July 2, 1935. E. L. ACKLEY 2,006,783

TRUING DEVICE

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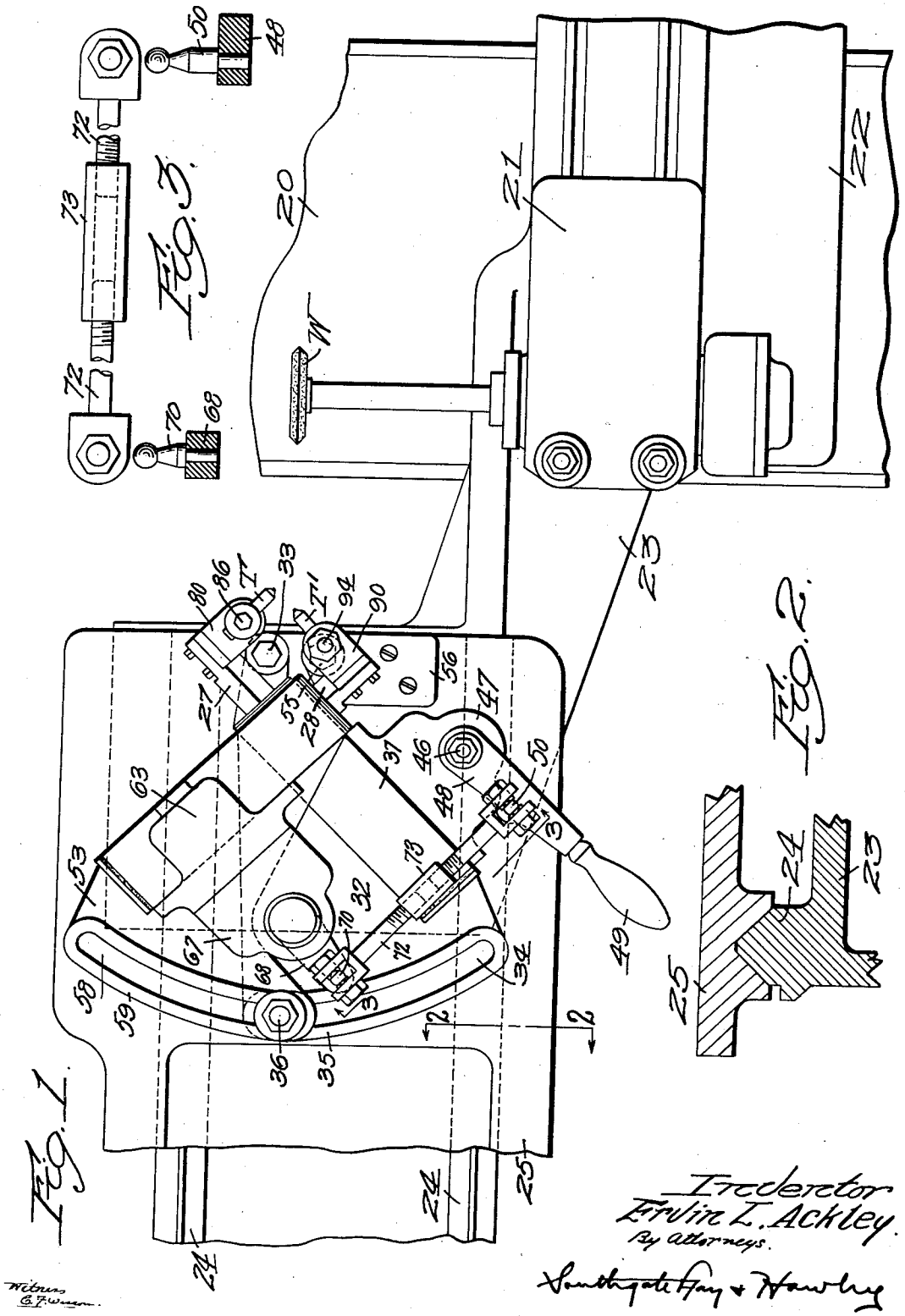


Fig. 1.

