March 29, 1938. L. C. COX 2,112,481

AUTO LIFT

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Fig. 1.

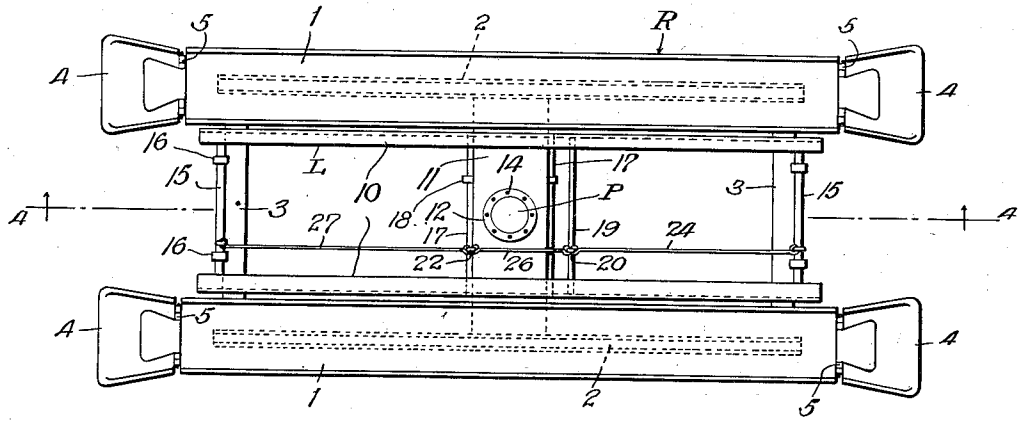


Fig. 2.

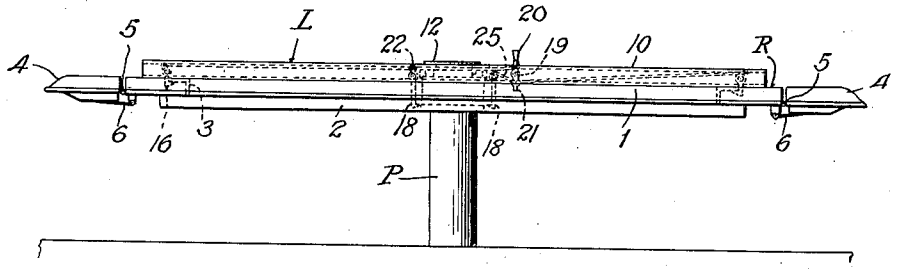
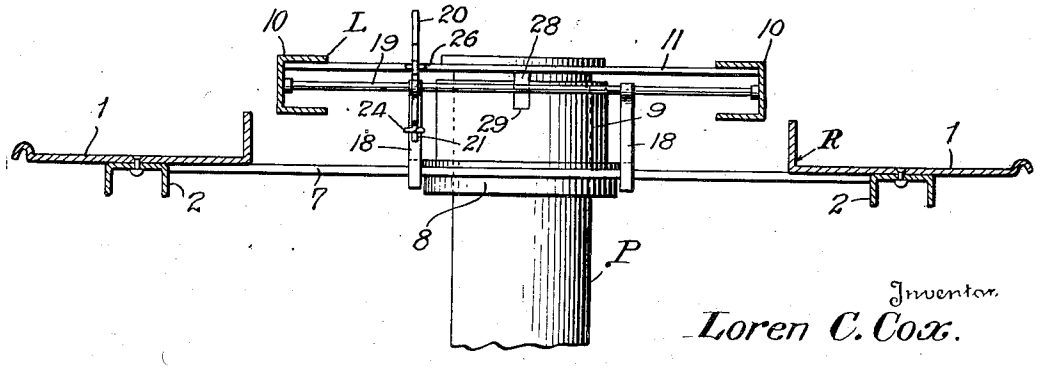


Fig. 3.



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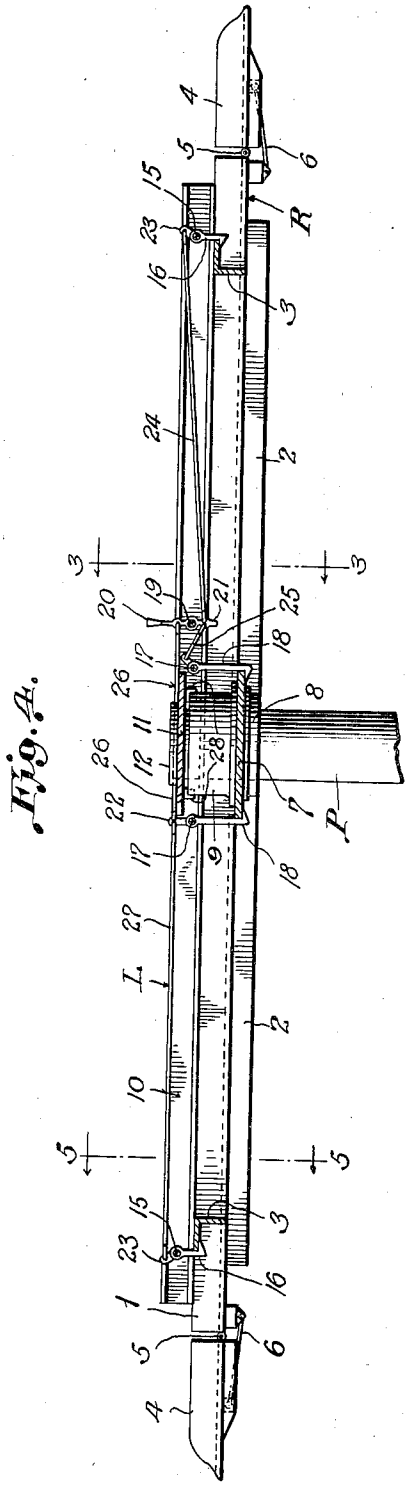


