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MICROTOME KNIFE GUARD

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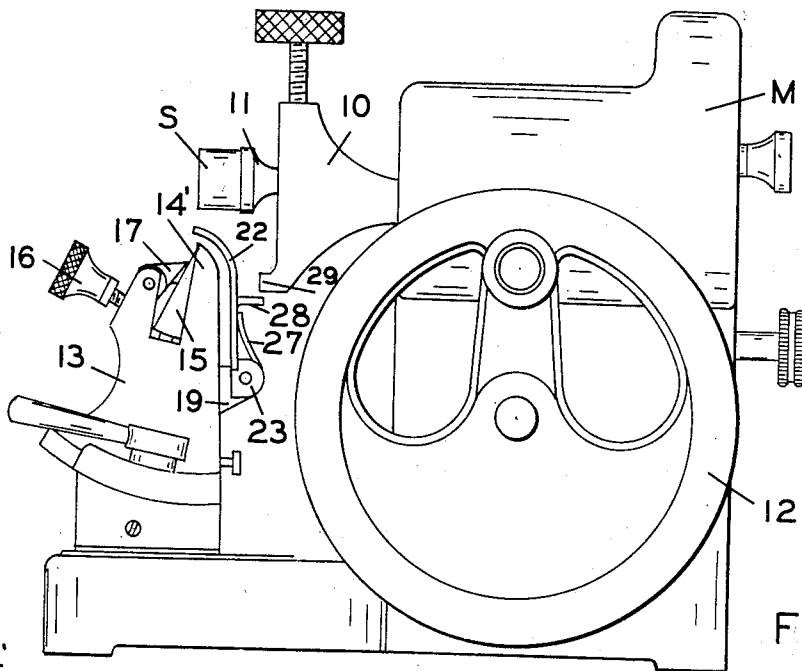


