March 1, 1960 H. C. JOHNSTON 2,926,654

GRINDING WHEEL DRESSER

Filed April 3, 1958

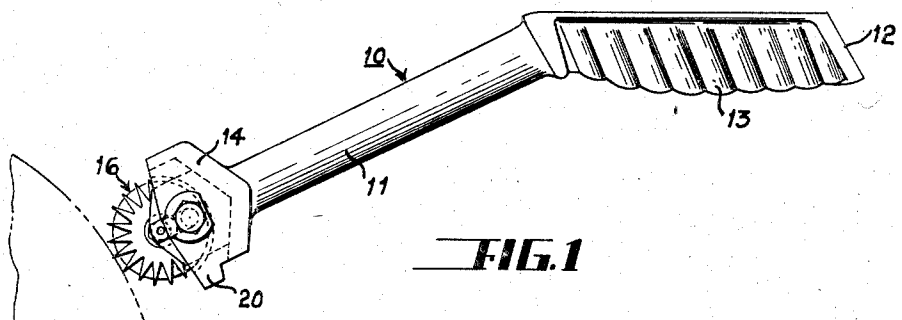


FIG. 1

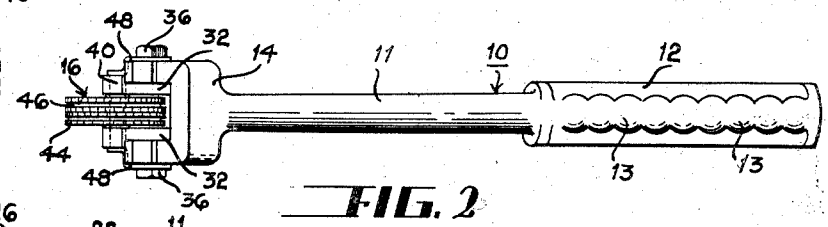


FIG. 2

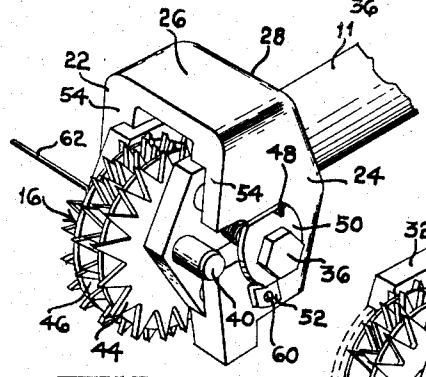


FIG. 5

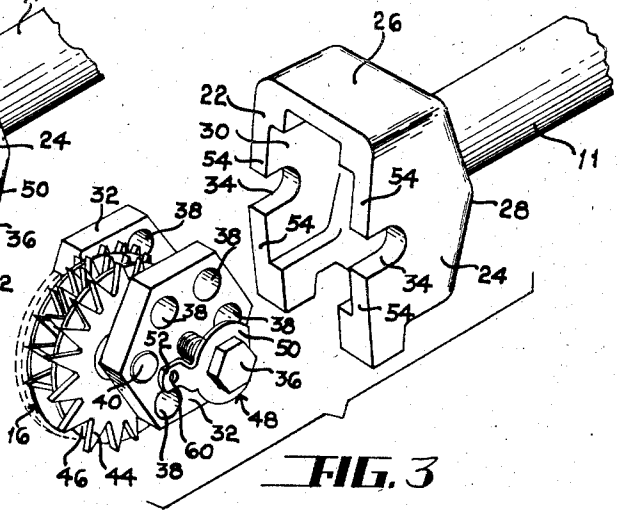


FIG. 3

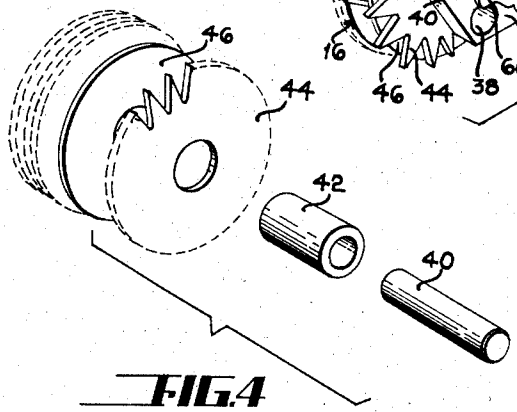


FIG. 4

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GRINDING WHEEL DRESSER

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4 Claims. (Cl. 125—37)

This invention relates to a grinding wheel dresser and more particularly to improvements relating to the bearing assembly supporting the cutters of the dresser for rotation, this invention being an improvement upon the grinding wheel dresser shown and described in United States Letters Patent No. 1,382,176 issued June 21, 1921 to J. Dobson.

