May 20, 1952 C. R. HODGES 2,597,325

CULTIVATOR DISK SHARPENER

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Fig. 1.

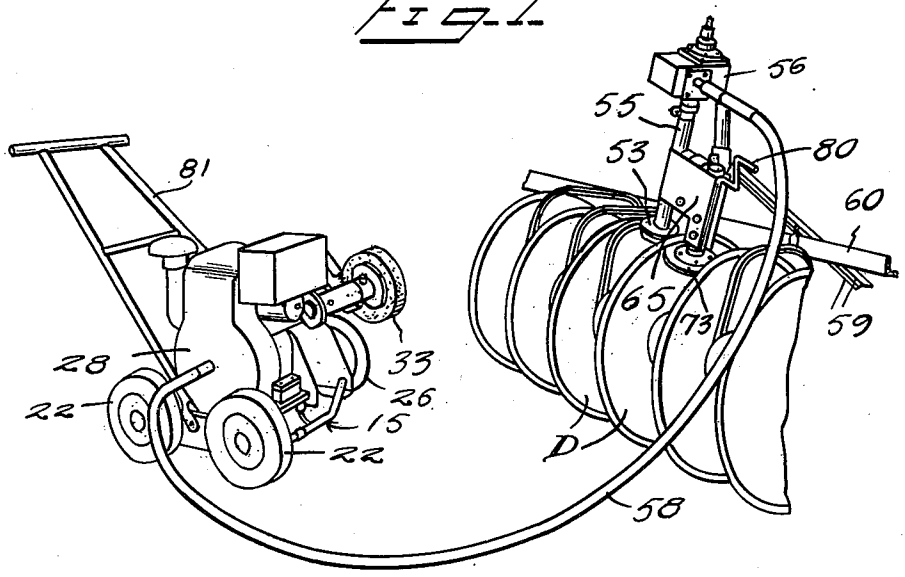
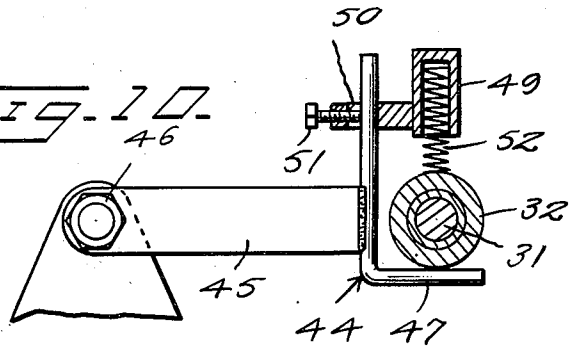


Fig. 10.



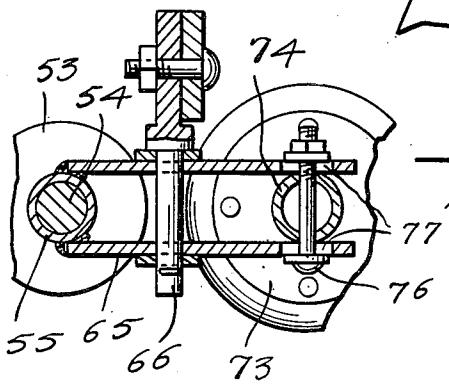


Fig. 11.