FIG. 1

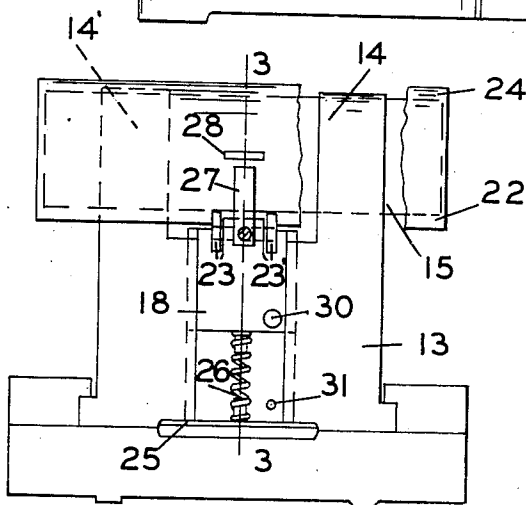


FIG. 2

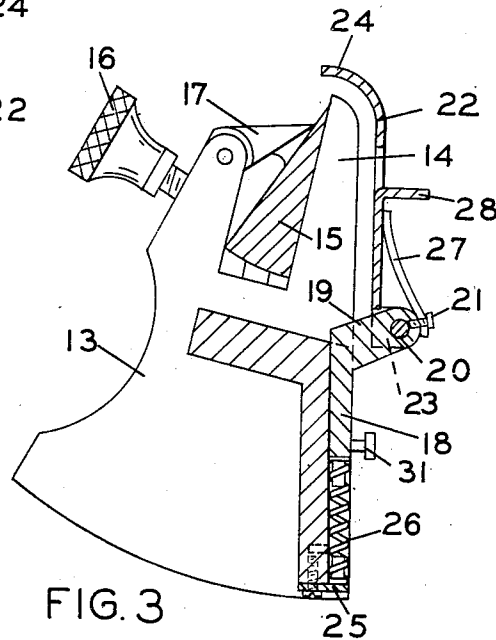


FIG. 3

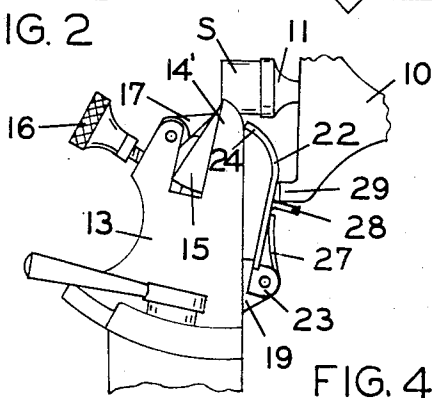


FIG. 4

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MICROTOME KNIFE GUARD

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This invention relates to microtomes which are used for cutting thin sections of a specimen for microscopic study. More particularly it relates to means for guarding the microtome knife in order to prevent accidental injury to the operator and protect the knife edge from being damaged.

One of the objects of my invention is to provide a guard for a microtome knife. Another object is to provide a guard for a microtome knife and means for automatically moving the guard. A further object is to provide a microtome having a guard which is movable to cover or uncover the knife edge during the operation of the microtome. A still further object is to provide a microtome having a movable specimen carrier, a guard for the knife and common means for moving both the guard and the specimen carrier. Other objects and advantages reside in certain novel features of construction, arrangement and combination of parts as will hereinafter be more fully described and pointed out in the appended claims.

Referring to the drawing:

Fig. 1 is a side elevation of a microtome embodying my invention.

Fig. 2 is an elevation of the knife support and guard, detached from the microtome.

Fig. 3 is an enlarged vertical section taken on line 3—3 of Fig. 2.

Fig. 4 is a fragmentary view illustrating the operation of the knife guard.

A preferred embodiment of my invention is illustrated in the drawing wherein M indicates, generally, a well known type of microtome having a member 10 to which is secured a specimen holder 11 carrying a specimen S. When the wheel 12 is rotated, the specimen is vertically reciprocated and moved horizontally by small increments so that successive sections are cut off the specimen by the stationary knife. The mechanism for vertically reciprocating member 10 and moving it horizontally is well known to those skilled in the art and hence is not described and shown in detail.

Adjustably mounted on the base of the microtome is a support 13 having the two spaced projecting members 14 and 14' against which the microtome knife 15 is secured by means of the screws 16 and cooperating clamps 17. Slidably mounted on the support 13 is the block 18 having the projecting lug 19 on which a stub shaft 20 is fixed by means of screw 21. The guard 22 has the two ears 23 and 23' by means of which it is mounted to turn on stub shaft 20. The guard 22 has an upper curved portion 24 which overhangs the cutting edge of knife 15 and the guard

preferably is slightly longer than the knife so that cutting edge is well protected.

Mounted on the under side of support 13 is a plate 25 on which is carried a spring 26 which bears against slide 18 and urges it upward together with the guard 22 and spring 27 tends to urge it inwardly toward the knife 15. The guard 22 has an integral projecting lug 28 which is positioned in the path of the projection 29 on reciprocating member 10.

The guard 22 is normally held in position by springs 26 and 27 so as to protect the edge of knife 15 when the specimen holder 11 is in the position shown in Fig. 1. In this position, the specimen S may be readily manipulated or adjusted without subjecting the operator to the danger of having his hands cut on the adjacent razor-edged knife 15. The guard 22, in this position, also serves to protect the razor edge of the knife 15 from being damaged. As the wheel 12 is turned, the member 10 moves downward to bring the specimen S into contact with the cutting edge of the knife. Before the specimen contacts with the knife, the projection 29 contacts with the lug 28 on the guard 22 and pushes the guard downwardly against spring 26. On its downward movement, the portion 24 of the guard strikes the tops of the members 14 and 14' on support 13 so that the guard 22 moves away from the knife and against the tension of spring 27. The knife edge is thus uncovered by the time that the specimen reaches it so that a section may be cut without interference from the guard, as shown in Fig. 4. As the member 10 moves upwardly, the two springs 26 and 27 function to move the guard 22 into position to cover the knife, as shown in Fig. 1. The guard 22 may be moved downwardly and locked in position by means of a pin 30 which is carried by slide 18 and adapted to cooperate with an aperture 31 in support 13.

