April 24, 1956 F. T. BARRETT 2,742,742

DISK SHARPENING MACHINE

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Fig. 1

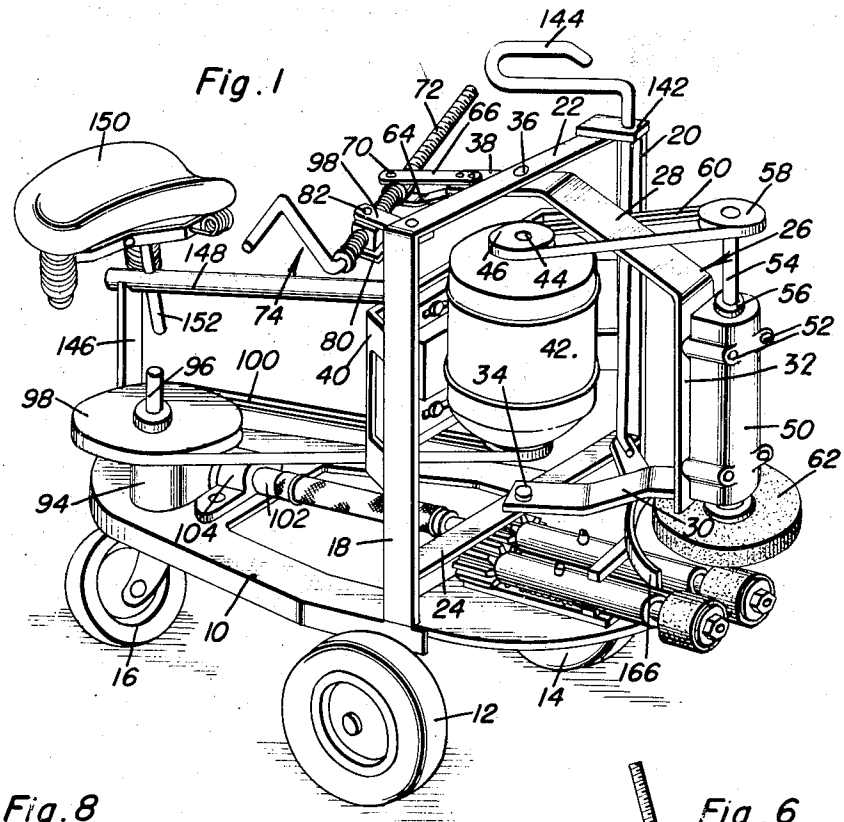


Fig. 8

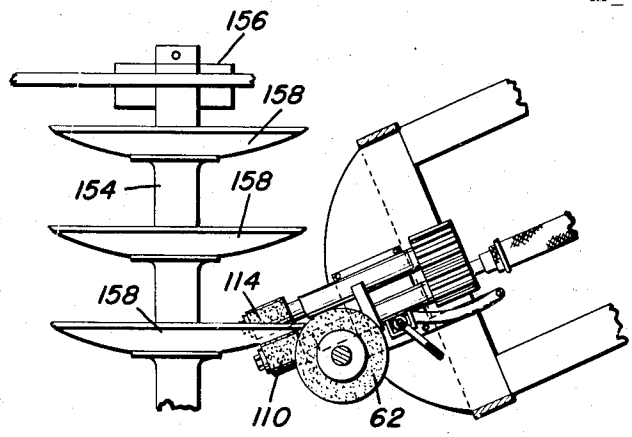


Fig. 7

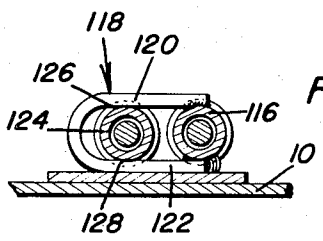
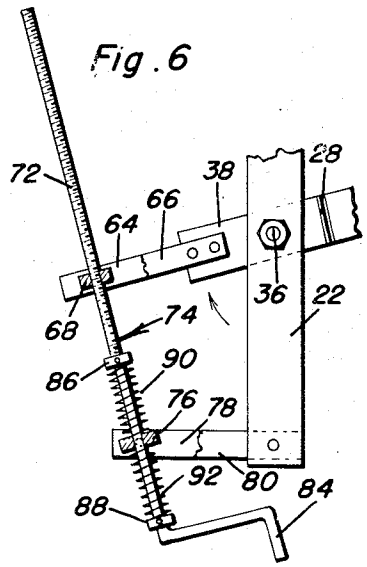


