April 3, 1951 L. LA MUNYON 2,547,474

WHEEL-LIFTING JACK

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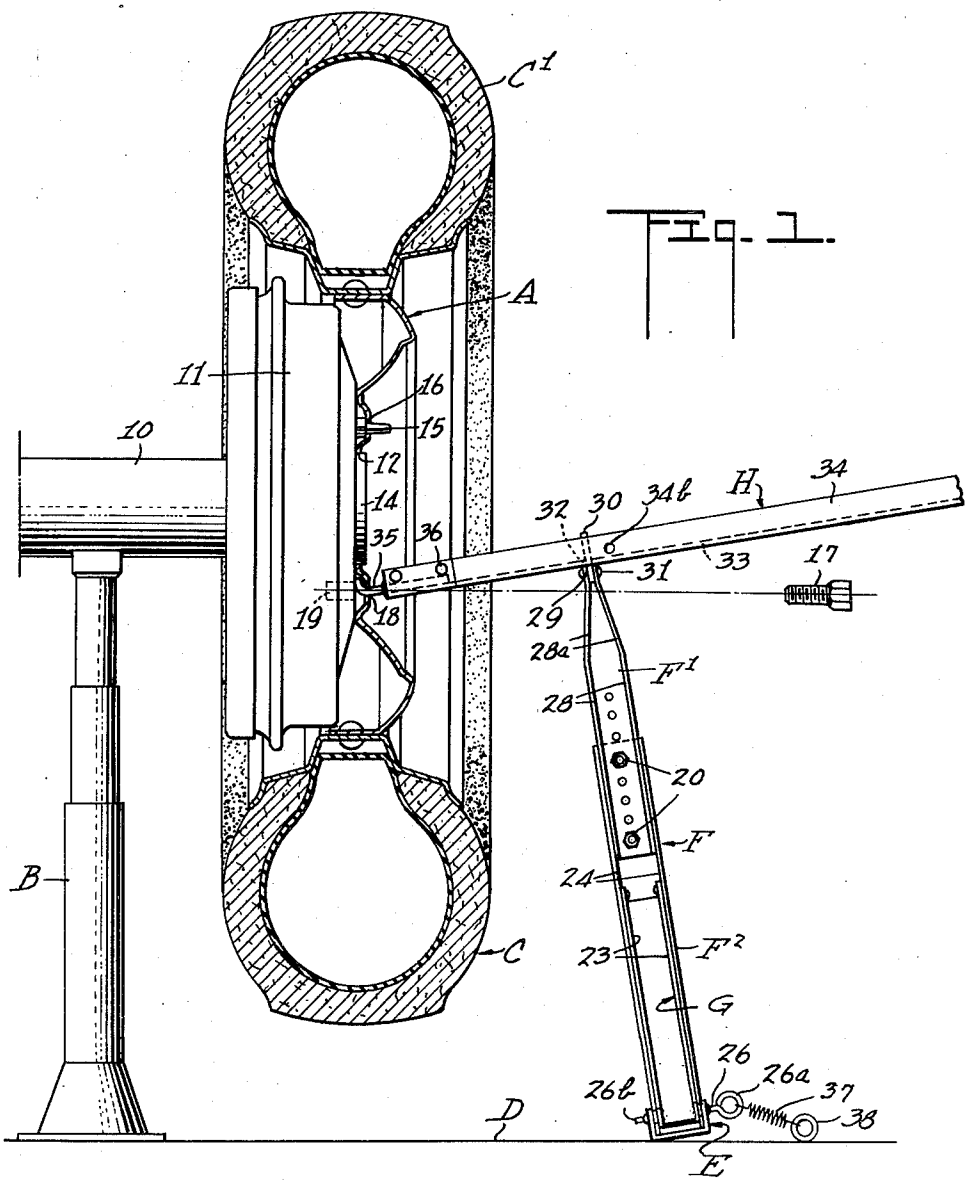