Fig. 4.

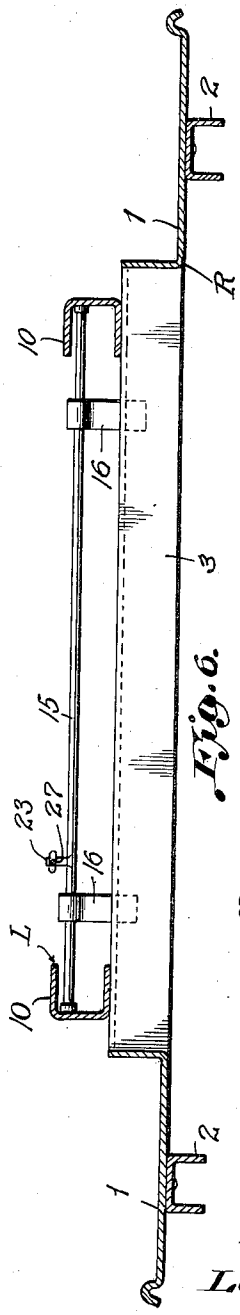


Fig. 5.

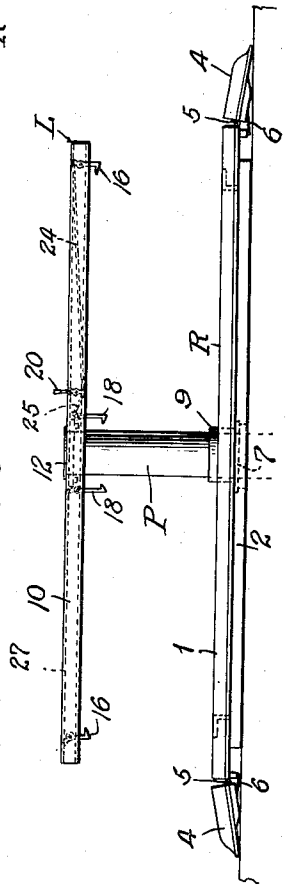


Fig. 6.

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UNITED STATES PATENT OFFICE

2,112,481

AUTO LIFT

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Application July 15, 1937, Serial No. 153,833

3 Claims. (Cl. 254—89)

In repairing, greasing or inspecting an automobile, sometimes it is necessary to lift the automobile bodily, the wheels of the automobile resting on a runway. Again, it may be necessary to lift an automobile from the axles, leaving the wheels free to turn. The general practice is to have separate lifts for carrying out each of the operations referred to. The object of this invention is to combine two such lifts in one machine and to provide novel structure, hereinafter described, whereby that operation may be brought about.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings:

Fig. 1 shows in top plan, a device constructed in accordance with the invention;

Fig. 2 is a side elevation;

Fig. 3 is a transverse section on the line 3—3 of Fig. 4;

Fig. 4 is a longitudinal section on the line 4—4 of Fig. 1, parts remaining in elevation;

Fig. 5 is a cross section on the line 5—5 of Fig. 4;

Fig. 6 is a side elevation showing the free wheeling lift raised independently of the runway.

The letter P designates a plunger mounted to move vertically and generally operated by fluid pressure, such a plunger being a common and well known part of auto lifting devices found at filling stations, in shops, or elsewhere. The letter R designates a runway. The runway R comprises spaced parallel tracks 1. Reenforcing members 2 extend longitudinally of the tracks 1 and are secured to the under surfaces of the tracks. Near to their ends, the tracks 1 are joined together by connections, such as outer cross pieces 3, which may be angle members. The tracks 1 are joined together intermediate their ends by a connection 7, which is a cross piece in the form of a plate. Vertically movable ramps 4 are hinged at 5 to the ends of the tracks 1. The numeral 6 designates any suitable mechanism for controlling the vertical swinging movement of the ramps 4. The mechanism shown at 6 may be of any desired kind and is known in the art.

A slide 8, in the form of a collar, is mounted to move vertically on the plunger P. The intermediate cross piece 7 of the runway R rests on the collar 8, and the collar 8 has an extension 9, prolonged upwardly through the cross piece 7.

