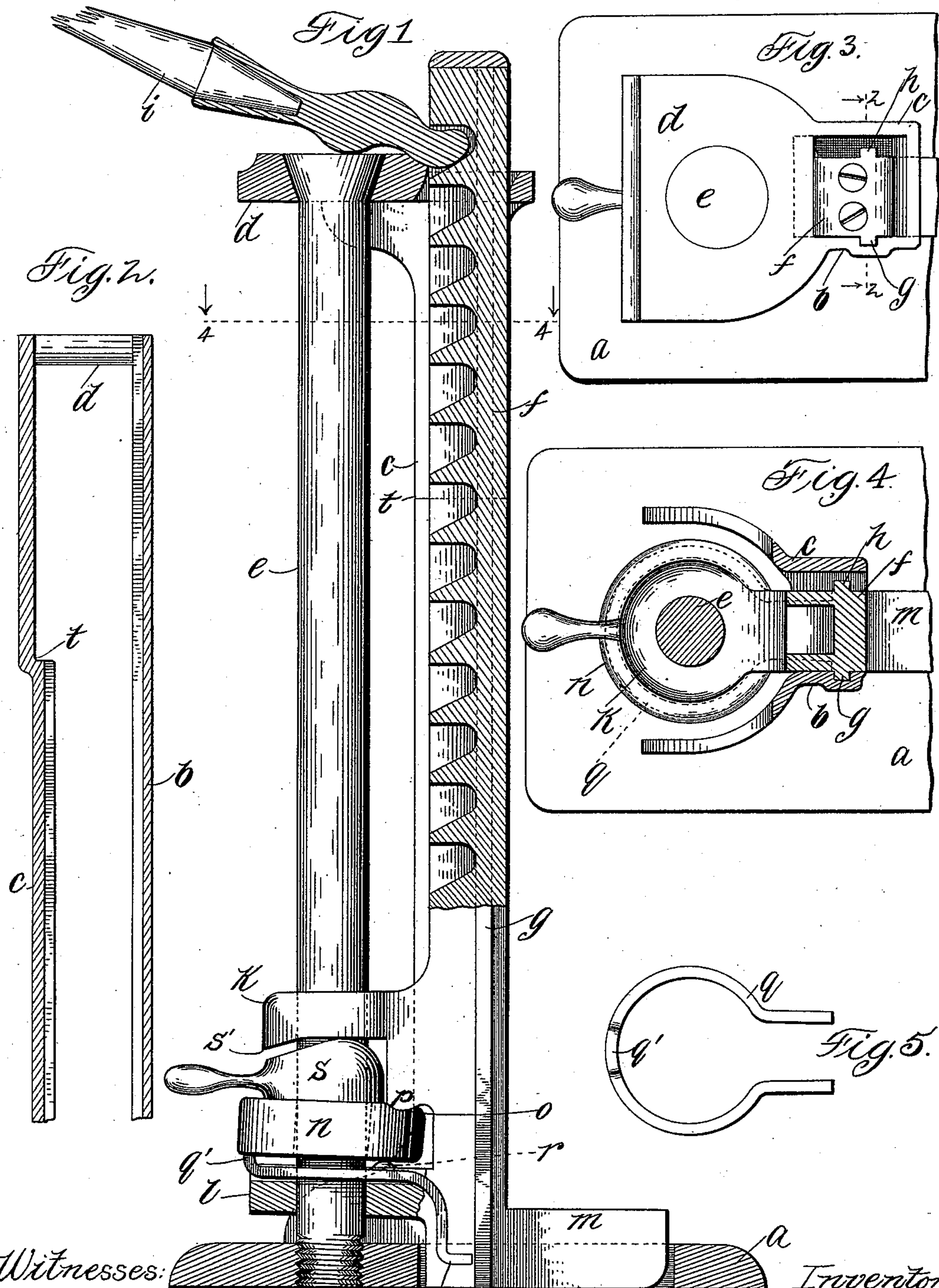


(No Model.)

A. A. SMITH.
LIFTING JACK.

No. 539,449.

Patented May 21, 1895.



Witnesses:

George L. Bragg.
W. Clyde Jones.

Inventor.
Allan A. Smith.
By Barton & Brown
Attorneys.

UNITED STATES PATENT OFFICE.

ALLAN A. SMITH, OF GRAND ISLAND, NEBRASKA.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 539,449, dated May 21, 1895.

Application filed September 24, 1894. Serial No. 523,872. (No model.)

To all whom it may concern:

Be it known that I, ALLAN A. SMITH, a citizen of the United States, residing at Grand Island, in the county of Hall and State of Nebraska, have invented a certain new and useful Improvement in Lifting-Jacks, (Case No. 2,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to lifting jacks of the class known as track jacks, which are especially designed for raising and lowering railroad tracks.