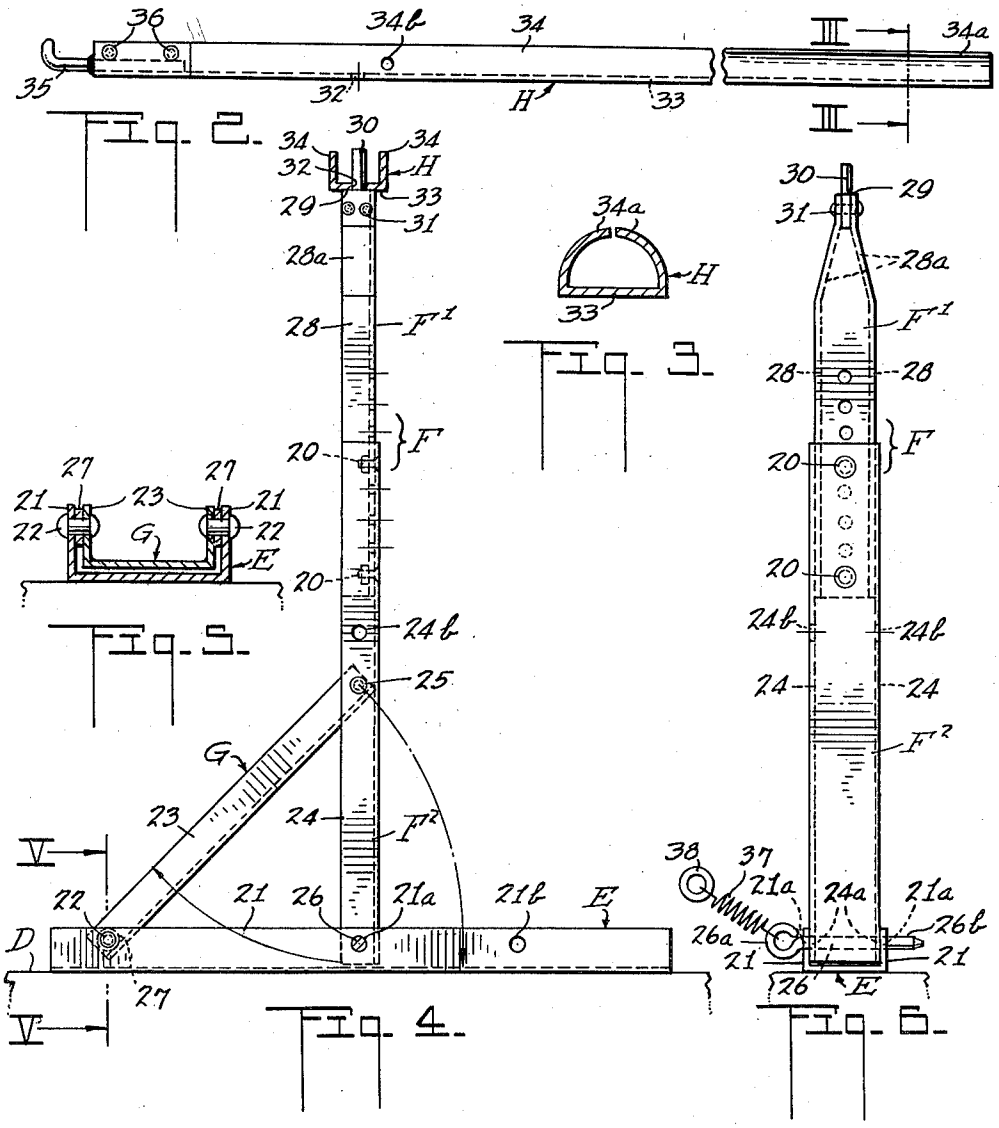
Fig. 1.

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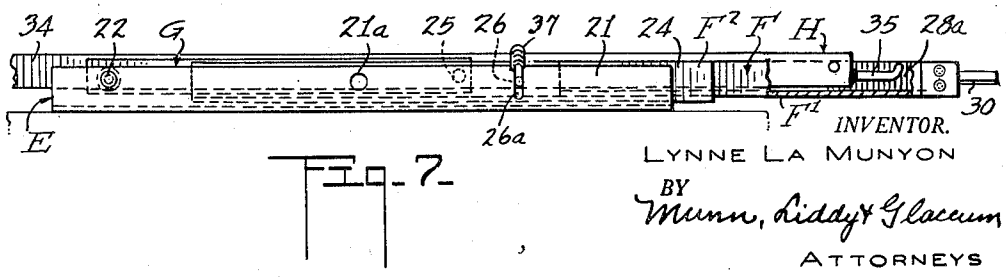


FIG. 7.

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WHEEL-LIFTING JACK

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6 Claims. (Cl. 254—131)

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The present invention relates to improvements in a wheel-lifting jack. It consists of the combinations, constructions and arrangement of parts, as hereinafter described and claimed.

