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GRAIN HAMMERMILL KNIFE ADAPTER

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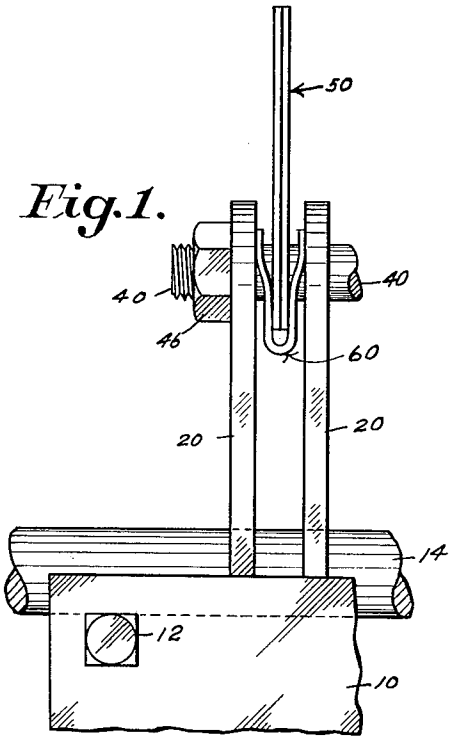


Fig. 1.

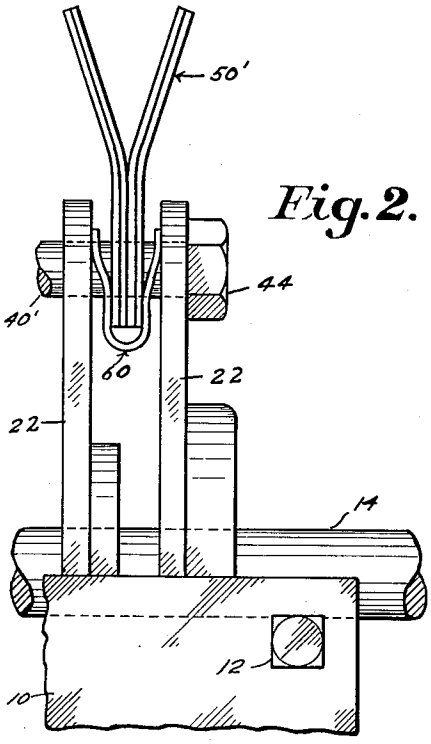


Fig. 2.

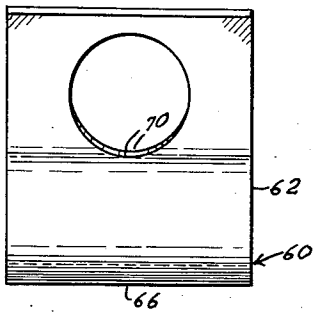


Fig. 3.

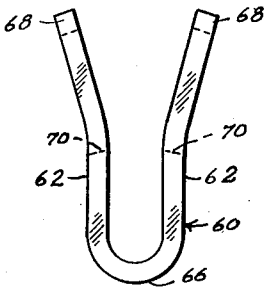


Fig. 4.

INVENTOR.
SANNING C. JENSEN.
BY W. Hiram Sturges
Agent

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GRAIN HAMMERMILL KNIFE ADAPTER

Sanning C. Jensen, Neola, Iowa

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3 Claims. (Cl. 241—194)

This invention relates to grain hammermills of a type having spaced apart discs between which knives are disposed pivotally secured to a rod extending through the discs, and more particularly it is an object of this invention to provide means for maintaining such knives in place between said discs at times when said rod is withdrawn during servicing of such machines.

It is well known that one of the great disadvantages in the construction of this type of a grain hammermill is the difficulty of removing one of the knives thereof without permitting other knives thereof to fall from position at times when the rod holding the knives is moved.

Accordingly it is an object of this invention to provide a device for eliminating the undesirable features of this prior art construction without interfering with the normal operation of the grain hammermill.

Another object of the invention resides in the provision of an adapter of resilient construction for holding knives in place between the discs of a grain hammermill, the adapter being so constructed as to press against the oppositely disposed sides of two discs regardless of whether the discs are spaced apart a somewhat greater distance than usual.

A further object of the invention is to provide an adapter as described for spacing a knife apart from the adjacent discs during operation.

Still another object of the invention is to provide a grain hammermill knife adapter as described which is adapted to fit and hold in place knives of various widths.

This application is a continuation in part of the applicant's co-pending patent application Serial No. 280,447, filed April 4, 1952, now abandoned.

Another object of the invention is to provide a device for the purpose described which is sturdy and durable in construction, reliable and efficient in operation, and relatively simple and inexpensive to manufacture, assemble and utilize.

Other and still further objects and advantages of the invention will become apparent from the following detailed description of a preferred embodiment thereof.

In the drawings:

Figure 1 is a top plan view of a portion of grain hammermill including a portion of the housing thereof, a portion of the rotor shaft, half portions of two discs and end portion of the knife securing rod, a knife and an adapter of this invention disposed in a position of use about said rod.

Figure 2 is a view of a portion of a grain hammermill, including a housing portion, a portion of the rotor shaft, two discs spaced apart at greater distance than the discs of Figure 1, a differently constructed and larger knife, and end portion of a rod, and an adapter of this invention secured about the rod.