The letter L designates, generally, a free wheeling lift, that is, an instrumentality employed to raise an automobile by means of the axles of the vehicle, the wheels of the vehicle being left free to turn. The lift L includes parallel rails 10, spaced apart less widely than are the tracks 1 of the runway R, but disposed closely adjacent to the inner edges of the tracks, as Fig. 1 will show. Intermediate their ends, the rails 10 of the lift L are joined by a connection, which may be a cross plate 11. The plunger P extends upwardly through the cross plate 11 and is connected thereto in any suitable way. For instance, the plunger P may be provided at its upper end with an outstanding annular flange 12, secured at 14 to the cross piece or plate 11.

Transverse outer shafts 15 are journaled in the side rails 10 of the lift L and are located near to the ends of the side rails. Depending beveled latches 16 are secured to the shafts 15 and are adapted to engage automatically with the outer cross pieces 3 of the runway R, as shown in Fig. 4. Inner shafts 17 are journaled on the rails 10 of the lift L and are located on opposite sides of the plunger P, in close relation thereto. Depending beveled latches 18 are secured to the shafts 17 and are adapted to engage automatically with opposite edges of the intermediate cross piece 7 of the runway R.

Between one of the shafts 17 and the corresponding shaft 15 (Fig. 4) and near to the said shaft 17 is located a latch operating shaft 19 which is journaled in the rails 10 of the lift L. An actuating member 20, preferably an upstanding handle, is secured to the latch operating shaft 19. The handle 20 is extended downwardly below the shaft 19, to form a crank arm 21 on said shaft. The outer shafts 15 are supplied with upstanding crank arms 23. The inner shafts 17 are supplied with upstanding crank arms 22. A link 24 is pivoted at its outer end to the crank arm 23 of the right hand shaft 15 in Fig. 4. The inner end of the link 24 is pivoted to the depending crank arm 21 of the shaft 19. One end of a link 25 is pivoted to the crank arm 21 of the shaft 19, and the opposite end of the link 25 is pivoted to the crank arm 22 on the adjacent shaft 17. One end of a link 26 is pivoted to the handle

20, above the shaft 19, and the opposite end of the link 26 is pivoted to the crank arm 22 of the shaft 17 which is on the opposite side of the plunger P from the handle 20. The said crank arm 22 is connected by a link 27 with the arm 23 on the shaft 15 at the left hand end of Fig. 4.

In practical operation, when it is desired to lift a vehicle with the ground wheels of the vehicle on the tracks 1 of the runway R, the parts are arranged as shown in Figs. 4 and 2. Under such circumstances, the lift L is connected to the runway R, because the latches 16 are engaged with the cross connections 3 of the runway, and because the latches 18 are connected to the intermediate cross piece or plate 7 of the runway. When the plunger P moves upwardly, it carries with it the lift L, and the runway R is raised, because the runway is connected to the lift by means of the latches 16 and 18.

It may be that the operator wishes to lift the vehicle by its axles, leaving the ground wheels free to turn. Then, with the parts arranged as shown in Fig. 4, the vehicle is mounted on the runway R, the wheels of the vehicle resting on the tracks 1 of the runway. By means of the handle 20, and the links 24, 25, 26 and 27, the latches 18 may be disengaged from the intermediate cross piece 7 of the runway R, and the latches 16 may be disengaged from the outer cross pieces 3 of the runway. Then, if the plunger P is caused to move upwardly, the lift L will be raised, as shown in Fig. 6, the runway R remaining in lowered position, because the plunger P can slide through the collar parts 8—9 that carry the runway, by means of the cross piece 7 of the runway. The rails 10 of the lift, engaging beneath the axles of the vehicle, will raise the vehicle, the ground wheels thereof being left free to turn.

In order to keep the lift L in parallel relation to the runway R, when the parts are arranged as shown in Fig. 4, the intermediate cross plate 11 of the lift L is supplied with oppositely disposed lugs 28, adapted to be received in seats 29 formed in the upper edge of the extension 9 of the collar 8, as shown in Fig. 3.

The device is simple in construction, but it combines two lifts in one, in that the operator may raise the vehicle, with the wheels of the vehicle on the tracks 1 of the runway R, or, if he prefers, he may raise the lift L, independently of the runway R, the vehicle wheels being carried upwardly, free from the tracks 1 of the runway.

Having thus described the invention, what is claimed is:

1. In a device of the class described, a plunger mounted for vertical movement, a free wheeling lift connected to the plunger, a runway vertically slidable on the plunger below the free wheeling lift, and means for effecting a releasable connection between the free wheeling lift and the runway.

2. In a device of the class described, a plunger mounted for vertical movement; cooperating members comprising a free wheeling lift connected to the plunger, and a runway vertically slidable on the plunger below the free wheeling lift; latch means carried by one of said cooperating members and engageable automatically with the other of said cooperating members, upon relative movement between said cooperating members, and means under the control of an operator for releasing the latch means.

3. In a device of the class described, a plunger mounted for vertical movement, an elongated free wheeling lift connected to the plunger, an elongated runway, means for mounting the runway on the plunger for vertical sliding movement below the free wheeling lift, said means and the free wheeling lift having elements which interengage, upon relative vertical movement between the lift and the runway, and hold the lift and the runway in parallel relation, and means for effecting a releasable connection between the lift and the runway.

LOREN C. COX.