May 11, 1943. G. P. DORRIS 2,318,764

KNIFE GRINDER

Filed April 19, 1941

Fig. 1.

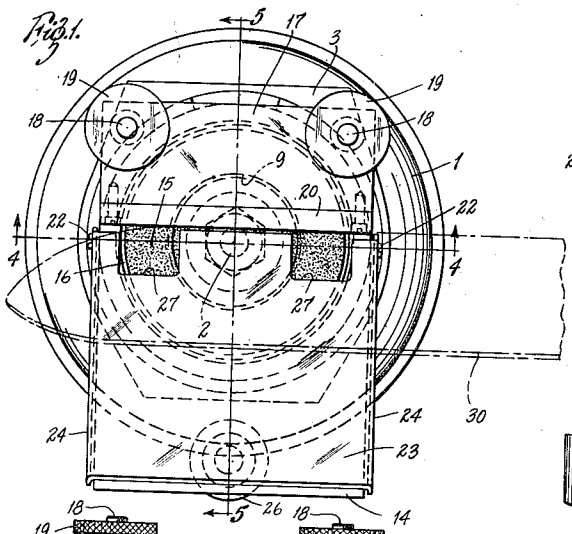


Fig. 4.

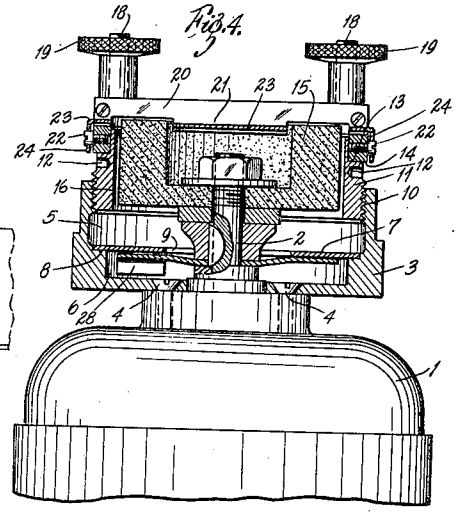


Fig. 2.

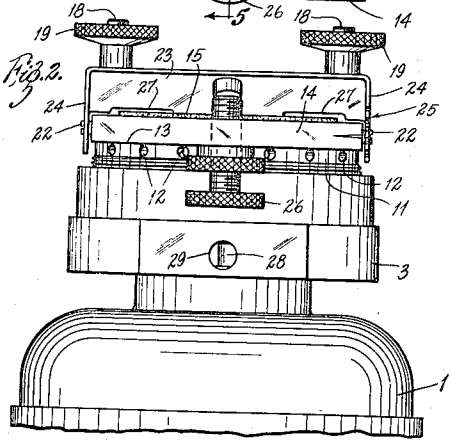


Fig. 3.

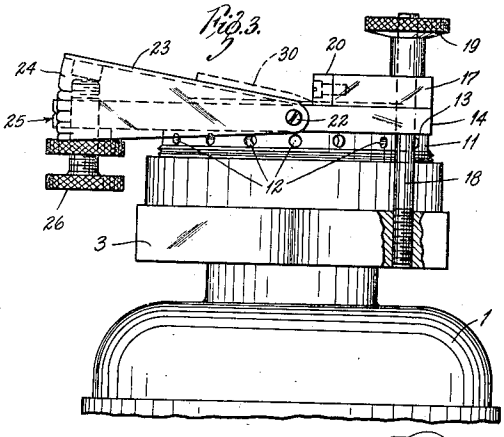


Fig. 6.

