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HYDRAULIC JACK

Clinton Stutter, Maspeth, N. Y.

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2 Claims. (CL 399—1)

My invention relates to a hydraulic jack and more particularly to a readily portable jack, which may be employed, among other things, for pulling radius rod pins in motor vehicles.

Heretofore, it has been an exceedingly difficult undertaking to remove a radius rod pin, particularly when the pin has become greatly worn or distorted, or has become rusted or corroded in place. It has usually been necessary to work in an exceedingly cramped space and drive the pin out with a hammer and some form of drift. By means of my improved hydraulic jack, a radius rod pin and the like may be pulled with little or no effort and without being cramped.

It is an object of the invention to provide an improved form of hydraulic jack.

It is a more specific object to provide a hydraulic jack having features particularly adapting it for drawing pins and the like.

Other objects and various features of novelty and improvement will be hereinafter pointed out or will become apparent to those skilled in the art.

In the drawing which shows, for illustrative purposes only, a preferred form of the invention—

Fig. 1 is a central, sectional view through an hydraulic jack, illustrating features of the invention;

Fig. 2 is a view similar to Fig. 1 but illustrating the jack in its operative environment.

Briefly stated, the jack includes a cylinder member having a central opening therethrough and a concentric annular cylinder or cylinder space. A ram member has an annular piston fitting in the cylinder space and a hydraulic connection is made to the cylinder space behind the ram piston. The central opening through the cylinder member is adapted to receive a draw rod or tension member which is engageable with the ram member and the pin to be pulled while the cylinder member is bottomed on, say, the member on which the pin is fitted.

In the specific form illustrated, the cylinder is made up of an outer cylindrical member 5 and an inner cylindrical or sleeve member 8 having a central opening 7 extending therethrough. The two cylindrical members 5 and 8 are spaced apart so as to define an annular cylinder space or jack cylinder 3. In the form shown, the outer sleeve has an inturned lateral flange 9 which interfits with an outwardly directed lateral flange 10 on the inner sleeve. The two flanges may be suitably packed, as indicated at 11, and may be secured together by any suitable means such as screws or by welding (not shown).

The ram member, in the preferred form, comprises a tubular or sleeve-like member 12 carrying an annular piston at its inner end. The piston includes a suitable annular C-ring type of cup packing 13, held to the lower end of the ram member 12 as by means of cap screws 14, as will be understood.

An hydraulic connection 15 is made to the annular cylinder 3 in the space behind the ram piston and any suitable source of hydraulic pressure, such as a hand hydraulic pump, may be attached at the connection point 15.

When the ram member 12 is in the form of a sleeve, as illustrated, it is desirable to guide and dust seal the forward end of the cylinder. In the form shown, an annular guiding and dust cap 16 may be screwed onto the outer sleeve member 5 and an annular grinding and dust cap 17 may be screwed onto the outer end of the inner sleeve 8. The dust caps may carry suitable packings 18 to embrace the inner and outer sides of the sleeve 12 of the ram and thus exclude dust and preferably also prevent serious leakage of any hydraulic fluid which may leak into the cylinder 3 forwardly of the piston. The dust caps serve also as guides for the ram sleeve as it moves back and forth in the cylinder, as will be understood. The forward end of the ram sleeve 12 may carry an abutment head 19 which may be removably secured thereto, or may simply rest on the end of the sleeve 12.

In Fig. 2 I have illustrated my improved jack as embodied in a pin puller for pulling a pivot pin securing a radius rod to a radius rod bracket of a motor vehicle. As illustrated, the radius rod bracket 20 has a tongue interfitting with the yoke on the radius rod 21. The radius rod pin 22 passes through openings in both the radius rod and radius rod bracket and is secured in the rod yoke as by means of cross pins or the like. The pin 22 may be provided with a screw threaded opening 23 which normally receives a lubrication fitting employed in lubricating the bearing surfaces between the bracket bushing and pin.

When the pin 22 is to be pulled by means of my improved jack, the cylinder member may be abutted against the bracket or the radius rod, or both. A tension or draw rod 24 passing through the opening 7 in the cylinder member is engaged with the pin 22 as by means of an adapter interposed between the draw rod and the pin 22, or by providing the draw rod 24 with a screw threaded projection to screw into the opening 23 in the pin 22. The draw rod 24 is engageable with the ram 12 as by having an adjustable nut 25 on

the draw rod seat on the removable head 19 on the ram.

When the keys or locking pins are removed from the seating apertures 26 in the radius rod, the pin is free to be pulled out. Upon the application of hydraulic pressure, as by means of a hand pump or the like to the cylinder behind the ram piston, the ram is projected, and through the draw rod the pin 22 is drawn out of the bores in the radius rod bracket and the radius rod. In some cases, particularly where the pin 22 is too large to pass through the central opening 7 in the jack cylinder, a longer draw rod 24 may be employed and a sleeve interposed between the base of the jack cylinder and the radius rod bracket and radius rod so that the pin 22 may be pulled through the sleeve and disengaged before it reaches the bore 7 in the cylinder. Where pins such as 22 have various types of threaded connections such as 23, it may be advisable to use a single draw rod 24 and employ an adapter which may be secured to the draw rod and interfit with the threaded connection to the pin. Various adapters would be used for different pin connections, as will be understood.

In order to limit the travel of the ram and prevent it from forcing the packings out of the cylinder, I may provide a relief port 26' which would be uncovered when the ram has been projected to its limit. The port may normally be closed by a spring pressed valve 27.

It will be seen that by means of my invention pins may be readily drawn and it is only necessary to have sufficient room to receive the jack and it is unnecessary to have room enough to swing a hammer. Thus, by means of my invention, pins may be drawn which are in exceedingly inaccessible locations. Furthermore, my improved jack, while designed primarily for pulling radius rod pins, may be employed for other purposes and may be used either as a pull or push type jack.

While the invention has been described in considerable detail and a preferred form illustrated, it is to be understood that various changes may be made within the scope of the invention as defined in the appended claims.

I claim:

1. In a device of the character indicated, a pair of concentric cylindrical members defining an annular cylinder space between them, one of said cylindrical members having a laterally extending base flange forming a base to engage a support, the other of said cylindrical members having an oppositely directed laterally extending flange coacting with said first flange and extending substantially completely across said annular cylinder space and forming the bottom of a ram cylinder, an annular ram member in said ram cylinder, hydraulic pressure connection means to said cylinder beneath said ram member, the inner of said pair of cylindrical members having an axially extending bore therein to permit passage of a draw rod.

2. In a device of the character indicated, a pair of concentric cylindrical members closed at their base ends and defining an annular cylinder space, a ram in said cylinder, said ram comprising a cylindrical sleeve having an enlarged annular piston head at the inner end thereof fitting said cylinder, packing and guide means for said ram sleeve comprising an annular guide member removably secured in the outer of said concentric cylindrical members and an annular guide member removably secured to and about the inner of said cylindrical members, said guide members being spaced apart annularly to receive said ram sleeve, and a removable head on said ram sleeve and positioned exteriorly of said packing and guide means.

CLINTON STUTTER.