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FLUID PRESSURE JACK.

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1,323,688. Patented Dec. 2, 1919.

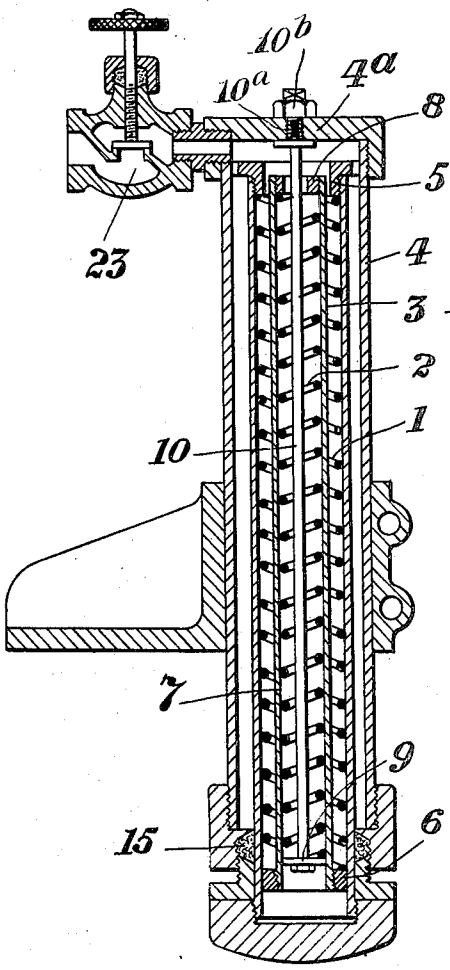


Fig. 1.

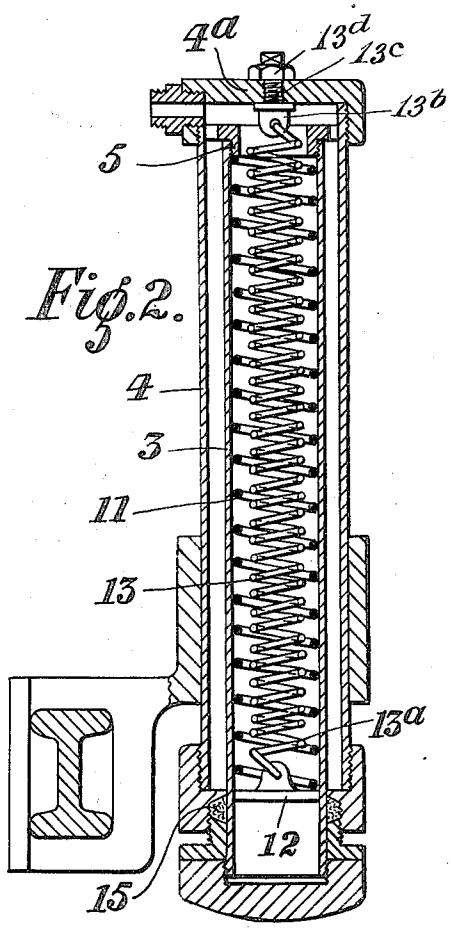


Fig. 2.

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FLUID-PRESSURE JACK.

1,323,688. Specification of Letters Patent. Patented Dec. 2, 1919.

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To all whom it may concern:

Be it known that we, EDMUND GRAHAM, of Dunottar, King's Road, Knock, Belfast, Ireland, and GEORGE BOWMAN, of Ballygomartin Road, Belfast, Ireland, both subjects of the King of Great Britain and Ireland, have invented certain new and useful Improvements Relating to Fluid-Pressure Jacks, of which the following is a specification.

This invention relates to liquid or other fluid pressure operated jacks for use in connection with the jacking up of motor or like vehicles, its object being to provide improvements in the means for returning the ram of each jack after the pressure is withdrawn.

Under our invention the ram of the jack is returned by a plurality of co-acting springs. The springs may be arranged to act under either compression or tension or under compression and tension and the ram is made hollow for their reception.

We have hereunto appended explanatory drawings showing some examples of ram returning means, in accordance with our invention.

Figure 1 is a sectional elevation of a jack in which the ram is returned by means of two compression springs.

Fig. 2 is a sectional elevation of a jack in which the ram is returned by a combination of compression and tension springs.