In conventional grinding wheel dressers of the type herein disclosed there are two principal components of the wheel dresser subject to excessive wear. One of these components comprises the cutter wheels which engage and trim the grinding wheel.

These cutter wheels rotate upon a bushing supported by a shaft, the latter being journalled in suitable bearings. The bearing members supporting this shaft comprise the other component subjected to excessive wear.

In the past, the practice has been to so arrange the grinding wheel dresser that the cutter wheels may be readily replaced as often as is necessary and the bearing members which are subjected to a less severe wear may be repositioned as desired to present new bearing surfaces to the shaft supporting the cutter wheel.

An object of the present invention is to provide a grinding wheel dresser wherein the cutter wheels may be removed and replaced without disassembly of the grinding wheel dresser, and without disturbing the alignment of the bearing surfaces presented to the shaft supporting the cutter wheels.

Another object of this invention is to provide a novel retaining clip for retaining the cutter wheel supporting shaft in engagement with its bearing surfaces while the grinding wheel dresser is being used, these retaining clips being provided with knock-out apertures facilitating removal of the shaft supporting the cutter wheels.

Still another object of this invention is to provide an improved handle for the grinding wheel dresser provided with an improved piston grip for manual handling of the grinding wheel dresser, there being an angular relationship between the main body of the handle and the piston grip such that proper alignment of the cutter wheels with a grinding wheel is facilitated.

Other objects and advantages reside in the construction of parts, the combination thereof, the method of manufacture and the mode of operation, as will become more apparent from the following description.

In the drawing,

Figure 1 is a side elevational view of the grinding wheel dresser of this invention in engaging relation to a grinding wheel, the latter being shown in fragmentary phantom detail.

Figure 2 is a bottom plan view of the grinding wheel dresser of Figure 1.

Figure 3 is an enlarged fragmentary partially exploded view of the operative end of the grinding wheel dresser illustrating the bearing supports for the wheel cutters separated from the handle portion of the grinding wheel dresser.

Figure 4 is an enlarged fragmentary exploded view

of the shaft assembly for rotatably supporting the cutter wheels of the grinding wheel dresser of Figure 1.

Figure 5 is an enlarged fragmentary view of the operative end of the grinding wheel dresser of Figure 1 illustrating a knock-out punch in operative relation with the grinding wheel dresser and further illustrating partial disassembly of the grinding wheel dresser.

Referring to the drawing in detail, the grinding wheel dresser, as illustrated in Figure 1, comprises a holder **10** having a handle portion **11** terminating at one end in a grip portion **12** and at the opposite end in a generally rectangular hollow head **14** adapted to receive the wheel dressing assembly indicated generally by the reference numeral **16**. The grip portion **12** forms an angle of approximately 25° with the handle portion **11** and is provided on the under side thereof with a plurality of ridges **13**, so that the grip portion may be conveniently gripped by hand.

In Figure 1 of the drawing, the grinding wheel dresser is illustrated in operative engagement with a grinding wheel **18** illustrated in phantom. The angular relationship between the grip portion **12** and the handle portion **11** is such that the wheel dressing assembly will engage the grinding wheel at the proper angle when the grip portion **12** is held conveniently in the horizontal position.

The head **14** of the grinding wheel dresser is provided with foot portions **20** providing a rest for the grinding wheel dresser when the grinding wheel, as is typically the case, is provided with a platform attachment, not shown.

The head of the grinding wheel dresser and the operative elements of the wheel dressing assembly are shown in exploded detail in Figures 3 and 4. Referring to Figure 3, the head of the grinding wheel dresser comprises spaced parallel jaws **22** and **24** bridged by a wall **26**, and an angularly concave base portion **28**. The jaws **22** and **24**, and the wall **26** form a three sided substantially rectangular cavity.

Each of the jaws **22** and **24** is provided with polygonal recesses or slots **30** on the inner surfaces thereof. These slots **30** are adapted to receive hexagonal bearing members **32**, such that these hexagonal bearing members, which are part of the wheel dressing assembly, may be locked within the head **14** in spaced parallel relation.

The parallel jaws **22** and **24** are also provided with centrally located U-shaped notches **34** adapted to receive threaded bolts **36** threadedly engaging the centers of the bearing members **32**. The construction and arrangement is such that the bearing members **32** engaged by the bolts **36** may be slid onto the head **14** so as to seat in the recesses **30** of the head **14** and may be tightened into place by means of the bolts **36**. The polygonal structure of the recesses **30** and bearing members **32** is complementary, such that the bearing members **32** when seated in the recesses **30** are secured non-rotatably in registry by the walls of the recesses **30**.

