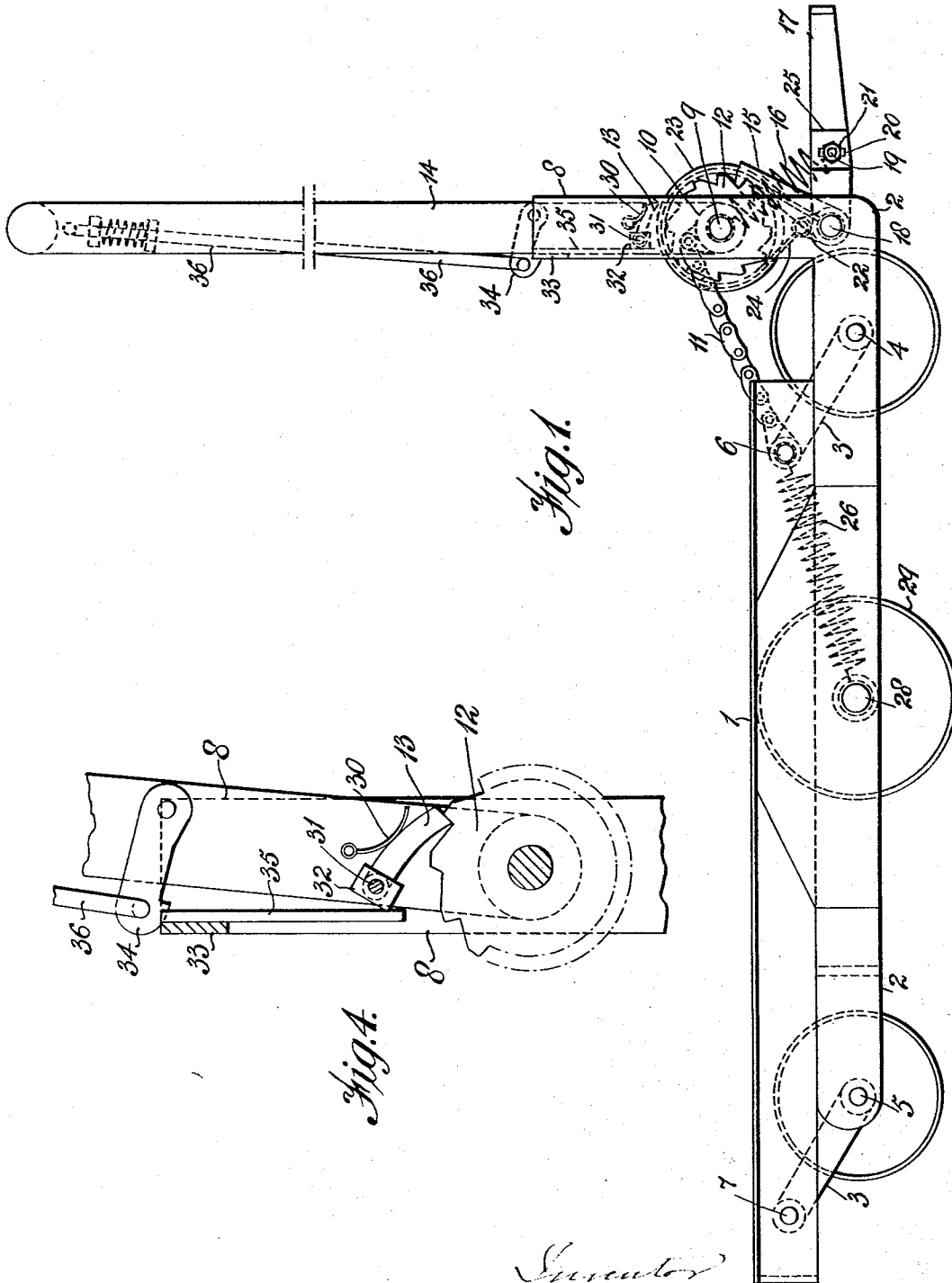


1,378,466.

