Dec. 14, 1948. J. W. PARKER 2,456,079

SURFACE GRINDER

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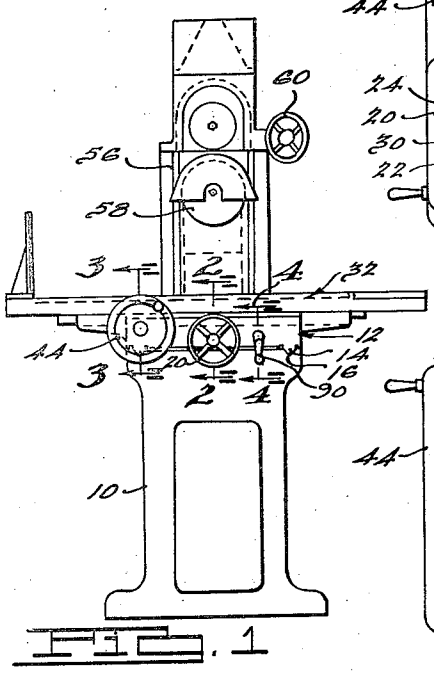


Fig. 1.

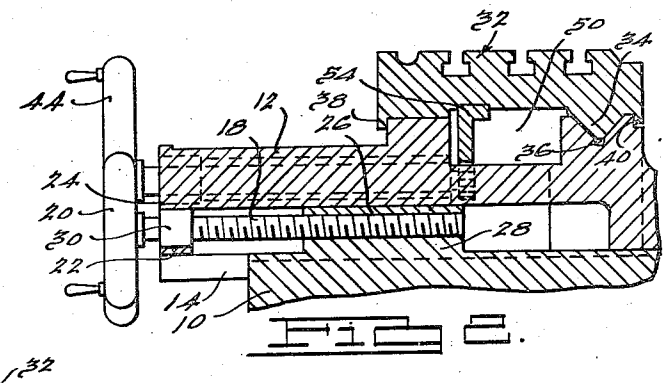


Fig. 2.

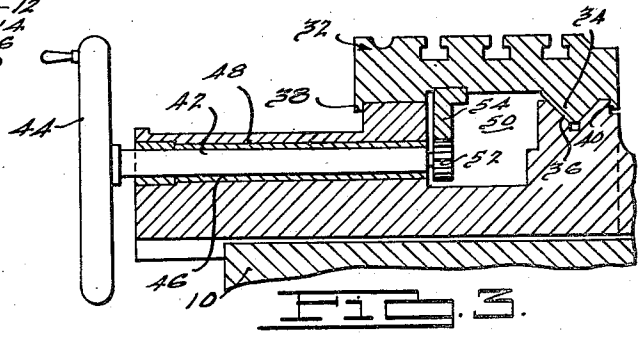


Fig. 3.

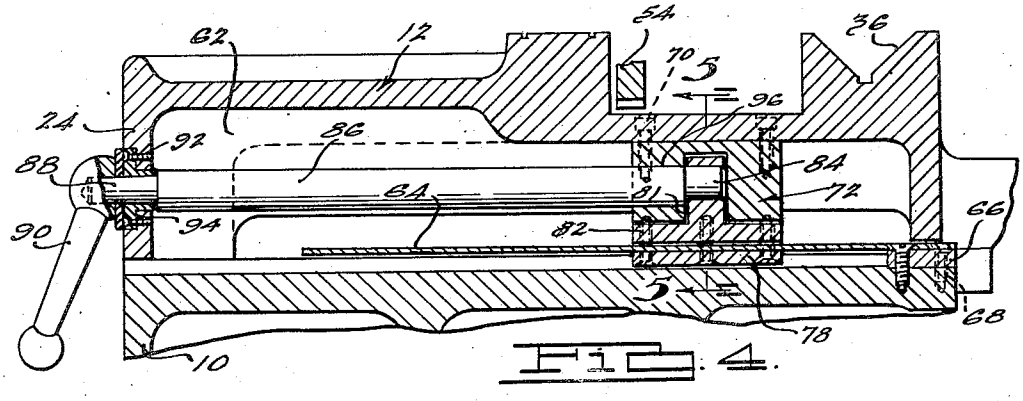


Fig. 4.

