Sept. 26, 1939. F. TURRETTINI 2,174,146

GRINDING MACHINE

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Fig. 1

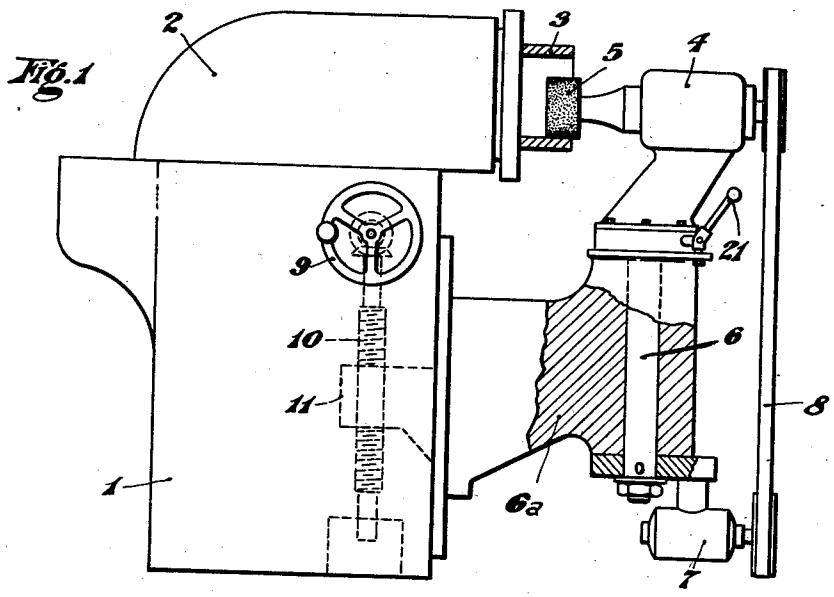


Fig. 2

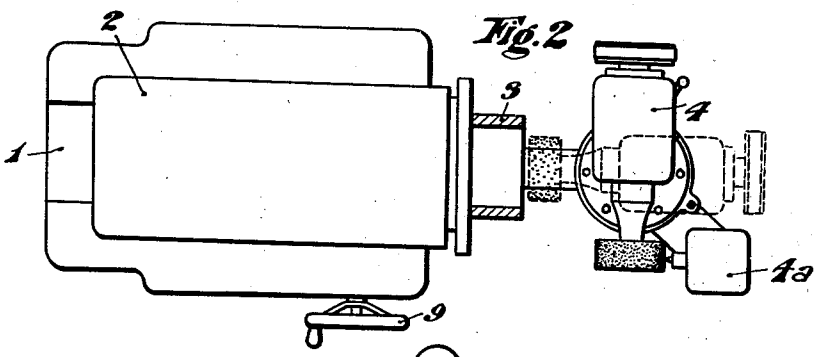
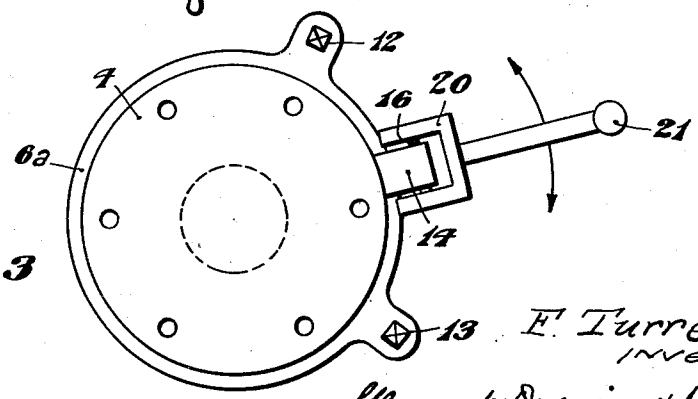


Fig. 3



F. Turrettini
INVENTOR

By: Glascock Downing & Seebold
Attys.

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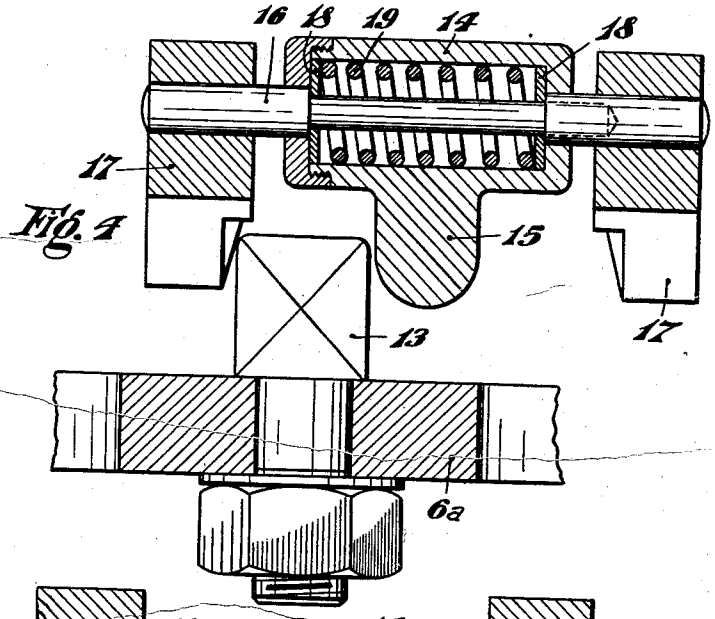


