Nov. 18, 1924. 1,516,298

C. IVERSON

PULLER DEVICE FOR BEARINGS

Filed Aug. 27. 1923

Fig. 1.

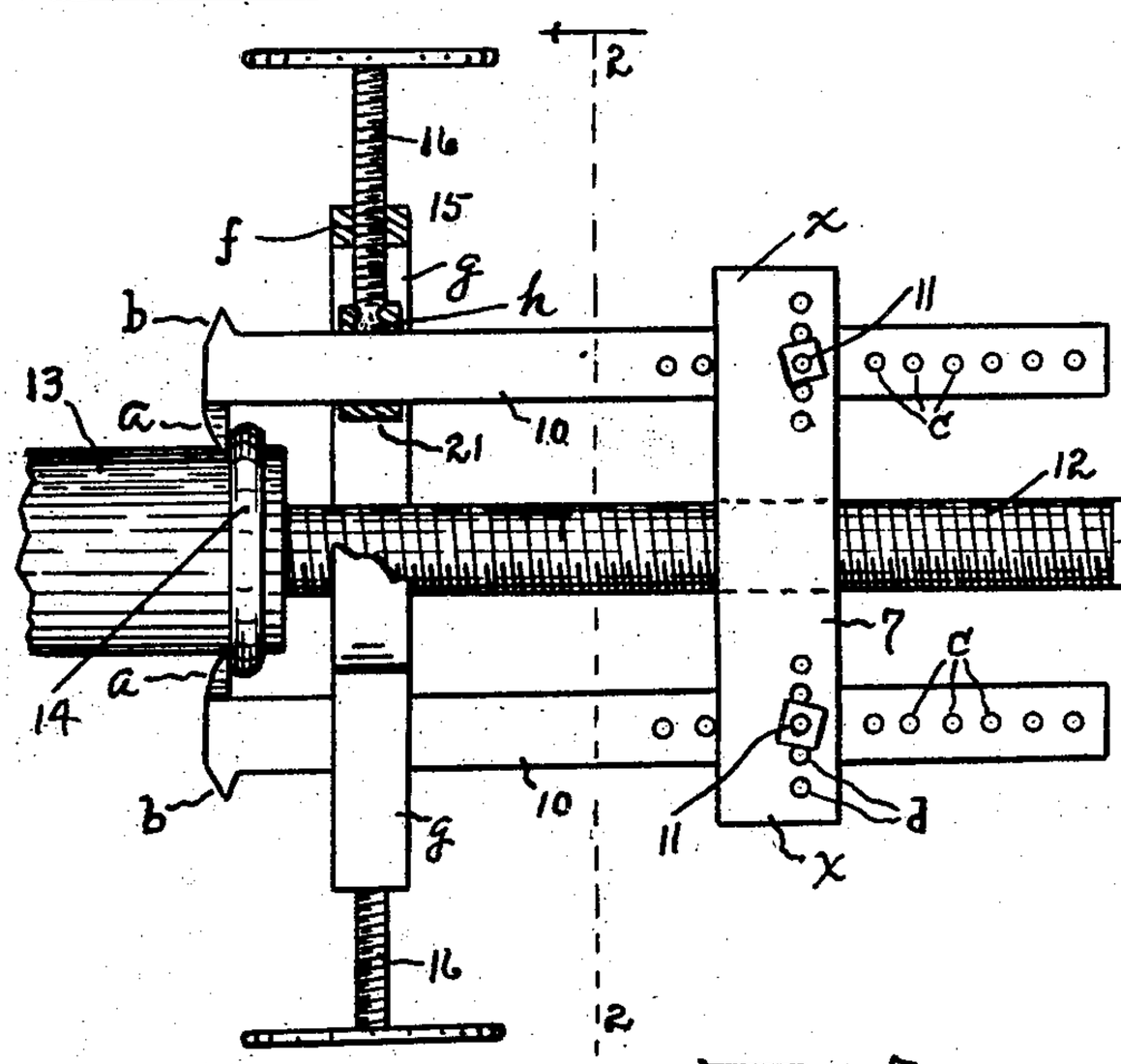

Fig. 2.

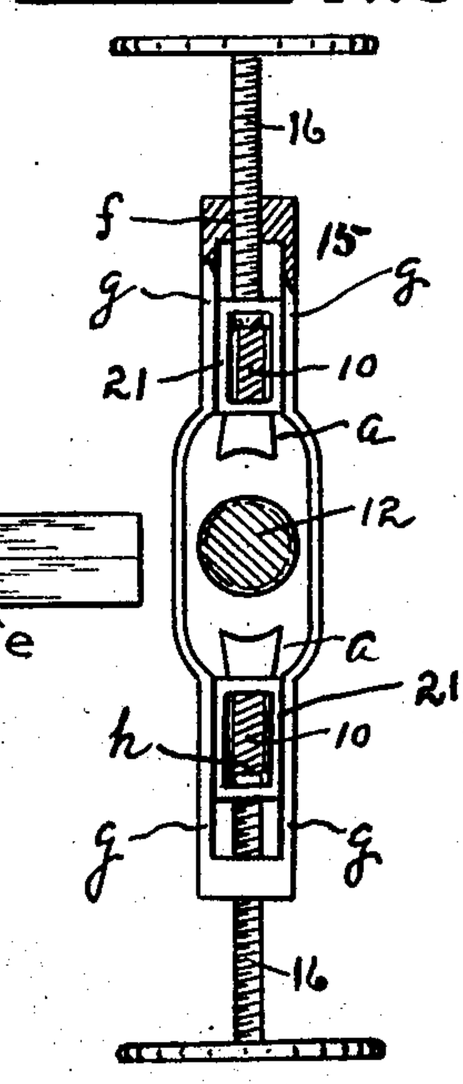

Fig. 3.

