E. ADELL.

JACK FOR AUTOMOBILES AND THE LIKE.

APPLICATION FILED JULY 6, 1914.

**1,183,841.**

Patented May 23, 1916.

2 SHEETS—SHEET 1.

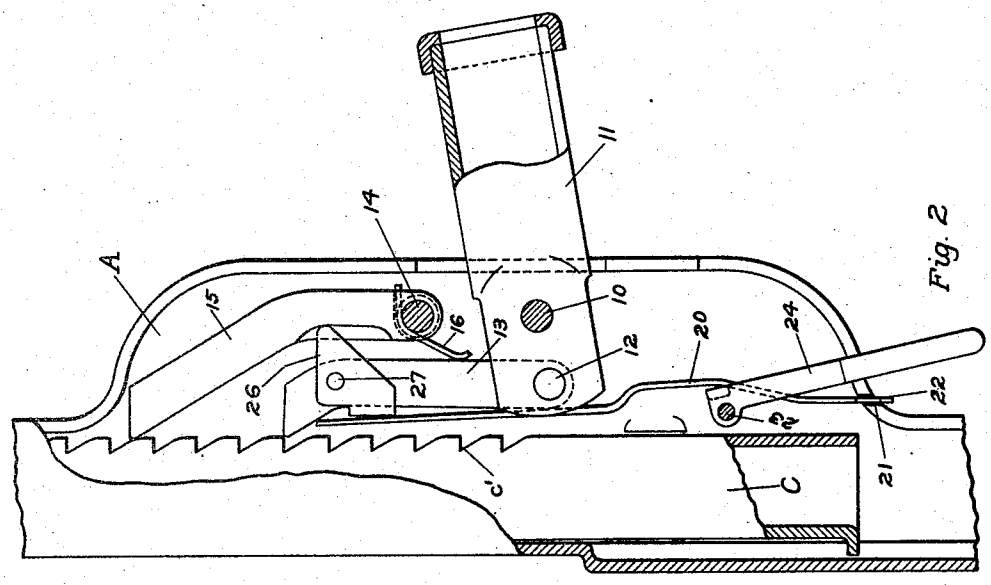



Fig. 2

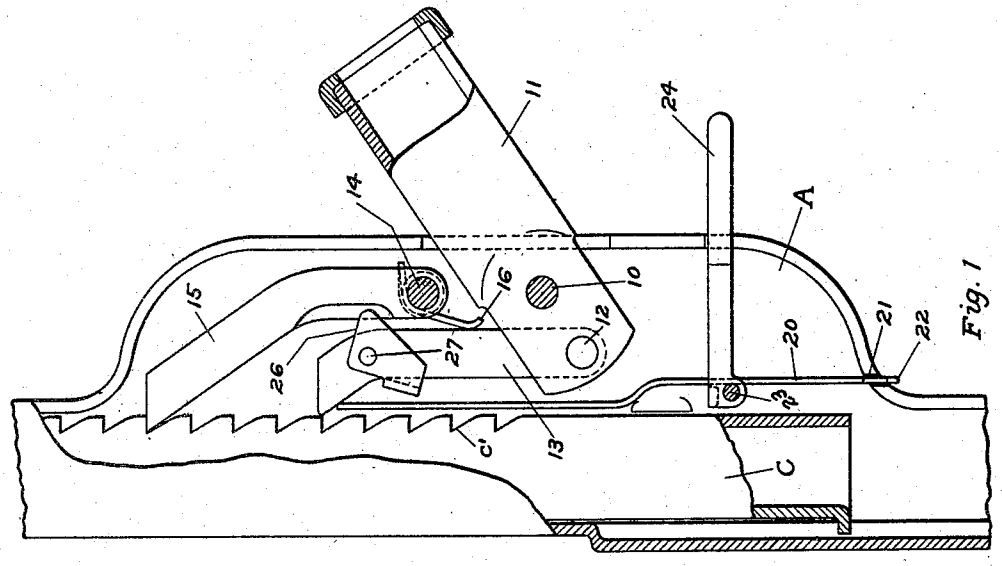



Fig. 1

Witnesses.

C. F. Wesson.

E. M. Allen.

Inventor.

per Edward Adell.

Southgate + Southgate

Attorneys.