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Fig. 2

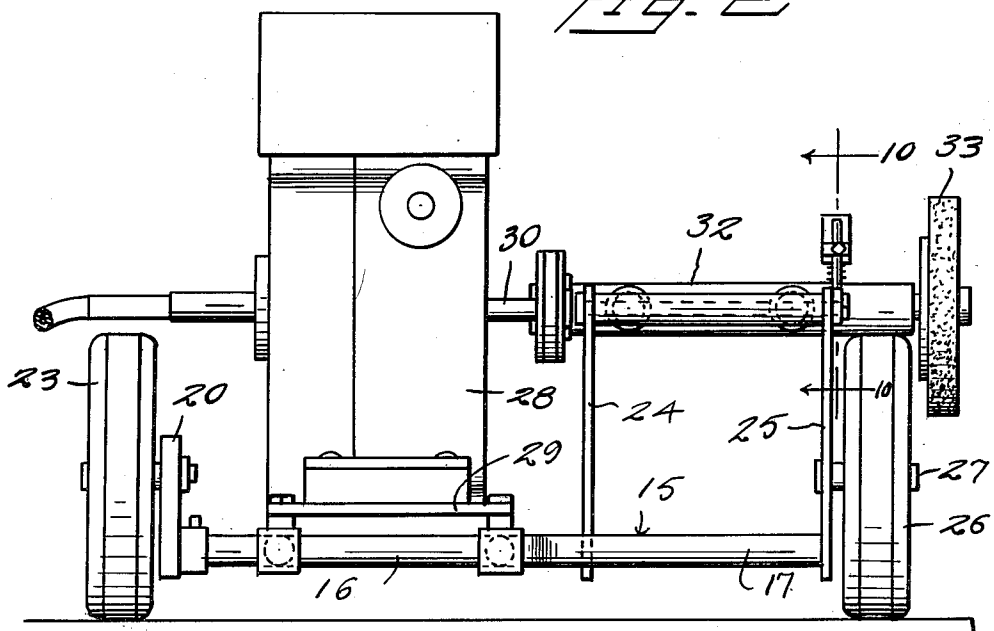
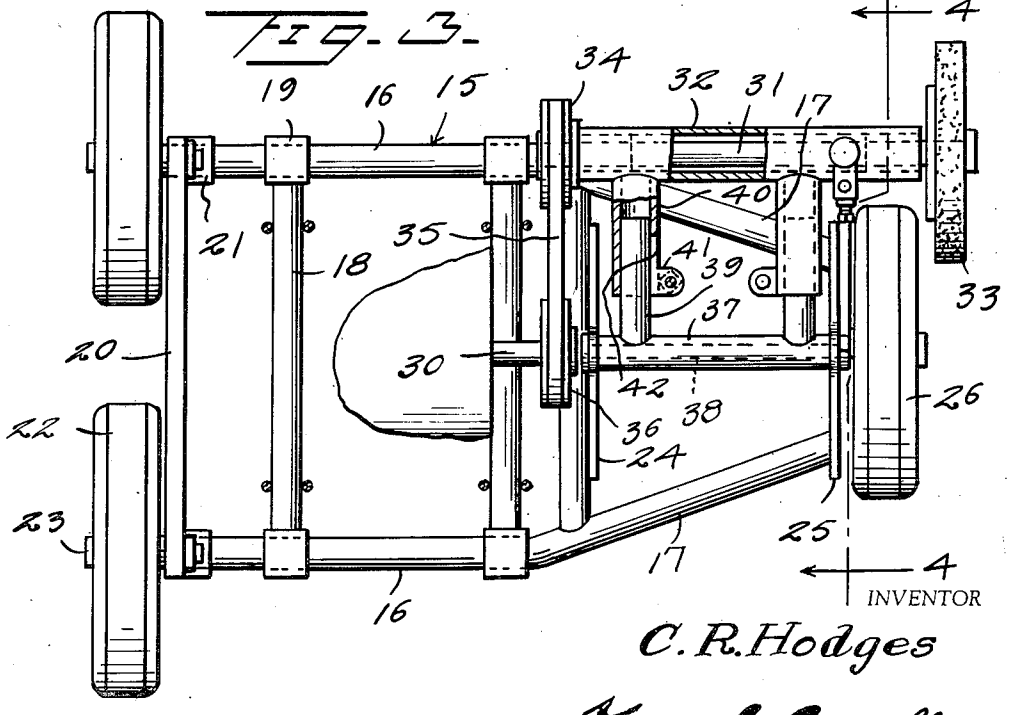


Fig. 3



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Fig. 4.

