W. B. WHITTON.

VEHICLE JACK.

APPLICATION FILED NOV. 28, 1919.

1,342,140.

Patented June 1, 1920.

2 SHEETS—SHEET 1.

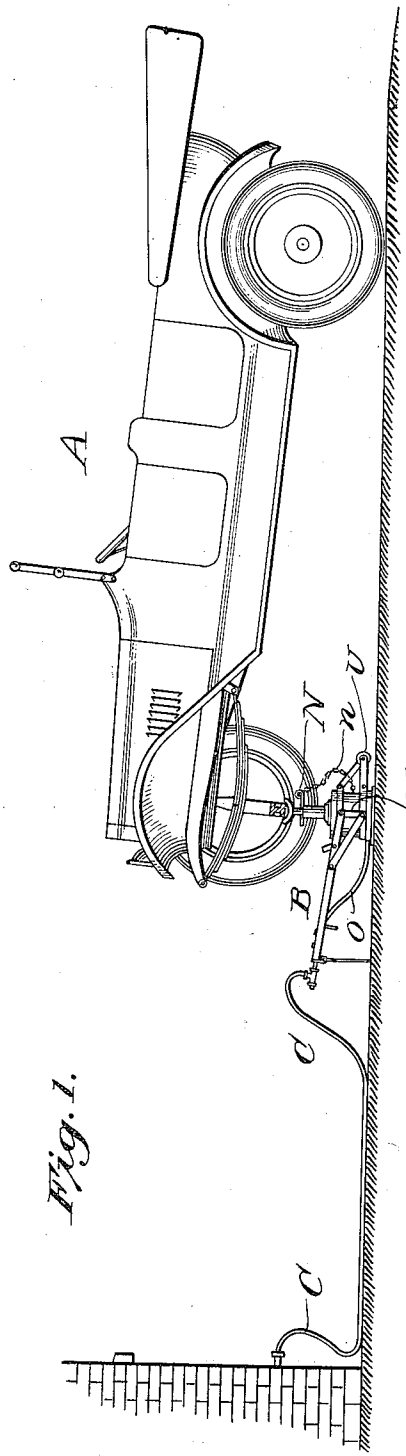


Fig. 1.

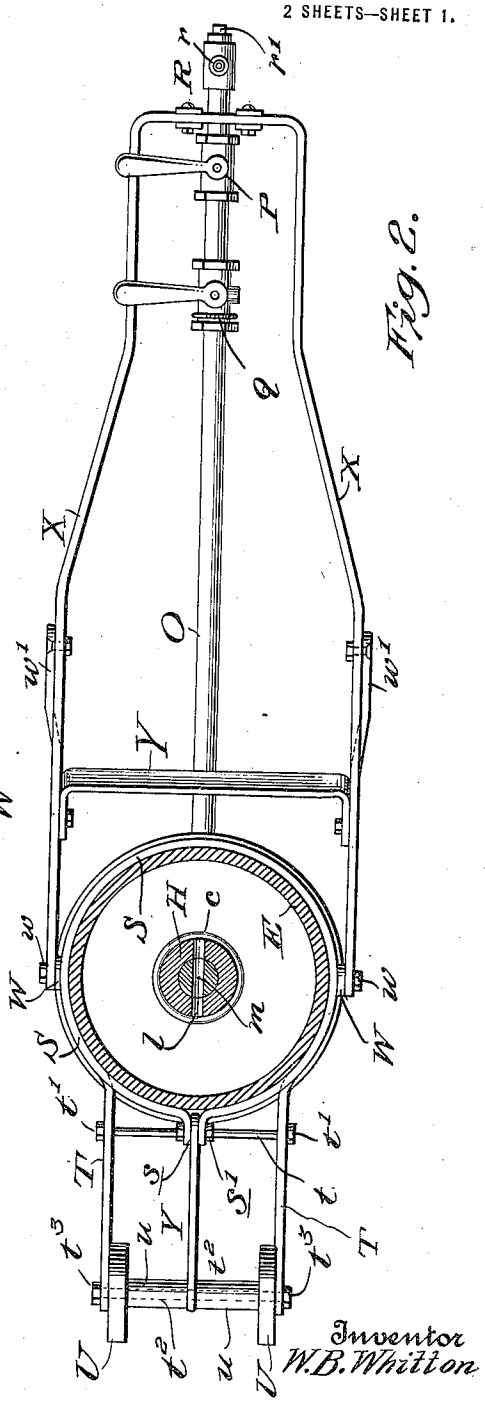


Fig. 2.