Patented May 17, 1921.

3 SHEETS—SHEET 1.



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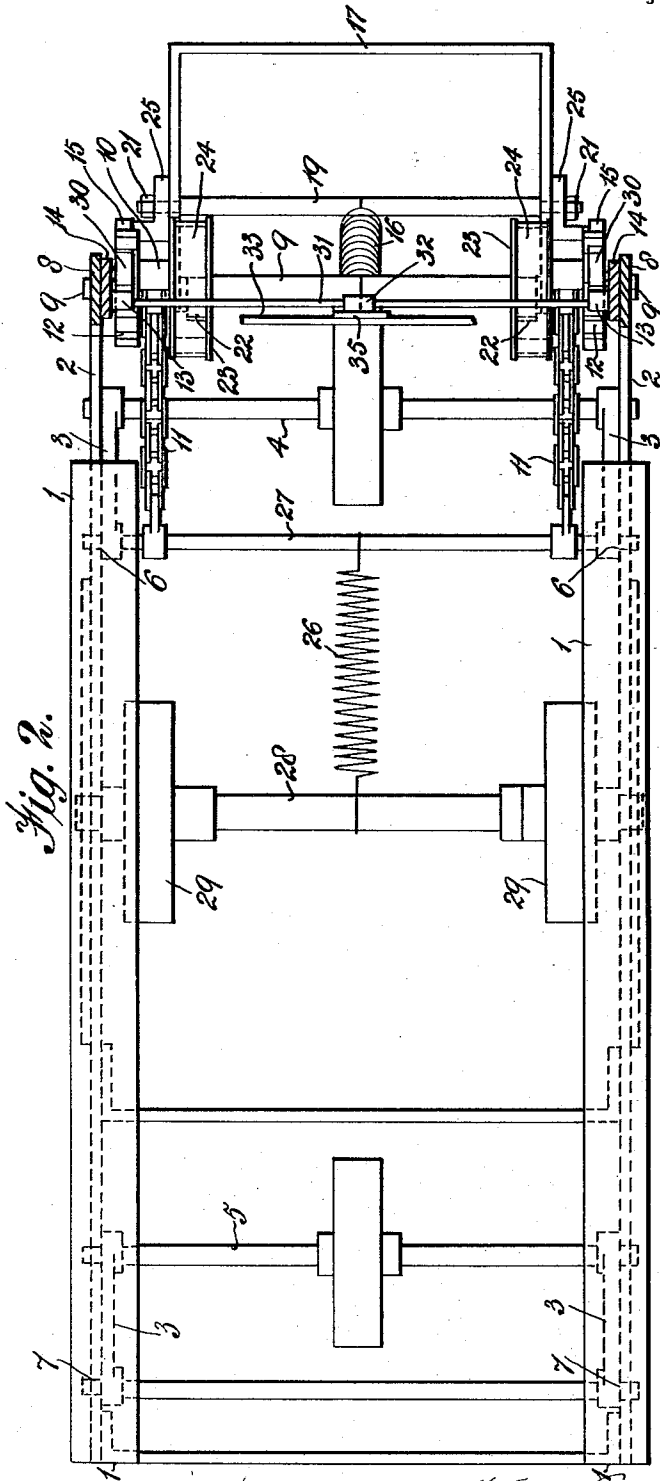
LIFTING TRUCK.

APPLICATION FILED MAY 14, 1920.

1,378,466.

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3 SHEETS—SHEET 2.

