This invention relates to jigs or the like for supporting a grinding wheel in sharpening flat blades, and more particularly to such devices used in grinding the blades of rotary power mowers in which the blades are sharpened only along portions at their ends.

One of the principal objects of the present invention is to provide a grinding wheel and jig combination of economical construction having convenient and positive means for rigidity but detachably mounting the jig on the back of a flat blade to be sharpened only along the front edges of its end portions, so that the grinding wheel connected through its shaft with a portable electrical power unit, such as an electrical hand drill, or a motor through a flexible shaft, and moved manually along the edge of the blade with such pressure as may be required to renew a dulled edge.

Another, and important object of the present invention is to provide a grinding wheel and jig combination for the purpose mentioned having only a single clamping screw to facilitate the quick removal of the jig from one end of the blade and attachment to the other end of the blade.

A further object of the invention is to provide a jig of the character mentioned having adjustable means for adapting it to blades of various widths and thicknesses.

A still further object of the present invention is to provide a combination grinding wheel and jig combination for the purpose mentioned in which the grinding wheel is left free for such manual pressure against the cutting edge portions of the blade during the grinding operations as the operator may desire.

Other objects and advantages of my improved grinding wheel and jig combination will be apparent or obvious to those skilled in the art from the following specification in which reference is had to the accompanying drawing forming a part thereof, and in which:

FIG. 1 is a perspective view of a grinding wheel and jig combination in accordance with my invention;

FIG. 2 is a section taken on the line 2—2 of FIG. 1 and showing the grinding wheel and jig in side elevation;

FIG. 3 is a top plan view of the combination shown in FIGS. 1 and 2;

FIG. 4 is a section taken on the line 4—4 of FIG. 2; and

FIG. 5 is a section taken on the line 5—5 of FIG. 2.

Referring to the drawing in which numerals designate like parts in the several views, my improved jig designated generally by the numeral 10 is an integral unit made of flat steel or other suitable material in substantially L-shaped formation, as viewed from the top, and comprising a substantially U-shaped clamp 12 having a pair of screws 14 in its top portion projecting into the space between the top and bottom portions of the clamp, its bottom having openings 16 (FIG. 4) in concentric relation with the screws to permit the insertion of a screw-driver (not shown) for effecting vertical adjustment of the screws for a purpose which will later be described. Mounted in the bottom portion of the clamp 12 between the screws 14 is a clamping screw 18 having a suitable handle 20.

Joined at its bottom to the top portion of the clamp 12 in vertical edgewise relation, is a flat horizontal portion 22 of the jig 10 extending at right angles to the open edges of the clamp 12 a substantial distance and then bent at right angles to form another flat portion 24 also extending horizontally but in perpendicular relation with the rear wall of the clamp 12, leaving the clamp in offset relation with the flat portion 24. This latter portion is provided with a central longitudinal slot 26 open at its outer end for the slidable mounting therein of a bearing 28 having a pair of vertically opposite horizontal grooves 30 (FIG. 5) for the slidable reception of the opposed edges of the slot 26. The grinding wheel 32 rigidity mounted on a shaft 34, which extends horizontally through the bearing 28 at right angles to the slot 26 and the grooves 30 in the bearing, in both rotatable and slidable relation with the bearing.

As shown more clearly in FIGS. 2, 3 and 4, the jig 10 is clamped to the back edge of one end of a rotary mower blade 36 by simply slipping the clamp portion 12 over the blade until the back of the blade comes into contact with the rear wall of the U-shaped portion of the clamp, then sliding the blade endwise, so that the grinding wheel will be free to traverse the full length of the cutting edge 38, and tightening the clamping screw 18 against the bottom side of the blade, thereby rigidity clamping the blade against the bottom ends of the screws 14. The screws 14 can be adjusted to accommodate blades of various thicknesses.

The shaft 34 may be connected to any suitable electrical power unit in a portable character, for example, as an electrical hand drill 40 having a flexible electrical conductor (not shown). In locations where electrical power is not available, or if for other reasons desired, the grinding wheel shaft 34 may be connected with a flexible shaft operated by a gasoline motor or other power unit.

As already mentioned, the bearing 28 is freely movable in the slot 26, thereby permitting the grinding wheel to be quickly applied to the cutting edges of blades 36 of various widths. With the grinding wheel in operation it is moved back and forth along the cutting edge 38 with the slidable bearing 28 permitting the application of sufficient manual pressure to maintain firm contact between the grinding wheel and blade. As shown in FIG. 3, when the blade 36 is clamped in the jig 10 it is parallel with the shaft 34, which ensures uniform grinding of the cutting edge. When the cutting edge on one end of the blade has been sharpened the jig and grinding wheel can quickly be transferred to the opposite end of the blade. Obviously, changes or modifications may be made in my improved grinding wheel and jig combination without departing from the spirit and scope of my invention. Therefore, it should be understood that the embodiment of my invention shown and described is intended to be illustrative, only, and restricted only by the appended claims.

1. A grinding wheel and jig combination of the character described, a jig comprising a pair of flat and relatively thin sections rigidly connected in right angular and vertically edgewise relation, one of said sections having a flat, inwardly open, U-shaped clamp rigidly connected to its lower edge in right angular relation therewith, said clamp having screw means for clamping a flat blade therein, the other section of said jig having a longitudinal slot extending from its outer end; a shaft bearing mounted on said jig section, said bearing having a bore and a generally slidable relation therein, said bearing having guide means coengageable with said jig section for maintaining said bearing and shaft in free longitudinally slidable relation therewith, and with said bore and shaft in axially right angular alignment with the center of said slot.

2. In a grinding wheel and jig combination of the character described, a jig comprising a pair of flat and
3,089,286

3. A grinding wheel and jig combination as in claim 2 in which the shaft bearing projects axially through the slot in the associated jig section.

4. In a grinding wheel and jig combination of the characteristic described, a jig comprising a pair of flat and relatively thin sections rigidly connected in right angular and vertically edgewise relation, one of said sections having a flat, inwardly open, U-shaped clamp rigidly connected to its lower edge in right angular relation therewith, said clamp having screw means for clamping a flat blade therein, the other section of said jig having a longitudinal slot extending from its outer end; a shaft bearing mounted on said jig section, said bearing having a bore and a grinding wheel shaft mounted in axially sliding relation therein; said bearing being of a greater diameter than the width of said slot and having a pair of grooves engaging the edges of said slot for maintaining said bearing and shaft in free longitudinally sliding relation therewith, and with said bore and shaft in axially right angular alignment, and with said bore and shaft in axially right angular alignment with the center of said slot.

5. In a grinding wheel and jig combination of the characteristic described, a jig formed of flat and relatively thin material and a grinding wheel slidably mounted thereon, a flat, inwardly open U-shaped clamp rigidly connected to its lower edge in right angular relation therewith, said clamp having a pair of projections depending from the upper wall of said clamp and screw means projecting through the bottom wall of said clamp between said pair of projections for clamping a flat blade against said projections.

6. A grinding wheel and jig combination as in claim 5 in which the pair of projections depending from the upper wall of the U-shaped clamp consist of adjustable screws, and in which the bottom wall of said clamp portion is provided with openings in concentric relation with said screws for the insertion therethrough of a tool for adjusting said screws.

References Cited in the file of this patent

UNITED STATES PATENTS

2,565,291 Amendola Aug. 21, 1951
2,579,360 Brown Dec. 18, 1952
2,728,175 Sanders Dec. 27, 1955
2,830,413 Dahlerup Apr. 15, 1958