The hexagonal bearing members **32** are each provided with a plurality of bearing holes **38**, there being one bearing hole **38** disposed in each angular portion of each bearing member **32**. When the bearing members **32** are held in registry by the jaws **22** and **24**, the several bearing holes **38** in the bearing members **32** are in axial alignment. The dimensions of the jaws **22** and **24** are such that upon the bearing members **32** being secured in position in the recesses **30**, one angular portion of each bearing member **32** will be projecting beyond the jaws **22** and **24**, and the bearing holes **38** in these outwardly projecting portions will be aligned to accept a shaft identified by the reference numeral **40**. The shaft **40** is provided with bevelled ends to facilitate insertion in the bearing holes **38**.

Journalled upon the shaft **40**, as illustrated in the ex-

ploded view of Figure 4, is a bushing 42. Journalled, in turn, upon the bushing 42 are a plurality of cutting wheels 44 separated by spacers 46. These cutting wheels 44, which are freely rotatable upon the bushing 42, comprise the wheel dressing elements of the grinding wheel dresser.

The shaft 40 is retained in position in the bearing members 32 by means of retaining clips 48. These retaining clips 48 each include a substantially planar body portion or member 50 journalled upon a bolt 36, so as to be supported in flush relation against the sides of a jaw 22 or 24, as the case may be. A lug 52 is supported by the body member 50 in off-set relation thereto. The amount of off-set between the body member 50 and lug 52 corresponds approximately to the thickness of the jaws 22 and 24.

The arrangement is such that upon the bolts 36 being tightened so as to draw the bearing members 32 into the recesses 30, the lugs 52 will move into position to cover the bearing holes 38 receiving the shaft 40 located in the outwardly projecting portions of the bearing members 32. The movement of the lugs 52 into position over the ends of the shaft 40 is facilitated by the mutually inclined terminal margins 54 of the jaws 22 and 24. These margins co-operate to limit the pivotal movement of the lugs 52, such that these lugs cannot move away from their positions covering the ends of the shaft 40.

As illustrated in the drawing, each of the lugs 52 is provided with an aperture 60 adapted to receive a knock-out pin or rod 62 for purposes to be described in the following. The diameter of this aperture 60 is less than the diameter of the shaft 40.

The grinding wheel dresser is assembled as follows. Initially, the bearing members 32 are seated within the recesses 30 of the head 14 and the bolt 36 associated with one bearing member 32 is tightened to lock that bearing member. The other bearing member 32 is loosely seated in its recess 30, the associated retaining clip 48 being rotated to a non-operative position as illustrated in Figure 5. The body portion 50 of the retaining clip is made non-circular to facilitate manual rotary movement. At this time, there is an aligned pair of bearing holes 38 in the outwardly projecting portions of the bearing members 32. The bushing 42 carrying an assembly of cutting wheels and spacers is then positioned between the aligned bearing holes 38. Following this the shaft 40 is driven through the bearing holes 38 and the bushing 42. The retaining clip 48 associated with the loosely secured bearing member 32 is next moved to the operative position as shown in Figure 3, such that the lug 52 thereof covers the end of the shaft 40. The associated bolt 36 is then tightened and the grinding wheel dresser is ready for use.

As noted hereinbefore, the cutter wheels 44 are subjected to wear when the grinding wheel dresser is in use and fail considerably more rapidly than any of the other components of the grinding wheel dresser. The cutter wheels 44 may be replaced in the following manner.

One of the bolts 36 is loosened sufficiently that the associated retaining clip 48 may be rotated out of the operative position. A rod 62 is then inserted in the knock-out aperture in the opposite retaining clip 48, as illustrated in Figure 5, and utilized to drive the shaft 40 out of the bearing members 32. This frees the cutter wheels 44 for replacement. With the cutter wheels replaced, the dresser is reassembled as described above.

It has also been noted hereinbefore that the bearing holes 38 also tend to wear excessively. This makes it desirable to provide a plurality of bearing holes 38 which may be selectively presented to the shaft 40, as in the present invention, such that the life of the bearing members 32 may be prolonged considerably. Accordingly, when the bearing holes 38 have worn an excessive amount, new bearing holes 38 may be presented to the rod 40 by disassembling the wheel dresser and rotating the hexagonal bearing members 60° relative to the recesses 30. To facilitate correct sequential rotation of the bearing members 32, these bearing members may be indexed, or the bearing holes 38 may be sequentially numbered.