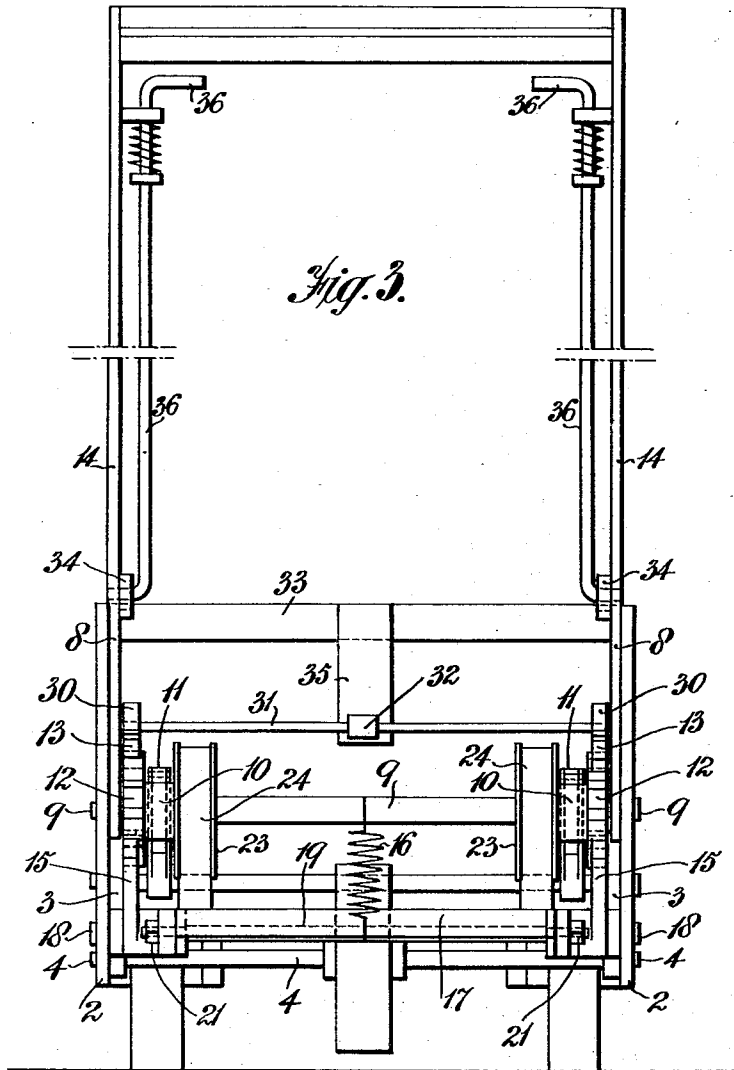


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1,378,466.

Patented May 17, 1921.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WALTER EDWARD KIMBER, OF LONDON, ENGLAND.

LIFTING-TRUCK.

1,378,466.

Specification of Letters Patent.

Patented May 17, 1921.

Application filed May 14, 1920. Serial No. 381,397.

To all whom it may concern:

Be it known that I, WALTER EDWARD KIMBER, a subject of the King of Great Britain, residing at No. 1 Camden Square, London, N. W. 1, England, have invented a new and Improved Lifting-Truck, of which the following is a specification.

The present invention relates to lifting trucks or trolleys in which a lever or handle pivoted to the under frame or carriage of the truck is employed for raising the upper or lifting frame thereof which is to receive the goods or material required to be transported from one position to another, and it consists in an improved construction of means for imparting the elevating movement to such upper frame in several stages or steps by successive movements or impulses of the lever, with the object of adapting the truck for the raising of heavy loads with greater facility than is possible when the total lift has to be effected by a single operation of the lever, and also of the means for controlling the descent of such upper frame when the goods or material is required to be lowered again.

In the accompanying drawings—

Figure 1 is a side elevation of a truck embodying my invention.

Fig. 2 a plan view thereof with the operating lever or handle in horizontal section, and

Fig. 3 a front elevation of the truck.

Fig. 4 is a detail view to a larger scale of the means for automatically disengaging the operating pawl from the ratchet wheel.

In these figures 1 is the upper or lifting frame of the truck which in the known manner is preferably connected to the stationary under frame 2 of the truck by side links 3 mounted on the front and rear axles 4 and 5 of such under frame, and pivoted at 6 and 7 to the fore and rear ends of the upper frame 1.

