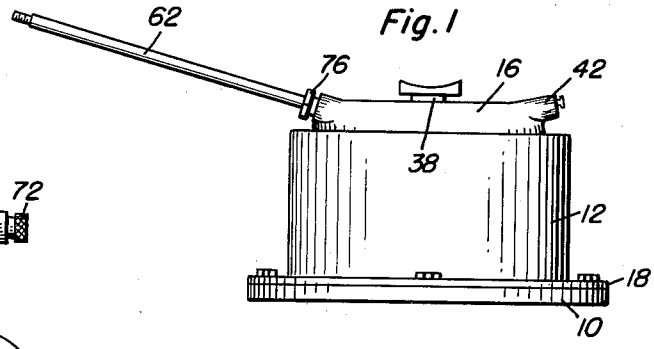
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JACK WITH BLADDER MOTOR

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Fig. 1



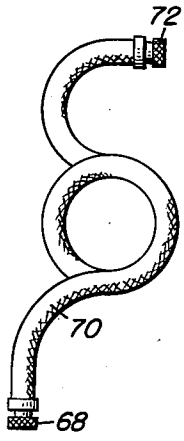


Fig. 2

Fig. 3

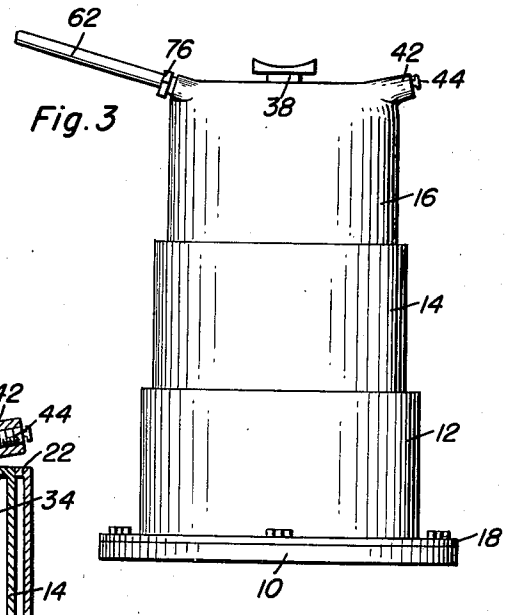
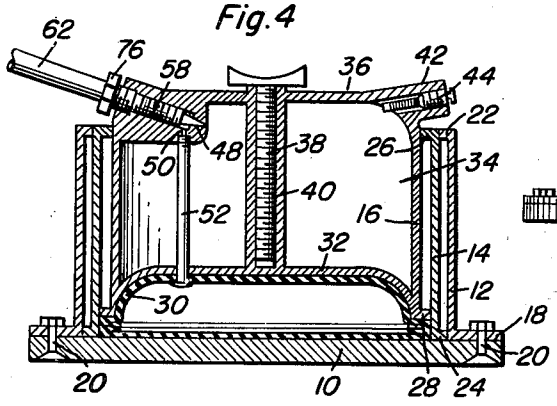