My lifting jack is adapted to be placed between the ties and is provided with a notched lifting bar having a foot adapted to extend under the rail that is to be raised. This lifting bar is inclosed in a housing and is provided with a clutching mechanism suitably mounted upon an upright standard or bolt, whereby, when the lifting bar is raised, it will be held in position.

My invention relates more particularly to the clutching mechanism and the means for releasing the same when it is desired to lower the lifting bar.

Speaking generally, my lifting jack consists in a notched lifting bar adapted to be raised by a lever, the lifting bar having a foot extending horizontally to engage with the flange of a railroad rail, the said lifting bar being provided with projecting lugs at the lower portion thereof having openings, through which openings a standard passes. The standard is preferably in the form of a bolt, and is provided with a ring clutch which is adapted to be carried upward upon the standard as the bar is raised, and whenever the lifting power of the lever is removed the ring clutch engages with the standard and serves as a support for the lifting bar to hold the same, together with its load, in position. A spring, preferably in the form of a loop, passes around the standard under the ring clutch, and presses against the lower edge of the same opposite the lifting bar to tilt the said ring clutch and cause the same to readily engage with the standard or bolt. The lifting bar is mounted in a suitable housing, which housing consists of a casting having two side pieces suitably grooved to serve as a guide for said

lifting bar. This housing not only serves as a guide for the bar, but is preferably extended at the upper and lower ends thereof so as to support the standard, the lower portion of the housing being of sufficient area to form the base. The ring clutch is placed between the projecting lugs of the lifting bar, which lugs are provided with circular holes so that they may move up and down upon the standard. Above the ring clutch and about the standard I place a rotatable ring having the upper face thereof beveled and adapted, when the said ring is rotated, to engage with the under inclined surface of the lug above the same to bring the ring clutch parallel with the standard so as to relieve the grip of the said ring clutch upon the said standard. In this manner I am enabled to readily disengage the clamp to permit the lifting bar to descend.

My invention consists, more particularly, in the said rotatable ring acting after the manner of a cam, and the combination therewith of the ring clutch and spring, whereby the said ring clutch is readily disengaged from its hold upon the standard to permit the lifting bar to descend.

My invention further consists in certain details of construction and specific combinations of parts, which will be hereinafter more particularly described.

In the drawings, which are illustrative of my invention, Figure 1 is an elevation, partially in section, illustrative of a lifting-jack embodying my invention. Fig. 2 is a sectional view of the housing, taken on line 2 2 of Fig. 3, the lifting-bar being removed and the lower portion of the housing being broken away. Fig. 3 is a plan view of the lifting-jack illustrated in Fig. 1 with the lifting-lever removed. Fig. 4 is a similar view taken upon section-line 4 4 of Fig. 1. Fig. 5 is a detail view of the spring which normally presses against the outer under edge of the clutch-ring.

Like parts are indicated by similar letters of reference throughout the different figures.

The base *a*, the side pieces *b c* constituting the housing, and the top or upper portion *d* thereof, may all be conveniently cast in a single piece. The upper projecting portion *d* may be drilled out and the base *a* tapped out, as shown, to receive the bolt or standard *e*. The lifting bar *f* I have provided with tongues

g h, which are adapted to slide in corresponding grooves provided in the sides *b c* of the housing, the casting or frame constituting the base *a*, the housing *b c*, and the projecting portion *d*, supports the standard *e* and forms a guide for the lifting bar *f*. The lifting bar is provided with a rack and is adapted to be raised by means of a hand lever *i* which may be fulcrumed upon the top of the standard *e* so as to successively take the notches of the rack. The lifting bar near the lower end thereof is provided with projecting lugs *k l* which are drilled out to admit the standard *e*.

The foot *m*, which projects laterally from the lifting bar *f* in the direction opposite to that of lugs *k l*, is adapted to be placed under the flange of a rail that is to be raised. The base *a* is provided with an opening so that the foot may be lowered to the position shown in Fig. 1.

