Nov. 22, 1927.

1,649,904

E. A. LONGGOOD

VEHICLE LIFTING DEVICE

Filed Oct. 14, 1926

4 Sheets-Sheet 1

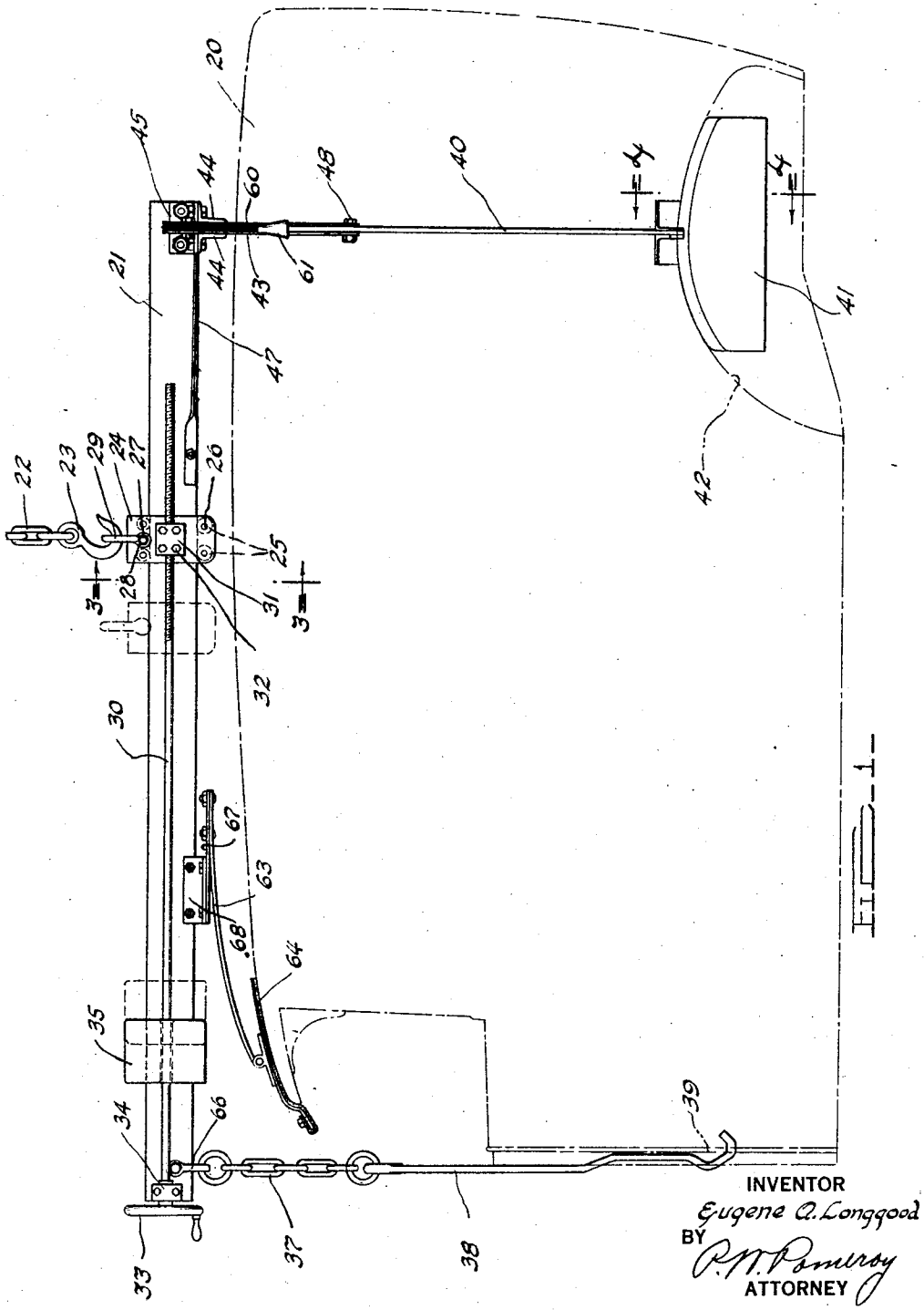


FIG. 1.

