No. 789,071. PATENTED MAY 2, 1905.

H. SCHROER.

LIFTING JACK.

APPLICATION FILED JULY 26, 1904.

Fig: 1.

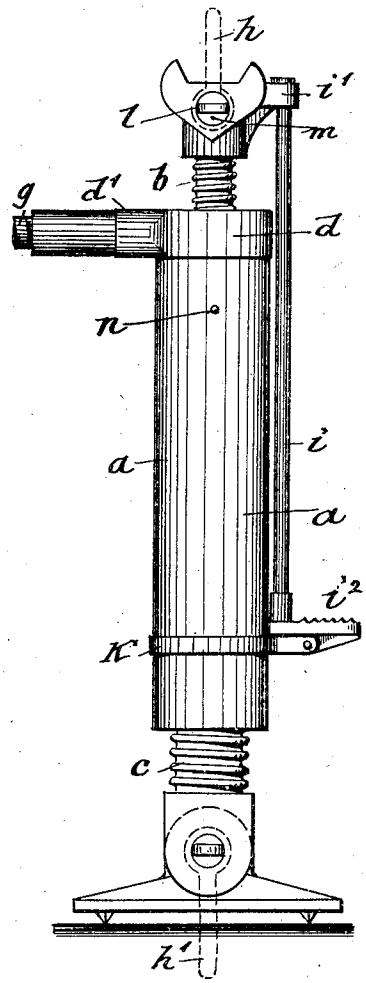


Fig: 2.

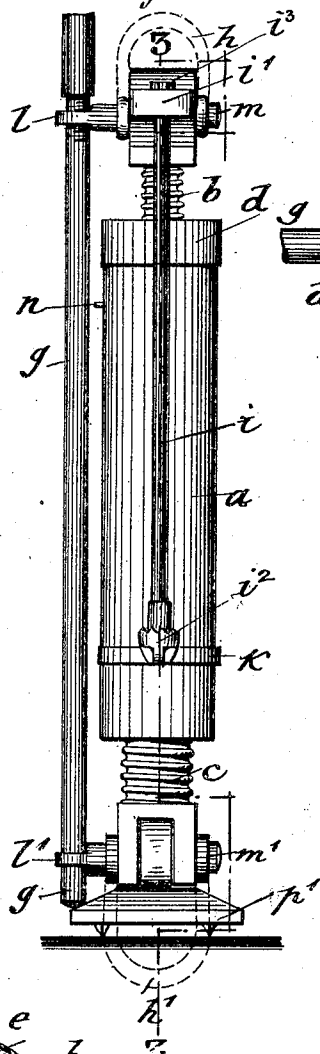


Fig: 3.

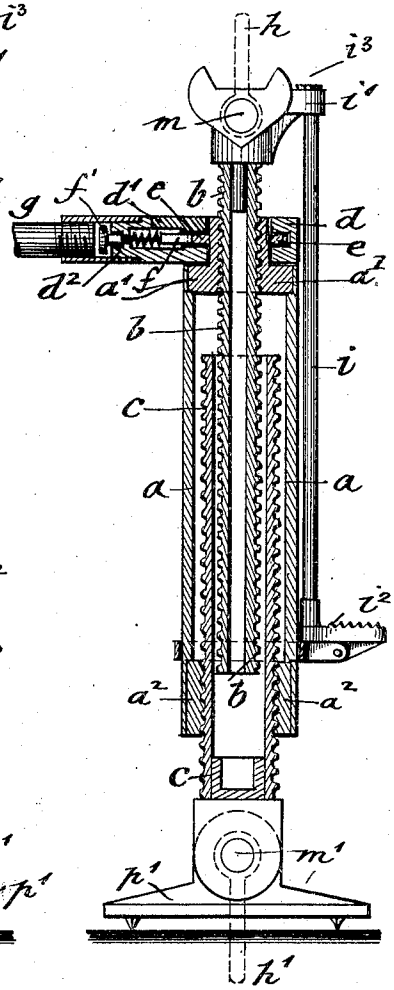


Fig: 5.

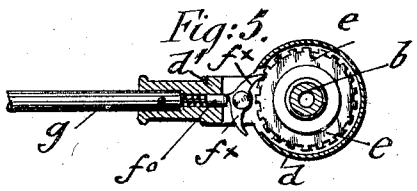


Fig: 4.

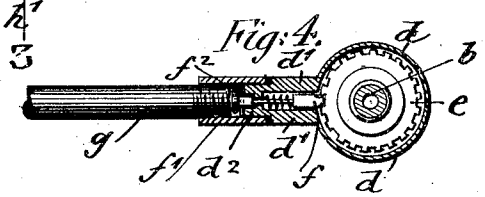


Fig: 6.