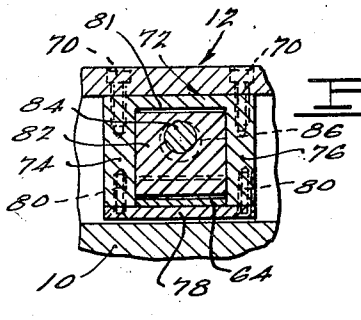


Fig. 5.

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SURFACE GRINDER

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1 Claim. (Cl. 51—231)

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The invention relates broadly to new and useful improvements in surface grinding machines and more particularly to means for locking the saddle of a machine of this type in a selected adjusted position.

In conventional surface grinders the saddle is mounted for horizontal sliding movement on a suitable base, and a work table is supported on the saddle for horizontal sliding movement in a direction normal to the direction of travel of the saddle. Manually operated actuator means are provided for separately actuating both the saddle and work table. These actuators are usually equipped with hand wheels which are disposed at the front of the machine where they are readily accessible for operation.

During setting up operations a piece of work is mounted on the table and the saddle is adjusted to properly position the work with respect to the grinding wheel by manually rotating one of the hand wheels. In the case of conventional surface grinders the operator must thereafter exercise extreme care to avoid striking or bumping the hand wheel or other adjustable parts of the machine since in doing so he may easily shift the table with the saddle and move the workpiece from its intended position. In practice, a workpiece that must be held to a fine tolerance easily can be ruined by an inadvertent shifting of the saddle from its adjusted position by even the slightest amount.

An important object of the invention therefore is to provide a surface grinding machine that is equipped with means for locking the saddle in the adjusted position.

Another object of the invention is to provide a saddle locking means for surface grinding machines that can be engaged without disturbing the delicately adjusted saddle.

Still another object of the invention is to provide a locking means of the above mentioned character that when engaged will not subject either the base or the saddle to stresses which might disturb adjustment of the saddle.

Yet another object of the invention is to provide a locking means of the above mentioned character that is simple in construction, efficient in operation and inexpensive to manufacture.

A further object of the invention is to provide a locking means of the above mentioned character that can be easily applied to conventional surface grinding machines.

Other objects and advantages of the invention will be apparent during the course of the following description.

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In the drawings forming a part of this specification and wherein like numerals are employed to designate like parts throughout the same.

Fig. 1 is a front elevation of a surface grinding machine embodying the invention,

Fig. 2 is an enlarged, fragmentary, vertical sectional view taken on the line 2—2 of Fig. 1,

Fig. 3 is an enlarged, fragmentary, vertical sectional view taken on the line 3—3 of Fig. 1,

Fig. 4 is an enlarged, fragmentary, vertical sectional view taken on the line of 4—4 of Fig. 1, and

Fig. 5 is a fragmentary, vertical sectional view taken on the line of 5—5 of Fig. 4.

For a more detailed description of the invention reference is had to the accompanying drawings wherein the numeral 10 designates the base for slidably supporting a saddle 12. Adjacent each side thereof the saddle 12 is provided with downwardly extending, substantially V-shaped guides 14 which operate in correspondingly shaped guideways 16 provided in the top surface of base 10. As best shown in Fig. 1, the guides 14 and guideways 16 extend from front to back so that the saddle 12 moves in a horizontal plane and is adjustable relative to the operator who normally stands in front of the machine.

In order to adjust the saddle 12 an actuator is provided which comprises an externally threaded spindle 18 and a hand wheel 20. As best shown in Fig. 2, the spindle 18 is journaled in an opening 22 provided in the front wall 24 of the saddle and extends into a horizontal, internally screw-threaded passage 26 provided in an upward extension 28 on the base 10. The spindle 18 preferably is supported in opening 22 by a bearing 30 which is capable of sustaining both radial and thrust stresses. Thus, when handwheel 20 is rotated, the spindle 18 moves axially in passage 26 and slidably actuates the saddle 12.

Mounted on the saddle 12 is a conventional work table 32. Adjacent its rearward edge, the latter is provided with a depending substantially V-shaped guide 34 which extends from left to right and slides in a correspondingly shaped guideway 36 provided in the top surface of the saddle. Depending flanges 38 and 40 on the work table overhang the parallel front and back surfaces of the saddle 12 and assist in retaining and guiding the work table. It will be observed that the work table also operates in a horizontal plane but in a direction normal or at right angles to the direction of travel of the saddle 12.

