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H. FEHSE

2,223,342

EXCHANGEABLE KNIFE BLADE

Filed July 1, 1938

Fig. 1.

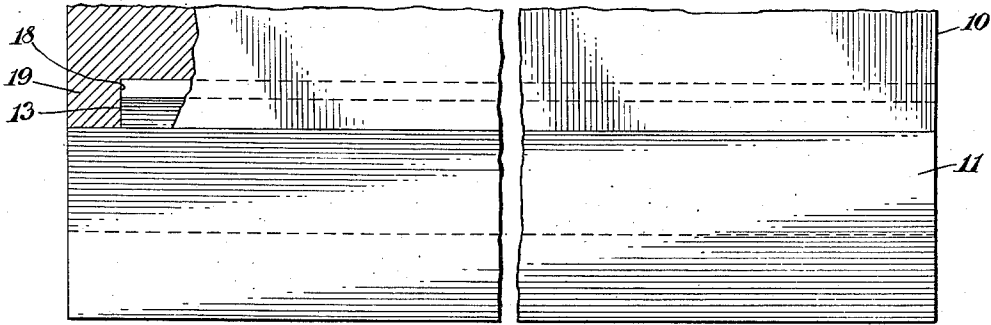


Fig. 2.

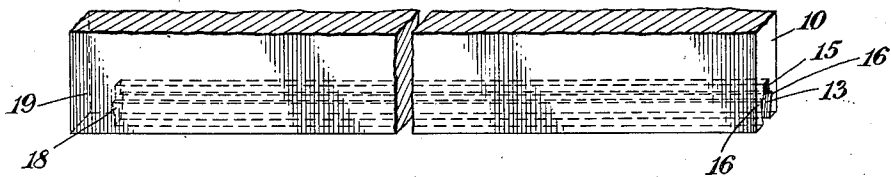


Fig. 3.



Fig. 4.

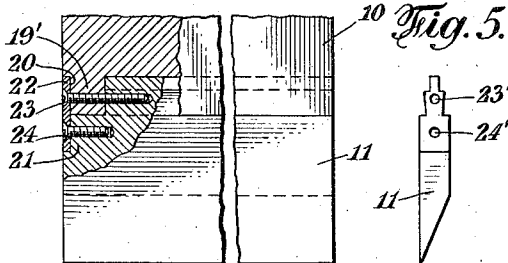


Fig. 5.

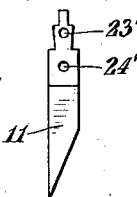
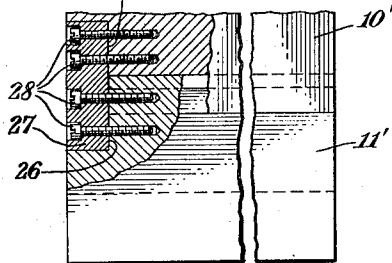


Fig. 6.



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EXCHANGEABLE KNIFE BLADE

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3 Claims. (Cl. 164—58)

This invention relates to knives or cutters in general, and especially to the type of cutters used in relatively heavy cutting devices.

In heavy cutting devices, such as paper cutters, the blade employed is subjected to a good deal of wear and strain, in consequence of which a very fine quality of steel must be used to maintain a sharp cutting edge. Usually, the dimensions of heavy cutters are so large that the blades used therein represent a very substantial investment. High-grade steel used for blades must be sufficiently hardened in order to maintain the edge for an extended period of time. Due to this hardening, the blades become relatively brittle and are likely to crack or break. In the event that the blades break, which is very often the case, the replacement of such broken knives becomes costly, which directly reflects upon the price of the material cut.

For all practical purposes, the most important portion of the blade is that which is equipped with the cutting edge or that part which first engages the work to be cut. That portion must be of a very fine grade of steel, so as to hold the edge and so that it may be readily resharpened when becoming dull.

The present invention has for its principal object the provision of an elongated knife blade or cutter the length of which far exceeds its width or breadth, and wherein the cutting portion of the blade may be relatively narrow or short, whereas the body of the blade above the cutting edge may be made as wide or high as is practical or desirable for the attachment of the blade to the blade holder.

Another object of the present invention resides in the connection between the cutting portion of the blade, made preferably of superior steel, such as high-speed or high carbon steel, and the upper body of the blade, made preferably of inferior, less expensive material.

Another object of this invention is to provide an end stop at one end of the combination blade, so as to prevent the movement of one blade member relative to the other blade member in one direction. This is especially necessary in view of the fact that the usual movement of the cutter is a slicing motion, while the blade descends. Consequently, there is a tendency of the cutting member of the blade to slide out from the upper body thereof.

The foregoing and still further objects and important advantages of the present invention will become more fully apparent from the ensuing description, in connection with the accom-

panying drawing, the latter forming an essential part of my disclosure, but which drawing is in no way intended to limit me to the actual showing, and in which:

Fig. 1 illustrates a fragmental elevation of my combination cutter, partially in section, which latter shows one form of an end stop for the blade cutting portion.

Fig. 2 is a perspective view of the lower end of the upper body or member of my combination blade.

Fig. 3 illustrates a perspective view of the cutting portion of my combination blade.

Fig. 4 illustrates a modified end stop construction for the blade.

Fig. 5 is an end view of the cutting portion of my blade, and

Fig. 6 illustrates another embodiment of the end stop construction for the blade.