Fig. 3.

Fig. 2.

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Fig. 4.

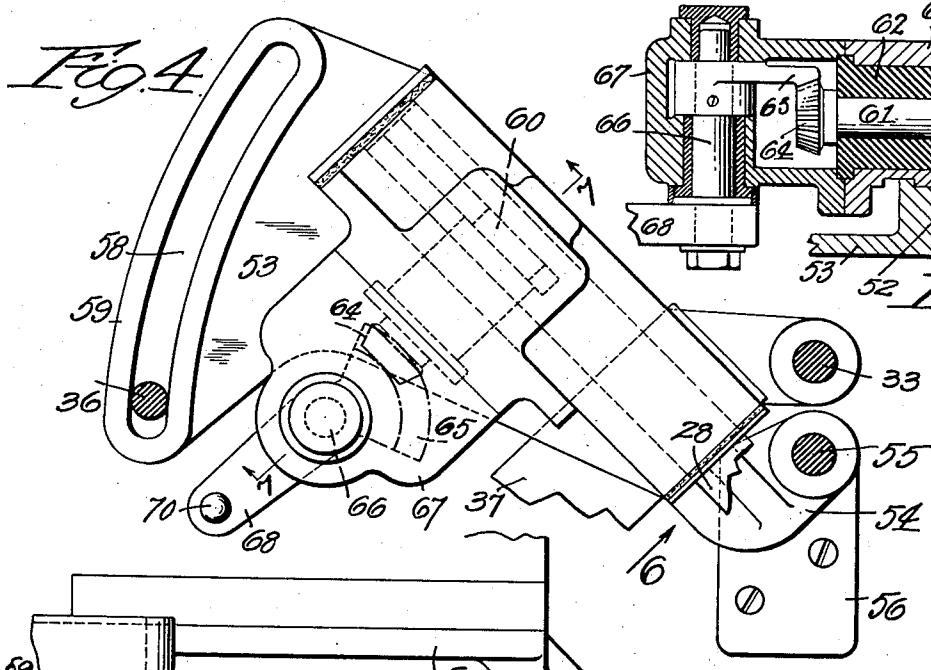


Fig. 7.

Fig. 6.

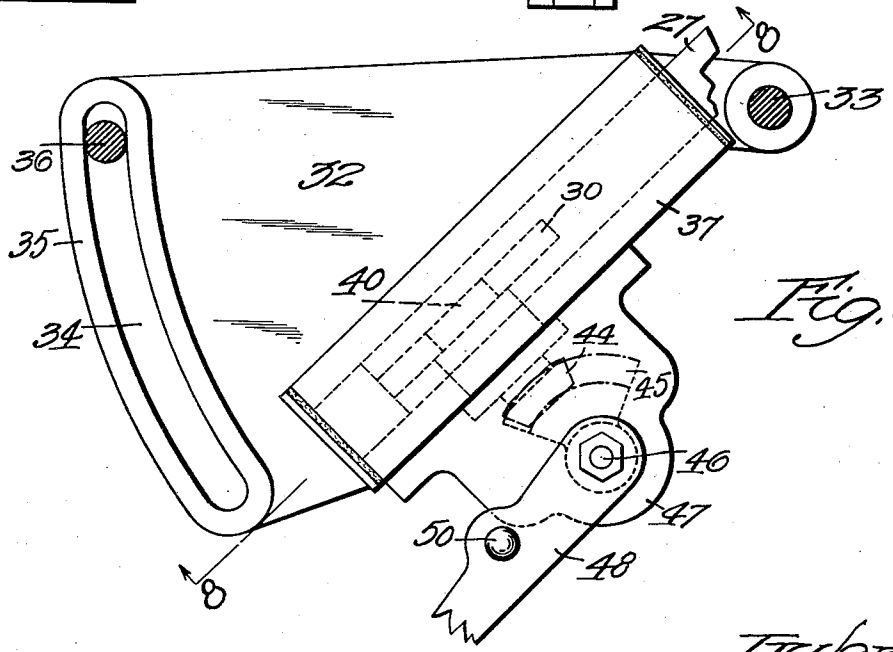


Fig. 5.

