

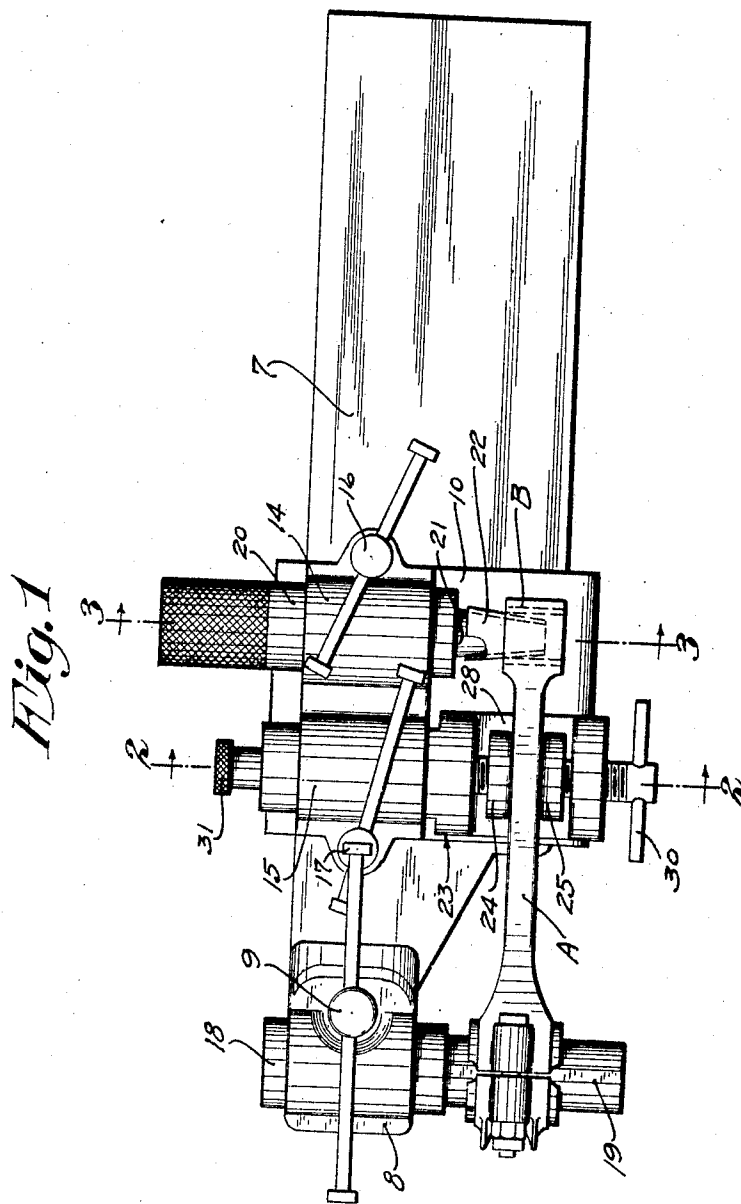
Aug. 2, 1927.

W. AAB

1,637,508

ALIGNING AND REAMING MACHINE FOR CONNECTING RODS

Original Filed Oct. 5, 1925 2 Sheets-Sheet 1.



Inventor
William Aab
By his Attorneys
Merchant and Kiegan

Aug. 2, 1927.