An object of my invention is to provide a jack for lifting an automobile wheel into proper position relative to the brake drum in order to allow the wheel to be secured to the drum by the usual retaining studs. These steps may be accomplished with facility and ease by employing my lifting jack.

Another object resides in the provision of a wheel-lifting jack, which is adapted to be folded in a compact unit when not in use, thus requiring a relatively small storage space. The jack is arranged so that it may be assembled very quickly.

It is proposed in this invention to provide a wheel-lifting jack that is simple in construction, compact, durable and efficient for the purpose intended.

Other objects and advantages will appear as the specification continues, and the novel features will be set forth in the claims hereunto appended:

For a better understanding of my invention, reference should be had to the accompanying drawings, forming part of this application, in which:

Figure 1 is a partial vertical sectional view taken through a rear wheel of an automobile, and illustrating my lifting jack in operative position;

Figure 2 is a side elevation of the lifting lever;

Figure 3 is an enlarged transverse sectional view taken along the line III—III of Figure 2;

Figure 4 is a side elevation of the base and extendible standard of my jack, the lifting lever being disclosed in section;

Figure 5 is an enlarged transverse sectional view taken along the line V—V of Figure 4;

Figure 6 is an end elevational view of Figure 4; and

Figure 7 is a side elevation showing the parts of the lifting jack in folded position.

While I have shown only the preferred form of my invention, it should be understood that various changes, or modifications, may be made within the scope of the annexed claims without departing from the spirit thereof.

Referring now to Figure 1, it will be noted that I have shown a rear axle 10 of an automobile on which a brake drum 11 is mounted in the usual manner. The disc wheel A has been aligned with and moved up against the drum 11.

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A jack B has raised the axle sufficiently for the tire C to clear the ground D.

The disc wheel A is provided with a central opening 12 adapted to receive the hub 14. A centering stud 15 on the brake drum projects through an opening 16 in the disc wheel in the conventional manner when the wheel A is applied over the hub 14. A plurality of retaining studs 17 are insertable through openings 18 in the disc wheel and are adapted to be screwed into threaded bores 19 provided in brake drum.

Ordinarily, five of these retaining studs are arranged circumferentially around the brake drum 11 for anchoring the disc wheel in place. I utilize the lowermost stud-receiving opening 18 when lifting the wheel into proper alignment with the brake drum 11 and hub 14.

In its structural features, my wheel-lifting jack includes a base E having an extendible standard F mounted thereon, a diagonal brace G, and a lifting lever H. The base, standard and brace are made up of channel irons of progressively small cross-section that may be nested together when the jack is folded, as shown in Figure 7 of the drawings.

The base E is of sufficient length to prohibit any sideways tilting of the standard F, but is narrow enough to permit the standard to be tilted toward and away from the brake drum when the base is disposed parallel with the side of the tire C (see Figure 1). This rockable feature of the base allows the wheel A to approach and telescope over the hub 14 when assembling the wheel on the brake drum.

The standard F is made in two sections, which are designated at F1 and F2. The section F1 slides within the section F2 so that the two sections may be adjusted to suit different size wheels. Bolts 20 secure these two sections of the standard in adjusted position.

The brace G is hinged to the flanges 21 of the channel-shaped base E by rivets 22, with the flanges 23 of the brace facing upwardly (see Figure 5). Also, the brace has its flanges 23 hinged to the flanges 24 of the channel-shaped section F2 by rivets 25. In order to secure the lower end of the section F2 to the base E, I make use of a pin 26, which is insertable through aligned openings 21*a* and 24*a* fashioned in the flanges 21 and 24, respectively.

Upon withdrawing the pin 26, the standard section F2 is foldable into a position between the flanges 21 of the base E. At the same time, the brace G is foldable into a position between the flanges 24 of the standard section F2. Spacers

27 are interposed between the flanges 21 and 23 to provide ample room between these flanges to receive the flanges 24 of the section F2 (see Figure 5) when the device is folded.

The upper ends 28a of the flanges 28 on the section F1 converge toward one another to provide a fulcrum 29 at the top of the standard. A pivot rod 30 is secured to the standard section F1 by rivets 31 so as to project beyond the fulcrum 29 in axial alignment with the standard F.

