7 is straight and adapted to bear throughout its length against the straight upper wall 11 of the socket. The lower finger 8 is made thinner than the upper finger 7 in order to make it more flexible and its lower longitudinal edge is straight for a substantial portion of its length adjacent its connection with the blade portion as at 12. This straight portion is adapted to bear against the lower straight wall 13 of the socket located forwardly of the notch 5. Beyond its straight portion 12 the finger 8 is bent slightly inward and formed at its free end with a locking head 14. This locking head is formed with a forwardly facing locking shoulder 15.

In sliding the blade shank into the socket the spring fingers are compressed toward each other as the locking head 14 slides over the lower wall 13 of the socket. When the shank is forced in sufficiently to aline the head 14 with the notch 5, the head is snapped out through the notch by the resiliency of the finger 8 and its locking shoulder is brought into locking engagement with the shoulder 16 at the forward edge of the notch. The shank is then positively locked against withdrawal from the socket. Near its juncture with the blade the shank is shouldered at its upper and lower edges, as at 17, to abut the end of the handle. The expanding tendency of the spring fingers is only partly relieved by the snapping of the locking head through the notch 5. The fingers will therefore continue to press firmly against the upper and lower walls 11 and 13 of the socket, and this pressure, combined with the snug engagement of the side walls 10 with the shank and the contact of the shoulders 17 with the end of the handle, holds the blade firmly against wabbling.

To remove the blade from the handle it is merely necessary to press the locking head 14 laterally inward and pull outward longitudinally on the blade. The notch 5 is of a size and shape to permit a finger or thumb to readily engage the locking head. By bifurcating the end of the handle and the shank of the blade, the knife is rendered lighter at this point and give a better

balance. The cleft 4 and notch 5 both open into the socket 2 and facilitate the cleaning and removal of the blood or other matter therefrom. This renders the knife more sanitary. The bifurcation of the handle and the blade shank gives the further advantage of facilitating the withdrawal of the blade in case its shank should bind in the socket as a result of rust or drying of the blood. In this case a sharp tool may be inserted through the cleft 4 of the handle and the crotch of the shank to forcibly withdraw the shank. The blade and handle are formed without screws, pins, or other projections which would render them difficult to clean. The shank and socket are formed with substantial, open structures which may be easily and thoroughly cleaned and sterilized. The manner of forming the blade and mounting it renders it possible to use a blade formed of substantial stock which may be re-ground repeatedly.

What I claim is:

1. A knife comprising a blade formed integrally with a shank longitudinally bifurcated to form two spaced fingers, one of said fingers being resilient and formed at its free end with a locking head; and a handle formed at one end with a socket adapted to snugly receive the blade shank endwise said handle being formed with a notch in one of its outer sides opening into the side of the socket and adapted to receive the said locking head when the shank is inserted into the socket, the said blade fingers being normally spread apart to a greater width than the width of the socket, whereby the flexible finger will be compressed toward the other finger when the shank is forced into the socket and the locking head will be snapped outwardly into said notch by the resiliency of the flexible finger to lock the blade against withdrawal from the handle.

2. A knife comprising a blade provided with a shank longitudinally bifurcated to form two spaced fingers, one of said fingers being resilient; a locking head carried by one of said fingers; and a handle formed at one end with a socket adapted to snugly receive the blade shank endwise and formed with a notch in one of its outer sides opening into the side of the socket and adapted to receive the said locking head when the shank is inserted into the socket, the said blade fingers being normally spread apart to a greater width than the width of the socket, whereby the flexible finger will be compressed toward the other finger when the shank is forced into the socket and the locking head will be snapped outwardly into said notch by the resiliency of the flexible finger to lock the blade against withdrawal from the handle.

3. A knife comprising a blade provided with a shank longitudinally bifurcated to form two spaced fingers, one of said fingers being resilient; a locking head carried by the free end of one of said fingers; and a handle formed at one end with a socket adapted to snugly receive the blade shank endwise, said handle being formed with a notch through one of its outer sides opening into the side of the socket and adapted to receive the said locking head when the shank is inserted in the socket, the said blade fingers being normally spread apart to a greater width than the width of the socket, whereby the flexible finger will be compressed toward the other finger when the shank is forced into the socket and the locking head will be snapped into said notch by the resiliency of the flexible finger to lock the blade against withdrawal from the handle, the handle being formed with a notch extending inwardly from its socket end and adapted to aline with the crotch of the bifurcated shank.

4. A knife comprising a blade formed integrally with a shank longitudinally bifurcated to form two spaced fingers, one of said fingers being resiliently flexible and formed at its free end with a locking head; and a handle formed at one end with a socket adapted to snugly receive the blade shank endwise, said handle being formed with a notch through one of its outer sides opening into the side of the socket and adapted to receive the said locking head when the shank is inserted in the socket, the said blade fingers being normally spread apart to a greater width than the width of the socket, whereby the flexible finger will be compressed toward the other finger when the shank is forced into the socket and the locking head will be snapped outwardly into said notch by the resiliency of the flexible finger to lock the blade against withdrawal from the handle, the socket end of the handle being bifurcated and having its cleft adapted to register with the crotch of the bifurcated blade shank.

5. A knife comprising a blade provided with a laterally compressible resilient shank; a handle formed with a socket adapted to receive said shank under compression; and means carried by the shank and the socket adapted to effect a snap locking connection therebetween by an expansion of the resilient shank within the socket, the handle being formed with an opening leading laterally into the socket and adapted to give access to the shank therein and permit it to be manually compressed to release said locking means.

In testimony whereof I hereunto affix my signature.

ALEXANDER A. S. STUART.