

[54] **MOTOR DRIVEN VEHICULAR CHASSIS AND LOAD CARRYING PLATFORM OR CONTAINER FOR TRANSPORT THEREBY**

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[51] Int. Cl.....B60p 1/64

[58] Field of Search.....214/515; 254/47, 4 C

[56] **References Cited**

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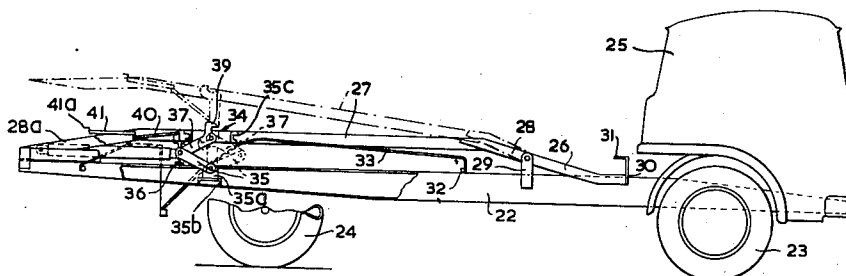
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[57] **ABSTRACT**

The invention consists in the combination of a motor driven chassis and a platform having front and rear supporting legs with releasable struts. The legs are hingedly secured to the platform and the latter is provided with rollers at its forward end and towards its rear end is provided with a combination of fixed and movable pulleys together with cable trained over the pulleys and anchored to the rear legs and to a fixture.

The chassis is provided with rails extending along the chassis girders, the rails being pivoted to the girders towards their forward ends and forming downwardly inclined ramps at their rear ends. The chassis is further provided with a pair of toggles operated by a hydraulic piston and cylinder assembly and having hooklike members. When the chassis is backed below a free standing platform the rollers cooperate with the ramps and run on the rails, the front end of the platform is raised, the struts of the front legs are released and said legs are folded upwardly and rearwardly, the toggles are then operated to raise the rails, to cause the hooklike members to lock the platform to the chassis and to move the movable pulleys so that the cables release the struts of the rear legs which are folded upwardly and inwardly, further movement of the toggles lowering the platform and the rails. By reversing the movement of the piston the cycle of operations is reversed to leave the platform free standing.

**4 Claims, 7 Drawing Figures**



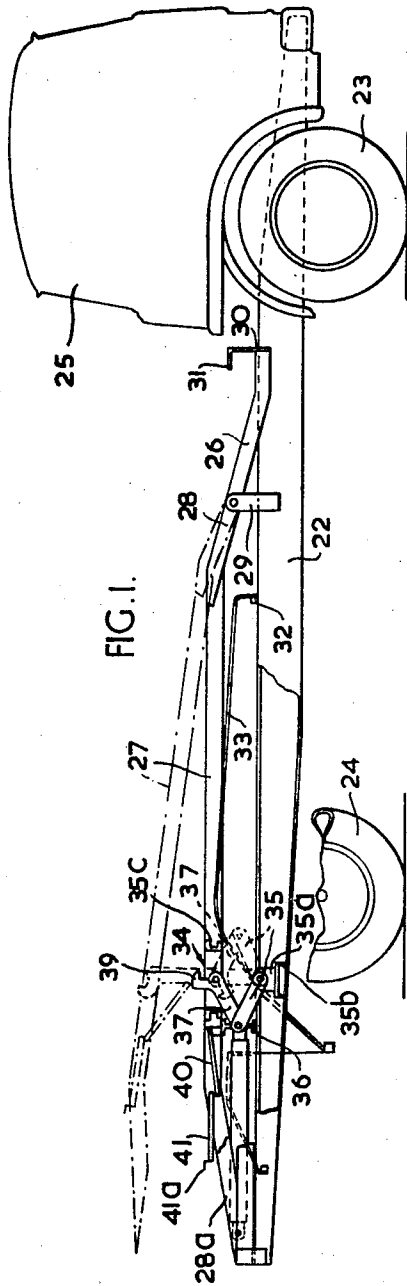


FIG. 1.