Referring to the drawings:—

In the example shown at Fig. 1 we employ two compression springs 1 and 2 to give the necessary spring return action on the ram 3 of the jack 4. The springs 1 and 2 are concentrically arranged the spring 2 being within the spring 1 and both springs within the ram 3. The outer spring 1 bears, at its top, against a projecting ring 5 within the ram 3 while its lower end rests on a flange 6 on the lower end of a tube or sleeve 7 located between the springs. The inner spring 2 bears, at its upper end, against the underside of an inwardly projecting ring 8 at the top of and movable with the sleeve 7 and at its lower end, bears on a ring or plate 9 which may be fixedly and adjustably connected by a rod 10 with the top 4^a of the jack by means of the threaded extremity 10^a and the nut 10^b. The sleeve 7 is adapted to slide over the fixed plate 9 and the latter is shown capable of adjustment for the purpose of varying the compression on the springs. The arrangement is such that when the liquid or fluid forces the ram 3 down the springs will be compressed and as the ram extends beyond the jack casing 4 the sleeve 7 will extend outward with it over the fixed plate 9. When the fluid pressure is withdrawn both springs will react to return the ram 3.

Instead of the two compression springs as above described we may employ, as shown in Fig. 2, a compression spring and a tension spring used in combination. In this case the ram 3 and jack casing 4 are made the same as the corresponding parts shown in Fig. 1 and both springs are accommodated within the ram 3. The compression spring 11 bears, at its upper end, on the projecting ring 5 and, at its lower end, on a plate 12 movable within the ram 3 and connected to one end 13^a of the tension spring 13 and its other end may be fixedly and adjustably secured to the top 4^a of the jack casing 4 by means of the anchor bolt 13^b and a threaded portion 13^c and a nut 13^d coöperating therewith. The arrangement is such that when the fluid pressure forces down the ram 3 the compression spring 11 will be compressed against the plate 12 until the pressure commences to pull on the tension spring 13 which will then be extended and the plate 12 will move with the movement of the tension spring 13 carrying with it the compression spring until the limit of movement of the ram 3 has been reached. When the fluid pressure is withdrawn both springs will react to return the ram and may, for some portion of return action, be re-acting together.

Having now fully described our invention what we claim and desire to secure by Letters Patent is:—

1. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram and two springs located in said ram, and means also within the ram, interposed between, and upon which means both springs act for the purpose of returning the jack after the pressure thereon has been relieved.

2. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram, two springs both acting under compression located in said ram, one within the other, and means interposed between the springs and upon which means both springs

act whereby the spring, will coöperate for the purpose of returning the jack after the pressure thereon has been relieved.

3. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram, a tubular member within said ram, and two co-acting springs located in said ram the one within the ram and the other within the tubular member, and means whereby when the ram is forced outward both springs are compressed simultaneously.

4. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram and two co-acting springs located in said ram the one spring being fixedly held at one end and at its other end coöperating with a movable member, and the other spring being outside the first mentioned spring and seated at one end against the top of the ram and at the other end against said movable member.

5. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram and two co-acting springs located in said ram the one spring being fixedly and adjustably anchored at one end and at its other end being held by a movable member, and the other spring being outside the first mentioned spring and seated at one end against the top of the ram and at the other end against said movable member.

6. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram, two co-acting springs, located in said ram, comprising an outer spring bearing at one end against the top of the ram and at the other end against an element movably fitted in the ram, the inner spring being anchored at one end to the casing and at the other end upon the said element.

7. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram and two co-acting springs therein and a member acted on by and located between the springs said member being slidably fitted within the ram.

8. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram, two springs located in said ram, means anchoring the one spring to the casing, and means within the ram and between the springs whereby the two springs are caused to co-act.

9. A liquid or other fluid pressure jack for jacking up vehicles having a hollow ram, two springs located in said ram, means anchoring the one spring to the casing, and means within the ram whereby the two springs are caused to co-act, said means consisting of a movable member acted on by both springs.

10. A liquid or other fluid pressure jack for jacking up vehicles and having a hollow ram, two springs located in said ram, means anchoring one of the springs to the casing, and means within the ram whereby the two springs are caused to co-act, the last said means embodying a movable element acted upon by both springs, the last said means also embodying a tubular member interposed between the springs and encompassing one of the springs.

In testimony whereof we affix our signatures in presence of two witnesses.

EDMUND GRAHAM.
GEORGE BOWMAN.

Witnesses:
ANDREW HAMILTON,
JOHN KNOX.