J. A. MARCHNER.

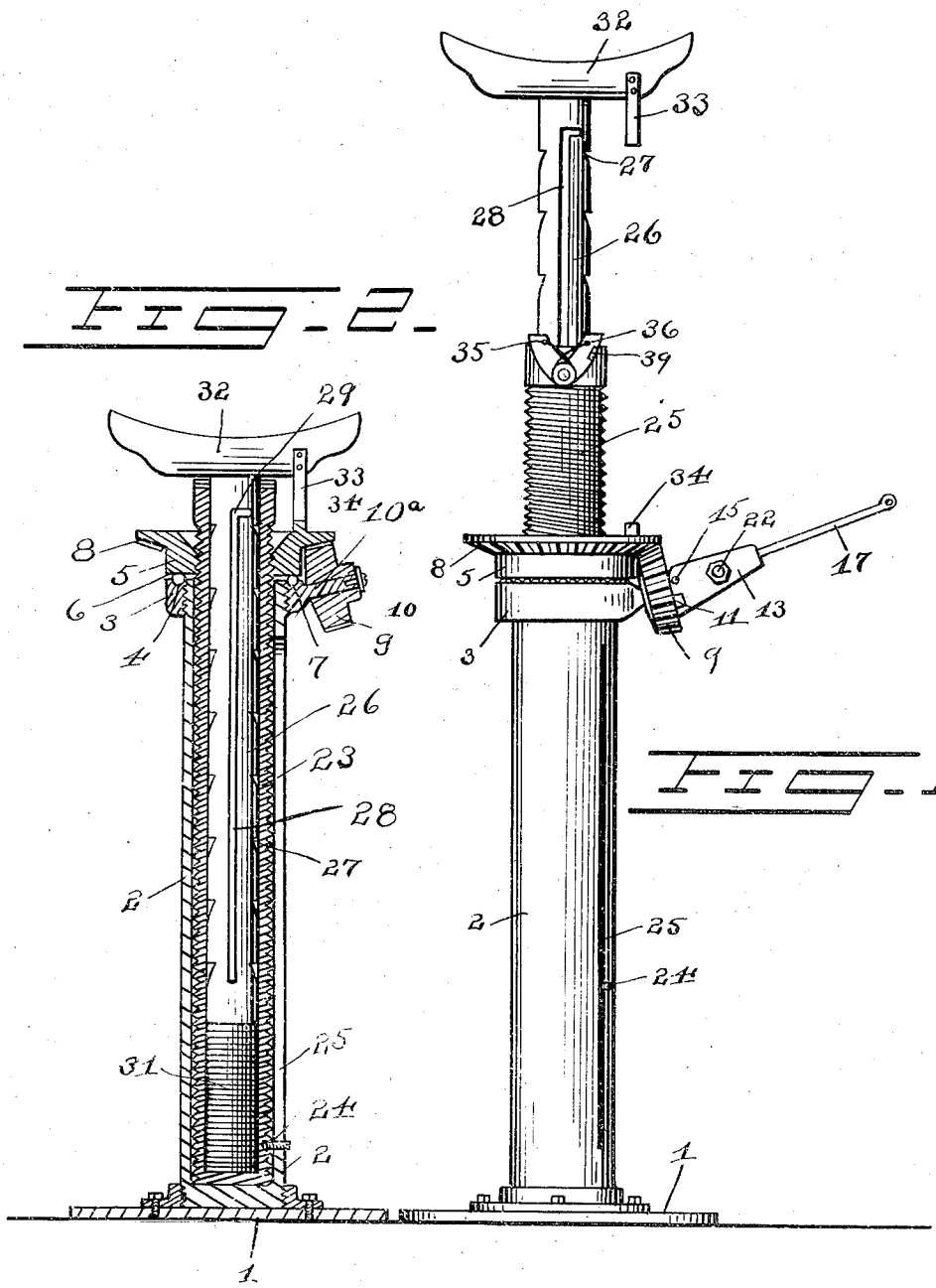
LIFTING JACK.

APPLICATION FILED AUG. 18, 1919.

1,324,058.

Patented Dec. 9, 1919.

2 SHEETS—SHEET 1.



Inventor

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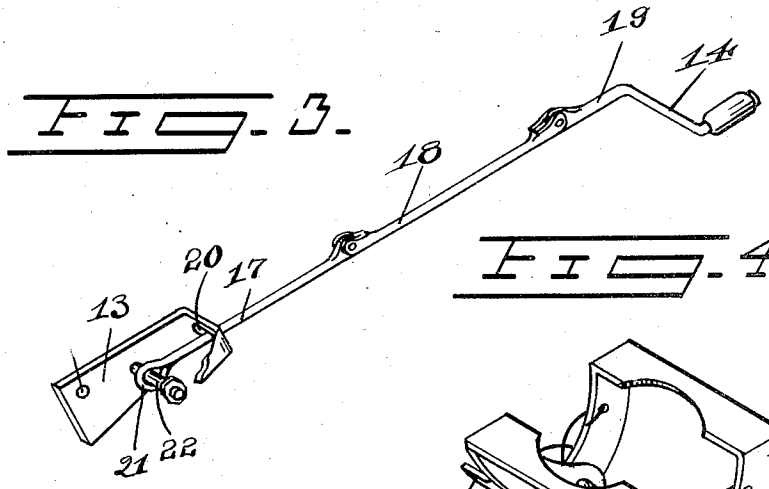


FIG. 3.

FIG. 4.

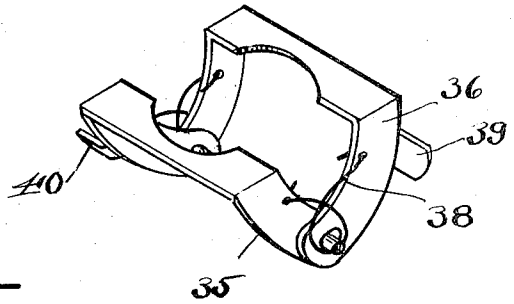
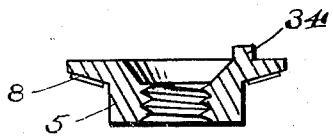


FIG. 5.



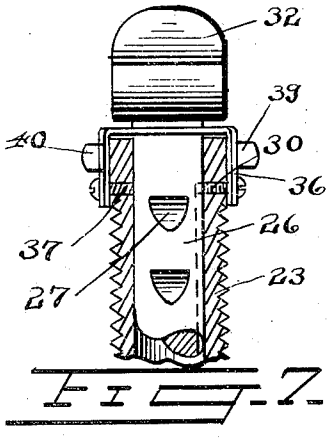


FIG. 7.

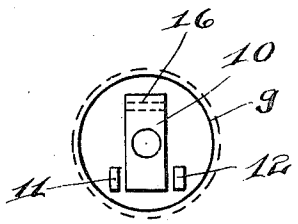


FIG. 6.

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UNITED STATES PATENT OFFICE.

JOSEPH A. MARCHNER, OF ATLANTIC CITY, NEW JERSEY.

LIFTING-JACK.

1,324,058. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed August 18, 1919. Serial No. 318,295.

To all whom it may concern:

Be it known that I, JOSEPH A. MARCHNER, citizen of the United States, residing at Atlantic City, in the county of Atlantic and State of New Jersey, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

The object of this invention is to provide new and improved construction in lifting jacks for use in lifting vehicles.

This and other objects of this invention will be fully illustrated in the drawings, described in the specification and pointed out in the claims at the end thereof.

In the accompanying drawing,

Figure 1 is a side elevation of the lifting jack.

Fig. 2 is a longitudinal cross section of the lifting jack.

Fig. 3 is a detail perspective view of the handle for operating the lifting jack.

