F. N. & F. E. GARDNER.

ATTACHMENT FOR DISK GRINDERS.

APPLICATION FILED JULY 26, 1910.

1,001,631.

Patented Aug. 29, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

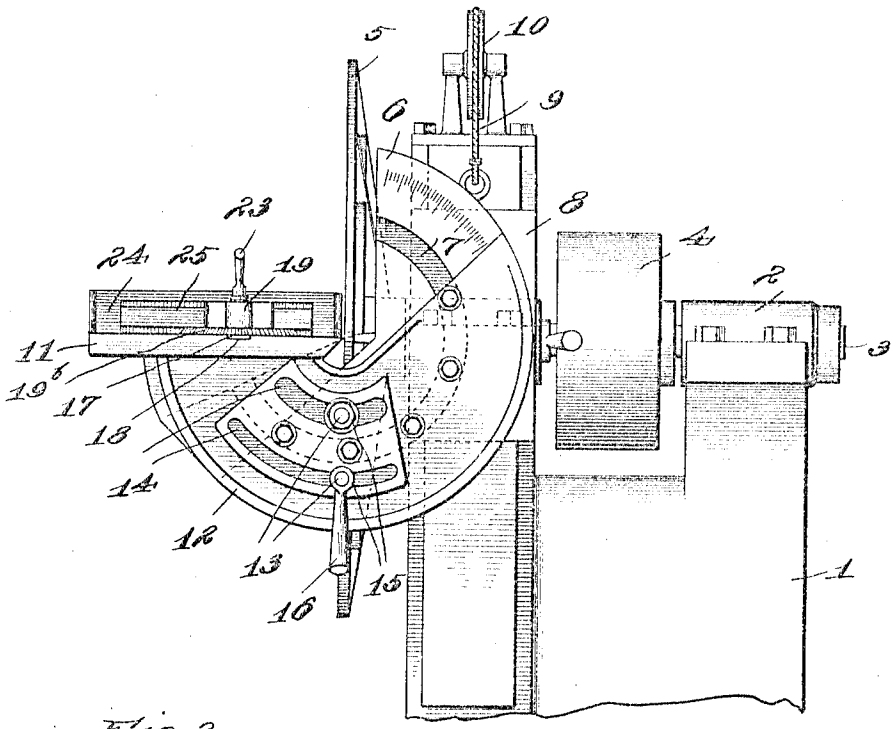
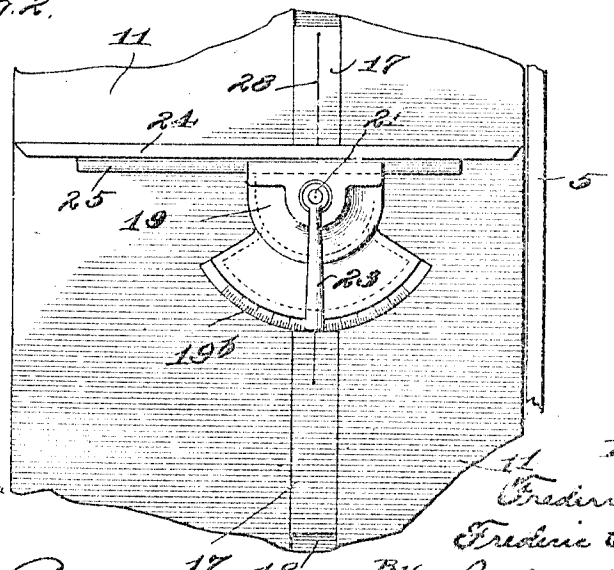


Fig. 2.



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2 SHEETS—SHEET 2.

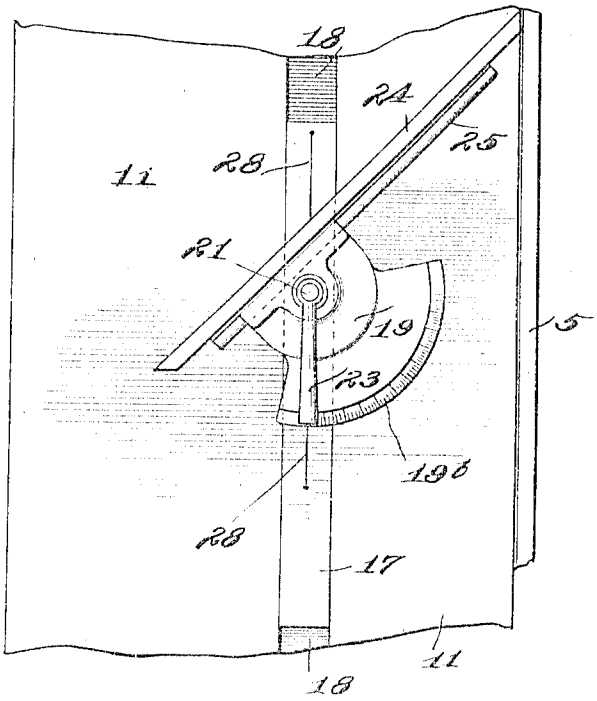


Fig. 3.

