

E. J. CUMMINGS.  
LIFTING JACK.  
APPLICATION FILED JULY 30, 1912.

1,065,031.

Patented June 17, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

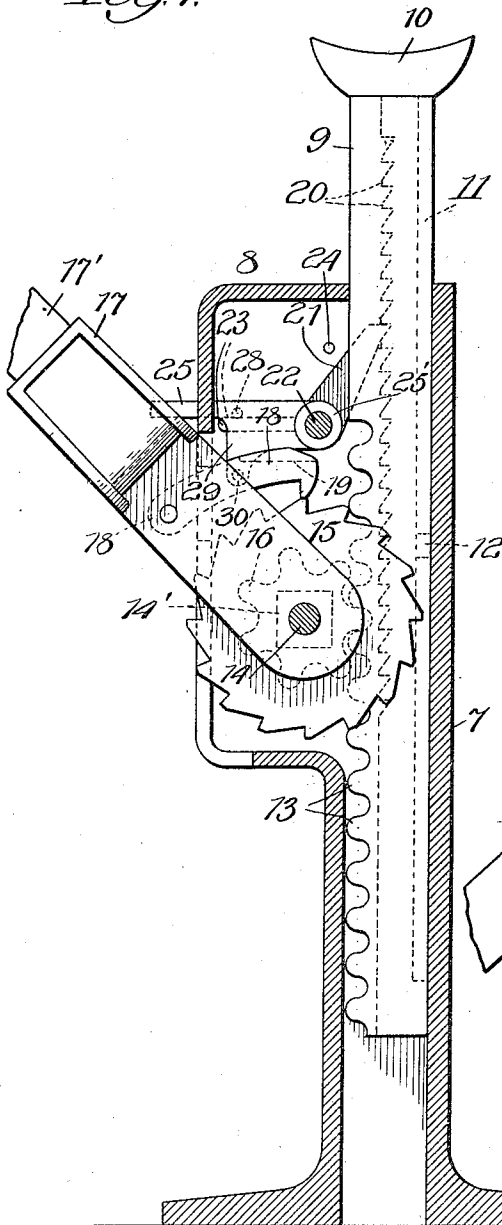
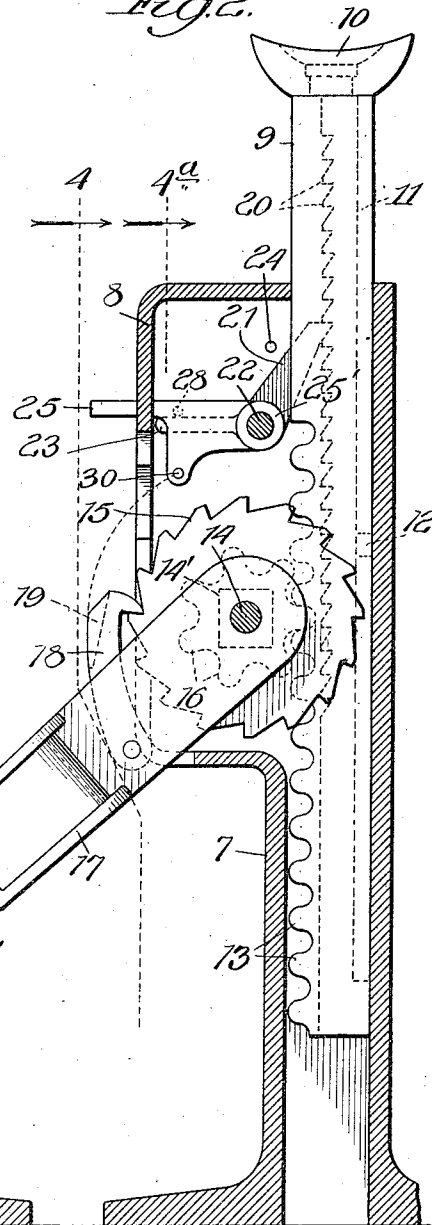


Fig. 2.

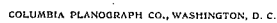


Witnesses:  
C. C. Gaylord,  
Chas. H. Bull,

Inventor:  
Edward J. Cummings,  
By Dyrenforth, Lee, Crittenden & Miles,  
Attys.

1,065,031.

2 SHEETS--SHEET 2.



# UNITED STATES PATENT OFFICE.

EDWARD J. CUMMINGS, OF CHICAGO, ILLINOIS.

## LIFTING-JACK.

1,065,031.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed July 30, 1912. Serial No. 712,298.

*To all whom it may concern:*

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

My invention relates to an improvement in the class of lifting-jacks wherein the lifting-bar is raised through the medium of means engaging it and connected with a handle operative to actuate said means.