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Filed Oct. 14, 1926 4 Sheets-Sheet 2

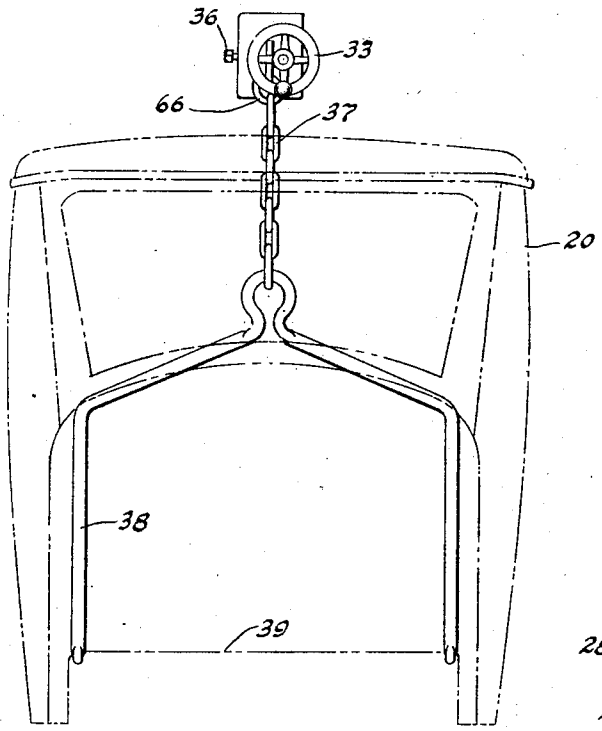


FIG. 2.

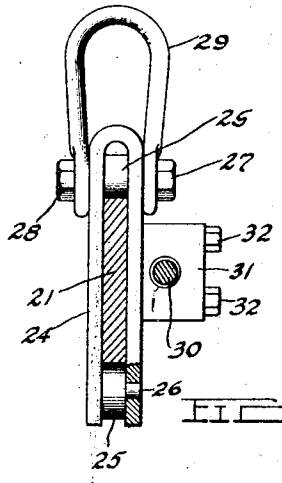


FIG. 3.

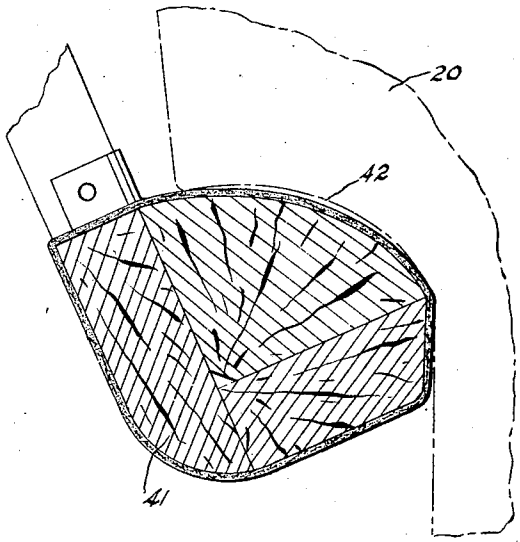


FIG. 4.

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Filed Oct. 14, 1926 4 Sheets-Sheet 3

FIG. 5.