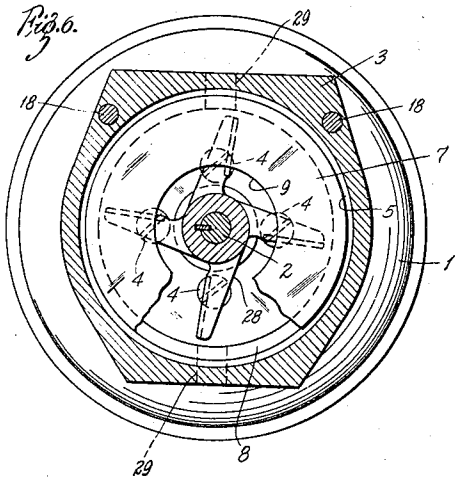
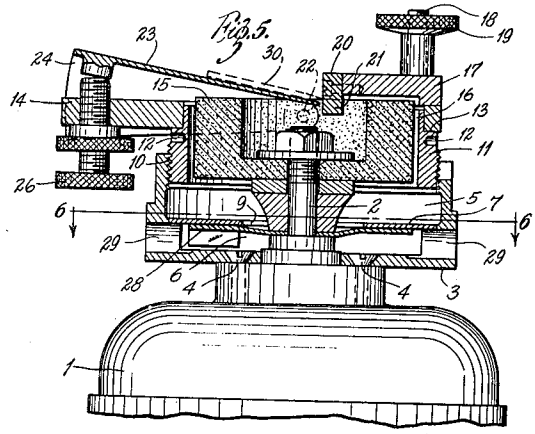


Fig. 5.



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KNIFE GRINDER

George P. Dorris, St. Louis, Mo., assignor, by direct and mesne assignments, to said Dorris, trustee

Application April 19, 1941, Serial No. 389,308

1 Claim. (Cl. 51—128)

This invention pertains to grinding apparatus, and more particularly to knife grinders for use in butcher shops and similar establishments where knives must be frequently sharpened.

One of the objects of this invention is to provide a grinder for knives so arranged that a knife may be applied to the grinder in a simple manner, and in which guiding and locating devices are arranged to insure the grinding of a proper edge without requiring any high degree of skill on the part of the operator.

Another object is to provide such a grinder, having arrangements for positively preventing a knife blade from becoming jammed in the device.

Another object is to provide such a device arranged for simple adjustment to vary the angle of the ground edge.

Another object is to provide such an apparatus of improved construction which may be accurately adjusted to take up wear and which may also be provided with suitable means to carry off the grinding dust.

Further objects will appear from the following description, taken in connection with the accompanying drawing, in which:

Figure 1 is a plan view of an apparatus embodying this invention;

Figure 2 is a view in end elevation of the same;

Figure 3 is a view in side elevation;

Figure 4 is a vertical section on line 4—4 of Figure 1;

Figure 5 is a vertical section on line 5—5 of Figure 1; and

Figure 6 is a horizontal section taken on line 6—6 of Figure 5.

Referring to the accompanying drawing, the embodiment of the invention selected for illustration therein is arranged to be mounted upon a motor 1 having a vertical shaft 2. A supporting base 3 for the grinder is arranged for attachment to the frame of the motor 1 as by means of screws 4 or other suitable fastenings. The base 3 may have the horizontal contour shown in Figure 6, and has an internal bore providing therewithin an upper chamber 5 and a lower chamber 6. These chambers are separated by a baffle plate 7 resting on a shoulder 8 of the base and having a central opening 9.

The upper part of the base 3 is provided with an internal thread 10, into which is threaded a barrel 11. This barrel may be provided with a series of recesses 12, adapted to receive a suitable tool for adjusting the barrel 11 by rotating the same in the threads 10 in order to raise and lower it. The barrel 11 is further provided with an annular shoulder 13, upon which is mounted a working table 14.

Mounted on the shaft 2 and secured for rotation therewith is a grinding element in the form of a cup-shaped wheel 15 of suitable abrasive material. This wheel fits within the bore of the barrel 11, allowing a slight air space 16 therebetween. Mounted on the table 14, and so as to extend over a portion of the grinding wheel 15 and the table 14, is a bridge 17. This bridge is hollowed out underneath so as to clear the grinding wheel, but rests at its edges upon the table 14. The entire assembly may be held in place by a pair of studs 18 threaded into the base 3 at their lower ends. At their upper ends suitable thumb nuts 19 may be threaded on the studs 18 so as to bear upon the bridge 17 and clamp the entire assembly together.

