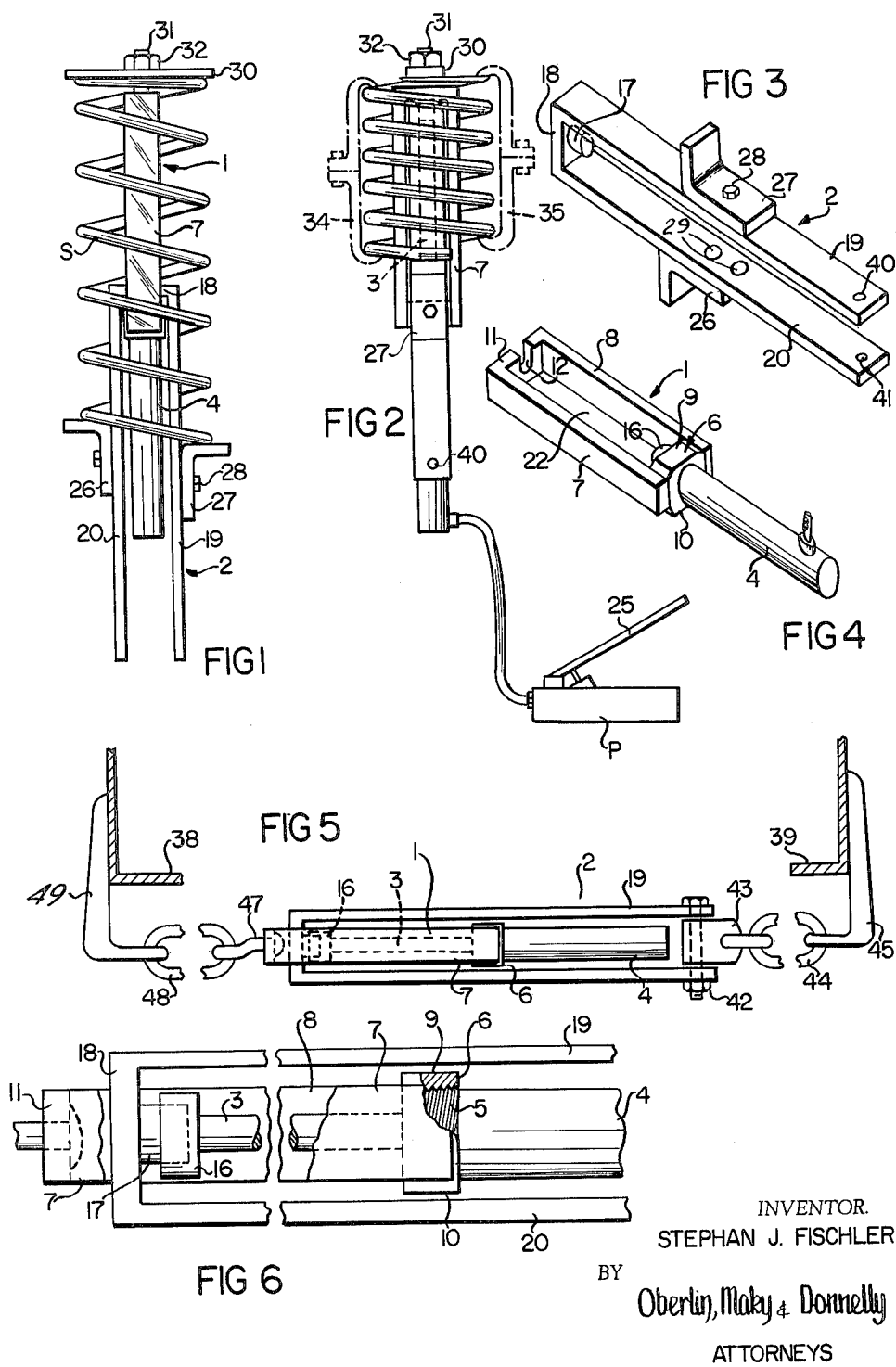


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HYDRAULIC JACK ASSEMBLY
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HYDRAULIC JACK ASSEMBLY
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This invention relates generally as indicated to a hydraulic jack assembly and more particularly to an attachment for a piston-cylinder assembly whereby the normal pushing force of such piston-cylinder can readily be converted to a pulling force.