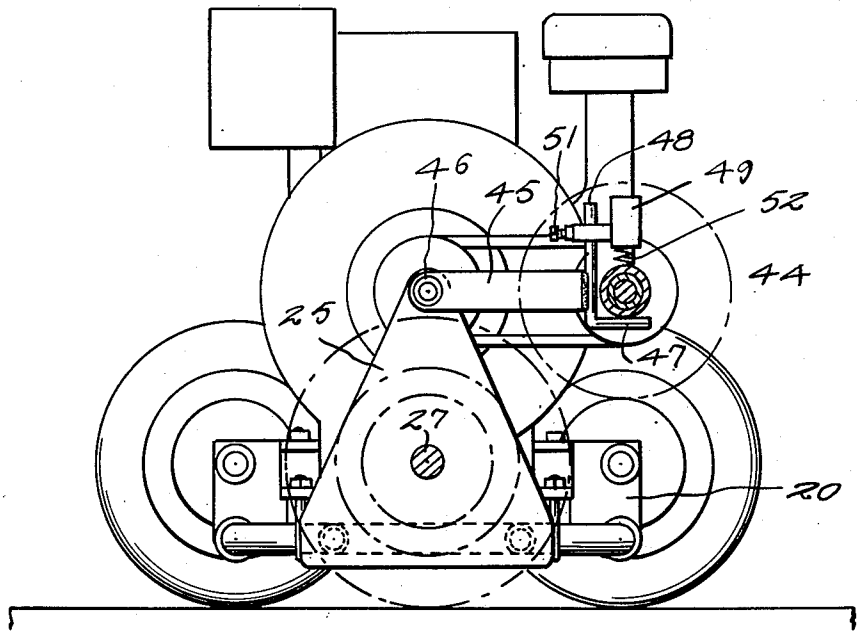


Fig. 5.

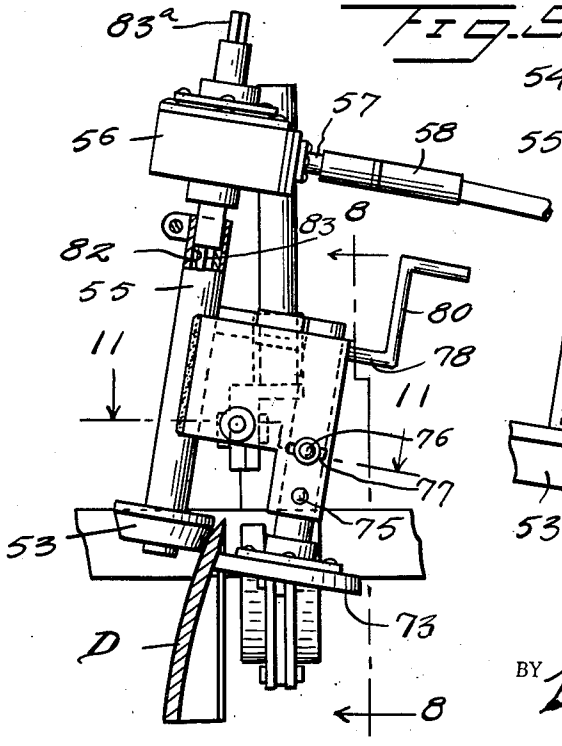
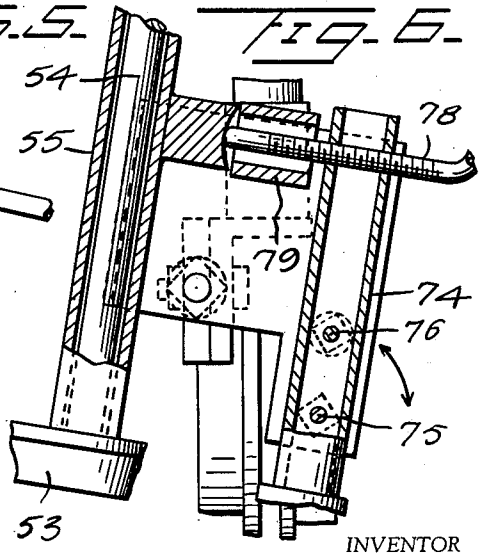


Fig. 6.



