

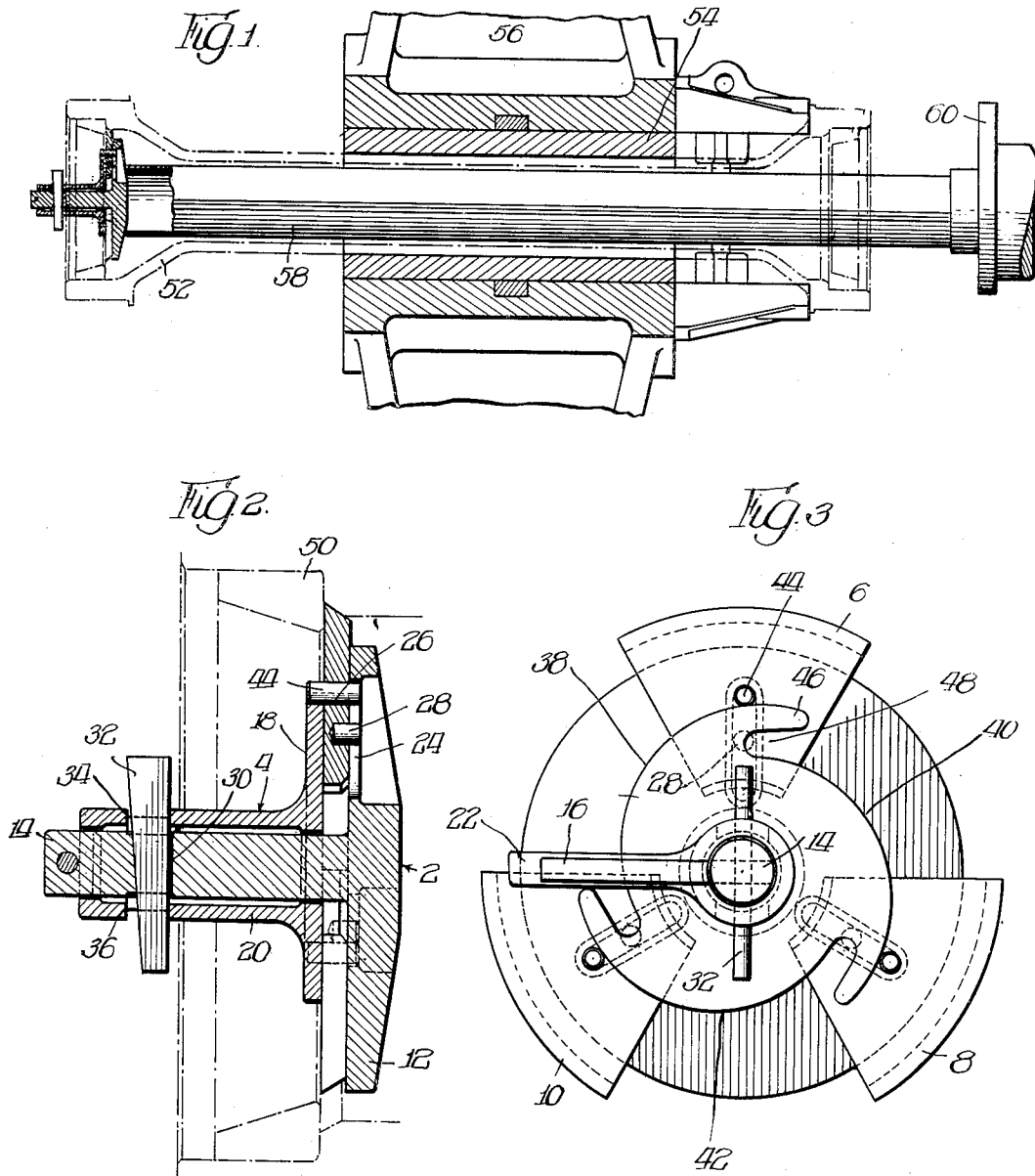
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TOOL

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TOOL

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The present invention relates to tools and more in particular to roller bearing cup removing tools.

Among the objects of the present invention is to provide a novel tool adapted to be used in conjunction with suitable power means for removing roller bearing cups pressed within the housing of car wheel axles.

Another object of the invention is to provide a novel tool which may be readily and easily inserted within the housing of car axles and having means adapted to engage with a roller bearing cup for removal of the same from the housing.

The invention comprehends the idea of providing a novel roller bearing cup removing tool adapted to be easily inserted into the housing for a car wheel and having means, such as movable elements controlled by suitable means, for moving these elements into a position for engagement with the roller bearing cup.

A still further object of the present invention is to provide a novel tool having means for locking these movable elements against outward movement, whereby the same are held in a position to provide clearance for insertion of said tool within a roller bearing cup in the housing of a car axle.