The primary object of my invention is to provide improved mechanism for controlling the bar, in lowering it, against the weight of the load thereon, and a readily-operative device for throwing said controlling means out of action for adapting the operating handle, by working it, to raise the bar.

In the accompanying drawings, Figure 1 is a vertical sectional view of a lifting-jack provided with my improvements, showing the bar and operating lever in their raised positions, the section being taken on line 1, Fig. 4; Fig. 2 is a similar view of the same, showing the lever lowered to the point from which to release the raised lifting-bar; Fig. 3 is a view of the lifting-jack in elevation; Fig. 4 is a section on line 4, Fig. 2, through the operating lever, and on line 4<sup>a</sup>, same figure, through the standard, showing the mechanism therein in elevation, and Figs. 5 and 6 are enlarged sections respectively on lines 5 and 6, Fig. 3.

The hollow standard 7 is provided with a lateral chamber-forming enlargement 8 extending downwardly from its upper end, as in other lifting-jacks of the present type. The lifting-bar 9, shown to be provided with a head 10, works in the standard through its upper end, and is formed in its back with a longitudinal groove 11 to admit a stud 12 projecting into it from the adjacent wall of the standard for guiding, in its vertical movements, the bar 9, which has formed on its forward face a rack 13 extending from the lower end of the bar part way to its opposite end. In the opposite walls of the chamber 8 is supported a shaft 14 having a square enlargement 14', about which fits a ratchet-wheel 15, and a circular enlargement 14<sup>2</sup>; and the shaft carries or has formed on it adjacent to the wheel, a pinion 16 engaging the teeth 13. The operating lever 17, which has a socket in its outer end for a handle 17', is bifurcated at its inner

end, as shown, and the shaft passes transversely through openings in the forked end of the lever, which loosely fit, respectively, about the shaft-section of relatively-small diameter and the enlargement 14<sup>2</sup>. A pawl 18 is pivoted to the lever to extend between the arms forming its forked end and engage the ratchet 15, whereby lowering the lever, with the pawl engaging the ratchet-wheel, turns the latter for turning the pinion to engage the rack 13 and raise the lifting-bar.

The parts, as thus far described, need involve no features of novelty.

On one side of the pawl 18 projects an approximately triangular, or cam-like, head 19, for the purpose hereinafter explained.

Along one side of the longitudinal center of the forward lifting-bar face is formed thereon a depressed series of ratchet-teeth 20 extending from the upper end of the bar short of its opposite end, but past the upper end of the series of rack-teeth 13. With the ratchet 20 coöperates a detent-pawl 21 pivoted on a shaft 22 supported in the opposite walls of the chamber 8 toward its upper end, this detent having a tail-piece 23 extending from it; and movement of the detent backwardly from the ratchet 20 is limited by a stop 24 in its path. On the shaft 22 is pivotally supported, at its head 25', an arm 25 projecting through a cam-like slot 26 in the face-wall of the chamber 8 and formed with an offset 26' at its upper end. A coiled spring 27 is confined about the shaft against a side of the head 25' for the purpose hereinafter explained. The arm 25 has a pin 28 projecting laterally from it to bear against the tail-piece 23, and a shoe 29, of general triangular shape, depends from the arm and carries in its lowermost corner a laterally-projecting pin 30 to extend, in the direction opposite that of the pin 28, into the path of the cam-head 19.

In the position of the parts represented in Fig. 1, the lifting-bar is sustained in its raised position by the detent 21, which is held, by the weight of the load on the bar, in engagement with a tooth of the ratchet 20 against the tendency of the weight of the arm 25 upon its tail-piece to withdraw it; and the lever 17 is raised. In lowering the lever to the position represented in Fig. 2, the head 19 on the pawl 18 rides over the pin 30, thereby tripping the pawl by raising its free end to remove it from encountering

and being obstructed by teeth of the ratchet-wheel. When, in this movement of the operating lever, the cam 19 has cleared the pin 30, the pawl drops into engagement with a tooth of the ratchet-wheel 15, as represented in Fig. 2; or if the movement of the lever be slow, the pawl will drop into engagement with a ratchet-wheel tooth one or more spaces ahead of the showing in that figure, depending on the degree of such slowness and whether it be desired to lower the lifting-bar more or less by each operation of the lever. With the pawl thus engaging the ratchet-wheel, the lever is further depressed slightly to raise the lifting-bar sufficiently to take the load off the detent, whereupon the weight upon its tail-piece of the arm 25, through the medium of the pin 28, withdraws the detent as far as the stop 24 will permit, and frees the bar, allowing it to be lowered under the control of the operator on the lever 17, which rises as the bar descends. In the rise of the lever, the cam 19 rides underneath the pin 30 in its path, thereby eventually bringing the pawl again to the relative position represented in Fig. 1, and meantime, by the engagement of the cam with the pin 30, raising the shoe 29 to lift the weight of the arm 25 off the tail-piece 23, thereby freeing the detent and permitting it to fall by gravity into engagement with the ratchet 20 for holding the lifting-bar pending another depression of the lever 17, for repeating the described operation.

