July 15, 1924. 1,501,162

H. A. CUMFER

KNIFE AND HOLDER

Filed Jan. 30, 1922

Fig. 1.

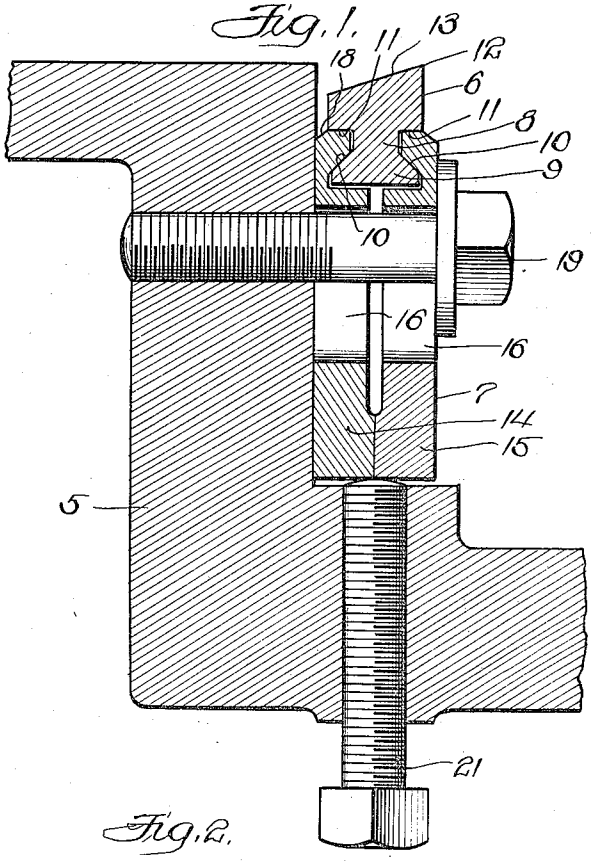
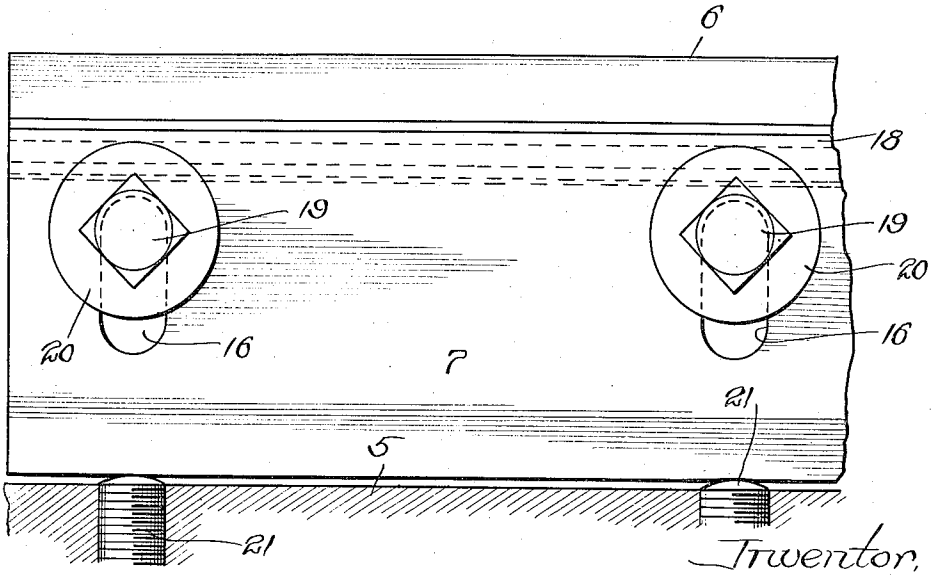


Fig. 2.



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UNITED STATES PATENT OFFICE.

HARRY A. CUMFER, OF CHICAGO, ILLINOIS, ASSIGNOR TO GUYTON & CUMFER MFG. CO., A CORPORATION OF ILLINOIS.

KNIFE AND HOLDER.

Application filed January 30, 1922. Serial No. 532,651.

To all whom it may concern:

Be it known that I, HARRY A. CUMFER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Knives and Holders, of which the following is a specification.

This invention relates to improvements in knives and holders.

One of the objects of this invention is to provide a knife of such configuration and cooperating holder that the knife will be held in the holder as firmly and unyieldingly as if the knife and holder were of one solid integral piece.

