Dec. 2, 1930. W. J. HOGG ET AL 1,783,540

DIE CHASER GRINDING FIXTURE

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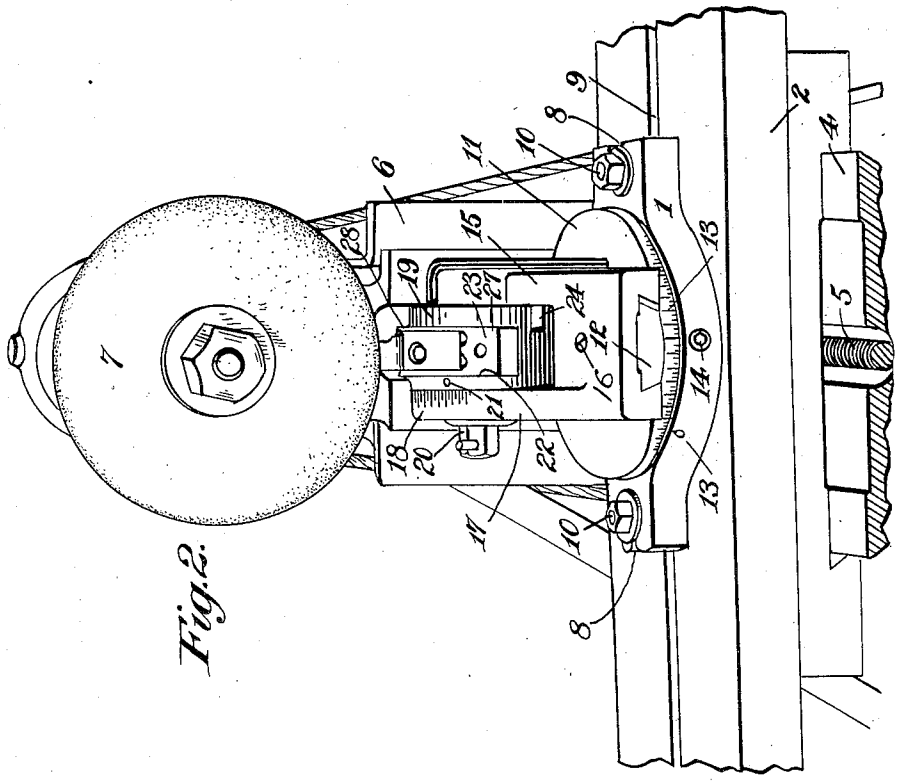

Fig. 2.

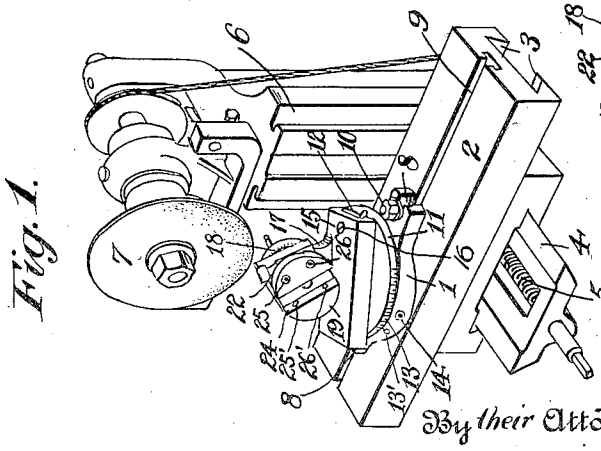

Fig. 1.

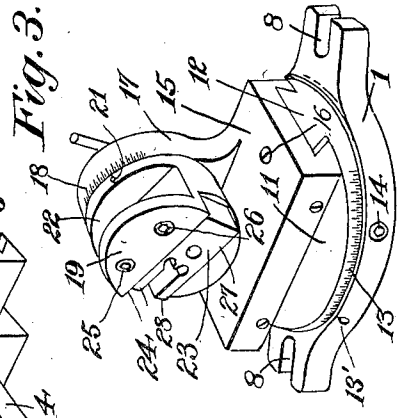

Fig. 3.

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DIE CHASER GRINDING FIXTURE

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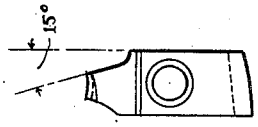


Fig. 8.

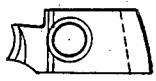


Fig. 10.

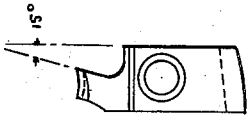


Fig. 7.