The lever H is made of channel iron and has an opening 32 in its web 33 to receive the pivot rod 30. The lever may be rocked up and down on the fulcrum 29 and rotated about the pivot rod 30. The flanges 34 of this lever are brought close together at their forward ends so as to be secured to a lifting hook 35 by rivets 36. This hook is dimensioned for fitting into the lowermost stud-receiving opening 18 in the disc wheel A, as clearly shown in Figure 1. At the rear end of the lever H, the flanges 34 are brought together and appropriately rounded on top to effect a comfortable grip 34a for the operator's hand.

When my wheel lifter is to be used, the standard F is swung into upright position and has its lower end anchored to the base E by inserting the pin 26 through the aligned openings 21a and 24a in the flanges 21 and 24, respectively. At this time, the brace G will occupy the diagonal position shown in Figure 4 to give rigidity to the standard.

Next, the base E is placed on the ground D close to and parallel with the wheel A. The lever H is lowered upon the fulcrum 29 with the pivot rod 30 passing through the opening 32 in the web of the lever (see Figures 1 and 4) and the hook 35 is inserted through the lowermost opening 18 in the disc wheel. The operator places one hand on the topmost part C1 of the tire to steady the wheel. The other hand of the operator is utilized for pressing down on the grip end 34a of the lever H until the wheel is axially aligned with the hub 14.

For the purpose of aligning the stud-receiving openings 18 of the disc wheel with the threaded bores 19 in the brake drum, the wheel A may be rotated on the hook 35. Also, the wheel may be moved laterally by swinging the lever H in a horizontal plane. The centering stud 15 is guided through the opening 16, and the central opening 12 of the wheel fitted over the hub 14. The lever H may be moved in the direction of its longitudinal axis, thereby tilting the standard F and the base E into inclined positions, as shown in Figure 1, in order to bring the disc wheel up against the face of the brake drum.

When retaining studs 17 have been inserted through upper openings 18 into threaded bores 19 to secure the wheel to the brake drum, the hook 35 is disengaged from the wheel. Thereupon, the lower studs 17 are screwed into place.

In order to fold the device, the lever H is removed from the pivot rod 30 and then the pin 26 is withdrawn. The rivets 22 and 25 act as pivots and the standard F and brace G are let down into the base E, as illustrated in Figure 7. Next, the operator places the lever H between the flanges 24 and 28 of the standard sections F1 and F2, respectively, with the hook 35 disposed snugly between the converging flanges 28a of the standard section F2 (see Figure 7).

When the parts have been folded, the pin 26 is inserted through aligned openings 21b in the flanges 21 of the base E (see Figure 4), openings 24b in the flanges 24 of standard section F2, and openings 34b in the flanges 34 of the lever H. This will keep the base E, standard F, brace G and lever H in folded and nested position.

The pin 26 is provided with an eye 26a to which one end of a spring 37 is attached. The other end of this spring carries a ring 38. The spring is adapted to be drawn sling-fashion over the assembly and the ring 38 slipped over the protruding end 26b of the pin 26 to hold the lifting lever H securely in place. This produces a compact device requiring relatively small storage space.

I claim:

1. In a wheel-lifting jack of the character described; an elongated channel-shaped base having its web disposed on the underside and its flanges projecting upwardly; a channel-shapped standard movable into upright position relative to the base, and also movable into folded position between the flanges of the base; the flanges of the standard also facing upwardly when the standard is folded; a channel-shaped brace having its end portions hinged to the base and to an intermediate part of the standard; the brace being movable into a position between the flanges of the standard and base with its flanges also facing upwardly; means for removably anchoring the lower end of the standard to the base; a pivot rod extending above the top of the standard and connected thereto; a lever journalled on the pivot rod for swinging about the latter and also movable into various inclinations relative to the standard; and a wheel-engaging hook disposed on one end of the lever.

2. In a wheel-lifting jack of the character described; an elongated channel-shaped base having its web disposed on the underside and its flanges projecting upwardly; a channel-shaped standard movable into upright position relative to the base, and also movable into folded position between the flanges of the base; the flanges of the standard also facing upwardly when the standard is folded; a channel-shaped brace having its end portions hinged to the base and to an intermediate part of the standard; thc brace being movable into a position between the flanges of the standard and base with its flanges also facing upwardly; means for removably anchoring the lower end of the standard to the base; a pivot rod extending above the top of the standard and connected thereto; a lever journalled on the pivot rod for swinging about the latter and also movable into various inclinations relative to the standard; and a wheel-engaging hook disposed on one end of the lever; the lever being removable from the pivot rod and dimensioned to nest lengthwise of the base between the upwardly facing flanges of the folded brace and standard.

