W. B. TULEK.

FIXTURE FOR USE IN CUTTER GRINDING AND SIMILAR OPERATIONS.

APPLICATION FILED JULY 8, 1919.

1,352,703. Patented Sept. 14, 1920.

FIG. 1

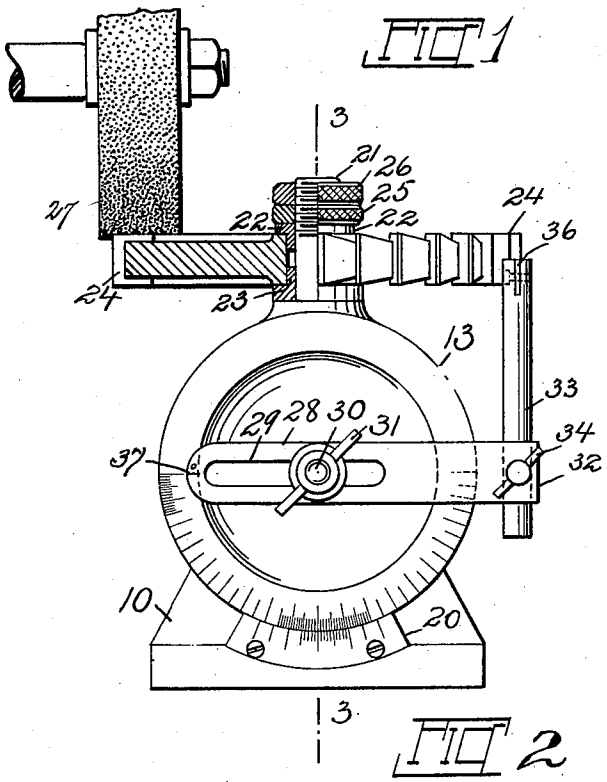


FIG. 4

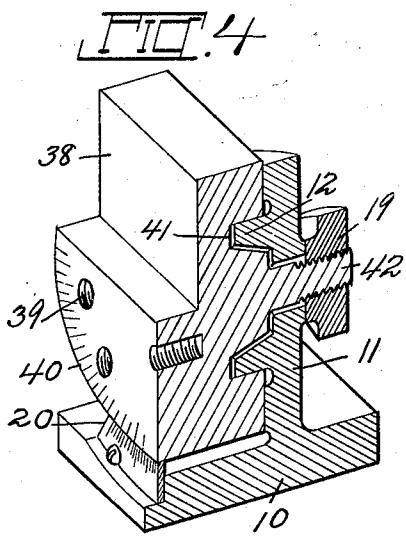


FIG. 2

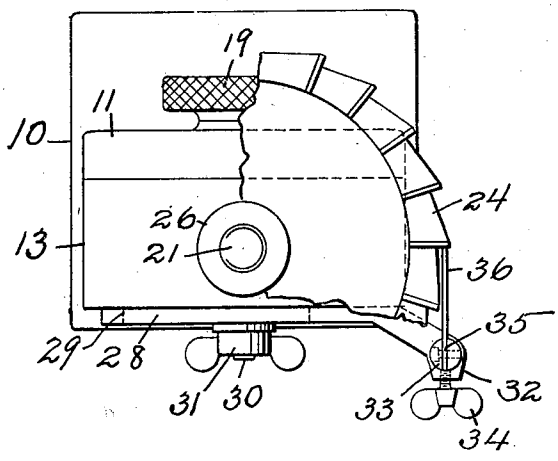
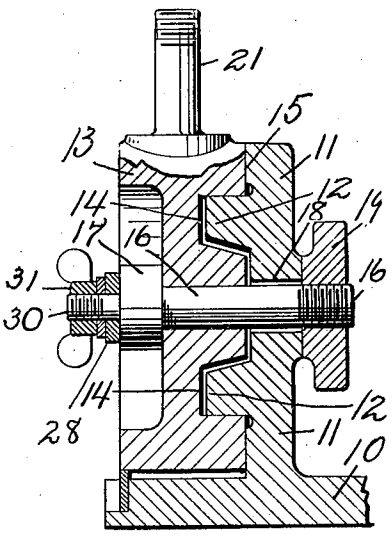


FIG. 3



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FIXTURE FOR USE IN CUTTER-GRINDING AND SIMILAR OPERATIONS.

