C. E. BRAY.

DISK SHARPENER.

APPLICATION FILED AUG. 25, 1919.

1,343,342. **Patented June 15, 1920.**

Fig. 1.

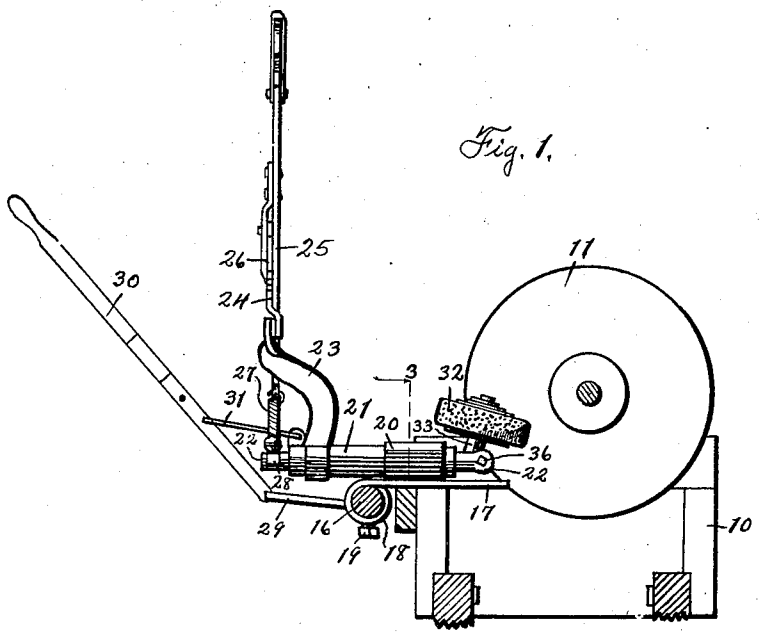


Fig. 2.

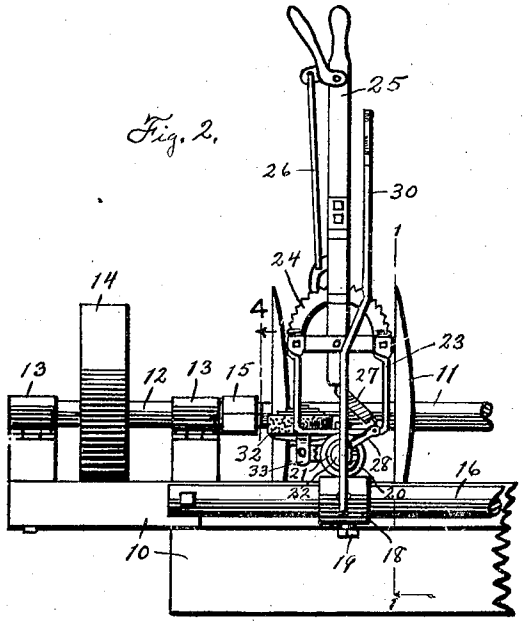


Fig. 3.

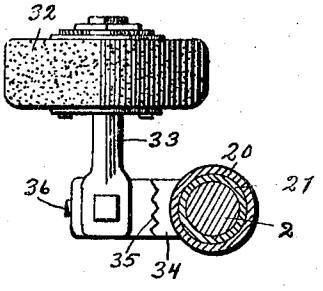
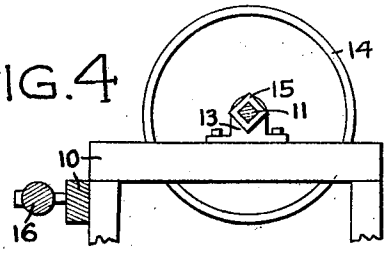


FIG. 4



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DISK-SHARPENER.

1,343,342. Specification of Letters Patent. Patented June 15, 1920.

Application filed August 25, 1919. Serial No. 319,767.