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Fig. 8.

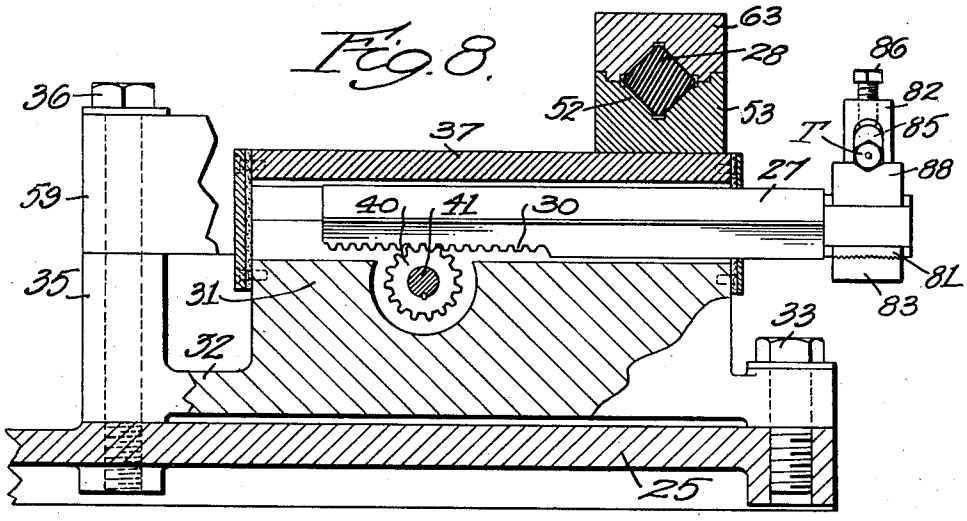


Fig. 9.