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Fig. 7.

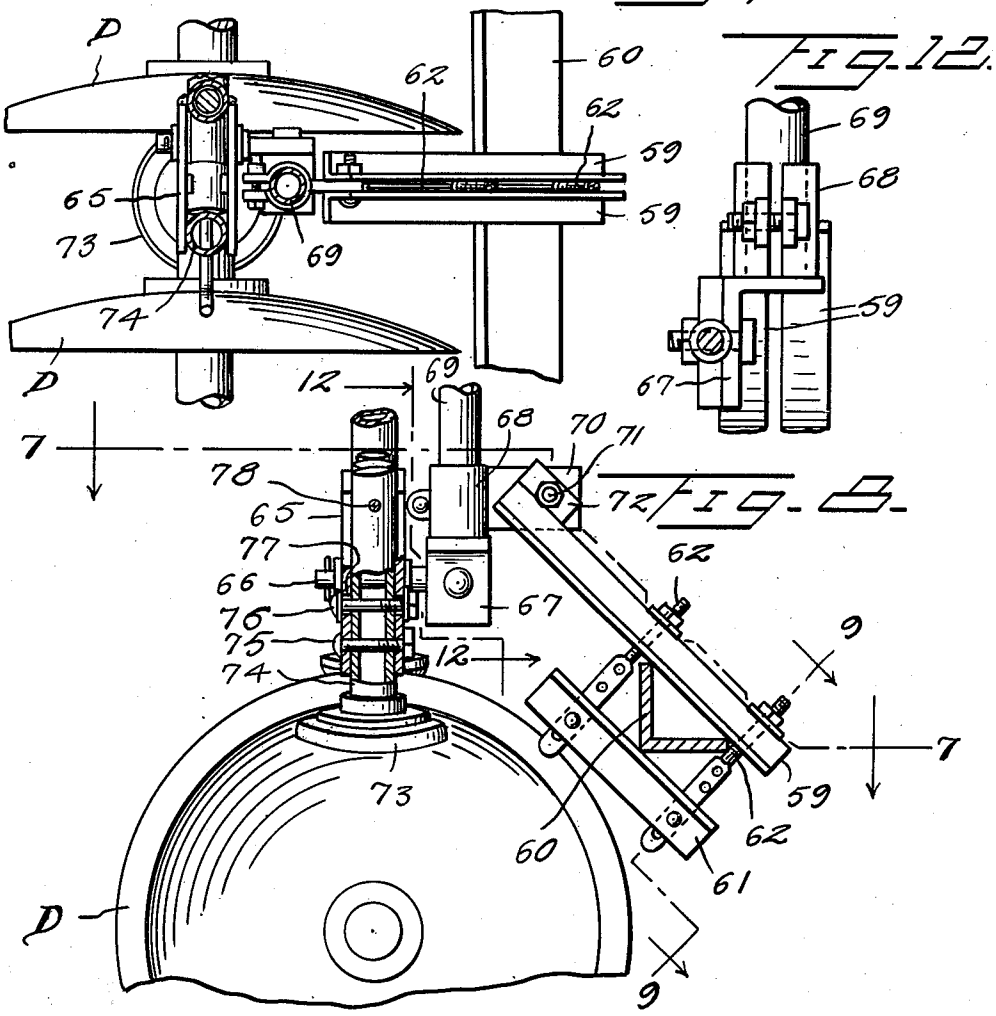
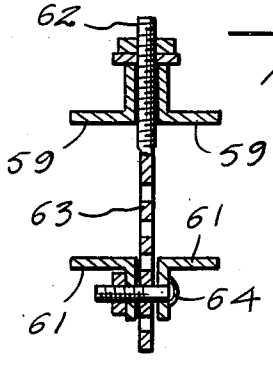


Fig. 12.

