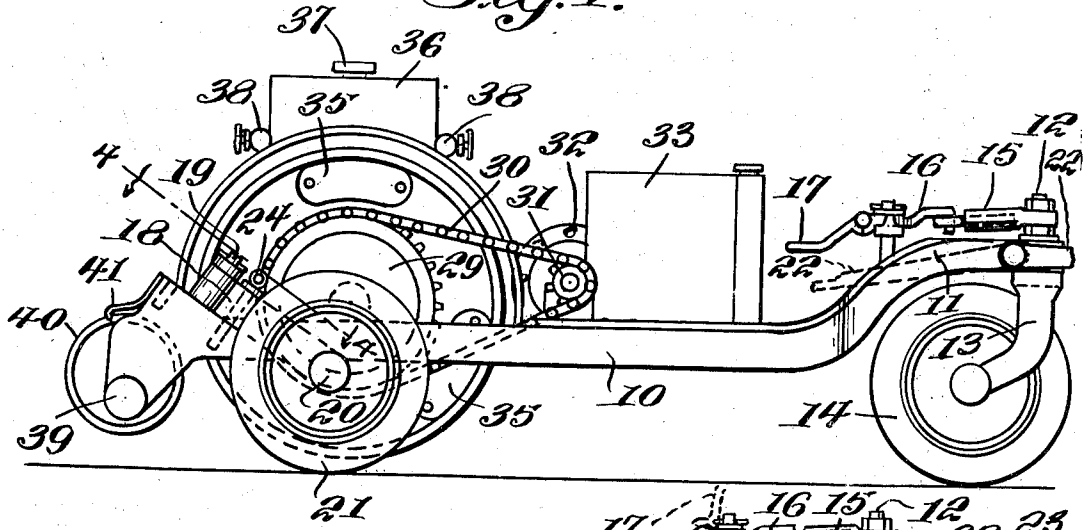
April 27, 1937. E. V. BILES 2,078,900

ROAD ROLLER

Filed Oct. 9, 1933 3 Sheets-Sheet 1

Fig. 1.



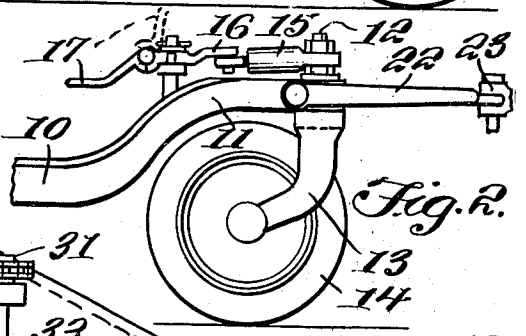
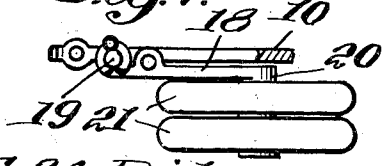


Fig. 2.

Fig. 3.

Fig. 4.



E. V. Biles INVENTOR

BY Victor J. Evans & Co. ATTORNEY

WITNESS J. T. L. Wright

April 27, 1937. E. V. BILES 2,078,900

ROAD ROLLER

Filed Oct. 9, 1933 3 Sheets-Sheet 2

Fig. 5.