Fig. 6



Francis T. Barrett
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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DISK SHARPENING MACHINE

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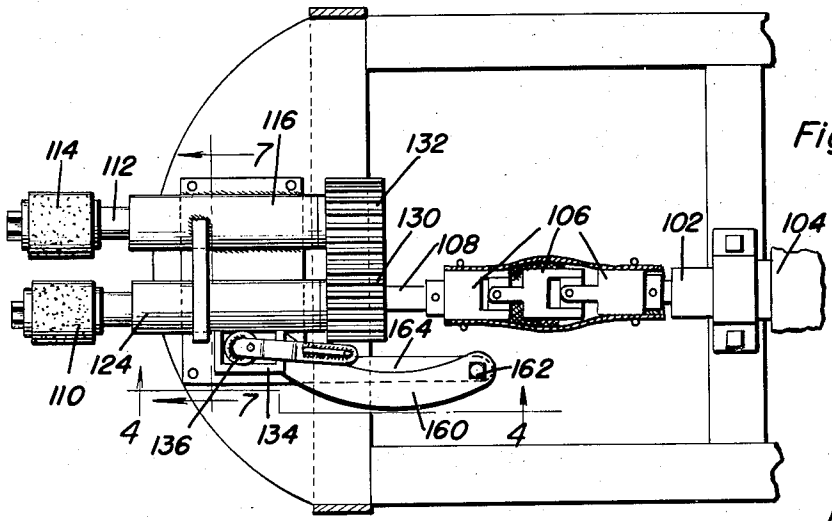


