

July 12, 1960

H. PERSSON
GRINDING TOOL

2,944,374

Filed May 15, 1958

2 Sheets-Sheet 1

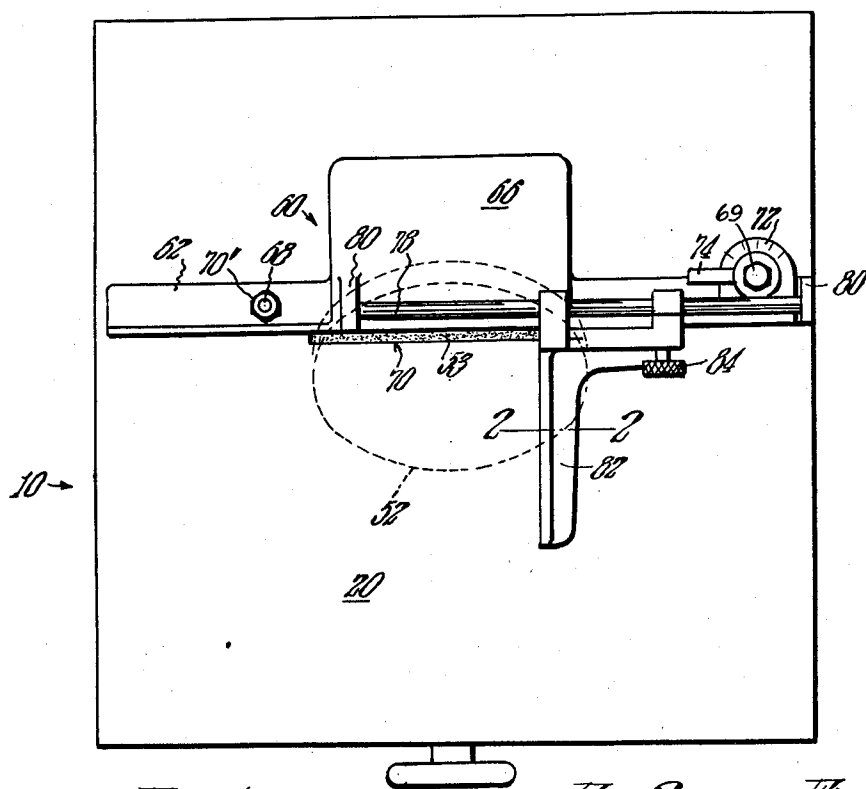


Fig. 1

Fig. 2

Fig. 3

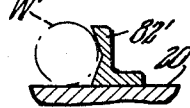
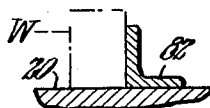


Fig. 4

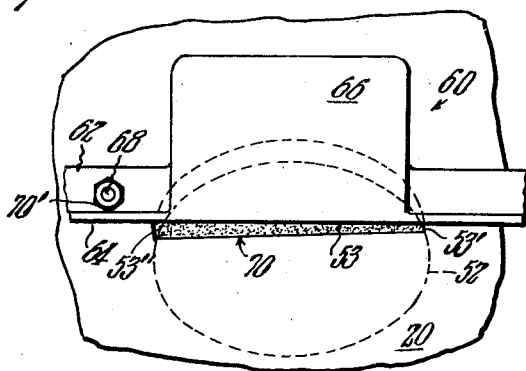
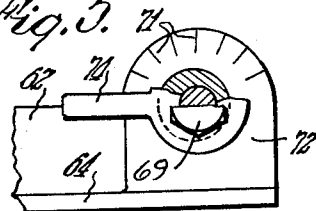


Fig. 5



INVENTOR.

Henry Persson

BY Ross & Ross, Attys.

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GRINDING TOOL

Henry Persson, 224 Glenwood Ave., Bloomfield, N.J.

Filed May 15, 1958, Ser. No. 735,516

2 Claims. (Cl. 51-110)

My invention relates to new and useful improvements in a grinding apparatus and means for grinding the rough or sharp edges, corners or ends of workpieces.