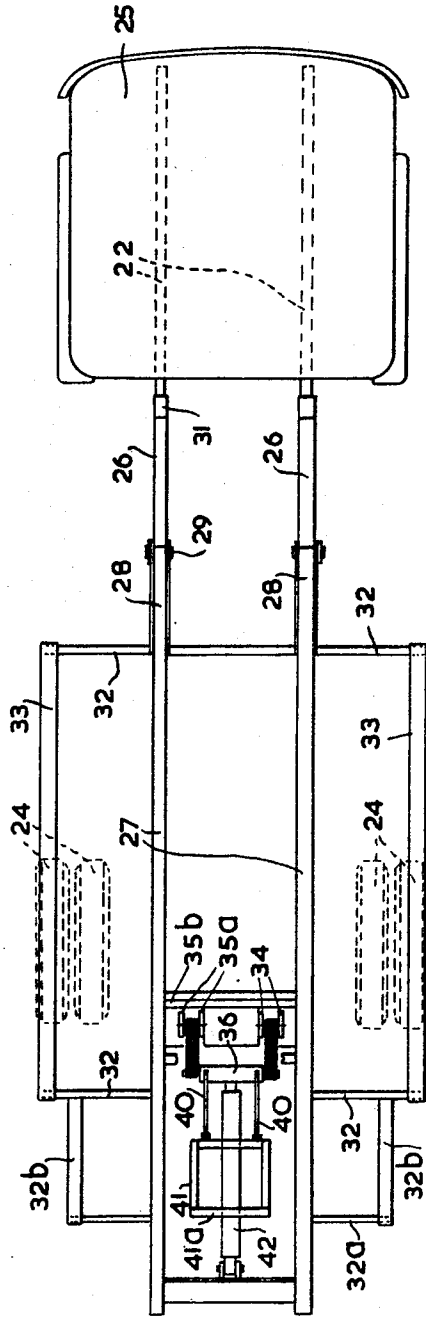


FIG. 2.

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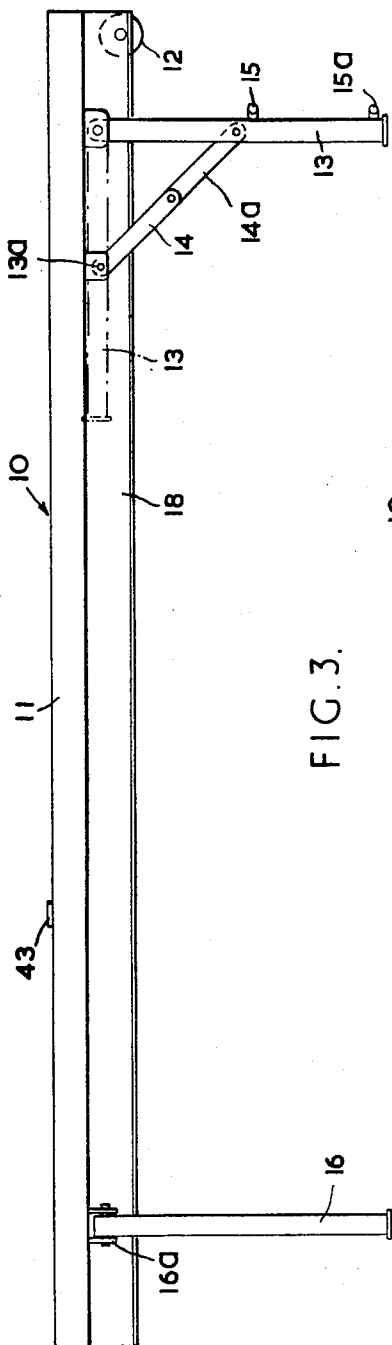


FIG. 3.

