

E. R. CONNERS.
GRINDING WHEEL TRUING MACHINE.
APPLICATION FILED JULY 9, 1920.

1,383,601.

Patented July 5, 1921.
2 SHEETS—SHEET 1.

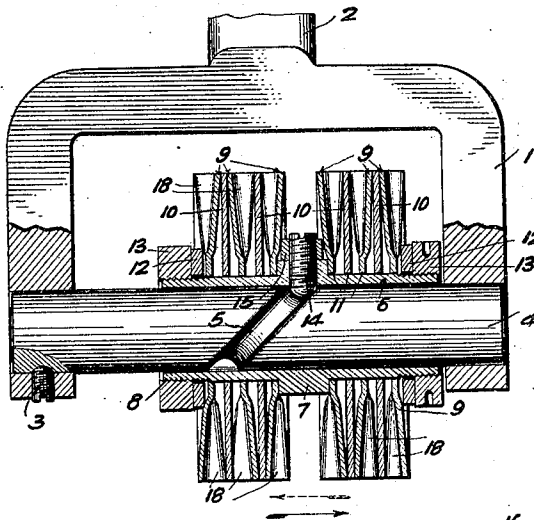


Fig. 1.

Fig. 2.

Fig. 4.

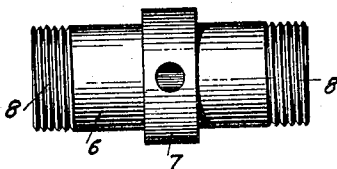


Fig. 3.

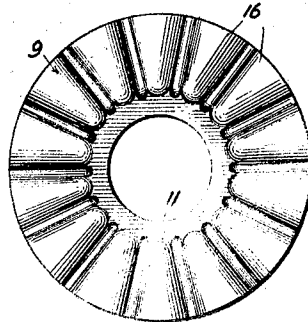
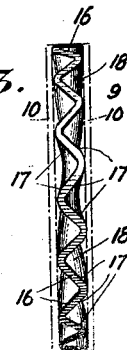
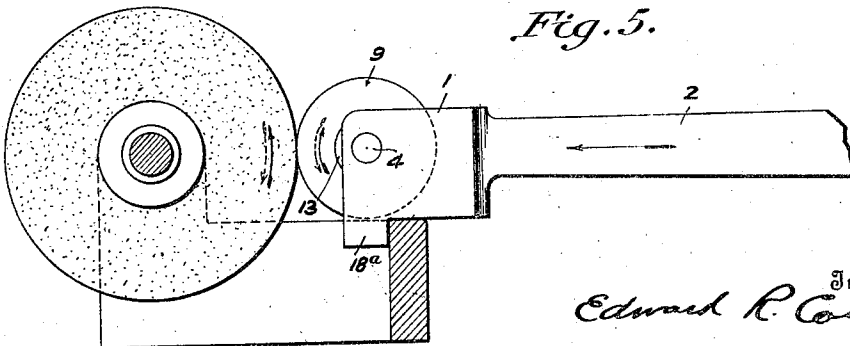


Fig. 5.



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Fig. 6.

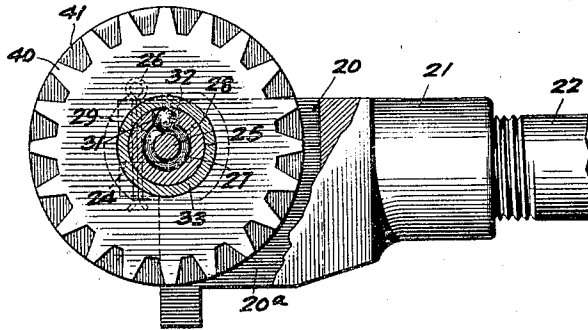
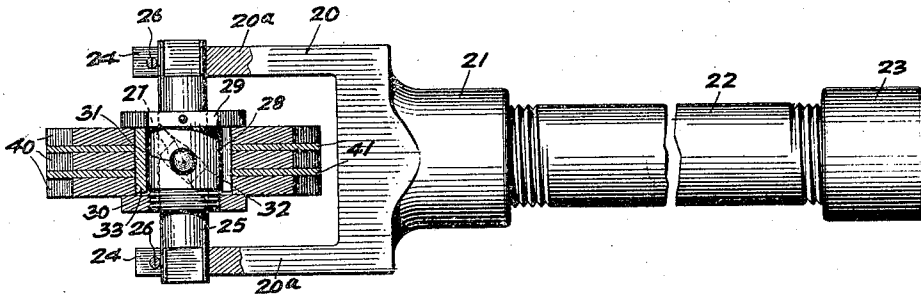


Fig. 7.