The feature of this invention is the provision of a new and improved apparatus of the character described.

A principal object hereof is to provide a machine or instrumentality for grinding off or deburring and finishing the sharp edges, corners and ends of workpieces, which machine or instrumentality may be operated by even the most inexperienced operator quickly and simply and efficiently.

Another feature hereof is the provision of a rotary grinding or abrading device having an effective working surface on the upper face of the grinding or abrading wheel which is accessible for grinding the edge, corner or end of a workpiece without interference from other parts of said wheel and its associated power means. The device is adapted to deburr and chamfer all kinds of hard or soft material.

It is another object of the invention to provide a grinding or abrading machine wherein the operator may bring the workpiece to the machine and may accomplish the grinding action on a certain edge or corner or end of the workpiece by means of a single pass of the workpiece past the grinding wheel or cutting tool.

It is another object of the invention to provide an adjustable guide means against which the workpiece may be rested and supported while the edge grinding or abrading operation is being performed thereon.

Broadly speaking, the invention envisions a housing or framework having a horizontally-disposed planar work-supporting surface or table carried thereby, said housing enclosing there within a horizontally-adjustable power means having a drive shaft angularly disposed relative to the work-supporting surface, wherein the drive shaft carries and rotates an annular grinding wheel in an angular plane relative to the work-supporting surface.

Other features and advantages will be apparent from the description of one specific embodiment of the invention illustrated in the accompanying drawings wherein:

Fig. 1 is a top plan view of the apparatus of the invention;

Fig. 2 is a sectional elevational view on the line 2-2 of Fig. 1;

Fig. 3 is a sectional elevational view similar to Fig. 2 showing a modified form of the guide member of the invention;

Fig. 4 is a fragmentary diagrammatic top plan view of the apparatus of the invention, with the ear 80 of the casting 60 being removed for purposes of clarity, and showing the adjustable feature of the guide;

Fig. 5 is a fragmentary top plan view showing the details of the hub of the apparatus by which the camming action is achieved;

Fig. 6 is a side elevational view, partly in section, of the apparatus illustrated in Fig. 1;

Fig. 7 is a perspective view of a rectangular shaped

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workpiece which has been operated upon by the apparatus; and

Fig. 8 is a side elevational view of a cylindrical shaped workpiece which has been operated upon by the apparatus.

The embodiment, illustrated in Figs. 1 and 6, comprises generally an upright housing or casing generally designated by numeral 10 and consisting of the conventional side walls 12 and end walls 14 connected together at their adjacent corners as by corner braces 16 having downwardly depending portions functioning as legs wherefor the housing is raised to a height convenient for operational use.

A large planar work table or work rest or work supporting surface 20 is fixed to the top of the walls 12 and 14 and functions to enclose the housing.

Mounted within the housing and extending between the opposite end walls 14 and 14 are a pair of cooperable spaced, parallel, slide rods 22 and 23, fixed to the said walls as by rod plates 24 and cap screws 26.

A motor 30 is carried and supported angularly relative to the housing 10 by and fixed to a motor bracket or casting generally designated by the numeral 32 having a pair of spaced, downwardly depending, sides 34 and 36 terminating in a forward leg 37 and a rear leg 38, which legs are spaced from the parallel to each other and extend transverse to and are slidable on the slide rods 22 and 23.

A screw 40, having a hand wheel 42 fixed to its outer end, extends through one of the end walls 14, is spaced between and in alignment with the slide rods 22 and 23, and has an inner end portion in threaded engagement with the rear leg 38.

A compression spring 44 is disposed over each of the slide rods 22 and 23 between the rear leg 38 and the respective rod plate 24 adjacent the end wall 14. Said springs function to urge the motor bracket or casting 32 forwardly as the screw 40 is turned by the rotation of the hand wheel 42.

An opening 50 is provided in the plate 20 of the housing through which a grinding wheel 52 operatively connected to a driving shaft 54 of the motor 30 extends. As aforesaid, the motor 30 is inclined within the housing, as is the grinding wheel 52 operatively connected thereto, for reasons as will hereinafter more fully appear.