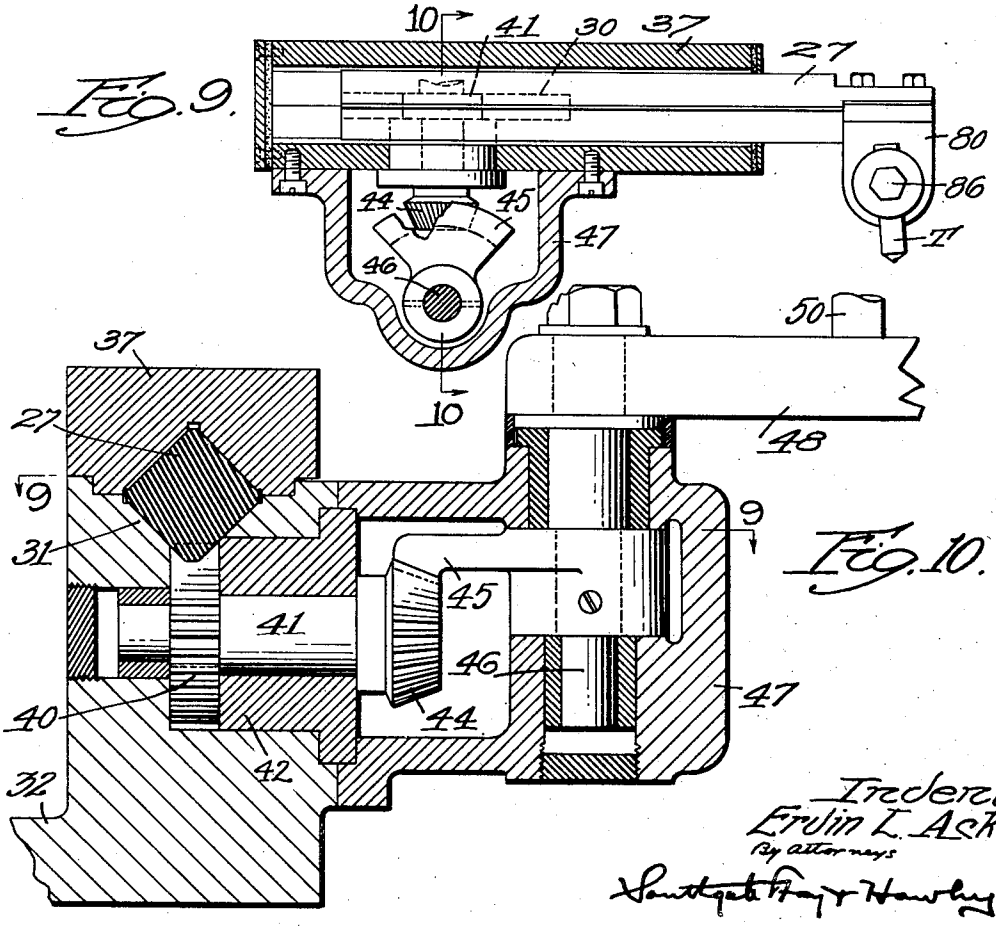


Fig. 10.

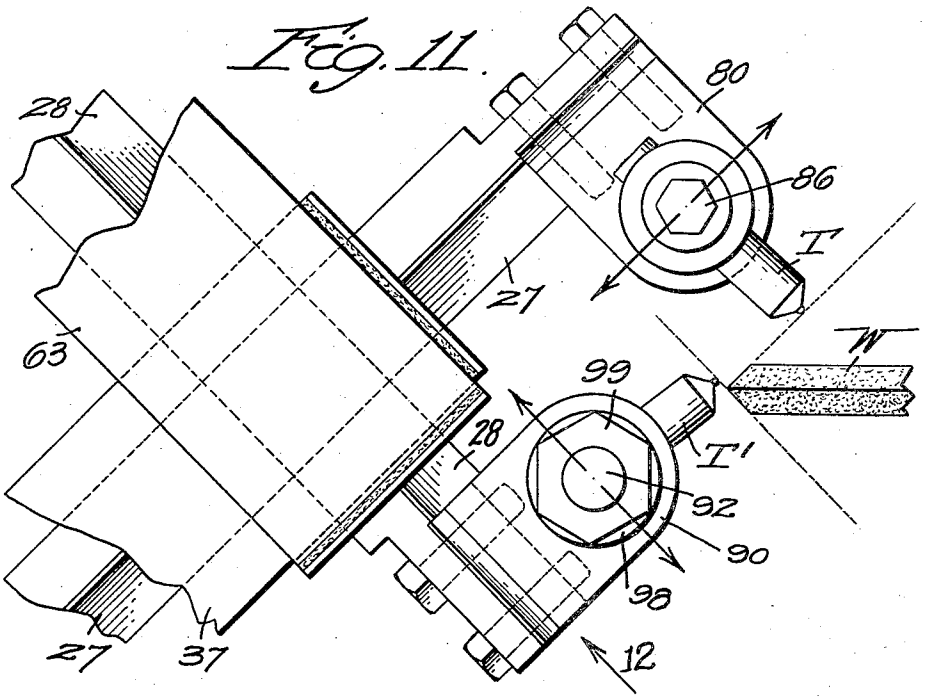
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Fig. 11.