Referring now specifically to the drawing, numeral 10 denotes the upper member of my blade construction, whereas numeral 11 denotes the cutting member of my blade, the former being made of relatively inferior, inexpensive steel, while the latter is made of high-grade, and therefore costly steel. It will be observed from Figs. 2, 3 and 5 that the two members are connected longitudinally by a substantially key-stone shaped dovetail connection, consisting of a male portion 12 extending upwards from cutting member 11 and a corresponding female recess 13 provided in the lower edge of member 10. From the dovetail formation of the male member extends a tongue 14, which is of a substantial construction and which is adapted to enter a corresponding groove 15 provided over the female dovetail portion 13 of member 10. It will be noted that the lower, dovetail portion of the connection is of relatively stout, heavy construction and is somewhat longer than tongue 14, which latter is relatively slender in comparison with dovetail 12. This tongue and groove arrangement is intended to stabilize the connection between the two members and to prevent the breaking out of the relatively frail dovetail connection, especially at the weakest points of member 10, as indicated at 16 in Fig. 2. Tongue 14 effectively prevents a lateral movement of cutting member 11 relative to body member 10 of the blade.

Specific attention is invited to the left hand end construction of members 10 and 11, constituting effective stop means for member 11 against an outward movement in left hand direction relative to member 10. To achieve this purpose, I terminate the male portion of the dovetail con-

nection short from the left hand end of member 11, as indicated at 17. Correspondingly, I terminate dovetail recess 13 short from the left hand end of member 10, as indicated at 18 in Fig. 1.
 5 In doing so, I form a step-like stop 19 in member 10, which prevents member 11 from sliding out.

A modified form of the left hand end stop and a connection between the two members is shown in Fig. 4, wherein the step-like extension 19' is
 10 recessed at 20, while a corresponding recess is provided in cutting member 11 at 21. Into this recess as fitted a plate 22, through which pass, into the bodies of member 10 and 11, screws 23
 15 and 24, respectively. These screws hold cutting member 11 against a right hand movement relative to member 10. It is to be noted, of course, that there is usually no appreciable strain exerted against the blade which would have the tendency of separating cutting member 11 from
 20 body member 10 in a right hand direction. Therefore, the construction shown in Fig. 4 is merely a double safeguard for holding the two members in fixed relation relative to one another. The cutting portion of my blade, as constructed in accordance with Fig. 4, is shown in
 25 end view in Fig. 5, in which figure will be observed openings 23' and 24' for receiving, respectively, screws 23 and 24.

Referring to Fig. 6, there is illustrated another
 30 embodiment of my stop construction and blade member connection, wherein member 10' is recessed, as indicated at 25, while member 11' is recessed at 26. Into these recesses is fitted a block 27, which is preferably secured in place
 35 by a number of screws 28, extending into the bodies of members 10' and 11'. Block 27 serves as an end stop against the movement of member 11' relative to member 10' during the slicing motion of the cutter, and at the same time
 40 fixedly holds the two members in their intended position, by means of screws 28.

From the afore-described construction of my device it becomes quite obvious that it is my
 45 intention to produce an effective cutter, wherein the major body of the blade may be made of relatively inexpensive, inferior material, whereas the cutting member of the blade is made of fine quality steel, whereby I produce an efficient
 50 cutting instrument at a considerable reduction in cost.

It is also obvious that due to the combination dovetail and tongue and groove construction of my device, the exchange or replacement of the
 55 most expensive portion of the blade may be readily effected at a minimum cost to the user, and that due to the tongue and groove construction above, any possible breakage of the dovetail connection is not only greatly minimized, but practically eliminated. It goes without saying,
 60 that while I have shown in the illustrations a combination cutter intended for heavy duty, the same principle of exchangeable portions with

cutting edges for blades is applicable to any other cutting instrumentalities. By the same token, it is obvious that while I have shown specific constructions as to the connections between the two
 5 blade members, and also specific constructions of the end stops at one end of the cutter, the application of this principle to other cutting instrumentalities may require changes and improvements, and I, therefore, reserve for myself
 10 the right to make such changes and improvements, without departing from the broad scope of my invention as defined in the annexed claims.

I claim:

1. In an elongated cutter or the like, a mem- 15
 ber of inferior material, a member of superior material, a longitudinal, interlocking slide connection uniting said members over their entire
 length, but terminating short from one end of the members, stop means provided at the short
 20 end of the slide connection for preventing the movement in one direction of one member relative to the other member, said slide connection being substantially of a dovetail construction, including a tongue extending from the male mem- 25
 ber of the connection into a corresponding groove provided in the female member, said tongue and groove serving as safety means for preventing the breakage of the connection through side
 30 strains.

2. In an elongated cutter blade construction, wherein the length of the blade far exceeds its
 breadth, an upper and a lower blade portion, made, respectively, of inferior and superior materials, a straight-line, continuous interlocking
 35 slide connection longitudinally uniting the two blade portions over substantially their entire length, starting at one of their extreme ends and terminating at a point a short distance from their other extreme ends, in the space between
 40 said point and the terminus of said slide connection a step-like formation depending from the upper blade portion and serving as a stop for the lower blade portion, and fastening means in said step-like formation for immovably securing 45
 the two blade portions against disengagement, said interlocking slide connection being of a key-stone formation and consisting of a relatively stout, lower dovetail-shaped portion and a central projection extending from the latter
 50 and being somewhat shorter and far slimmer than said dovetail portion, said projection serving as stabilizer for the connection and as a safety means for preventing the breakage of the latter.

3. In a cutter blade construction, as set forth 55
 in claim 2, said step-like formation being in the form of a block fixedly secured to the upper blade portion, and said fastening means, passing through said block, being in operative engagement with the slide connection of the lower blade
 60 portion.

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