Feb. 23, 1954 F. D. SAWYER 2,669,819

STALK SHREDDER HAMMER AND SPACER

Filed Oct. 17, 1951

FIG. 1

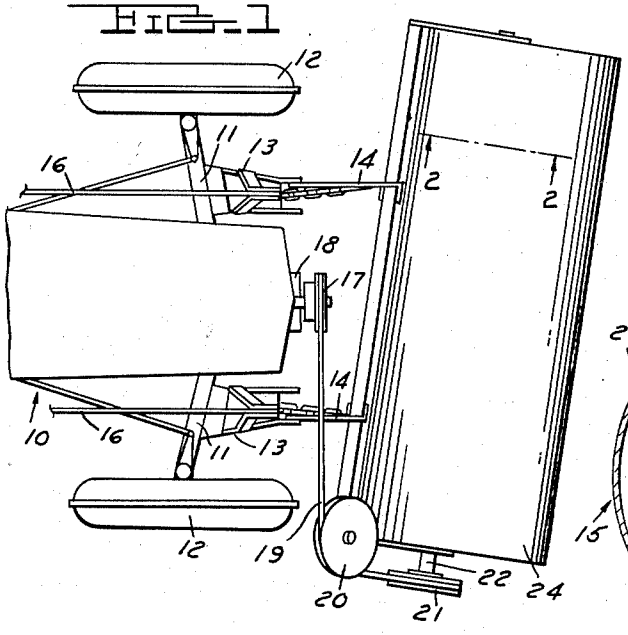


FIG. 2

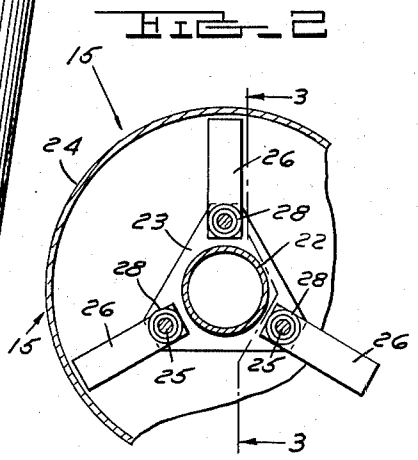


FIG. 3

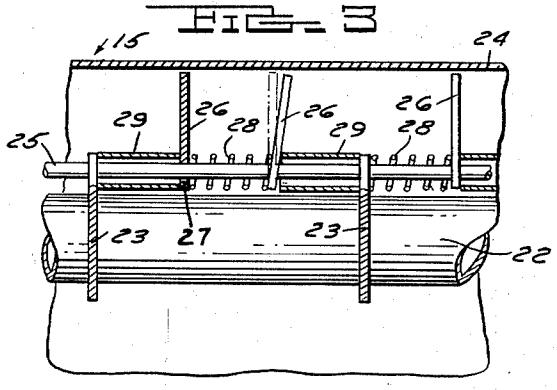
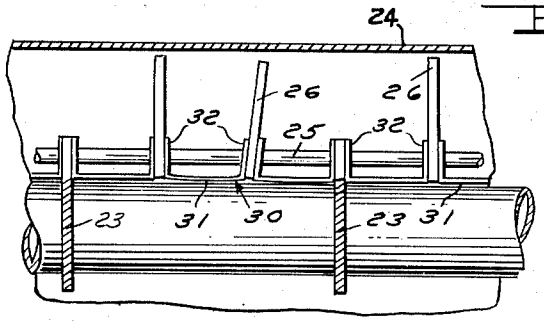


FIG. 4



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STALK SHREDDER HAMMER AND SPACER

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1 Claim. (Cl. 55—118)

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The present invention relates to a hammer assembly for a stalk shredder and more particularly to such a hammer assembly provided with resilient means for accommodating independent relative lateral movement of the hammers.

The stalk shredders of the prior art typically comprise a rotary flail assembly enclosed with an open bottomed casing, the flail assembly including a plurality of aligned individually mounted hammers disposed upon a rotatable shaft. The hammers are mounted on the shaft for rotation thereon and are free for movement in a plane radial to the associated shaft, so that the hammers, though normally held outwardly by centrifugal force, are free to swing in the radial plane upon contact with the ground. The hammers are held against lateral movement, i. e., movement axially of the shaft, by rigid spacer collars, and the hammers have been frequently bent and broken upon contacting the ground or other object tending to force the hammers laterally. This problem is particularly acute where the shredder is inclined to its path of travel, i. e., where the vertical plane of hammer travel is inclined to the path of tractor movement, and such inclined shredders have not proved practical due to hammer breakage, even though improved ground area coverage may be obtained in this manner.

The present invention now provides an improved hammer assembly for a stalk shredder including resilient means normally biasing the hammers to a true radial position, but accommodating relative independent lateral movement of the hammers to reduce breakage thereof under operating conditions. More particularly, the present invention comprises spring means interposed between adjacent hammers, the spring means being resiliently deflectable to accommodate lateral hammer movement. Two different types of springs may be utilized to provide such deflection, namely, either a compression coil spring or a leaf-type spring.

It is, therefore, an important object of the present invention to provide an improved hammer assembly for the stalk shredder having resilient means for accommodating independent lateral deflection of the hammers.

