Jan. 29, 1952 H. L. PEYRON 2,583,877

AUTOMOBILE HOIST AND POSITIONER

Filed April 4, 1947

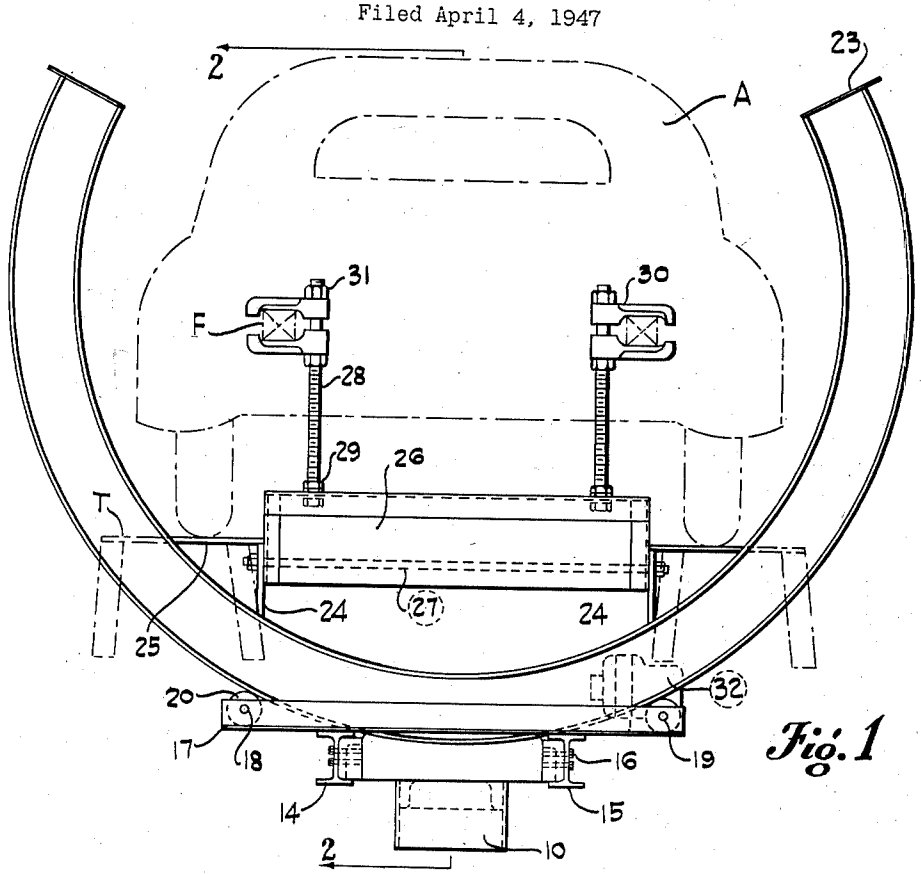


Fig. 1

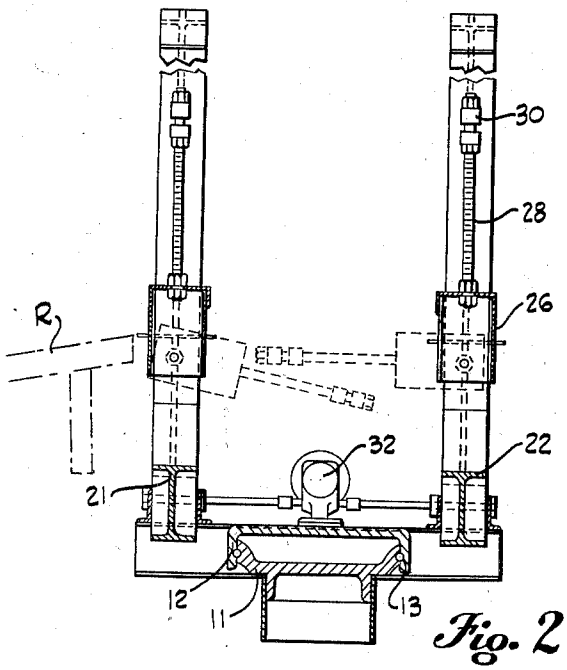


Fig. 2

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Patented Jan. 29, 1952

2,583,877

UNITED STATES PATENT OFFICE

2,583,877

AUTOMOBILE HOIST AND POSITIONER

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Application April 4, 1947, Serial No. 739,477

7 Claims. (Cl. 214—1)

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This invention relates to a vehicle hoist and positioner.

