Oct. 12, 1926. 1,602,961

C. E. BEILHARZ

JACK

Filed Oct. 5, 1925

Fig. 1.

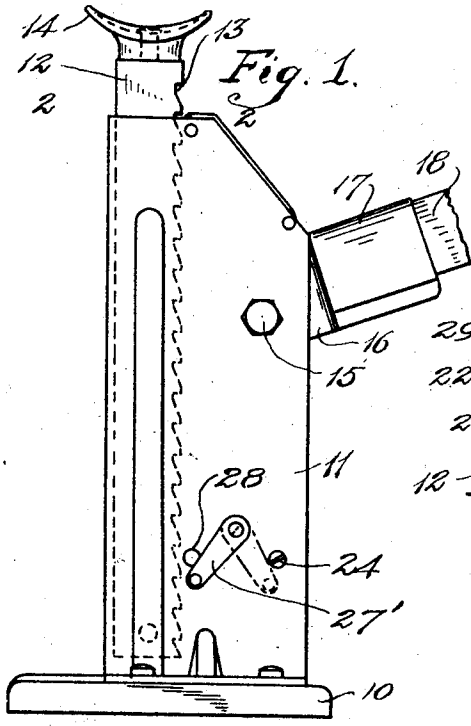


Fig. 3

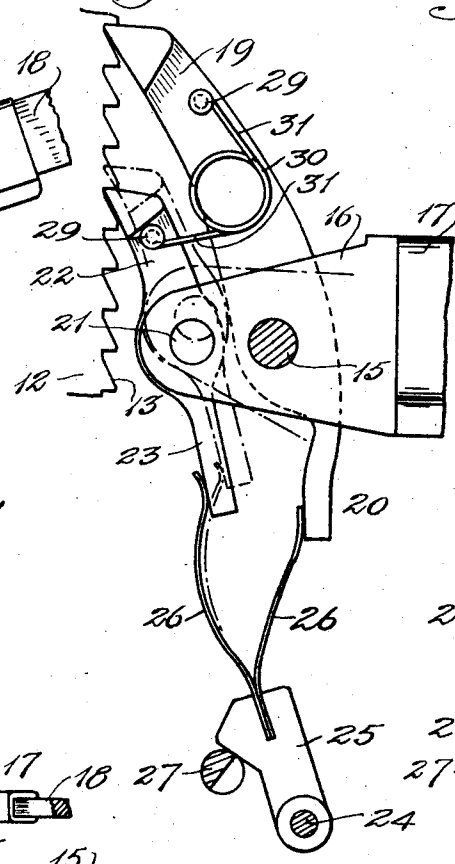


Fig. 4.

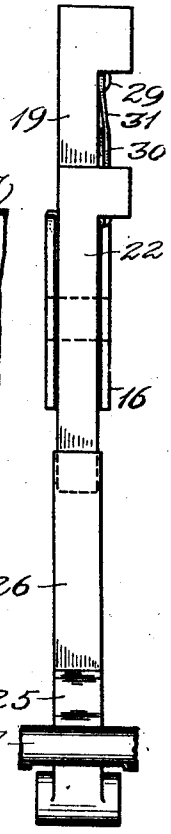


Fig. 2.

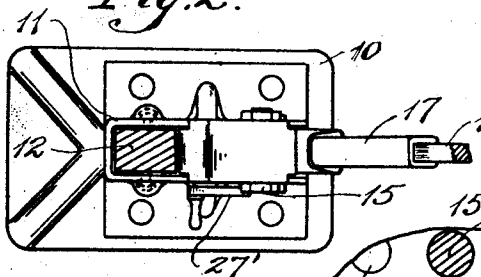


Fig. 6.