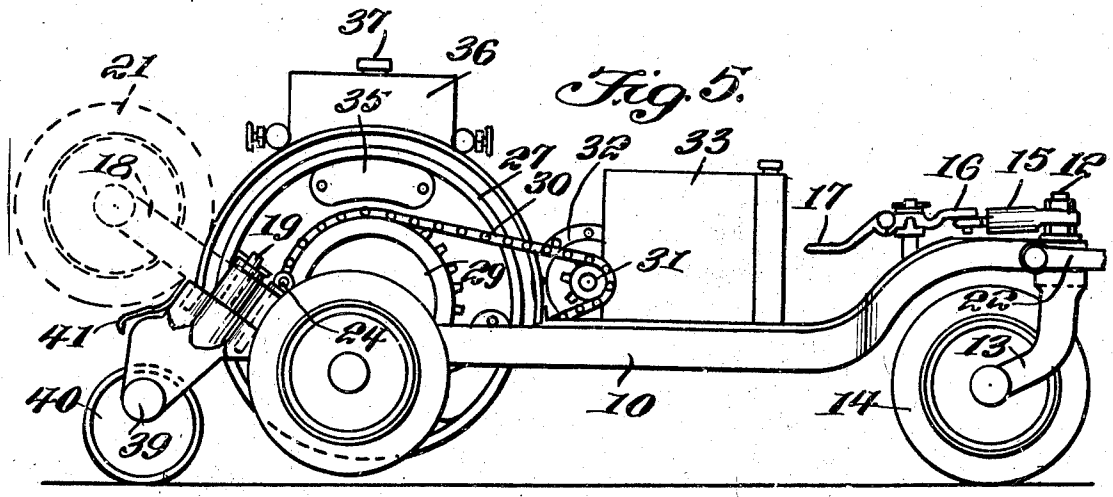


Fig. 6.

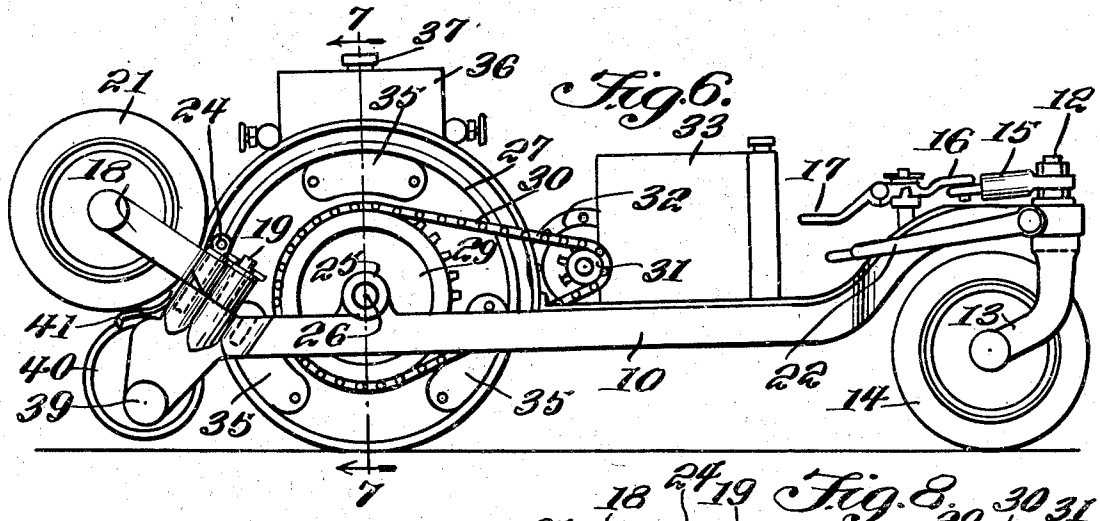


Fig. 7.

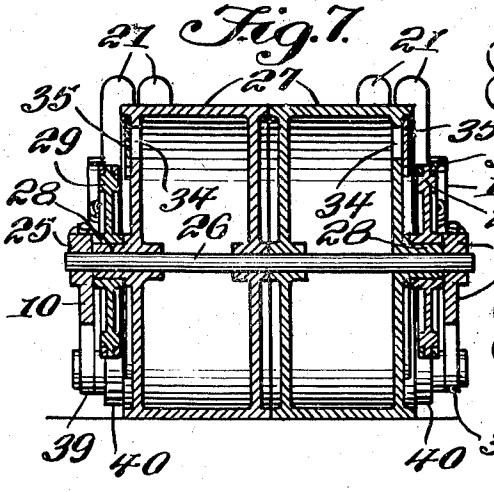
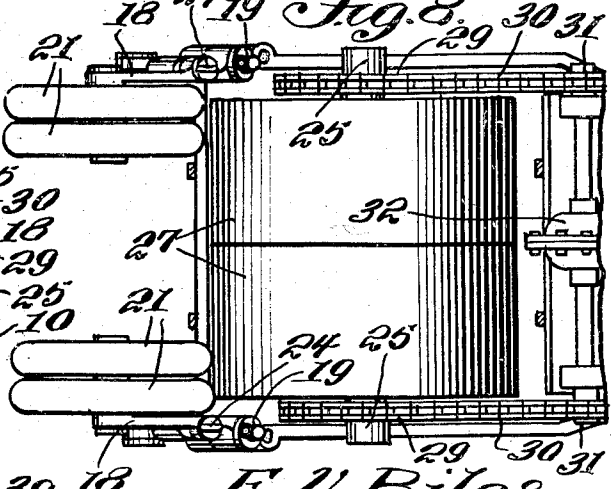


Fig. 8.



