Aug. 25, 1936. R. A. KAPLAN 2,052,304

PULLING TOOL

Filed Sept. 15, 1934

Fig. 1

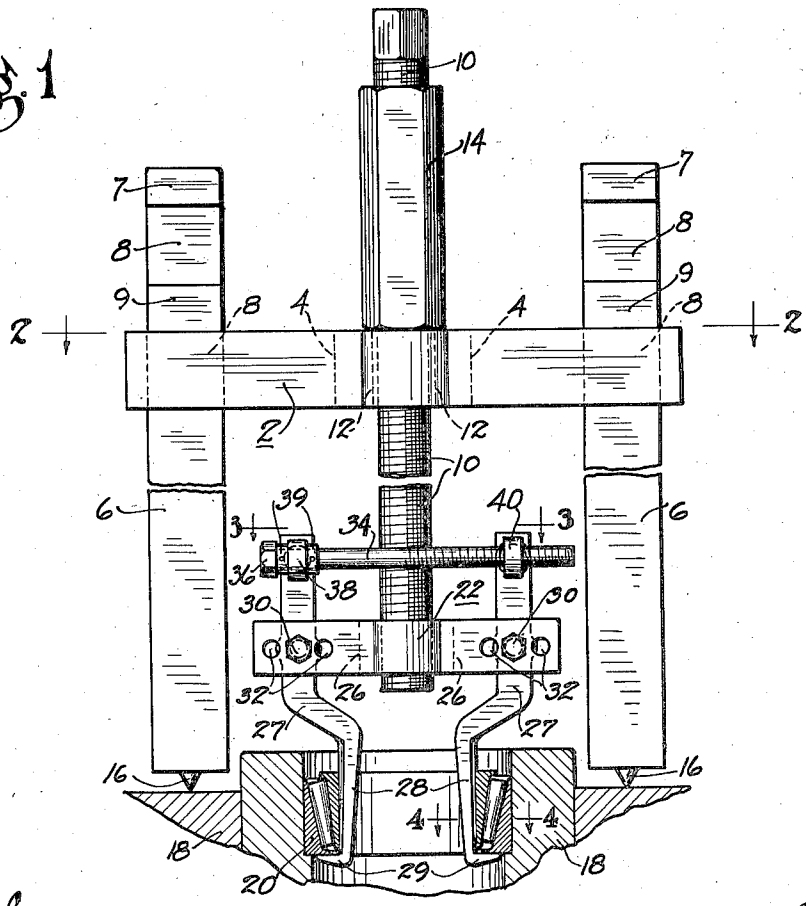
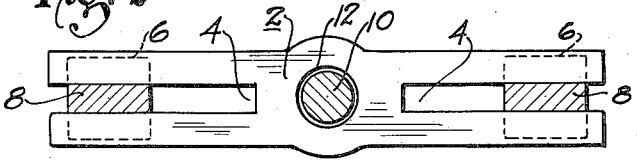


Fig. 2



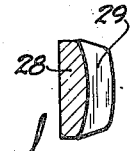


Fig. 4

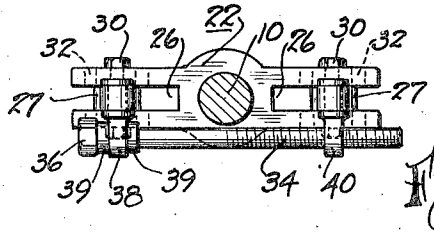


Fig. 3

INVENTOR.
Reuben A. Kaplan
BY A. R. McCrady
ATTORNEY.

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PULLING TOOL

Reuben A. Kaplan, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn., a corporation of Minnesota

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7 Claims. (Cl. 29—88.2)

This invention relates to tools for extracting annular members, such as roller bearing cups, from their position in an assembly. More particularly, the invention contemplates a tool of improved design for extracting members of annular shape from their mountings in automotive vehicles and the like, which tool is of simplified construction, easily applied and removed, and easily adjustable to accommodate itself to a variety of different structures and conditions of operation.

An object of the invention is to provide a tool of the character indicated, which shall be of improved design and inexpensive to manufacture.

Further objects and advantages of the invention will be apparent from the following description, taken in connection with the appended drawing, in which:

Figure 1 is a view in elevation of a device which embodies the invention, showing it applied to the extraction of a roller bearing;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1; and

Figure 4 is a sectional view taken on the line 4—4 of Figure 1, showing a cross-section of one of the extracting hooks.

Referring more particularly to the drawing, the device illustrated therein comprises a cross-head 2 having vertical slots 4 at its ends designed to receive two legs 6 which may move independently of each other longitudinally of the slots for lateral adjustment, the cross-head and legs together forming a yoke. The legs are provided with heads 7 and have upper and lower cutaway portions 8, which may alternatively be seated in slots 4, for longitudinal adjustment of the legs. The cut-away portions 8 are separated by bosses 9. A threaded tension member 10 passes loosely through a hole 12 in member 2 and carries an elongated nut 14 which is designed to be rotated by a wrench to apply tension to member 10.