Fig. 4



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Fig. 5

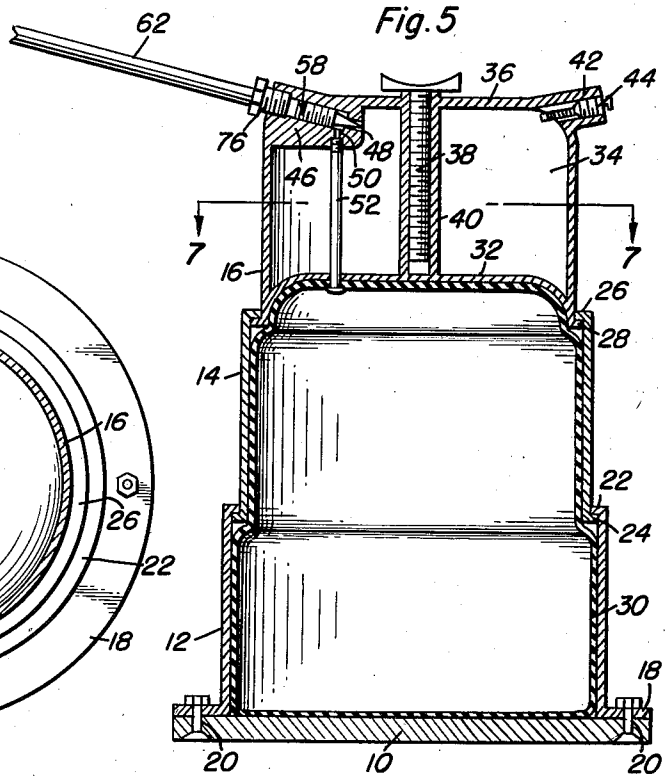


Fig. 7

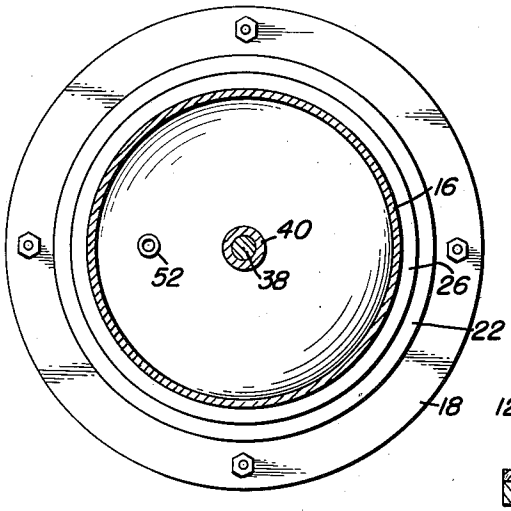
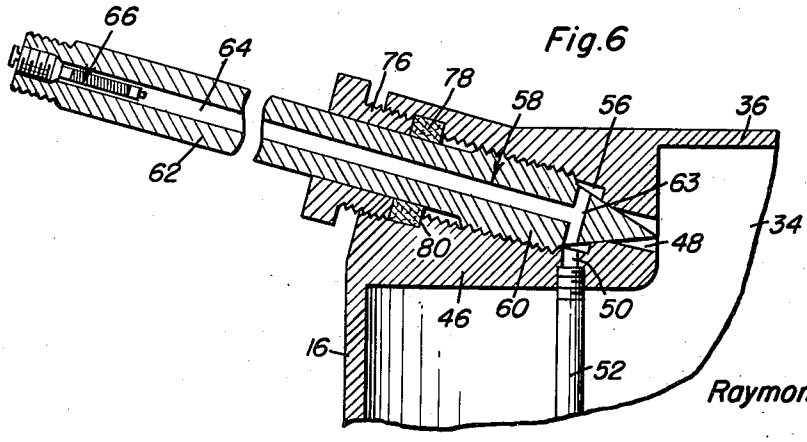


Fig. 6



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UNITED STATES PATENT OFFICE

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JACK WITH BLADDER MOTOR

Raymond Carnahan, Magnolia, Ark.

Application December 4, 1950, Serial No. 198,943

4 Claims. (Cl. 60—57)

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This invention relates to improvements in fluid operated jacks.

An object of this invention is to provide an improved jack which is operated on fluid, preferably air, the jack being of the type which includes a plurality of extensibly connected tubular sections, at least one and preferably two of the sections having a bladder therein and at least one of the other sections being arranged to constitute a pressure chamber, the pressure chamber having a means of air inlet to charge the chamber and also an improved valve assembly, whereby operation of the valve, air under pressure from the chamber may be introduced into the bladder for extending the various tubular sections, or air under pressure may be introduced through a valve stem assembly at the end of a handle, allowing air to flow down the handle directly into the bladder, not entering reserve tank.

Ancillary objects and features of importance will become apparent in following the description of the illustrated form of the invenion.

In the drawings:

Figure 1 is an elevational view of the device;

Figure 2 is a top view of a length of hose to be used with the device; to inflate the bladder and operate the jack, using outside air supply which, in case of an emergency, would be air pressure from other tires on the car.

Figure 3 is an elevational view of the device in the extended position;

Figure 4 is a sectional view of the device in Figure 1;

Figure 5 is a sectional view of the device as illustrated in Figure 3;

Figure 6 is an enlarged sectional view illustrating the detail of construction of the valve; and,

Figure 7 is a transverse sectional view taken substantially on the line 7—7 of Figure 5 and in the direction of the arrows.

As shown in the drawings, I have provided a device for raising and lowering objects, for example automobiles. The device comprises a jack having a base 10 with three tubular housing sections 12, 14 and 16, although more or less sections may be employed as found desirable or necessary.

The lower section 12 has an outwardly directed flange 18 through which rivets or bolts 20 are passed and inasmuch as they also pass through the base 10, the bottom section or base section 12 is held fastened to the base. In order to prevent tampering with the inside of the jack and to facilitate a faster and more economical assembly, section 12, without the flange, may be electrically welded to the base 10. An inwardly directed flange 22 at the upper open end of the tubular section 12 constitutes a stop to limit the outward movement of the section 14 when contacted by the lower outwardly directed flange 24 thereof.

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There is an inwardly directed flange 26 at the top of the intermediate tubular section 14 arranged to be contacted by the outwardly directed lower flange 28 of the top section 16.

There is a bladder 30 made of suitable material, as rubber or a rubber composition, either natural or synthetic, located within the tubular section 12 and the tubular section 14. The top part of the bladder contacts the bottom wall or panel 32 of the top section 16, the top section being closed, except for necessary openings, in order to form a fluid, as air, chamber 34.