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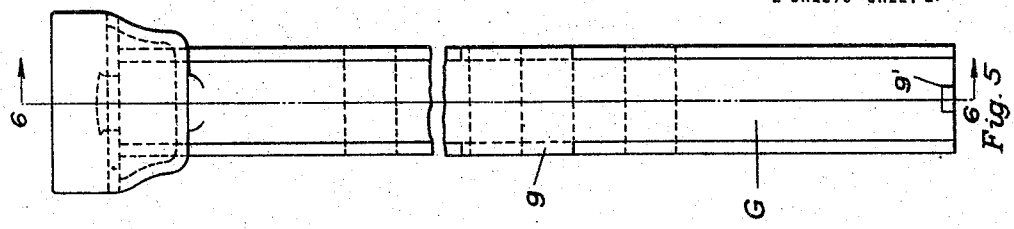



Fig. 5

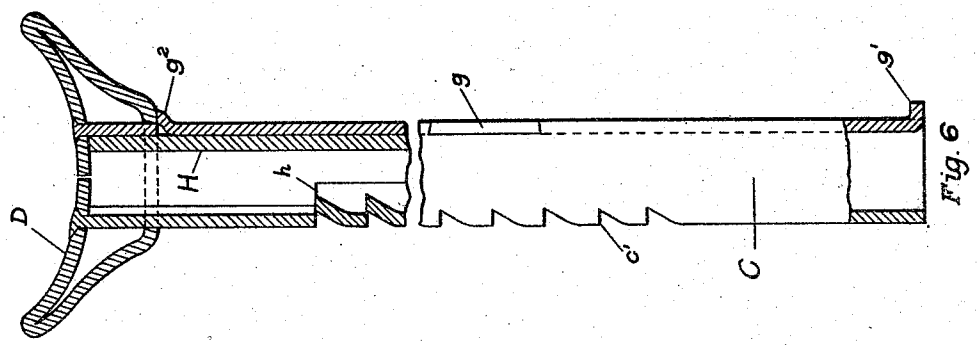



Fig. 6

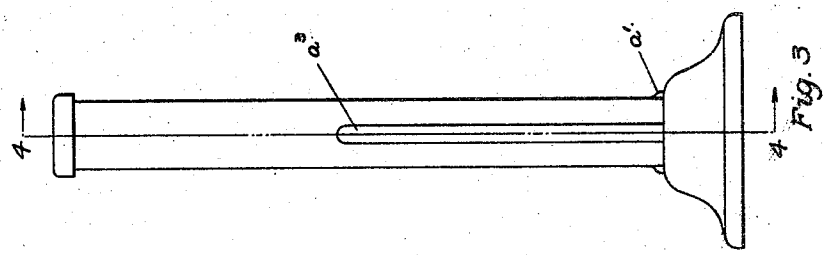



Fig. 3

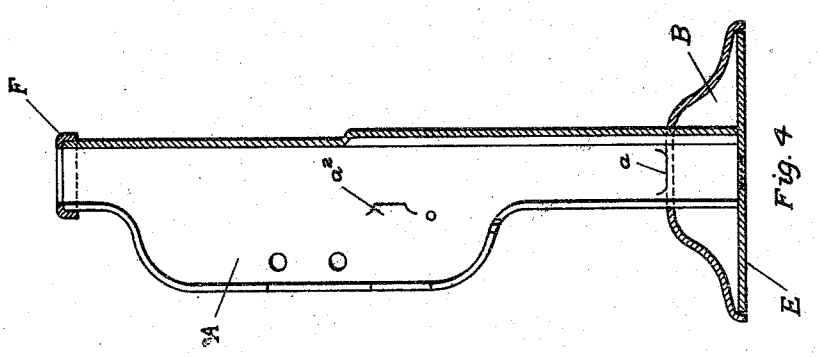



Fig. 4

Witnesses.

C. F. Wesson.

E. M. Allen.

Inventor.

Edward Adell.

per Southgate & Southgate

Attorneys.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C

# UNITED STATES PATENT OFFICE.

EDWARD ADELL, OF ORANGE, MASSACHUSETTS.

## JACK FOR AUTOMOBILES AND THE LIKE.

1,183,841. Specification of Letters Patent. Patented May 23, 1916.

Application filed July 6, 1914. Serial No. 849,067.

*To all whom it may concern:*

Be it known that I, EDWARD ADELL, a citizen of the United States, residing at Orange, in the county of Franklin and State of Massachusetts, have invented a new and useful Jack for Automobiles and the like, of which the following is a specification.

This invention relates to a jack particularly designed for use in lifting and lowering automobile axles but capable of general use.

The principal objects of the invention are to provide a light and simple jack containing few parts, all located in a small space at one side of the rack; to construct a jack for this purpose almost entirely of sheet metal, and to produce a reduced and simplified pawl motion therefor.