Legs 6 at their lower ends are provided with pointed projections 16 adapted to engage the hub 18 or other member wherein is seated the roller bearing cup 20 or other piece to be extracted.

The means for exerting a pulling force on the bearing comprises a cross-piece 22 having a vertical bore threaded to receive member 10 and having slots 26 at its ends to receive a pair of work-engaging members 27 which are pivotally mounted therein by means of bolts 30, extra holes 32 being provided in the cross-piece for lateral adjustment.

The members 27 are of the general shape shown in the drawing, and comprise shanks 28 of convex outer cross-section, and hooks 29 designed to engage the inner surface of the piece to be extracted.

The upper ends of members 27 are connected by means of a bolt 34 having a head 36 and an unthreaded portion adjacent the head rotatably mounted in an apertured stud 38 fixed to the upper portion of one of the members 27. Collars 39 are fixed to the bolt 34 at opposite sides of the stud 38. The other end of the bolt is threaded and engages a correspondingly theaded stud 40 fixed to the upper end of the other member 27. It will be seen that by rotation of bolt 34 the lower ends of shanks 28 may be moved outwardly or inwardly to cause hooks 29 to engage or disengage the bearing or other work 20.

It will be noted that vertical adjustment of crosspiece 22 may be had by rotating nut 14 or by rotating the cross-piece relative to member 10.

In operation, the device being properly adjusted, it is put in position and the members 27 inserted within the member to be extracted. The bolt 34 is then rotated to cause hooks 29 to positively engage the inner surface of the work, and tension is then applied to the members 27 by rotating nut 14 in the clockwise direction, drawing the tension member 10 and members 27 upwardly to extract the bearing 20.

Although the invention has been described with reference to a specific embodiment thereof, it may be embodied in numerous other forms, and is not limited except by the terms of the following claims.

I claim:

1. In a pulling tool of the class described, a pair of elongated members having work-engaging hooks at their inner ends, a supporting member pivotally mounting said elongated members, threaded means for drawing the outer ends of said elongated members together to force said hooks into engagement with the work, and threaded means adjustably engaging said supporting member to exert an outward force thereon.

2. In a pulling tool of the class described, a plurality of elongated members having work-engaging projections at their inner ends, a supporting member pivotally carrying said elongated members, means connecting the outer ends of said elongated members and operative to posi-

tively force said projections into engagement with the work, a yoke adapted to seat adjacent the work, a threaded member connecting said yoke and said supporting member and a nut on said threaded member designed to exert a force tending to draw the supporting member toward the yoke.

3. In a pulling tool for bearings and the like, a plurality of elongated members having work-engaging hooks at their inner ends, a supporting member, pivotal connections between the supporting member and the elongated members, a threaded member connecting the outer ends of said elongated members and operative to positively force said hooks into engagement with the piece to be extracted, a yoke adapted to seat adjacent the work, and means slidably engaging said yoke and threadedly engaging said supporting member and designed to exert an outward force on said supporting member.

4. In a pulling tool for bearings and the like, a plurality of elongated members having work-engaging hooks at their inner ends, a supporting member, means for pivotally connecting said elongated members to any of a plurality of points on said supporting member, means interconnecting said elongated members and operative to positively force said hooks into engaging relation with the piece to be extracted, a yoke adapted to seat adjacent the work, and rotary means interconnecting said yoke and said supporting member for exerting an outward force on said supporting member.

5. A device as defined in claim 4, wherein the yoke comprises a cross-head having lateral slots, and a pair of compression members each provided with a plurality of portions of reduced cross-sections adapted to selectively engage one of said slots.

6. In a pulling tool of the class described, a plurality of elongated members having work-engaging projections at their inner ends, a supporting member, means for pivotally connecting said elongated members to any of a plurality of points on said supporting member, means interconnecting said elongated members and operative to positively move said projections into engaging relation with the piece to be extracted a yoke having independently adjustable legs adapted to seat adjacent the work, and threaded means interconnecting said yoke and said supporting member for exerting an outward force on said supporting member.

7. In a pulling tool, a plurality of work engaging members having outwardly convex projections at their ends, a cross piece pivotally connected to said work engaging members at an intermediate point thereof, means interconnecting the other ends of said members and operative to positively move said projections into engagement with the piece to be pulled, a yoke having independently adjustable reaction members adapted to seat adjacent the work, and means adjustably engaging the cross piece and slidably engaging the yoke for exerting a pulling force on the cross piece.

REUBEN A. KAPLAN.