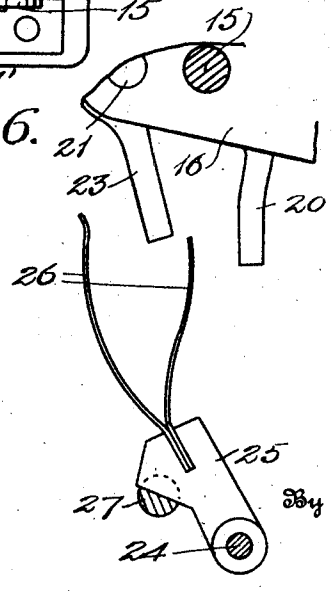
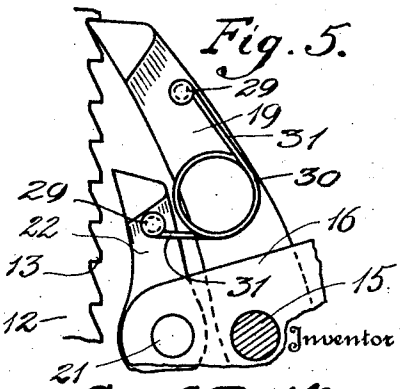


Fig. 5.



Inventor

Carl E Beilharz

By

Clarkson

Attorney

Patented Oct. 12, 1926. 1,602,961

UNITED STATES PATENT OFFICE.

CARL E. BEILHARZ, OF JOLIET, ILLINOIS, ASSIGNOR TO WILLIAM E. PRATT MFG. CO.

JACK.

Application filed October 5, 1925. Serial No. 60,528.

This invention relates to lifting jacks and has special reference to a lifting jack of the pawl and ratchet type.

One important object of the invention is to improve the general construction of devices of this character.

A second important object of the invention is to provide an improved jack of this type wherein the jack may be used for raising an object by a step-by-step movement and may be lowered by a similar movement, novel means being used to effect the transition from a lifting to a lowering jack.

A third object of the invention is to provide a novel arrangement of pawl controlling mechanism in a jack of this description.

With the above and other objects in view as will be hereinafter apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Figure 1 is a side elevation of the complete jack.

Figure 2 is a section taken on a horizontal plane slightly above the standard.

Figure 3 is an enlarged side elevation of the working parts removed from the jack and showing the same in lifting position.

Figure 4 is an edge view from the left hand side of Figure 3, the ratchet bar being omitted.

Figure 5 is a side elevation showing the pawl controlling mechanism in lowering position.

Figure 6 is a view of the pawls and ratchet showing their positions in lowering an object with the operating handle fully raised.

This jack comprises a base 10 having an upstanding casing 11 provided at one side with a guide channel wherein is mounted for vertical sliding movement a ratchet bar 12 having ratched teeth 13 on its rear edge and preferably provided with a rotatable head 14.

Through the sides of casing 11 adjacent the rear edges thereof extends a pivot bolt 15 whereon is mounted a bifurcated lever having forwardly extending arms 16 and a rearwardly extending socket 17 adapted to receive an extension handle 18 in the usual manner for operating the jack. Between the arms 16 a retaining pawl 19 is pivotally mounted on the bolt 15 and is provided with a downwardly extending tail 20, the pawl being arranged to engage the ratchet teeth 13. Also there extends between the forward ends of said arms a pivot pin 21 and on this pin is mounted an actuating pawl 22 having a downwardly extending tail 23 and likewise adapted to engage said ratchet teeth 13.

Mounted on a pivot bolt 24 between the sides of the frame 11 is an arm 25 carrying a pair of diverging leaf springs 26, each spring having its free end positioned just in front of the tail of a respective pawl. Extending through the sides of the frame is a cam shaft, the low part of the cam being formed by a flat cut away portion as shown. At one side of the casing 11 this cam shaft is provided with an operating lever 27 which moves between the head of the bolt 24 as a limit stop in one direction and a stop pin or lug 28 as a limit stop in the opposite direction. On each pawl is a pin 29 and at 30 is a coiled torsion spring having its arms 31 pivotally secured to these pins 29.

In operation when it is desired to lift an object the jack is placed thereunder and the lever 27 swung forwardly against the stop 28. This rotates the cam shaft so as to bring the high part of the cam against the arm 25, thus forcing the same rearwardly and bringing the springs 26 into forcible engagement with the tails of the pawls. This causes both pawls to engage the ratchet teeth. Upon depression of the handle 18 the pawl 22 will be raised and lift the ratched bar until the pawl 19 engages beneath the ratched tooth next lower to that with which it was formerly engaged. By repeatedly oscillating the handle the ratchet bar may be protruded to any desired extent within the limits of the lift of the jack.

