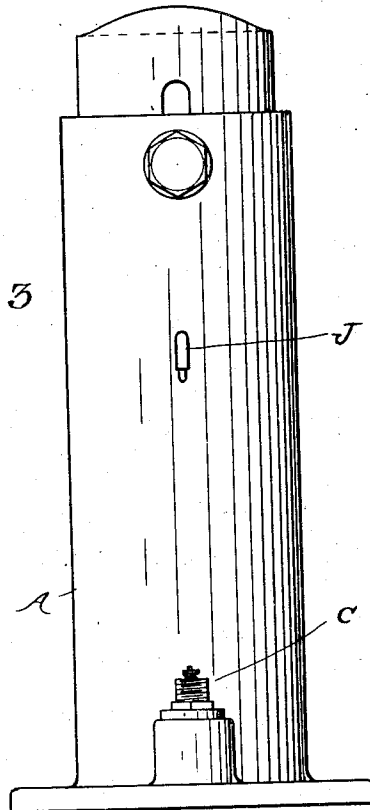
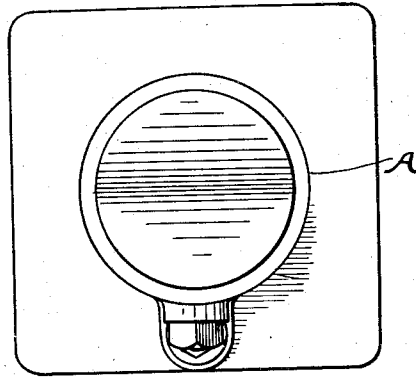
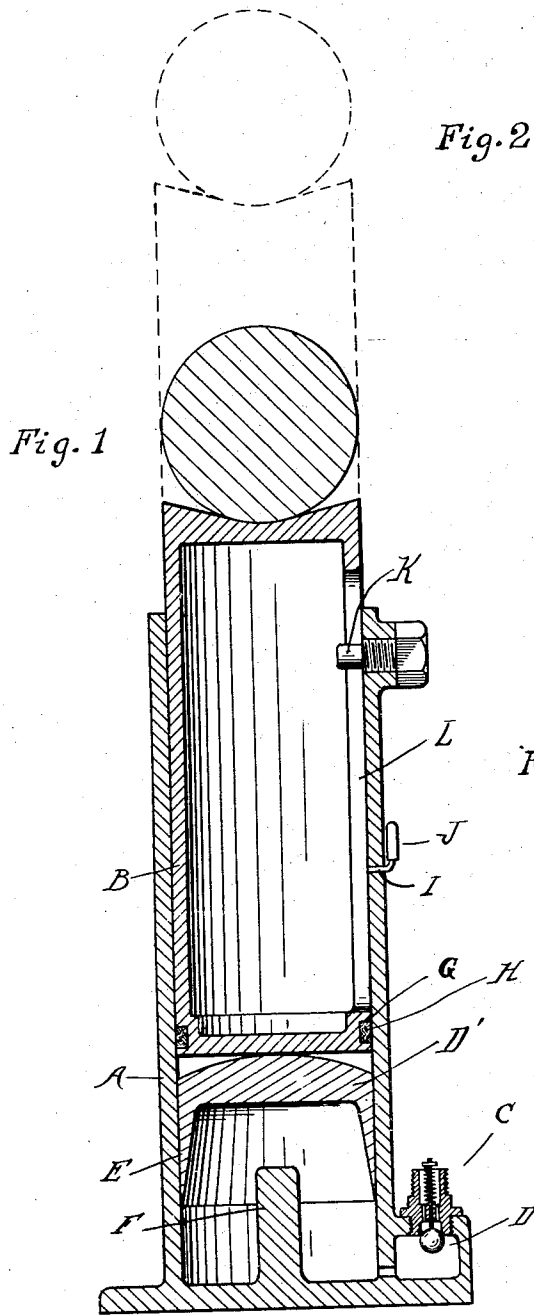


N. B. WALES.
PNEUMATIC JACK.
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1,108,952.

Patented Sept. 1, 1914.



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UNITED STATES PATENT OFFICE.

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PNEUMATIC JACK.

1,108,952.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NATHANIEL B. WALES, a citizen of the United States of America, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Pneumatic Jacks, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention relates to jacks and more particularly to that type adapted for use in connection with motor vehicles.

It is the object of the invention, first, to obtain a construction of pneumatic jack 15 which is operable from the power air-pump with which many automobiles are equipped, or by the ordinary manually-operated pump.

It is a further object to obtain a construction which will hold the compressed air for 20 a definite period of time and will therefore sustain the load; and still further, it is an object to obtain a simple and inexpensive construction to manufacture.

In the drawings: Figure 1 is a central 25 vertical section through the jack, showing the same in engagement with a load, such as the axle of a car; Fig. 2 is a plan view; and Fig. 3 is a front elevation.

A is the stationary member of the jack 30 which is provided with a cylindrical barrel; B is the movable member telescopically engaging the barrel A; and C is a nipple for connection with the tube from the pneumatic pump and provided with the usual 35 check-valve D which controls the air admitted into the barrel.