Fig. 8.

Fig. 9.



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CULTIVATOR DISK SHARPENER

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Application September 25, 1950, Serial No. 186,598

5 Claims. (Cl. 51—104)

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This invention relates to a portable sharpener for cultivator discs.

An object of this invention is to provide a sharpener for cultivator discs which is capable of grinding the discs without removing the discs from the cultivator.

Another object of this invention is to provide a sharpener which includes means for rotating the discs as they are being ground.

A further object of this invention is to provide an improved means for removably attaching the disc rotating means to the cultivator frame.

A further object of this invention is to provide an improved grinding device wherein the abrading wheel is carried by an adjustable mounting which is capable of swingable adjustment through a large arc.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a perspective view of a disc sharpener constructed according to an embodiment of this invention.

Figure 2 is a detailed front elevation of the portable grinder or sharpener.

Figure 3 is a plan view partly broken away and in section of the grinder.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a fragmentary side elevation of the disc rotating means.

Figure 6 is a fragmentary vertical section of the disc rotating means.

Figure 7 is a fragmentary sectional view taken on the line 7—7 of Figure 8.

Figure 8 is a fragmentary sectional view taken on the line 8—8 of Figure 5.

Figure 9 is a fragmentary sectional view taken on the line 9—9 of Figure 8.

Figure 10 is a fragmentary sectional view taken on the line 10—10 of Figure 2.

Figure 11 is a fragmentary sectional view taken on the line 11—11 of Figure 5.

Figure 12 is a fragmentary sectional view taken on the line 12—12 of Figure 8.

Referring to the drawings the numeral 15 designates generally a frame structure formed of a pair of tubular frame members 16 which are provided with forwardly convergent frame portions 17. The frame members 16 are connected together by means of a pair of tubular connecting bars 18 having bushings or sleeves 19 engaging

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about the bars or frame members 16. A plate 20 extends between the frame bars 16 at one end thereof and is formed with sockets 21 within which the adjacent ends of the bars 16 are firmly secured.

A pair of traction wheels 22 are rotatably carried on spindles 23 which are carried by plate 21. A pair of vertically disposed triangularly shaped plates 24 and 25 are fixed between the divergent bars 17, and a wheel 26 is rotatably mounted on a spindle 27 carried by the outer plate 25. A motor or power member 28 is carried by a platform or plate 29 which is secured to the connecting bars 18, and the power member 28 includes a shaft 30 projecting from the opposite ends thereof. In the present instance the power member 28 is an internal combustion engine, and the shaft 30 is the crankshaft of the engine.

A grinder shaft 31 is rotatably disposed in a bearing 32, and one end of the grinder shaft 31 has an abrading wheel 33 secured thereon, while the other end of the shaft 31 has a pulley 34 secured thereto about which a belt 35 engages. The belt 35 also engages about a pulley 36 which is secured to one end of the power shaft 30.

A tubular member 37 is disposed between the upper ends of the plates 24 and 25, and a bolt 38 extends through the tubular member 37 and through the plates 24 and 25 so that the tubular member 37 may be loosely secured between the plates 24 and 25. The tubular member 37 has secured thereto a pair of laterally extending members 39 and a pair of right angularly disposed tubular members 40 are secured to the bearing 32 and telescope over the supporting members 39. The telescoping members 40 are lengthwise split for a portion of the length thereof, and ears 41 project from the telescoping members 40 on opposite sides of the slit 42. A clamping bolt 43 is extended through each pair of ears 41 so that the telescoping members 40 may be firmly secured in endwise adjusted position in order to hold the belt 35 taut. The tubular member 37 with the lateral extensions 39 and the bearing 32 with the lateral extensions 40 provide a swingable and adjustable mounting for the grinder shaft 31.