E. V. Biles
INVENTOR

BY Victor J. Evans & Co. ATTORNEY

WITNESS J. L. Wright

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ROAD ROLLER

Filed Oct. 9, 1933 3 Sheets-Sheet 3

Fig. 14.

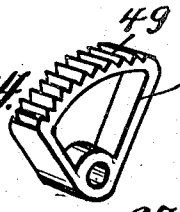


Fig. 9.

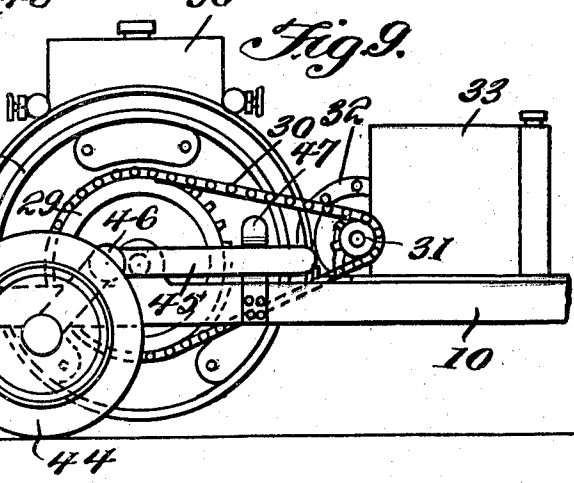


Fig. 13.

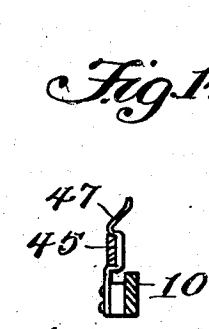


Fig. 10.

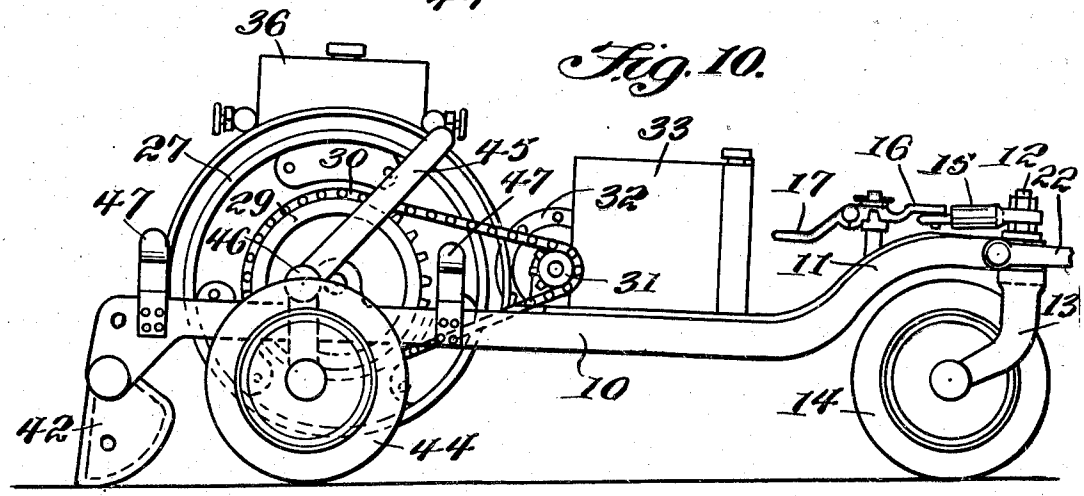


Fig. 11.

