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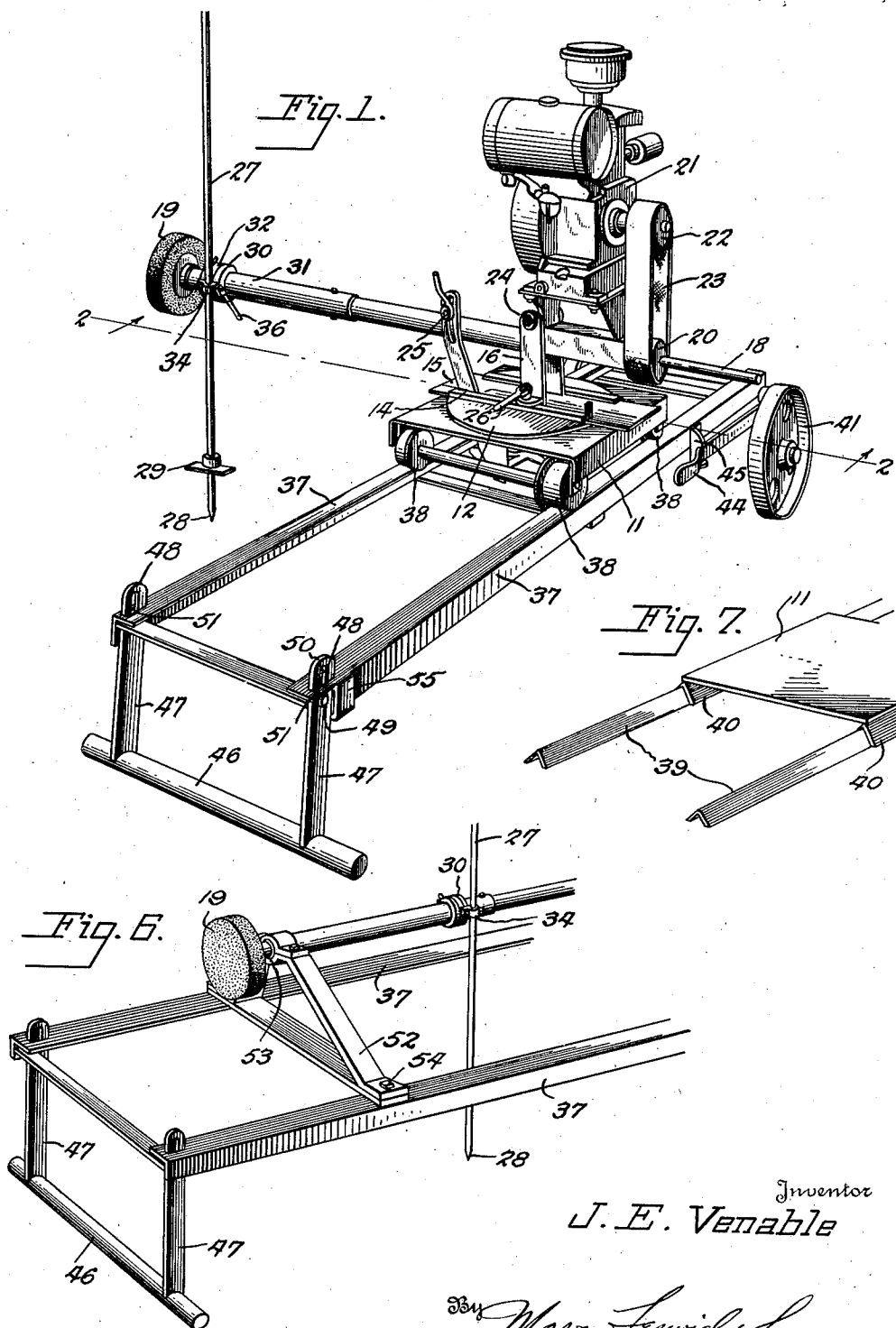
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GRINDER

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GRINDER

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9 Claims. (Cl. 51-166)

This invention pertains to grinders and like machines, and is directed particularly to machines to be used for grinding farm implements of various kinds, especially of the disc blade type.

In the case of farm implements of the disc blade type such, for example, as disc plows and harrows, the conventional practice when they become dull is to disassemble the blades and transport them from the farm to the shop to grind them. The machine of my invention is adapted to be transported to the farm, and to the job. It can be transported to the farm implement wherever it happens to be and set up beside the implement in position to perform the sharpening operation. The implement need not be dismantled or disassembled.