An upward extension 8 on each side of the fore part of the under frame carries a transverse shaft 9 situated at a suitable height and on each end of which a small drum 10 is mounted, to which one extremity of a small length of chain, flexible cable or rope 11, is secured, while its other end extends back and is attached to the fore part of the upper or lifting frame 1. The under side of the links of the short length of chain 11 is preferably formed to conform with the periph-

ery of the drum 10, so as to closely follow the contour thereof when wound thereon.

A wheel 12 having ratchet teeth is secured to the drum 10 and with it engages a pawl 13 acted upon by a spring 30 and carried by the operating lever or handle 14, which is also mounted on the transverse shaft 9, so as to actuate the drum 10 through a certain arc each time the lever 14 is depressed, and enable the lever to be returned to the upright position and the pawl 13 to slip over the ratchet wheel 12 for a fresh engagement for moving the drum 10 through a further arc on the next depression of the lever 14.

A holding pawl 15 is pivoted to the under frame 2 on a stud or shaft 18 in position to engage the ratchet wheel 12 of the drum 20. This holding pawl is spring actuated and operates to hold said ratchet wheel stationary while the operating handle 14 is moved back to effect a fresh engagement of the actuating pawl 13 with said ratchet wheel. This holding pawl has a forward extension 25 provided with a slot 20. An actuating lever 17 is pivoted on the pivot stud 18 with the pawl 15 and is provided with a lateral projection 19, which engages said slot for actuating said holding pawl. This lever constitutes a pedal lever and is preferably in yoke-shaped form for connection with the holding pawls on opposite sides of the truck. A cross bar 19 connects the opposite sides of said yoke-shaped lever forward of its pivot and projecting ends thereof constitute the projection which engage the slots 21 in the extensions 25. The depression of this pedal lever disengages the holding pawl 15 from the ratchet wheel 12 and allows the upper or lifting frame 1 to descend under the weight of the load thereon when required.

To permit this the ratchet wheel 12 must be free to rotate back under the pull on the chain 11 when the retaining pawl 15 has been released by the depression of the pedal lever 17, for which purpose the actuating pawl 13 must also at this period be out of engagement with said ratchet wheel 12. This might be effected by throwing back the pawl 13 out of engagement when the operating lever is in the raised position by hand. It is however preferable to effect this automatically by the action of returning such lever to the raised position, and for this purpose the shaft 31 carrying said pawl 13 extends from side to side of the machine and is

fitted with a block 32 constituting a cam or rocker. The upward extension 8 on each side of the under frame 2 is connected at top by a cross bar 33 which a spring catch 34 on the operating lever 14 engages so as to retain it in its extreme raised position.

The cross bar 33 carries a downwardly depending plate or abutment 35, and just before lever 14 attains its highest position the forward edge of the block 32 by contact with said abutment will cause the shaft 31 to turn or rock and so effect the desired disengagement of pawl 13 from the ratchet wheel 12, and in which position it will be retained as long as the operating lever 14 remains locked by catch 34 to the cross bar 33; but on the release of which catch and the beginning of the next downward movement of lever 14 and the consequent removal of the block 32 from contact with the plate 35, the pawl 13 under its weight and the action of the spring 30 acting thereon, will at once reengage the ratchet wheel 12 so that the continued descent of the lever will impart the desired fresh movement to the chain drum 10.

Each pawl 15 of the pedal lever 17 is mounted by its boss on the shaft 18 on which said lever turns, and is formed with a forward extension 25 having a slot 20 to engage the end of a cross bar or stay 19 with which the lever is provided, nuts 21 on the ends of such stay enabling the pawls to be fixed rigidly in position to which they have been adjusted on the lever to insure their correct disengagement and reengagement with the ratchet wheel 12 on each side when the pedal 17 is depressed and released. The spring 16 which insures such reengagement is at one end attached to the stay 19 and at the other end to the shaft 9 of the drum 10.