W. AAB

1,637,508

ALIGNING AND REAMING MACHINE FOR CONNECTING RODS

Original Filed Oct. 5, 1925 2 Sheets-Sheet 2

Fig. 2

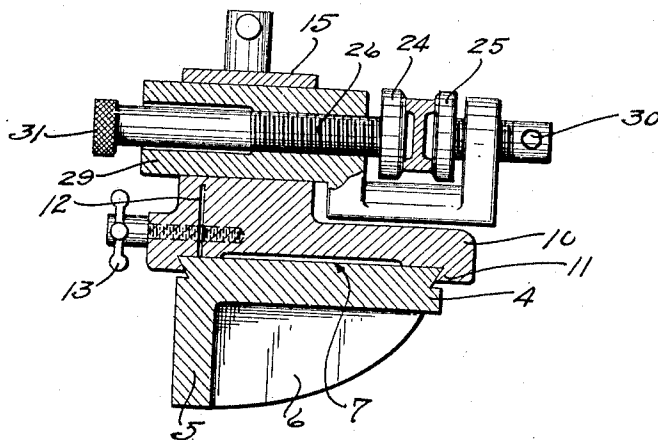
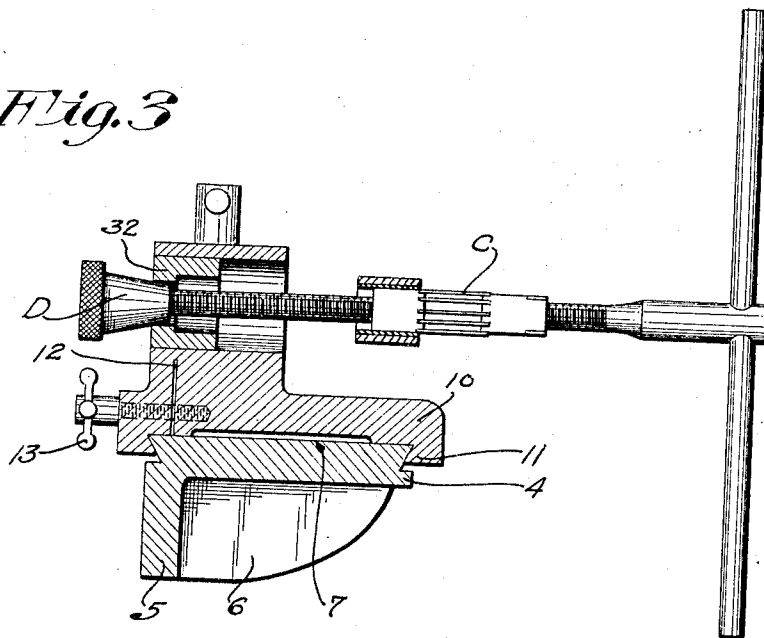


Fig. 3



Inventor
William Aab
By His Attorneys
Merchaut and Kline

Patented Aug. 2, 1927.

1,637,508

UNITED STATES PATENT OFFICE.

WILLIAM AAB, OF NEW ULM, MINNESOTA.

ALIGNING AND REAMING MACHINE FOR CONNECTING RODS.

Original application filed October 5, 1925, Serial No. 60,474. Divided and this application filed April 23, 1926. Serial No. 104,063.

My present invention has for its object to provide an extremely simple and highly efficient machine for holding a piston connecting rod and centering its wrist pin bushing for reaming, and is a division of my co-pending application entitled "Aligning machine for connecting rods and wrist pins of internal combustion engines" filed Oct. 5, 1925, under Serial Number 60,474.

To the above end, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claim.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a plan view of the invention; Fig. 2 is a transverse vertical section taken on the line 2—2 of Fig. 1; and

Fig. 3 is a view taken transversely through the machine on the line 3—3 of Fig. 1 with the centering device removed and a reamer substituted therefor.

The numeral 4 indicates a flat base having at its back a depending longitudinally extended flange 5 suitably reinforced by means of cross ribs 6. The top of the base 4 is planed true to afford a work surface 7. The base 4 may be rigidly held in any suitable manner such as by having its depending flange 5 clamped between the jaws of a vise.

Formed with the base 4 at the left-hand end thereof is a split bearing sleeve 8 having a turning rod-equipped adjusting screw 9 for contracting the same. The axis of this bearing sleeve 8 extends parallel to the work surface 7 and transversely thereof. A head 10 is slidably mounted on the work surface 7 and has front and rear depending flanges 11 that have beveled interlocking engagement with the front and rear longitudinal vertical edges of the base 4 and guides said head for straight line movement toward and from the bearing sleeve 8. To secure the head 10 to the base 4 in different adjustments in respect to the bearing sleeve 8 said head is longitudinally split at 12 on its under side at the back thereof and provided with a hand screw 13 for contracting said head at the split 12 and thereby clamping the head flanges 11 onto the longitudinal vertical edges of the base 4.

