

No. 828,876.

PATENTED AUG. 21, 1906.

E. P. BULLARD, JR.
 ROTARY TABLE BEARING.
 APPLICATION FILED FEB. 12, 1906.

Fig. 1.

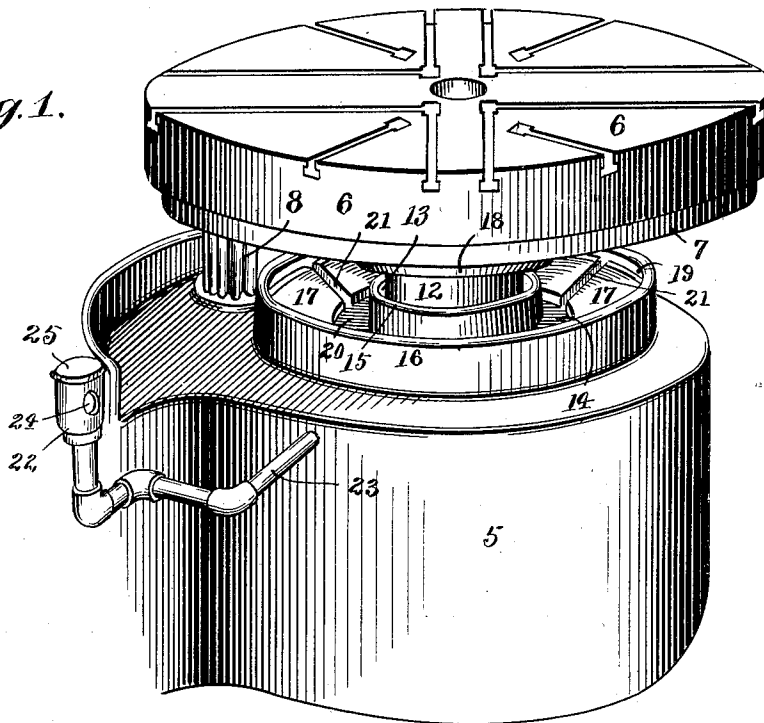


Fig. 2.

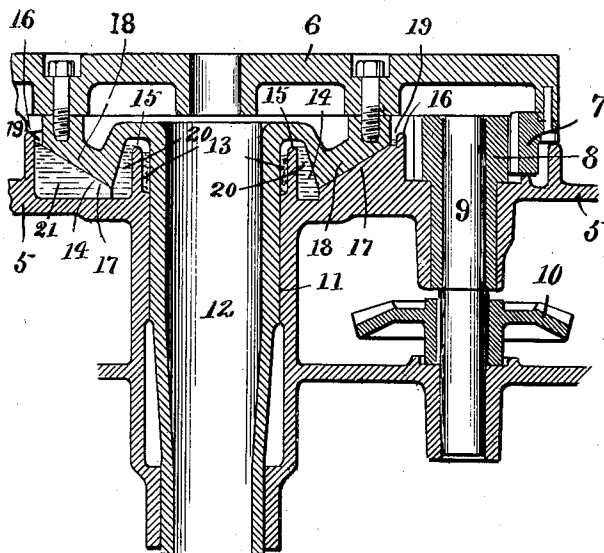
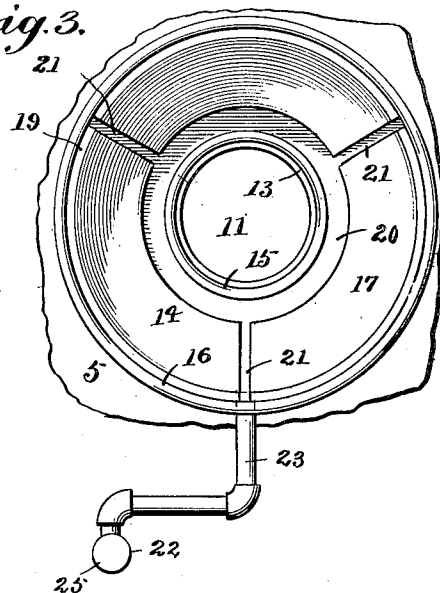


Fig. 3.



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EDWARD P. BULLARD, JR., OF BRIDGEPORT, CONNECTICUT, ASSIGNOR
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ROTARY-TABLE BEARING.

No. 828,876.

Specification of Letters Patent.

Patented Aug. 21, 1906.

Application filed February 12, 1906. Serial No. 300,791.

To all whom it may concern:

Be it known that I, EDWARD P. BULLARD, Jr., a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Rotary-Table Bearings, of which the following is a specification.

My invention relates to new and useful improvements in bearings for rotary tables of machine-tools—such, for instance, as boring-mills, vertical lathes, &c.

It is the purpose of this invention to provide a self-lubricating bearing for both the table and spindle of machine-tools, whereby the wearing-surfaces will be submerged in oil at all times, whereby the amount of oil contained upon the bearings may be readily determined and likewise replenished during the operation of the machine, and finally to provide a lighter-running and longer-wearing bearing of this kind than has heretofore been produced.

Upon the accompanying drawings, forming a part of this specification, similar numerals of reference denote like or corresponding parts throughout the several figures, and of which—

Figure 1 shows a perspective view of a portion of the bed or frame of a boring-mill and the table therefor in a raised position to show my improved bearing. Fig. 2 is a transverse vertical section through a portion of the frame and table shown in Fig. 1. Fig. 3 is a plan view of the bearings of the frame, together with the oil-reservoir and connections intermediate thereof and the bearing.