Fig. 4

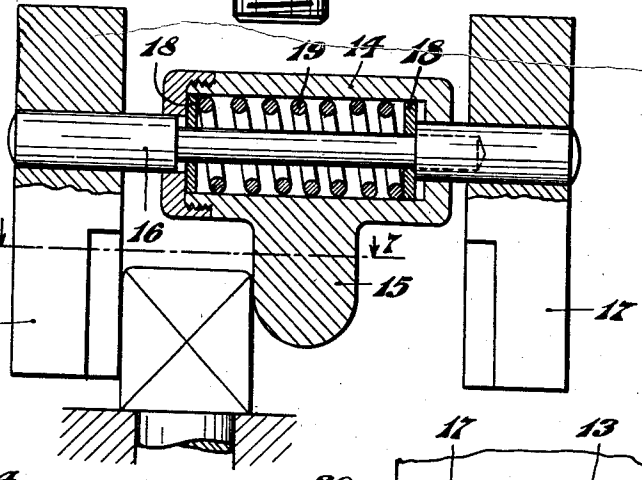


Fig. 5

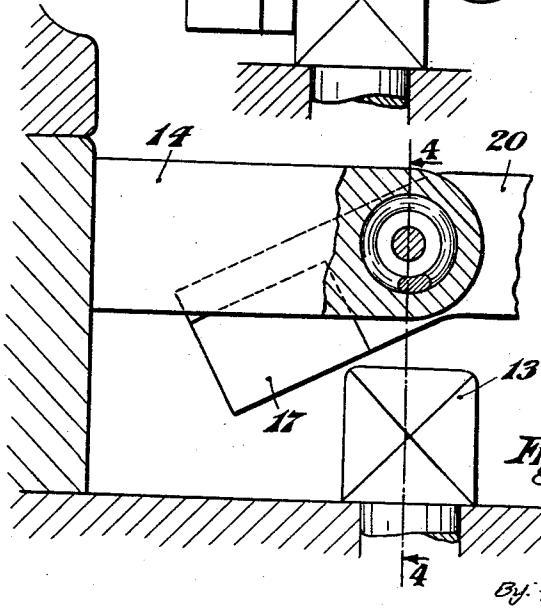


Fig. 6

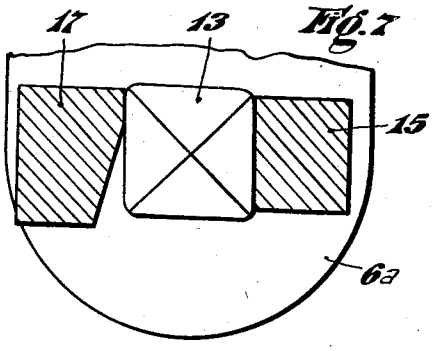


Fig. 7

F. Turrettini
INVENTOR

By: Glascock Downing & Seebold
ATTYS.

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UNITED STATES PATENT OFFICE

2,174,146

GRINDING MACHINE

Fernand Turrettini, Bellevue-Geneva, Switzerland, assignor to the firm Société Genevoise d'Instruments de Physique, Geneva, Switzerland, a firm of Switzerland

Application October 19, 1937, Serial No. 169,904
In Switzerland November 4, 1936

2 Claims. (Cl. 51—166)

The present invention relates to grinding machines of the type having a movable grinding wheel support adapted to be brought in two positions, one of which is the working position for effecting actual grinding work, while in the other position the grinding wheel is brought to a trueing device for effecting trueing of the profile of the wheel.

In known grinding machines of this type the grinding wheel support is brought from working position to trueing position by a translatory movement, which generally is effected by means of the lead screw of the feeding device; the result is an increased wear of the lead screw as also a loss of time. Furthermore, in the case of internal grinding machines, the known designs require the removal of the trueing device during grinding and its reapproaching for trueing.

The object of the present invention is to avoid these inconveniences and to provide a grinding machine permitting to rapidly and easily effect the trueing operations.

According to the invention the grinding wheel support is rotatably mounted on the machine bed so that the passage from one position to the other is obtained by rotation of the support about an axis which is perpendicular to the axis of the workpiece mounted on the machine.