Fig. 4.

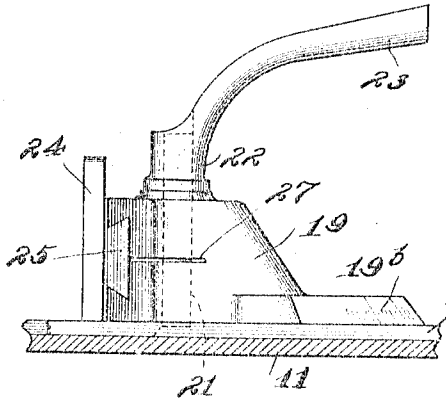
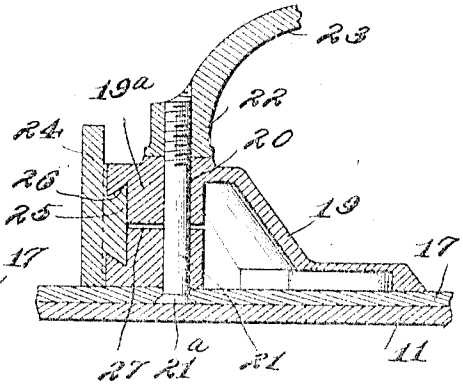


Fig. 5.



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ATTACHMENT FOR DISK GRINDERS.

1,001,631. Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed July 26, 1910. Serial No. 573,826.

To all whom it may concern:

Be it known that we, FREDERICK N. GARDNER and FREDERIC E. GARDNER, citizens of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Attachments for Disk Grinders, of which the following is a specification.

This invention contemplates an attachment for disk grinding machines of the type disclosed in our prior application Serial No. 528,791, filed November 18, 1909. The machine shown in said application is especially adapted for grinding or surfacing wood, and is particularly intended for use by pattern makers.

The object of this invention is to provide an attachment for disk grinding machines adapted to facilitate the grinding of plane faces at the exact angle desired.

In the accompanying drawings, Figure 1 is a fragmental side elevation of a disk grinding machine having an attachment thereon embodying the features of our invention. Fig. 2 is a plan view of the attachment and a portion of the machine. Fig. 3 is a view similar to Fig. 2 but showing the attachment in a different position. Fig. 4 is a side elevation and Fig. 5 is a central sectional view of the attachment.

The machine illustrated in Fig. 1 comprises a suitable base 1 having bearings 2 thereon in which is mounted a shaft 3 carrying a drive pulley 4. Fixed on one end of the shaft 3 is a disk 5, to the outer face of which is secured a sheet of sand paper or other abrasive material. A segment 6 having a groove 7 therein is fixed to a member 8 which is vertically slidable upon the base 1. Said member is attached to one end of a cable 9 passing over a sheave 10, the other end of said cable carrying a counterbalancing weight (not shown). The work table 11 is carried by a segment 12 having a curved rib on its inner face which travels in the groove 7 in the segment 6. The segments 6 and 12 are secured together by means of bolts 13 passing through the segment 6 and through arcuate slots 14 in the segment 12, said bolts having nuts 15 turned thereon.

It will be seen that the work table 11 may be tilted either upwardly or downwardly from a horizontal position into planes at various angles with the disk 5. The inner edge of said table is beveled, as shown, to permit such tilting movement. The center of the arc upon which the groove 7 is formed is a point which lies close to the abrading surface of the disk 5 and coincides with the innermost portion of the beveled edge of the table 11. The movement of the segment 12 being a rotative one, and the axis of rotation being coincident with the inner upper edge of the work table, it will be seen that the work table may be tilted without changing the position of the inner edge thereof. To clamp the table in the desired position one of the nuts 15 may be turned up tightly by means of a handle 16 formed thereon.

The embodiment of our invention which we have herein shown comprises a bar 17 adapted to slide in a groove 18 in the face of the work table 11, said groove extending parallel with the face of the disk 5. Positioned upon the bar 17 is a body portion 19 which may be hollow, as shown in Fig. 5, for the sake of lightness and also to make it yielding or compressible for a purpose to be later described. Extending upwardly through the bar 17 and through an opening 20 in one wall 19^a of the body 19 is a stud 21, the head 21^a of said stud being countersunk in the lower face of the bar 17. A nut 22 is threaded on the upper end of the stud 21, said nut bearing against the body 19 and having a handle 23 preferably formed integral therewith. When the nut 22 is turned down tightly, the body portion is locked against rotation. The body 19 has a protractor 19^b thereon, said protractor in this instance being formed integral with the body.