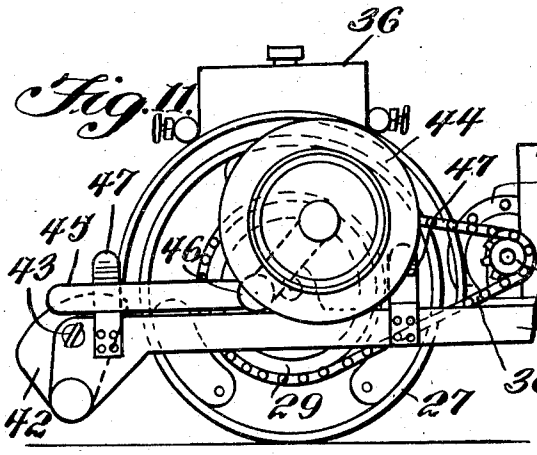
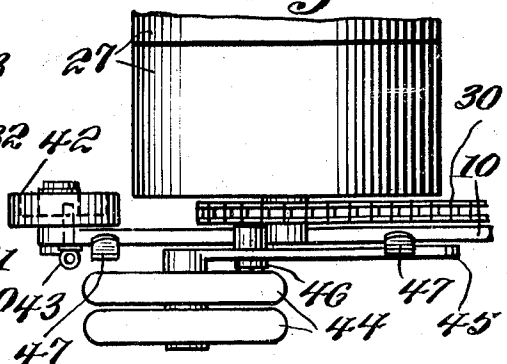


Fig. 12.



E. V. Biles
INVENTOR

BY Victor J. Evans & Co.
ATTORNEY

WITNESS J. L. Wright

Patented Apr. 27, 1937

2,078,900

UNITED STATES PATENT OFFICE

2,078,900

ROAD ROLLER

Edgar V. Biles, San Antonio, Tex., assignor of twenty-nine one-hundredths to Carl H. Graham and twenty one-hundredths to J. P. Willson, both of San Antonio, Tex.

Application October 9, 1933, Serial No. 692,849

10 Claims. (Cl. 94—50)

The invention relates to a road working machine and more especially to road rollers.

The primary object of the invention is the provision of a machine of this character, wherein the road roller of the same is constructed so that it can be automatically brought into contact with a ground surface or elevated therefrom under applied mechanical power, thus eliminating manual labor in converting the said roller from active to inactive positions, or vice versa, and when in inactive position the machine can be drawn by motive power or otherwise with rapidity, this being essential where a piece of work is considerably distant from another locality where the machine is located.

Another object of the invention is the provision of a machine of this character, wherein the same is provided with a hitch for connection with a motor driven tractor, truck or other draft device, whereby the latter will enable quick transportation of the machine and the latter when in road working condition carries its own power for the working thereof.

A further object of the invention is the provision of a machine of this character, wherein the road roller is made up of several sections, these being driven through differential mechanism so that the machine, when the road roller is active, can conveniently make a turn and is driven from its own power unit, the machine in its entirety being of novel construction and the several sections of the roller being susceptible of change in weight according to the required working condition of the road roller.

A still further object of the invention is the provision of a machine of this character which is comparatively simple in its construction, thoroughly reliable and efficacious in its purposes, readily and easily converted for transportation or for working activity, strong, durable, and inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described in detail, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention, and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is a side elevation of the machine constructed in accordance with the invention and in the preferred make-up.

Figure 2 is a fragmentary side elevation of the front steering or caster wheel, showing the hitch with a draft implement.

Figure 3 is a top plan view of the machine as shown in Figure 1.

Figure 4 is a fragmentary detail sectional view on the line 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is a side elevation similar to Figure 1 showing the road roller elevated from a ground surface and about to be brought to active working position or in contact with said ground surface.

Figure 6 is a view similar to Figure 5 showing the road roller in ground working position or in contact with the ground surface.

Figure 7 is a sectional view on the line 7—7 of Figure 6 looking in the direction of the arrows.

Figure 8 is a fragmentary top plan view of the rear portion of the machine with the road roller contacting with the ground surface, as shown in Figures 6 and 7.

Figure 9 is a fragmentary side elevation showing a modified form and the road roller inactive for transportation of the machine by a draft implement, the lifting cam being shown by full lines in normal position and by dotted lines in position for the automatic elevation of the machine for the freeing of the rear traction wheels from the ground.

Figure 10 is a view similar to Figure 9 showing the rear traction wheels elevated from the ground for the swinging of the same to a position to bring the road roller into ground working position.

Figure 11 is a view similar to Figure 10 showing the road roller in working position with the ground and the traction wheels elevated with the cam in normal position.

Figure 12 is a top plan view of Figure 11.