The movements of the parts are so timed as to free the detent to drop into its barsustaining position just before the pawl attains the position, relative to a ratchet-wheel tooth, in which it is represented in Fig. 1.

When it is desired to render inoperative the mechanism for controlling the lowering of the bar, for enabling the lever to be worked for lifting it, the arm 25 is raised, by hand, in the cam-slot 26, thereby tensioning the spring 27, so that when the arm attains the offset 26' it is snapped into the latter, to be held therein, by the recoil of the spring.

As will be seen, the mechanism I have provided for the load-lowering control is simple and reliable in action, thoroughly safeguarding against accidental dropping of the lifting-bar.

I realize that considerable variation is possible in the details of construction thus specifically shown and described and I do not intend by illustrating a single specific or preferred embodiment of my invention to be limited thereto; my intention being in the following claims to claim protection upon all the novelty there may be in my invention as broadly as the state of the art will permit.

What I claim as new and desire to secure by Letters Patent is—

1. In a lifting-jack, the combination of

a standard, a lifting-bar provided with a rack, a rack-engaging pinion, an operating-lever, a pawl-and-ratchet device operated by said lever, and having a cam on the pawl, a detent for engaging said bar, and mechanism between said lever and detent acting on the cam to trip the pawl when the lever is lowered and actuated by the cam when the lever is raised to free the detent to permit it to engage the bar.

2. In a lifting-jack, the combination of a standard, a lifting-bar provided on its face with a series of rack-teeth and a depressed series of ratchet-teeth to one side of the center of said face, a rack-engaging pinion, an operating-lever, a pawl-and-ratchet device operated by said lever and having a cam on the pawl, a gravity-detent for engaging said ratchet-teeth, and mechanism between said lever and detent normally tending to hold the detent out of engagement with said ratchet-teeth and acting on the cam to trip the pawl when the lever is lowered and actuated by the cam when the lever is raised to free the detent to permit it to engage the bar.

3. In a lifting-jack, the combination of a standard, a lifting-bar provided with a rack, a rack-engaging pinion, an operating-lever, a pawl-and-ratchet device operated by said lever and having a cam on the pawl, a detent for engaging said bar, mechanism between said lever and detent acting on the cam to trip the pawl when the lever is lowered and actuated by the cam when the lever is raised to free the detent to permit it to engage the bar, and means for releasably holding said mechanism out of the path of said cam when the lifting-bar is to be raised.

4. In a lifting-jack, the combination of a standard, a lifting-bar provided with a rack, a rack-engaging pinion, an operating-lever, a pawl-and-ratchet device operated by said lever and having a cam on the pawl, a detent for engaging said bar, provided with a tail-piece, and a gravity arm normally bearing against said tail-piece and provided with a depending shoe extending into the path of said cam, whereby, in lowering the lever to release the detent from the load, the cam trips the pawl, and in raising the lever the cam raises said arm off said tail-piece to permit the detent to engage the lifting-bar.

5. In a lifting-jack, the combination of a standard, a lifting-bar provided with a rack, a rack-engaging pinion, an operating-lever, a pawl-and-ratchet device operated by said lever and having a cam on the pawl, a detent for engaging said bar, provided with a tail-piece, and a gravity-arm having a pin projecting from it to bear upon said tail-piece, said arm having a depending shoe with a pin projecting therefrom into

the path of the cam, whereby, in lowering the lever to release the detent from the load, the cam rides over the shoe-pin to trip the pawl, and in raising the lever the cam engages the shoe-pin to lift the weight of said arm off the tail-piece to permit the detent to engage the lifting-bar.

6. In a lifting-jack, the combination of a standard having a chamber provided in a wall thereof with a cam-slot containing an offset, a lifting-bar provided with a rack, a rack-engaging pinion, an operating-lever, a pawl-and-ratchet device operated by said lever and having a cam on the pawl, a detent for engaging said bar, provided with

a tail-piece, and a spring-pressed gravity-arm normally bearing against said tail-piece and having a depending shoe extending into the path of said cam, whereby, in lowering the lever to release the detent from the load, the cam trips the pawl, and in raising the lever the cam raises said arm off said tail-piece to permit the detent to engage the lifting-bar, said arm extending through and being adjustably confined in said slot.

EDWARD J. CUMMINGS.

In presence of—

O. C. AVISUS,

D. C. THORSEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."