1,352,703. Specification of Letters Patent. Patented Sept. 14, 1920.

Application filed July 8, 1919. Serial No. 309,437.

To all whom it may concern:

Be it known that I, WILLIAM B. TULEK, a citizen of the United States and a resident of New York, county of New York and State of New York, have invented certain new and useful Improvements in Fixtures for Use in Cutter-Grinding and Similar Operations, of which the following is a specification.

This invention relates to a fixture used in grinding cutters, and is adapted for use on either a surface grinder or universal grinder, without the necessity of supplying a special cutter grinder. It is instantly adaptable to a surface grinder and can be attached thereto either by two simple straps or by a magnetic chuck.

The invention further consists of a fixture of this kind in which cutters of any form can be held so as to be engaged by the grinding wheel, and any angle may be obtained and the device held at such angle, the cutter being graduated, being usually equipped with a vernier.

The invention is further designed to provide a holder or fixture for cutters that are being ground, such holder being adapted to be easily adjusted, but very rigid when secured in adjusted position, being held against accidental movement by a positive holding means, but being adapted to be freely revolved when such holding means is released.

A further object of the invention is to provide a fixture which can be easily and quickly changed by means of an angle head, so that it is useful in place of sine bar and V-blocks and can also be used for holding templet gages for grinding at various angles, the base portion of the machine thus being adapted for use, without unnecessary delay incidental to the change, either as a holder for cutters in the grinding operation or as an angle head for use in tool work.

The invention is illustrated in the accompanying drawing, in which Figure 1 is a side view of my improved fixture and illustrating part of a grinding wheel operating against a cutter held by the fixture. Fig. 2 is a top view of the device shown in Fig. 1 with the cutter broken away. Fig. 3 is a section on line 3—3 in Fig. 1, with the cutter removed, and Fig. 4 is a sectional perspective view of the angle head in place on the base portion.

The device comprises what, for the purposes of clear description, will be called the fixed member 10, which is the base of the fixture and is adapted to be held in place by simple straps or by a magnetic chuck, or by other means, the fixed member having a vertical portion, preferably a substantially thick disk 11 with an annular projecting portion 12 on the front face thereof.

The movable member 13 has a recessed part 14, the outer wall of which rests on the outer wall of the projecting part 12, and these parts being finished and accurately fitted, the rotation and also the position of the movable member in any rotative position is assured, and where the vertical faces abut, as at 15, there is a similar smoothness of surface and an accurate fit that permit of the rotative member being positively and accurately held in rotative relation to the fixed member.

The spindle 16 has a collar 17 that limits its movement into the rotative or cutter supporting member 13, into which member the spindle 16 is secured, the spindle fitting loosely in the opening 18 in the member 10 and being provided with a nut, preferably a small hand wheel 19, so that when the nut is screwed up tight, the abutting faces 15 of the two members are so tightly forced together as to hold the rotative member against any rotation relative to the fixed member.

A proper scale, preferably a vernier, is placed on the device, and in the form shown the scale plate 20 is fastened on the front of the base or fixed member 10 near the bottom thereof and has its upper edge concentric with and bearing against the periphery of the member 13, and the scale marks on the abutting edges of these elements permit reading so that the angle which the rotative member occupies is indicated on this scale.

In order to hold a cutter the member 13 is provided with a stud 21, which receives the slip or loose collars 22, these collars being of various sizes so far as their outside measurement is concerned, but all of the same measurement at their inside diameter. In other words, they all fit snugly over the stud 20, but they vary in the dimension of the diameter illustrated at 23, and as a number of these slip collars are provided with the fixture, the same stud serves for a rather extensive range of cutters having different sizes of arbor holes.