Fig. 3

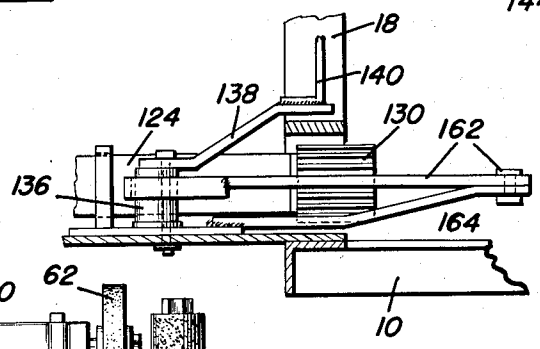


Fig. 4

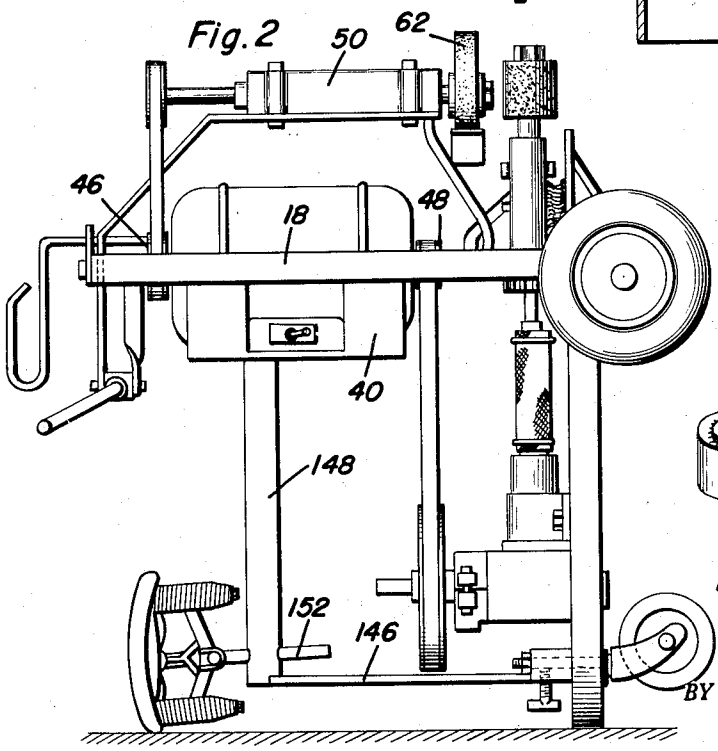


Fig. 2

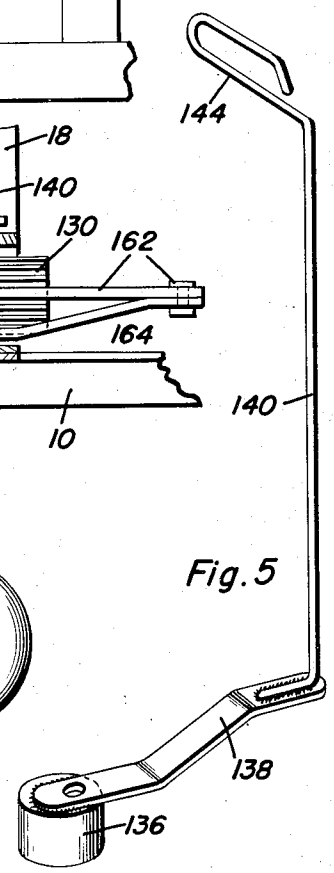


Fig. 5

Francis T. Barrett
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jackson
Attorneys

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DISK SHARPENING MACHINE

Francis T. Barrett, Pocahontas, Iowa

Application May 13, 1954, Serial No. 429,529

4 Claims. (Cl. 51—173)

This invention relates to tool sharpeners, and has for its primary object the provision of a mobile machine for sharpening the disks of disk harrows and the like which will perform its functions in the most expeditious manner.

Another object of this invention is to provide an improved sharpening machine which contemplates the sharpening of disks of disk harrows and like machines without the removal of the disks from the harrow.

Still another object of this invention is to provide an improved disk sharpener wherein its component parts are efficiently arranged for most effectively sharpening disks, the mechanism including means for engaging and rotating disks and a grinding wheel cooperable therewith for effecting the sharpening of the disks.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout and in which:

Figure 1 is a perspective view of the improved disk sharpening machine;

Figure 2 is a side elevational view of the machine showing the same in vertical position for use as a common grinding wheel;

Figure 3 is a horizontal section showing the forward end of the machine;

Figure 4 is a longitudinal vertical section taken substantially along the plane of section line 4—4 in Figure 3;

Figure 5 is a perspective view of the roller operating mechanism;

Figure 6 is a partial plan view of the wheel adjusting mechanism;

Figure 7 is a transverse vertical section taken substantially along the plane of section line 7—7 in Figure 3; and

Figure 8 is a horizontal sectional view showing the machine in operation.

Referring now more particularly to the drawings, the machine will be seen to consist generally of a base portion 10 which is preferably of plate-like configuration, slightly elongated, which has a pair of wheels 12 and 14 journaled at its forward end and a rear caster wheel 16 carried at its rearward end for movably supporting the frame assembly. The frame further includes a pair of upright members 18 and 20 secured at opposite sides of the base 10 adjacent the forward end thereof, and an upper cross-piece 22 interconnects the upper ends of these uprights and a further or lower cross-piece 24 extends between and is secured to the uprights adjacent their lower end and in spaced relation to the base portion 10.

A generally U-shaped bracket assembly indicated generally by the reference character 26 is secured between the upper and lower cross-members, and it will be seen that this bracket includes a pair of spaced leg members 28 and 30 interconnected by a bight portion 32. The bracket is disposed in a vertical plane, and a pair of pivot pin members 34 and 36 carried by these lower and upper cross-members, respectively, project through the legs 28 and 30 and pivotally secure the bracket to the frame assembly. The pins 34 and 36 are disposed in vertical alignment, and it is to be noted that one of the legs 28 is slightly longer than the other leg 30 such that its rear end portion 38 projects rearwardly of the upper frame member 22, the purpose of this construction being presently apparent.

A support member 40 of any desired configuration extends between the uprights 18 and 20, and to this supporting member is secured an electric motor 42 in such a manner that the drive shaft 44 of the motor is disposed vertically and in alignment with the pins 34 and 36. The upper end of the drive shaft has secured thereto a pulley 46 and a similar pulley 48 is secured to the lower end of the drive shaft.

