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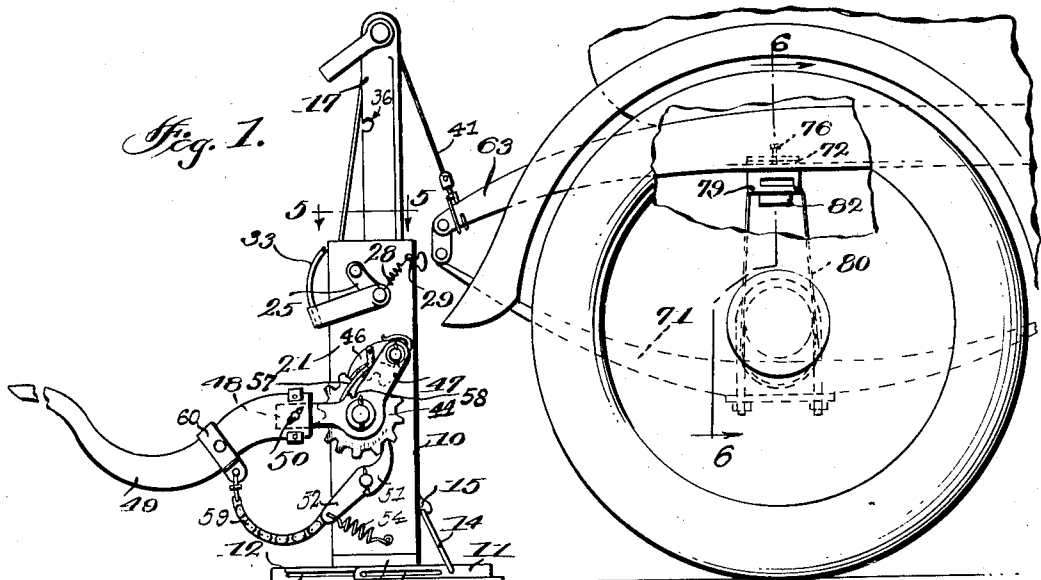
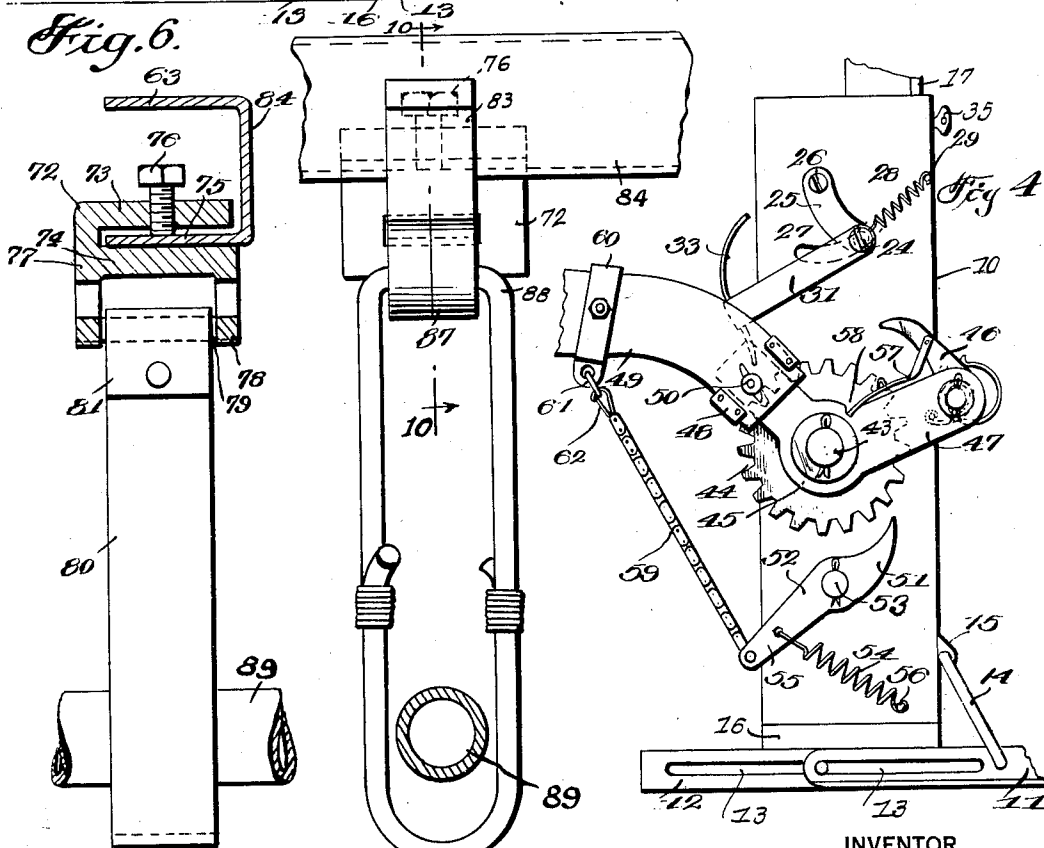
M. DWORK

1,941,854

AUTOMOBILE JACK

Filed June 4, 1931

2 Sheets-Sheet 1



WITNESS
J. P. Markey

Fig. 7.