The top section has an upper wall 36 from which the screw 38 housed in a threaded sleeve 40 is adapted to rise in order to provide additional height in accordance with the necessities of the particular operation performed.

A nipple 42 is fixed to the upper section 16 and accommodates the standard air valve 44. This nipple and valve constitute an air inlet member or assembly used for charging the chamber 34 with air or other fluid under high, but safe operating pressures.

A valve case 46 is fixed to the upper section 16 and has a port 48 therein (Figure 6). The valve case is provided with an outlet opening 50 in which the upper end of a conduit 52 is threaded or welded. The lower end of the conduit 52 is passed through an aperture in the bottom panel 32 of the top section 16 and is fastened by standard means in communication with the bladder 30.

The valve case 46 is provided with a valve chamber 56 into which the valve 58 is threaded. This valve includes a valve body 60 together with a valve stem 62. The valve body and stem is arranged to move inwardly or outwardly of the valve case 46 in response to rotation of the stem 62 whereby the inner end portion of the valve body opens or closes the port 48.

There is an air passage 64 extending through the valve stem 62 and a part of the valve body 60. A transverse passage 64 opens outwardly or laterally of the valve body. The passage 64 is controlled by a standard fluid valve 66 which is threadedly disposed in the passage and the outer end of the stem is provided with external threads in order to accommodate the standard fitting 68. A fitting is provided at the end of a flexible hose

70, the other end of the hose having a fitting 72 thereon identical to the fitting 68.

In order to hold the valve 58 in place within the valve case 46, an externally threaded plug 76 is disposed in threads provided in the valve chamber 56, the plug being provided with a bore rotatively retaining the stem 62 of the valve. A packing gland 78 is abutted by the inner end of the plug 76, this packing gland also abutting a shoulder 80 provided in the valve chamber 56.

In operation the chamber 34 may be charged by using the inlet member specifically provided for this purpose. Any type of fluid adaptable may be used, for example air, butane and others. After the jack is placed beneath the frame or axle housing or other part of the vehicle, the valve stem 62 is rotated causing the inner end of the valve to open the port 48. At this time some of the fluid under pressure passes through the port 48, conduit 52 and into the bladder 30. Inasmuch as the bladder then becomes pressurized the sections will extend to lift the vehicle. At the time that the desired height of the jack is reached, the valve stem is rotated in the opposite direction to close the port 48.

In order to exhaust the fluid under pressure from the bladder 30 the stem of the valve 66 is operated whereby the fluid under pressure passes through the conduit 52, the transverse passages 63 and the passage 64.

In instances wherein it is desired to inflate the bladder 30 directly from an outside source, the valve 58 is retained in the port 48 closing position (Figure 6) and an air pressure hose 70 constituting an outlet for fluid under pressure, is applied to the outer end of the stem 62 causing fluid under pressure to pass through the passage 64, the channels or passages 63 and the conduit 52.

The latter operation may be used as an emergency measure when the chamber 34 is empty or devoid of any appreciable pressure. Then, the flexible hose 70 is threaded by the coupling 68 or the coupling 72 to the threaded outer end of the valve stem 62, while the other coupling on the flexible hose 70 is threaded or simply slipped on the various valve stems of the inflated tires of the vehicle. The fittings 68 and 72 are provided with small projections interior thereof in order to operate the valve stems of the standard valves in the valve holders of tires and the stems projecting from the standard valves 66 or 44.

Having described the invention, what is claimed as new is:

1. In a jack, a housing comprising a plurality of extensibly connected tubular sections, a base secured to the bottom section, a bladder disposed in the bottom section, the top section having a base wall contacted by said bladder and adapted to be extended with respect to said bottom section when said bladder is inflated, said top section being closed to constitute a pressure chamber, a fluid inlet member opening into said chamber, a valve case with a port opening into said chamber, and a conductor opening into said bladder and said valve case, a valve including a stem and disposed in said case, said valve being arranged to open and close said port, said stem having a single passage therein for inlet and discharge of fluid from said bladder, and a valve in said passage.

2. A jack comprising a housing which includes a number of extensibly connected sections, a first of said sections having a bottom wall, side walls and a top to thereby define a pressure chamber, a bladder disposed in said housing and contacting said first section, said bladder constituting a motor to lift said first section, and a valve to regulate the admission of fluid under pressure located in a means of conducting fluid under pressure from said chamber into said bladder.

3. The combination of claim 2 and said valve having a passage therein and arranged to constitute an air inlet assembly to direct air from an outside source directly into said bladder.

4. The combination of claim 3 and an inlet member having a valve operatively connected with said first section and opening into said chamber to charge said chamber.

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