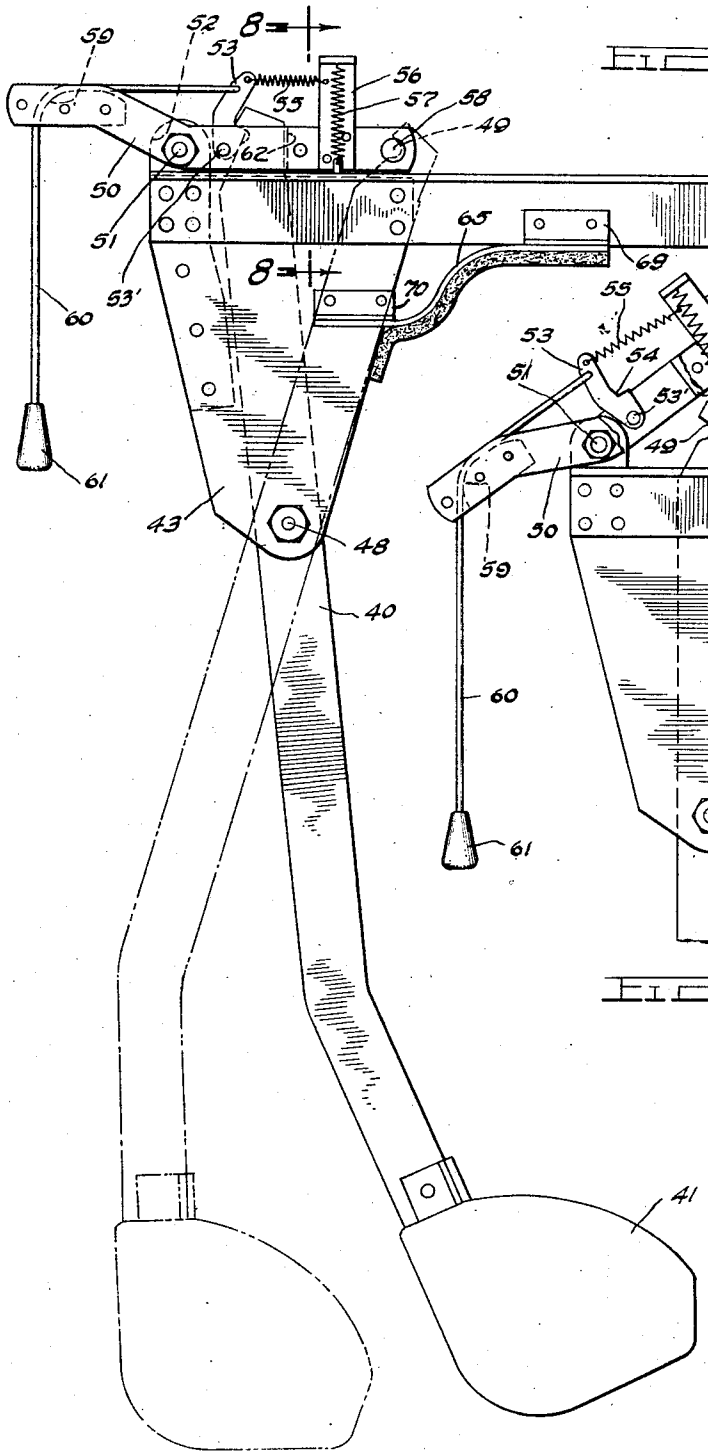


FIG. 6

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VEHICLE LIFTING DEVICE

Filed Oct. 14, 1926 4 Sheets-Sheet 4

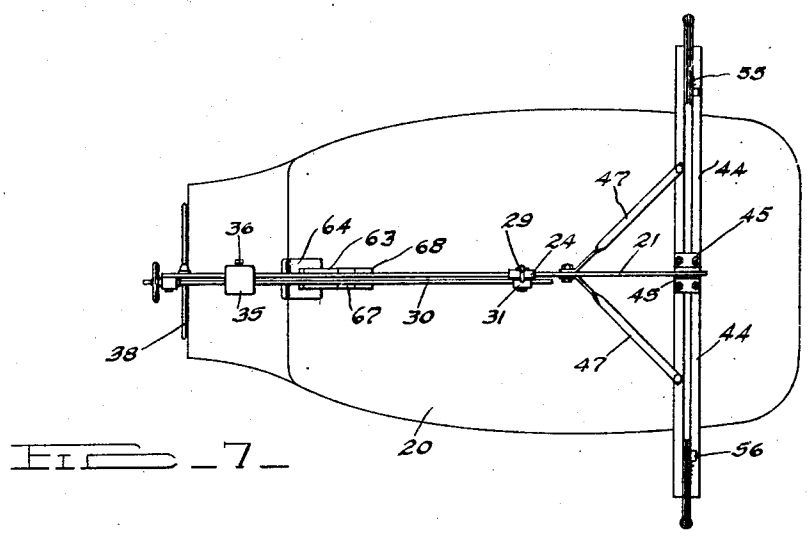


FIG. 7.

