

June 19, 1928.

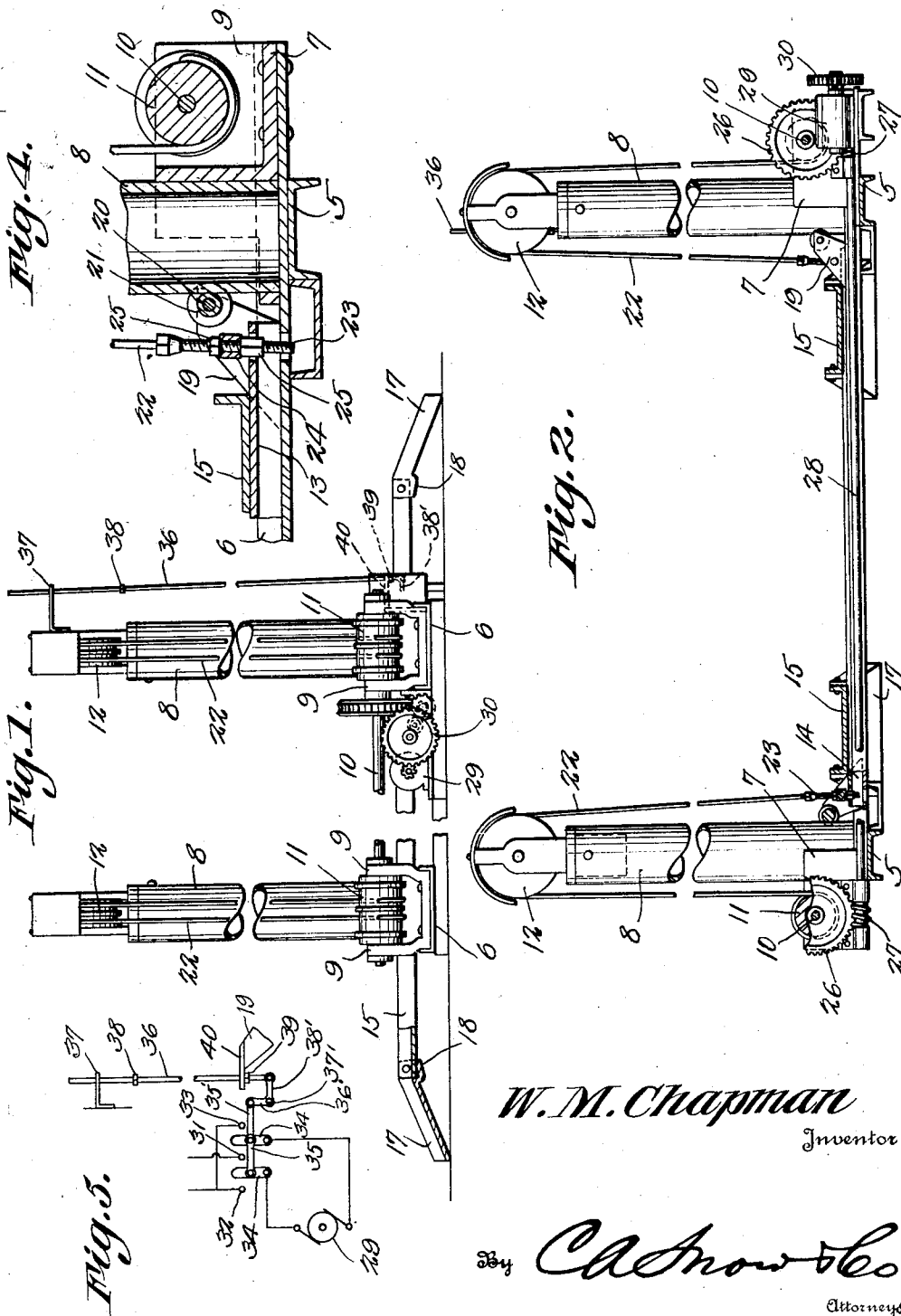
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W. M. CHAPMAN