Fig. 9.

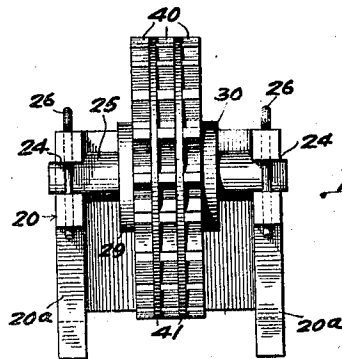
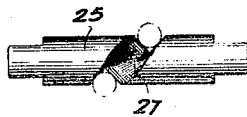


Fig. 8.

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UNITED STATES PATENT OFFICE.

EDWARD R. CONNERS, OF CINCINNATI, OHIO, ASSIGNOR TO THE PRECISION TRUING MACHINE & TOOL COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

GRINDING-WHEEL-TRUING TOOL.

1,383,601.

Specification of Letters Patent.

Patented July 5, 1921.

Application filed July 9, 1920. Serial No. 395,025.

To all whom it may concern:

Be it known that I, EDWARD R. CONNERS, a citizen of the United States, and residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Grinding-Wheel-Truing Tools, of which the following specification is a full disclosure.

This invention relates to a device for grinding, truing and smoothing emery wheels or the like, and has for its object to provide a tool which, when held against the rotating wheel to be ground, will perform the operation quickly and accurately.

Another object of the invention is to provide an emery wheel truing tool with a rotative abrading wheel reciprocating transversely upon its axis in its rotation about the axis when pressed against a revolving emery or grinding wheel from which the abrading wheel receives its motion, whereby the operator can hold the tool in a fixed position against the emery wheel with the abrading wheels translatable across the entire width of surface to be trued for producing a straight or plane finish thereto.

Another object is to so construct the grinding or truing elements, that the cuttings will not clog the same, and an additional object is to interpose smoothing elements between the said grinding elements in such a manner as to insure a uniform smoothing of the surface and straight face of the wheel to be ground during the grinding operation.

Other objects and certain advantages will appear in the description and special reference is made to the drawings forming a part of this specification in which,

Figure 1 is a plan section of my device.

Fig. 2 is a face view of one of the fluted grinding disks.

Fig. 3 is an edge view of the disk shown in Fig. 2, the position of the smoothing disks being shown in dot-and-dash lines.

Fig. 4 is a detail view of the disk holding mandrel.

Fig. 5 is a diagrammatic view showing the method of using my grinding device.

Fig. 6 is a plan section of a modified form.

Fig. 7 is a central vertical section of the same.

Fig. 8 is an end elevation, and,

Fig. 9 is a detail of the shaft and miter groove thereon.

The numeral 1 designates a fork, formed integral with a handle 2, and between the arms the fork is fastened as at 3, a shaft 4 provided at its middle with a circumferential or annular miter-groove 5. Surrounding said shaft, and adapted for rotation and reciprocation thereon, is a mandrel 6 in the form of a hollow tube, the same having a central annular boss or hub 7 formed thereupon, and the said mandrel is provided at its ends with exterior screw threads 8. A series of fluted or corrugated grinding disks 9, and smoothing disks 10 having central openings 11, are placed upon the mandrel 5 and on each side of the boss 7, each series being composed of alternate grinding and smoothing disks, and as units providing abrading wheels-clamped against the boss 7, by washers 12, and nuts 13 engaging the threads 8, rigidly securing the abrading wheels upon the mandrel.

Screwed into the boss 7, of the mandrel 6, passing through the same, and projecting into the groove 5 is a pin 14, designed in conjunction with the groove 5, to cause the mandrel 6 and the disks 9 and 10 to reciprocate longitudinally upon the shaft 4, as the said abrading wheels are rotated during their frictional engagement with the wheel to be ground. (See Fig. 5.) The pin 14 is locked to position by the nut 15.

The fluting 16, of the grinding disks results in giving inclined cutting edges 17 to the same at their peripheries, and the spaces 18 formed between the lateral faces of the grinding and smoothing disks allow for the carrying away of the cuttings.

It will be seen that as the abrading wheels rotate and reciprocate upon the shaft 4, the edges 17 have a shearing action upon the surface of the wheel being ground, while the peripheries of the disks 10 tend to smooth the wheel as the grinding operation proceeds.