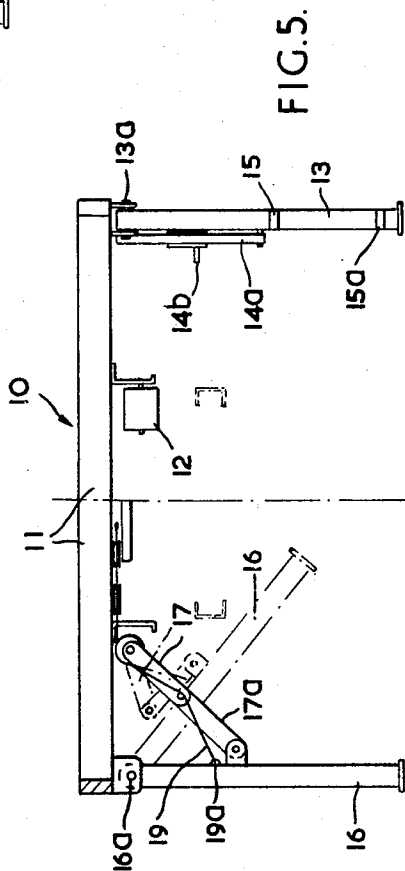


FIG. 5.

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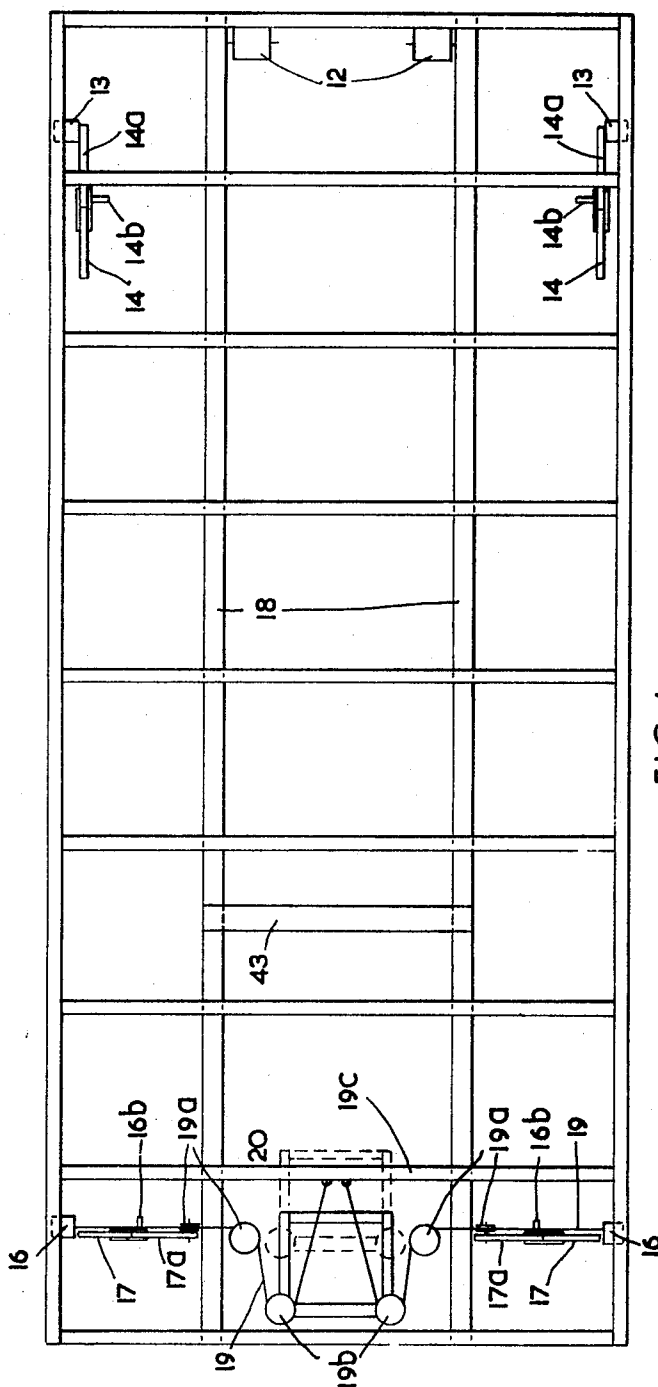


FIG. 4.