The invention also involves improvements in the details of construction of the various parts of the jack and the combinations thereof.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a side elevation, with parts broken away and shown in section, showing the parts in position for raising the rack; Fig. 2 is a similar view showing the parts in position for lowering the rack; Fig. 3 is a rear elevation of the casing; Fig. 4 is a sectional view on the line 4—4 of Fig. 3; Fig. 5 is a rear elevation of the rack and connected parts; and Fig. 6 is a sectional view on the line 6—6 of Fig. 5.

The invention is shown as embodied in a construction having a main outer casing A and a base B for supporting the same. In this casing is a rack C having teeth $c'$ on one side thereof and provided with a rest D at the top for receiving the axle or other body to be lifted. The details of these parts will be described hereinafter.

For the purpose of operating the rack the following mechanism is provided: Pivoted on a stud 10 is a lever 11 which can be provided with a wooden or other extension or handle for operating it. The lever extends through a slot in an enlargement formed on the front of the casing. At its inner end it is provided with a stud 12 to which is pivotally connected a pawl 13 for engaging the teeth $c'$ of the rack. This pawl is arranged to move substantially vertically as the lever is oscillated about the stud 10. Almost directly above the stud 10 is a stud 14 mounted on the casing and pivoted thereon is a second pawl 15 also adapted to engage the teeth $c'$. A spring 16 wound around the stud 14 extends at one end through a slot in the front of the pawl 15 and engages the top wall of said slot so as normally to hold this pawl against the rack in the position shown for example in Fig. 1. The other end of this spring 16 engages the front of the pawl 13 and normally forces that toward the teeth also.

For the purpose of changing the action of the pawls a spring 20 is provided having a narrow part at the bottom which extends through a slot 21 in the casing. An enlarged part 22 below it holds the spring at this point and permits it free play in the casing. This spring extends upwardly in the casing into a position to engage the rear of the pawl 13.

Pivoted on a stud 23 supported by the casing is a trip lever 24. When this lever is in the position shown in Fig. 1 it puts no pressure on the spring 20 but allows it to remain freely in position, but when the lever is turned down to the position shown in Fig. 2 it presses the spring back toward the pawl 13. In this position it engages a trip 26 which is pivoted on a stud 27 carried by the pawl 13. This trip projects to the rear of the pawl 13 where it is engaged by the spring and it also has an end projecting to the front where it can engage the pawl 15 as shown in Fig. 2.

The operation of this part of the device is as follows: With the parts in the position shown in Fig. 1, the spring 20 as stated is loose and does not affect the pawls, consequently the spring 16 is free to force both pawls toward the rack. Now when the lower end of the operating lever moves down to the position shown in Fig. 1 the spring 16 has forced the end of the pawl 15 in between two of the teeth $c'$ thus holding the rack in that position during the descent of the pawl 13. During this downward motion of this pawl the tooth with which it was in engagement forces it out toward the front and it comes down freely until it springs over the bottom of that tooth, which it is free to do. This entire action is controlled by the spring 16. Now upon the upward motion of the lower end of the lever this pawl 13 of course engages a tooth and moves the whole rack up. During this motion the pawl 15 can do nothing except be forced out by the tooth which it has been

engaging and then when it reaches the bottom of it swing in by the force of the spring 16. It then holds that tooth while the pawl 13 descends as the lever is turned in the opposite direction. During this entire motion the spring 20 and the trip 26 work idly. Now in order to lower the rack the trip lever 24 is turned down to the position shown in Fig. 2. The effect of this, assuming that the pawl 15 at that time is in engagement with one of the teeth, is to force the spring 20 back against the front of the trip 26. This holds this trip resiliently and forces the pawl 13 forward away from the rack. Then the rack is held up simply by the pawl 15. If then the inner end of the lever 11 is lowered, the pawl 13 will simply work down idly without dislodging or affecting the pawl 15. Upon the rise of the inner end of the lever the pawl 13 is forced up with the trip 26 in opposition to the spring 20. When the pawl reaches nearly the top of its stroke the end of the trip 26, held out by the spring 20, will engage a surface 29 on the pawl 15 and force that pawl out of engagement with the tooth of the rack. By this time the end of the pawl 13 has moved in far enough to engage the bottom of a tooth. This occurs at the top of each upward movement of the pawl 13. Now when the pawl is drawn down the end of the trip 26 moves downwardly and forwardly along the surface 29 and allows the upper pawl 15 to gradually approach the rack while the pawl 13 is moved down, but soon the pawl 13 is forced forward by the top of the spring 20 so as to disengage it from the tooth of the rack which it has been supporting. Then the rack drops on the pawl 15 which by that time has projected into its path and the parts are ready to perform this operation over again. In this way it will be seen that very simple pawl mechanism is required for performing these results and that it is so constructed that the pawls work together and coöperate with each other, thus reducing the number of parts required and permitting their being mounted at the front of the rack. In this way the use of mechanism projecting at the side of the casing and rack is entirely avoided.

