Oct. 9, 1923. 1,470,581

H. E. DUFFY

AUTOMOBILE ELEVATING JACK

Filed April 17, 1922 2 Sheets-Sheet 1

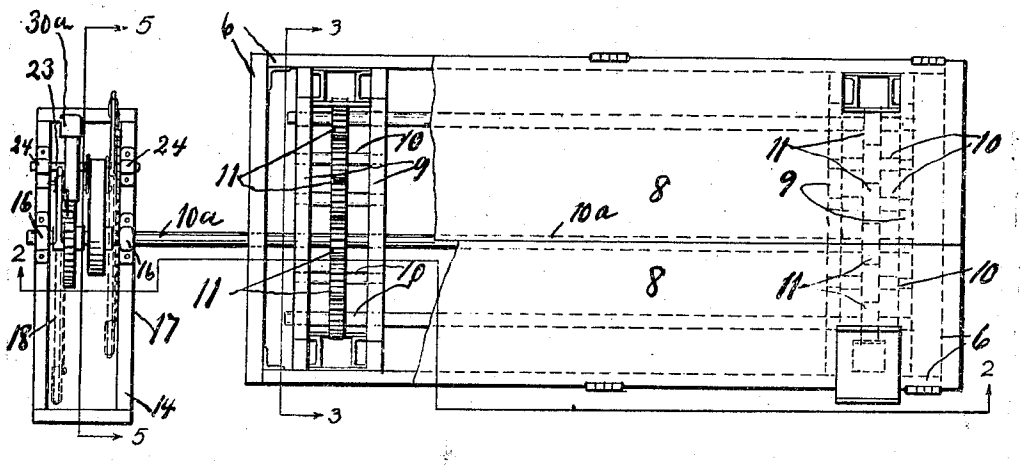


FIG. 1.

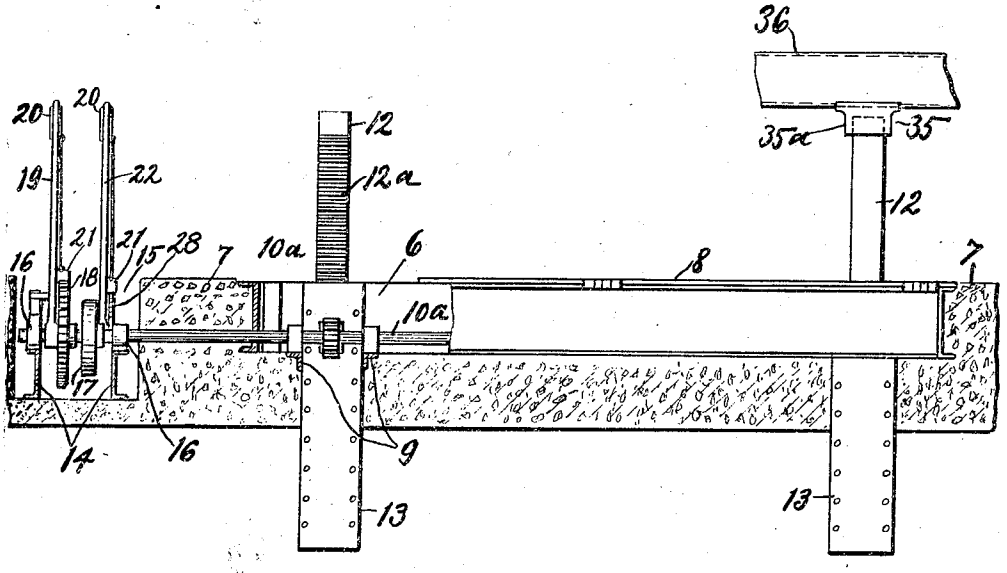


FIG 2

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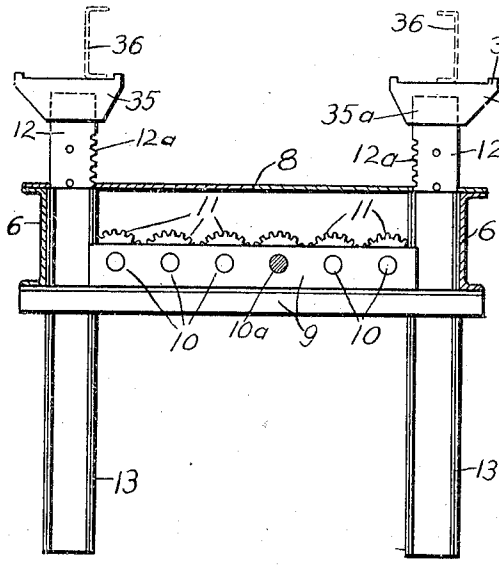


FIG. 3.