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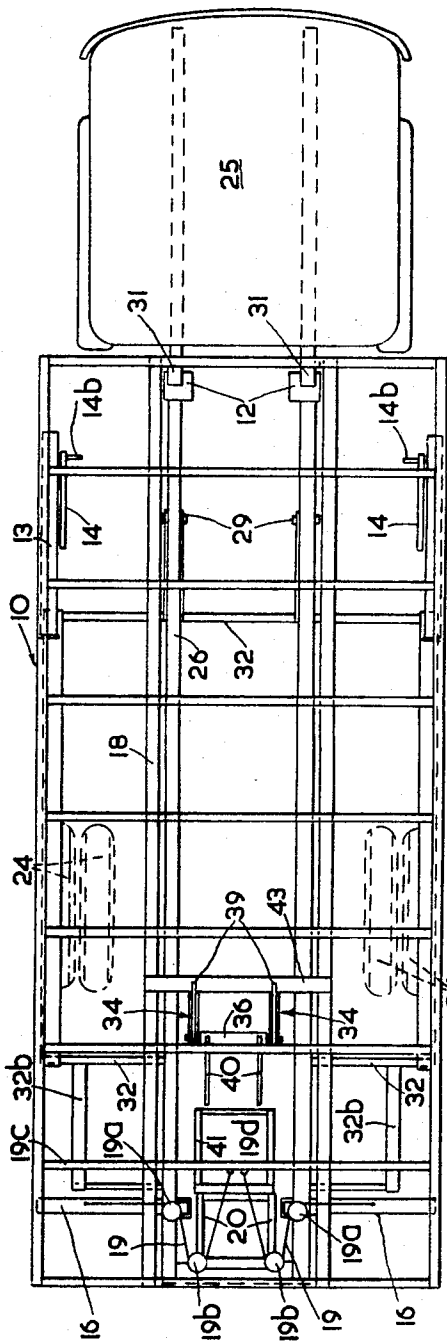


FIG. 7

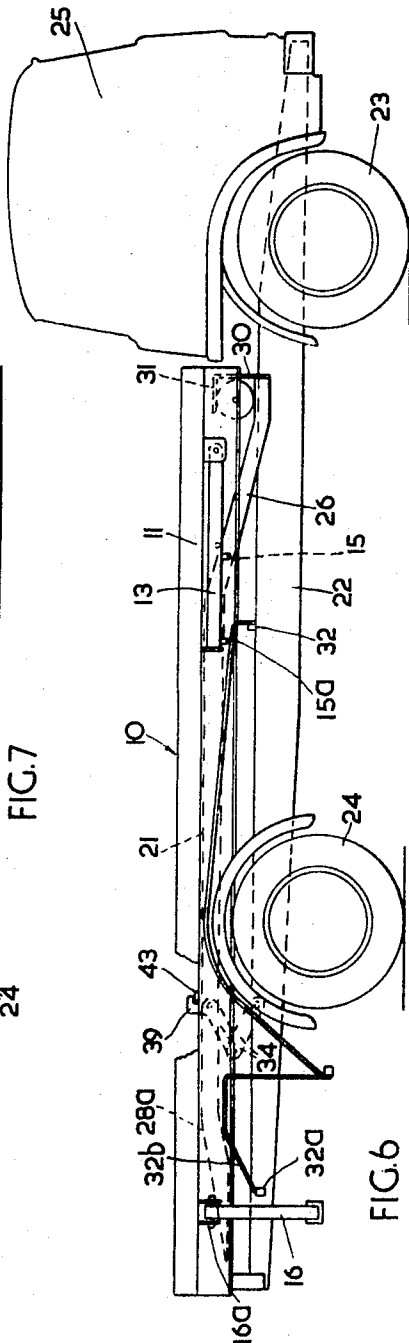


FIG. 6

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# MOTOR DRIVEN VEHICULAR CHASSIS AND LOAD CARRYING PLATFORM OR CONTAINER FOR TRANSPORT THEREBY

This invention has reference to motor driven vehicular chassis and load carrying platform or container combinations, the platform or container being detachably secured to the chassis and having front and rear supporting legs by which it can be supported free standing. When the platform or container is secured to the chassis the legs assume a position in which they are held clear of the ground. Such combinations are hereinafter referred to as the kind specified.

