

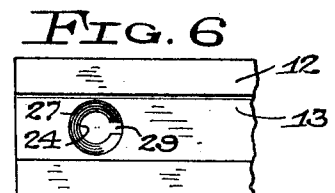
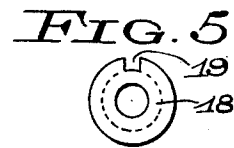
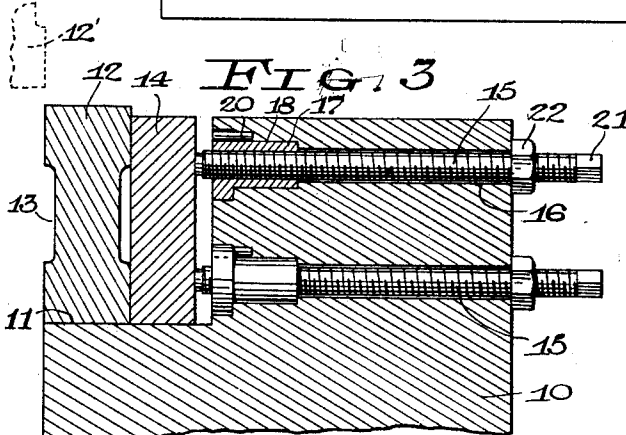
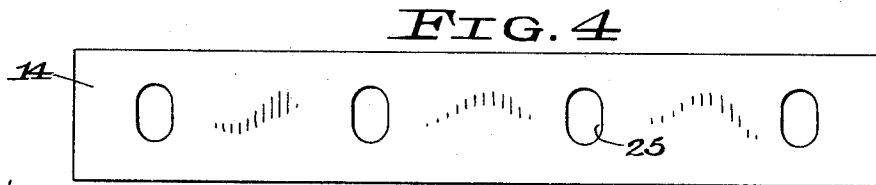
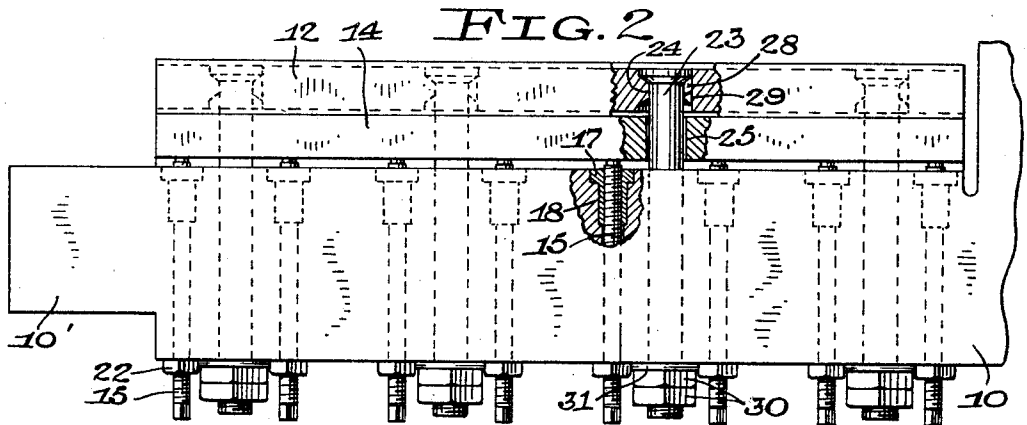
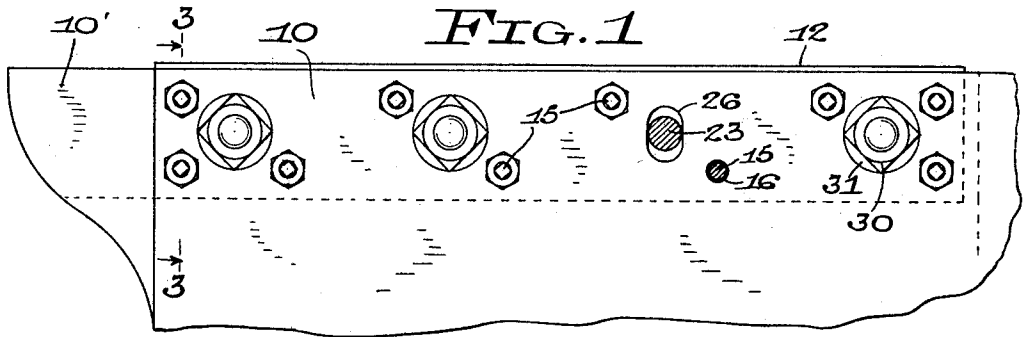
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SHEAR KNIFE ADJUSTING MEANS