The tubular member 37 is coaxial with the crankshaft 30 so that the grinder shaft supporting means may be adjusted through a relatively large arc. The bearing 32 is held in adjusted position about the axis of the bolt 38 by means of an L-shaped member 44 which is fixed to a bar 45. The inner end of the bar 45 has the bolt 38 extending therethrough, and tightening

of the nut 46 on one end of the bolt 38 will hold the bar 45 in angularly adjusted position.

The lower side 47 of the L-shaped member 44 engages beneath the bearing 32, and the vertical side 48 of the L-shaped member 44 has adjustably secured thereto a socket member 49. The socket member 49 includes a lug 50 through which the vertical side 48 engages, and a set screw 51 is threaded into the lug 50 and engages the vertical side 48 so that the lug and socket may be fixed in adjusted position.

A spring 52 at its lower end bears against the bearing 32 and at its opposite end projects into the socket 49. Vertical adjustment of the socket 49 will provide for tensioning of the spring 52. In this manner the shaft bearing will be cushioned so that the grinder wheel 33 may have slight movement in the rotation thereof.

The abrading wheel 33 is adapted to engage on one side of a cultivator disc D, and the disc D is rotated during the grinding action by means of a driving wheel 53 which is carried by a shaft 54. The shaft 54 extends rotatably through a bearing sleeve 55 which projects downwardly from a gear reduction member 56 of conventional construction. The driving wheel 53 is of the friction type and is adapted to bear against one face of the disc D.

The reduction gearing 56 includes a shaft 57 with which a flexible shaft 58 is connected. The flexible shaft 58 is connected at the opposite end thereof to the opposite end of the crankshaft 30 so that operation of the power member 28 will provide for rotation of the abrading wheel 33 and also simultaneous rotation of the disc rotating member 53.

The reduction gearing 56 with the bearing sleeve 55 and the driving wheel 53 are supported in operative position with respect to the disc D by means of a supporting bar 59 which is clamped to a cultivator frame bar 60 by means of a clamping bar 61. The clamping bar 61 is held in clamping position by means of a pair of bolts 62 which are extended between the two supporting bars 59. There are two of the clamping bars 61 as shown in Figure 9 with two of the supporting bars 59. Each bolt 60 includes an apertured flat lower portion 63 which engages between the clamping bars 61, and a bolt 64 is extended through the bars 61 and a selected aperture in the flat portion 63 of each bolt 62.

The bearing sleeve 55 has fixed thereto a pair of parallel plates 65, and a stud 66 engages through the two plates 65. The stud 66 is carried by a block 67 having a socket 68 at its upper end within which a handle or bar 69 is secured and a lug or plate 70 projects from the socket 68 and engages between the two supporting bars 59. A clamping bolt 71 engages through a pair of upwardly projecting projections 72 which are fixed to each supporting bar 59 so that the lug 70 may be tightly clamped with respect to the supporting bars 59. The stud 66 provides a means whereby the bearing sleeve 55 may be adjusted about one axis, and the bolt 71 provides a means whereby the bearing sleeve 55 may be adjusted about a right angularly disposed axis.

The friction wheel 53 is operatively held against one face of the disc D by means of a pressure wheel or roller 73 which is rotatably carried by the lower end of a roller supporting tube 74. The supporting tube 74 engages between the two plates 65 and is rockably mounted on a lower bolt 75. An upper bolt 76 also extends through the

two plates 65 and through a pair of arcuate slots 77 formed in the two plates 65. The pressure wheel 73 is adjusted toward or away from the opposite side of the disc D by means of a threaded shaft 78 which is threaded through the upper portion of the tube 74 and is swivelly mounted in a body 79 positioned between the two plates 65. The screw shaft 78 includes a crank 80 by means of which the tubular member 79 may be rockably adjusted about the pivot member 75.