Fig. 4 is a detail perspective view of the dogs for holding the extension of the jack in an elevated position.

Fig. 5 is a sectional view of the bevel gear for operating the lifting jack.

Fig. 6 is an end elevation of the bevel pinion operated by the handle of the lifting jack.

Fig. 7 is a sectional view of the upper end of the lifting jack.

In the several figures of the drawings, like reference numerals indicate like parts.

The lifting jack comprises the base 1 which supports the hollow standard 2. Carried on the end of this standard and suitably fastened thereto is the collar 3 having a ball race 4 provided thereon. A second collar 5 having a ball race 6 provided thereon is supported by the balls 7 mounted in the ball race 4. The collar 5 has the bevel gear 8 formed thereon which meshes with the bevel pinion 9 which is pivoted on the stud 10^A carried on the collar 3. The hub of the bevel pinion has a rectangular extension 10 formed thereon with lugs 11 and 12 at the sides thereof.

A U-shaped bracket 13 is carried on the end of the extension crank 14. This bracket is adapted to embrace the rectangular hub 10 and slide over it inside of the lugs 11 and 12. A pin 15 is then inserted into suitable holes provided for this purpose in each of the sides of the U-shaped bracket and this pin is also made to pass through a hole 16 provided in the hub 10. The pin 15 thus forms a pivot around which the bracket 13 can swing on the hub 10.

When in the operative position, that is the position shown in Fig. 1, both sides of the bracket 13 embrace the full length of the hub 10 and project between the lugs 11 and 12 and the hub 10. On turning the bracket 13 by means of the crank 14, the hub 10 and its pinion 9 are rotated, which in turn rotates the bevel gear 8 with which the pinion 9 meshes.

The crank 14 is made up of the sections 17, 18 and 19. These sections are pivoted to each other and are made so as to fold over each other to shorten the length of the crank when not in use for the purpose of storing it in the tool box. The last section or link 17 of the crank 14 projects through the opening 20 in the end of the bracket 13 and the eye 21 formed on the end of the link 17 engages the bolt 22 which is held in place between the sides of the bracket 13 near the middle thereof.

The hollow center of the bevel gear 8 and its hub 5 is provided with the female thread. The threaded upright 23 is adapted to screw into the threaded center of the gear 8 to be raised or lowered thereby on the rotation thereof.

In order to keep the upright 23 from turning with the gear, a pin 24 is provided thereon. This pin projects out from the periphery of the upright near the lower end thereof and engages the vertical slot 25 in the standard 2. This slot holds the upright 23 to a straight up and down movement when being raised or lowered by the gear 8.

The upright 23 is hollow and has an extension 26 mounted to telescope therein. This extension is notched out on two sides diametrically opposite each other with the notches 27, each having a rectangular shoulder provided at the upper end thereof.

Between the series of notches 27 on one side of the extension 26 is the groove or slot 28. This slot has a short extension 29 at right angles thereto at the upper end

thereof. A pin 30 provided on the upper end of the upright 23 normally projects into the horizontal extension 29 of the slot 28 and locks the extension in place in the upright 23. An expansion spring 31 is placed between the closed end of the hollow upright 23. An expansion spring 31 is placed 26. When the extension 26 is contracted and locked in position, this spring 31 is normally compressed as shown in Fig. 2.

On the end of the extension 26 is mounted the saddle 32 which is brought into engagement with the member that is to be raised. The saddle 32 has a depending lug 33 provided thereon which engages with one side of the upwardly projecting lug 34 carried on the bevel gear 8.

The jack is brought into operative position by placing the base 1 and the standard 2 below the member that is to be lifted. The upright and its extension with the saddle 32 occupies its lowermost position as shown in Fig. 2 when placed ready to engage the member to be lifted. On the first movement of the bevel gear 8 by the pinion 9 through the crank 14 the lug 34 carried on the bevel gear engages the sides of the depending spring lug 33 and turns the saddle 32 and extension 26 with it. In so doing, the horizontal slot 29 turns with the extension and brings the pin 30 which projects into it in line with the vertical slot 28.

