June 23, 1925. 1,543,236

W. T. SEARS

ROTATING TABLE FOR RADIAL DRILLS

Filed July 28, 1921

Fig. 1.

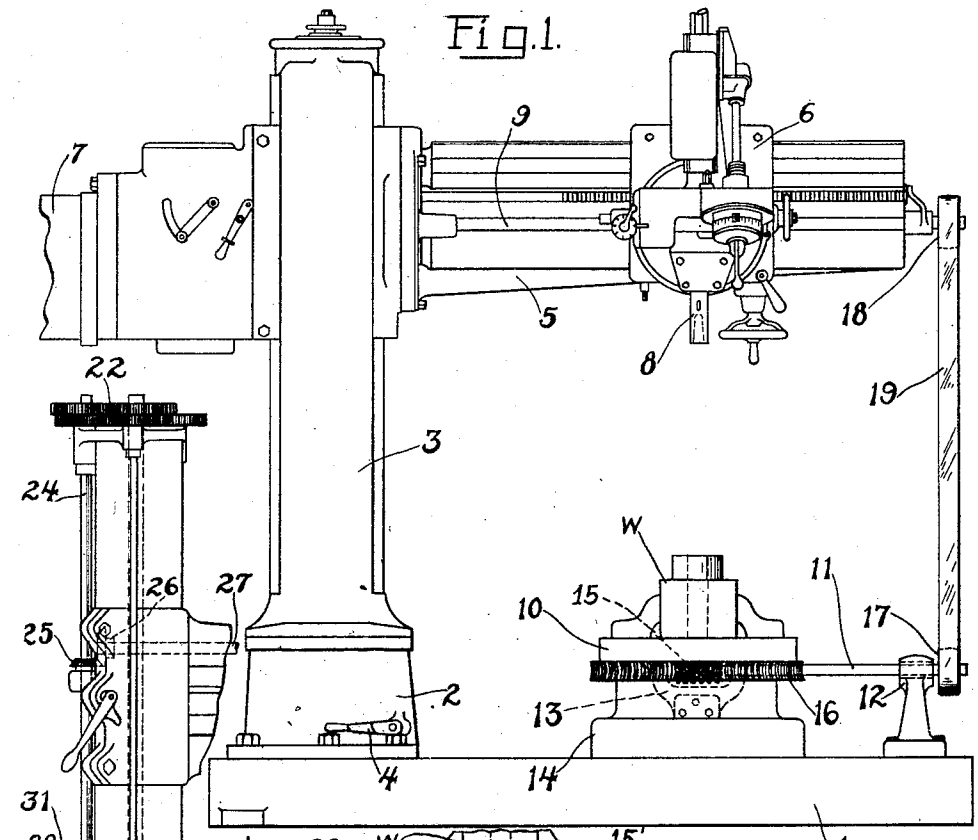


Fig. 2.

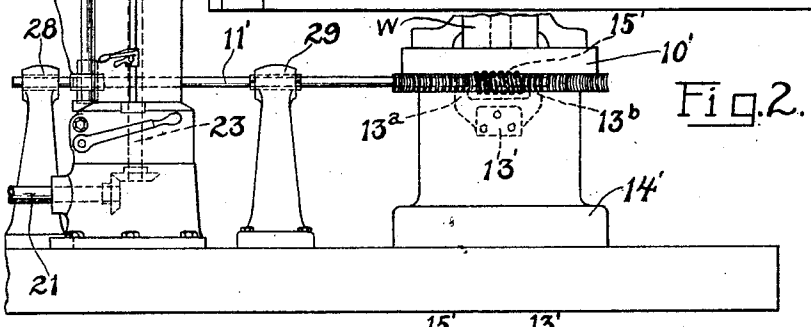
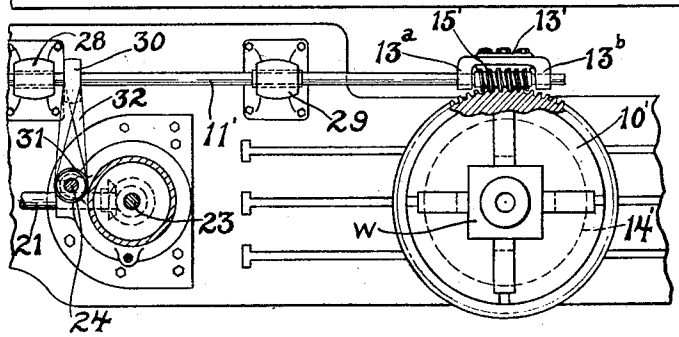


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ROTATING TABLE FOR RADIAL DRILLS.