The operativeness of the jack is dependent upon the maintenance of an air-tight piston in the barrel, as otherwise the load cannot 40 be sustained for any length of time. The ordinary means of packing pistons, such as the provision of rings, is inadequate, for even a slight leakage will soon result in the dropping of the load. I have therefore de- 45 vised a construction in which an absolutely air-tight seal is at all times maintained between the piston and the cylinder barrel. This consists in providing a cupped metallic piston D, with its annular flange E tapered 50 to a knife edge. This permits of expansion under the internal air pressure, so as to hold the flange at all times in sealing contact with the inner face of the barrel. If the piston D were made as integral part of the 55 movable member B of the jack, there would

be danger of breaking the seal by the unequal distribution of the load on the piston, causing the canting or the movement of the same out of true axial alinement. This difficulty I have avoided by forming the piston 60 D separate from the member B and by providing a substantially point-contact bearing of the one upon the other. As shown, the upper end of the piston D is of a spherical form, while the lower end of the member B 65 is flat and bears on the piston at the center. Thus any lateral stress can be transmitted from the member B to the member D, and the piston is permitted at all times to maintain its true axial alinement with the cylindrical barrel. To protect the knife-edge 70 flange from injury, a stop member F is arranged within the barrel centrally thereof. This is of sufficient height to contact with the piston before the knife-edge comes in 75 contact with the bottom of the barrel. Provision is also made for protecting the piston from dust or grit, by the placing of a groove G in the member B, which is filled with felt or other soft packing material H. 80

With the construction as described, whenever air is pumped into the barrel the piston D will be forced upward, carrying with it the member B and the load sustained thereon. To avoid lifting the load too high or 85 subjecting the jack to too great an air pressure, I have provided a vent opening I in the barrel suitably located to be unsealed by the piston at the limit of its normal upward movement. This vent may be connected to an audible signal, such as a whistle 90 J, which will inform the operator that the limit of upward movement has been reached. In case of the sudden release of 95 the load, as for instance if the jack should tip over, the expansive force of the compressed air would tend to drive the piston and member B completely out from the barrel. This is avoided by a stop K which, as shown, engages a slot L in the member B, 100 but which is adapted to arrest further movement of said member when it contacts with the bottom of the slot.

The operation of the jack will be readily understood, the load being raised by the introduction of compressed air through the 105 nipple C, and being lowered by the unseating of the valve D, which permits the escape of air. When the piston is lifted to the desired point, the load may be sustained for 110

as long a period as desired, as a perfect air seal is maintained.

What I claim as my invention is;—

- 5 1. A jack, comprising telescopically engaged stationary and movable members, an air-tight piston in one of said members bearing against the other member, and means for introducing compressed air into the first-mentioned member.
- 10 2. A jack, comprising a barrel member, a member telescopically engaging said barrel, an independent air-tight piston member in said barrel bearing against the telescopically-engaging member, and means for introducing compressed air into said barrel.
- 15 3. A pneumatic jack, comprising a hollow barrel member, a member telescopically engaging the same, a piston fitting within said barrel member having an annular knife-edge forming an air-seal, and a check-valve controlled inlet connection for said barrel.
- 20 4. A jack, comprising a hollow barrel member, a member telescopically engaging the same, a cupped piston fitting within said barrel member, provided with an annular knife-edge for forming an air-seal, means for introducing compressed air into said barrel and for exhausting the same, and a stop for limiting the downward movement of said cupped piston to protect said knife-edge from injury.
- 25 5. A jack, comprising a hollow barrel member, a member telescopically engaging the same, a piston forming an air-tight seal with said barrel member adapted to lift said telescopic member, means for introducing compressed air into said barrel, and a vent in said barrel unsealed by said piston
- 30 at the limit of its upward movement.
- 35 6. A jack, comprising a hollow barrel member, a member telescopically engaging
- 40

the same, a piston in said barrel forming an air-tight seal therewith, means for introducing compressed air into the barrel, a vent in said barrel unsealed by said piston at the limit of its upward movement, and an audible signal operated by the air escaping from said vent.

7. A jack, comprising a hollow barrel member, a member telescopically engaging the same, a piston in said hollow barrel member for lifting said telescopic member and forming an air seal with the barrel, and a stop for limiting the upward movement of said telescopic member.

8. A jack, comprising a hollow barrel member, a member telescopically engaging the same, and a cupped piston in said barrel member having an annular knife-edge for forming an air seal, said piston and telescopic member being independent of each other and having a central bearing contact.

9. A jack, comprising a hollow barrel member, a member telescopically engaging the same, and a cupped piston in said barrel member provided with an annular flange having a knife-edge and also having a rockable central contact engagement with said telescopic member.

10. A jack, comprising a hollow barrel member, a member telescopically engaging the same provided with a soft packing forming a dust guard, and a cupped piston within said barrel below said telescopic member provided with an annular knife-edge for forming an air seal.

In testimony whereof, I affix my signature in presence of two witnesses.

NATHANIEL B. WALES.

Witnesses:

JAMES P. BARRY,
W. K. FORD.