The accompanying drawings illustrate by way of example one form of embodiment of a grinding machine according to the invention.

Figure 1 is an elevation of the grinding machine, partly drawn in section.

Figure 2 is a plan view of the machine.

Figure 3 is a plan of a part of the grinding wheel support.

Figures 4 to 7 concern detail parts of the machine, Figures 4 and 5 being each a section along the line 4—4 of Figure 6, showing the members in two different positions of operation and Figure 7 being a section along the line 7—7 of Figure 5.

The represented grinding machine comprises a bed 1 bearing a slidable spindle head 2, a support 4 for the grinding wheel 5 and a support 4a for a trueing device. The support 4 is fixed to a vertical rotatable shaft 6 journaled in a slide 6a and carrying, at its lower end, an electric motor 7 driving the wheel spindle by means of a belt 8. The slide 6a can be vertically moved by a handwheel 9 turning a screw 10 engaged in a nut 11.

Fig. 1 shows the grinding wheel 5 in actual working position; to bring it into trueing position, the slide 2 is moved to the rear end of its travel, so that the wheel 5 is clear of the workpiece 3, the support 4 is then rotated through an angle of about 90° around the axis of shaft 6. In this manner the support 4 is brought in the position according to Fig. 2, the grinding wheel coming into the range of the trueing device 4a; the motor 7 and the belt 8 being carried by the shaft 6, make the same rotation as the support 4. The workpiece is now sufficiently accessible to allow, for instance, its measurement by means of a gauge.

The feed motion of the grinding wheel towards the work, its releasing for the dead return travel and an eventual relieving motion are conveniently obtained by a translatory motion of the support 4, parallely to the axis of the shaft 6; this motion being controlled by the hand-wheel 9.

The support 4 bears a locking device cooperating with the stops 12 and 13 provided on the slide 6a. One of these stops determines the working position, and the other the trueing position. The locking device shown in Figs. 3 to 7 comprises, on the support 4, a bearing sleeve 14 with a nose 15 projecting downwardly; a shaft 16, movable axially in the bearing 14, is provided at each end with a tapered projecting part or jaw 17, both jaws 17 being carried by a fork 20 provided with a handle 21. A spring 19 and two loose washers 18 are mounted on the shaft 16, inside of the sleeve 14. Figs. 4 and 6 show the locking device at rest; the handle 21 is horizontal and both jaws 17 are equally spaced from the nose 15. The support 4 is rotated from working into trueing position and vice versa by handle 21 until the fork 20 is positioned above stop 12 or 13; the handle 21 is then moved upwardly, thus lowering the jaws 17 which form together, with the nose 15, two elastic clutches, one or the other of which according to the position of the support 4a, yieldingly engages a stop 12 or 13 (see Figures 5 and 7) and thus determines the working position or the trueing position of the grinding wheel.

The invention is not limited to the construction shown in the drawings. The invention can be applied to all kinds of grinding machines, for instance, to thread grinding machines. In this case, the trueing device 4a will be designed in a well known manner, so as to shape the grinding wheel to the profiles of the thread.

I claim:

1. A grinding machine having a grinding wheel, a rotatable grinding wheel support, a work piece carrier, a trueing device for trueing the grinding wheel, said trueing device being angu-

larly spaced from the work piece carrier relative to the axis of rotation of the grinding wheel support, means for rotating the grinding wheel support from working position into trueing position, a locking device for locking the grinding wheel support in one or the other of said two positions, said locking device comprising a bearing sleeve having an outwardly projecting nose thereon, a shaft slidably traversing said sleeve, a spring within said sleeve acting to yieldingly maintain said shaft in a median position relative to said nose on the sleeve, a clamping jaw carried by each end of the shaft outside of the sleeve, and two angularly spaced abutments determining each one of said two positions of the grinding wheel support, said bearing sleeve with said shaft and jaws being movable relative to said abutments, and each of said jaws coacting with said nose on the bearing sleeve to form a clutch member adapted to yieldingly engage one of said abutments.

2. An internal cylindrical grinding machine comprising a work carrier, a grinding wheel, a grinding wheel support rotatable about an axis being perpendicular to the axis of the cylindrical work to be ground, said grinding wheel being adapted to occupy two predetermined positions, the working position and a wheel trueing position, both situated on the same circle of rotation about said first mentioned support axis, a slide carrying said support and movable parallely to said support axis, a trueing device mounted on said slide and angularly spaced from the work piece carrier relative to said support axis, two angularly spaced fixed abutments on said slide for co-operating with said support to determine the working position and the trueing position of the grinding wheel, and means for moving the grinding wheel support relative to the trueing device about said axis of rotation into engagement with one or the other of said abutments.

FERNAND TURRETTINI.