To accomplish this purpose I construct an abrading machine which is readily portable and which is universally mounted. In the preferred application of the invention, the power source is mounted on the machine in a position and in a manner to drive the abrading wheel in any position of adjustment.

The machine will grind all types of disc bladed implements including those with scallop-edged discs, and will sharpen the entire periphery of the disc including the portion encompassed in the grooves as well as the lands.

The machine of my invention is so constructed that by a simple adjustment it can be set up, either in the shop or on the job, as a stationary grinder, and thus it can be employed for grinding other tools besides disc bladed implements.

Having described the invention in general terms, attention is now directed to the drawings, in which:

Figure 1 shows a perspective view of the grinder;

Figure 2 is a cross-sectional elevation taken on line 2-2 of Figure 1;

Figure 3 is a cross-sectional elevation taken on line 3-3 of Figure 2;

Figure 4 is a cross-sectional detailed view taken on line 4-4 of Figure 2;

Figure 5 is a cross-sectional detailed view taken on line 5-5 of Figure 2;

Figure 6 is a perspective view showing the grinder and adapter for converting it into a stationary grinder; and

Figure 7 is a perspective view showing the modification of the rail construction.

The grinder of this invention comprises a base member 11 on which the turntable 12 is mounted to pivot at 13. Guideways 14 on the turntable

12 guide the carriage 15 mounted to slide freely in the guideways 14. The upright bracket 16 mounted on the carriage 15 carries the bearing 17 for the shaft 18. At one end of the shaft 18 is fixedly mounted the grinding head 19, comprising an abrasive wheel or any other suitable grinding or polishing rotary member. The shaft 18 is driven preferably at the opposite end by means of the pulley 20 connected to a source of power.

In the present practice of the invention the source of power is a portable internal combustion motor 21 mounted in fixed relationship to the bearing 17, as clearly seen in Figure 1, and connected to the shaft 18 by means of the pulley 22 and belt 23. The shaft 18 and its bearing 17 is mounted to swivel on the pin 24 which rides in the bracket 16, as clearly illustrated in Figure 2. It will be noted that the power source 21, being mounted unitary with the shaft and bearing construction, will also swivel on the pin 24.

The shaft 18, as will be noted in the drawings, projects away from the base member 11 to permit the grinding head 19 to be projecting a considerable distance beyond the body of the machine. As the shaft 18 is swiveled on the pin 24 the grinding head 19 moves up and down to position it at the desired predetermined height above the ground. The bolt and slot connection 25, shown in detail in Figure 4, enables the bearing 17 to be held in fixed position of adjustment after the grinding head has been positioned at the desired height above the ground.

In the usual practice of the invention the grinding head is slidable along the guideways 14 freely toward or away from the base member 11. However, it can be fixed and held against such movement by means of the clamp member 26, clearly illustrated in Figures 1 and 3.

When the grinder is used for grinding disc implements it is positioned with the shaft 18 normal to the shaft carrying the discs of the implement and the grinding head 19 is first positioned to a height which places the shaft 18 approximately in line with the disc carrying shaft. The clamp 25 is manually operated to hold the shaft 18 at the adjusted angle. The grinder can then be manually manipulated to pivot with the turntable on the pivot pin 13.

To steady the oscillatory movement of the grinder head 19 I provide a steadying rod 27 pointed at 28 so that it can be readily driven into the ground, the stop 29 functioning to limit the depth to which the rod 27 penetrates into the ground. The collar 30, attached to the bear-

ing 17' and the housing 31 near the grinder head, carries the ring 32. The collar 30 is slidable along the housing 31 for adjustment to determine the extent to which the grinder head projects beyond the collar so as not to interfere with the operation of the ring 32 and the rod 27, and is held in position of adjustment by the set screw 30', Figure 5. Pivoted at 33 on the ring 32 is the eye member 34 through which the rod 27 passes. The ring 32 being rotatable on the collar 30 and the eye member 34 being rotatable on the ring member at right angles to the axis of the ring members rotation, affords a universal joint connection between the rod 27 and the grinding head 19. The set screw 36 holds the rod 27 in the eye member 34 when the grinder head 19 has been adjusted to the proper height as hereinbefore described.

The grinder so positioned relative to the disc bladed implement is now ready to perform the sharpening operation. With the grinding head 19 power driven, the grinder can be oscillated with the turntable on the pivot pin 13 to grind by manual manipulation of the rod 27.

In the case of implement blades with scalloped edges the grinding head 19 can be reciprocated longitudinally of the shaft 18 and radially of the implement blade. The clamp member 26 is manipulated to enable this reciprocation of the grinding head 19.