The grinding wheel 52 may be of any of the generally known types having an abrasive material bonded together to make a homogeneous wheel or it may be of any base composition having a grinding surface secured thereto, as a coating, disk or the like.

The wheel has a working surface 53 on its side facing away from the axis of rotation of the wheel.

If desired, a heavy duty carbide tipped cutter may be used in lieu of the grinding wheel.

The working surface 53 of the wheel, as best illustrated in Fig. 6, is inclined relative to the horizontal plane of the table 20 at approximately 45 degrees as the shaft 54 upon which the wheel 52 is mounted is inclined within the housing at the same angle to the vertical.

A casting, generally designated by numeral 60, consists of an elongated angle shaped member having a horizontally disposed supporting portion 62 which rests on the top of the table and a vertically disposed guide portion 64 extending upwardly therefrom, at one side thereof and at a right angle thereto. Additionally, the casting 60 is formed with a cover or closure portion 66 intermediate its opposite ends, which portion is boxlike in configuration and serves to partly enclose or mask the aforescribed opening 50 in the table 20.

The member 60 is held in pivoted relation on the table 20 by means of a bolt 68 and nut 70 in such manner that the opening 50 in the table 20 is entirely enclosed save for an elongated slot designated by numeral 70 in Figs. 1 and

4 at the point of intersection of the vertically disposed guide portion 64 of the casting 60 and the table 20, through which slot 70 a corner or edge or end of a workpiece engages the upper face 53 of the grinding wheel 52 during operational use, as will subsequently be observed.

At the other end of the casting 60, opposite to the afore-described pivoted end, an adjustment member consisting of an eccentric or cam is provided. A horizontally extending hub member 72 is provided having a vertically extending opening therethrough centrally thereof. A manually engageable member 74 is oscillatable on a bolt 69 of the table 20, and has a downwardly depending portion in the aforesaid opening of hub 72, and which is eccentric relative to its axis of oscillation whereby as the member 74 is turned relative to the hub member 72, the casting 60 is caused to move slightly on its pivot 68 so as to assume a position of angularity relative to the longitudinal axis of the transverse slot 70 and the grinding wheel 53 therein, for reasons as will be observed.

A slide rod 78 is carried by upwardly extending ears 80 of the casting 60 and an outwardly extending angle shaped member 82, which may be called a fence, is slidable therealong relative to and on the upper surface of the table 20 for guiding a rectangular or square workpiece such as shown in Fig. 2. The fence 82 may be removable and may be replaced with a suitable and differently designed and shaped fixture such as 82', as shown in Fig. 3, for guiding other shaped workpieces such as a rod or shaft W'.

The fence 82 may be held firmly relative to the slide 78 by means of an adjusting screw 84 of conventional design.

The table 20 is adapted to receive thereon, in a supporting manner, a workpiece W and to allow a sliding movement of same relative thereto from one side thereof to the other along and adjacent the guide 64.

As the workpiece moves across the slot 70, a corner or edge or end of the workpiece W contacts the upper face 53 of the grinding wheel for the accomplishment of the grinding action thereon during operational use so as to provide the ground corner or edge or end E indicated in Fig. 7 or the corner or edge or end E' indicated in Fig. 8.

The grinding operation is performed by the flat, upper, angularly-disposed face 53 of the grinding wheel 52 as the workpiece is seated on the table 20 and is manually moved from one end thereof to the other and past the opening or slot 70.

The wheel itself is practically self dressing as the workpiece contacts the entire working surface thereof.

The adjustment for wheel wear and depth of cut is easily provided for by the movement of the motor 30 relative to the housing 10 and the slot 70 thereof simply by the turning of the hand wheel 42 according to the adjustment desired to be made.