In automotive shops, hydraulic piston-cylinder unit jacks are readily available but to adapt these jacks to exert a pulling or compression force on large and cumbersome objects such as automobile frames or coil springs has required a lot of complex gear and mechanisms. With the present invention, it is possible to employ a simple piston-cylinder assembly with slight modifications to exert almost any large pulling force required such as to straighten an automobile frame or to compress a coil spring prior to placement in the automobile chassis.

It is accordingly a principal object of the present invention to provide a hydraulic jack assembly which can readily be employed with an ordinary piston-cylinder unit to convert the pushing force of such unit into a pulling force.

A further principal object is the employment of special interfitted U-shape adapters for the piston and cylinder of such unit making such piston-cylinder unit more versatile and easier to use in such wider field of operations.

Another object of the present invention is the employment of a hydraulic jack accessory for a piston-cylinder assembly which can readily be employed to compress coil springs for insertion in automobile chassis.

A further object is the provision of a hydraulic jack assembly which can readily be employed to straighten automobile and other large size frames.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

FIG. 1 is a side elevation of a hydraulic jack assembly in accordance with the present invention illustrating such jack assembly in position to compress a coil spring;

FIG. 2 is a view as seen from the right in FIG. 1 after such spring is compressed;

FIG. 3 is a perspective view of one of the principal elements of such hydraulic jack assembly;

FIG. 4 is a similar perspective view of the other major element of such hydraulic jack assembly;

FIG. 5 is a fragmentary view of such jack assembly illustrating the manner in which it may be employed to straighten large frame members; and

FIG. 6 is a somewhat enlarged detail view partially broken away and in section of the jack of FIG. 5.

Referring now to the annexed drawings and more particularly to FIGS. 1 through 4, it will be seen that the hydraulic jack assembly of the present invention is comprised primarily of a yoke 1 and a puller 2 which are interfitted and connected to the piston rod 3 of piston-cylinder assembly 4.

The rod end of the cylinder of the piston-cylinder

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assembly 4 is provided with threads as indicated at 5 in FIG. 6 to receive an internally tapped sleeve 6 which may be welded between the outer ends of legs 7 and 8 of the U-shape yoke 1. The sleeve 6 may be provided with parallel side facets 9 and 10 only slightly wider than the width of the yoke 1. The bight portion 11 of the yoke is provided with an open-ended slot 12 especially adapted to receive the head of a stud or other like fastening means. The length of the yoke 1 is preferably slightly longer than the stroke of the piston of the piston-cylinder assembly 4, the rod 3 of which is provided with a socket 16 which closely receives a stud 17 projecting inwardly from the bight portion 18 of the puller 2.

The puller 2, like the yoke 1, comprises an elongated U-shape member having legs 19 and 20 extending from the bight portion 18. The transverse dimension of the legs and bight portion is such that the puller 2 will fit within the opening 22 within the yoke and this assembly can be accomplished by first threading one leg in and then sliding the puller around until it fits over the sleeve 6 generally longitudinally of the cylinder and yoke assembly.

In such assembled condition with the piston rod 3 retracted, the parts will assume their position shown in FIG. 1. The legs 19 and 20 of the puller 2 will fit closely over the facets 9 and 10 of the sleeve 6 and such sleeve facets will serve as a guide as the piston rod is now extended by employment of the conventional pump P operated by handle 25 shown diagrammatically in FIG. 2.

In FIGS. 1 and 2, the present invention is shown in use for the specific purpose of compressing an automobile spring S prior to assembly. For this purpose, angle brackets 26 and 27 may be secured to the legs 20 and 19 respectively of the puller 2 offset in the manner indicated in FIGS. 1 and 3 to support one end of the spring S which is threaded over the assembled hydraulic jack. Such brackets may be held to the respective legs by suitable fasteners such as the screws 28 and as seen in FIG. 3, a plurality of tapped holes 29 being provided in the legs 19 and 20 permitting the adjustability of the brackets longitudinally of the legs 19 and 20. When the spring is in place in its uncompressed condition as seen in FIG. 1, a special bar 30 having a centrally disposed opening therein may be secured to the bight portion 11 of the yoke 1 by placing the head of the stud 31 in the slot 12 and securing the bar 30 in place by means of a nut or the like 32. With the parts thus properly assembled and care being taken to make sure the stud 17 of the puller is properly positioned in the socket 16 on the end of the piston rod 3, the pump P may now be actuated to cause extension of the rod 3. In this manner, the puller which is fastened through the opening 22 of the yoke 1 is moved longitudinally upwardly as seen in FIG. 2 compressing the spring between the brackets 26 and 27 and the bar 30. When the spring has been compressed to the desired degree, spring clamp brackets shown in phantom lines in FIG. 2 at 34 and 35 may be employed to hold the spring in such compressed condition. A valve may be opened on the pump P and the bar 30 removed so that the compressed spring can be removed from the assembly.