The clutching and releasing mechanism consists of the ring clutch *n* which is provided with a seat *o* upon which rests the lip *p* of the lifting bar. The spring *q*, as indicated by the dotted lines in Fig. 4, is held in place by recesses conforming in shape to the free ends thereof provided in the opposite sides of the lifting bar. This spring *q* extends upwardly, as indicated at *q'*, to press against the under and outer edge of the clutch ring *n* so that the ring may be tilted to engage with the standard *e*, notwithstanding the weight of the lifting bar may be taken off from the same at the seat *o*. A lug *r* is provided on the upper face of the projecting lug *l* so as to be forced against the lower inner edge of the clutch ring *n* whenever the lifting bar *f* is raised. When, therefore, the weight of the lifting bar is removed from the clutch at *p*, and the lug *r* is forced up against the under side of the clutch ring, the clutch being actuated by pressure of the point *q'* of the spring as well as by the upward movement of the lug *r*, its grasp upon the standard *e* will be removed so that the clutch will move upwardly freely upon the said standard or bar *e*, being raised as the lifting bar is raised. Very slight downward movement of the lifting bar will, however, bring the weight thereof upon the seat *o* of the clutch, and the clutch *n* will immediately be tilted back to its original position so as to engage with the standard and serve to sustain the weight of the lifting bar, together with its load. Thus the lever *i* may be worked in the notches of the rack in succession, raising the lifting bar step by step to the height that may be required.

Above the clutch ring *n* I have placed a rotatable tripping or releasing ring or block *s* which is provided with a beveled surface adapted to bear against the corresponding under surface *s'* of the projecting lug *k*. This block *s* is preferably provided with a handle, as shown, and is adapted to be rotated to bring the highest portion of the upper surface thereof under and against the beveled under surface *s'* of projecting lug *k* so as to

press downwardly upon the upper outer edge of the clutch *n* in opposition to the force of the spring *q* to bring the opening in the said ring clutch *n* into parallelism with the standard *e*, thus causing the clutch to release its grip upon the standard. As shown in the drawings, the clamp *n* may be disengaged from the standard by turning the block *s* a part of a revolution.

In order that the lifting bar may be conveniently placed in position in the housing the side *c* of the housing is offset at the upper portion thereof so as to afford sufficient space to admit the tongues *g h* of the lifting bar; that is to say, in assembling the parts the upper end of the lifting bar is inserted between the side pieces *c b* and up through the opening in the upper portion *d* of the frame, until the bottom of the lifting bar is raised as high as the shoulder *t*, whereupon the tongues *g h* of the lifting bar may be inserted in the grooves of the housing, and then the lifting bar may be lowered to its normal position. The distance that the lifting bar may be inserted upward through the opening in the top *d* of the frame, will be determined by the position of the lug *k*; and this will determine the position of the shoulder *t* of the housing. The space between the side pieces *b c* at the upper portion thereof may be widened in any other suitable way so as to admit of the insertion of the lifting bar.

It is evident that the particular shape of the cam surfaces of the block *s* and that of the corresponding under surface *s'* of the projection from the lifting bar, may be varied so long as the said surfaces are such that upon a suitable movement of the block the clutch *n* will be caused to disengage its hold upon the standard *e*. It is also evident that the form and construction of the several parts of my lifting jack may be modified in various ways without departing from my invention.

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

1. The combination with a ring clutch mounted on a vertical standard and a spring adapted to tilt the clutch to cause the same to engage with the standard, of a rotatable cam block adapted to be turned to bring the opening of the clutch into parallelism with the standard upon which the clutch is mounted, to cause the clutch to release its grip upon the standard, substantially as and for the purpose specified.

2. The combination with the lifting bar provided with the rack and a lever for operating the same, of the vertical standard passing through lugs extending from the lifting bar, and a ring clutch upon said standard between said projecting lugs for sustaining the weight of the lifting bar in any position to which it may be raised by the lever, and a block adapted to be manually rotated to disengage the ring clutch from the standard, substantially as described.

3. The combination, in a lifting jack, with the lifting bar, of a standard parallel thereto, the said standard and lifting bar being mounted in a frame, said lifting bar having projecting lugs near the lower portion thereof through which the standard is inserted, a ring clutch upon said standard between said lugs adapted to sustain the weight of the lifting bar and its load, said ring being normally acted upon by a spring, and a block adapted to be rotated to disengage the clutch from the standard, said block, when rotated, acting against the under surface of the upper one of the projecting lugs, after the manner of a cam, in position to the normal pressure of the spring, substantially as described.

4. In a lifting jack, the lifting bar mounted in a suitable frame and provided with projecting lugs *k l*, the lower lug being provided with the projecting bearing piece *r*, in combination with a spring and a clutch ring *n*,

the said spring and projection *r* being adapted to bear, respectively, against the under surface of said ring on opposite sides of the standard passing through the ring, whereby when the lifting bar is raised the clutch is free to move upward upon the standard, substantially as described.

5. The combination with the lifting bar provided with the ratchet and the projecting lugs *k l*, of the frame consisting of a casting having the base *a*, the side pieces *b c*, and the projecting upper portion *d*, the space between the side pieces *b c* being enlarged at the upper portion thereof, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 22d day of September, A. D. 1894.

ALLAN A. SMITH.

Witnesses:

GEORGE P. BARTON,
GEORGE L. CRAGG.