The present grinding wheel dresser is so constructed that the cutter wheel assembly 44 may be withdrawn and replaced without disturbing the arrangement of the bearing members 32 by means of a simple disassembly mechanism. Further, the grinding wheel dresser of this invention is so constructed that several bearing surfaces may be successively presented to the shaft 40 which rotatably supports the cutter wheel assembly. While the bearing members 32 have been illustrated in the hexagonal form, it will be obvious to those skilled in the art that the bearing members 32 may take any polygonal form, such as the pentagonal, septagonal or octagonal forms. It will be necessary, of course, in varying the polygonal form of the bearing members 32 to vary the polygonal form of the recesses 30 in a similar manner.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention I claim:

1. In a grinding wheel dresser, a holder, spaced parallel jaws disposed at one end of said holder, a pair of polygonal bearing members each provided with a plurality of bearing holes, the number of bearing holes in each member equalling the number of faces thereof, recesses in said jaws for receiving and registering said bearing members, bolt means penetrating said jaws to threadedly engage said bearing members for drawing said bearing members into said recesses whereby said bearing members are supported in spaced parallel registration by said jaws, and a shaft journalled in one pair of registered bearing holes for supporting cutter wheels, the improvement wherein at least one of said jaws is recessed away from the bearing hole receiving said shaft whereby said shaft is removable from said bearing members without removing the polygonal bearing members from the holder, and including a retaining clip carried by the bolt means penetrating said recessed jaw for releasably closing the adjacent bearing opening to retain said shaft within said bearing holes.

2. The grinding wheel dresser according to claim 1, wherein said holder includes an elongate handle member provided with an angularly extending grip portion for manual gripping of said wheel dresser.

3. In a grinding wheel dresser, a holder, spaced parallel jaws disposed at one end of said holder, a pair of polygonal bearing members each provided with a plurality of bearing holes, the number of bearing holes in each member equalling the number of faces thereof, said bearing holes being disposed in the angles of said polygonal bearing members, slots in said jaws for slidably receiving and registering said bearing members, bolt means penetrating said jaws to threadedly engage said bearing members for securing said bearing members in said slots whereby said bearing members are supported in spaced parallel registration by said jaws, and a shaft journalled in one pair of registered bearing holes for supporting cutter wheels, the improvement wherein said bolt means secure said bearing members to said jaws in fixed relation to the ends of said jaws such that one pair of registered bearing holes is disposed outwardly of ends of said jaws, said shaft being journalled in said outwardly disposed bearing holes so that the shaft and the cutter wheels may be removed without removing the bolts securing the bearing members in position, and including a pair of retaining clips, each comprising a planar body portion journalled upon the bolt means carrying same so as to seat flush with the outer

wall of the adjacent jaw, and a lug portion set off from said body portion an amount corresponding substantially to the thickness of said jaw, said jaws being provided with marginal portions at the ends thereof for guiding said offset lugs into position over the adjacent outwardly disposed bearing holes.

4. In a grinding wheel dresser, a holder, spaced parallel jaws disposed at one end of said holder, a pair of polygonal bearing members each provided with a plurality of bearing holes, the number of bearing holes in each member equalling the number of faces thereof, said bearing holes being disposed in the angles of said polygonal bearing members, slots in said jaws for slidably receiving and registering said bearing members, bolt means penetrating said jaws to threadedly engage said bearing members for securing said bearing members in said slots whereby said bearing members are supported in spaced parallel registration by said jaws, and a shaft journalled in one pair of registered bearing holes for supporting cutter wheels, the improvement wherein said bolt means secure said bearing members to said jaws in fixed relation to the ends of said jaws such that one pair of registered bearing holes is disposed outwardly of ends of said jaws, said shaft

being journalled in said outwardly disposed bearing holes so that the shaft and the cutter wheels may be removed without removing the bolts securing the bearing members in position, and including retaining means for releasably closing the outwardly disposed bearing holes for retaining said shaft within said bearing holes, said retaining means including a retaining clip including a main body portion, a lug integral with the main body portion of the clip, said lug being in offset relation thereto, the amount of offset between the body portion and the lug corresponding approximately to the thickness of the jaws, and means for releasably securing said retaining means to the holder.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,926,654 March 1, 1960

Harold C. Johnston

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, lines 51 and 54, for "piston", each occurrence, read -- pistol --.

Signed and sealed this 23rd day of August 1960.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents