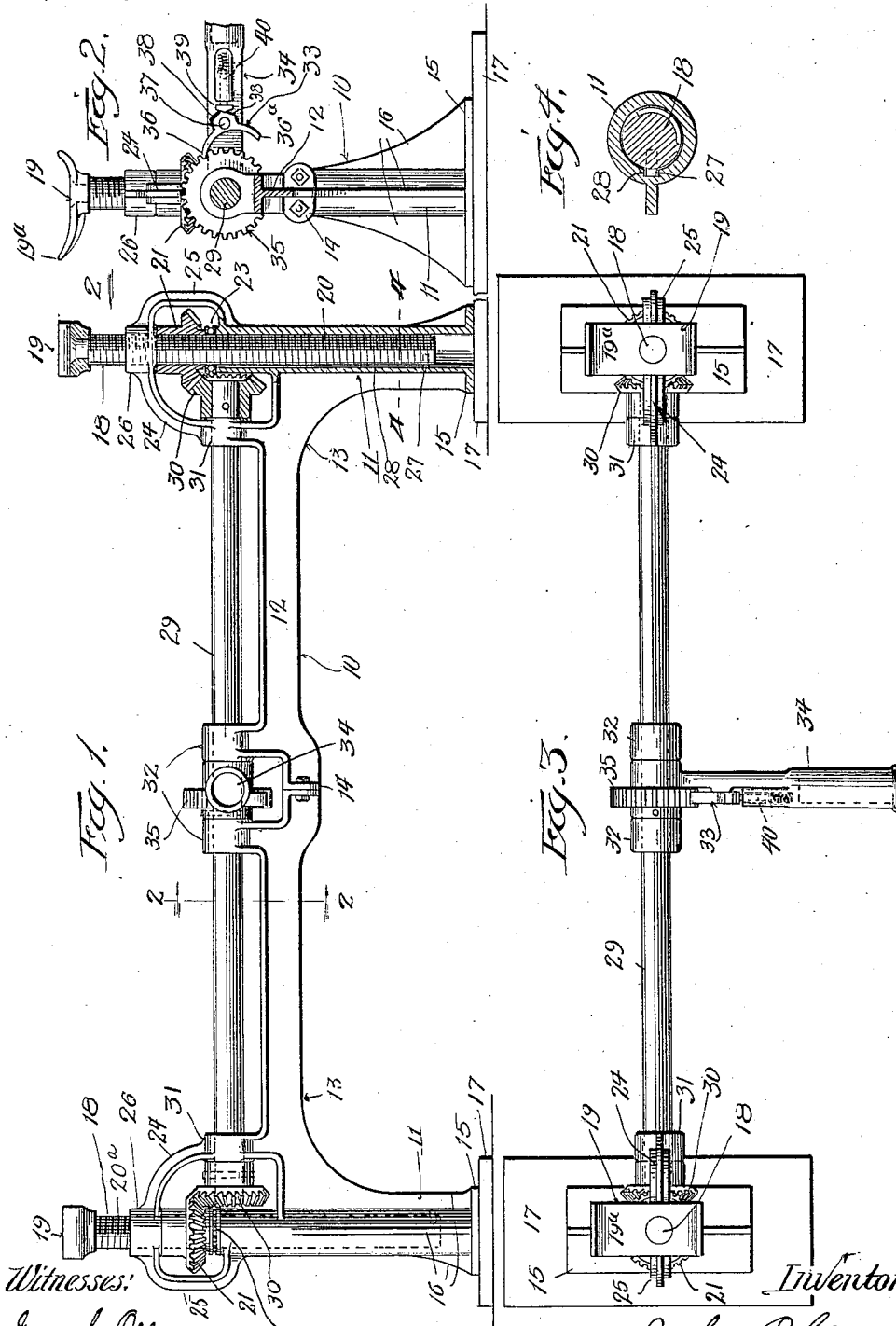


J. OLSON.
LIFTING JACK.

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1,018,127.

Patented Feb. 20, 1912.



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UNITED STATES PATENT OFFICE.

JOHN OLSON, OF CHICAGO, ILLINOIS.

LIFTING-JACK.

1,018,127.

Specification of Letters Patent.

Patented Feb. 20, 1912.

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To all whom it may concern:

Be it known that I, JOHN OLSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to lifting jacks, and has for its object to provide a lifting jack of improved construction, capable of raising either end of a vehicle (such as an automobile, wagon or the like) in an approximately true vertical line.

The ordinary lifting jack is intended for raising one wheel of the vehicle at a time, but this is objectionable, especially where the device is used to raise one of the wheels of an automobile from the ground, because it tends to twist the frame of the machine.

My improvement is designated to overcome this objectionable feature.

Other objects and advantages will appear in the course of this specification, and to such ends the invention consists in the novel features of construction, arrangement and combination of parts hereinafter described and claimed.

In the drawing furnished herewith, Figure 1 is a side elevation of a lifting jack embodying my invention, Fig. 2 is a vertical cross section taken on the line 2—2 of Fig. 1, Fig. 3 is a plan of the device, and Fig. 4 is a detail horizontal section taken on the line 4—4 of Fig. 1.

Referring to said drawing 10, represents a frame comprising two tubular standards 11, suitably spaced apart, and a cross connecting member 12. The frame is preferably made of two similar halves 13, 13, bolted together at the middle as shown at 14, and each standard is formed upon its lower end with a base plate 15, and reinforced by lateral webs 16. If desired a larger base plate 17, may be secured to the underside of the base plate 15, to increase the stability of the structure.

Movably mounted in the hollow of each standard is a vertically movable post 18, having upon its upper end a shoulder block 19, for receiving and supporting the axle of the vehicle to be raised. Means are provided for raising and lowering the posts in unison and one form of means will now be described.

In the drawings each post 18, is shown as screw threaded, one with a right-hand thread and the other with a left-hand

thread, as seen at 20, 20^a, and a beveled pinion 21, having internal screw threads formed on the wall of its bore, is mounted upon each screw threaded post. A ball bearing arrangement 23, is provided between the lower end of each bevel pinion and the standard 11, to take up the end thrust, and the standard is extended above said bearing in the form of arms 24, 25, having at their upper ends a bearing 26, in which is guided the upper end of said post. Rotation of the post within the standard is prevented by a pin 27, projecting out from the post and traveling in a vertical slot 28, formed on the inner wall of the tubular standard. It is obvious that rotation of either bevel pinion in the proper direction will cause a consequent upward movement of the post and that rotation of said pinion in an opposite direction will cause a consequent lowering movement of the post.

To operate both posts in unison, I provide a cross shaft 29, having a bevel pinion 30, secured to each end and meshing with the bevel pinions 21, on the posts. The shaft 29, is journaled in end bearings 31, extending up from the frame and is also journaled in intermediate bearings 32, located near the middle of said frame as clearly indicated in Fig. 1. Pawl and ratchet mechanism is provided for turning the shaft 29, in either direction to raise or lower the posts in unison and as shown said pawl and ratchet mechanism comprises a pawl 33, carried by a lever 34, fulcrumed upon the shaft 29, between the bearings 32, and a ratchet wheel 35 rigidly secured to the shaft 29, said pawl being arranged to engage with the teeth of the ratchet wheel. The pawl 33, is preferably in the form of a double pawl having two tooth-engaging ends 36, 36^a, one end of said pawl being arranged to engage with the teeth above the lever to turn the shaft in one direction and the other end of the pawl being arranged to engage the teeth below the lever to turn the shaft in the opposite direction. The pawl is fulcrumed between its ends upon the lever at 37, and is formed with a head having two beveled faces 38, arranged to be engaged by the head 39, of a spring pressed bolt 40, carried in a recessed lug on the lever 34, said spring pressed bolt acting to yieldingly hold the pawl in engagement with the ratchet wheel. By reference to Fig. 2 it will be perfectly obvious that whenever the lever is rocked upwardly, the pawl will operatively engage with one

tooth of the ratchet wheel and turn the same, whereas in the downward movement of the lever, the pawl will move back freely. By shifting the pawl over to bring the end 5 36^a, into engagement with the teeth of the ratchet wheel, the other inclined face 38, is brought into engagement with the bolt 40, whereby said end 36^a, is yieldingly held in engagement with the teeth of the ratchet 10 wheel. The end of the lever is formed with a handle socket for the reception of a handle.