The annular collars fit against the top and bottom edges of the head of the cutter 24,

and the nut 25 and the lock 26 are so adjusted as to hold the cutter firmly in a fixed rotative position, but loose enough to permit its rotation so that the successive teeth can be ground by means of the grinder, in the form illustrated this being done by a grinding wheel 27.

The cutter is held in proper position for grinding, that is, it is indexed by a finger supported from the spindle 16. The strap 28 is provided with a slot 29, and through this slot passes the extension 30 of the spindle and is held in place by a nut 31, usually a thumb nut, to provide for its operation without the necessity of using a tool. The end of the strap is preferably inclined to the front and provided at its free end 32 with a stem 33, the stem being held in position by a set-screw 34. The strap 28 is arranged diametrically on the front of the member 13. The stem is perpendicular thereto; in other words, tangential to the periphery of the member 13, and is provided on its top edge with the finger 35, preferably a flat strip of spring steel or the like, the free end 36 of which is adapted to be placed so that it engages the teeth of the cutter and permits the setting of each successive tooth in a proper position and thus indexes the cutter.

The stem 33 is rotative, and this permits the swinging of the stem and also the swinging of the finger 35, so that it can be placed in contact with the edges of cutters of different peripheries, and it can be swung, by reason of the adjustment of the strap 28, so that it occupies an angular position relative to the cutter when the form of cutter makes this necessary, and, if desired, a scale mark 37 may be employed, if thought desirable, to indicate the angle of the index finger, although such reading is not usually essential or necessary to the successful adjustment of the index finger.

The fixture is adapted for use with an angle head, this being clearly shown in Fig. 4, in which the base portion is equipped with the angle head 38 having screw-threaded openings 39 and having the scale 40 thereon. This member is recessed, as at 41, to receive the projecting annular part 12 of the member 10, and is provided with a stud or spindle 42 which receives the hand nut 19 and can thus be held in position relative to the base portion, this angle head being useful in place of sine bar and V-blocks and for holding templet gages for grinding at various angles.

In this cutter holder for grinding purposes the fixed member, so-called, can be attached to a movable part of a grinding machine, but it is called the fixed member since it is substantially fixed at its initial adjustment, and this term is used to identify the member 10. The rotative member can be adjusted and swung so as to provide for grinding the faces and also the edges of cutters, can be tilted to any angle to bring about any desired degree of contact between the cutter and grinding wheel, and the spring stop or index holding strap can be adjusted independently of the adjustment of the movable member so that the spring stop can be used against that face or edge of the cutter to which it is most desirable to adjust it.

I claim:

1. A cutter holder for grinding purposes comprising a base member, a movable member, the members having coacting parts so that the movable member can be partially rotated, a spindle secured to one of said members and passing through the other member, a nut on said spindle, a radial stud on the movable member, an extension on said spindle, a slotted strap on said extension, a nut for locking the strap on the extension, and a spring finger supported by said strap.

2. A cutter holder for grinding purposes comprising a base member, a movable member, said members having coacting means so that the movable member can be partially rotated, a spindle on the movable member having a collar on one end and being screw-threaded on the other end, a nut on said screw-threaded end, a stud projecting radially from the movable member, an extension on said spindle, a slotted strap arranged transversely on said movable member with the extension projecting through the slot in the strap, a nut on the extension, a stem rotatably and longitudinally movable in the end of said strap, means for locking said stem against movement, and a spring finger projecting from said stem.

3. A cutter holder for grinding purposes comprising a base having a disk thereon, an annular projecting part on the disk, a movable member having an annular recess therein adapted to have the outer wall thereof fit on the outer edge of the projection of the disk, a spindle on the movable member and fitting loosely in the disk, the outer face of the movable member being recessed, a collar on said spindle with its outer face substantially flush with the outer face of the movable member, a nut on the end of the spindle and bearing against the outer face of the disk, an extension on the spindle, a slotted strap bearing against the outer face of the collar and the outer face of the movable member, means on said strap for indexing a cutter, and a radial stud on the periphery of the movable member for receiving a cutter to be ground.

In testimony that I claim the foregoing, I have hereto set my hand, this 3rd day of July, 1919.

WILLIAM B. TULEK.