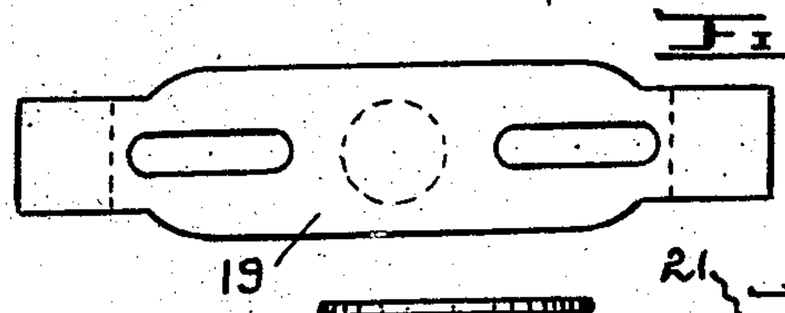

Fig. 4.

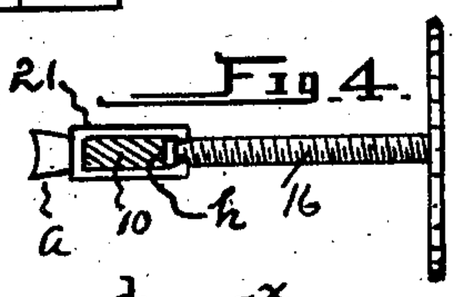

Fig. 5.

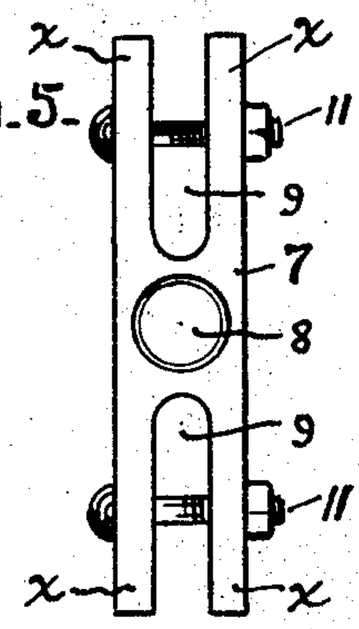

Fig. 6.

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UNITED STATES PATENT OFFICE.

CHRISTIAN IVERSON, OF WESTON, IOWA.

PULLER DEVICE FOR BEARINGS.

Application filed August 27, 1923. Serial No. 659,508.

To all whom it may concern:

Be it known that I, CHRISTIAN IVERSON, a citizen of the United States, residing at Weston, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in a Puller Device for Bearings, of which the following is a specification.

This invention has for its object to provide a tool for use in garages and machine shops generally, for removing gears, cams, collars or the like from shafts or bearings of any kind which have been mounted within hollow cylinders or tubes.

During the repair work it is often necessary to remove bearings and is desirable, of course, to remove them without injury to the shafts or cylinders upon which they have been mounted, and by use of the device to be described, it is believed that this may be readily accomplished.

One of the specific objects is to provide a tool for these purposes which will consist of few and simple parts so that it may be economically manufactured, and will be convenient and durable in use.

The invention consists of the novel and useful construction, combination and arrangement of parts, as described herein and claimed, and as illustrated in the accompanying drawing, wherein one embodiment is shown, it being understood that changes may be made in form, size and proportion of parts and minor details, said changes being within the scope of the invention as claimed.

In the accompanying drawing, Fig. 1 is a side view of the device, partly in section, a part of a shaft and a bearing ring being added. Fig. 2 is a view partly in section, of the clamping-frame or yoke, and showing the pull-bars and screw in transverse section, on line 2—2 of Fig. 1. Fig. 3 is a face view of a bearing-block. Fig. 4 is a side view of a clamping-screw and its swivel, a pull-bar, in section, being added. Fig. 5 is a face view of a supporting-block. Fig. 6 is a side view of the device arranged for moving a core or tubular part from a hollow cylinder.

Referring now to the drawing for a more particular description, the invention consists of a supporting-block 7 provided at its middle with a threaded aperture 8 (Fig. 5.) and having slots 9 opening on its ends. I employ a plurality of pull-bars 10, each being provided with opposed projections *a* and *b* at one of its ends, and having apertures *c* formed at longitudinal intervals therein for receiving a pivot-pin or bolt 11 on which a pull-bar is mounted, each bolt also engaging in an aperture *d*, these last named apertures being formed in the arms *x* of the supporting block.