An object of the invention is to provide a hoist for automobiles and similar vehicles that will enable the vehicle to be driven onto the hoist and then firmly but detachably secured thereto and to provide means whereby when the vehicle has been thus secured for laterally tilting the vehicle bodily to facilitate making inspection and repairs or replacements.

More specifically an object of the invention is to provide a hoist for elevating vehicles such as automobiles on which arcuate members are rollably supported and to provide means for clampingly supporting the vehicle on the arcuate members whereby as the vehicle is tilted by rolling the arcuate members with relation to the hoist the center of gravity of the vehicle will be maintained at approximately the same point over the supporting structure of the hoist.

With the foregoing and other objects in view which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a view in end elevation of the vehicle hoist and positioner embodying the present invention; and

Fig. 2 is a sectional view taken substantially upon the line 2—2 upon Fig. 1.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, 10 indicates the upper portion of a column of either a pneumatic or hydraulic hoist mechanism such as is conventionally employed in garages, service stations, and the like for elevating automobiles. On the top of this column there is a head 11 on which a cap 12 is rotatably mounted such as by an anti-friction bearing indicated at 13. Longitudinally extending I beams 14 and 15 are secured to the sides of the cap such as by bolts 16 and these beams in turn serve to support transversely extending angle irons 17. Longitudinally extending shafts 18 and 19 extend through the ends of these angle irons so as to rotatably support rollers 20. These rollers are arranged in transverse alignment to provide a forward pair of rollers and a rear pair of rollers. Each pair of rollers serves to rollably support an arcuate member, the arcuate members being indicated respectively at 21 and 22. These arcuate members are preferably in the form of curved I beams having their outer flanges resting on the rollers so as to be peripherally supported thereby. At the ends of these arcuate members there are stops 23 that may engage the rollers or the adjacent angle irons to limit the extent to which the arcuate members may roll on their respective pairs of rollers.

On each arcuate member there is a pair of upstanding supports 24 and these supports are

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braced by horizontal braces 25 connecting them to the arcuate members and which form short floor sections. A frame 26 is pivotally mounted such as upon a rod or shaft 27 that connects the supports 24 on each arcuate member. On each frame there are upstanding screws 28 that can be adjusted up and down with relation to the frame such as by nuts 29. Clamping members 30 are mounted on each screw and these clamping members can be adjusted toward and away from each other such as by nuts 31.

The device embodying the present invention is preferably located adjacent a ramp R which leads up to the level of the braces 25 or if desired the construction may be located in a pit so that the top surfaces of the braces 25 may assume a position approximately flush with the surrounding ground surface. Trestles T are positioned between the arcuate members having their top surfaces approximately flush with the tops of the braces 25. Thus the ramp R on the surrounding ground surface together with the braces 25 and the trestles T form a continuous supporting surface across the device to enable an automobile A to be driven thereon. While the automobile is being driven onto the hoist and positioner the frames 26 are rotated about the rods or shafts 27 into the dotted line positions shown in Fig. 2 to enable the automobile to be passed thereover. After the automobile has assumed a position substantially straddling the arcuate members the frames 26 are returned to the full lines positions shown and the screws 28 are vertically adjusted with relation thereto to enable the clamps 30 to be clamped on the frame F by means of the nuts 31. In this way the automobile is firmly but detachably mounted on the arcuate members 21 and 22. The elevating mechanism which elevates the column 10 may then be operated to lift the device to the desired height and the trestles T are then removed. When thus supported the automobile together with the arcuate members may be rotatably tilted in either direction and during such tilting movement the arcuate members merely roll on their supporting pairs of rollers 20. This tilting may be accomplished manually or may be performed by means of a motor 32 whose gear box or drive is incorporated in one of the shafts such as the shaft 19. In this manner the automobile may be tilted into any desired position to permit of inspection or repair work on its motor or chassis. If it is desired to swing the automobile such swinging action is permissible due to the cap 12 being rotatably mounted on the head 11 by means of the anti-friction bearing 13. During all of these rotating or tilting movements it will be appreciated that as the arcuate members roll on the rollers about the center of curvature of the arcuate members, the center of gravity of the entire structure will remain at approximately the same point over the center of the column 10.