In case it is wished to lower the object and retract the ratchet bar the lever 27 is swung rearwardly into contact with the head of the bolt 24. In this condition the arm 25 swings forwardly and the springs 26 assume the positions shown in Figure 6, being free from the tails of the pawls. If, under these circumstances, the handle 18 be depressed the pawl 22 will first move into engagement with a tooth of the ratchet, this motion being caused by the spring 30 and its arms 31 which act as a link between the pins 29. As soon as this is engaged a slight further depression of the lever tensions the spring 30

and at the same time lifts the ratchet bar sufficiently to free the pawl 19 which, due to the tension of the spring 30, is forced rearwardly. The handle 18 is then allowed to rise thus lowering the ratchet bar. The spring 30 and its arms now acts as a link to pull the pawl 19 forwardly into engagement below the tooth next above that with which it formerly engaged. As the upward movement of the handle 18 is continued the pawl 22 is pulled, by the spring 30, rearwardly and the pawls resume their initial position. Repetition of the handle movement effects a step-by-step lowering.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

Having thus described the invention, what is claimed as new, is:

1. In a jack, a casing, a ratchet bar protrudable from the casing, an operating lever pivoted to said casing, a retaining pawl mounted concentrically with the pivot point of the lever and engageable with said ratchet, an operating pawl pivoted to said lever in spaced relation to its pivoted axis and engageable with said ratchet, a spring link connecting said pawls, said spring link comprising a spiral spring having its ends angularly disposed, studs located on said pawls adjacent the ratchet engaging ends thereof to which the ends of the sprial spring are connected, a pair of springs movable into and out of contact with said pawls, and arranged when in contact to force said pawls into engagement with the ratchet, and releasable means to force said springs into contact with said pawls.

2. In a jack, a casing, a ratchet bar protrudable from the casing, an operating lever pivoted to said casing, a retaining pawl mounted concentrically with the pivot point of the lever and engageable with said ratchet, an operating pawl pivoted to said lever in spaced relation to its pivoted axis and engageable with said ratchet, a spring link connecting said pawls, said spring link comprising a spiral spring having its ends angularly disposed, studs located on said pawls adjacent the ratchet engaging ends thereof to which the ends of the spiral spring are connected, a tail depending from each of said pawls, a pair of springs movable into and out of contact with said tails and arranged when in contact to force said pawls into engagement with the ratchet, and releasable means to force said springs into contact with said tails.

3. In a jack, a casing, a ratchet bar protrudable from the casing, an operating lever pivoted to said casing, a retaining pawl mounted concentrically with the pivot point of the lever and engageable with said ratchet, an operating pawl pivoted to said lever in spaced relation to its pivoted axis and engageable with said ratchet, a spring link connecting said pawls, said spring link comprising a spiral spring having its ends angularly disposed, studs located on said pawls adjacent the ratchet engaging ends thereof to which the ends of the spiral spring are connected, a tail depending from each of said pawls, an arm pivoted in said casing, a cam shaft having a cam with which said arm engages, means exterior of the casing to rotate said cam shaft and thereby move said arm, and a pair of springs each engaging a respective tail, said springs being carried by said arm and adapted upon movement of the cam to one position to force the pawls into engagement with the ratchet and upon movement of the cam to a second position to allow said pawls to move freely for disengagement from the ratchet.

4. In a jack, a casing, a ratchet bar protrudable from the casing, an operating lever pivoted to said casing, a retaining pawl mounted concentrically with the pivot point of the lever and engageable with said ratchet, an operating pawl pivoted to said lever in spaced relation to its pivoted axis and engageable with said ratchet, a spring link connecting said pawls, a tail depending from each of said pawls, an arm pivoted in said casing, a cam shaft having a flat portion thereon with which said arm is adapted to engage when the cam shaft is rotated to one position, means exterior of the casing to rotate said cam shaft to bring the round portion of the shaft into engagement with and thereby move said arm, a pair of springs each engaging a respective tail, said springs being carried by said arm and adapted upon movement of the cam to one position to force the pawls into engagement with the ratchet and upon movement of the cam to a second position to allow said pawls to move freely for disengagement from the ratchet, a stud projecting laterally from each pawl adjacent the nose thereof, and a spiral spring having one end connected to one stud and the other to the other stud and being free for movement in its central portion.

In testimony whereof I affix my signature.

CARL E. BEILHARZ.