From the foregoing it will be apparent that I am able to attain the objects of my invention and provide a guard for a microtome knife and means for automatically moving the guard away from the knife during the cutting operation. Microtome knives are generally provided with razor-like cutting edges so that the guard protects the operator against accidental injury and also shields the knife edge from damage. My improved guard does not interfere with the regular operation of the microtome. My device is relatively simple in structure and can be readily adapted for attachment to existing types of microtomes with slight alterations. Various modifications can obviously

be made by those skilled in the art without departing from my invention.

I claim:

1. A microtome having in combination a cutting member and a specimen holding member, one of said members being reciprocable toward and from the other, guard means associated with said cutting member and means for moving said guard means away from said cutting member during the reciprocation of one of said members toward the other member.
2. A microtome having in combination a knife, guard means associated with said knife, a holder for a specimen, means for producing relative movement between said holder and knife to bring the specimen into contact with the knife and means for automatically moving said guard means away from the knife during said movement.
3. A microtome having in combination a knife, guard means movably mounted adjacent to said knife, a holder for a specimen, mechanism for producing relative movement between said holder and knife to bring said specimen and knife into contact with each other, and means actuated by said mechanism for moving said guard means away from said knife.
4. A microtome having in combination a knife, guard means for the edge of said knife, a movable member carrying a holder for a specimen, mechanism for reciprocating said member to move the specimen to and from said knife and means operatively associated with said mechanism for moving said guard means from and toward the edge of said knife.
5. A microtome having in combination a knife, guard means normally protecting the edge of said knife, a movable member supporting a specimen, means for moving said member to bring said specimen into contact with said knife and means cooperatively associated with said guard means and said member for moving said guard means away from the edge of the knife when the specimen is moved toward said knife.
6. A microtome having in combination a base, a support on said base, a knife carried by said support, a guard movably mounted on said support, said guard being movable into and out of position to protect or uncover the edge of said knife and means comprising a reciprocable member for moving said guard.
7. A microtome having in combination a knife, a guard for said knife, yieldable means normally holding said guard so as to protect the edge of said knife, a reciprocable member carrying a specimen holder and means on said guard cooperating with said member for moving the guard away from the edge of the knife.
8. In a microtome the combination of a support, a knife carried by said support, a block slidably mounted on said support, a guard pivotally mounted on said block, yieldable means normally urging said guard into position to protect the edge of said knife and means for moving said guard against the action of said yieldable means to uncover the edge of said knife.
9. A microtome having in combination a support, a knife mounted on said support, a guard for said knife, said guard being movably mounted on said support and normally positioned to protect the edge of said knife, a lug secured to said guard, a reciprocable member, said lug being positioned in the path of said member whereby said guard may be moved out of its normal position.
10. A microtome having in combination a support, a knife mounted on said support, a block slidably mounted on said support, a guard pivotally mounted on said block, yieldable means normally urging said guard into position to shield the edge of said knife, a movable member carrying a specimen, and means associated with said member for moving said guard away from the edge of said knife.
11. A microtome having in combination a support, a knife on said support, a block slidably mounted on said support, a guard mounted on said slide, means for holding said guard in position to protect the edge of said knife, a projection on said guard, a member carrying a specimen, means for reciprocating said member to bring the specimen into contact with the knife, said projection being positioned in the path of said member whereby said guard may be moved away from the edge of said knife.
12. A microtome comprising a support, a knife mounted on said support with its edge horizontally disposed, a guard movably mounted on said support, said guard having an overhanging portion, yieldable means for normally holding said guard with its overhanging portion above the edge of said knife, mechanism for moving a specimen into engagement with the edge of the knife and means operatively associated with said mechanism for moving said guard vertically and laterally to uncover the edge of said knife.

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