An elongated, vertically disposed bearing member 50 is secured, as by suitable fasteners 52, to the bight portion 32 of the bracket 26 and a vertical shaft 54 is journaled in this bearing member, suitable thrust collars 56 being provided on the shaft to prevent longitudinal shifting thereof, and it is to be noted that the upper end of this shaft carries a pulley 58 which cooperates with the pulley 46 by means of the endless belt member 60 such as to impart rotation to the shaft 54 in response to rotation of the motor 42. The lower end of the shaft 54 is provided with a grinding wheel 62 whose manner of operation will be presently apparent.

As seen most clearly in Figure 6 the rearward end 38 of the leg 28 is provided with a pair of vertically spaced extension straps 64 and 66 which pivotally carry therebetween a nut member 68, suitable trunnions 70 being provided for this purpose, and the threaded portion 72 of a crank member 74 is received in this nut. A guide washer or collar 76 is trunnioned between a pair of strap members 78 and 80, the trunnion being indicated by reference numeral 82 and the crank 74 projects through this washer to terminate in a laterally offset hand portion 84. A pair of stop collars 86 and 88 are rigidly secured at spaced points on the crank 74, and suitable compression spring members 90 and 92 are disposed between these stop collars and the washers 76 to effect a shock absorbing mounting of the bracket 26. Of course, operation of the crank 74 will effect traversing of the bracket 26 back and forth about the vertical axis containing the pivot pins 34 and 36.

Adjacent the rear portion of the base 10 is a gear box 94 having a vertical stub shaft 96 projecting upwardly therefrom to which is connected a pulley member 98 which cooperates with the previously mentioned pulley 48 and an endless flexible belt 100 for imparting rotation to the shaft 96 as the motor 42 is operated. Suitable gearing within the box 94 (not shown) effects rotation of the shaft 102 which extends longitudinally of the base 10 and is journaled in the pillow block assembly 104. As seen most clearly in Figure 3, this shaft 102 is connected by means of a plurality of universal joint members 106 to a shaft 108 which projects beyond the forward end of the machine and is provided thereat with a resilient roller member 110 in the manner shown. A further shaft 112 is disposed substantially parallel to the shaft 108, and this shaft carries a further roller 114 cooperable with the roller 110 in a manner presently set forth.

A tubular bearing member 116 is rigidly affixed to the forward end of the base 10 and this member journals the shaft 112 therein. As seen most clearly in Figure 7, a U-shaped guide member 118 has the free ends of its legs 120 and 122 secured in straddling relation to the bearing member 116 and a further tubular bearing member 124 is slidably disposed between these leg members in the manner shown. To prevent longitudinal shifting of the bearing member 124 with respect to the fixed bearing member

116, the member 124 is provided with diametrically opposed notches 126 and 128 receiving the legs 120 and 122 respectively.

The shaft 108 is provided with a gear 130 which meshes with the corresponding gear 132 on shaft 112 such that these shafts are rotated in opposite directions. For the purpose of shifting the bearing member 124 with respect to the member 116, the former is provided with a U-shaped abutment member 134 and a cylindrical block 136 is disposed between this abutment member and the bearing 124. An arm 138 connected to the block 136 is in turn connected to a vertically disposed eccentric crank member 140 which is pivotally received in a strap 142 on the upper cross-frame member 22 such that when the handle portion 144 of this crank is rotated, the member 124 will be shifted toward and away from the member 116.

The frame assembly is completed by a rear upright member 146 and a longitudinally extending horizontal frame member 148 which extends between the upper end of the upright 146 and the rear face of the supporting member 40 in the manner shown. A suitable operator's seat 150 is swivelly carried by the member 148 by means of a vertical post 152.

In operation, attention is directed most particularly to Figure 8, wherein it will be seen that the shaft 154 of a disk harrow or the like is elevated by suitable blocks 156 or the like such that the disks 158 are disposed out of contact with the ground surface.