To shift the grinding head 19 from blade to blade progressively as the successive blades become sharpened I provide the guiderails 37. In one embodiment of the invention I mount the base member 11 on wheels 38 which are flanged as shown in Figures 1 and 2 to ride on the rails 37.

In Figure 7 I show a modification of this structure comprising the V-shaped guiderails 39 which carry the base member 11 and permit it to slide thereon by means of the V-shaped truck members 40 fixed to the base member 11. The construction shown in Figure 7 is slightly less complicated and less expensive than the embodiment shown in Figures 1 and 2 and functions quite as well.

The entire machine is mounted to be readily transportable to and from the job and for this purpose it is preferably equipped with wheels. In the preferred embodiment shown in Figures 1 and 2 I provide the wheels 41 mounted on the axle 42 which is mounted to pivot additionally at 43. The wheels 41 are thus offset from the pivot 43, as shown, which enables them to be adjusted relative to the guiderails 37 for lowering the guiderails to or lifting them up from the ground. This construction is clearly indicated in Figure 3. The lever 44, illustrated in Figure 1, is fixed to the axle 42 and is held in position by the latch member 45. The lever 44 can be released from the latch member 45 and swung around to first lower the guiderails 37 to the ground and thereafter lift the wheels 41 slightly off the ground.

At the opposite end of the guiderails 37 I provide the handle 46 with the connecting members 47 notched at 48 to slide along the pin 49. The notched ends 50 of the connecting members 47 are slidable in the slots 51 in the respective guiderails 37. This construction enables the connecting members 47 to be moved longitudinally guided by the pins 49 until they get beyond the scope of the slots 51, at which time the handle 46 can be swung in line with the guiderails 37. With the connecting members 47 disposed longitudi-

nally of the rails 37, the handle 46 can be pushed towards the wheels 41 to project the ends 50 into the straps 55 which hold the members 47 rigidly in line with the rails 37.

With the handle 46 in line with the guiderails 37, and the wheels 41 lifted off the ground by manipulation of the lever 44, as hereinbefore described, the rails 37 rest on the ground to provide a supporting base for the machine. The machine can be adjusted in this manner as described either for grinding disc-bladed implements or for grinding other tools. When it is desired to grind other tools and to mount the machine as a stationary grinder, the grinding head 19 can be swung with the turntable 12 on the pivot pin 13 until the shaft 18 is disposed parallel with the guiderails 37. The removable bracket 52 fits on the guiderails 37 and is provided with a seat 53 to receive the housing 31 of the shaft 18. With the housing 31 seated on the bracket 52, mounted on the guiderails 37, the machine functions as a stationary grinder capable of doing general grinding and buffing jobs. The set screws 54 hold the bracket 52 in fixed position longitudinally of the rails 37 and prevents the base member 11 from sliding longitudinally of the rails 37.

The hereinbefore description presents a preferred embodiment of the invention which is not limited to the details described but is determined by the scope of the accompanying claims.

What I claim is:

1. A grinder comprising a base member, a shaft projecting away from the base member, bearings for the shaft, an abrasive wheel fixed to the projecting end of the shaft, a turntable on the base member, a supporting bracket on the turntable to carry the bearing and shaft, a swivel connection between the supporting bracket and the shaft bearings to tilt the shaft for positioning the wheel at a predetermined height, a clamp to hold the shaft to the angle to which it is tilted, a bracing member near the abrasive wheel to steady the position of the wheel, a loose connection between the bracing member and the abrasive wheel to permit oscillation of the wheel with the turntable in accordance with the manipulation of the bracing member.

2. A grinder comprising a base member, a shaft projecting away from the base member, bearings for the shaft, an abrasive wheel fixed at the projecting end of the shaft, a turntable on the base member, guideways on the turntable, a carriage on the guideways, a bracket on the carriage supporting the bearing with the shaft disposed longitudinally of the guideways, a swivel connection between the supporting bracket and the shaft bearings to tilt the shaft for positioning the abrasive wheels at a predetermined height, a clamp to hold the shaft at the angle to which it is tilted, a bracing member near the abrasive wheel to steady the position of the wheel, a loose connection between the bracing member and the abrasive wheel to permit oscillation of the wheel with the turntable and reciprocation with the carriage in accordance with the manipulation of the bracing member.