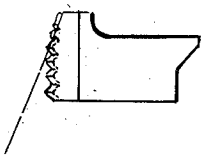


Fig. 9

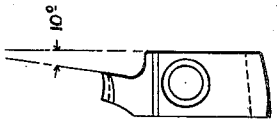
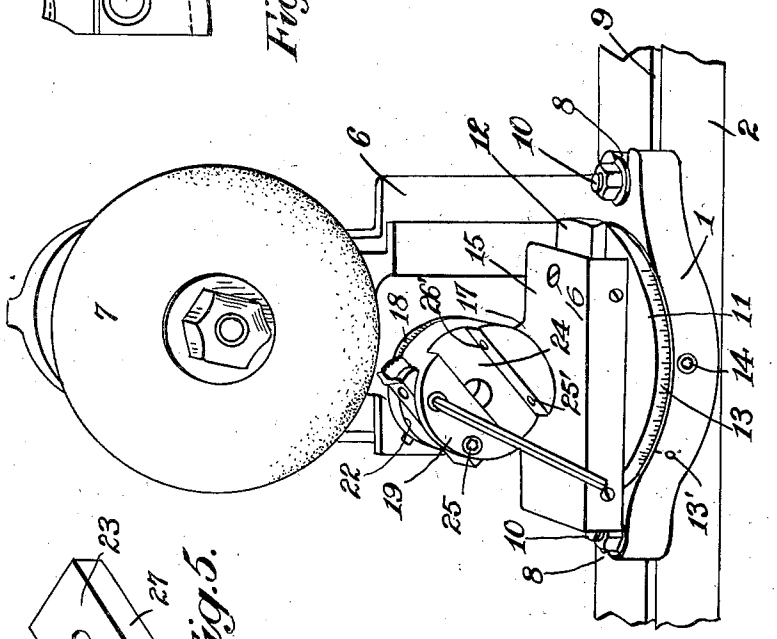


Fig. 6.

Fig. 4.



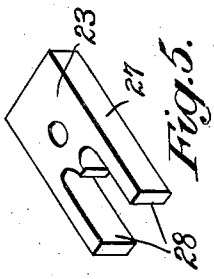


Fig. 5.

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UNITED STATES PATENT OFFICE

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DIE-CHASER-GRINDING FIXTURE

Application filed January 7, 1928. Serial No. 245,098.

This invention relates to grinding machines, an object of the invention being to provide an improved machine for grinding or sharpening the chasers of threading dies.

A further object of the invention is the provision of an improved grinding fixture having practically a universal adjustment, by means of which the chasers or cutters of threading dies may be ground or sharpened effectively and economically and with great speed and accuracy, and which fixture is simple in construction and adjustment and comparatively inexpensive to manufacture and by means of which it is necessary only to use one grinding wheel for grinding the throats of the chasers instead of, as formerly, requiring a button wheel for each size of radius to be ground.

In the drawings accompanying and forming a part of this specification—

Figure 1 is a perspective view of this improved grinding fixture applied to a suitable grinding machine;

Fig. 2 is a front view thereof;

Fig. 3 is a perspective view of the fixture detached from the grinding machine;

Fig. 4 is a view somewhat similar to Fig. 2 but showing the chaser differently positioned for the operation of the grinding wheel;

Fig. 5 is a perspective view of an adapter for holding the chaser in position to be ground;

Figs. 6, 7 and 8 are views of die chasers illustrating different ways of grinding the faces thereof;

Figs. 9 and 10 are views of chasers illustrating the manner in which the throats thereof are ground.

Similar characters of reference indicate corresponding parts in the several views.

Before explaining in detail the present improvement and mode of operation thereof, we desire to have it understood that the invention is not limited to the details of construction and arrangement of parts which are illustrated in the accompanying drawings, since the invention is capable of other embodiments, and that the phraseology which we employ is for the purpose of description and not limitation.

The base 1 of this improved fixture is mounted on an adjustable table 2 carried by the bed of a suitable grinding machine, and this table is provided with transversely-extending dovetailed guideways 3 and 4 whereby the table may be adjustable transversely relatively to the grinding wheel, the table being shiftable toward and from the grinding wheel by a suitable worm-gear mechanism 5. The bed of the machine is provided with an upright post or support 6, upon which is mounted a grinding wheel 7 rotated from any suitable source of power. This upright post also has a vertical guideway for the vertical adjustment of the table 2. The base 1 of the grinding fixture is provided with forked ends 8 and depending projections (not shown) adapted to run in a slot 9 of the table 2, and by means of these forked ends the base 1 is clamped to the table 2 by bolts 10 which extend into the slots 9, shown in the form of T-slots, and this base may be located at any desired point along the table 2. Pivotally mounted on base 1 for horizontal rotation is a rotatable or indexable disk or plate 11 having on its top a dovetailed guide 12. The periphery of this indexable disk is suitably graduated, as at 13, while the base 1 of the fixture is provided with the usual zero graduation 13′, one at the front end and one at the rear thereof, thereby to indicate when the indexable plate is turned to the proper setting of the disk according to the angle the chaser is to be set relatively to the grinding wheel. A hollow set-screw 14 carried by the base is in position to engage a depending pivot member or post located in an opening of the base, whereby the indexable disk may be fixed at the proper setting thereof.