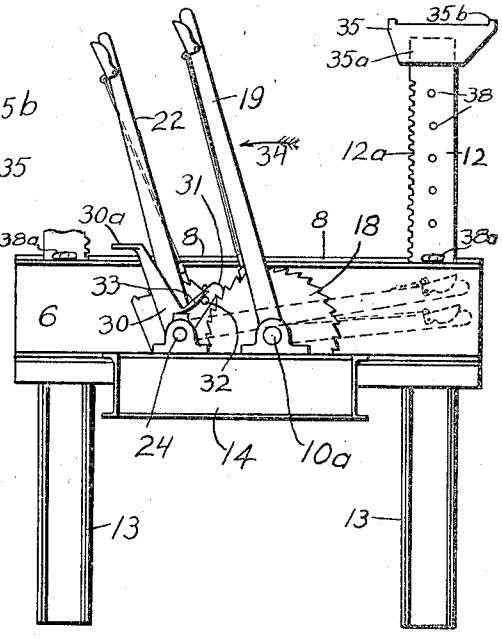


FIG. 4.

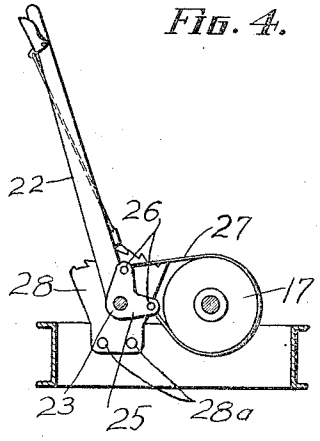


FIG. 5.

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Patented Oct. 9, 1923. 1,470,581

UNITED STATES PATENT OFFICE.

HARRY E. DUFFY, OF ST. PAUL, MINNESOTA, ASSIGNOR OF FIVE ONE-HUNDREDTHS TO ANNA F. JANIESCH, OF SLEEPY EYE, MINNESOTA, AND FOUR-TENTHS TO PAUL E. RICK, OF ST. PAUL, MINNESOTA.

AUTOMOBILE ELEVATING JACK.

Application filed April 17, 1922. Serial No. 554,001.

To all whom it may concern:

Be it known that I, HARRY E. DUFFY, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Automobile Elevating Jack, of which the following is a specification.

My invention relates to devices for elevating vehicles of all kinds, particularly automobiles, for the purpose of making them easily accessible for repairing or demonstration purposes.

The object of the invention is to provide a device readily installed in the floor of a garage or other building, the parts of said device being so constructed that when not in use they are hidden from view and covered in such a manner that automobiles may be driven over it the same as the rest of the floor in such building.

In the accompanying drawings:

Fig. 1 is a top view of the device, some parts being broken away to expose the mechanism.

Fig. 2 is a partly sectional side elevation about as on line 2—2 in Fig. 1.

Fig. 3 is a sectional elevation on line 3—3 in Fig. 1.

Fig. 4 is an end elevation looking as from left to right in Fig. 1.

Fig. 5 is an enlarged sectional elevation as on line 5—5 in Fig. 1, disclosing mainly the brake of my device.

Referring to the drawing by reference numerals, 6 is an elongated rectangular frame preferably made of structural iron, and adapted to be installed below the floor level 7 of a garage in such a manner that the top of its hinged cover sections 8, is level with the floor line, said covers forming practically an unbroken surface level with the rest of the garage floor. Within said frame and near each end of it I provide an integral cross frame consisting of two transversely arranged spaced members 9 in which are journaled a number of spaced shafts 10 carrying a train of gears 11 the outer ones of which engage the teeth 12^a of a vertically arranged rack post 12 movable vertically in hollow depending casings 13.

A long shaft 10^a extending longitudinally through the entire frame and having corresponding gears 11 in the inner frames 9 keyed thereto, is extended a predetermined distance from the above described main frame to a secondary frame 14 installed in a pit 15 below the floor line and containing the operating levers of my device which will now be described.