3. In a wheel-lifting jack of the character described; an elongated channel-shaped base having its web disposed on the underside and its flanges projecting upwardly; a channel-shaped standard movable into upright position relative to the base, and also movable into folded position between the flanges of the base; the flanges of the standard also facing upwardly when the standard is folded; a channel-shaped brace having its end portions hinged to the base and to an intermediate part of the standard; the brace being movable into a position between the flanges of the standard and base with its flanges also facing upwardly; the flanges of the standard and base having openings aligned with one another when the standard is disposed upright relative to the base; and a pin removably insertable

through said openings; the flanges of the standard and base having other openings aligned with one another when the standard is folded relative to the base; the same pin being insertable through said other aligned openings for securing the standard in folded position.

4. In a wheel-lifting jack of the character described; an elongated channel-shaped base having its web disposed on the underside and its flanges projecting upwardly; a channel-shaped standard movable into upright position relative to the base, and also movable into folded position between the flanges of the base; the flanges of the standard also facing upwardly when the standard is folded; a channel-shaped brace having its end portions hinged to the base and to an intermediate part of the standard; the brace being movable into a position between the flanges of the standard and base with its flanges also facing upwardly; a pivot rod extending above the top of the standard and connected thereto; a lever journalled on the pivot rod for swinging about the latter and also movable into various inclinations relative to the standard; a wheel-engaging hook disposed on one end of the lever; the lever being removable from the pivot rod and dimensioned to nest lengthwise of the base between the upwardly facing flanges of the folded brace and standard; the flanges of the standard and base having openings aligned with one another when the standard is disposed upright relative to the base; and a pin removably insertable through said aligned openings; the flanges of the standard and base having other openings aligned with one another when the standard is folded relative to the base; the same pin being insertable through said other aligned openings; the lever also having pin-receiving openings; the pin also extending through said openings in the lever when the latter is nested between the base and standard, thereby retaining the base, standard, brace and lever in folded position.

5. In a wheel-lifting jack of the character described; an elongated channel-shaped base having its web disposed on the underside and its flanges projecting upwardly; a channel-shaped standard movable into upright position relative to the base, and also movable into folded position between the flanges of the base; the flanges of the standard also facing upwardly when the standard is folded; a channel-shaped brace having its end portions hinged to the base and to an intermediate part of the standard; the brace being movable into a position between the flanges of the standard and base with its flanges also facing upwardly; a pivot rod extending above the top of the standard and connected thereto; a lever journalled on the pivot rod for swinging about the latter and also movable into various inclinations relative to the standard; a wheel-engaging

hook disposed on one end of the lever; the lever being removable from the pivot rod and dimensioned to nest lengthwise of the base between the upwardly facing flanges of the folded brace and standard; the flanges of the standard and base having openings aligned with one another when the standard is disposed upright relative to the base; and a pin removably insertable through said aligned openings; the flanges of the standard and base having other openings aligned with one another when the standard is folded relative to the base; the same pin being insertable through said other aligned openings; the lever also having pin-receiving openings; the pin also extending through said openings in the lever when the latter is nested between the base and standard, thereby retaining the base, standard, brace and lever in folded position; and means securable to the pin and overlying the lever to retain the latter in folded position.

6. In a wheel-lifting jack of the character described; an elongated channel-shaped base having its web disposed on the underside and its flanges projecting upwardly; a channel-shaped standard movable into upright position relative to the base, and also movable into folded position between the flanges of the base; the flanges of the standard also facing upwardly when the standard is folded; a channel-shaped brace having its end portions hinged to the base and to an intermediate part of the standard; the brace being movable into a position between the flanges of the standard and base with its flanges also facing upwardly; means for removably anchoring the lower end of the standard to the base; a pivot rod extending above the top of the standard and connected thereto; a lever journalled on the pivot rod for swinging about the latter and also movable into various inclinations relative to the standard; and a wheel-engaging hook disposed on one end of the lever; the lever being removable from the pivot rod and dimensioned to nest lengthwise of the base between the upwardly facing flanges of the folded brace and standard; the flanges of the channel-shaped standard converging toward the top of the standard; the hook being insertable between the converging flanges of the standard when the lever is nested between the flanges of the folded brace and standard.

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