Figure 3 is a side elevation of the adapter of this invention.

Figure 4 is a frontal elevation of the adapter of this invention.

The adapter of this invention is for attachment to a grain hammermill, a portion of the housing of which is

shown at 10 in Figures 1 and 2, having a securing bolt 12 disposed therethrough, the remainder of the housing not being shown.

The grain hammermill is provided with a central rotor shaft 14 which latter is provided with a plurality of discs 20 extending outwardly therefrom as shown in Figure 1. The discs 20 are arranged in pairs, one pair of which is shown in Figure 1 and another pair of which is shown in Figure 2 at 22.

The pairs of discs 20 and 22 are spaced apart differently for purposes later described.

The grain hammermill is provided with a rod 40 extending therethrough transversely with respect to the discs 20, the rod having a head 44 on one of its ends and a nut 46 on the other of its ends.

Between the discs 20 a knife 50 is provided and the latter is swingably disposed about the rod 40. The knife 50 is provided with flat sides.

The foregoing is old in the art. It is the object of this invention to provide an adapter generally indicated at 60 having two arms 62 disposed alongside each other. The adapter further includes an interconnecting portion 66 which latter interconnects corresponding ends of the arm 62. The adapter 60 is provided with terminal and arm portions 68 which latter are divergently disposed at times when the arms are in relaxed position, the arms being resilient. It will be understood that a less desirable, but operative device can be constructed having only one of the arms of a resilient construction.

The arm 62 together with their end portions 68 are preferably integral with the interconnecting portion 66.

The arms are each provided with an aperture 70 therethrough for receiving the rod 40 in use.

The inner surfaces of those portions of the arm 62 which are disposed adjacent the interconnecting portion 66 are preferably arranged in approximate parallelism for snugly receiving, pressing against, and holding the inner end of the knife 50 in use.

In operation the adapter 60 holds the knife 50 spaced apart from the discs 20 in a manner formerly accomplished in the prior art by bushings which latter were free to fall from position whenever the rod 40 was removed.

When the rod 40 is removed the adapter 60 presses against the sides of the discs 20 holding itself in place, further pressing against the side of the knife 50 holding the knife in place during servicing of the machine and at times when the rod 40 is removed.

In Figure 2 a modification of the grain hammermill of Figure 1 is shown in which like parts are given like numbers and in which the discs 22 thereof are spaced apart at greater distance than the discs 20.

The knife 50' of Figure 2 is of a Y shape and is of a greater thickness at its inner end than the knife 50. The adapter 60 of this invention is shown in place on the rod 40' of Figure 2 to illustrate the fact that the resilient arms of the adapter are able to hold a thicker knife and are able to hold a knife between wider spaced discs, for providing a very versatile adapter.

This invention has provided means for maintaining the knives of a grain hammermill in place during servicing thereof, which means comprises an adapter for use with knives of various thicknesses and for use between discs of varying spacing.

From the foregoing description it is thought to be obvious that a grain hammermill knife adapter constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this

reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, except as claimed.

I claim:

1. In combination: a grain hammermill having a rotor, two spaced apart rod holding members mounted on said rotor in fixed positions with respect to each other; a rod disposed through said rod holding members, a knife partially disposed between said holding members and pivotally secured to said rod; and an adapter comprising: two arms disposed alongside each other; means interconnecting corresponding ends of said arms, said arms each having a portion adjacent said interconnected ends disposed with its inner surfaces in approximate parallelism with the inner surface of the other such portion of the other arm, at least one of said arms being resilient, the terminal ends of said arms being divergently disposed and being disposed pressing outwardly because of said resilience against the opposing surfaces of said rod holding member, said approximately parallel surfaces of said arms being disposed against and pinching on opposite sides of said knife because of said resilience, said arms each being provided with an aperture therethrough, the walls of said apertures being disposed about said rod.

2. In combination, a grain hammermill having a rotor, two spaced apart rod holding members mounted on said rotor in fixed positions with respect to each other; a rod disposed through said rod holding members, a knife partially disposed between said holding members and pivotally secured to said rod; and an adapter comprising: two arms disposed alongside each other; means interconnecting corresponding ends of said arms, at least one of said arms being resilient, the terminal ends of said arms being disposed farther apart than the inner ends thereof when said adapter is in a relaxed position and being disposed pressing outwardly because of said resilience against the

opposing surfaces of said rod holding members, a portion of said knife being pinched between said arms because of said resilience, said arms each being provided with an aperture therethrough, the walls of said apertures being disposed about said rod.

3. In combination: a grain hammermill having a rotor, two spaced apart rod holding members mounted on said rotor in fixed positions with respect to each other; a rod disposed through said rod holding members, a knife partially disposed between said holding members and pivotally secured to said rod; and an adapter comprising: two arms disposed alongside each other; means interconnecting corresponding ends of said arms, said arms having portions adjacent said interconnected ends disposed with their inner surfaces on opposite sides of and engaging and pressing against the outer sides of said knife respectively, at least one of said arms being resilient, the terminal ends of said arms being divergently disposed with respect to said knife engaging portions and being disposed pressing outwardly because of said resilience against the opposing surfaces of said holding members, said arms each being provided with an aperture therethrough, the walls of said apertures being disposed about said rod.

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