Oct. 25, 1932. C. H. LANDERS 1,883,977

WORK HOLDING MEANS FOR TURNING MACHINES

Original Filed Jan. 3, 1928

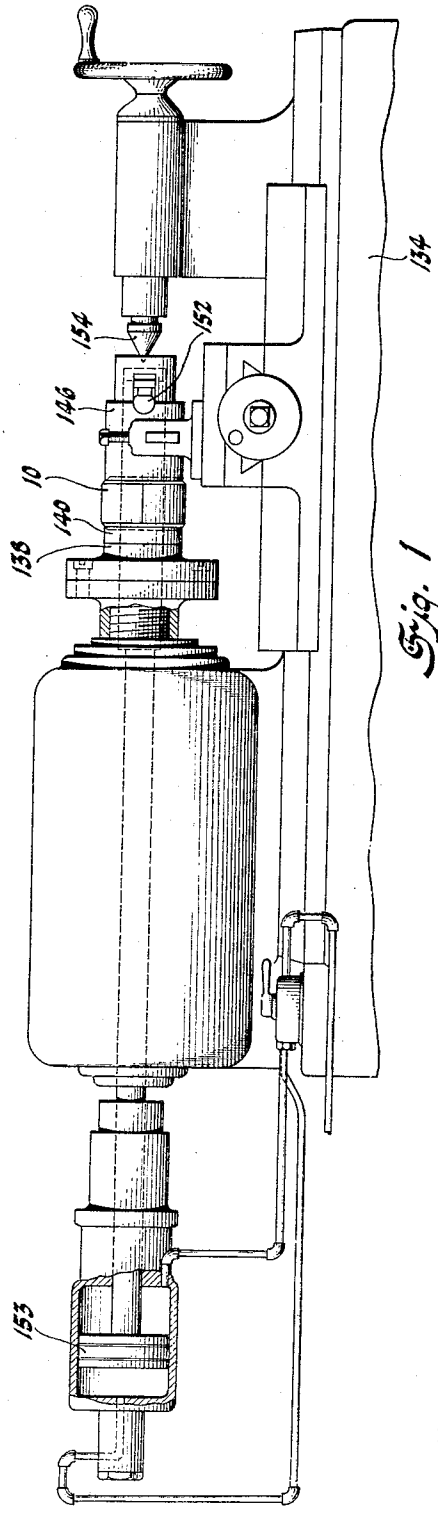


Fig. 1

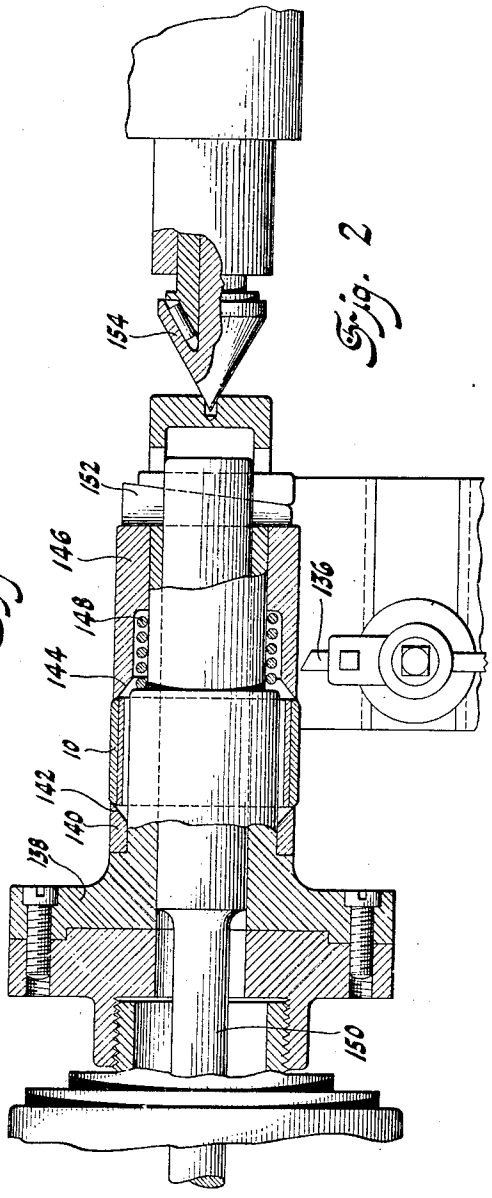


Fig. 2

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Patented Oct. 25, 1932 1,883,977

UNITED STATES PATENT OFFICE

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WORK HOLDING MEANS FOR TURNING MACHINES

Original application filed January 23, 1928, Serial No. 248,842. Divided and this application filed November 20, 1929. Serial No. 408,496.