Application filed July 28, 1921. Serial No. 488,233.

To all whom it may concern:

Be it known that I, WILLARD T. SEARS, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Rotating Tables for Radial Drills, of which the following is a specification.

This invention relates to drilling machines and particularly to mechanism adapted to be applied to a standard radial drilling machine for conveniently rotating a work chuck or table in operations requiring such procedure. Accordingly, the primary object of the invention is to provide comparatively simple means for performing the function stated, such means being adapted to be readily and conveniently applied to the usual or standard types of radial drilling machines.

More specifically, it is an object of the invention to provide a drilling machine attachment for conveniently rotating the work chuck or table from a spindle driving shaft on the drill supporting mechanism, such attachment being adapted to be operated from either the column or arm shaft forming the usual standard parts of a drilling machine.

With these and other objects in view, my invention consists in the features of construction and operation set forth in the following specification and illustrated in the accompanying drawing. In such drawing annexed hereto and forming a part of this specification, I have shown certain embodiments of my invention as applied to radial drilling machines 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.

Referring to the figures of the drawing:

Figure 1 is an elevation of one type of radial drilling machine showing my invention embodied therein.

Fig. 2 is a fragmentary side elevation showing another type of radial drilling machine having my invention embodied therein.

Fig. 3 is a sectional plan view of Fig. 2.

In performing certain drilling operations, particularly in metal which is not homogeneous or in which there are blow-out holes, to insure the hole being central of the work, it is desirable to rotate the work while it is being drilled. In the drawing, I have shown simple mechanism somewhat in the form of an attachment for performing this function. In certain types of radial drills, it will be convenient to drive this mechanism from the shaft extending horizontally along the radial arm while in other types the same may be more conveniently driven from the shaft extending vertically at one side of the column. It may also be desirable in some instances to drive the same from a relatively small individual electric motor. In the drawing, I have illustrated these several methods of driving the attachment which drawing will now be described in detail.

Referring to Fig. 1 of the drawing, 1 indicates the bed of a radial drilling machine on the base 2 of which is mounted for rotary adjustment a drill supporting column 3. A clamping lever 4 is provided for securing the column against rotation. A drill supporting arm 5 is illustrated as mounted for vertical movement on the column and a drill supporting element 6 is mounted for horizontal movement along the arm. A motor 7 is provided on the arm for operating the drilling mechanism, including the rotation of the drill spindle 8 from the arm shaft 9.

A work support or chuck 10 is rotatably mounted on the bed, a piece of work W to be drilled being illustrated as secured thereon. Adjacent and preferably to the rear of the work support, I mount a horizontal shaft 11 in a bearing 12 on the bed and in a bracket 13 on the stationary base 14 of the work support. A worm 15 is secured to the shaft between two bearings on the bracket 13 and engages exterior worm teeth 16 in the work support, the said two bearings being more clearly illustrated in Fig. 3. A pulley 17 on the end of the shaft 11 is operatively connected to a pulley 18 on the end of the arm shaft 9 by means of a belt 19. Such mechanism provides a very convenient means for driving the attachment in drilling machines of the type illustrated in Fig. 1 wherein the power element comprises a motor, as the motor 7, on the drill supporting arm.