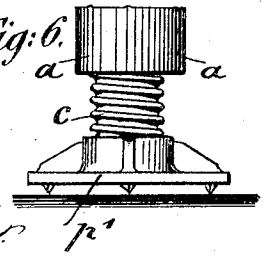
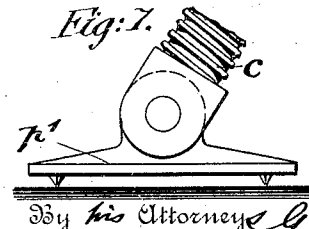


Fig: 7.



Witnesses
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No. 789,071. Patented May 2, 1905.

UNITED STATES PATENT OFFICE.

HERMANN SCHROER, OF MANNHEIM, GERMANY.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 789,071, dated May 2, 1905.

Application filed July 26, 1904. Serial No. 218,271.

To all whom it may concern:

Be it known that I, HERMANN SCHROER, a citizen of the Empire of Germany, residing in Mannheim, in the Grand Duchy of Baden and Empire of Germany, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to certain improvements in the lifting-jack for which I received Letters Patent of the United States No. 761,418, dated May 3, 1904, said improvements being designed with the view of increasing the lifting stroke of the same, which is of special advantage for lifting railway-cars, moving-vans, and other heavy vehicles and which has also the advantage that the jack, owing to its increased lift, can be advantageously used as a tension or drawing mechanism; and for this purpose the invention consists of a lifting-jack which comprises a cylindrical casing, two telescoping spindles in said casing, a ratchet-wheel and pawl mechanism at the upper end of the casing, interiorly-threaded sleeves at the upper and lower ends of the cylindrical casing for engaging both screw-spindles, and lifting mechanism connected with the head of the inner screw-spindle.

The invention consists, further, of certain details of construction by which a draw action can be exerted by the jack, as will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved lifting-jack. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical central section on line 3 3, Fig. 2. Figs. 4 and 5 are horizontal sections of two different pawl-and-ratchet mechanisms for the lifting-jack. Fig. 6 is a side view of a stationary foot-piece, and Fig. 7 is a side view of a movable foot-piece at the lower end of the jack.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, *a* is a cylindrical casing which is open at both ends and provided at its upper and lower ends with interiorly-threaded stationary sleeves *a'* *a²*, which serve for guiding two telescoping spindles *b* and *c*, of which the interior spindle *b* is adjustable within the exterior spindle *c*, as shown clearly in Fig. 3. The exteriorly-recessed sleeve *a'* at the upper end of the casing *a* is recessed for guiding a circular ratchet-strap *d*, which incloses a ratchet-wheel *e*, that is keyed to the recessed sleeve *a'*. The ratchet-strap *d* is provided with a socket *d'*, having a rectangular recess adjacent to the strap and a round socket *d²* in line therewith for receiving a hand-lever *g*. In the socket *d'* is guided a spring-actuated pawl *f*, which projects into the spaces between the teeth of the ratchet-wheel *e*, the end of the pawl being provided at one side with a rectangular recess which engages the side of the next adjacent ratchet-tooth, while the opposite side of the pawl *f* is rounded off, so that during the return motion of the lever *g* the pawl clears the teeth of the ratchet-wheel, while it is instantly returned into engagement with the same by the tension of the helical spring interposed between the head of the pawl and an interior shoulder of the socket *d²*. On the stem of the spring-pawl *f* is arranged a milled head *f'*, which is provided with a cross-pin *f²*, that engages a transverse recess in the end of the socket *d'*. When the milled head *f'* is pulled outwardly against the tension of the spring, turned on its axis, and then released, the cross-pin *f²* engages the transverse recess and holds the pawl *f* in a position for turning the ratchet-wheel *e* in one or the opposite direction, so as to produce the extension or withdrawing of the telescoping spindles *b* and *c*.