In order to adjust the work table 32 on the saddle 12 an actuator is provided which comprises

an arbor 42 and a handwheel 44. The latter is positioned in front of the work table 32 and the arbor 42 extends rearwardly through a sleeve bearing 46 which fits snugly in a horizontal bore or passage 48 provided in the work table. At its rearward end the arbor 42 projects into a groove 50 which extends transversely across the top of the work table 32. The projecting end of the arbor carries a pinion 52 which meshes with a rack 54 on the under surface of the work table. From the foregoing, it will be readily apparent that, when handwheel 44 is rotated, pinion 52 cooperates with the rack 54 to slidbaly actuate the work table 32 in guideway 36.

Behind the saddle 12 and work table 32, the base 10 is provided with the usual standard 56 which supports the vertically movable grinding wheel 58 in the conventional manner. The grinding wheel 58 is adjusted relative to a work piece supported on the work table 32 by means of a manually operated handwheel 60.

Attention is now directed to Figs. 4 and 5 which show the locking means for holding the saddle 12 in a selected adjusted position. In this connection, it will be observed that the saddle is hollow to provide an inner chamber or cavity 62 which opens onto the flat top surface of the base 10.

Disposed within the cavity 62 and in vertically spaced relation with the top surface of the base 10 is a flexible metallic strip 64. The strip extends in a direction parallel to the guide 14 and is supported at its rearward and by a spacer 66. Screws 68 extending through openings provided in the strip 64 and spacer 66 and into tapped holes provided in the base 10 securely anchor the strip to the base.

Also disposed within the cavity 62 and attached to the saddle 12 by bolts 70 is a supporting block 72. As best shown in Fig. 5, the supporting block is mounted directly above the strip 64 and is formed at each side thereof with flanges 74 and 76 which extend downwardly in embracing relation with the strip. A transverse bearing plate 78 extends below the strip and is attached to the flanges 74 and 76 by screws 80. It will be observed that plate 78 supports the strip 64 and that it will travel along the strip during movement of the saddle 12. Disposed within a cavity 81 provided in block 72 and above the strip 64 is a vertically and laterally movable clamping member 82. The latter is movable into and out of engagement with the strip 64 by means of an eccentric 84 on the end of a shaft 86. At its forward end the shaft 86 is provided with a reduced portion 88 which extends through a hole 94 in the front wall 24 and carries an operating handle 90. A suitable bearing 92 fitted in the hole 94 rotatably supports the shaft. At its rearward end the shaft 86 is rotatably journaled in an opening 96 provided in the support 72. When handle 90 is rotated in one direction, the clamping member 82 moves downwardly and presses the strip 64 solidly against the bearing plate 78 and when handle 90 is rotated in the opposite direction, clamping member 82 is lifted to release the strip. In practice, it has been found that the binding, frictional engagement between strip 64, bearing plate 78 and clamping member 82 effectively holds the saddle 12 stationary.

As suggested, the locking means can be engaged or applied without disturbing the adjustment of saddle 12 by reason of the inherently flexible nature of strip 64. The unique character of this strip also prevents any stresses that may be created by clamping it between plate 78 and member 82 from being transmitted either to the base 10 or the saddle 12.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the appended claim.

Having thus described the invention, I claim:

A surface grinder comprising, in combination, a base; a saddle mounted for sliding movement on said base; a table slidably mounted on the saddle for movement in a direction of right angles to the direction of travel of said saddle; actuator means for said saddle and said table; and means for holding the saddle in a selected adjusted position, said holding means comprising an inherently flexible metallic strip mounted on the base and extending in spaced relation therewith beneath the saddle and parallel to its direction of travel, a support attached to the saddle positioned to travel along said strip, an adjustable clamping member carried by the support and movable against said strip to press the latter into binding, frictional engagement with the support, and a manually rotatable shaft journaled in the saddle and having an eccentric connection with said clamping member whereby rotation of the shaft moves the clamping member into and out of engagement with the strip.

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