A spring 26 is arranged to connect a stay 27 between the front links 3 with the axle 28 of the center wheels 29 of the truck and assist the descent of the upper frame 1 when the pawls 13 and 15 at each end are disengaged from the ratchet wheel 12.

The chain drum 10 is also fitted with a brake, which is connected with an extension 22 of the pedal 17 which controls the second pawl 15, so that when the pedal is depressed such brake will be applied and enable the descent of the upper frame to be controlled by the foot of the operator after the disengagement of the pawl 15 from the ratchet wheel 12 has been first effected by such depression.

In the drawing a band brake 23 is shown, the band 24 of which is at one end secured to the extension 22 of the pedal 17, while its opposite end engages the pivot 18 of such pedal so that the depression of the latter after first releasing the retaining pawl 15 of ratchet wheel 12 will immediately begin to tighten the brake band 24 on its drum, and

the regulation of the pressure on such pedal will enable the return movement of the chain drum 10 to be controlled and so regulate the descent of the upper frame 1.

The spring catch 34 on the pivoted lever or operating handle 14 when the latter is in its extreme rearward position, by engaging the cross bar 33 of the upward extension 8 of the under frame 2 of the truck renders same solid therewith and enables the truck to be pushed to the position to which it is required to convey or receive the goods, when the operating of a rod 36 permits the catch 34 to be disengaged for the purpose of turning the lever to actuate the chain drum 10 and raises the upper frame 2 of the truck as described.

What I claim as my invention, and desire to secure by Letters Patent, is:—

1. A lifting truck comprising a truck frame, a movable lifting frame connected by links thereto, a lever pivoted to the truck frame, a ratchet wheel on the axle of the lever, a pawl carried by said lever and engaging said ratchet wheel on the axle of the lever, a drum mounted on the axle of said lever, a cable windable on said drum and connected with said lifting frame, a second pawl mounted on said truck frame and also engaging said ratchet wheel, a brake mounted on the axle of said ratchet wheel and means for operating said brake and said second pawl simultaneously.

2. A lifting truck comprising a truck frame, a lifting frame connected by links to said truck frame, a lever pivoted to the fore end of the truck frame, a ratchet wheel on the axle of said lever, a pawl carried by said lever and engaging said ratchet wheel, a drum also mounted on the axle of said lever, a chain connecting said drum to the fore end of said lifting frame, a second pawl mounted on said truck frame and also engaging said ratchet wheel, a brake drum mounted on the axle of said ratchet wheel, a lever constituting a pedal mounted on the axle of said retaining pawl, and a brake band connected to said lever.

3. A lifting truck comprising an upper frame, an under frame, links connecting said frames, a lever pivoted to the under frame, a ratchet wheel mounted on the axle of said lever, a drum also mounted on said axle, a chain connected with the fore end of the upper frame and with said drum, a pawl carried by said lever and engaging said ratchet wheel, means for disengaging such pawl as the lever completes its upward movement and means for reengaging said pawl with said ratchet wheel as the lever begins its downward movement, and a retaining pawl mounted on the under frame and also engaging said ratchet wheel, and means for releasing said retaining pawl from said ratchet wheel.

4. A lifting truck comprising an upper frame, an under frame, links connecting said frames, a lever pivoted to the under frame, a ratchet wheel mounted on the axle
5 of said lever, a drum also mounted on said axle, a chain connected with the fore end of the upper frame and with said drum, a pawl carried by said lever and engaging said ratchet wheel, a cam mounted on the axis
10 of said pawl and engaging an abutment on the under frame when the lever is in its

raised position, a retaining pawl mounted on the under frame and also engaging said ratchet wheel, and means for releasing said retaining pawl.

15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER EDWARD KIMBER.

Witnesses:

CHARLES ARTHUR ALLISON,
WILLIAM JAS. FERRY.