Another object of the present invention is the provision of a hammer assembly for a stalk shredder including spaced independently movable hammers and spring means interposed between adjacent hammers for resilient reflection to accommodate lateral hammer movement.

It is a further object to provide a hammer assembly for a stalk shredder including spaced relatively movable hammers disposed on a rotatable shaft and a coil spring confined between adjacent hammers and resiliently deflectable to accommodate independent relative lateral hammer movement.

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Yet another important object is the provision of a hammer assembly for a stalk shredder including spaced relatively movable hammers disposed on a rotatable shaft and leaf springs interposed between adjacent hammers and having terminal portions engaging the hammers to accommodate lateral movement thereof.

The specific nature of this invention, as well as other objects and advantages thereof, will become apparent to those skilled in the art from the following detailed description, taken in conjunction with the attached sheet of drawings on which, by way of preferred example only, are illustrated two embodiments of this invention.

On the drawings:

Figure 1 is a plan view of a stalk shredder mounted upon a tractor and provided with a hammer assembly of the present invention;

Figure 2 is an enlarged fragmentary sectional view taken along the plane 2—2 of Figure 1;

Figure 3 is a fragmentary sectional view taken along the planes 3—3 of Figure 2; and

Figure 4 is a fragmentary sectional view similar to Figure 3 illustrating a modified form of hammer assembly of the present invention.

As shown on the drawings:

In Figure 1, reference numeral 10 refers generally to a tractor, such as a Ford tractor, having a tractor energized hydraulic system and laterally extending front axles 11 supporting front wheels 12 thereon. The tractor front axle is provided with forwardly extending mounting brackets 13.

The brackets 13 support forwardly extending arms 14 upon which is disposed a stalk shredder indicated generally at 15, the brackets also carrying rearwardly extending actuating rods 16 which are connected to the tractor hydraulic system to elevate and lower the shredder 15 from and to working position. The shredder is driven by a sheave 17 disposed upon an engine driven shaft 18 and lapped by a V-belt or the like 19 which also laps an idler sheave 20 and a driven sheave 21. The driven sheave 21 is disposed upon a shredder axle 22 which carries a plurality of axially spaced support plates 23 (Figures 2 and 3) along the length thereof in the interior of the shredder casing 24. The plates 23 support longitudinally extending shafts 25 which are rotatable with the axle 22 about the axle axis, and the shafts each support a plurality of shredder

hammers 26 which are provided with enlarged apertures 27 which are substantially larger than the shafts 25, so that the hammers are free to pivot about the shaft axis independently of one another.

Of course, during rotation of the axle, the hammers 26 will be subjected to centrifugal force which will tend to retain the hammers in their radially outward positions illustrated in Figure 2. However, the enlarged apertures 27 accommodate radial movement of the hammers, as upon their striking an obstruction preventing their movement with the shaft.

Between adjacent hammers 26, there are disposed spacer elements 28 in the form of helical coil wire springs receiving the shaft 25 axially therethrough and having the axial spring ends seated against facing side portions of the hammer. Between the hammers 26 and the adjacent spacer plates 23, there is disposed a rigid cylindrical spacer collar 29 which also axially receives the shaft 25 therethrough. The rigid spacer collars 29 serve to position the hammers 26 upon the shaft 25 with the hammers being retained against the collars 29 by the compression force of the spring 28. At the same time, the compressibility of the springs 28 accommodates lateral deflection of the hammers 26 as illustrated in Figure 3. It will be appreciated also that, where more than two hammers 26 are disposed between adjacent holding plates 23, alternate rigid spacer elements 29 and springs 28 are utilized so that each hammer 26 contacts at least one spring 28.

In the modification illustrated in Figure 4, the rigid collars 29 and the springs 28 are replaced by a plurality of leaf-type spring elements 30. The elements 30 comprise a central web portion 31 and outturned terminal ears 32 joined by the web 31 and apertured to receive the shaft 25 therethrough. Preferably, the entire element 30 is formed of resilient spring steel or the like, although it is possible to form either the ears 32 or the web 31 from resilient material with the remaining portions of the elements being formed of rigid material.

It will be appreciated that the elements 30 serve a dual function, namely to space the hammers from adjacent hammers or from an adjacent plate 23, and to resiliently accommodate lateral deflection of the hammers 26, as illustrated in Figure 4, with each of the elements 30 contacting a given hammer being deflectable as illustrated. Thus, the hammers 26 being confined between the ears 32 of adjacent elements 30 are free for lateral deflection with the resilient spacers serving to urge the hammers to, and to retain the same in, a central truly radial position.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claim.

I claim:

A hammer assembly for a stalk shredder having a rotatable axle, comprising a pair of axially spaced supporting elements rotatable with said axle, a shaft carried by said elements for rotation about the axis of said axle, a plurality of spaced hammers respectively having enlarged apertures through which said shaft freely extends, and hammer spacing ears having medial apertures, respectively, receiving said shaft therethrough, each of said hammers being snugly interposed between a pair of said ears and in extended surface contact with both of said ears, said ears being inherently resilient and normally extending radially of said shaft to retain said hammers in radial planes, said ears being resiliently deformable to accommodate hammer deflection and to return said hammers to said radial planes.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,505,089	Bailey et al.	Apr. 25, 1950
2,506,054	Agee et al.	May 2, 1950