The number of disks composing the abrading wheel or wheels is optional and largely depending upon the size of the grinding wheel to be trued or operated upon, but it is desirable to have the abrading wheel with each revolution move or sweep back and forth across the full face width of the grinding wheel, without being required to change the position of the abrading tool.

The tool can be used by an unskilled op-

erator and a straight or plane surface can be produced by the grinding wheel.

The frame of the abrading tool is provided with depending lugs 18^a at the lower 5 extremities of the arms of the fork 1 for engagement with the tool rest or support of the grinding machine, enabling the abrading tool to be firmly anchored or positioned in relation to the grinding wheel and wedged 10 against the surface to be trued, for obtaining the required abrading pressure.

As the operator is relieved from any manual feeding of the tool across the face of the grinding wheel, a straight surface 15 truing is assured, whether parallel or at an angle to the axis of the grinding wheel.

The screw 14 is disposed centrally of the mandrel, which permits the annular inclined groove 5 to be likewise disposed centrally 20 of the shaft, so that the mandrel completely houses the groove at its limits of reciprocation, protecting the parts from the abrading tailings and dust, which could cause undue wear to the parts.

25 The tool is anchored upon the tool rest or support of the grinding machine and the handle is moved upwardly, bringing the abrading wheel against the emery wheel under a required pressure. The abrading 30 wheel, through its peripheral frictional engagement with the surface of the emery wheel, is rotated at a rate proportional to the rotation and diameter of the emery wheel, and as it rotates about its axis, it is 35 translated transversely upon the axis in motions of reciprocation and thus is fed crosswise of the emery wheel surface. The operator holding the tool in a fixed position enables the grinding wheel surface to be 40 finished in a straight line crosswise of the surface engaged.

A modified form of my device is shown in Figs. 6 to 9 inclusive, in which the numeral 20 designates the fork, substantially similar 45 to the fork 1, but is provided with a socket 21, into which is screwed the handle 22 having a finishing cap 23 at its opposite end. The arms 20^a of the fork have slots 24 formed therein, and the flattened ends of the 50 shaft 25 engage the said slots and are held thus engaged by split keys 26 as shown. Centrally of the shaft 25 is a miter groove 27, and loosely surrounding said shaft and covering said groove, is a tubular mandrel 55 28, having a wrench flange 29 at its one extremity, which acts as a stop against which a series of alternate gear-like cutting

wheels 40 and smoothing disks 41, are clamped by the threaded nut 30; centrally of the tubular mandrel, is an opening 31, 60 for the reception of a steel ball 32, half of the same projecting into the miter groove. Surrounding the mandrel is a split tubular collar 33, upon which the disks 40 and 41, are placed and clamped as above described. 65 The action of the tool is similar to that of the first form.

Having described my invention, I claim:

1. In a grinding and smoothing tool, the combination of a fork member provided 70 with a handle, a shaft rigidly held between the arms of said fork, a circumferential groove placed centrally and at an angle of 45° to the long axis of said shaft, a tubular mandrel mounted for rotation and oscilla- 75 tion upon said shaft, a pin traversing the wall of said mandrel, and projecting into said groove, and grinding elements rigidly mounted upon said mandrel.

2. In a tool of the class described, a handle 80 having a bifurcated end providing a bearing, a non-rotatable shaft supported by said handle bearing, having an annular inclined groove about its periphery, a rotatable abrading wheel journaled upon said 85 shaft and cooperating with said annular groove, whereby said wheel in its rotation is reciprocated upon said shaft.

3. In a tool of the class described, a handle member, a shaft fixed upon said 90 handle member, having an annular inclined groove about its periphery, a sleeve rotatable and slidable longitudinally upon said shaft, having an element engaged into said annular groove of said shaft, and abrading 95 disks clamped upon the sleeve.

4. In a tool of the class described, a handle, a mandrel removably supported in said handle and provided with an annular inclined groove about its periphery, abra- 100 ding disks having a removable hub, a sleeve concentric within said hub, secured thereto and therewith slidable upon said mandrel, said sleeve having a ball confining aperture therethrough and a ball in said sleeve aper- 105 ture engaged in said annular inclined groove.

In witness whereof, I hereunto subscribe my name, as attested by the two subscribing witnesses.

EDWARD R. CONNERS.

Witnesses:

L. A. BECK,
J. C. JUNIUS.