As a special feature of the invention, the casting 60, and more particularly the guide portion 64 thereof, may be angularized relative to the housing 10 and the slot 70 in the table 20 thereof by the eccentric means aforescribed. That is, the casting can be adjusted so as to move slightly by the oscillation of the manually engageable member 74 to a predetermined position of angularity as indicated by the indicia 71 on the hub 70 causes the guide portion 64 to incline slightly relative to the longitudinal axis of the slot 70 and of course relative to the grinding wheel 52. By means thereof, the guide portion 64 is set out of line with the grinding wheel wherefor the formation of burrs along the sides of the newly formed edge is obviated. That is, there is a slight angulation of the plane of the angle guide relative to the plane of the path of movement of the upper face of the cutting wheel.

The result of such angularization is best shown in the enlarged, overexaggerated illustration in Fig. 4 wherein the grinding wheel 52 has its upper face 53 disposed in an angular, plane relative to the plane of the table, as is normal, and wherein the member 60 has been angularized or inclined by the adjustment of the member 74 at the right side of the device as one views Fig. 1. The adjust-

ment inclines the member 60 so that the guide portion 64 is inclined slightly relative to the longitudinal axis of the slot 70.

As the angle is increased, the cutting action at the leading edge 53' of the upper face of the grinding wheel is less than the cutting action at the trailing edge 53'' of the upper face of the grinding wheel.

It is to be appreciated that as a workpiece is urged along the angle guide from one side thereof to the other, the workpiece is subjected to a depth of cut indicated as *a* at one side of a grinding wheel and a lesser depth of cut indicated as *b* at the other side of the grinding wheel.

I claim:

1. A machine for removing the corners and edges from workpieces comprising, a housing having a table provided with a work supporting surface and with an opening having a forward edge, an electric motor and a tool rotatable thereby having a flat forward working face, mounting means mounting said motor relative to said housing and positioning a portion of said tool in said opening above said supporting surface and a portion of said forward face in a plane at an obtuse angle relative to and above said surface and adjacent the forward edge of said opening, an elongated member superposed on and movable on said supporting surface having a forward longitudinal guide portion and a closure portion intermediate opposite ends of said guide portion enclosing a portion of said tool and having a forward wall forming a continuation of said guide portion and being disposed forwardly of the working face of the tool, the lower edge of the forward wall of the closure portion being spaced above the supporting surface and cooperating with the forward edge of said opening to form an elongated slot across and exposing a portion of the forward face of said tool, said guide portion and forward wall and supporting surface cooperating as guide means for movement of a workpiece therealong and into engagement through said slot with the exposed face portion of said tool, one end of said elongated member being pivoted to said table actuating means adjustably connecting the opposite end of said member and table to swing said member in opposite directions to position said guide in adjusted positions relative to the upper working face portion of the tool.

2. A machine for removing the corners and edges from workpieces comprising, a housing having opposite side walls and a table provided with a horizontal work supporting surface and with an opening having a forward edge, an electric motor and a tool rotatable thereby having a flat forward working face, mounting means mounting said motor relative to said housing and positioning the upper portion of said tool in said opening above said supporting surface and the upper portion of said forward face in a plane at an obtuse angle relative to and above said surface and adjacent the forward edge of said opening, an elongated member superposed on and movable on said supporting surface having a forward longitudinal guide portion and a closure portion intermediate opposite ends of said guide portion enclosing the said upper portion of the tool and having a forward wall forming a continuation of said guide portion and being disposed forwardly of the working face of the tool, the lower edge of the forward wall of the closure portion being spaced above the supporting surface and cooperating with the forward edge of said opening to form an elongated slot across and exposing a portion of the forward face of said tool, said guide portion and forward wall and supporting surface cooperating as guide means for movement of a workpiece therealong and into engagement through said slot with the exposed face portion of said tool, one end of said elongated member being pivoted to said table actuating means adjustably connecting the opposite end of said member and table to swing said member in opposite directions to position said guide in adjusted positions relative to the upper working face

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portion of the tool and a fence reciprocally mounted on said elongated member for movement thereby of a work-piece along said guide means.

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