3. A grinder comprising a base member, a shaft projecting away from the base member, bearings for the shaft, an abrasive wheel fixed to the projecting end of the shaft, a turntable on the base member, guideways on the turntable, a carriage in the guideways, a bracket on the carriage supporting the bearings with the shaft disposed longitudinally of the guideways, a swivel connection between the supporting

bracket and the shaft bearings to tilt the shaft for positioning the abrasive wheel at a predetermined height, a clamp to hold the shaft to the angle to which it is tilted, guiderrails supporting the base member to permit shifting the grinder and its support bodily.

4. A grinder comprising a base member, a shaft projecting away from the base member, bearings for the shaft, an abrasive wheel fixed to the projecting end of the shaft, a turntable on the base member, guideways on the turntable, a carriage in the guideways, a bracket on the carriage supporting the bearings with the shaft disposed longitudinally of the guideways, a swivel connection between the supporting bracket and the shaft bearings to tilt the shaft for positioning the abrasive wheel at a predetermined height, a clamp to hold the shaft to the angle to which it is tilted, guiderrails supporting the base member to permit shifting the grinder and its support bodily, an axle and a truck carrying the guide rails, wheels mounted on the axle to render the grinder portable.

5. A grinder comprising a base member, a shaft projecting away from the base member, bearings for the shaft, an abrasive wheel fixed to the projecting end of the shaft, a turntable on the base member, guideways on the turntable, a carriage in the guideways, a bracket on the carriage supporting the bearings with the shaft disposed longitudinally of the guideways, a swivel connection between the supporting bracket and the shaft bearings to tilt the shaft for positioning the abrasive wheel at a predetermined height, a clamp to hold the shaft to the angle to which it is tilted, guiderrails supporting the base member to permit shifting the grinder and its support bodily, an axle and a truck carrying the guiderrails, wheels mounted on the axle to render the grinder portable, adjusting means between the wheels and the guiderrails to adjust the height of the grinder base member above the ground.

6. A grinding implement comprising, a grinder, a base member, and a movable carriage supporting the grinder on the base member, the grinder comprising a rotary shaft projecting away from the base member, an abrasive wheel fixed to the projecting end of the shaft, the carriage comprising, a bracket, bearings in the bracket for the shaft, a swivel connection between the bracket and the bearings to tilt the shaft for positioning the abrasive wheel in adjustment at a predetermined height, the base member comprising a turn table, and a guideway for the carriage on the turn table to reciprocate the abrasive wheel towards and away from the carriage at its height of adjustment.

7. A grinding implement comprising, a grinder,

a base member, and a movable carriage supporting the grinder on the base member, the grinder comprising a rotary shaft projecting away from the base member, an abrasive wheel fixed to the projecting end of the shaft, the carriage comprising a bracket, bearings in the bracket for the shaft, a swivel connection between the bracket and the bearings to tilt the shaft for positioning the abrasive wheel in adjustment at a predetermined height, the base member comprising a guideway for the carriage to reciprocate the abrasive wheel towards and away from the carriage at its height of adjustment, a bracing member near the abrasive wheel, a loose connection between the bracing member and the abrasive wheel to steady the movement of the abrasive wheel in accordance with manipulation of the bracing member.

8. A grinding implement comprising, a grinder, a base member, and a movable carriage supporting the grinder on the base member, the grinder comprising a rotary shaft projecting away from the base member, and abrasive wheel fixed to the projecting end of the shaft, the carriage comprising a bracket, bearings in the bracket for the shaft, a swivel connection between the bracket and the bearings to tilt the shaft for positioning the abrasive wheel in adjustment at a predetermined height, the base member comprising a turn table, and a guideway for the carriage on the turn table to reciprocate the abrasive wheel towards and away from the carriage at its height of adjustment, a bracing member near the abrasive wheel, a loose connection between the bracing member and the abrasive wheel to steady the movement of the abrasive wheel in accordance with manipulation of the bracing member.

9. A grinding implement comprising, a grinder, a base member, and a movable carriage supporting the grinder on the base member, the grinder comprising a rotary shaft projecting away from the base member, a motor to rotate the shaft, and an abrasive wheel fixed to the projecting end of the shaft, the carriage comprising a bracket, bearings in the bracket for the shaft, a swivel connection between the bracket and the bearings to tilt the shaft for positioning the abrasive wheel in adjustment at a predetermined height, the base member comprising a turn table, and a guideway for the carriage on the turn table to reciprocate the abrasive wheel towards and away from the carriage at its height of adjustment, a bracing member near the abrasive wheel, a loose connection between the bracing member and the abrasive wheel to steady the movement of the abrasive wheel in accordance with manipulation of the bracing member.

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