The platform may have side walls and may constitute the base of a container and the term platform will be understood to cover a platform with or without side walls and also containers.

The present invention has for its object to provide improvements in such combination and particularly to the means by which the platform is attached to the chassis and detached therefrom and by which the legs are actuated so that they can support the platform free standing and thereafter rendered inoperative so that they will not bear on the ground when the platform is being transported on the chassis.

According to the present invention in a motor driven vehicular chassis and platform combination of the kind specified the platform is provided with rollers at the front end thereof, a pair of front and a pair of rear legs hinged to the platform to swing upwardly from a vertical platform supporting position, releasable struts to maintain the legs in their vertical position and, located towards the rear thereof, a combination of fixed pulleys and movable pulleys and cables or chains passed over said pulleys, the movable pulleys being carried by a sliding member and one end of each cable or chain being anchored to a rear leg and the other end thereof anchored to a fixture and the vehicular chassis is provided with rails pivotally supported at their front ends on the chassis girders and having ramps at their rear ends which, when the chassis is backed to a free standing platform cooperate with the rollers to raise the front of the platform and its front legs, means at the rear of the chassis to release the struts of the front legs, runners to raise the front legs when their struts are released and power means by the operation of which the platform is secured to the chassis supported on the rails, the rails raised so that the rear legs clear the ground and the member carrying the movable pulleys slid to swing the rear legs upwardly, further movement of the power means dropping the rails with platform thereon on to the girders so that the chassis with platform thereon can be driven away, reversal of the foregoing cycle of operations leaving the platform free standing.

The invention further consists in a chassis and platform combination as set forth in the preceding paragraph wherein the front legs are hinged to swing rearwards and the rear legs are mounted to swing inwards.

Each strut preferably comprises two pivotally interconnected links having a projecting pin at its pivot and the chassis is provided with trip plates at the rear thereof to cooperate with the pins of the struts of the front legs such cooperation breaking the struts to permit the said legs to swing upwards and the cables or chains pass under the pins of the struts of the rear legs so that when tensioned the struts are broken to permit the rear legs to swing upwards.

The said power operated means is conveniently in the form of a double-acting hydraulic piston and cylinder assembly controlled from the driver's cabin and a pair of parallel toggles operated by the piston, said toggles having hooklike members to make locking engagement with the platform mounted on the rails.

The invention will now be described with reference to the accompanying drawings which illustrate a preferred embodiment of the invention and wherein:

FIG. 1 is an elevation of the motor driven chassis which is shown partly in section;

FIG. 2 is a plan view thereof;

FIG. 3 is an elevation of the load carrying platform;

FIG. 4 is a plan view thereof; and

FIG. 5 is an end elevation thereof, the left hand side of this figure showing a rear supporting leg and the right hand side thereof showing a front supporting leg;

FIG. 6 is an elevation of the combined motor driven chassis and load carrying platform; and

FIG. 7 is a plan view thereof.

As shown in FIGS. 3, 4 and 5 the load carrying platform 10, which may be the base of a container, comprises a rectangular skeleton frame 11 which may carry a base or floor, not shown, with or without side walls.

The forward end of this frame carries two axially aligned rollers 12 and near said end are two front legs 13 hinged at 13a one at each side of the frame so that they can swing upwardly and rearwardly. Each leg is provided with a collapsible strut to retain it in its vertical position, each strut comprising two pivotally interconnected links 14 and 14a hinged to the frame and leg respectively.

Each strut has an inwardly projecting pin 14b at the common pivot of the links. The front or leading face of each leg 13 carries two transversely extending rollers 15 and 15a, said rollers being substantially the breadth of the leg.