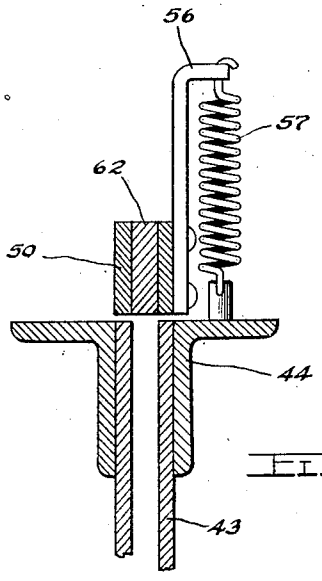


FIG. 8

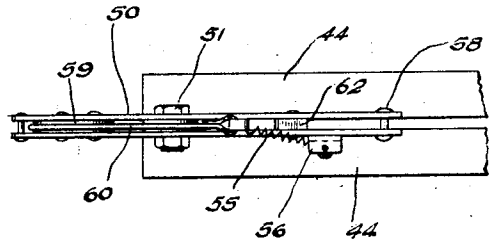


FIG. 9

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Patented Nov. 22, 1927. 1,649,904

UNITED STATES PATENT OFFICE.

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VEHICLE-LIFTING DEVICE.

Application filed October 14, 1926. Serial No. 141,517.

This invention relates to loading devices, and particularly to a crane sling for use in connection with the moving of vehicle bodies.

It is generally the custom in large manufacturing plants to finish the vehicle bodies on a floor above the floor on which the chassis is assembled and when it is desired to mount a body on a chassis, the chassis is positioned beneath an opening in the floor above, and the body is lowered through the opening by a crane, chain falls, or the like. Usually a loading crane is provided with hooks for engaging a flange or similar part of the body cowl, and with cables which hook over the ends of a wooden cross member extending transversely through the door or rear window opening of the body, if a "closed" body is being mounted on a chassis. In "open" bodies provided with collapsible tops, the rear hooks may be secured to the top supports, or to a cross member extending transversely beneath the frame of the body. This latter method has been found to be particularly objectionable as it is necessary to remove the cross member before the body can be correctly placed on the chassis. All this, placing the cross member, securing the hooks, etc., consumes considerable time and necessitates several men to properly mount the body on the chassis; besides, the men are apt to become careless and bump the body with the cross member, or allow the swinging hooks to strike it and mar the finish.

With the above in view, it is the principal object of the present invention to provide a crane device for moving or loading vehicle bodies, which is adjustable to all types of bodies, that is, sedan, coupé, touring, and the like.

Another object is to provide an adjustable crane sling for moving vehicle bodies, which is economical to manufacture, easily operated and which is very efficient in that the body cannot become disengaged from the sling while it is being moved from one location to another.

Another object is to provide a crane sling having padded arms which support the rear of the body at the rear wheel housings.

A further object is to provide a crane sling with a longitudinally adjustable support for the crane hook, whereby the position of the same may be changed to be above the center of gravity of different type bodies which are to be moved, in order to keep the bodies on a substantially horizontal plane.

These being among the objects of the present invention, the same consists of certain features of construction, and combinations of parts, to be hereinafter described with reference to the accompanying drawings, and then claimed, having the above and other objects in view.

Referring to the accompanying drawings in which a suitable embodiment of the present invention is illustrated.

Figure 1 is a side elevation of the crane sling showing the same in position for engaging a vehicle body, which is shown in dash and dot outline.

Figure 2 is a front elevation of the crane sling showing the hooked member engaging the cowl at the front of the body.

Figure 3 is an enlarged section taken on the line 3—3 of Figure 1, showing an end view of the adjustable crane hook support.

Figure 4 is an enlarged section taken substantially on the line 4—4 of Figure 1 showing the padded block engaging the wheel housing.

Figure 5 is an enlarged side view of one of the swinging arms carrying the pad to engage the wheel housing.

Figure 6 is a partial side view showing the locking mechanism for the swinging arm in released position.

Figure 7 is a plan view of the crane sling showing the same positioned over the top of a vehicle body.

Figure 8 is an enlarged section taken on the line 8—8 of Figure 5 showing a portion of the locking mechanism.

Figure 9 is an enlarged plan view of the latch release and locking mechanism shown in Figure 5.

