May 14, 1940. J. J. HARTEN 2,200,883

TOOL GRINDING FIXTURE

Filed Sept. 1, 1938

Fig. 1

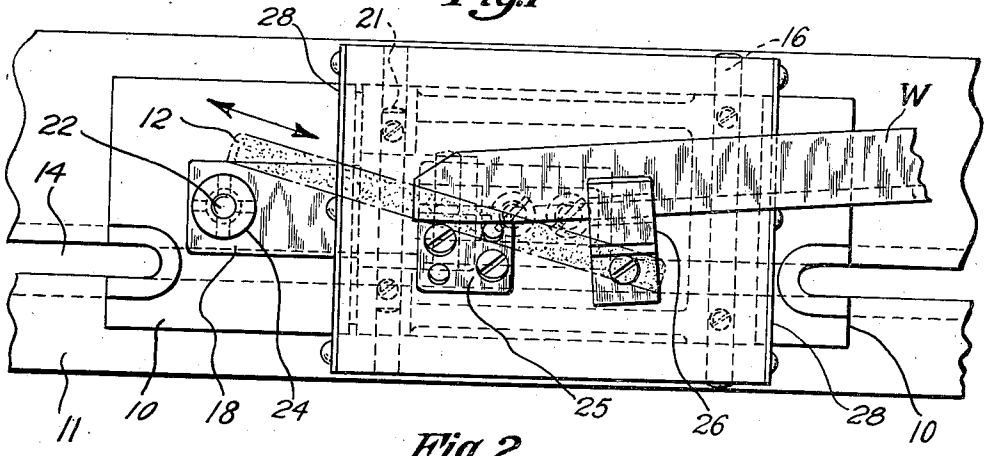


Fig. 2

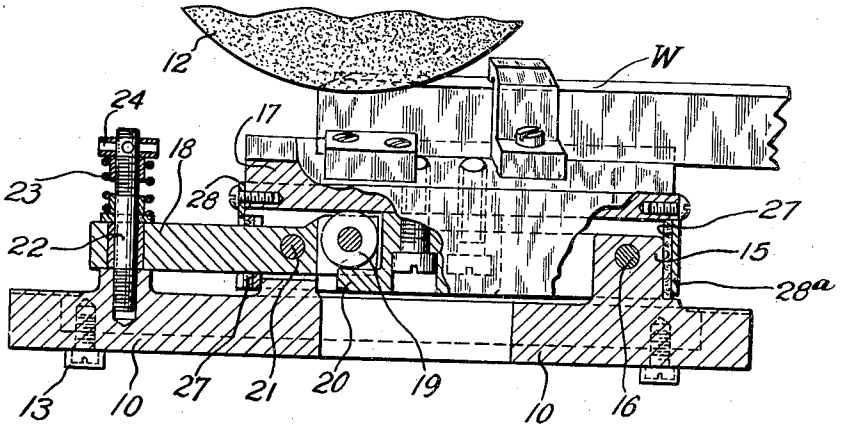


Fig. 3

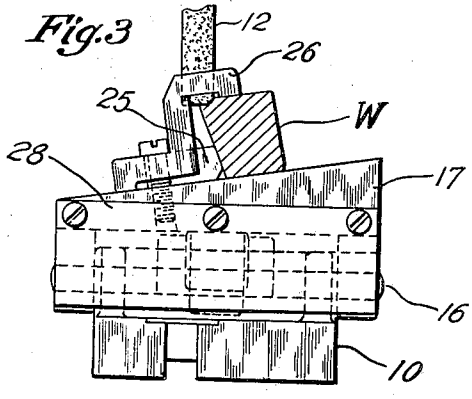
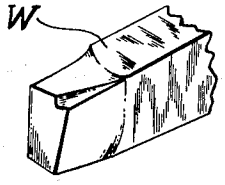


Fig. 4



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Patented May 14, 1940 2,200,883

UNITED STATES PATENT OFFICE

2,200,883

TOOL GRINDING FIXTURE

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Application September 1, 1938, Serial No. 227,995

3 Claims. (Cl. 51—218)

This invention relates to work holding fixtures for tool grinding machines and particularly to a fixture for resiliently supporting the work piece or tool being ground or sharpened against the wheel during the grinding operation.