ELEVATOR RACK

Filed April 20, 1927

2 Sheets-Sheet 1



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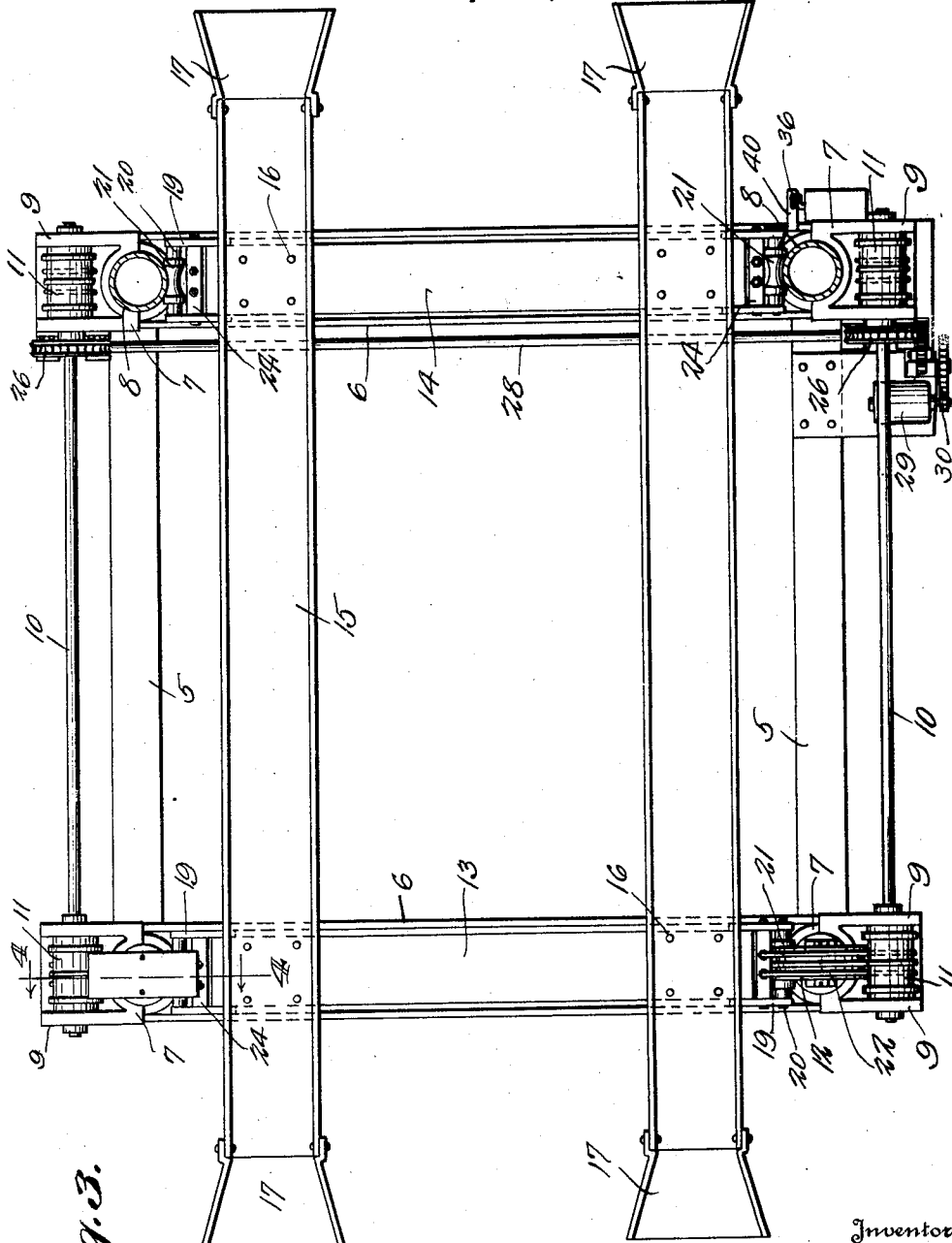
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UNITED STATES PATENT OFFICE.

WILLIAM MELROSE CHAPMAN, OF NEW ORLEANS, LOUISIANA.

ELEVATOR RACK.

Application filed April 20, 1927. Serial No. 185,212.

This invention relates to elevator racks, especially designed for lifting motor vehicles.

The primary object of the invention is to provide an elevator rack of the motor driven type especially designed for use in elevating motor vehicles to a plane wherein mechanics may have easy access to the working parts of the vehicle while in a standing position, thereby facilitating the oiling, greasing and repairing operations.

Another object of the invention is to construct an elevator rack of this character so that the strain directed to the uprights of the rack caused by the weight of the vehicle being lifted, will be directed in a true vertical plane and throughout the lengths of the uprights, thereby relieving the uprights of all lateral strain.

A further object of the invention is to provide means for adjusting the sides of the movable frame to level the movable frame, should the elevator rack be positioned on an uneven surface.

A still further object of the invention is the provision of means for automatically cutting off the motor when the elevator reaches a predetermined position or a position at the limit of its upward movement.

With the foregoing 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.

Referring to the drawings:

Figure 1 is a side elevational view of a device constructed in accordance with the invention, parts broken away and parts in section.

Figure 2 is a transverse sectional view through the elevator rack.

Figure 3 is a plan view of the elevator rack and illustrating the uprights at one end of the elevator rack, in section.

Figure 4 is an enlarged sectional view taken on line 4—4 of Figure 3.

Figure 5 is a diagrammatic view illustrating the switch and operating mechanism.

Referring to the drawings in detail, the device embodies inverted channel bars 5, arranged at opposite sides of the elevator rack

to which the front and rear channel bars 6 are connected in the formation of the base of the rack. These channel bars 6 extend appreciable distances beyond the channel bars 5 as clearly shown by Figure 4 of the drawings, where they provide supports for the brackets 7 that embody sockets for the reception of the uprights 8.