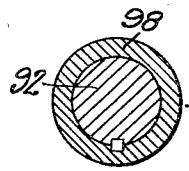


Fig. 14

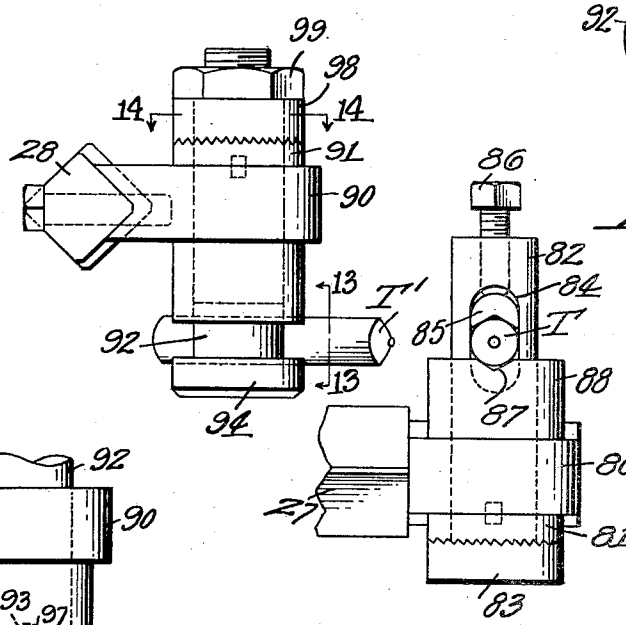


Fig. 12.

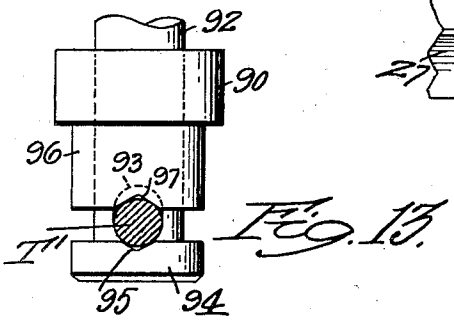


Fig. 13.

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UNITED STATES PATENT OFFICE

2,006,783

TRUING DEVICE

Ervin L. Ackley, Worcester, Mass., assignor to John Bath & Company, Worcester, Mass., a corporation of Massachusetts

Application July 13, 1934, Serial No. 735,020

5 Claims. (Cl. 125—11)

This invention relates to devices for truing or dressing the edge faces of a grinding wheel at predetermined angles. The device is particularly designed for truing a grinding wheel used in thread grinding operations, in which operation the face angle of the wheel must be very accurately defined and maintained.

It is the general object of my invention to provide a truing device by which both faces of a wheel edge may be dressed at separately selected angles and by a single truing operation.

I further provide improved means for adjusting and determining the face angles, and improved positive operating connections between the truing device slides.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a plan view of my improved truing device;

Fig. 2 is a detail sectional elevation, taken along the line 2—2 in Fig. 1;

Fig. 3 is a detail sectional view, taken along the line 3—3 in Fig. 1;

Fig. 4 is a plan view of one portion of my improved truing device;

Fig. 5 is a similar view of another portion of the truing device;

Fig. 6 is a partial side elevation, looking in the direction of the arrow 6 in Fig. 4;

Fig. 7 is a sectional elevation, taken along the line 7—7 in Fig. 4;

Fig. 8 is a sectional elevation, taken along the line 8—8 in Fig. 5;

Fig. 9 is a sectional plan view of certain actuating mechanism, taken along the line 9—9 in Fig. 10;

Fig. 10 is a sectional side elevation of said actuating mechanism, taken along the line 10—10 in Fig. 9;

Fig. 11 is an enlarged plan view of certain parts including improved devices for holding the truing tools;

Fig. 12 is an end elevation, looking in the direction of the arrow 12 in Fig. 11;

Fig. 13 is a detail sectional elevation, taken along the line 13—13 in Fig. 12, and

Fig. 14 is a detail sectional plan view, taken along the line 14—14 in Fig. 12.

Referring to the drawings, I have indicated a wheel carriage 20 (Fig. 1) designed for longitudinal adjustment on the bed or frame of a grinding machine, not shown.