As seen in FIG. 5, the hydraulic jack assembly of the present invention may be employed to straighten automobile frame members 38 and 39. The ends of the legs 19 and 20 may be provided with aligned openings 40 and 41 to receive the nut and bolt assembly 42 to hold a clevis 43 for a chain 44 to which hook 45 is attached. In this manner, hook 45 may be connected by the chain 44 to the extended end of the puller 2. Similarly, the bight portion 11 of the yoke 1 may be provided with a stud 47 in slot 12 to which is connected chain 48 and the hook 49. Accordingly, extension of the rod 3 from the cylinder will move the puller to the left within the

yoke 1 pulling the hook 45 toward the hook 49 compressing the frame members 38 and 39 therebetween. The chains, of course, can readily be removed from the yoke and puller as can the brackets 26 and 27. It can now be seen that the simple piston-cylinder assembly is modified by threading the sleeve 6 on the rod end of the cylinder with such sleeve carrying the U-shape yoke 1 extending therebeyond. The second U-shape member or the puller 2 having a pair of parallel elongated legs passes through the opening of the yoke and engages the rod end of the piston as by means of the inwardly directed stud 17 seated in the socket 16 on the end of the piston rod 3. As the piston rod is extended from the cylinder, the puller will thus move toward the outer end of the yoke. Chains may be secured to the yoke and pullers in the manner indicated to straighten frames or special brackets may quickly be attached to the yoke and puller, respectively, to compress springs as seen in FIGS. 1 and 2, these being but two of many uses for the disclosed hydraulic jack assembly. Accordingly, the two U-shape members are disposed at right angles to one another with the puller being inside the yoke and secured to the piston while the yoke is secured to the cylinder.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivalent of such be employed.

I, therefore, particularly point out and distinctly claim as my invention:

1. A hydraulic jack assembly comprising a hydraulic piston-cylinder assembly, a U-shape yoke member secured to the rod end of the cylinder of such piston-cylinder assembly, said U-shape yoke member having elongated legs extending away from said piston-cylinder assembly, a U-shape puller member disposed within such yoke member at right angles thereto and secured to the piston of such piston-cylinder assembly, said puller member having elongated legs extending back along the piston-cylinder assembly, and work contact means adapted to be secured to opposite ends of the assembly to the yoke and puller respectively.

2. In combination, a piston-cylinder assembly, a sleeve threaded on the rod end of the cylinder, a rod projecting from said rod end and having a socket on the projecting end thereof said sleeve carrying a U-shape yoke extending therebeyond, a second U-shape member having a bight portion and a pair of parallel elongated legs extending therefrom, said bight portion having a stud projecting inwardly between said legs, said second U-shape member being inserted within said U-shape yoke with said legs

extending longitudinally of the cylinder and said stud inserted in the socket on said rod whereby movement of said rod will move said second U-shape member with respect to said yoke.

3. A hydraulic jack assembly adapted to compress coil springs, comprising a piston-cylinder assembly, a U-shape yoke secured to the rod end of said piston-cylinder assembly, a U-shape puller fitted within said yoke and having elongated legs extending longitudinally along the cylinder of said piston-cylinder assembly, spring supporting brackets mounted on the legs of said U-shape puller, a transverse bar secured to the bight portion of said yoke, and means operative to extend the rod of said piston-cylinder assembly to compress a spring or the like positioned between said brackets and bar as the rod of said piston-cylinder assembly engages the bight portion of said of said puller to move the same longitudinally within said yoke.

4. The hydraulic jack assembly set forth in claim 1, wherein said work contact means includes chains fastened to opposite ends of said assembly, and hook means on said chains adapted to engage the frame of an automobile or the like, whereby extension of said rod within said piston-cylinder assembly may be employed to pull said chains together to straighten such frame.

5. The hydraulic jack assembly set forth in claim 3 wherein the bight portion of said puller has a stud projecting inwardly therefrom, said stud being adapted to engage in a socket provided on the end of the rod of said piston-cylinder assembly.

6. The hydraulic jack assembly of claim 3 wherein said spring supporting brackets are adjustably mounted on the legs of the U-shape puller, and said transverse bar is secured to the bight portion of said yoke with a fastening means having a head portion adapted to be received within an open-ended slot provided in said bight portion.

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