INVENTOR
Max Dwork
BY
Mum & Co.
ATTORNEY

Jan. 2, 1934.

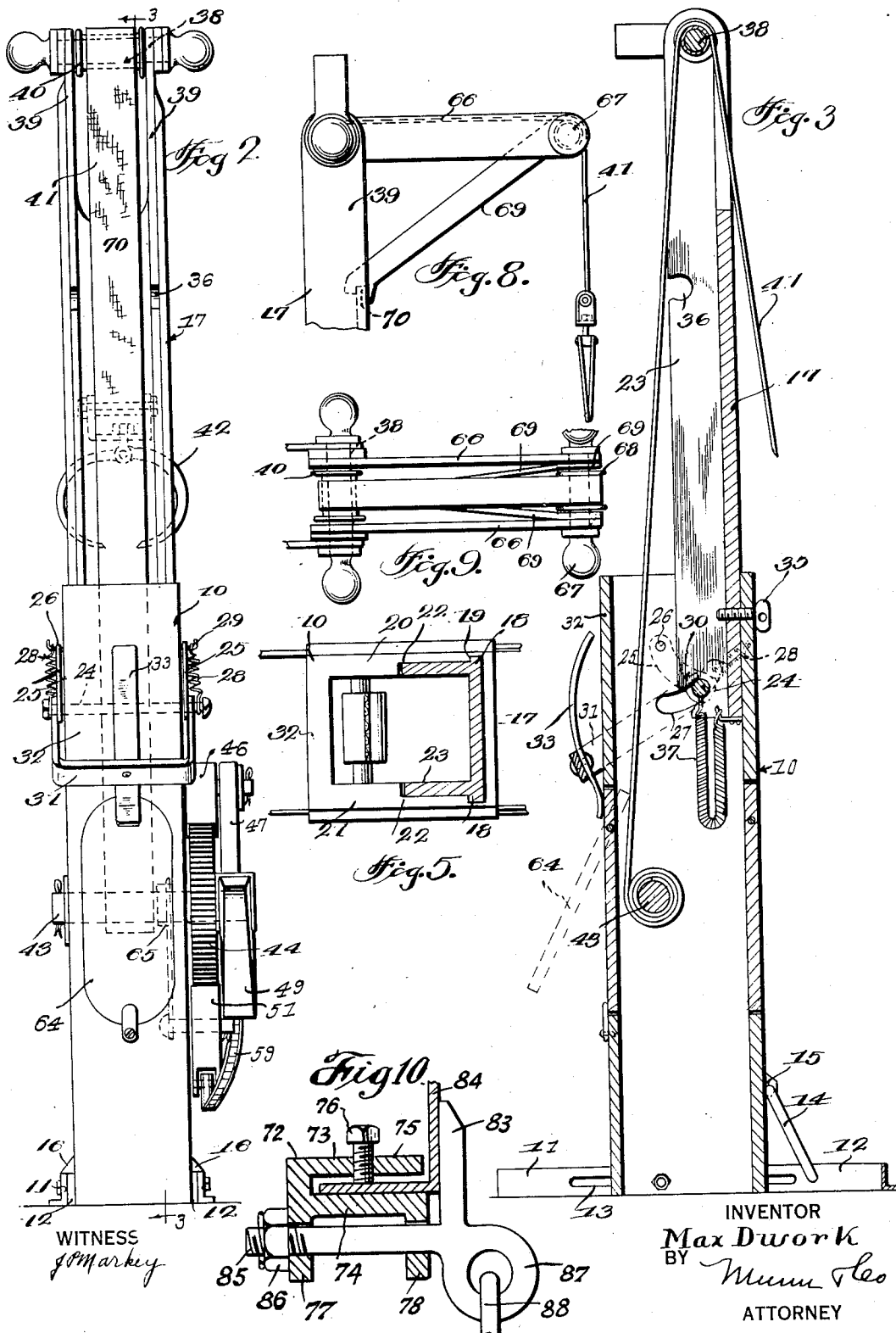
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UNITED STATES PATENT OFFICE

1,941,854

AUTOMOBILE JACK

Max Dwork, Brooklyn, N. Y.