These brackets have spaced flanges 9 formed with openings to receive the shafts 10 on which the double drums 11 are mounted. Supported on the upper ends of the uprights 8 are double pulleys 12 which are of diameters so that the peripheries thereof extend beyond the sides of the uprights with the result that the cables operating thereover will move in substantially vertical lines.

The inner or movable lifting frame embodies front and rear channel bars 13 and 14 respectively which are relatively narrow and are designed to fit within the channel bars 6 as clearly shown by Figure 3 of the drawings.

These channel bars 13 and 14 are connected by means of the track sections 15 and are secured thereto by means of the rivets 16.

At the ends of the track sections 15 are pivoted sections 17 that are provided with inwardly disposed lips 18 adapted to engage under the track sections 15 to restrict downward movement of the sections 17. Thus it will be seen that as the movable frame moves downwardly, the pivoted sections will contact with the surface on which the elevator rack is positioned, and will automatically adjust themselves to irregularities in the surface on which the device is positioned.

Pairs of arms 19 are secured at each end of each of the channel bars 13 and 14, and as shown, these arms 19 extend upwardly and outwardly where they are connected by means of the shafts 20 on which the rollers 21 operate, the rollers 21 being formed with curved peripheries conforming to the curvature of the corner posts or uprights against which they operate.

These rollers 21 not only guide the movable frame in its upward movement, but at the same time provide means to brace the uprights against lateral strain while the motor vehicle positioned on the movable frame is being elevated.

The cables 22 which operate over the pulleys 12, and which are wound on the drums 11, are connected with the movable frame by means of the threaded shanks 23,

which are formed with bores throughout their lengths and in which the cables 22 are secured. As shown, the shanks extend through brackets 24 that are carried by the arms 19, and which are supported between the arms, there being provided nuts 25 on the threaded shanks and disposed on opposite sides of the brackets 24 so that by rotating the nuts, the sides of the movable frame may be adjusted vertically to level the movable frame.

The shafts 10 that operate on opposite sides of the elevator lift are provided with gears 26 that are in mesh with the oppositely disposed worm gears 27 mounted at opposite ends of the shaft 28 to the end that the shafts 10 are operated in opposite directions and the cables are wound on the double drums from the insides of the drums.

These shafts 10 and 28 are operated by means of the motor 29 that transmits its motion through the train of gears indicated at 30.

The switch for controlling the circuit to the motor is of the double-pole type, and embodies contact points 31, 32 and 33, the contact points 31 and 32, when in circuit, cause the motor to operate in one direction, while the contacts 31 and 33 when in circuit, cause the motor to operate in the opposite or reverse direction.

Reference characters 34 indicate the switch arms which are connected by means of the link 35 and so arranged that they will move into engagement with the contacts 31, 32 and 33 to complete the circuits. As shown, the arm 35' connects with the link 35, the arm 35' is connected with the lever 36' to move therewith, which lever is connected with the shaft 37', to which the arm 38' is connected, the latter arm having pivotal connection with the rod 36 that has its upper end supported within an opening formed in the guide arm 37. Secured to the rod 36 is an upper stop 38 and a lower stop 39 between which the laterally extended arm 40 carried by the movable frame operates.

From the foregoing it will be seen that when it is desired to elevate the movable

frame, the operator moves the rod 36 downwardly causing the arm 38 to operate to move the arms and link that connects the switch arms 34 to complete the circuit to the motor through the contact points 31 and 33, causing the motor to operate in a direction to elevate the movable frame. It follows that when the arm 40 moves into engagement with the stop 38, the rod 36 is moved upwardly causing the operating arms and link to move the switch arms to their neutral positions, thereby cutting off the motor.

When it is desired to lower the movable frame, the operator moves the rod 36 upwardly causing the switch arms 34 to move into engagement with the contact points 31 and 32, thereby placing the motor in circuit and causing the motor to operate in a reverse direction to rotate the shafts to unwind the cables.

As the arm 40 contacts with the stop 39 the rod 36 is again moved downwardly operating the contact arms to move them to their neutral positions and again cutting off the motor.

It should be obvious that owing to the meshing of the gears with the worm gears, the movable frame will be held against downward movement when in its elevated position until the motor is reversed, it being understood that the motor 29 is of the reversing type.

I claim:

An elevating device including a base embodying longitudinal inverted channel bars, transverse channel bars secured to the first mentioned bars and having upstanding flanges, corner posts secured to the first mentioned bars, a vertically movable frame embodying channel bars adapted to normally rest between the upstanding flanges of the second mentioned channel bars, said frame adapted to move between the corner posts, and means operating over the posts for raising and lowering the vertically movable frame.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

WILLIAM MELROSE CHAPMAN.