When the work is completed the apparatus is returned to the position shown in Fig. 1, the trestles T reinstalled, and the automobile lowered thereon. The clamps **30** are then loosened and caused to disengage the frame F and the frames **26** are then swung downwardly into the dotted line position shown in Fig. 2. The automobile may then be driven off of the device.

While the use of clamps which clamp directly onto the frame is preferably employed in some instances eyes or other fastening devices may be permanently welded onto the frame F to facilitate rigidly fastening the automobile onto the frames **26** and consequently onto the arcuate members **21** and **22**. Inasmuch as the angle irons **17** are preferably arranged on opposite sides of the arcuate members these angle irons in effect serve as guides confining the arcuate members on their respective pairs of rollers **20** while the arcuate members are rolling thereon.

From the above described construction it will be appreciated that an improved hoist for vehicles is provided enabling a vehicle such as an automobile to be rigidly secured to arcuate members which by rolling on the rollers **20** will enable the automobile to be easily tilted into any desired position to facilitate making repair work thereon.

It will be appreciated by comparing Figs. 1 and 2 that the arcuate members are unjoined to one another in the area beneath the vehicle thereby exposing the entire under side of the vehicle and leaving the under side unobstructed. Also, by comparing Figs. 1 and 2 it will be seen that the arcuate members are spaced apart a distance less than the wheel base distance of the vehicle so that the front wheels and back wheels of the vehicle straddle the arcuate members and the wheels hang freely from the vehicle during use of the device and do not rest on any surfaces, the arms **28** being the sole supporting means for the vehicle, this construction allowing rotation and turning of the wheels or removal of the wheels when the vehicle is set up in the device.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A device of the class described comprising a supporting means having spaced pairs of rollers, an arcuate member mounted for rolling movement on each pair, means for rotating at least some of the rollers to roll the arcuate members about their respective centers of curvature, and means on the arcuate members swingable to an erect position to provide rigid supports, said swingable means being fastenable to the frame of the vehicle for supporting the vehicle free and clear of the rest of the device, said swingable means being movable with movement of the arcuate members.

2. A device as set out in claim 1 in which the arcuate members are positioned apart a distance less than the wheel base length of the vehicle.

3. A device as set out in claim 2 in which the swingable means are the sole means of supporting the vehicle so that the wheels of the vehicle hang freely from the vehicle.

4. A device of the class described comprising a supporting means having spaced pairs of rollers, an arcuate member mounted for rolling movement on each pair, means for rotating at least some of the rollers to roll the arcuate members about their respective centers of curvature, and means on each arcuate member foldable downwardly and inwardly toward one another to enable a vehicle to pass thereover and swingable upwardly to an erect position, the foldable means being connectable to the frame of the vehicle for supporting the vehicle free and clear of the rest of the device and for allowing the vehicle to be bodily turned with movement of the arcuate members, the foldable means being adjustable as to height and being the sole supporting means for the vehicle, the arcuate members being spaced apart a distance less than the wheel base length of the vehicle and being unjoined to one another in the area beneath the vehicle leaving the under side of the vehicle unobstructed.

5. A device of the class described comprising a supporting means having spaced pairs of rollers, an arcuate member mounted for rolling movement on each pair, means for rotating at least some of the rollers to roll the arcuate members about their respective centers of curvature, and means on each arcuate member providing a pair of upstanding arms, the pair of arms on one arcuate member being swingable inwardly toward the pair or arms on the other arcuate member to enable the vehicle to pass thereover and swingable upwardly into the under side of the vehicle, each arm having clamping means for clamping onto the frame of the vehicle, said arm providing means being mounted directly upon its arcuate member to be movable therewith whereby the vehicle is bodily turned with movement of the arcuate members.

6. A device of the class described comprising a pair of spaced arcuate members mounted for rotation about a common axis which is the center of curvature of each, means for rotating the arcuate members in unison, and means on the arcuate members movable in unison therewith and swingable from a collapsed position to an erect position to provide rigid supports and being attachable to the frame of the vehicle for supporting the vehicle free and clear of the rest of the device.

7. A device of the class described comprising a pair of spaced arcuate members mounted for rotation about a common axis which is the center of curvature of each, means for rotating the arcuate members in unison, means on the arcuate members and movable therewith and swingable about axes transverse of said common axis above mentioned to an erect position to provide rigid supports, and clamping means adjustably carried by the last-named means adapted to be clamped onto the frame of the vehicle for supporting the same.

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