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2,848,849

AXIAL LOCATING DEVICE

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4 Claims. (Cl. 51-105)

This invention relates to machines for grinding crankshafts or other workpieces having spaced shoulder portions, particularly to means for aligning said shoulders with a grinding wheel or other cutting tool.

It is an object of this invention to provide means for engaging the spaced shoulders of a workpiece to shift said shoulders into alignment with a grinding wheel.

Another object is to provide a shoulder engaging device consisting of work engaging feelers adapted to be spread into engagement with said shoulders.

Figure 1 is a plan view.

Figure 2 is a sectional right hand elevation.

Figure 3 is a plan view partly in section of a locator and means to move it toward and from operative position.

In the drawings, numeral 10 indicates a support member having a cylindrical bore 11 therein. A piston 12 slidably mounted in said bore is held in left hand position by a spring 13 and is moved to the right by fluid under pressure from any suitable source introduced through passage 20.

Piston 12 has a piston rod 14 which extends through the right hand end of bore 11. The end of piston rod 14 is slotted to receive the ends of fingers 15 and 16 which are held therein by a fastener 17. Said fastener also holds a portion 18 of a connection 19 for actuating a switch 25 in response to movement of piston 12. The function of switch 25 is to signal the retraction of fingers 15 and 16 after the crank has been located. A similar operation is shown in Patent No. 2,820,332, dated January 21, 1958. Fingers 15 and 16 have surfaces 21 and 22 respectively which engage a spreading pin 23. Pin 23 is mounted in members 24 and 26 formed by slotting one end of support member 10. When piston 12 moves to the right, surfaces 21 and 22 are urged against pin 23 and fingers 15 and 16 are spread outwardly to engage shoulders 30 and 31 of a workpiece 32. The work engaging portions of said fingers are rounded at the end to minimize friction and to avoid digging into the workpiece. If said shoulders are out of line with wheel W, as indicated in Figure 3, finger 15 will engage shoulder 30 and shift workpiece 32. Finger 16 and shoulder 31 will move toward one another and when they meet, both shoulders will be in line with the sides of wheel W. When piston 12 is moved to the left and the pressure of pin 23 removed from said fingers, they are retracted by a spring 35.

In order to provide added rigidity for support member 10 a pair of clamp screws 40 are mounted in brackets 41 to engage opposite sides of said support member 10. Said brackets may be mounted on any suitable base member (not shown).

While fingers 15 and 16 are shown at the upper side of workpiece 32, they would function equally well if located either beneath or at the front of said workpiece.

If it is desired to move support 10 and associated parts toward and from work engaging position, they may be mounted as shown in Figure 3 on a member 50 which is carried by a piston rod 51 attached to piston 52 in cylinder 53. This apparatus is shown and described in greater detail in Patent No. 2,820,332, dated January 21, 1958. When support member 10 is retracted, a hinged member 55 rides along member 56 on said support member, and at the end of the movement, it drops down to

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close an opening in the locator housing (not shown). Said patent also describes the means for positioning the workpiece out of alignment initially so that the locating movement always takes place in the same direction.

5 What I claim is:

1. In a grinding machine for grinding workpieces having opposed shoulders or flanged portions, a grinding wheel and a support member, a work locating device having means rigidly mounted in said support member for co-operating with said shoulder portions for determining the relative axial position of said shoulder portions and said grinding wheel including a pair of work engaging fingers on said support member one on each side of the median plane of said grinding wheel and movable in the direction of said shoulders, and means for spreading said fingers into engagement with said shoulders to shift said workpiece axially into alignment with said grinding wheel.

2. In a grinding machine, a grinding wheel and a support member, a work locating device rigidly mounted in said support member for effecting a relative axial positioning movement between spaced shoulders on a workpiece and said grinding wheel, comprising a work engaging unit on said supporting member having expandible work engaging elements, means for spreading said elements away from the median plane of said grinding wheel and into engagement with said spaced shoulders, said elements being mounted so that if the work is not in alignment with the grinding wheel, one of the work engaging elements will contact a shoulder before the other and the continued spreading of said work engaging elements will cause the other shoulder and work engaging element to approach one another whereby the shoulders of said workpiece are moved axially into alignment with said grinding wheel.

3. In a grinding machine for grinding a cylindrical portion of a workpiece having opposed shoulders or flanged portions, a grinding wheel for grinding said shoulders and a supporting member, said workpiece being positioned initially with said shoulders unequally spaced from the median plane of said grinding wheel, a work locating device having means for co-operating with said shoulder portions, including a pair of work engaging members on said supporting member, means for spreading said work engaging members away from the median plane of said grinding wheel and toward said opposed shoulders whereby, when one of said members engages the corresponding shoulder before the other, the workpiece will be shifted axially until both of said work engaging members are in contact with their respective shoulders.

4. In a grinding machine for grinding cylindrical portions of a workpiece having opposed shoulder or flanged portions, a grinding wheel for grinding said shoulders and a work support, a work locating device on said support having means for co-operating with said shoulder portions for determining the relative position of said shoulder portions and said wheel including a pair of feelers and means for spreading said feelers away from the median plane of said grinding wheel and into engagement with said shoulders whereby to shift said workpiece into substantially exact alignment with the median plane of said grinding wheel.

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