I prefer to make one end 19^a, of each shoulder block 19, long enough to project considerably beyond the post so that the 15 shoulder block may receive the axle of the vehicle without interfering with other parts immediately below the same. The cross shaft 29, and frame are arranged to lie somewhat below the upper end of the stand- 20 ard in order that the lifting jack may be placed under the rear axle of automobiles, which axles contain enlargements between their ends for instance the compensating gear is usually placed at such points.

In using the device, the jack is placed 25 under either axle of the vehicle to be lifted, the pawl set properly and the handle rocked up and down. The cross shaft 29, being rotated in the proper direction, the pinions 30 on the end thereof turn the internally screw threaded bevel pinions 21, in opposite directions on the screw threaded posts 20, and by reason of the screw threaded connection therewith, move said posts upward in uni- 35 son, thereby lifting the vehicle axle and parts carried thereby in a vertical line. To lower the vehicle the position of the pawl is changed so as to bring its end 36^a, in engagement with the ratchet wheel and the 40 lever rocked as before. The device is found especially advantageous where it is desirable to raise automobiles sufficiently to take their weight from their pneumatic tires and in such cases it is usual to provide a pair of 45 lifting jacks for each machine.

In the modified form illustrated in Fig. 5, the cross connection between the two stand- 50 ards 11^a, is omitted, and the shaft formed in two parts 29^a, 29^b, rigidly connected together as by a clamp 29^c, but capable of being adjusted longitudinally of each other to accommodate vehicles whose axles are longer or shorter than standard size or when the 55 parts are so arranged that it would be inconvenient to use a jack in which the two lifting devices were not capable of relative adjustment. The particular form of construction of the adjustable shaft is not material to the invention broadly considered, 60 but the one shown is sufficient for the purpose of illustration. In the form shown, one section 29^b, is tubular and receives the other section 29^a, in the hollow of the tube.

By loosening the clamp 29^c, the shaft may be extended to separate the standards far- 65 ther apart, or may be contracted to bring them closer together, after which the clamp may again be tightened to rigidly secure the two sections together. The lever and pawl and ratchet mechanism is shown as located 70 near one of the standards, although this is not essential.

I realize that various alterations and modifications of this device are possible without departing from the spirit of my in- 75 vention, and I do not therefore desire to limit myself to the exact form of construction shown and described.

I claim as new and desire to secure by Letters Patent: 80

1. In a lifting jack, the combination with a frame comprising two oppositely disposed similar halves bolted together, each half comprising a hollow standard formed with an integral flat base and with an integral 85 horizontal bar extending to the middle of the jack, of a pair of screw threaded posts, one mounted to slide in each standard, and having a shoulder upon its upper end, a bevel pinion threaded upon each post and 90 held against longitudinal movement upon the standard, a pair of bevel pinions, one meshing with each pinion on the posts, a cross shaft journaled on said horizontal bars and carrying said second named pinions, an 95 operating lever, and pawl and ratchet mechanism operatively connected with said cross shaft and lever.

2. In a lifting jack, the combination with two similar frame members, each compris- 100 ing a tubular standard having a gap intermediate its ends, and a cross connection extending to the center of the lifting jack, each cross connection having horizontal bearing apertures adjacent the standards 105 and adjacent the center of the lifting jack, of a vertically movable post mounted in each standard, a shoulder-block carried by each post, and mechanism for raising and lower- 110 ing the posts in unison, said mechanism including a cross shaft, journaled in said horizontal bearing apertures, a pinion upon each end of said cross shaft, a pinion upon each post and intermeshing with the adjacent pinion on the cross shaft, the pinions on 115 the posts being confined against longitudinal movement in the gap in the standards, rock lever, and operative connections between the rock lever and shaft.

In witness whereof I have hereunto signed 120 my name at Chicago, Cook county, Illinois, this 27th day of April 1911.

JOHN OLSON.

Witnesses:

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