Located on the dovetailed guide 12 of the rotatable disk is a slide 15 which may be secured by means of a set-screw 16 at any desired position along the guide 12 of the indexable disk or plate. This slide 15 is provided with an upright arm or bracket 17 having a graduated periphery 18, and pivotally mounted on this bracket is a rotatable chaser-holder 19 which may be, by a suitable clamping device 20, fixed in any desired position relative to the graduations of the bracket,

this rotatable holder being provided with zero graduations 21 to indicate the proper setting relative to the graduations of the bracket. The rotatable chaser-holder 19 is provided in the periphery thereof with a transverse recess or slot 22 for the reception of interchangeable chaser adapters 23 (Fig. 5), and is also provided in the face thereof with a similar recess or slot 24 for the reception of a chaser adapter. These adapters are held in position by pairs of hollow set-screws, two, as 25′ and 26′, in the periphery of the chaser-holder 19, and two, as 25 and 26, in the face of the holder 19. One of each pair of set-screws engages the body 27 of the adapter and clamps it in position in the holder, while the other forces the spring forked section 28 of the adapter against the chaser and thus holds the chaser in place in the adapter. These interchangeable adapters 23 are all of similar size, but are provided with differently-formed spring portions for holding the different sizes and kinds of chasers. Thus the chaser fits into the forked end of the adapters, being held therein by one of the set-screws, while the adapter in turn is held in position by the other set-screw in the rotatable adapter or chaser-holder.

In practice, suitable charts are furnished with the fixture to show the correct degree to set the fixture so as to grind the chaser at the proper radius: for instance, when the chaser throats (Figs. 9 and 10) are to be ground, the proper adapter is set in the slot 22, and by turning the indexable plate 11 to the desired position for grinding, the proper radius is obtained. To illustrate: when the indexable plate is set at zero degrees (0°) and locked, a one-sixteenth inch ($\frac{1}{16}$″) radius will be ground, and when the indexable plate is at ninety degrees (90°), a three inch (3″) radius will be ground with a six inch (6″) diameter wheel—the chaser being moved back and forth under the rotating grinding wheel by means of its slide 15. Thus by setting the indexable plate at the correct point from zero to ninety degrees, any radius from one-sixteenth of an inch to three inches can be ground. When the chaser adapter is set in the slot 24 (Fig. 3), the proper hook or angle (Figs. 6 to 8) of the cutting face of the chaser is obtained by adjusting the rotatable holder 19 the proper degrees.

It is to be understood that by describing in detail herein any particular form, structure or arrangement, it is not intended to limit the invention beyond the terms of the several claims or the requirements of the prior art.

Having thus explained the nature of our said invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the modes of its use, we claim:

1. A universally adjustable grinding fixture for grinding die chasers or cutters comprising a chaser holder having a pair of chaser-holding recesses located in transverse faces of the holder and both extending in the same direction and pivotally supported for indexable movement in a vertical plane and for indexable movement in a horizontal plane.

2. A universally adjustable grinding fixture for grinding die chasers or cutters comprising a chaser holder having a pair of chaser-holding recesses located in transverse faces of the holder and pivotally supported for indexable movement in a vertical plane and having slidingly-connected members pivotally supported for indexable movement in a horizontal plane.

3. A grinding fixture comprising a pair of members pivotally supported for rotary movements in transverse planes, one slidingly supported on the other, whereby one is shiftable transversely of the other in a straight path, one of said members constructed for directly supporting a chaser to be ground.

4. A grinding fixture comprising a pair of members pivotally supported for rotary movements in transverse planes, one slidingly supported on the other, whereby one is shiftable transversely of the other in a straight path, one of said members having a plurality of recesses for positioning the chaser to be ground.

5. A grinding fixture comprising a pair of members pivotally supported for rotary movements, in transverse planes, one slidingly supported on the other, whereby one is shiftable transversely of the other in a straight path one of said members having a pair of recesses, one located in the face and the other in the periphery thereof for supporting a chaser to be ground.

6. A grinding fixture comprising a pair of members, one supported for rotary movement in a horizontal plane and the other supported for rotary movement in a vertical plane, and constructed for directly holding a chaser to be ground, and means for supporting said last member for sliding movement in a straight path relatively to said first member.

7. A grinding fixture comprising a pair of members, one supported for rotary movement in a horizontal plane and the other supported for rotary movement in a vertical plane, and having a plurality of recesses extending in the same direction for the reception of chaser adapters, and means for supporting said last member for sliding movement in a straight path relatively to said first member.

8. A grinding fixture comprising a pair of members, one supported for rotary movement in a horizontal plane and the other supported for rotary movement in a vertical

plane, and having a pair of parallelly extending recesses one in the periphery and the other in the face thereof for the reception of chaser adapters, and means for supporting said last member for sliding movement in a straight path relatively to said first member.