Inventor
W. B. Whitton

By his Attorneys
Baldwin & Wright

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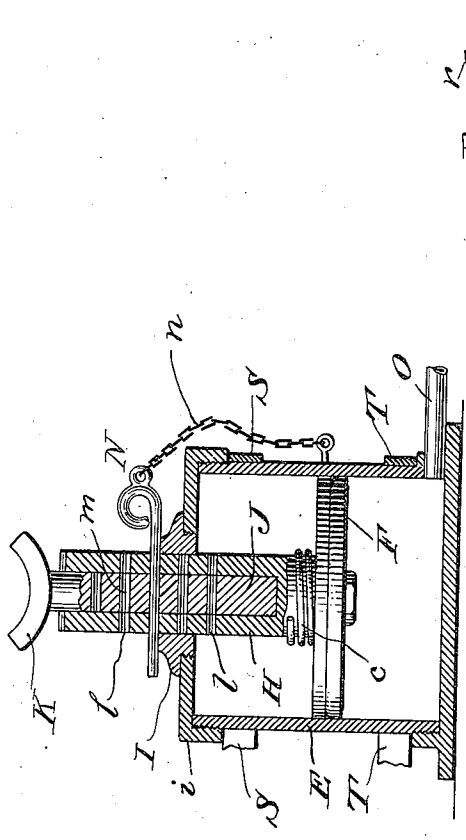


Fig. 4.

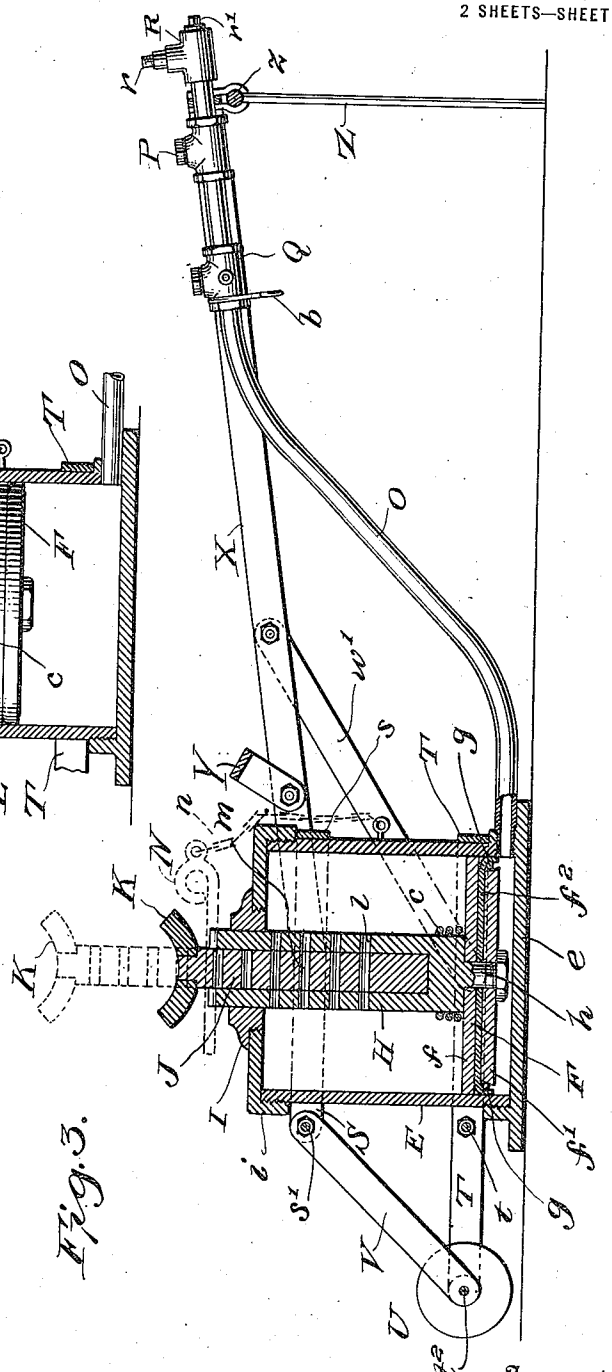


Fig. 3.

Inventor

W. B. Whitton

By his Attorneys Baldwin Wight

UNITED STATES PATENT OFFICE.

WARREN B. WHITTON, OF COLUMBIA, SOUTH CAROLINA.

VEHICLE-JACK.

1,342,140. Specification of Letters Patent. Patented June 1, 1920.

Application filed November 28, 1919. Serial No. 340,996.

To all whom it may concern:

Be it known that I, WARREN B. WHITTON, a citizen of the United States, residing in Columbia, in the county of Richland and State of South Carolina, have invented certain new and useful Improvements in Vehicle-Jacks, of which the following is a specification.

