The present invention is directed generally to roughage mill and more particularly to an arrangement or construction for adjusting the knife in the cutter head of the mill.

The primary object of the present invention is to provide a novel and improved adjustable knife holder for a knife head by means of which a knife having two oppositely arranged cutting edges may be adjusted with respect to the cutter head.

A further object of the invention is to provide an adjustable knife holder in which a knife having two cutting edges of relatively thin piece of knife steel may be used.

A further object of the invention is to provide an adjustable knife holding device for cutter head used in connection with a roughage mill by means of which a relatively thin knife blade with two cutting edges may be supported and locked therein and in which the cutting edge of the knife therein may be adjusted with relation to the cutter without ruining the unused edge of the cutter knife.

These and other objects are accomplished by providing a construction and an arrangement of the various parts in a manner hereinafter described and particularly pointed out in the appended claims.

Referring to the drawing:

Fig. 1 is a side elevational view of a fragmentary portion of an arm 10, 15 of a plate casting for roughage mill showing the preferred form of my improved adjustable knife holder mounted thereon;

Fig. 2 is a top plan view of the same;

Fig. 3 is a cross sectional view taken on the line 3—3 in Fig. 2;

Fig. 4 is a top plan view of a modified form of an improved form of adjustable knife holder for roughage mill;

Fig. 5 is a cross sectional view taken on the line 5—5 in Fig. 4;

Fig. 6 is another modified form of an improved form of adjustable knife holder;

Fig. 7 is a cross sectional view taken on the line 7—7 in Fig. 6;

Fig. 8 is a longitudinal cross-sectional view of the knife plate shown in Fig. 7, and Fig. 9 is a cross sectional view of another modification of a clamp type holder for a cutter head.

The present invention is specifically directed to the construction of a novel form of knife holder which permits the use of a relatively thin blade of a knife made from specially selected steel and also makes it possible to use a double cutting edge on the opposite edges of the knife, so that both edges of the knife may be used before resharpening of the knife is necessary. The present invention also permits the knife to be properly adjusted with respect to the cutter bar of the mill so that as the edge of the knife wears by reason of grinding, the knife may be advanced to its proper position with respect to its co-acting cutter bar of the mill.

In illustrating the preferred form of my invention I have shown the same in connection with a fragmentary portion of a cutter head casting. In the drawing is shown an arm 10 which is one of the spider arms of the revolving cutter head casting. The outer ends of each of these arms 10 are provided with an angularly disposed L-shaped portion 11, which in effect form a seat 12 for the knife and knife plate hereinafter described. The rear end of this L-shaped portion 11 is provided with two transversely extending threaded apertures 13 for the reception of threaded set screws 14. These set screws are locked in various positions of adjustment by a lock nut 15. Extending through the outer part of the L-shaped portion 11 of the arm 10 are slotted apertures 16. Mounted on the seat 12 of the L-shaped portion 11 is a cutter knife 17 which is preferably made of relatively thin specially selected steel. This knife 17 is provided with two cutting edges as shown at 18 and 19. Mounted on top of the knife 17 is a knife plate 20. The plate 20 and the knife 17 are provided with registering apertures 21 and 22 respectively. Extending through the apertures 21 and 22 of the plate 20 and knife 17, respectively, and extending through the slotted apertures 16 is a bolt 23 for securing the plate 20 and knife 17 to the arm 10 of the cutter head casting. The rear end or edge of the plate 20 is located in the path of the set screws 14 so as to be contacted therewith, as shown at 24, for relatively adjusting the cutter edge 18 of the knife with respect to the cutter bar 25 on the mill.

From the above description it will be readily seen by loosening the nuts on the bolts 23 that the set screws 14 may be adjusted after loosening the lock nuts 15 so that the cutting edge 18 may be relatively adjusted with respect to the arm 10 of the cutter head casting, after which the bolts 23 may then be secured for rigidly securing the knife to the cutter head.