A primary object of the invention is to provide a fixture on which the work piece or tool being ground or resharpened may be resiliently mounted and having its work holding member held in its operative position by a spring, the pressure of which may be widely varied as required.

With the above and other objects in view the invention may include the features of construction and operation set forth in the following specification and illustrated in the accompanying drawing.

In the accompanying drawing annexed hereto and forming a part of this specification, I have shown the invention embodied in a fixture or holder for grinding and resharpening lathe and planer tools and adapted for mounting upon a small size tool grinding machine, but it will be understood that the invention can be otherwise embodied and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims appended to this specification being relied upon for that purpose.

In the drawing:

Figure 1 is a plan view of the fixture forming the present invention shown mounted upon the movable table or work support of a standard tool grinding machine.

Fig. 2 is a front elevation of the fixture shown in Fig. 1, parts being broken away to more clearly show their construction.

Fig. 3 is an end elevation of the fixture taken from the right hand end as seen in Fig. 2; and

Fig. 4 is a perspective view of a tool adapted to have its chip clearing groove ground in the fixture forming the present invention.

In the above-mentioned drawing there has been shown but one embodiment of the invention which is now deemed preferable, but it is to be understood that changes and modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

Briefly, and in its preferred aspect, the invention may include the following principal parts: first, a base adapted to be secured directly to the movable table of a universal tool grinding machine; second, a body member pivotally mounted thereon near one end on a horizontal axis; third, a lever pivotally mounted intermediate its ends in the base and bearing at one end against the lower surface of the body member at the end of the body member opposite that at which the body member is pivoted; and fourth, a spring engaging the opposite end of the lever and retaining the lever in a position to support the table in its elevated or operative position.

The particular embodiment of the invention illustrated is adapted to grind or resharpen the upper cutting surface of the tool; that is, the surface intercepting the front substantially vertical surface and which forms the cutting edge. As best seen in Fig. 4, the surface formed by the wheel is in the form of a narrow channel arcuate in cross-section and extending the length of the cutting edge. This surface forms, with its intercepting vertical surface, a cutting angle of somewhat less than a right angle and the narrow channel forms a chip guiding and breaking means on the upper surface of the tool.

Referring more in detail to the figures of the drawing, there is shown a base 10 adapted to be secured in position on the table 11 of a universal tool grinding and sharpening machine, the wheel 12 of which is shown disposed obliquely to the direction of travel of the table 11. Means to relatively adjust the heighth of the table 11 and wheel 12, to angularly adjust the path of movement of the table 11 relative to the wheel 12 and to traverse the table 11 past the wheel forming parts of the grinder will not require further description. These parts form no part of the present invention and are those usually found on tool grinding machines. To aline the base 10 with the machine table 11, studs 13 fitting a T-slot 14 in the table 11 are fastened into the lower surface of the base.

Extending transversely across the base 10 is a projection 15 within which is supported a horizontal pin 16. Mounted on this pin 16 for limited pivotal movement is a body member 17. As shown in Fig. 2 the body member 17 near one end engages the pin 16 and at an intermediate point is supported upon or by means of a lever 18, there being a roller 19 at the end of the lever 18 bearing against the lower surface of the body member 17. A lug or bracket member 20 secured to the lower surface of the body member 17 has an extended end portion closely fitting the roller so that with the lever 18 held in position the body member 17 is secured against movement up or down.