Application June 4, 1931. Serial No. 542,177

9 Claims. (Cl. 254—139)

My invention relates to improvements in jacks and particularly to automobile jacks.

It is an object of the invention to provide a jack which may be used to raise one end of an automobile without the user reaching under the car to place the jack as is now necessary with jacks as now commonly known.

Another object of the invention is to provide a jack which will engage the extremities of the chassis of the car during the raising operation.

A further object of the invention is to provide a jack which will raise the wheels higher off of the ground than jacks now commonly used.

Still another object of the invention is to provide a jack which will be particularly effective when the axle by reason of the car being on soft ground or for other causes is so close to the ground as to render an ordinary jack useless.

A still further object of the invention is to provide a jack having an extensible foot so that it will not be liable to tip over during use.

Other objects and advantages of the invention will become apparent during the course of the following detailed description when read in conjunction with the accompanying drawings wherein:

Figure 1 is a side elevation of an embodiment of the invention showing the jack in operative position for raising the rear wheel of an automobile;

Fig. 2 is a rear elevation thereof;

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a side elevation showing the operative parts of the jack in the operation of lowering the car;

Fig. 5 is a horizontal sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a vertical section taken on the line 6—6 of Figure 1 illustrating a sag-limiting means;

Fig. 7 is a side elevation illustrating a modified form of sag-limiting means;

Fig. 8 is a fragmentary view of a further modified form of the jack; and

Fig. 9 is a top plan view thereof.

Figure 10 is a vertical section taken on line 10—10 of Figure 7.

Referring now more particularly to the drawings, wherein like numerals designate like parts throughout the same, my improved jack comprises an upright hollow standard 10 substantially rectangular in cross section. The standard 10 is provided at its lower end with an extensible base or foot comprising a pair of oppositely disposed U-shaped members 11 and 12,

the sides of which embrace the lower end of the side walls of the standard 10 and are provided with horizontal slots 13 through which a securing bolt passes to slidably attach the members 11 and 12 to the standard. The foot section 11 is provided with a pivoted bail 14 which engages beneath a lip 15 formed with the front face of the standard 10 when the foot sections 11 and 12 are in extended position, the bail 14 acting as a brace to prevent the jack from tipping forwardly. The side walls of the standard 10 are provided with projecting flanges 16 which bear against the upper edges of the sides of the foot sections 11 and 12 so as to produce a firm base for the jack when the sections are extended as shown in the drawings.

The hollow standard 10 carries an extensible post 17 of substantial channel-shape formation, the post 17 being slidably received within said standard. The post 17 is provided with oppositely disposed flanges 18 on either side thereof which fit in complementary grooves 19 formed in the standard 10 and the side walls 20 and 21 of said standard are cut away as at 22 for the accommodation of the flanges 23 of the post 17.

The post 17 is held in its extended position by means of a cross bar 24 which extends between the side walls 20 and 21 of the standard 10 and is suspended by means of a pair of pivoted links 25 which are pivoted at their upper ends as at 26 to the respective side walls. The ends of the bar 24 extend through the lower ends of the links 25. The bar 24 is disposed in aligned arcuate slots 27 in the respective side walls 20 and 21 and is normally urged toward the forward end of said slots by means of a pair of springs 28 secured at one end to the outer ends of said bar 24 and at their other ends to the standard 10 as at 29. When the extensible post 17 is in its uppermost position, the bar 24 engages in the seat 30 formed with the lower end of the post 17 whereby to lock the same in its uppermost position. The bar 24 may be retracted to release the post by means of member 31 carried by the bar, for example, a bail which has its ends secured to the ends of the shaft 24 and which embraces the rear wall 32 of the standard 10. A suitable lever 33 pivotally carried by the bail 31 has one end bearing against the rear wall 32 of the standard 10 so that when the other end thereof is moved outwardly the bail 31 and thus the bar 24 will be retracted to release the standard 17. An additional locking means in the form of a thumb screw 35 is provided for securing the standard 17 in its uppermost position,

said thumb screw being threadedly engaged through the front wall of the standard 10 and the web portion of said post.

When the standard 17 is in the lowermost or depressed position the spring pressed bar 24 will seat within a notch 36 in the edges of the flanges 23 whereby to lock the post 17 against outward movement. A contractile spring 37 secured at one end of the lower end of the post 17 and at its other end to the bar 24 automatically raises the post 17 out of the standard 10 when the bar 24 is released or is retracted from engagement with the notch 36.