9. A grinding fixture comprising a horizontally rotatable disk and a vertically rotatable holder provided with recesses in the periphery and face thereof for the reception of chaser adapters, and means slidingly supporting the rotatable holder on the rotatable disk.

10. A grinding fixture having a base, an indexable disk pivotally mounted thereon, a sliding member mounted on the disk and having an upright bracket, a rotatable chaser holder horizontally pivoted on said bracket, said holder having recesses in the transverse faces thereof for the reception of chaser adapters, and means for clamping the adapter and chaser to be ground in position.

11. A universally adjustable grinding fixture comprising a horizontally rotatable member, a vertically rotatable member, means for slidingly supporting the latter on the former, said vertically rotatable member having a pair of chaser carrying recesses, one in the periphery and the other in the face thereof, and means extending respectively through the face and periphery of the holder for clamping the adapters and chasers in position to be ground.

12. A universally adjustable grinding fixture comprising a horizontally rotatable member, a vertically rotatable member, means for slidingly supporting the latter on the former, said vertically rotatable member having a pair of chaser carrying recesses, one in the periphery and the other in the face thereof, means for clamping each of said rotatable members in its adjusted positions, and means extending respectively through the face and periphery of the holder for clamping the adapters and chasers in position to be ground.

13. A universally adjustable die chaser grinding fixture comprising a plurality of indexable members rotatably supported for adjustment in transverse directions, one supported on the other for sliding movement in a straight path, one of said members having a pair of transverse recesses, one in the periphery and the other in the face thereof for the reception of interchangeable chaser adapters.

14. A universally adjustable die chaser grinding fixture comprising a plurality of indexable members rotatably supported for adjustment in transverse directions, one supported on the other for sliding movement in a straight path, one of said members having a pair of transverse recesses, one in the periphery and the other in the face thereof for the reception of interchangeable chaser adapters, each comprising a body portion and a forked spring portion.

15. A universally adjustable die chaser grinding fixture comprising a plurality of indexable members rotatably supported for adjustment in transverse directions, one supported on the other for sliding movement in a straight path, one of said members having a pair of transverse recesses, one in the periphery and the other in the face thereof for the reception of interchangeable chaser adapters, each comprising a body portion and a forked spring portion, and a pair of clamping means cooperating with each of said recesses, one for the adapter and the other for the chaser and adapter.

16. In a grinding machine having a grinding wheel, means for rotating it and an adjustable table, the combination of a fixture comprising a base adjustably secured to the table, an indexable plate pivotally secured to the base and rotatable in a horizontal plane, said base and plate having cooperating graduations, means for locking the indexable plate in any of its adjusted positions, a sliding plate supported by said indexable plate and provided with an upstanding bracket, an indexable chaser holder pivotally secured to said bracket for rotary movement in a vertical plane, said holder and plate having cooperating graduations, and means for locking the holder in any of its adjusted positions.

17. In a grinding machine having a grinding wheel, means for rotating it and an adjustable table, the combination of a fixture comprising a base adjustably secured to the table, an indexable plate pivotally secured to the base and rotatable in a horizontal plane, said base and plate having cooperating graduations, means for locking the indexable plate in any of its adjusted positions, a sliding plate supported by said indexable plate and provided with an upstanding bracket, an indexable chaser holder pivotally secured to said bracket for rotary movement in a vertical plane, said holder and plate having cooperating graduations, means for locking the holder in any of its adjusted positions, said holder having a pair of recesses one located in the periphery and the other in the face thereof for the reception of a chaser adapter, and clamping means extending through the periphery and through the face of the holder and into said recesses for locking the chaser adapter and its chaser in position to be ground.

18. A grinding fixture having a base, a horizontally-rotatable plate thereon, a slide on said plate, and a vertically-rotatable chaser-holding member carried by the slide and constructed directly to receive the chaser

or cutter to be ground either in the face or periphery thereof.

19. A grinding fixture having a base, a rotatable plate pivoted thereto for indexable movement in a horizontal plane, a slide on said plate having an upright arm at one side thereof, a circular chaser-holder pivoted to the upright arm for indexable movement in a vertical plane, said holder having a pair of chaser-holding recesses, one in the face and the other in the circular periphery thereof and both extending from one circular face to the other of the holder, and means for locking the holder in any of its indexed positions.

20. A grinding fixture comprising a horizontally-rotatable indexable disk and a rotatable indexable tool holder normally supported within the periphery of said disk for sliding movement relatively thereto, said holder having a horizontal axis whereby it is indexable in a vertical plane and also having recesses in the periphery and face thereof for the reception of the tools to be ground.

Signed at Cleveland, Ohio, this 3rd day of January, 1928.

WILLIAM J. HOGG.
FREDERICK NEUMANN.