Mounted in the threaded aperture 8 of the block is a screw 12 preferably having a terminal part *e* formed angular in plan, to which a wrench (not shown) or similar tool may be applied for rotating the screw.

Relative to the use of parts as thus described, and referring to Fig. 1 of the drawing, a shaft is indicated at 13 provided with a bearing 14, and it will be understood that an operator may so dispose the pull-bars that their projections *a* will engage said bearing, the distal end of the screw 12 being in engagement with the end of the shaft 13, and by rotating the screw in one direction the block 7 and pull-bars will be moved outwardly from the shaft 13 to effect a removal of the bearing from said shaft.

In order that the projections *a* will be maintained in engagement with the bearing 14 during removal thereof, a clamping-frame 15 of elongated loop-form is employed and is disposed to surround the screw 12 and pull-bars. Clamping-screws 16 are threaded in the ends of the loop, as indicated at *f*, their inner ends being in engagement with the pull-bars, and by rotating the screws 16 in one direction the projections *a* may be pressed against the shaft and maintained in engagement, during operation, with member 14.

By referring to Figs. 2 and 4 it will be noted that the projections *a* are formed outwardly divergent and that the ends of these projections are of curved form to conform, approximately, to the convexed surface of the shaft, so that a suitable contact may be made on the side of the bearing 14.

The clamping-frame is preferably of such form that opposed, parallel arms *g* are provided to operate as guides. Referring now to Fig. 6 of the drawing, it may be stated that, in order that bearings 17 may be removed from the interior of a hollow cylinder or tubular member 18, any suitable support may be provided to be laid across the opening of member 18, as the block or bar 19 as a bearing or resisting-member adapted to be in engagement with the distal end of the

screw 12, the projections *b* of the pull-bars 10 engaging the inner wall of member 17 or within depressions or apertures of said member 17, the clamping-screws 16 being rotated in a direction to cause the pull-bars to swing outwardly and to be maintained in engagement with member 17, the screw 12 being rotated, as already described, to effect removal of said member 17.

Numerals 21 indicate swivels, each adapted to receive a pull-bar and having a removable mounting on the head *h* of a screw 16 and to be moved by a screw 16 between the guides *g* for moving a pull-bar inwardly or outwardly, depending upon the direction of rotation of a screw 16, said swivels being adapted to engage the guide-arms *g* during their sliding movements, and preventing any transverse swinging movements of the pull-bars during operation.

It will be understood that while in Fig. 6 of the drawing I have shown a tube 17 having opposed apertures 20, said tube being secured in a hollow cylinder or shaft 18, this is simply to illustrate adaptation of the device for removing bearings from the interior of a hollow member, where the pull-bars, in order to be operative, must be pressed outwardly. Apertures, of course, are not always found in bearings and are not necessary to operation since the projections may be pressed against a bearing with sufficient force, by means of the clamping-screws 16, that its removal may be effected. Also while I have shown the projections *b* to be tapered, they may have any suitable form best adapted to engage the inner wall of a tubular member to be removed.

While I have shown and described two clamping-screws, I do not wish to be limited to this number. Also it is obvious that the device would be operative by rotating a single clamping-screw 16.

It will be noted that the parts of the device are few and simple. To assemble the parts, after a swivel 21 has been mounted on a screw 16, a pull-bar 10 is inserted in the swivel and is then pivotally mounted upon the supporting-block 7, as described.

I claim as my invention,—

1. In a puller device for bearings, a supporting-block having a threaded aperture, pull-bars having opposed projections at one of their ends and pivotally mounted on said block, a rotatable screw in the threaded aperture of the supporting-block, an elongated clamping-frame surrounding the screw and pull-bars and having approximately parallel guide-arms, clamping-members threaded in the ends of the frame, swivels on the clamping-members engaging the pull-bars and disposed between the guide-arms of said frame, said clamping-members being revoluble for moving the pull-bars transversely, the swivels moving slidingly longitudinally of said guide-arms.

2. In a puller device for bearings, a supporting-block having a threaded aperture, pull-bars provided with projections and connected with said block to permit swinging movements therefrom, a clamping-frame of elongated loop-form having parallel guide-arms and surrounding the pull-bars between the block and the projections of said bars, swivels receiving the pull-bars and disposed between the guide-arms of the frame, revoluble clamping-members threaded in said frame and connected with the swivels for moving the pull-bars transversely, and a revoluble screw in the aperture of the supporting-block for moving the pull-bars longitudinally.

3. In a puller device for bearings, a clamping-frame, swivels mounted to permit sliding movements in said frame, a supporting-block, a screw extending through the frame and threaded in said block, a plurality of pull-bars pivotally mounted in the supporting-block each being disposed in a swivel and having projections extending outwardly from two opposed sides, and a pair of clamping-rods threaded in the frame each being connected with a swivel, said clamping-rods being revoluble in one direction for moving the swivels and projections of said bars toward each other, and adapted to be rotated for moving the swivels and projections on said bars outwardly from each other.

In testimony whereof, I have affixed my signature in presence of two witnesses.

CHRISTIAN IVERSON.

Witnesses:
ALFRED FEALA,
JAMES C. JENSON.