In the accompanying drawings, in which like numerals refer to like parts throughout the several views, a vehicle body 20 is shown suspended by the crane sling comprising the present invention, and as illustrated in dash and dot outline, particularly in Figures 1, 2 and 7, is of the closed type, wherein a permanent top is provided. The sling is provided with a main frame member 21 through which the entire weight of the body being lifted is transferred to the lifting crane (the chain 22 and hook 23 only of which are shown). The frame member 21 is rectangular in cross section and extends longitudinal-

ly of the body just over its top. A block 24 of inverted U-shaped section encloses the sides and top of the frame member 21 and extends below the bottom thereof. Between the sides of the block 24 and carried by pins 26 are rollers 25 which contact with the lower face of the frame member 21 and transmit the weight of the body from the frame member 21 to the block 24. A clevis 29, which is secured to the upper edge of the block 24 by a bolt 27 and nut 28, is provided for transmitting the weight of the body from the block 24 to the crane hook 23.

A shaft 30 having one end threaded into a screw block 31 secured to the side of the block 24 by cap screws 32 provides a means for longitudinal adjustment of the block 24 on the frame member 21, such adjustment being desirable to compensate for the varying centers of gravity of different types of bodies. The unthreaded end of the shaft 30 is supported by a bearing 34 secured to the extreme end of the frame member 21, and a hand wheel 33 is keyed to the end of the shaft 30 extending through the bearing 34 to rotate the same. The position of the block 24 on the frame member 21 may be changed by rotating the hand wheel 33 which causes the shaft to thread into the screw block 31 and draw the block 24 forward or backward on the frame member 21, according to the direction of rotation of the wheel 33. A weight 35, having a set screw 36 may be provided to slide on the front end of the frame 21 in order to balance the sling structure, as the rear end of a vehicle body is heavier than the front end.

Referring particularly to Figures 1 and 2, the front end of the crane sling is provided with a clevis 66 and a chain 37 which carries a U-shaped iron bar 38 having hooked ends that engage with the lower edge of the vertical portion of the body cowl 39, to support the front end of the body 20.

Supports 44, formed of spaced angle iron members secured by angle brackets 45 to the rear end of the frame member 21, extend outwardly in opposite directions from the sides of the main frame member 21 and are rigidly braced by brace members 47 properly secured thereto and to the frame member 21.

The outer extremities of the supports 44 are provided with downwardly extending plates 43 which pivotally support vertically positioned arms 40 between their ends on the pins 48 for movement laterally of the body 20 and frame member 21. The lower ends of the arms 40 are built up with curved blocks 41 suitably padded with felt or other resilient material and shaped to provide surfaces complementary to the indentations that form the wheel housings 42 of the body 20 which they are adapted to engage as shown in Figure 4 and thereby support the rear end of the body. The upper ends of the arms 40 lie between and normally project above the angle members that form the supports 44, as shown in Figure 6. The arms 40 are adapted to be held in two positions by locking and releasing means, one position of which is the engaging position as shown by the solid lines of Figure 5, that is, being locked in position to support the vehicle body, and the other of which is the non-engaging position, as shown by the dot and dash lines of the same figure, the arms 40 being locked out of contact with the body.

As the locking and releasing means for each arm 40 are identical, it is sufficient to describe only one of the same in detail. Referring to Figures 5 and 6, the locking and releasing mechanism is shown as comprising a lever 50, composed of two flat members spaced parallel to each other, pivoted between its ends on a pin 51 supported by a base member 52 secured to the extreme end of the support 44, and a latch member 53 pivoted at 53′ on the the flat members comprising the lever 50. One face of the latch 53 is cut away to provide a substantially ninety degree step 54 for a purpose to be hereinafter described. The free end of the latch 53 is drawn toward the inner end of the lever 50 by a coil spring 55 attached to an upwardly extending standard 56 secured to the lever 50. The standard 56 is formed with a flange to which one end of the spring 57 is secured, the opposite end being secured to the support 44, so that the lever 50 is normally drawn downwardly toward the member 44. Extending horizontally between the spaced members of the lever 50 at its extreme inner end is a bolt 58 which engages with an indentation 49 in the uppermost end of the arm 40 to lock the arm in non-engaging position. (See Figure 5.) Secured at the opposite end of the lever 50, and positioned between the side pieces, is a curved member 59 over which a cable 60 is adapted to slide to operate the latch 53, one end of the cable 60 being attached to the latch 53 and the other end being provided with a pull handle 61. Adjacent the standard 56, but positioned between the sides of the lever 50, is a stop block 62 for the arm 40 to abut against, the use of which will be described later.