Still another object of the present invention is to provide a novel roller bearing cup removing tool having relatively movable tool members adapted to be clamped in engaging relation with cup pushing elements interposed therebetween and for holding these elements in position for engagement with the roller bearing cup, suitable means being provided for applying pressure to the tool for removing the roller bearing cup from the housing of the car axle.

The invention further contemplates the idea of providing a roller cup removing tool in which the cup pushing elements are guided by one of the relatively movable members of the tool and moved outwardly by means, such as a cam surface provided on the other of the movable members, into a position for engagement with the roller bearing cup. Further means, such as lock elements, are provided on the last mentioned member for locking said elements to provide clearance for insertion of said tool within said roller bearing cup.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation as will be more fully described and particularly pointed out in the specification, drawing and claims appended hereto.

In the drawing which illustrates an embodi-

ment of the device, and wherein like reference characters are used to designate like parts—

Figure 1 is a fragmentary view in side elevation of a wheel press, an embodiment of the present invention being disclosed in cross section in association with an axle housing supported in the wheel press;

Figure 2 is a view in cross section of an embodiment of the present invention; and

Figure 3 is a view in front elevation of the embodiment disclosed in Figure 2 of the drawing.

Referring now more in detail to the drawing, an embodiment selected to illustrate the present invention is shown as comprising an inner movable member 2, an outer movable member 4, and roller bearing cup pushing plates 6, 8 and 10 interposed between these two movable members. The movable member 2 comprises a disc shaped backing plate 12 having an outwardly extending shaft 14 integral therewith and provided with a laterally extending rod 16 having an end fitting within a bore or drilled opening adjacent the outer end of the shaft 14.

The outer movable member 4 comprises a plate element or part 18 having an integrally and outwardly extending tubular hub or shaft 20 adapted to fit over and encircle the shaft 14 of the inner member 2. This shaft or hub 20 is provided with an integrally and laterally extending handle 22. The backing plate or portion 12 is provided with elongated and radially extending slots or openings 24 adapted to receive projecting dowels 26 and 28 fitting in each of the roller bearing cup pushing plates or elements and for guiding these plates or elements between the backing part 12 and plate element 18 of the inner and outer tool members 2 and 4, respectively.

The shaft 14 is provided with a transverse slot 30 adapted to receive a key 32 passing downwardly through aligned openings 34 and 36 provided in the walls of the tubular hub 20, this key 32 being adapted to be forced into engagement with a wall of the slot 30 and the ends of the openings 34 and 36 for clamping the inner and outer movable members in contacting engagement with the roller bearing cup pushing plates or elements 6, 8 and 10.

As clearly shown in Figure 3 of the drawing, the plate element 18 of the outer movable member 4 is provided with cam surfaces 38, 40 and 42 adapted to engage with cam follower portions 44 of the pins or dowels 26, projecting from the front face of the roller bearing cup pushing plates. Each of these cam surfaces terminates in a locking element 46 overhanging the adjacent cam sur-

face and in spaced relation therewith to provide slots or openings 48.

As shown in Figures 2 and 3 of the drawing, the cam followers 44 of the roller bearing cup pushing plates are in engagement with these cam surfaces adjacent the locking elements 46, these plates being maintained in this position by the clamping action of the key 32 passing through the hub 20 and shaft 14 of the outer and inner movable members, respectively. The position of the plates under these conditions is such as to cause the same to engage the rear surface of the roller bearing cup 50 fitting within the axle housing 52, which in turn is positioned between wood blocking 54 of a bolster of a wheel press 56. The backing plate part or portion 12 of the inner movable member 2 is engaged by the end of a wrought iron pipe 58, or other means, of a press ram 60 for applying a pressure or force to the inner member 2 and for forcing the roller bearing cup 50 from the axle housing.

The roller bearing cup removing tool may be removed from the roller bearing cup by removing the key and rotating the handle 22 in a counter-clockwise position so that the cam follower 44 of the plate 6 drops onto the cam surface 40, it being necessary to manually move the plates 8 and 10 into a similar position with the cam surfaces 42 and 38, respectively.

The handle 22 may then be moved in a clockwise position, as viewed in Figure 3 of the drawing, whereby the cam followers 44 enter into the slots 48 and are locked in position by the locking elements 46. This movement of the plates 6, 8 and 10 provides sufficient clearance for removing the tool from the roller bearing cup, as likewise to position these plates whereby the tool may be easily and readily inserted within the roller bearing cup at the other end of the axle housing, or in another axle housing.