To all whom it may concern:

Be it known that I, CHARLES E. BRAY, a citizen of the United States of America, and resident of Monroe, Jasper county, Iowa, have invented a new and useful Disk-Sharpener, of which the following is a specification.

The object of this invention is to provide an improved construction for machines for grinding disks of disk harrows.

A further object of this invention is to provide improved means for adjusting the grinding wheel relative to a disk to be ground.

A further object of this invention is to provide an improved disk grinder or sharpener which shall be easy to operate and control and which shall be capable of rapid work, not only in the actual grinding of disks but in the positioning of the grinding wheel relative to successive disks to be ground.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a cross-section on the line 1—1 of Fig. 2, illustrating my improved grinding devices in side elevation and in position for practical use. Fig. 2 is an elevation at right angles to the showing of Fig. 1, a portion only of the support and disk gang mounted thereon being shown. Fig. 3 is a cross-section on the indicated line 3 of Fig. 1, on an enlarged scale. Fig. 4 is a detail cross-section on the line 4 of Fig. 2.

In the construction of the device as shown the numeral 10 designates a supporting frame such as is commonly employed to carry disk gangs, such at 11, in the operation and process of grinding the disks thereof. A shaft 12 is journaled at one end of the frame 10 in bearings 13 and a belt pulley 14 is fixed to said shaft and adapted to be connected to any suitable power device (not shown). At the inner end of the shaft 12 is a socket 15 adapted to receive an angular end portion of the axle or shaft of the disk gang 11, so that said gang may be rotated when power is applied to the shaft 12.

A rod or pipe 16 is carried by and longitudinally of the frame 10 and is arranged at one side thereof and parallel with, below and to one side of the disk gang when mounted on said frame. A base plate 17 is formed with a slide bearing 18 slidably engaging the rod 16, so that said plate and the devices carried thereby may be moved longitudinally of said rod and of the frame. The major portion of the base plate, when the device is in position for operation, projects toward the disk gang 11 and rests upon the frame 10. A set screw 19 is mounted in the bearing 18 and adapted to be set upon the rod 16, to hold the plate and device in adjusted position. An elongated bearing 20 is mounted on and fixed to the base plate 17 and a tubular member 21 is slidably mounted in said bearing, the bores of said bearing and tubular member being arranged transversely relative to the frame 10. A rod or shaft 22 is mounted for rotary oscillation in the tubular member 21 and projects at both ends therefrom. A yoke-shaped bracket 23 is mounted on and fixed to the outer end portion of the tubular member 21 and a toothed segment 24 is fixed to the upper end of said bracket. An adjustment lever 25 is fulcrumed intermediate of its ends on the lower portion of the segment 24 and is provided with the usual detent devices 26 for engaging said segment and holding it in any position in which it may be placed manually. The lower end of the lever 25 is yieldingly connected by a relatively stiff coil spring 27 to an arm 28 fixed to the projecting outer end of the rod or shaft 22. Thus provision is made for rocking the shaft or rod 22 in the tubular member 21, through oscillation of the adjusting lever 25, the spring 27 permitting said shaft to yield at times irrespective of any movement of said lever.

An arm 29 is fixed to and extends outwardly from the bearing 18 of the base plate 17 and a shifting lever 30 is fulcrumed at its lower end on said arm. The lever 30 is pivotally connected intermediate of its ends to the outer end portion of the tubular member 21 by means of a link 31. Oscillation of the shifting lever 30 accomplishes a sliding movement in the bearing 20 of the tubular member 21 and the devices carried thereby, including the rod or shaft 22 and the adjusting lever 25 and connections.

The grinding wheel, such as 32, is suitably carried by the inner end portion of the rod or shaft 22. I have shown the wheel 32 as freely mounted for rotation on a spindle 32 secured to an arm 34 projecting laterally

from the inner end portion of the rod or shaft 22. If desired the arm 34 may be formed in two parts with interengaging teeth 35 on their meeting ends, in order to provide a means for adjusting the position of the spindle 33 relative to the vertical; or any other suitable means for this purpose may be employed. The arm 34, and the separate parts thereof, are firmly held in position by a bolt 36 extending therethrough and through the inner end of the rod 22, which is flattened to receive said bolt.