When the swinging arm 40 is in inoperative position, as shown by the dot and dash lines of Figure 5, the same is locked against movement by the pin 58 which engages the indentation 49 in the end of the arm 40. When the locking and releasing means is released and the arm 40 is swung to engaging position, as shown by the solid lines of Figure 5, the same is locked against movement by the stop block 62 which engages with and prevents its upper end from pivoting. The latch 53 engages a portion of the indentation 49 and prevents the inner end of the

lever 50 from accidentally raising and allowing the stop block 62 to become disengaged from the arm 40.

The body 20 while being supported in the crane sling is steadied therein and prevented from longitudinal rocking by means of a felt faced arm 64, engaging the front end of the body top and pivoted between its ends to one end of a long flat spring member 63. The other end of this spring member 63 is mounted on a shorter flat spring member 67 attached to the main frame member 21 by the bracket 68. Referring to Figure 5, stampings 65, lined with felt or similar material and mounted on brackets 69 and 70 secured to each of the supports 44 and the end plates 43 respectively, are adapted to contact with the body 20 at the top side rails to prevent transverse rocking and swinging of the body.

The operation of the mechanism comprising the present invention will now be described and a specific example of mounting a vehicle body on a vehicle chassis will be explained. The body, after being assembled, is usually some distance away from the chassis, so a traveling crane (not shown) or other suitable means may be employed to move it for mounting on the chassis. The crane is moved so that the sling is directly over the body 20 and is lowered so that the hooked ends of the U-shaped bar 38 may be engaged with the body cowl 39. While in inoperative position, the swinging arms 40 are held in such a position by the locking means that the padded ends will not touch the body 20. Each arm 40 is then released by pulling the cable handle 61 to cause the lock bolt 58 to disengage the indentation 49 in the end of the arm 40. The cable handles 61 are then pulled further to raise the inner ends of the levers 50 out of engaging relation with the upper ends of the arms 40, and the arms 40 are swung inwardly so that the padded end portions 41 fit snugly in and up against the wheel housing 42 of the body 20. When each arm 40 has reached this position, as shown by the solid line in Figure 5, the handle 61 is released and the tension in the coil spring 57 then draws the lever 50 downwardly to normal position so that the stop block 62 drops back of the upper end of the arm 40 to prevent the same from moving. The latch member 53 engages the indentation 49 in the end of the arm 40 and locks the lever 50 against inadvertent movement. The operator then manipulates the crane to raise the body from the floor, and if the body 20 does not ride level, or in other words is at an angle with the horizontal, the hand wheel 33 is rotated to draw the supporting block 24 forwardly or rearwardly, whichever the case may be, so that there will be an equal distribution of the weight on each side of the point where the lifting force is exerted. The crane moves the body over to a position directly over the vehicle chassis on which the body 20 is to be mounted and lowers the same thereonto. The crane sling is then released by pulling the cable 60 of each latch mechanism so that, first, the latch member 53 disengages with the end of the arm 40 and then the entire lever 50 is pivoted upwardly until the stop block 62 clears the end of the arm 40, to allow the lower end of the arm 40 to swing outwardly and disengage the padded end 41 from the wheel housing 42. This position for the latch mechanism is shown in Figure 6. Both arms are released in this way and the U-shaped bar 38 is then released by unhooking the same from the body cowl 39. The arms 40 are then swung outwardly to their original inoperative positions, with the bolts 58 locking the same in such positions. The crane sling is now ready to be attached to another body, but this body may be of a different type, that is, if the body 20 was of the sedan type, this next one to be assembled to a chassis may be of the coupé type wherein the weight is not distributed the same longitudinally of the body, and it will be necessary, after the same is attached to the body, to adjust the block 24 on the frame 21 by rotating the hand wheel 33, as was done in the preceding instance.