This invention relates to the manufacture of bearings, and this application is concerned particularly with the structure of an outside turning machine such as disclosed in my prior application, S. N. 248,842, filed January 23, 1928, of which this is a division. The various operations in the process of making bearings prior to and subsequent to the outside turning, as fully disclosed in my prior filed application, form no part of the present invention and are not included herein.

The machine for outside turning is so constructed as to clamp a pair of bearing halves for application of the turning tool to the exteriors thereof. More specifically a pair of bearing halves is clamped between two cup-like members having clamping surfaces engaging the chamfered ends of the bearings.

One of the main objects of my invention is to so mount said clamping elements as to hold the bearing halves firmly in place during the turning operation, and providing a quick, yet positive, readily controlled means for moving one of said clamping elements toward and away from the other to facilitate the removal of the turned bearing halves and replacement by unturned halves. It will be understood that a grinding wheel may be employed instead of a turning tool, which latter I prefer because turning is sufficiently accurate and may be more quickly accomplished than grinding.

In the drawing:

Figure 1 is a side elevation of the turning machine, and Figure 2 is a plan view with parts shown in section.

The turning machine is provided with a bed plate 134 upon which is mounted a cutter 136 adapted to be moved along the work either manually or automatically. The mounting of the cutter on the bed plate which supports the clamping members and associated elements insures accurate positioning of the bearing halves relative thereto during the cutting operation.

The bearing halves 10 are mounted on a revolving shaft 138 driven by any suitable means and provided with a clamping collar 140 having a bevelled surface 142 for engaging the similarly bevelled surfaces on one end of said bearing halves 10. The corresponding surfaces at the other end of said bearings are engaged by a bevelled surface 144 carried by the sliding clamp 146 normally urged away from the bearings by the coil spring 148, as shown. The shaft 138 is hollow and within it reciprocates ram 150 which is provided at one end with wedges 152 for engaging the clamping member 146 and locking it against the bearings 10, which wedges operate in slots in the shaft 138. At its other end, the ram 150 is provided with a piston 153 operating in a suitable cylinder and adapted preferably to be actuated by air pressure to effect movement of the clamping member 146 into engagement with the bearings 10. The free end of the shaft 138 is engaged by a pilot bearing 154, preferably mounted on anti-friction bearings and serving to prevent flexing of the shaft such as would cause inaccuracy of the cut.

In operation the ram 150 is moved to the right carrying with it the wedges 152 and releasing the clamping member 146 which is moved by the spring 148 to the right. A pair of bearing halves are then inserted around the shaft 138 and the ram 150 moved to the left clamping said bearing halves in position between the collar 140 and clamping member 146. The cooperating bevelled surfaces on the bearing halves and clamping elements serve to position such bearings with respect to the cutter 136 and concentrically with the shaft 138. The shaft 138 is then rotated and after moving the cutter 136 along the bearing, the operations above set forth are repeated replacing the turned bearing halves with unturned bearings.

It will be seen that my turning machine is positive in its action, providing for both accuracy and expediency in turning the bearing halves for which it is particularly designed. Various uses for the clamping means forming a part of my invention will suggest themselves within the scope thereof.

I claim:

1. A holding means for bearing segments or the like including a hollow shaft, a relatively fixed clamping collar thereon, a relatively movable clamping member thereon,

spring means housed within said clamping member normally urging the same away from the clamping collar, and fluid pressure operated means including a ram passing through said hollow shaft and provided with elements engaging an end of said clamping member to move it toward the clamping collar, adapted to thereby retain bearing segments between said clamping elements.

2. A holding means for bearing segments or the like comprising a relatively fixed clamping collar, a relatively movable clamping member, a spring housed within said movable clamping member and urging said clamping member away from said clamping collar, and means cooperating with said clamping member and operable by fluid pressure in one direction to positively move said clamping member toward said clamping collar and in the other direction to permit said spring to move said clamping member away from said clamping collar.

3. A holding means for bearing segments or the like, including a hollow shaft, a relatively fixed clamping collar thereon, a relatively movable clamping member thereon, and means for moving said clamping member toward and away from said clamping collar comprising a ram slidably mounted in said hollow shaft and provided with elements engaging said clamping member to move it toward said clamping collar, and a spring engaging said clamping member to move it away from said clamping collar, said spring being positioned between said clamping member and an abutment on said hollow shaft so that it urges said clamping member away from said clamping collar independently of said ram.

4. A holding means for bearing segments or the like, including a hollow shaft, a relatively fixed clamping collar thereon, a relatively movable clamping member thereon, spring means constantly urging said clamping member away from said clamping collar, a fluid pressure operated means including a ram slidably mounted within said hollow shaft, elements secured to an end of said ram extending through longitudinal slots in said hollow shaft to engage an end of said clamping member to move it toward said clamping collar, and a pilot bearing engaging the adjacent free end of said hollow shaft to prevent flexing thereof.

In testimony whereof I affix my signature.

CHAS. H. LANDERS.