Towards the rear of said frame are two rear legs 16 hinged at 16a one at each side thereof to swing upwardly and inwardly. Each rear leg has a strut formed of two pivotally interconnected links 17 and 17a connected to the leg and to a bracket carried by a longitudinally extending beam 18 of the frame respectively. Also connected at 19d to each leg 16 is one end of a chain or cable 19 which passes under a pin 16b at the common pivot to the two links 17 and 17a, over fixed guide pulleys 19a, over a movable guide pulley 19b and at its other end is anchored to a transverse member 19c of the frame.

The two movable pulleys 19b are carried by a horizontally sliding carriage 20 which is supported by a pair of guide rails, not shown, so that it can slide longitudinally of the frame, i.e., towards and away from the rear of the frame.

The vehicle has a chassis of conventional construction, see FIGS. 1 and 2, that is it has two longitudinally extending side girders 22 interconnected by transverse members and supported by front and rear ground wheels 23 and 24 which are spaced outwardly from the chassis. At the front of the chassis is the usual driver's cabin 25.

Each girder supports a rail formed of two sections, namely a short rigid rail or ramp section 26 which slopes upwardly from the rear of the cabin and a relatively long rail section 27 which at its forward end is inclined as at 28 to form a continuation of the adjacent short rail and at its rear end forms a downwardly inclined ramp 28a. The two longer rail sections are interconnected by cross members and are pivotally supported at their forward ends by vertical brackets 29 secured to the girders. At the front ends of the shorter rail sections 26 are upright stops 30 having rearwardly extending overhanging abutments 31.

The chassis also supports front and rear out-riggers 32 on which are mounted horizontally extending broad rails or runners 33 downwardly curved at their rear extremities to extend over the rear of the rear wheel guards. Towards the rear end of the chassis are two toggles 34 which are spaced apart and occupy vertical planes. The lower link 35 of each toggle is pivoted between brackets 35a mounted on a transversely extending member 35b secured to the girders 22 forming the chassis and the upper link 37 of each toggle is pivoted between plates, not shown, mounted on transversely extending members 35c welded or otherwise secured to the inner sides of the two longer rail sections 27.

The upper ends of the upper links carry hooklike members 39.

The common pivots of the two toggles are interconnected by means of a cross head 36 which can swivel about the axis of the common pivot of the toggles and is connected by means of two rearwardly extending connecting rods 40 to a slide 41 supported by parallel guides, not shown, rigid with the pivoted longer rail sections 27 and located near the rear ends of the rails. The rear of this slide has an angle iron cross bar 41a to

engage the sliding carriage 20 of the platform. Also supported by the vehicle chassis towards the rear thereof is a double-acting hydraulic ram and cylinder assembly 42 to which pressure fluid can be supplied under the control of valve means, not shown, located in the driver's cabin. The ram is connected to the cross head 36. Carried by the rear outriggers 32 and further outriggers 32a are trip ramps 32b.

In describing the operation of the combined vehicular driven chassis and the load carrying platform it will first be assumed that the latter is free standing. That is it is supported by its front legs 13 which are in their vertical position and by the vertical rear legs 16 which are also in their vertical position, the legs being retained in their vertical position by their struts. It will also be assumed that the platform is supporting a load which has to be transported.

The long hinged sections 27 of the rails are then lying horizontally over the girders 22 by which they are supported and the cross head 36 is then in its forward position so that the two toggles are collapsed in the position shown in dotted lines in FIG. 1.

To mount the platform on the vehicle chassis the vehicle is maneuvered so that its chassis is backed below the forward end of the free standing platform. As the chassis is being backed the rollers 12 at the leading or front end of the platform engage the upwardly inclined ramps 28a at the rear end of the rails 27 of the chassis and the front of the platform is thereby raised. The front legs 13 are therefore raised clear of the ground.

The inwardly projecting pins 14b are then actuated by the trip ramps 32b so that the struts formed by the links 14 and 14a are broken to permit the struts to collapse. Consequently when the legs 13 engage the guides or runners 33 the struts collapse and the legs swing backwards to a substantially horizontal position in which they are retained by the said guides or runners, the rollers 15 and 15a then running on the guides or runners.