I will now describe the construction of the casing and rack. The casing A consists of a single piece of sheet metal bent up into form by dies and having a seam at which the edges come together, preferably located at the center of the front thereof, that is the side from which the handle lever 11 projects. In order to hold this together at the bottom the base B is provided also consisting of a single piece of sheet metal having a hole in it for receiving the shank of the casing proper. The casing is provided with two slits $a'$ fitting over the top of the base, thus holding these parts in position. The ends of the sides of the casing extend down through openings in the bottom E with which the base is provided and are headed over to solidly hold these parts together. These parts B and E are also made of sheet metal. At the top the casing is held together by a sheet metal ferrule F. On the sides of the casing is provided with two tongues $a^2$ which are pressed inwardly to serve as guides for the rack C and it is also provided on the rear surface with a pressed-out rib $a^3$ which serves to strengthen the construction at this point and also serves as a guide for an integral projection $g'$ on the bottom of the rack. This rack is also made of a piece of sheet metal and its teeth $c'$ are made by cutting slits through one flat surface thereof parallel with each other and bending them in to the form illustrated in Fig. 6. The main part of the rack C is formed of a piece of sheet metal bent to form the three sides of a four-sided figure. The other side is made of a piece G of sheet metal fitting in between the edges of the piece C. It is provided with a pair of projecting flanges $g$ which project into slots formed in the edges of the sides of the member C to hold it in position. The bottom of this member G is free from this point down to form a spring and has the projection $g'$ extending into the groove $a^3$ and preventing the rack being removed easily after it is once inserted. By exerting sufficient pressure it can be pulled out but it will not ordinarily become dislodged in practice.

For the purpose of strengthening the rack it is provided on the inside thereof with a metal piece H which is put in from the top and has three sides. This fits into the rack for a distance down and is provided with a shoulder $h$ which engages the first tooth at the top and securely holds these parts in position. The rest D at the top is also made of a piece of sheet metal and is connected with the members C and G by their ends extending up through it and being riveted over at the top. The member G is provided with an integral offset $g^2$ on which the bottom of the rest engages for holding it in position.

With this construction it will be seen that the parts are easily made in dies of a material which is strong and durable and especially light in weight for its strength. The construction of the parts is very simple and their assemblage is also a matter requiring very little time as no loose rivets or other fastening devices have to be handled so that the whole device can be manufactured cheaply. The jack is not likely to get out of order in practice, and takes up very little room in use and when packed for shipment. It can be carried around very readily on account of its light weight.

Although I have illustrated and described

only a preferred embodiment of my invention and shown it as applied only for one purpose, I am aware of the fact that many modifications can be made in the construction and arrangement of the parts and that it can be used for other purposes without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction shown, or the particular use mentioned, but

What I do claim is:—

1. In a jack, the combination with a casing, a rack movable up and down in the casing, and a handle lever for operating the rack, of an operating pawl pivoted to the end of said operating lever, a second pawl pivoted at a stationary point, a single spring coiled around the pivot of the second pawl, each end forcing one of said pawls toward the rack, and a stronger spring for pushing the operating pawl from the rack as it descends and allowing the first named spring to move it against the rack as it ascends.

2. In a jack, the combination with a casing, a rack and an operating lever, of a pawl pivoted to said operating lever, a second pawl pivoted beyond the operating lever, yielding means for forcing both pawls toward the rack, a trip pivoted on the first pawl, a flat spring arranged parallel with the first pawl for normally engaging one end of said trip and holding the first pawl back away from the rack in opposition to said yielding means, a second pawl having a surface for engaging the other end of said trip on the other side of its pivot when the second pawl is held in engagement with a rack tooth and forcing the first pawl into engagement with the rack in opposition to the flat spring, said flat spring extending past the operating lever in the casing to a point on the other side of the operating lever, and a trip lever pivoted to the casing on said other side of the operating lever and movable to two positions in one of which it leaves the flat spring inoperative.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

EDWARD ADELL.

Witnesses:

CARL C. HARRIS,

HARRY E. ANDERSON.

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