The upper end of the post 17 is bifurcated and has a shaft 38 extending between the furcations 39 thereof. The shaft 38 has a spool or roller 40 journaled thereon over which a flexible strap 41 is trained. The strap 41 carries a pair of cooperating grappling hooks 42 at one end thereof and has the other end secured to a rotatable shaft 43 which is journaled in the side walls 20 and 21 of the standard 10. The shaft 43 extends through the side wall 21 and has a toothed wheel 44 keyed thereon. A bell crank lever 45 is journaled on the outer end of the shaft 43 adjacent the wheel 44 and has a pivoted spring pressed operating pawl 46 carried by one arm 47 thereof for engagement in one direction of movement with the wheel 44. The other arm 48 of the bell crank engages within a socket in the end of an operating handle 49 and is locked therein during rotation of the jack by means of a thumb screw 50. It will be seen from an inspection of Fig. 1 that movement of the outer end of the operating lever up and down will result in rotation of the wheel 44 and thus the shaft 43 causing the flexible strap 41 to be wound upon said shaft. Reverse rotation of the wheel 44 and shaft 43 during upward movement of the lever 49 is prevented by means of a back-check pawl 51 formed with one end of an arm 52 which is pivoted intermediate of its ends to the side wall 21 below the wheel 44 as at 53. A contractile spring 54 extends between the opposite end 55 of the arm 52 and a point 56 on the standard 10 and serves to maintain the pawl 51 in engagement with the wheel 44.

The pawl 46 carries a pivoted latching lever 57, the free end of which may be engaged in a notch 58 in the hub of the bell crank 45 in an obstructing position to raise the pawl 46 out of engagement with the wheel 44. The pawl 51 may be disengaged from the wheel 44 through the medium of a chain 59 extending between the end 55 of the arm 52 and a strap 60 embracing the lever 49, the end of the chain 59 being detachably secured to a ring 61 carried by the strap 60 through the medium of a snap hook 62. By latching the pawl 46 out of engagement with the wheel 44 and then raising the lever 49 to the position shown in Fig. 4, both pawls 46 and 51 will be disengaged from the wheel 44 and the strap 41 will be permitted to rotate in a direction to unwind the strap 41.

In the operation of the jack, the post 17 is first raised to extended position and the hooks 42 are engaged with the end of the chassis 63 of an automobile or other vehicle. With the pawl 46 engaged with the wheel 44 the lever 49 is operated to effect rotation of the shaft 43 in a counter-clockwise direction to wind the strap 41 thereon and elevate the car. A pivoted door 64 may be provided in the rear wall 32 of the standard 10 to accommodate the increased bulk as the strap 41 is wound up. When it is desired

to lower the car, the pawl 46 is locked out of engagement with the wheel 44, the chain 59 is hooked on to the ring 61 of the strap 60 and the lever 49 is then raised beyond its normal range of operating movement to draw the chain 59 taut and disengage the pawl 51 from the wheel 44 thereby permitting the weight of the car suspended from the hooks 44 to unwind the strap 41 from the shaft 43. In order to prevent too sudden a lowering of the car, a suitable friction brake 65 may be provided on the shaft 43 and the pawl 51 may also be allowed to intermittently engage the wheel 44 so that a possible injury to the car due to a sudden fall will be obviated.

In the modified form of the invention shown in Figs. 8 and 9 the post 17 carries a pair of forwardly extending horizontal arms 66, the inner ends of which are journaled on the shaft 38 on either side of the roller 40. A shaft 67 extends between the outer ends of the arms 66 and has a roller 68 journaled thereon over which the strap 41 is trained after its passage over the roller 40. The bifurcated brace arm 69 extends between the shaft 67 and the post 17, the lower end of said brace being formed to hook over the upper edge 70 of the web portion of said post between the furcations 39. The purpose of the extending arms 66 is to adapt the jack for use with vehicles having bumpers which project beyond the rear end of the frame of the car. In order to limit the sag of the spring 71 of the vehicle when the end of the chassis 63 is raised by the jack I have provided a suitable strap 80 which extends under the axle and has its ends secured to a bracket 72 carried by the chassis 63. The bracket 72 is provided with a pair of spaced plates 73 and 74 between which the lower flange 75 of the channel frame 63 is received. A set screw 76 passing through the plate 73 serves to lock the bracket to the frame. A pair of depending side plates 77 and 78 formed with the plates 73 and 74 have pins 79 extending between each end thereof to which the ends of the strap 80 are secured as at 81. A suitable rubber buffer 82 is carried by the under side of the bracket 72 for engagement with the upper side of the axle when the spring is abnormally compressed.