The grinding wheel W is rotatably mounted in a wheel head 21 supported on a wheel slide 22. A bracket 23 extends forward from the wheel slide 22 and is provided with guideways 24 (Fig. 2) for a truing device slide 25. The slide 25 is advanced toward the wheel on the guideways 24 by any usual feeding mechanism when the wheel is to be trued.

Diamond points or other wheel dressing tools T and T' are mounted on slide bars 27 and 28, which slide bars are preferably of rectangular or other non-circular cross section as indicated in Figs. 7, 8 and 10.

The lower slide bar 27 (Figs. 8, 9 and 10) is provided with rack teeth 30 on its lower edge and is slidable in a V-shaped guideway in an upwardly projected portion 31 of a supporting plate 32 (Fig. 5).

The plate 32 is mounted to swing about a bolt or stud 33 fixed in the truing device slide 25 (Fig. 8). The plate 32 is also provided with a segmental slot 34 (Fig. 5) in a flanged edge portion 35 (Fig. 8) through which extends a clamping bolt 36, also secured in the truing device slide 25.

The plate 32 may be swung about the pivot stud 33 to any desired angular position relative to the axis of the grinding wheel, and may be clamped in such adjusted position by the clamping bolt 36.

The slide bar 27 is held in its guideway by a cap 37 (Fig. 10) suitably secured thereto. The rack teeth 30 on the slide bar 27 are engaged by a pinion 40 (Figs. 8 and 10) mounted on a short shaft 41 rotatable in a bearing 42 fixed in the plate portion 31.

A bevel pinion 44 is also secured to the short shaft 41 and is engaged by a segment gear 45 mounted on a short shaft 46 rotatable in bearings in a supporting member 47 secured to the end of the plate portion 31.

A lever 48 is secured to the outer end of the shaft 46 and is provided with a handle 49 (Fig. 1) and stud 50. By swinging the lever 48 by means of the handle 49, the slide bar 27 may be reciprocated through the positive gear connections above described.

The slide bar 28 is similarly mounted to slide in a V-shaped guideway 52 (Fig. 7) in a raised edge portion of a supporting plate 53. The plate 53 is mounted to swing over the cap 37 of the lower plate 32 and has a downwardly offset projection 54 (Fig. 6) pivoted at 55 (Fig. 4) on a bracket 56 secured to the truing device slide 25.

A segmental slot 58 (Fig. 4) is formed in a thickened edge portion 59 (Fig. 8) of the plate 53. The clamping bolt 36, previously described, extends through both segmental slots 34 and 58 in the two supporting plates 32 and 53.

Rack teeth are formed in the upper edge of the slide bar 28 (Fig. 7) and are engaged by a pinion 60 on a short shaft 61 mounted in a bearing 62 in a member 63 secured to the supporting plate 53 and also forming a cap for the slide bar 28.

A bevel pinion 64 is mounted on the shaft 61 and is engaged by a segment gear 65 on a short shaft 66 rotatably mounted in a supplemental bearing member 67 and having a lever 68 secured to the lower end thereof.

It will be noted that these operating connections are substantially the same as those previously described for the slide bar 27, except that the pinion 60 is above the slide bar 28, whereas the pinion 40 (Fig. 8) is below the slide bar 27.

The lever 68 is provided with a stud 70 (Fig. 3) similar to the stud 50 in the lever 48, and these studs are provided with ball heads adapted to be received in swivel bearings in the ends of an adjustable link 72 (Fig. 3) made in two parts and provided with right and left-hand portions threaded into a turn buckle or sleeve 73 by which the length of the link 72 may be adjusted.

In Figs. 11 to 14 I have shown means for securing the tools T and T' to the ends of the slide bars 27 and 28.

The slide bar 27 is provided with an offset bracket 80 having a serrated collar 81 (Fig. 12) fixed to the lower face thereof. A tool post 82 extends through the bracket 80 and collar 81 and is provided with an enlarged serrated head 83.