A gage rail 24 is mounted in the body 19 to slide longitudinally, said rail having a rib 25 thereon which is dovetailed in a groove 26 in said body. A horizontal slot 27 is cut through the wall 19^a of the body adjacent the groove 26, to permit the upper and lower portions of said wall 19^a to yield toward each other so as to clamp the rail 24 in its groove 26.

As will be seen from the foregoing, the rail 24 may be clamped against sliding movement in the body, and said body may be clamped against rotation upon the bar 17, by the single operation of turning the nut 22 downwardly on the stud 21. This feature is valuable in the saving of time.

A zero line 28 may be formed on the bar 17 to coöperate with the protractor 19b.

The opposite ends of the rail 24 are beveled as shown, so that the rail may be adjusted close to the grinding disk 5 at any angle of said rail.

It will be seen that the attachment may be used either right- or left-handed. Referring to Fig. 3, the body 19 and rail 24 may be rotated from the position there shown to present the opposite end of the rail toward the grinding disk. This has been found very convenient in practice. The locking means, being coaxial with the axis of rotation of the body, offers no hindrance to such turning of the body as is necessary to place either end of the gage rail adjacent to the disk. The axis of turning movement is intermediate the two end portions of the zero line 28, so that when the gage rail is reversed the protractor is still in operative relation with the zero-indicating means.

In the use of the attachment, the protractor 19b is adjusted with reference to the zero line at 28 to set the rail 24 at the desired angle to the grinding disk 5, and said rail is slid in the body 19 to bring its end close to the grinding face of the disk. The nut 22 is then turned down to lock the parts against movement. The work to be ground may now be placed on the work table against the rail 24 and moved into contact with the grinding disk.

The bar 17 is slidable in its groove 18 over the entire face of the disk 5. This is important since it permits of utilizing the entire grinding surface of the disk. If the cutting is confined to one space on the grinding disk, the abrading material at this space becomes filled with the fine wood dust, thus materially reducing its cutting action.

By tilting the work table 11 upwardly or downwardly, compound angles of any desired degree may be ground.

We claim as our invention:

1. In a disk grinding machine, the combination of a rotary grinding disk, a work table supported adjacent to said disk, an upright stud on said table, a body rotatably mounted on said stud, a gage rail slidably mounted in said body, and means coöperating with said stud for clamping said gage rail against sliding movement and locking said body against rotation.

2. In a disk grinding machine, the combination of a rotary grinding disk; a work table supported adjacent to said disk; a body rotatably mounted on said table; a gage rail slidably carried by said body; and a single means for locking said body against rotation and for locking said rail against sliding movement.

3. In a disk grinding machine, the combination of a rotary grinding disk; a work table supported adjacent to said disk; a body rotatably mounted on said table, a gage rail slidably mounted in said body by means of a rib and groove connection, said body being compressible; and means for compressing said body to clamp the rib between opposite walls of the groove and thus lock said gage rail against sliding movement.

4. In a disk grinding machine, the combination of a rotary grinding disk; a work table supported adjacent to said disk, said table having a groove therein parallel with said disk; a bar slidable in said groove; a body rotatably mounted on said bar and carrying a protractor; a gage rail slidably carried by said body; and a single means for locking said bar against sliding movement and for locking said body against rotation.

5. In a disk grinding machine, the combination of a rotary grinding disk; a work table supported adjacent to said disk, said table having a groove therein parallel with said disk; a bar slidable in said groove; a stud having its lower end fixed in said bar; a body rotatably mounted on said stud and having a dovetail groove in one side, said body having a horizontal slot extending inwardly from said groove and intersecting said stud; a gage rail having a dovetail rib slidably mounted in said groove; and a nut threaded on the upper end of said stud, said nut being adapted to clamp said rail against sliding movement and lock said body against rotation.

6. In a disk grinding machine, the combination of a rotary grinding disk; a work-table supported adjacent to said disk, said table having a groove extending parallel with the face of said disk; a bar slidable in said groove; a body attached to said bar, said body having a groove of non-circular cross-section; and a gage rail having a rib corresponding in cross-sectional form to the form of the groove in the body, and slidably fitting within said last mentioned groove, whereby the gage rail is non-rotatably and slidably connected to the body.

7. In a disk grinding machine, the combination of a rotary grinding disk; a work-table supported adjacent to said disk; a member mounted to slide on said table in a direction parallel with the face of the disk, said member having a zero line thereon; a body provided upon one side with a protractor; a gage rail connected to the

other side of the body for sliding movement toward and away from the disk, said body being pivoted at a point between the protractor and the gage rail and between the ends of said zero line, whereby the body may be turned to bring the protractor into operative relation with either end portion of said line, and means coaxial with the axis of rotation of the body for locking it against rotation.

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