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WHEEL PULLER DEVICE

Filed June 10, 1960

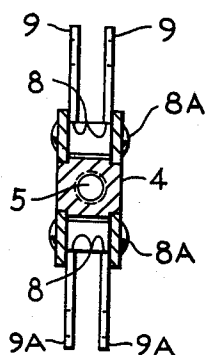


FIG. 1

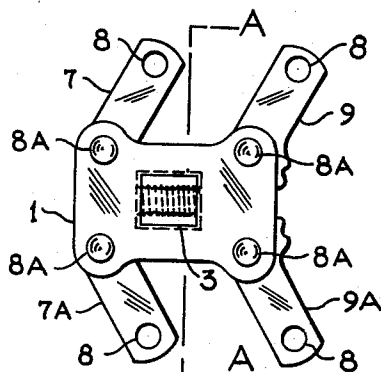


FIG. 2

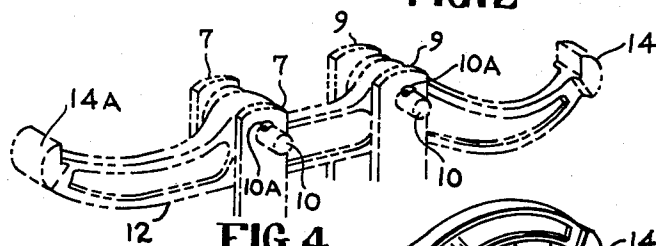


FIG. 4

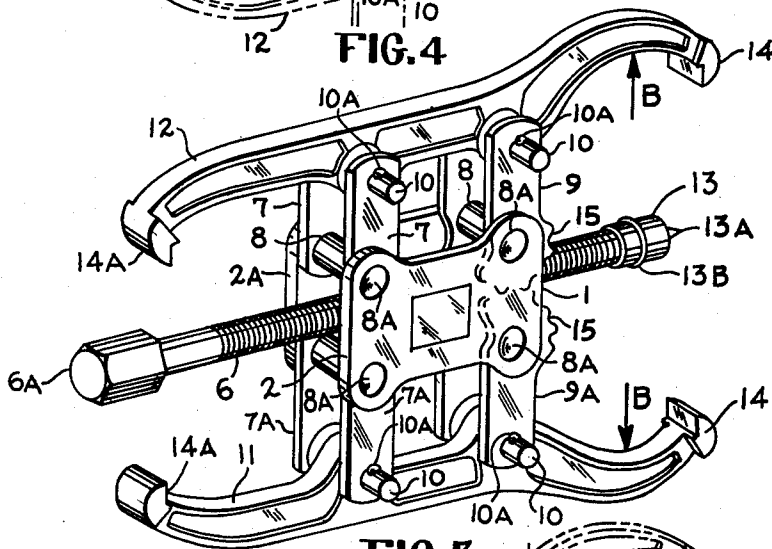


FIG. 3

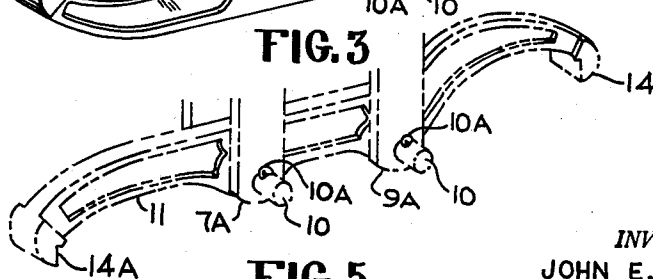


FIG. 5

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WHEEL PULLER DEVICE

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3 Claims. (Cl. 29—261)

This invention relates to a manually operated wheel puller device for removing wheels, gears, bearings and the like from shafts, axles or other assemblies to which such parts have been tightly fitted.

Heretofore wheel pullers were constructed with gripping jaws that had a tendency to spring outwardly when influenced by heavy pressure which caused damage to the part being removed, and frequently slip completely off from their engaged position, thereby causing greater damage.

It is, therefore, the general object of the present invention to provide means whereby the gripping jaws of this wheel puller will operate in unison and always be in parallel position, and seat squarely against the face of the part being removed, regardless of their gripping position on parts of varying sizes.

Another object of this invention is to provide a wheel puller device with means to keep the forcing screw centered on the part being removed.

A further object of the present invention is to provide a puller device, having parallel arms and gripping jaws with a linkage that will equalize the pressure of the gripping jaws to the pressure being exerted on the forcing screw.

A further object of this improved wheel puller device is that the linkage is so arranged that the greater the pressure exerted on the forcing screw the tighter the gripping jaws will grip the part being removed.

With the foregoing objects of the invention in view and others thereof which will appear as the description of the invention proceeds, the invention resides in the combination and arrangement of parts and the details of construction hereinafter described and claimed, it being understood that changes in the invention as herein disclosed can be made within the scope of what is claimed, without departing from the spirit of the invention.

Further objects of the present invention will be evident from the following description of the invention, as illustrated in the accompanying drawings, in which—

FIG. 1 is a cross section along lines A—A of FIG. 2.