The post 82 is also provided with an elongated slot 84 to receive the shank of the tool T and also to receive a clamping element 85 engaged by the end of a set screw 86. The tool T rests in a V-shaped notch 87 (Fig. 12) in the upper surface of a collar 88 loose on the tool post 82.

By loosening the screw 86, the tool T may be adjusted longitudinally of its axis or angularly with respect to the axis of the tool post 82. After being placed in the desired position, tightening of the screw 86 causes the serrated head 83 to engage the serrated fixed collar 81, thus holding the parts firmly from displacement.

The corresponding parts for the slide 28 are shown in Figs. 12, 13 and 14 and comprise an offset bracket 90 secured to the slide 28 and having a serrated collar 91 fixed to its upper face. The tool post 92 extends loosely through the parts 90 and 91 and is provided with an elongated slot 93 and with an enlarged head 94 having a tool-receiving notch 95. A collar 96 is loose on the tool post 92 and also has a notch 97 for the tool T'.

A serrated collar 98 (Figs. 12 and 14) is keyed to the upper part of the tool post 92 and may be clamped against the serrated collar 91 by a binding nut 99. This construction possesses the same advantages for securing the tool in any selected position as are possessed by the form previously described.

Having described the details of construction of my improved truing device, the advantages and method of operation thereof will be readily apparent.

After loosening the clamping bolt 36, the supporting plates 32 and 53 may be swung about their pivots to any desired angular positions and they may be held in adjusted position by again tightening the bolt 36. It will be noted that each plate is independently adjustable angularly, so that each slide bar may be adjusted to move at any desired angle relative to the axis of the grinding wheel.

After setting the plates to selected angles, the link 72 is adjusted to such length as will bring the tools T and T' into the desired operating relation with the grinding wheel W. The truing device slide is then advanced on its guideways 24 to bring the tools T and T' into contact with the edge of the grinding wheel and the handle 49 is swung back and forth to reciprocate the tools along their respective angular paths.

The operating connections are such that one tool moves toward the apex of the grinding wheel edge while the other tool moves away from the apex, thus preventing any possibility of interference between the tools.

My improved truing device is of simple and rigid construction, easily adjusted and firmly maintained in adjusted position. Both slides are positively connected to the operating handle so that the movement of the slides is entirely controlled.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:—

1. A truing device comprising a pair of tool-supporting slide bars, supports for said bars, means to adjust each support angularly, each bar having rack teeth thereon, a pinion in each support for each slide bar, and manual means to simultaneously rotate said pinions, said means including a separate actuating shaft rotatably mounted in each support and movable therewith, an operating handle on one of said shafts, and longitudinally adjustable connecting means by which said shafts may be operatively connected in all relative positions of said supports.

2. A truing device comprising a pair of tool-supporting slide bars, supports for said bars, means to adjust each support angularly, positive gear connections between said slide bars operative in all angular positions of said supports, and means to move said slide bars, said connections including a vertical shaft in each support, a lever arm on each vertical shaft, a longitudinally adjustable link connecting said lever arms, and a handle to swing one of said arms.

3. A truing device comprising a pair of tool-supporting slide bars, supports for said bars, means to adjust each support angularly, each bar having rack teeth thereon, a pinion in each support for each slide bar and manual means to simultaneously rotate said pinions, said latter means including a vertical shaft in each support, a segment gear on each vertical shaft, a short shaft for each pinion, and a bevel gear on each short shaft engaged by one of said segment gears.

4. The combination in a truing device as set forth in claim 3, in which the vertical shafts are provided with lever arms connected by a longitudinally adjustable link, and in which one of said vertical shafts is provided with a handle for manual operation of said truing device.

5. In a truing device, a slide bar, a bracket on said slide bar, a serrated collar fixed to said bracket, a tool post slidable and rotatable in said bracket and collar, a serrated collar slidable but nonrotatable on said tool post, and means to clamp a tool in a transverse opening in said post and to simultaneously clamp said serrated collars together to maintain the adjusted angular position of said tool.

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