The vehicle continues its backing movement until the rollers 12 run on the ramps 26 and abut against the stops 30. Thereafter the hydraulic piston and cylinder assembly is energized under the control of the driver in the cabin to move the cross head 36 towards the rear of the chassis, such movement resulting in the toggle links being straightened and the rear ends of the rails raised as shown in dotted lines in FIG. 1. The rear legs 16 are thus raised clear of the ground. Said toggles also perform two further functions. Their hooklike members 39 engage a transverse member 43 of the platform 10 thereby locking the platform to the rails and through their connecting rods 40 a rearward sliding movement is imparted to the slide 41. A like movement is thereby transmitted by the cross bar 14a to the carriage 20 carrying the movable pulleys 19b. The cables 19 are thereby placed under tension and by bearing on the pins 16b they break the struts of the legs 16. The continued movement results in the two rear legs 16 being raised into their collapsed position.

Continued movement of the cross head in the same direction results in the toggles being moved through their dead center and the rails 17 together with the platform being lowered to rest on the girders of the vehicle.

The vehicle with the platform securely locked to its chassis can then be driven away.

To detach the platform and leave it free standing the hydraulic assembly 32 is energized to push the cross head 36 forwardly thereby straightening the toggles. This results in the hooklike members being freed from the transverse member

43, in the rear ends of the rails 27 being raised together with the platform and in the carriage 20 carrying the movable pulleys being moved forward. The rear legs then drop to a vertical position. When the toggles pass through their dead center the rails are lowered to be supported horizontally by the chassis girders, the rear end of the platform being left supported by the rear legs. The vehicle can then be driven forward. This results in the rollers 12 running up the ramps 26 and the ramps 28 at the leading ends of the fixed rail sections thus bringing the platform into a substantially horizontal position. As the vehicle continues to move forward the said broad rails or runners 33 continue to support the legs 15 in their collapsed position until their small transverse rollers 15 and 15a run down the downwardly curved ends of the said broad guides or runners thereby allowing the front legs to assume their substantially vertical position. Said legs, together with the rear legs, when the chassis is moved clear of the platform, then support the latter in its free standing position.

What is claimed is:

1. A motor driven vehicular chassis and platform combination wherein the platform is provided with rollers at the front end thereof, a pair of front and a pair of rear legs hinged to the platform to swing upwardly from a vertical platform supporting position, releasable struts to maintain the legs in their vertical position and, located towards the rear thereof, a combination of fixed pulleys and movable pulleys and cables or chains passed over said pulleys, the movable pulleys being carried by a sliding member and one end of each cable or chain being anchored to a rear leg and the other end thereof anchored to a fixture and the vehicular chassis is provided with rails pivotally supported at their front ends on the chassis girders and having ramps at their rear end which, when the chassis is backed to a free standing platform cooperate with the rollers to raise the front of the platform and its front legs, means at the rear of the chassis to release the struts of the front legs, runners to raise the front legs when their struts are released and power means by the operation of which the platform is secured to the chassis supported on the rails, the rails raised so that the rear legs clear the ground and the member carrying the movable pulleys slid to swing the rear legs upwardly, further movement of the power means dropping the rails with platform thereon on to the girders so that the chassis with platform thereon can be driven away, reversal of the foregoing cycle of operations leaving the platform free standing.

2. A chassis and platform combination as claimed in claim 1 wherein the front legs are hinged to swing rearwards and the rear legs are mounted to swing inwards.

3. A chassis and platform combination as claimed in claim 1 wherein each strut comprises two pivotally interconnected links having a projecting pin at its pivot and the chassis is provided with trip plates at the rear thereof to cooperate with the pins of the struts of the front legs such cooperation breaking the struts to permit the said legs to swing upwards and the cables or chains pass under the pins of the struts of the rear legs so that when tensioned the struts are broken to permit the rear legs to swing upwards.

4. A chassis and platform combination as claimed in claim 1 wherein the power operated means is in the form of a double-acting hydraulic piston and cylinder assembly and a pair of parallel toggles operated by the piston, said toggles having hooklike members to make locking engagement with the platform mounted on the rails.

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