The compression spring 31 is thus released and can expand and lift the extension 26 until the saddle 32 makes contact with the member to be lifted. When in this position a pair of spring pressed dogs 35 and 36 engage a pair of correspondingly placed notches in the extension 26 and support the extension in the elevated position.

After the extension has thus been released and automatically placed against the member to be lifted, a further turning of the handle 14 rotates the bevel gear and in doing so gradually raises the threaded upright 23 as the threads of the gear operate on the threads of the upright.

The jack is operated in this manner until it has attained the desired height. The spring lug 33 offers but a slight resistance to the lug 34 as it is rotated. This resistance, however, is sufficient to give the saddle and extension a small angular turn sufficient to move the slot 28 in line with the pin 30 as above pointed out. After this has been done the lug 34 slips under the spring lug 33 and will continue to do so at the end of each revolution, that is, whenever it comes in contact with the lug during successive revolutions of the bevel gear.

The pin 30 also forms one of the pivot pins on which the spring dogs 35 and 36 are mounted, a shorter pin 37 being provided in the upright 23 diagonally opposite to the pin 30 to form the other of the pivots for the dogs 35 and 36. The pin 37 does not project into any slot in the extension 26.

Suitable springs 38 are wound around the pins 30 and 37 and have their outer end engage the sides of the dogs 35 and 36 as shown in Figs. 1 and 5 in order to hold these dogs yieldingly in engagement with the notches 27.

On the raising of the jack the dogs 35 and 36 form supports for the extension 26 against which rest the rectangular shoulders of the notches 27.

When the jack has been lowered to its normal height, the extension 26 may be forced back into the hollow center of the threaded upright 23 by spreading the dogs 35 and 36 by means of the lugs 39 and 40 provided on the sides of the dogs 35 and 36 respectively.

The dogs are thus brought out of engagement with the shoulders of the notches 27 and the extension 26 may then be forced down against the pressure of the compression spring 31. At the end of its possible downward travel, the extension is given a slight turn in order to have the pin 30 engage into the horizontal extension slot 29 which prevents the extension from being forced back and locks the extension into the upright 26 from which it is released again on the rotation of the handle or crank 14 as above described.

I claim:

1. In a lifting jack, the combination of a base, an upright mounted on said base, a collar mounted on top of said upright, a stud carried by said collar, a pinion mounted to rotate on said stud, a bevel gear mounted to rotate on top of said collar and mesh with said pinion, said bevel gear having a hollow center and being provided with a female thread therein, a hollow and threaded stem being adapted to pass through said threaded center of said hollow bevel gear and being raised and lowered thereby on the rotation of said bevel gear, an extension mounted to telescope in said threaded stem, an expansion spring interposed between the bottom of said extension and said stem, means to lock said spring in a compressed state between the end of said stem and said upright, and means to release said spring on the beginning of the rotation of said bevel gear to raise said extension from said upright.

2. In a lifting jack, the combination of a base, an upright mounted on said base, a collar mounted on top of said upright, a stud carried by said collar, a pinion mounted to rotate on said stud, a bevel gear mounted to rotate on top of said collar and mesh with said pinion, said bevel gear having a hollow center and being provided with a female thread therein, a hollow and threaded stem

being adapted to pass through said threaded center of said hollow bevel gear and being raised and lowered thereby on the rotation of said bevel gear, an extension mounted to telescope in said threaded stem, an expansion spring interposed between the bottom of said extension and said stem, means to lock said spring in a compressed state between the end of said stem and said upright, means to release said spring on the beginning of the rotation of said bevel gear to raise said extension from said upright, and means carried on said stem and said extension to automatically support said extension on said stem at a predetermined position.

In testimony whereof I affix my signature.

JOSEPH A. MARCHNER.