FIG. 2 is a side elevation of puller assembly FIG. 3.

FIG. 3 is a view of side elevation of puller assembly.

FIG. 4 is a view of side elevation of FIG. 2 showing upper gripping jaws in reverse position.

FIG. 5 is a view of side elevation of FIG. 2 showing lower gripping jaws in reverse position.

In the embodiment of the invention shown in FIGURES 1 to 5 inclusive, frame 1 consists of two side plates 2 and 2A, which are provided with rectangular hole 3, which is shaped to receive member 4 having a threaded opening 5 therethrough of a size arranged to receive forcing screw 6; side plates 2 and 2A, arms 11 and 12 with frame 1 are provided with holes 8, FIGS. 1, 2, 3, 4 and 5. Holes 8 in links 7 and 7A and links 9 and 9A receive rivets 8A, which pivotally attach inner ends of links 7 and 7A, 9 and 9A to frame 1 and removable pins 10, which pivotally attach arms 11 and 12 to links 7, 7A, 9 and 9A. One end of forcing screw 6 is arranged with a hexagon shaped head 6A at one end thereof and the opposite end of forcing screw 6 is arranged to receive rotatable centering member which is shaped with sharp centering point 13A; centering member 13 is held in rotatable position on forcing screw 6 by snap ring 13B. Gripping jaws 14 and 14A, positioned at each end of arms 11 and 12, are arranged to securely grip the part to be removed and remain in

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parallel position, the operation of which is explained as follows: The gripping jaws 14 and 14A are assembled in any of the positions shown in FIGS. 3, 4 and 5 to accommodate the part to be removed. The puller device is then easily applied to the part to be removed, such as, a rear axle shaft bearing of an automotive vehicle. Gripping jaws 14 are positioned as shown in FIG. 3, centering member point 13A is positioned against the end of such axle shaft, the forcing screw 6 is advanced by rotating with a wrench fitted to hexagon head 6A. As the forcing screw is tightened, gear teeth 15 on links 9 and 9A, being in mesh, firmly hold arms 11 and 12 with their gripping jaws, which move in unison in parallel position throughout the entire operation of removing any part. The links 7, 7A, 9 and 9A are so positioned on parallel arms 11 and 12 that the greater the force applied to forcing screw 6, the greater the grip of gripping jaws 14 and 14A throughout the entire forcing range of the puller device.

One important feature of this invention is that the faces of gripping jaws 14 and 14A and centering point 13A bite the contacted surfaces and thereby prevent the gripping jaws 14 and 14A from slipping off the surface of the part being removed and thereby greatly damaging the part. Gripping jaws 14 and 14A, with their associated arms 11 and 12, always remain in a parallel line regardless of their expanded or contracted position. Removable pins 10 are fitted with spring loaded retaining balls 10A, which provide means whereby arms 11 and 12 with their associated gripping jaws 14 and 14A may be quickly disassembled and reversed by removing pins 10 and reassembling arms 11 and 12 to any of the positions shown in FIGS. 3, 4 and 5 to accommodate parts of any size to be removed having either external or internal surfaces to be engaged throughout the capacity of the puller device.

What I claim is:

1. A puller device of the character designated, consisting of a frame having support plates mounted on two sides thereof,

a threaded opening in said frame between said support plates, a pair of generally parallel arms located at the outer side of each of said support plates, gripping jaws with parallel gripping faces at each end of said arms, a forcing screw generally parallel with said arms fitted into said threaded opening, two pair of linkage members pivotally connected to one of said arms and one of said support plates, two pair of linkage members pivotally connected to the other of said arms and the opposite support plate, meshing gear teeth formed at the inner end of two opposite pairs of said linkage members to provide unison parallel movement to said arms and said gripping faces when said forcing screw is tightened against the part being removed.

2. A puller device of the character designated consisting of a frame member,

a threaded opening centrally located in said frame member, a pair of generally parallel arms having integral gripping faces at each end thereof, said arms being oppositely located at the sides of said frame, a forcing screw fitted into said threaded opening, two pairs of linkage members pivotally connecting one of said arms to said frame, two other pairs of linkage members pivotally connecting the other of said arms to said frame, meshing gear means formed at the inner ends of two opposite pairs of said linkage members providing

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unison parallel movement to said arms and gripping faces when said forcing screw is tightened against the part being removed.

3. A puller device of the character designated consisting of a frame member, 5
 a pair of parallel arms arranged on the opposite sides of said frame member,
 gripping jaws provided with gripping faces at the outer ends of each of said arms,
 a forcing screw generally parallel to said arms fitted into 10
 a threaded opening centrally located in said frame,
 two pairs of linkage members pivotally connecting said frame to one of said arms, and two pairs of linkage members pivotally connected to said frame and the 15
 other of said arms,
 meshing gear teeth formed at the inner end of two opposite pairs of said linkage members, whereby when

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said forcing screw is tightened against the part being worked on said arms and said gripping faces will move in unison in general parallel relationship to each other regardless of their expanded or contracted position.

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