Another type of radial drilling machine is illustrated in Figs. 2 and 3. In this ma-

chine, the main power mechanism comprises a shaft 21 entering the base of the machine and operatively connected to the gearing 22 at the top of the column through the usual column shaft 23. A shaft 24, illustrated as extending vertically of the column outside thereof, is driven from the gearing 22, a bevel gear 25 splined to shaft 24 operatively engaging a bevel gear 26 on arm shaft 27 which is connected to the drill spindle for rotating the same. In this type of machine, the work support may be conveniently rotated from this shaft 24. As a convenient means for so driving the same, I have illustrated the worm shaft 11′ as supported in bearings 28 and 29 on the bed and the worm 15′ thereon as mounted on the bracket 13′ between the bearings 13^a and 13^b. A pulley 30 on the shaft 11′ is operatively connected to a pulley 31 on the shaft 24 by means of a belt 32 whereby the work support 10′ is rotated from the vertical shaft 24.

What I claim is:

1. In a drilling machine, the combination of a bed, drill supporting mechanism comprising a vertical column on the bed and a horizontal arm supported solely by and movable vertically on the column, drilling mechanism including a drill spindle carried by the arm, a shaft carried by the said supporting mechanism for driving the spindle, power means operatively connected to the shaft for rotating the same, a rotary work support on the bed, a shaft having a worm thereon operatively engaged with a worm wheel on the work support, and means providing an operative connection between the two shafts for continuously rotating the work support at a relatively slow speed.

2. In a drilling machine, the combination of a bed, drill supporting mechanism comprising a vertical column on the bed and a horizontal arm on the column, drilling mechanism including a drill spindle carried by the arm, a shaft carried by the said supporting mechanism, power means operatively connected to the shaft and spindle for rotating the same, a rotary work support on the bed, a shaft operatively connected to the work support for rotating the same at a relatively slow speed, and an operative connection comprising a pulley on each of the said shafts, and a belt connecting the pulleys for continuously rotating the second named shaft and the work support.

3. In a drilling machine, the combination of a bed, a vertical column mounted thereon, a horizontal arm vertically adjustable on the column, drill supporting mechanism mounted on the arm, a drill spindle mounted on the said mechanism, a driving shaft mounted longitudinally on the arm and operatively connected to the drill spindle, power means for operating the shaft, a rotary work support mounted on the bed and beneath the arm, a shaft operatively connected to the work support for rotating the same, and an operative connection between the two shafts whereby the work support is continuously rotated from the said power means.

4. In a drilling machine, the combination of a bed, a vertical column mounted thereon, a horizontal arm carried by the column, drill supporting mechanism adjustable horizontally along the arm, a drill spindle mounted on the said mechanism, a driving shaft mounted longitudinally on the arm and operatively connected to the drill spindle, power means for operating the shaft, a rotary work support mounted on the bed and beneath the arm, a shaft operatively connected to the work support for rotating the same, and an operative connection between the two shafts comprising a pulley on each shaft connected by a belt whereby the work support is continuously rotated from the said power means.

5. In a drilling machine, the combination of a bed, a vertical column mounted thereon, a horizontal arm carried by the column, drill supporting mechanism adjustable horizontally along the arm, a drill spindle mounted on the said mechanism, a driving shaft mounted longitudinally on the arm and operatively connected to the drill spindle, power means for operating the shaft, a rotary work support mounted on the bed and beneath the arm, a shaft having a worm thereon operatively engaged with a worm wheel on the work support, a pulley on the outer end of the arm shaft, a pulley on the second named shaft, and a belt operatively connecting such pulleys whereby the work support is continuously rotated from the arm shaft.

6. In a drilling machine, the combination of a bed, a vertical column mounted thereon, a horizontal arm vertically adjustable on the column, drill supporting mechanism mounted on the arm at one side of the column, a drill spindle mounted on the said mechanism, a driving shaft mounted longitudinally on the arm and operatively connected to the drill spindle, a motor on the arm at the other side of the column and operatively connected to the shaft, a rotary work support mounted on the bed beneath the arm, a shaft having a worm thereon operatively engaged with a worm wheel on the work support, and an operative connection between the two shafts whereby the work support is continuously rotated from the motor at a relatively slow speed.

In testimony whereof, I hereto affix my signature.

WILLARD T. SEARS.