This invention relates particularly to jacks for lifting vehicles or parts thereof from the ground in order that they may be inspected and repaired, and particularly for raising portions of such vehicles for the purpose of inspecting and repairing the pneumatic wheel tires thereof.

According to my invention I provide a jack which is so constructed that it may be operated by pneumatic pressure or other fluid pressure, but preferably the jack is operated by compressed air obtained from a source of supply ordinarily employed for inflating wheel tires.

I have found that with a jack properly constructed sufficient power may be obtained from ordinary compressed air supplies to lift any desired part of a vehicle of any weight without the exertion of material physical effort, and that such jacks may be quickly operated to raise vehicle wheels and hold them in an elevated position for any desired length of time and may then be quickly lowered when desired. The jack is so supported that it may be readily moved from place to place, may be quickly connected with a source of power, may be readily adjusted to vehicles of different kinds to raise them any desired distance, and may be so locked as to hold the lifting devices in any desired position even when the pneumatic pressure is relieved.

In the accompanying drawings:—

Figure 1 shows a side elevation of an automobile with my improved lifting mechanism applied to its front end and connected with a source of power.

Fig. 2 is a view partly in horizontal section and partly in plan of a vehicle jack constructed in accordance with my invention.

Fig. 3 shows a vertical section of the jack with the piston in its lowermost position and shows also by dotted lines how the lifting devices may be lengthened when required.

Fig. 4 shows a vertical section of portions of the jack showing the piston partially raised and held in its elevated position.

In Fig. 1, an automobile A of well known construction is shown with the front end elevated by my improved lifting devices B which are connected by means of a hose C with a source of compressed air. The jack comprises a cylinder, piston, and jack rod supported in a frame having wheels by means of which the jack may be moved from place to place as desired. The cylinder E has a straight, flat base *e* adapted to rest on the ground as shown. The piston F may be of any suitable construction, preferably comprising two plates *f*, *f'* between which is arranged a packing disk f^2, which is held against the sides of the cylinder by a wire ring *g* which tends to press the edge of the disk against the sides of the cylinder.

It will be observed that the outer peripheral portion of the disk f^2 is bent downward and that the ring *g* is interposed between this portion of the disk and the edge of the plate *f'*. When the pneumatic pressure enters the lower end of the cylinder the ring is tightened and presses the peripheral portion of the packing disk against the cylinder, but when the pneumatic pressure is relieved the ring lowers and the pressure of the packing on the cylinder is relieved so that the piston may descend with greater ease.

The hollow piston rod H is fastened to the piston head at *h* in any suitable way and this rod extends through a bushing I in the cylinder head or top *i*, which is applied to the cylinder in the manner indicated. The rod H extends loosely through the bushing I, thus permitting air in the upper portion of the cylinder to escape when the piston is being raised.

Within the piston rod there in a lifting rod J which is movable longitudinally in the rod and carries at its outer end a shoe K adapted to engage the axle of an automobile or any other part thereof to which the jack is applied.

A series of transverse holes *l* are formed in the rod H and a corresponding series of holes *m* are formed in the lifting rod. These are adapted to receive a cotter pin N, connected to a chain *n*, attached to the jack cylinder as shown.

When compressed air is admitted to the lower end of the cylinder below the piston, the latter is raised to the desired extent and the lifting rod is correspondingly raised. When the parts are in the position shown in Fig. 3, the piston head, piston rod, and lift-

ing rod are coincidently raised, and the cotter pin need not be used, but when it is desired to apply the jack to a part of a vehicle which is a considerable distance above the ground, the piston rod may be lengthened by moving the jack rod longitudinally relatively to the piston rod, and then holding it in its adjusted position by means of the cotter pin. In this way the jack may be adjusted for use on parts of vehicles arranged at varying distances from the ground. It will also be observed that the construction is such that the jack rod may be held in its elevated position and the piston rod and piston head may be also held in elevated position, even after pneumatic pressure is withdrawn. This is indicated in Fig. 4 where it will be observed that the cotter pin extends through both the piston rod and the jack rod and rests on the top of the bushing I.

In order to supply the jack cylinder with air, a pipe or hose O is provided, which is equipped with a valve P for regulating the admission of compressed air and a two-way valve Q for regulating the exhaust. The pipe O may be connected with any desired source of air supply. R indicates a coupling, having a part r which may be connected to the supply and a plugged part r' which may also be used for this purpose.

In order to avoid shocks should air be admitted to the cylinder with no load on the piston, I provide a cushioning spring c which relieves the shock if the piston should be suddenly forced rapidly up against the cylinder head.