The bridge 17 in the embodiment illustrated carries a blade stop 20 extending approximately diametrically across the grinding wheel and having a downwardly extending middle portion 21 extending into the hollow of the cup-shaped grinding wheel. This stop is preferably constructed of hardened steel so as to withstand wear.

Pivoted at 22 on the table 14 is a blade-engageable guide plate 23. This plate may be provided with downwardly extending side wings 24 which may extend along the sides of the table 14, and one of which may be provided with a suitable scale, indicated at 25, to show the adjusted angular position of this plate. A suitable adjusting screw 26 threaded into the table 14 may be provided to adjust the angle of the plate 23. The inner edge of the plate 23 may be provided with notches 27 so that it may clear the working face of the grinding wheel, leaving between said notches a tongue which may extend down into the hollow of the grinding wheel, as shown in Figure 5.

Mounted on the shaft 2 for rotation therewith within the lower chamber 6 of the base is a fan 28. This fan is arranged below the baffle plate 7 so as to draw air downwardly through the air space 16 around the grinding wheel in order to carry away the cuttings which are discharged through one or more exhaust ports 29 in the lower part of the base 3.

In the use of this device the motor 1, having been set in operation, rotates the grinding wheel and the fan 28. The operator, having adjusted the plate 23 to the desired angle as indicated on the scale 23, places the knife blade to be ground against the plate 23 in the positions indicated

at 30 in dotted lines. The flat face of the blade is laid down against the plate 23, and the edge to be ground is placed against the blade stop 20. This locates the blade so as to position it at a proper angle with respect to the upper grinding face of the wheel 15. By holding it against the stop 20 and moving it lengthwise while maintaining the ground edge in contact with said stop, the knife is guided so as to maintain it always in proper relation to the grinding wheel. Accordingly, it is necessary only to stroke the knife blade back and forth a few times across the grinding wheel, while maintaining it thus in engagement with the plate 23 and the stop 20 in order to grind an even and uniform angle all along the blade. The blade is easily turned at the curved tip so as to maintain this relation with the grinding wheel. The blade may then be turned over and the opposite side ground in the same manner. Meanwhile, the fan 28 creates a suction in the air space 16, which draws the dust produced by the grinding operation downwardly through this space and into the chamber 5. At this point the baffle 7 deflects the air radially inwardly so that it passes through the opening 9 into the central portion of the chamber 6 and in proper relation to the fan 28, to be taken up thereby and forced out at the ports 29. If desired, any suitable duct system may be connected to the ports 29 so as to carry off and dispose of the dust in any desired manner.

It will be seen that this invention accomplishes its objects in providing a grinding device whereby butcher knives and the like may be ground accurately without requiring any particular skill on the part of the operator. The plate 23 fixes the angle to which the blade is ground. The stop 20 prevents the blade from shifting too far downwardly along the plate 23, and therefore insures the formation of a smooth and uniformly ground edge. As this stop plate extends into the hollow of the grinding wheel, it will be seen that it is impossible for the blade to become jammed between the wheel and this stop. Accordingly, the blade is always freely movable on the plate 23, and the grinding operation may be carried out with ease.

It is obvious that various changes may be made in the details of construction within the scope of the appended claim without departing from the spirit of this invention. It is understood, therefore, that the invention is not limited to the specific details shown and described.

The invention having thus been described, what is claimed is:

A knife grinder, comprising, motor means having an upright shaft, a cup-shaped grinding wheel on said shaft having a flat grinding rim moving in a substantially horizontal plane, a supporting table mounted for vertical adjustment relative to said plane, a blade-engageable guide plate pivoted on said table on an axis transverse to and adjacent the axis of said wheel, means for angularly adjusting said plate on said pivot axis, and a blade-edge guide supported above said wheel and extending downwardly into the hollow thereof and having a blade-engageable face positioned on the opposite side of said wheel axis from said guide plate so as to permit the blade to engage said grinding rim adjacent a point thereof on a diameter parallel to said face.

GEORGE P. DORRIS.