To the upper end of the spindle *b* is attached a bracket *i'*, which supports a rod *i*, that extends in downward direction alongside of the casing and carries at its lower end, near the lower end of the casing, a lifting-hook *i²*, which is intended to engage objects of smaller height near the base of the jack. On the exterior of the casing is arranged a guide-strap *k*, which is attached to the hook *i²* for the better support and guiding of the same. The supporting-rod *i* is connected by a screw *i³* with the bracket *i'*, so that on removing the screw it can be readily removed

with the lifting-hook i^2. The screw-spindle b is provided at its upper end and the screw-spindle c at its lower end with a draft-ring h and h', respectively, which are connected with the ends by pivot-bolts m m', the upper bolt m being made round and provided at one end with an eye l, while the lower pivot m' is made slightly conical and also provided with an eye l', said eyes serving for supporting the hand-lever g when the same is not required for use, as shown in Fig. 2. The lower conical bolt m' serves for firmly clamping the movable foot-piece p'. The eye l of the upper pivot-bolt m is provided with an interior screw-thread, which engages a corresponding thread on the lever g, so that the same can be screwed home in the eye l while being held by the lower eye without being liable of getting detached from the jack when not in use. The links at the head of the spindle b and on the lower end of the spindle c are intended also to be used as tension or draft links, the head being made of one piece, as it is not necessary to remove the same from the spindle. The lifting-hook can be removed from the jack when the draft-links are to be used. Either the head of the lifting-spindle b or the lifting-hook i^2 can be used for lifting purposes, while the draft-links serve for tension or draft purposes. The inner spindle b is provided with a right-hand screw-thread and the outer spindle c with a left-hand screw-thread, which permits the simultaneous extension or telescoping of both spindles. By means of the lever-actuated pawl-and-ratchet mechanism a double lifting or draw action of the jack is obtained.

In place of the spring-actuated pawl f (shown in Fig. 4) the centrally-pivoted double pawl $f^\times$ may be used, as shown in Fig. 5. In this case the pawl $f^\times$ is shifted from one side to the other of its center pin into engagement with the teeth of the ratchet-wheel e and then held in position therewith by the stop-piece f^0, which is turned on its axis through an angle of one hundred and eighty degrees in the same manner as the spring-pawl f in Fig. 4, so that the double pawl $f^\times$ accomplishes practically the same function as the spring-pawl f.

In order to prevent the screwing of the exterior spindle c out of the casing, so that the parts become detached from each other, a stop-pin n is arranged with the upper part of the casing a below the ratchet-strap d, which stop-pin forms contact with the guide-strap k of the lifting-hook i^2 and arrests the further turning motion of the casing and the detaching of the same from the spindle c.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A lifting-jack, consisting of a cylindrical casing, two exteriorly-threaded spindles located within the casing and telescoping one within the other, stationary interiorly-threaded sleeves at the upper and lower ends of the casing adapted to engage the screw-spindles, a pawl-and-ratchet mechanism on the upper sleeve for simultaneously actuating the spindles, a head at the upper end of the inner spindle provided with a bracket, and a lifting-hook guided on the cylindrical casing and connected by a supporting-rod with the bracket, substantially as set forth.

2. In a lifting-jack, the combination, with a cylindrical casing, of two tubular screw-spindles telescoping one within the other within the casing, stationary interiorly-threaded sleeves at the upper and lower ends of the casing adapted to engage the inner and outer screw-spindles, the upper end of the inner screw-spindle being provided with a head, a pawl-and-ratchet mechanism on the upper sleeve, and draft-links pivoted to the lifting-head of one spindle and to the lower end of the other spindle to permit the use of the lifting-jack for tension or drawing purposes, substantially as set forth.

3. In a lifting-jack, the combination, with a cylindrical casing provided with stationary interiorly-threaded sleeves at its upper and lower ends, of telescoping screw-spindles engaged by said sleeves, and a pawl-and-ratchet mechanism on the upper sleeve of the casing and consisting of a ratchet-strap movable about said sleeve, a ratchet-wheel keyed to said sleeve and rotatable in said ratchet-strap, a spring-actuated pawl guided in a socket of the ratchet-strap, and means for reversing said pawl and locking it in one or the other position so as to move the ratchet-wheel in either direction, and a lever adapted to engage the hub of the ratchet-wheel, substantially as set forth.

4. In a lifting-jack, the combination of a cylindrical casing having stationary screw-sleeves at its upper and lower ends, telescoping spindles having screw-threads of opposite direction engaged by said sleeves, a pawl-and-ratchet mechanism on the upper sleeve, a head attached to the upper end of the inner spindle, an enlarged portion at the lower end of the outer spindle, bolts connecting the head and engaged respectively with the upper end of one and the lower end of the other spindles, said bolts being provided with eyes, and a hand-lever adapted to be connected with the pawl-and-ratchet mechanism for operating the same or to be supported in the eyes of the bolts when not required for use, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HERMANN SCHROER.

Witnesses:

HEINRICH KRUG FUGEUSCOR,

JOSEPH H. SEUTE.