The sharpening machine is moved into position in the field or wherever the disk assembly to be sharpened happens to be, and the rollers 110 and 114 are spread apart to receive therebetween one of the disks 158 and are thereafter frictionally engaged on opposite sides thereof such that rotation of the shafts 112 and 108 will effect rotation of the disk 158 about its shaft 154. The grinding wheel 62 is then moved into position into contact with the edge of the corresponding disk 158 by manipulating the mechanism 74. The wheels 12 and 14 may be chocked to prevent the machine from backing away from the disks 158 during grinding of said disks. When it is desired to use the machine as a simple grinding wheel, the seat 150 is pivoted about its swivel 152, and the machine upended in the position shown most clearly in Figure 2, wherein the grinding wheel 62 will be disposed in a normal vertical position for ordinary grinding work.

It is to be noted that an idler arm 160 is connected to the abutment member 134 and is pivotally connected, as at 162 to a suitable strap 164 on the frame such as to constrain the motion of the member 124 when it is manipulated towards and away from the member 116. Further, a guard 166 may be provided on the bracket leg 30 in partially encompassing relation to the grinding wheel 62.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A disk sharpening machine comprising a frame having a horizontal base portion, a plurality of wheels movably supporting said base portion, a pair of uprights secured at opposte sides of said base portion adjacent one end thereof, a cross-member interconnecting the upper ends of said uprights, a generally U-shaped bracket, said bracket including spaced legs interconnected by a bight, a lower cross-member extending between said uprights in spaced relation to said base portion, a pair of vertically aligned pins carried by said cross-members and pivotally connecting the free ends of said legs thereto, a bearing member secured to the bight of said bracket, a vertical shaft journaled in said bearing member, a motor secured between said uprights having its drive shaft disposed vertically and in alignment with said pins, means connecting said drive shaft and the first mentioned shaft for imparting drive to the latter, a grinding wheel carried at the lower end of said first shaft, means carried by said base portion and disposed below said grinding wheel for engaging and rotating a disk to be sharpened, and means for swinging said bracket about said pins to move the grinding wheel into and out of engagement with a disk to be sharpened.

2. A disk sharpening machine comprising a frame having a horizontal base portion, a plurality of wheels movably supporting said base portion, a pair of uprights secured at opposite sides of said base portion adjacent one end thereof, a cross-member interconnecting the upper ends of said uprights, a generally U-shaped bracket, said bracket including spaced legs interconnected by a bight, a lower cross-member extending between said uprights in spaced relation to said base portion, a pair of vertically aligned pins carried by said cross-members and pivotally connecting the free ends of said legs thereto, a bearing member secured to the bight of said bracket, a vertical shaft journaled in said bearing member, a motor secured between said uprights having its drive shaft disposed vertically and in alignment with said pins, means connecting said drive shaft and the first mentioned shaft for imparting drive to the latter, a grinding wheel carried at the lower end of said first shaft, means carried by said base portion and disposed below said grinding wheel for engaging and rotating a disk to be sharpened, and means for swinging said bracket about said pins to move the grinding wheel into and out of engagement with a disk to be sharpened, said means for engaging and rotating a disk including a first bearing rigidly secured to said base, a second bearing movably mounted on said base, a bar secured to said first bearing, said second bearing being guidably engaged by said bar, an eccentric member pivoted to said base and engaging said second bearing, a pair of shafts journaled in said first and second bearings, resilient rollers carried by said shafts for frictionally engaging a disk therebetween, and means for rotating said eccentric to engage and disengage said rollers.

3. A disk-sharpening machine comprising a horizontal base, wheels supporting the base, a frame rising from one end of the base and having upper and lower cross members, a U-shaped bracket between said upper and lower cross members pivoted thereto in an upright position for lateral swinging, a vertical shaft journaled on said bracket and having a horizontal grinding wheel fast on its lower end for swinging horizontally by said bracket, a motor mounted in said frame and operatively connected to the upper end of the shaft, horizontal rollers mounted on said base below said grinding wheel for rotating a disk between the rollers, means operatively connecting said motor to said rollers, and screw feed crank operated means on said frame operatively connected to said bracket to swing the same.

4. A machine according to claim 3, said bracket having a crank arm thereon to which said screw feed means is operatively connected.

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