The lever 18 as shown in Fig. 2 is pivotally supported at an intermediate point on a horizontal pin 21 mounted in a projection on the base 10. The pins 16 and 21 for the body member 17 and lever 18 respectively are disposed parallelly to each other. Adjacent the end of the

lever 18 opposite that on which the roller 19 is mounted there is secured a stud 22 vertically disposed in the base and passing through a hole provided therefor in the lever 18. Bearing against the upper surface of the lever 18 and surrounding the stud 22 is a helical spring 23, the upper end of which bears against a nut 24 threaded upon the upper end of the stud 22. By adjustment of the nut 24 on the stud 22 the pressure exerted by the spring 23 to retain the lever 18 in the position shown in Fig. 2 may be varied over a wide range.

The tool W to be ground or resharpened is mounted on the upper surface of the body member 17, there being a projection 25 thereon against which a side of the tool W may rest. A clamp 26 may be mounted on the body member 17 engaging the upper surface of the tool W to securely hold the tool in position. As shown in Fig. 2 the tool being operated on is positioned during operation so that the end having its upper surface ground may be substantially above the inner end of the spring retained lever 18 and substantially above the roller 19.

To enclose the pivot pins 16 and 21, the roller 19 and inner end of the lever 18 to protect these parts from the entrance of abrasive dust, felts 27 may be held against these ends by means of thin metal plates 28 and 28*a*, the plate 28 at the left hand end of the body member 17 being cut to fit closely about the lever 18, as shown in Fig. 2.

In operation and with the base 10 mounted on the table 11 of a tool grinding machine the tool W to be ground or resharpened is clamped as shown to the body member 17. The table 11 mounting the base 10 is angularly adjusted so that the tool W being operated on will be disposed properly relatively to the wheel 12 and the direction of reciprocation of the table. With the table 11 and work W so adjusted, the table 11 is reciprocated in the direction indicated by the arrow in Fig. 1. The table 11 is raised relative to the wheel 12 so that the wheel successively cuts deeper into the narrow chip clearing and breaking channel formed in the upper surface of the tool W. The pressure of the wheel 12 against the tool W is limited by the spring 23 and is regulatable to effect the best cutting action by adjustment of the nut 24.

The metal plates 28 and 28*a* compress the felts 27 against the end surfaces of the projections in the base 10 through which the pivots 16 and 21 extend so that a substantial amount of friction is set up. This causes the body member 17 to move upward extremely slowly when depressed by the wheel 12 engaging the work W. By this means the spring 23 when compressed is prevented from rebounding to immediately raise the body member 17 to its upper position and unduly loading the wheel. The cutting action is therefore made more uniform and effective.

What I claim is:

1. A work holding fixture for tool grinding machines comprising in combination, a base member, a body member pivoted thereto adjacent one end, tool clamping means on said body member, a lever pivotally mounted in said base member intermediate its ends, one end of said lever supporting said body member adjacent the end opposite its pivoted end, a spring mounted adjacent its opposite end resiliently retaining said lever in position to support said body member in operative position, and means to adjust the pressure of said spring.

2. A work holding fixture for tool grinding machines comprising in combination, a base member, a body member pivoted thereto adjacent one end, tool clamping means on said body member, a lever pivotally mounted in said base member intermediate its ends, the inner end thereof having a roller thereon engaging and supporting said body member at its end opposite the pivoted end, a spring mounted adjacent the outer end of said lever and resiliently retaining said lever in position to support said body member, means to adjust the pressure of said spring, and means to enclose the pivots for said body member and lever, said means permitting limited pivotal movement of said body member.

3. A work holding fixture for tool grinding machines comprising in combination, a base member, a body member pivoted thereto adjacent one end, tool clamping means on said body member, a lever pivotally mounted in said base member intermediate its ends, the axes of said pivots being parallel, the inner end of said lever having a roller thereon engaging said body member adjacent the end opposite the pivoted end, a spring engaging the opposite end of said lever and resiliently retaining said lever in position to support said body member, and means to adjust the pressure of said spring.

JOHN J. HARTEN.