From the description and operation of the present invention, certain advantages are readily apparent. It can be seen that the lifting device may be adjusted to keep the bodies level at all times, and may be adjusted to meet the distribution of weight in different type bodies, that it eliminates extra labor usually employed for operating other devices of this nature, and that it operates easily and quickly, thereby saving time.

Formal changes may be made in the specific embodiment of the invention described, without departing from the spirit and substance of the broad invention, the scope of which is commensurate with the appended claims.

What I claim is:—

1. A lifting device for a vehicle body comprising a frame and body engaging members extending downwardly therefrom, the front engaging members being hooked to engage the body cowl, and the rear engaging members being pivotally mounted on said frame and blocks conforming in shape with and engaging the curved face of the wheel housings of said body.

2. A lifting device for a vehicle body comprising a frame member, oppositely extending sub-frame members secured thereto and projecting perpendicularly therefrom, and downwardly projecting arms pivotally mounted on each of said sub-frame members, the lower ends of said arms being provided with blocks conforming in shape with and

engaging the curved face of the wheel housings of said body.

3. In a vehicle body sling, a frame, a body engaging arm pivotally supported thereby, a pivotally mounted lever mounted on said frame co-operatively associated with said arm and provided with a plurality of stops each engageable with said arm whereby to hold said arm in one of a plurality of predetermined pivotal positions.

4. In a vehicle body sling, a frame, a body engaging arm pivotally supported thereby, a lever mounted on said frame provided with a plurality of stops engageable to hold said arm in a plurality of predetermined pivotal positions, and a latch mounted on said lever for preventing inadvertent movement of said lever.

5. In a vehicle body sling, a T-shaped frame, a body engaging arm pivotally supported on one of the arms of said frame, a lever pivotally supported on said frame provided with a plurality of stops each engageable with said arm to hold said arm in one of a plurality of pivotal positions, and a latch carried by said lever and engageable with said arm to lock said lever against inadvertent movement.

6. In a vehicle body sling, a frame, a body engaging arm pivotally supported thereon, a lever pivotally supported on said frame provided with a plurality of stops each engageable with said arm for holding said arm in one of a plurality of pivotal positions, a latch carried by said lever engageable with said arm for locking said lever against inadvertent movement, and single means for releasing said latch and moving said lever out of arm engaging position.

7. In a vehicle body sling provided with a supporting frame, a member supported thereby for engaging a lower portion of said body, said member comprising a depending arm mounted on said frame between its ends for pivotal movement lateral of said body, and a lever supported by said frame comprising two spaced parts adapted to straddle said arm, said lever provided with a block bridging the space between said parts and adapted to abut against said arm whereby to lock said arm against movement longitudinally of said lever.

8. In a vehicle body sling provided with a supporting frame, a depending arm supported thereby for engaging a wheel housing of said body and mounted for movement in a plane lateral to said frame, and a lever supported by said frame for locking said arm in a plurality of positions, said lever comprising two spaced parts adapted to straddle said arm and provided with abutments for said arm extending between said parts, means for normally holding said lever in arm engaging position, and means for swinging said lever out of arm engaging position.

9. A vehicle body sling comprising a supporting frame and depending members engageable with the cowl section and wheel house depressions of a body to secure the same thereto, and spring mounted pads carried by said frame for engagement with the top of said body for preventing relative movement of said body in respect to said sling.

10. In a vehicle body lifting device comprising a frame member and outwardly extending sub-frame members, body engaging arms mounted on said sub-frame members to pivot laterally of said frame member, and pivoted latch mechanisms each having a plurality of stops thereon co-operating with said body engaging arms for positively locking the same in operative and in inoperative positions.

11. In a sling for lifting vehicle bodies provided with a frame member having depending body engaging arms pivotally supported thereby, a block adjustably supported on said frame forwardly of said arms, screw means for adjusting said block on said frame, and means on said block for engaging sling lifting mechanism.

12. In a vehicle body lifting device having a frame and body engaging arms supported thereby, means on said frame extending parallel therewith for engaging a lifting mechanism, means for varying the position of said means on said frame to effect equal distribution of weight of the body on each side of the lifting force, and means for locking said arms into engagement with the vehicle body.

Signed by me at South Bend, Indiana, U. S. A., this 11th day of October, 1926.

EUGENE A. LONGGOOD.