Filed May 9, 1930



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SHEAR KNIFE ADJUSTING MEANS

Application filed May 9, 1930. Serial No. 451,182.

The invention relates to shear knife adjusting means.

The knives of a shearing machine, and particularly an alligator shear, require adjustment to bring them into proper relation with each other, and readjustment is necessary each time the knives are resharpened or renewed or when wear occurs in certain other parts of the machine. Such knife adjustment has heretofore been effected by the use of shims, and since adjustment is frequently made by inexperienced persons, the use of shims is not very satisfactory.

In order to overcome these difficulties, it is an object of the present invention to provide a knife-adjusting means which can be easily handled by inexperienced persons, and which provides a firm lateral support for the knife.

Another object of the invention is to provide a knife-adjusting means including adjusting screws which are threaded into bushings releasably mounted in the knife support, thereby permitting the screws to be easily removed after becoming defective by reason of wear or exposure to the weather.

The invention further consists in the several features hereinafter set forth and more particularly defined by the annexed claims.

In the accompanying drawing, Fig. 1 is a fragmentary side elevation of a shear frame incorporating the knife-adjusting means of this invention, parts being broken away and parts being shown in section;

Fig. 2 is a top plan view thereof, parts being broken away and parts being shown in section;

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a side elevation of a backing bar for the knife;

Fig. 5 is a detail view of one of the bushings, and

Fig. 6 is a fragmentary side view of the knife.

In this drawing, the numeral 10 designates the base frame of an alligator shear, the upper portion of the frame being provided at its outer end with the usual projecting shelf or ledge 10'. The upper portion

of the base frame is provided at one side with a rabbet 11 presenting a horizontally extending bottom wall and a vertical side wall. A shear knife 12 of rectangular cross-section rests on the bottom wall of the rabbet and is provided with longitudinally extending recesses 13 at opposite sides. The corners of the knife present four cutting edges which are selectively usable in order to avoid frequent resharpening of the knife. The knife 12, as usual, co-operates with a similar knife 12' carried on the movable element of the shear.

The back face of the knife bears against one side face of a rigid backing bar or plate 14 of rectangular cross-section extending parallel to the knife and resting on the bottom wall of the rabbet 11. The backing bar is spaced from the vertical side wall of the rabbet 11.

The position of the backing bar, and consequently that of the knife, is determined by a plurality of adjusting screws 15 extending through horizontal bores 16 formed in the upper portion of the shear frame at right-angles to the plane of the shear knife. The screws 15 are arranged in staggered parallel relation. Each adjusting screw has a reduced end bearing against the vertical side face of the backing bar 14 and the end portions of each screw adjacent the backing bar are threaded in a flanged bushing 17, which is removably fitted through a shouldered counterbore 18 formed in the shear frame in axial alignment with the bore 16 and opening at the vertical side wall of the rabbet 11. Each bushing is provided in its flanged portion with a notch 19 receiving therein a pin 20 which is driven into the shear frame to prevent relative rotation of the bushing in the shouldered counterbore 18. The outer end of each screw 15 is provided with a squared wrench-receiving portion 21, and a jam nut 22 is threaded on the screw for abutment with the outer face of the shear frame to hold the screw in adjusted position.