In the use and operation of this device the disc cultivator is disposed with the discs D raised above the ground so that the discs may be freely rotated. The driving friction wheel 53 is supported from the frame bar 60 by the supporting bars 59, and after initial adjustment of the driving wheel 53 the idler or pressure wheel 73 may be adjusted toward the opposite face of the disc D by turning of the screw shaft 78.

The frame structure 15 has a pair of handles 81 projecting upwardly and rearwardly therefrom so that the power member 28 may be adjusted toward or away from the implement. The grinding wheel 33 is moved with the power member 28 toward one side of a disc D in a position whereby the grinding wheel 33 will contact with the disc. The spring pressure from spring 50 on the wheel carrier will permit satisfactory grinding of discs which are bent or not true, as the carrier may have relative movement.

The operation of the power member 28 will provide for the grinding of one side of the disc while the disc rotating member 53 will effect rotation of the disc which is being ground through the medium of the flexible shaft 58.

The friction wheel shaft 54 is formed with a polygonal socket 82 in its upper end for receiving the end 83 of a polygonal shaft extending from the reduction gearing 56. Reversal of the gearing to dispose end 83a in socket 82 will effect reverse rotation of shaft 54 so that the discs on either side of a large machine may be rotated in the desired direction.

This device will provide an effective means whereby the discs of a cultivator may be easily and quickly sharpened without removing the discs from the cultivator. When one face of the disc has been ground the opposite face of the disc at the outer margin thereof may also be ground so as to provide for the desired keen edge on the margin of the disc.

What is claimed is:

1. A sharpener for rotatably supported cultivator discs carried by a cultivator frame comprising a mobile frame, a power member on said mobile frame, a grinding wheel, means rotatably and swingably supporting said wheel on said mobile frame, a disc rotating wheel, means supporting said disc rotating wheel from the cultivator frame, a flexible driving connection between said power member and said disc rotating wheel, a pressure wheel engageable with a disc on the side thereof opposite from said disc rotating wheel, and means adjustably supporting said pressure wheel.

2. A sharpener for rotatably supported cultivator discs carried by a cultivator frame comprising a mobile frame, a power member on said mobile frame, a grinding wheel carrier, means swingably securing said carrier on said mobile frame, a grinding wheel carried by said carrier, a driving connection between said power member and said grinding wheel, means holding said carrier in adjusted position, a disc rotating means, means

supporting said disc rotating means from the cultivator frame, and a flexible driving connection between said power member and said disc rotating means.

3. A disc sharpener for cultivator discs which are rotatably supported on a cultivator frame comprising a mobile frame, a power member on said mobile frame, a pair of upstanding plates fixed to said mobile frame, a carrier rockably disposed between said plates, a grinding wheel rotatably carried by said carrier, an operative connection between said power member and said grinding wheel, means adjustably holding said carrier, a disc rotating member, supporting means for said disc rotating member, clamping means for securing said supporting means on the cultivator frame with said disc rotating wheel engaging a disc, and a flexible connection between said power member and said disc rotating member.

4. A disc sharpener for cultivator discs which are rotatably supported on a cultivator frame comprising a mobile frame, a power member on said mobile frame, a pair of upstanding plates fixed to said mobile frame, a carrier rockably disposed between said plates, a grinding wheel rotatably carried by said carrier, an operative connection between said power member and said grinding wheel, means adjustably holding said carrier, a disc rotating member, supporting means for said disc rotating member, clamping

means for securing said supporting means on the cultivator frame with said disc rotating wheel engaging a disc, a flexible connection between said power member and said disc rotating member, and a pressure wheel rotatably carried by said supporting means confronting said disc rotating member for holding the latter in operative engagement with the disc.

5. A disc sharpener for cultivator discs which are rotatably supported on a cultivator frame comprising a disc rotating wheel, a supporting member for said wheel, means clamping said supporting member on said cultivator frame, a mobile frame, a power member on said mobile frame, a flexible driving connection between said power member and said disc rotating wheel, a grinding wheel rotatably carried by said mobile frame, and an operative connection between said grinding wheel and said power member.

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