Another object is to provide a knife having a longitudinally extending cutting edge and relatively short transverse dimensions with a suitable holder of less expensive metal, thereby to economize in the use of the higher priced metal.

Another object is to provide a holder for a relatively long, thin knife which will firmly hold the knife and brace it to prevent lateral deflection, or bending out of a true line.

Another object is, generally, to improve shearing knives and means for holding and bracing them.

Other objects and advantages will hereinafter appear, to persons skilled in the art, from a consideration of the following description when taken in conjunction with the drawings.

In machines in which a pair of cooperating scissors-like knives are used for shearing a sheet, as in paper cutting machines, it is quite essential that the cutting edges of the knives shall be held in true parallel alignment and, since the steel of which the best knives are made is expensive, economy in structure demands that the knife blades shall be of relatively small dimensions. There are other essentials that must be complied with. The blade must be held rigidly in place so that no part will be deflected in either transverse direction and the blade-holding means, made of a cheaper grade of material, shall be amply strong to withstand the stress and shall have facility to firmly grasp and clamp the blade without overlying a very large area of the blade.

Preferably the members of the holding means shall be independently adjustable to conform to the character of that part of the blade brought into contact with the holder to clamp it in place.

Another advantage, resulting from making the blade and holder separable, is that the blade can then be more conveniently sharpened when necessary and more quickly taken from the machine, as this may be done without removing the clamping bolts or any part of the holder by sliding the blade longitudinally of its axis after it has been released by the clamping holder.

In the drawing:—

Fig. 1 is a transverse section thru a part of the machine, the blade and its holder.

Fig. 2 is a broken-away elevation of the same.

In both views the same reference characters are employed to indicate similar parts.

Only one knife of a pair of similar knives is shown in which 5 is a part of a machine to which the lower knife 6 is attached and to which it is held by the holder 7.

The shank 8 of the knife is relatively short and terminates in an expanded tapered head 9 having tapered sides 10—10 and providing below the knife the shoulders 11—11. The cutting edge 12 of the knife may be kept sharp by grinding away part of the face 13.

The clamp or knife holder 7 consists of two duplicate members 14 and 15, each member provided with elongated slots or holes 16 that register with similar slots or holes in the companion member.

The upper ends of the members 14 and 15 each have a head 18 grooved to admit the head 9 of the clamp and having a surface for contact with the inclined parts 10 of the knife and abruptly terminating in an end for contact with the shoulders 11 on each side of the knife so that the heads of the holders are wedged into the grooves made into the sides of the knife blade when the clamping members are drawn together.

A series of spaced apart bolts 19 pass thru the slots in the holders 14 and 15 and are screwed into the machine member 5. To extend the pressure exerted by the bolts directly to the clamping members a washer 20 is placed over each of the bolts. When the bolts 19 are partially tightened the latitude of the knife or either end thereof may be adjusted by the bolts 21 which contact the lower edges of both of the clamping mem-

bers 14 and 15, whereupon the bolts 19 may be further tightened to firmly hold all of the parts in place.

The shank 8 of the blade is firmly wedged between two parts of each of the holder members, as when the heads of the holder members enter the groove on each side of the blade and the inclined edges at 10 meet, thus forcing very intimate contact under the shoulders 11 of the knife.

On the outside the washer 20 backs up the head of the outside member at the point of application of pressure.

Having described my invention what I claim as new and desire to secure by Letters Patent, is:

1. A device of the character described comprising a relatively long knife blade having a groove in both of its sides in the same plane forming abrupt shoulders at its upper edge and opposite outwardly inclined shoulders; a pair of duplicate clamping members, each having a head to fit in the respective groove on opposite sides and bolts passing thru said members to wedge the heads thereof into the grooves.

2. A device of the character described comprising a relatively long knife blade having a groove in both of its sides in the same plane forming abrupt shoulders at its upper edge and opposite outwardly inclined shoulders throughout the length of the blade; a pair of like clamping members each having a head to fit in the respective groove and bolts passing thru said members to wedge the heads thereof into the grooves.

3. A device of the character described comprising a relatively long knife blade having a groove in both of its sides each groove forming an abrupt shoulder nearest its cutting edge and an outwardly inclined opposite shoulder in combination with two relatively large separable clamping members having transversely extending spaced apart slots and each member having a head to enter the respective grooves and individually adjustable therein; bolts extending thru the slots to clamp the members together and bolts engaging the bottom edges of said members to adjust the position of said blade.

In testimony whereof I hereunto subscribed my name.

HARRY A. CUMFER.