The shear blade 12 is held in firm engagement with the backing bar 14 by means of a plurality of bolts 23 each of which passes through a transverse bore 24 formed in the

knife, a slot-like opening 25 formed transversely through the backing bar and a slot-like opening 26 formed through the upper portion of the shear frame. Each bolt has a conical head fitting within a conical recess 27 formed in the shear knife, and the bolt is provided with a lug 28 fitting within a slot 29 formed in the shear knife to prevent relative rotation of the bolt with respect to the knife. The opposite end of each bolt is threaded and is provided with a pair of clamping nuts 30, the inner one of which bears against a washer 31 engaging the outer face of the shear frame.

As seen in Fig. 1, the screws 15 are spaced so as to distribute among them the lateral pressure acting on the knife, there preferably being a pair of screws on opposite sides of each bolt 23. The screws 15 and bolts 23 are arranged in parallel relation.

When the knife is to be adjusted after having been resharpened or renewed, the jam nuts 22 on the screws 15 are loosened to permit the screws to be projected or retracted, as the case may be, until the effective cutting edge of the knife is in proper relation to the cutting edge of the co-operating movable knife 12', which latter may be placed in its lowermost position to serve as a gage. During this adjustment, the nuts 30 for the clamping bolts are either entirely removed or loosely threaded on the bolts. In this adjustment, the screws are all turned until their ends are in abutment with the backing bar 14, whereupon the jam nuts 22 are tightened to retain the screws in their adjusted positions. The nuts 30 on the clamping bolts are then tightened to clamp the knife firmly against the backing bar 14, the pressure exerted by the bolts being transmitted through the backing bar 14 to the screws 15, and thence through the internally threaded shouldered bushings 18 to the shear frame. Additional lateral pressure may be exerted during the use of the shear, and such pressure is transmitted to the shear frame in the same manner.

When a screw 15 becomes defective by reason of a battered or mashed end or by rusting, incident to exposure to the weather, it can be easily removed with its bushing by driving it through the bore 16 after removing the jam nut 22. A new bushing can then be fitted into the shouldered counterbore 18 and a new screw threaded into the bushing, thereby insuring a perfect threaded engagement of the new screw with its bushing.

In an alligator shear, only one of the co-operating knives of the shear requires adjustment and this is preferably the stationary knife, although obviously the movable knife may be adjusted instead.

After a knife is resharpened, shims are sometimes placed below the knife to adjust the elevation of the cutting edge of the knife,

but such shims are not critical as to thickness, and therefore, shims of varying thickness may be used without adversely effecting the operation of the shear.

What I claim as new and desire to secure by Letters Patent is:

1. In a shear, the combination of a support having a rabbet extending along an edge portion thereof and presenting a pair of substantially perpendicular faces, a shear knife resting on one of said faces to transmit shearing pressure thereagainst, a backing member engageable with a side face of said knife and disposed between said knife and the side face of said rabbet, said backing member being spaced from the side face of said rabbet a plurality of screws extending transversely through said support at substantially right-angles to the plane of said knife and having an end engagement with the side face of said backing member opposite said knife, said screws having threaded connections with said support for determining the lateral positions of said backing member and said knife with respect to said support, and clamping bolts extending through said backing member and said support and clamping said knife in lateral abutment with said screw-engaging backing member.

2. In a shear, the combination of a support, a shear knife resting on said support, a plurality of spaced screws extending transversely through said support and being movable completely through said support, nut members releasably mounted in said support and receiving said screws therethrough, said screws having a connection with said knife for determining the lateral position of said knife with respect to said support, and said nut members having an abutment with said support to transmit thereto lateral pressure from said knife communicated through said screws, and clamping bolts securing said knife to said support and imposing axial pressure on said screws, said screws forming a driving means for releasing said nut members from said support.

In testimony whereof, I affix my signature.
OSCAR W. KIRSTEN.