In the modified form shown in Figs. 4 and 5, the knife seat 11 of the arm 10 is provided with a round aperture 26. The knife 17 in this instance is provided with slotted apertures as shown at 26, and the plate 20' is also provided with registering slotted apertures 27. The slotted apertures 28...
26 in the knife 17' are relatively longer than the slotted apertures 27 in the plate 20'. The forward edge of the plate 20' is provided with depressed or off-set portions as shown at 28. These depressed or off-set portions 28 are in transverse alignment with the slotted apertures 27 in the plate 20' and are adapted to engage the forward portion of the slotted apertures 26 in the knife 17' as shown at 29. Obviously when the bolts 23 are loosened and the set screws 14 adjusted, the plate 20' will be moved and in turn will move the knife 17' for adjusting the cutting edge 18' of the knife with respect to its seat on the cutter head casting.

Another modified form of my improved knife holder is disclosed in Figs. 6, 7 and 8. In this form, the knife in addition to being provided with the slotted apertures 26', is also provided with two centrally located round apertures 30. These round apertures 30 are adapted to receive in engagement therewith, dowel pins 31 secured to the plate 32. The plate 32 is also provided with slotted apertures 33, which are adapted to register with the slotted apertures 26' in the knife 17' for receiving the securing bolts 23. Obviously when the bolts 23 are loosened, the set screws 14 may be turned for adjusting the plate 32 which, on engagement of the dowel pins 31 engaging the knife blade 17'', the knife may be adjusted for properly positioning the cutting edge with respect to cooperating cutter bar on the roughage mill.

In the last modification of my invention shown in Fig. 9 I have provided a clamp-like knife holder which is preferably formed as an integral part of the arm 16 of the cutter casting. The knife holder in this form comprises two spaced apart flat portions 34 and 35 which are preferably formed as an integral part of the arm 16 of the cutter head casting. These two flat portions 34 and 35 are so spaced apart as to form an recess 36 therebetween, for the reception of a plate 37 and a knife blade 38. The plate 37 is provided with slotted apertures as shown at 39 which register with round apertures 40 and 41 formed on the bottom portion 34 and 35 respectively for receiving the securing bolts 23. The forward portion of the plate 37 is provided with two dowel pins 42 which are adapted to be seated in the round apertures 43 formed in the knife blade 38. The rear edge of the knife holder portions 34 and 35 are provided with threaded apertures 45 for the reception of the set screws 47. The forward edge of the set screws 47 are adapted to engage the rear edge of the plate 37, as shown at 48 for adjusting the cutting edge of the knife 38 with respect to the cutter head casting. Obviously when the desired position of the cutting edge has been attained the clamping bolts 23 may be tightened thereby clamping the two portions 34 and 35 together for rigidly securing the knife in the cutter head.

From the above description it will readily be seen that I have provided a simple and efficient means in several different forms of a knife holder for a cutter head by means of which a relatively thin knife blade having oppositely disposed double cutting edges may be secured therein and adjusted with respect to the holder thereby extending the life of the knife before a resharpeming of the same is necessary. This construction also permits the adjustment of the knife with respect to the knife holder without ruining the sharp cutting edge that is not being used.

While in the above specification I have disclosed one form of my invention, it will of course be understood that other forms and additional modifications may be made without departing from the spirit and scope of my invention as it is expressed in the following claims.

What I claim is my invention and desire to secure by Letters Patent is:

1. A knife holder for a cutter head comprising a cutter head casting, a relatively thin knife secured to said casting, said knife having oppositely disposed cutting edges, a plate mounted on said knife, securing means for securing said plate and knife to said casting, a set screw mounted on said casting and engageable with one of the edges of said plate for adjusting said knife with respect to said casting.

2. A knife holder for a cutter head comprising a cutter head casting, a knife secured to said casting, a plate mounted on said casting, bolts extending through registering apertures in said plate, knife and cutter head casting, for securing said plate and knife to said cutter head, and set screws mounted in threaded engagement with said casting and engageable with said plate for adjusting the cutting edge of said knife with respect to said casting.

3. A knife holder for a cutter head comprising a cutter head casting, a relatively thin knife mounted on said casting, said knife having the opposite edges thereof beveled so as to form cutting edges, a plate mounted on said knife and engageable therewith, means for securing said plate and knife to said cutter head, and set screws mounted in threaded engagement with said cutter head and engageable with said plate whereby when said plate is adjusted, the cutting edge of said knife is adjusted with respect to said casting.

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