Integrally formed with the head 10 are laterally and horizontally spaced split bearing sleeves 14 and 15 provided with turning rod-equipped adjusting screws 16 and 17, respectively, for contracting said bearing sleeves. The axes of the bearing sleeves 14 and 15 are parallel to the axis of the bearing sleeve 8 and the work surface 7.

An arbor 18 is turnably and removably mounted in the bearing sleeve 8 and has a forwardly projecting section 19 on which the crank end of a connecting rod A and its bushing are mounted. The arbor section 19 is of a diameter that corresponds to the crank of an engine crank shaft for which the connecting rod A is designed. Preferably, as shown, the arbor section 19 is flattened on four sides so that only the four rounded corners thereof are engaged by the connecting rod bushing and hence will tightly hold bushings that vary slightly in diameter. In actual commercial usage a plurality of arbors like 18 but having sections like 19 of different diameters to correspond to the cranks of different engine crank shafts will be provided for interchangeable use.

To center the wrist pin bushing B of the connecting rod A in respect to the bearing sleeve 14 for reaming to receive a new wrist pin, there is mounted in the bearing sleeve 14 a mandrel 20 having a forwardly projecting conical centering point 21 with a correspondingly formed removable bushing 22 adapted to fit in the adjacent end of the bushing B, as shown in Fig. 1. With the bushing B thus centered, the connecting rod A is rigidly held by means of a clamp 23. This clamp 23 includes a pair of opposing inner and outer axially spaced disk-like jaws 24 and 25, respectively, having oppositely projecting screw-threaded shafts 26 and 27, respectively, journaled in the prongs of a U-shaped body member 28. The inner prong of the body member 28 is integrally formed with the outer end of a tubular shaft 29 removably mounted and rigidly held in the bearing sleeve 15. The shaft 27 is provided with a turning rod 30 by which it may be turned to operate the jaw 25, and the shaft 26 extends completely and axially through the tubular shaft 29 and has screw-threaded engagement with the outer end portion thereof. On the inner end of the shaft 26 is a knurled finger piece 31 by

which the shaft 26 may be turned to adjust the jaw 24.

In securing the connecting rod A by the clamp 23 while its bushing B is held centered, the adjusting screw 17 is first operated to release the bearing sleeve 15 from the shaft 26 so that said shaft 26 may be free to move axially. The shaft 27 is then operated to bring the jaw 25 into contact with the outer face of the connecting rod A, and next the shaft 26 is operated to bring the jaw 24 into engagement with the inner face of the connecting rod A to rigidly secure said connecting rod by said jaws. After the connecting rod A is rigidly secured by the clamp 23 the screw 16 is operated to release the bearing 14 and permit the mandrel 20 to be withdrawn axially therefrom.

In actual commercial use of the machine a plurality of interchangeably usable bushings like 22 will be provided for wrist pin bushings of different diameters. For a small sized bushing the centering point 21 may be used without the bushing 22.

After the mandrel 20 has been removed from the machine, a centering bushing 32 is inserted into the inner end of the bearing sleeve 14 and rigidly secured by clamping said bearing sleeve thereon. A reamer C, preferably of the type disclosed and broadly claimed in my copending application

filed June 29, 1923, under Serial Number 648,490, is inserted through the wrist pin bushing B and the bushing 32 from the front of the machine with the cutting knives of said reamer in position to enter the wrist pin bushing B from the outer end thereof, as shown in Fig. 3. The conical split feed nut D of the reamer C is then screwed onto the projecting inner end of the reamer's feed screw and seated in the inner end of the bushing 32. It will be noted that the bushing 32 is of different diameters at its ends so that the same may be turned end for end to receive the feed screws of different sized reamers. With the reamer thus applied, the wrist pin bushing B will be accurately reamed.

What I claim is:

A machine of the kind described having an arbor, a centering member, and a bearing between said arbor and centering member, a tubular shaft mounted in the bearing and having a U-shaped member, and a pair of axially aligned shafts, one of which has threaded engagement with the tubular shaft and the other of which has threaded engagement with the outer prong of said body, said pair of shafts having co-operating jaws at their inner ends between the prongs of said body member.

In testimony whereof I affix my signature.

WILLIAM AAB.