In practical use a disk gang to be sharpened is mounted on the frame as shown and described and power is applied to rotate the shaft 12 and said gang. The grinding device is positioned on the frame in such manner that the grinding wheel 32 contacts at its periphery with the cutting edge of one of the disks of the gang, and said wheel is rotated by reason of such contact and acts to grind, abrade and sharpen such cutting edge to the desired extent. The plate 17 and members carried thereby is moved lengthwise of the rod 16 from time to time to sharpen successive disks, and is set in position by means of the set screw 19. The base plate 17 and members carried thereby may be oscillated on the rod 16 when the screw 17 is loosened, so that the inner end of said plate may be raised to permit the same, and the wheel 32, to clear the disks and permit the longitudinal sliding movement of the device. When the base plate has been positioned and set relative to a disk to be sharpened the shifting lever 30 is manipulated to shift the tubular member, rod or shaft 22 and grinding wheel in the bearing 20, to adjust the grinding wheel toward or away from the disk on a line at right angles to the axis of the disk gang. Then the adjusting lever 25 is manipulated to oscillate the shaft or rod 22 in the tubular member and to adjust the wheel 32 toward the disk on a line parallel with the axis of the disk gang, and in such manner that said wheel contacts the convex surface of the disk and operates to grind and bevel the edge thereof as it is turned against said wheel, which also turns with the disk. At any time the arm 34 may be adjusted torsionally to adjust the position of the spindle 33, so that said spindle may be vertical or inclined the desired degree therefrom.

By the means described the grinding wheel may be quickly and easily adjusted for the work and when so adjusted the operation of grinding requires little attention or effort on the part of the operator.

I claim as my invention—

1. A disk sharpener, comprising a plate, a bearing thereon, a tubular member mounted for reciprocation in said bearing, a shaft mounted for rotary oscillation in said tubular member, a grinding device carried by one end portion of said shaft, and lever controlled means at the opposite end of said shaft for rocking the same in its bearing.

2. A disk sharpener, comprising a plate, a bearing thereon, a tubular member mounted for reciprocation in said bearing, a shaft mounted for rotary oscillation in said tubular member, a grinding device carried by one end portion of said shaft, a lever fulcrumed at the opposite end of said tubular member, and yielding connections between said lever and the shaft.

3. A disk sharpener, comprising a base plate, a bearing thereon, a tubular member mounted for reciprocation in said bearing, a shaft mounted for rotary oscillation in said tubular member, a grinding device carried by said shaft, a bracket carried by the opposite end of said tubular member, a lever fulcrumed on said bracket and connected to said shaft, and a lever fulcrumed on said plate and connected to said tubular member, the axes of oscillation of said levers being substantially at right angles to one another.

4. A disk sharpener, comprising a plate, a bearing thereon, a tubular member mounted for reciprocation in said bearing, a shaft mounted for rotary oscillation in said tubular member, an arm fixed to the inner end of said shaft and projecting laterally, a spindle carried by said arm, a grinding wheel mounted for rotation on said spindle, a lever for reciprocating said tubular member, and a lever for rocking said shaft.

5. A disk sharpener, comprising a plate, a bearing thereon, a tubular member mounted for reciprocation in said bearing, a shaft mounted for rotary oscillation in said tubular member, an arm projecting laterally from said shaft, a spindle projecting upwardly from said arm, a grinding wheel rotatably mounted on said spindle, means for adjusting the inclination of said spindle, and lever devices for rocking said shaft.

Signed at Monroe, in the county of Jasper and State of Iowa, this 15th day of August, 1919.

CHARLES E. BRAY.