In case the strap 80 cannot be used with certain types of cars, I have provided another type of sag limiting means comprising an angle bracket having an upstanding flange 83 for engagement against the web 84 of the chassis frame 63 and having a bolt 85 (Fig. 10) extending at right angles to the flange 83 and projecting through openings in the plates 77 and 78 of the bracket 72 being securely fastened thereto by means of a nut 86 received on the threaded end of said bolt. The angle bracket is provided with a sleeve 87 at the juncture of the flange 83 and bolt 85 through which is trained a cable 88 which encircles the axle 89 of the automobile (Fig. 7). The ends of the cable are fastened together to form a loop which limits the sag of the spring. It will thus be seen that when the end of the chassis is raised by winding the strap 41 onto the shaft 43 it will not be necessary to raise the chassis to an undue height before the wheel leaves the ground as will be the case if a sag limiting means were not provided.

Although a preferred embodiment of the invention has been shown and described, it will be understood that various changes in the details of construction may be made without departing from the spirit of the invention as defined by the appended claims.

I claim:

1. In a jack, an extensible post having a seat at the lower end and a notch in its side, a standard with which the post has telescopic engagement, a bar and mounting means by which the bar is movably carried by the standard, and resilient means for moving the mounting means toward the post to engage the bar either with the seat or the notch depending on the relation of the post with respect to the standard.
2. In a jack, a post having an opening, a standard with which the post has telescopic engagement, said standard having a slot, a bar having a portion occupying the slot, mounting means movably attached to the standard and carrying the bar for movement in the slot toward and away from the post, and resilient means acting on the mounting means and keeping the bar against the post and in said opening.
3. In a jack, a post having an opening, a standard with which the post has telescopic engagement, said standard having a slot, a bar having a portion occupying the slot, mounting means movably attached to the standard and carrying the bar for movement in the slot toward and away from the post, resilient means acting on the mounting means and keeping the bar against the post and in said opening, a bail attached to said mounting means, and a lever connected with the bail and contacting the standard, the operation of the lever moving the mounting means contrary to said resilient means thereby to move the bar away from the post.
4. In a jack, a post having a side notch, a standard into which the post is telescoped until the notch enters the confines of the standard, a bar and mounting means by which the bar is movably carried by the standard, said bar occupying the notch to hold the post in the telescoped position, and a spring having its respective ends connected with the bar and with the bottom of the post, said spring being under tension while the post is telescoped thereby serving to raise the post out of the standard when the bar is disengaged from the notch.
5. In a jack, a rotatable winding shaft and a toothed wheel affixed to the shaft, an operating lever having a notch, an operating pawl carried by the lever to operate the toothed wheel, and latch means carried by the operating pawl for holding said pawl in disengagement from the toothed wheel, said latch means comprising a lever to engage the notch.
6. In a jack having a rotatable winding shaft and a toothed wheel affixed to the shaft, an operating lever and a pawl carried thereby to operate the toothed wheel, a back check pawl riding the wheel to normally prevent retrograde rotation; latch means carried by the operating pawl and being movable into an obstructing position against the lever for holding the operating pawl in disengagement from the toothed wheel, and means operated by the lever upon upward shifting thereof beyond its normal range of operating movement to displace the back check pawl and free the winding shaft, said means comprising a flexible element having its respective ends connected with the lever and with the back check pawl being drawn taut in the abnormal upward movement of the lever.
7. In a jack, a lever having an arm and a notch, a pawl and means by which it is pivotally mounted on the substantial extremity of the arm, resilient means pressing on the pawl and tending to keep it in engagement with a ratchet wheel intended to be turned, and a latching lever pivotally carried by the pawl, being engageable with the notch to hold the pawl in an inoperative position against the tension of said resilient means.
8. In a jack, a hollow standard having an opening in one of its side walls, a winding shaft mounted in the standard adjacent to said opening, a flexible element connected with the shaft to be wound thereon, and a door pivoted to the standard for the normal closure of said opening, said door swinging to an open position to accommodate the increasing bulk when said flexible element is wound on the shaft.
9. A jack having an extensible post with a seat, a standard with respect to which the post is extensible, a bar to enter the seat and hold the post extended, and mounting means by which the bar is movably carried by the standard; means to retract the bar and release the post said means comprising a member carried by the bar, and a lever carried by said member having one end bearing against the standard.

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