In order to make the jack portable or readily movable from place to place, I provide a frame which is so constructed that it may be readily applied to or detached from the jack. This frame comprises an upper strap S which surrounds the upper portion of the cylinder and has its ends brought together at s and secured by a bolt s'. A lower strap T partially surrounds the lower portion of the cylinder, its free ends being prolonged as indicated in Fig. 2 to form parallel arms which are braced by a cross rod t carrying tightening nuts t'. This rod is arranged close to the cylinder. The outer ends of the strap T are connected by a rod t^2 carrying tightening nuts t^3 and this rod t^2 serves to support wheels U which are held in place by sleeves u. The ends of the strap T normally hold the wheels U a short distance above the ground level as indicated in Fig. 3, so that the jack may rest firmly on the ground when in operation. The ends s of the strap S are connected with the cross rod t^2 between the sleeves by a brace V. In this way the wheels are so connected with the jack that they may firmly support it when desired.

The upper and lower straps S and T are connected at the sides of the cylinder by vertical bars W (Fig. 1) which are bolted to the straps S and T in the manner indicated.

The pipe or hose O is supported on a frame which is applied to the cylinder preferably in the manner shown. This frame comprises a metal bar X of general U-shape, its opposite ends being connected at w to the upper strap S at the upper ends of the bars W. Braces w' are secured to the sides of the frame X and extend diagonally therefrom to the sides of the lower strap T. These braces are bolted to the frame X and to the strap T and also to the vertical bars W in any suitable way.

Y indicates a cross piece which serves to brace the frame X and also serves as a grip by means of which the frame and jack may be raised and lowered.

The pipe O is supported at the outer end of the frame X in any suitable way and this end of the frame carries a supporting bar Z which is pivotally connected to the frame X at z, so that it may be turned to inactive or active position. When arranged vertically, as shown in Fig. 3, it serves to support the outer end of the frame, but when turned on its pivot it may be held by a hook b and then be out of the way while the jack is being moved from place to place. Inasmuch, however, as the jack cylinder and parts immediately associated therewith are of considerable weight, the supporting bar Z is not an essential feature of the invention.

Experience has demonstrated that a jack constructed in the manner shown and hereinbefore described is most efficient and powerful. By tilting the frame the weight of the jack may be supported on the wheels U and the jack may be readily moved from place to place as desired, the cylinder being at that time raised above the ground, but when the jack is placed in position for use the cylinder is lowered and the wheels are raised, as indicated in Fig. 3, so that the jack rests solidly on the ground and may be then most efficiently operated to raise the object to which it is applied. As before stated, the jack is made adjustable in such manner that it may be applied to any desired part of the vehicle, whether high or low, and may be held in an elevated position thus enabling the pressure to be relieved and the jack disconnected from the fluid pressure supply. The frame is so constructed that it may be readily attached to, or detached from, the vehicle jack, and it is so constructed that proper leverage may be obtained to raise and lower the jack as a whole, and the air intake pipe is so constructed and supported that it may be moved from place to place with the jack and may be readily connected with, or detached from,

the hose or pipe ordinarily provided for inflating the tires of automobile wheels and for other purposes.

While preferably the jack is operated by compressed air, it will be understood that it can be operated by fluid pressure of other kinds.

I claim as my invention:—

1. A vehicle jack, comprising a cylinder, means for admitting compressed air thereto, a piston operating in the cylinder and provided with means for connecting it with a part to be lifted, a supporting frame applied to the cylinder, wheels supported by said frame and normally held above the ground level of the bottom of the jack, a pipe or hose for supplying fluid pressure to the cylinder, and a frame connected with the cylinder by which said pipe is supported.

2. A vehicle jack comprising a cylinder, a piston operating therein, a piston rod provided with means for engaging a part to be lifted, a frame applied to the cylinder, wheels carried by the frame and normally held above the ground level or above the bottom of the cylinder, a hose or pipe for supplying fluid pressure to the cylinder, a grip bar carried by the frame close to the cylinder, and means for supporting the outer end of the frame.

3. A vehicle jack comprising a cylinder, a piston operating therein, a piston rod engaging a part to be lifted, and a supporting frame applied to the cylinder comprising upper and lower straps, means for fastening them to the cylinder, wheels supported by said straps and normally held above the bottom of the cylinder, a pipe for supplying fluid pressure to the cylinder, a frame which supports said pipe and which is connected with the straps which surround the cylinder, a grip bar connected to the frame near the cylinder, and means for connecting the outer end of the supply pipe to the outer end of said frame.

In testimony whereof, I have hereunto subscribed my name.

WARREN B. WHITTON.