It is to be understood that I do not wish to be limited by the exact embodiment of the device shown, which is merely by way of illustration and not limitation, as various and other forms of the device will of course be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, and means on one of said elements for moving said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

2. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, and cam means on one of said elements for moving said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

3. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements, means for guiding said cup pushing plates, and means operable upon movement of certain of said plate elements for moving said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

4. A roller bearing cup removing tool or the

like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, means for locking said plates in a position to provide clearance for entry of said tool within said cup, and means operable upon movement of certain of said plate elements for moving said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

5. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, means for locking said plates in a position to provide clearance for entry of said tool within said cup, and a cam surface on one of said elements for moving said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

6. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, said cup pushing plates having a cam follower, and a cam surface on one of said elements for contacting said followers to move said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

7. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, said cup pushing plates having a cam follower, a cam surface on one of said elements for contacting said followers to move said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup, and members on said element for engaging said followers to lock said plates in a position to provide clearance for entry of said tool within said cup.

8. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, said cup pushing plates having a cam follower, one of said elements having cam surfaces for contacting said followers to move said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup, said cam surfaces terminating in lock members for engagement with said followers to lock said plates in a position to provide clearance for entry of said tool within said cup.

9. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, said cup pushing plates having a cam follower, one of said elements having cam surfaces for contacting said followers to move said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup, each of said cam surfaces terminating in a lock member overhanging the next adjacent cam surface for engagement with said followers to lock said plates in a position to provide clearance for entry of said tool within said cup.

10. A roller bearing cup removing tool or the like, comprising relatively movable plate ele-

ments, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, one of said plates being provided with slots, means on said cup pushing plates engaging in said slots, and means on the other of said plates for movement of said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

11. A roller bearing cup removing tool or the like, comprising relatively movable plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, one of said plates being provided with slots, means on said cup pushing plates engaging in said slots, said cup pushing plates having a cam follower, the other of said plates having means for engagement with said followers for locking said cup pushing plates in a position to provide clearance for entry of said tool within said cup, and a cam surface for movement of said cup pushing plates outwardly beyond said elements and into a position for engagement with said cup.

12. A roller bearing cup removing tool or the like, comprising relatively movable tool members provided with plate elements, a plurality of cup pushing plates interposed between said elements and adapted to be moved upon relative movement of said members outwardly beyond said elements, said members having concentrically arranged shafts for operation of said tool, and means for locking said members to prevent relative movement therebetween.

13. A roller bearing cup removing tool or the like, comprising relatively movable tool members provided with plate elements, a plurality of cup pushing plates interposed between said elements and movable outwardly beyond said elements, said members having concentrically arranged shafts, said shafts having aligned key slots, and a key engaging in said slots for locking said members in contacting engagement with said cup pushing plates.

14. A roller bearing cup removing tool or the like, comprising relatively movable tool members provided with plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, said members having concentrically arranged shafts, said cup pushing plates having a cam follower, means on one of said plate elements for engagement with said cam followers for movement of said cup pushing plates outwardly beyond said plate elements and into a position for engagement with said cup, and means for locking said members together.

15. A roller bearing cup removing tool or the like, comprising relatively movable tool members provided with plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, said members having concentrically arranged shafts, said cup pushing plates having a cam follower, means on one of

said plate elements for engagement with said cam followers for movement of said cup pushing plates outwardly beyond said plate elements and into a position for engagement with said cup, said shaft having aligned key slots, and a key engaging in said slots for locking said members together.

16. A roller bearing cup removing tool or the like, comprising relatively movable tool members provided with plate elements, a plurality of cup pushing plates interposed between said elements and movable in a plane substantially parallel to the plane of said elements, said members having concentrically arranged shafts, said cup pushing plates having a cam follower, means on one of said plate elements for guiding movement of said cup pushing plates, means on the other of said plate elements for engagement with said cam followers for movement of said cup pushing plates into a position for engagement with said cup, said last mentioned plate element being provided with locking members adapted to engage said cam followers for holding said cup pushing plates in a position to provide clearance for entry of said tool within said cup, and means engaging said shafts for locking said tool members in contacting engagement with said pushing plates.

17. A roller bearing cup removing tool or the like, comprising relatively movable members, a plurality of cup pushing members between said movable members and movable in a plane substantially parallel to the plane of said movable members, and means operable upon movement of certain of said relatively movable members for moving said cup pushing members outwardly beyond said members and into a position for engagement with said cup.

18. A roller bearing cup removing tool or the like, comprising members each having a laterally extending portion, a plurality of cup pushing members between said portions, and means for moving said cup pushing members outwardly beyond said laterally extending portions and into a position for engagement with said cup.

19. A roller bearing cup removing tool or the like, comprising relatively movable members each having a laterally extending portion, a plurality of cup pushing members between said portions, and means operable upon movement of certain of said movable members for moving said cup pushing members outwardly beyond said laterally extending portions and into a position for engagement with said cup.

20. A roller bearing cup removing tool comprising relatively movable tool members provided with plate elements, a plurality of cup pushing plates interposed between said elements and adapted to be moved upon relative movement of said members outwardly beyond said elements, said members having concentrically arranged shafts for operation of said elements, and means secured to said shafts for moving the same and said members.

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