Referring in detail to the numerals of reference marked upon the drawings, 5 indicates the base of the machine, which obviously may be formed in accordance with that of any modern boring-mill, vertical lathe, or similar machine-tool. 6 indicates a table the top design of which may likewise be of any preferred construction and driven in the usual way through an annular rack 7, attached to the under side of the table and engaged and operated through the pinion 8 upon a vertical shaft 9, to which power is communicated through a bevel-gear 10, operated from any suitable connection with the driving mechanism of the machine.

The frame 5 contains a central spindle-

hole 11 to receive the rotatable spindle 12 of the table 6. The upper end of said hole is enlarged to form an annular cup 13, in which a suitable packing material, such as waste, is placed against and to lubricate the spindle of the table. Exterior of this cup and in the top of the frame is an annular pocket 14, formed intermediate of the internal and external annular walls 15 and 16, respectively. In practice the outer wall 16 is made somewhat taller than the inner wall 16 to insure the overflow of oil from the pocket running over the inner wall upon the packing in the cup 13, from which it works down around the spindle to lubricate the same throughout the entire length of its bearing. Within the pocket 14 is formed an annular raised bearing 17, the top surface of which is preferably inclined at an angle with respect to the surface of the table and is adapted to receive the annular inclined engaging bearing 18. upon the under side of the table. The annular engaging surfaces of these bearings are below the surface-line of the oil within the annular pocket, and the bearings being narrow and located intermediate of the side walls form spaces 19 and 20 on either side to retain the oil, which compartments are connected through the radial oil-channels 21 of the lower bearing. There may obviously be any number of these channels in the face of the lower bearing, which is best adapted to answer the purpose of lubricating the bearing-surface of the parts in accordance with the particular class of machine to which the device is applied.

22 represents a filling-cup or reservoir which is suitably connected through the pipe 23 and one of the oil-channels 21 with the annular pocket of the frame to supply the oil thereto. In practice the top of the reservoir is slightly above the level of the inner wall 15 of the annular pocket, thus insuring the filling of said pocket with the filling of the reservoir and permitting a slight overflow from said reservoir to the spindle-cup. The transparent opening 24 in the reservoir readily shows the height of oil covering the bearing and indicates when an additional supply of oil is required. The oil-reservoir is preferably filled through the top and is provided with a detachable screw-cap 25, which is removed for filling.

With a construction as shown it will be seen that all the wearing-surfaces are either fully submerged or otherwise amply lubricated with oil. The side edges of the annular bearings intermediate of table and frame are fully covered with oil at all times, and besides by reason of the several oil-filled radial channels in the face of the lower bearing the under surface of the upper bearing is constantly being exposed to the oil, which serves to cool the bearings thoroughly, besides lubricate this intermediate surface.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a self-lubricating table-bearing, comprising a frame having an annular straight inclined bearing therein, an annular oil-pocket upon the inside adjoining the bearing and extended below the surface of the same, radial channels extending from the said annular pocket through the top surface of said straight inclined bearing, and a table having a straight inclined portion to rotate upon the bearing of the frame.

2. A table-bearing for machine-tools, comprising a frame having an annular inclined bearing, and an annular pocket on each side of and extended below the surface of such bearing radial channels extending from said pockets through the inclined wearing-surface of the bearing, a table rotatably mounted upon said bearing of the frame, and an oil-reservoir connected with the oil-pockets and channels of the bearing to supply a lubricant thereto.

3. A table-bearing for machine-tools, comprising a frame having an inclined annular bearing therein, a table having an inclined annular bearing to rotate upon the bearing of the frame, an annular oil-space upon each side of the said bearings extended below the surface of the lower bearing, and oil-channels extending across the surface of said lower bearing and connected with both said oil-spaces.

4. In a table-bearing for machine-tools, the combination of a frame having a central spindle-bearing, a straight inclined annular table-bearing, an annular pocket on each side of said table-bearing, radial channels extending through the table-bearing and connected with both said annular pockets and a spindled table rotatably mounted in said spindle-bearing and upon said table-bearing.

5. A table-bearing for machine-tools, comprising a base having a central spindle-bearing,

and an annular straight inclined table-bearing, radial channels in the face of the table-bearing, an annular pocket on both the inner and outer sides of the table-bearing with inclosing side walls, the outer wall of the pocket being higher than the inner one to insure the overflow of oil passing on the spindle-bearing connected oil-reservoirs located on a level with the inner wall of the pocket and a table mounted to rotate upon the said bearing.

6. A table-bearing for machine-tools, comprising a frame having a central spindle-bearing therein, an annular pocket exterior of said hole, and a raised annular bearing within the pocket, a spindled table rotatably mounted in the bearings, transverse inclined oil-channels through the face of the table-bearing adapted to lubricate the under inclined bearing-surface of the table, a connected oil-reservoir to fill the pocket-of the frame, and said frame being adapted to permit overflow upon the spindle-bearing.

7. In a self-lubricating table and spindle-bearing for machine-tools, the combination of a frame having a central spindle-hole therein, an annular pocket, an annular bearing intermediate the width of the pocket forming oil-spaces on each side of the bearing, oil-channels extending across the bearing, a spindled table mounted upon the bearing and journaled in the hole of the frame, and a packed cup surrounding the spindle adapted to be lubricated by the overflow from the pocket.

8. In a self-lubricating table and spindle bearing for machine-tools, the combination of a frame having a spindle-bearing and an annular pocket, a raised inclined annular bearing in the said pocket forming an oil-space on each side, transverse channels through the said bearing extending from one oil-space to the other, a table having an annular bearing extended into the pocket to engage the frame-bearing, and a spindle fitted to the hole of the frame, an annular pocket surrounding the spindle and adapted to receive the overflow from the oil-pocket and lubricate the spindle, and an oil-reservoir to supply the oil to said pocket.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 30th day of January, A. D. 1906.

EDWARD P. BULLARD, JR.

Witnesses:

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