Shaft 10^a is journaled in bearings 16 on frame 14 and between said bearings I key on said shaft a brake drum 17 and a gear 18. A hand lever 19 pivotally engaging the shaft 10^a and located adjacent the said gear 18 is provided with a finger latch 20 operating a ratchet pawl 21 to engage the teeth of the gear 18. The lever normally projects vertically above the pit 15 through a slot in a floor plate (not shown) covering said pit. Another vertically arranged lever 22 pivotally secured on a stub shaft 23 rotating in bearings 24 on the frame 14 and adjacent brake drum 17 is adapted to rock a bell crank 25 pivotally secured on the same shaft (see Fig. 5). The arms of the bell crank 25 are connected by pins 26 to the opposite ends of a brake band 27 adapted to contact with the outer surface of the brake drum 17. Lever 22 is also provided with a finger latch 20 operating a pawl 21 which engages a toothed segment 28 secured as at 28^a on frame 14 and concentric with shaft 23. By manipulating lever 19 one way its gear 18 and the shaft 10^a rotates the trains of gears 11 in a direction which causes all four rack posts to be raised, or lowered, simultaneously. A small bell crank 30 (see Fig. 4) mounted on shaft 23 in the small frame has one arm projecting up through the floor plate above frame 14 and its end flattened to form a foot pedal 30^a, its other arm 31 being hook-shaped to engage the teeth of gear 18. A pin 32 in the latter arm is engaged by a flat spring 33 secured in the adjacent bearing 24, said spring tending at all times to keep said hooked arm in engagement with the teeth of the gear. It will be readily seen that when lever 19 is used to rotate gear 18 in direction of arrow 34 (Fig. 4) to raise the four rack-posts 12 the hooked arm 31 will hold the gear 18, and also the posts 12, while the lever 19 is used to take another stroke to raise the posts further. Each post 12 projects through a hole 12^a in the main frame cover 8 and I provide for it

a removable cap 35 with a socket 35[a] on its under side to fit the top of the post and a horizontal top surface. These caps are adapted to engage the frame members 36 of an automobile or other vehicle and as all the caps are on the same horizontal plane the uniform raising of all the posts will raise the vehicle to any desired height.

The lowering of a vehicle from its raised position is accomplished by releasing pawl 31 from the gear 18 and simultaneously applying the brake with lever 22.

When so desired the levers 19 and 22 may be folded down into pit 15 below the floor level, the former lever having enough freedom to do this but the latter lever cannot be folded down until one of the brake band pins 26 on the bell crank have been withdrawn thus disconnecting the brake band and permitting lever 22 to be swung down into the pit out of the way.

The caps 35 may be offset and have flanges 35[b], said offset being horizontal and permitting the caps to be adjusted so that automobile frames of various widths may be engaged.

The operation of my device being fully disclosed in the above description it is only necessary to add that in the use of my device no part of an auto or other vehicle need be clamped or secured to it in any manner, the vehicle simply being raised by the four posts to any desired height and any person may walk under it to make repairs, inspections, etc. The advantage of using my device for displaying motor cars is obvious.

38 is a vertical row of holes in each of the rack posts and 38[a] is a pin provided to be put in the hole nearest the frame cover to prevent the posts from accidentally coming down.

What I claim is:

1. In a device of the kind described, a rectangular, horizontally arranged frame with cover sections adapted to be installed below the floor line of a building with its cover in plane with said floor, a number of depending hollow columns integral with said frame and a vertically slidable post within each column, means for raising and lowering said posts simultaneously and means removably secured on the top ends of said posts for engaging the under side of a vehicle, said posts having each on its inner side a toothed rack; trains of gears transversely arranged within the main frame, a train for each pair of oppositely arranged posts, the outer gears of each train meshing with the rack of its adjoining slidable post.

2. The structure specified in claim 1, said raising and lowering means comprising a longitudinally arranged main shaft keyed to the corresponding gear of each train of gears and extending to a secondary frame and journaled therein, and means within said secondary frame for rotating said main shaft to rotate the trains of gears and raise the posts simultaneously.

3. The structure specified in claim 2, and a brake on said shaft within the secondary frame for retarding the downward movement of the posts.

4. The structure specified in claim 3, said means for rotating the main shaft comprising a gear keyed thereon, a lever on the shaft adjacent the gear, means on the lever for engaging the teeth of the gear and locking means pivotally mounted adjacent the gear and engaging the latter to hold the lifting posts at any desired height.

In testimony whereof I affix my signature.

HARRY E. DUFFY.