Figure 13 is a sectional view on the line 13—13 of Figure 10.

Figure 14 is a perspective view of a slight modification of the lifting cam in Figures 9 to 12, respectively.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, particularly Figures 1 to 8 inclusive, the machine comprises a suitable main frame 10 having a forwardly tapered upwardly extending fore or front end 11 in which is journaled the stem 12 of a steering wheel or caster wheel fork 13 carrying the steering or caster wheel 14, preferably rubber tired. The stem 12 is fitted with an extensible link connection 15 operated upon by a steering lever 16, the latter having a foldable handle 17,

and through the instrumentality of the lever the wheel 14 can be turned for the steering of the machine.

At the rear end of the frame 10 are arranged laterally swinging hangers 18 carried by pivots 19 upon said frame, these hangers 18 being forwardly inclined and on the stud axles 20 of which are carried double rubber tired rear traction wheels 21, the angular disposition of the hangers being to permit the said wheels 21 to be raised to the proper extent when swung out of contact with the ground for a purpose presently described. Normally the wheels 21 contact with the ground for mobility of the machine, especially for convenient transportation thereof by a draft implement.

Connected for vertical swinging movement with the fore or front end 11 of the frame 10 is a hitch 22 which is adapted for connection with the draft beam 23 of a tractor, truck or other draft implement of the automotive type when the road working machine is to be conveyed from one locality to another and particularly where these localities are considerably distant from each other, thereby assuring speed of transportation.

Fitted with each hanger 18 is a locking pin 24 which is engageable with the frame 10 on opposite sides of the pivot 19 so that this hanger can be latched in its two adjusted positions, one being with the traction wheels 21 in contact with the ground and the other with said traction wheels elevated away from contact with the ground. The hangers 18 are of a character to permit the wheels, when elevated away from contact with the ground, to be well within the sides of the frame 10 so that the machine can readily pass over narrow bridges or contracted places without hinderance.

The frame 10 carries the bearings 25 for an axle 26, to which are fitted the independently rotatable cylinder sections 27, these, together, constituting the road roller, the sections being provided with hubs 28 to which are fixed sprocket wheels 29 over which are trained sprocket chains 30, these being also trained over sprocket pinions 31 driven from a differential 32 operated by a power unit 33 of the internal combustion type, the unit 33 being suitably mounted or supported upon the frame 10. Thus, by the independent rotation of the cylinders 27 constituting the road roller, through the differential 32, it will be apparent that this roller permits a turn to be made by the machine when the road roller is active for road work.

Each section 27, at its outer side, is provided with an opening 34 closed by a door or shutter 35 and through this opening may be introduced suitable weight material to increase the weight of the road roller according to the requirements thereof for road conditioning.

Superposed relative to the road roller is a water tank 36 filled through a spout 37 and supplying water to spray pipes 38 which direct sprays upon the outer surface of the road roller, this being conventional, and such tank 36 is suitably supported in its superposed position.

Formed at the rear end of the frame 10 are depending bearings 39, each having journaled thereon eccentrically movable lifter wheels 40 which normally are positioned elevated from contact with the ground and held in that position by spring latches 41. When either of the traction wheels 21 is in contact with the ground or the road roller in working position, the wheels 40 are in elevated position, which is their normal state. Now, when the machine requires the converting thereof from road working condition to transporting condition, the rear traction wheels 21 are swung from their elevated position to lowered position, it being understood, of course, that prior to the shifting of these wheels the wheels 40 have been released from the latches 41 and under their own gravity are brought into contact with the ground so that by a backward motion of the machine these wheels 40 will automatically lift the frame 10 to permit of the said traction wheels 21 being thrown to a position for contact with the ground when the machine is advanced a slight distance in a forward direction.

With the lifting wheels elevated and the front steering wheel 14 in contact with the ground and likewise the rear traction wheels 21 contacting therewith, on connecting the hitch 22 with the draft implement the machine can be conveyed or transported from one locality to another and in this considerable speed of transportation can be attained.

When it is desired to convert the machine to bring the road roller into active or contacting position with the ground it becomes necessary to release the wheels 40, which are normally elevated, so that the same will contact with the ground, then upon backward movement of the machine these wheels 40 will become active to elevate the frame 10, freeing the wheels 21 from contact with the ground, then such wheels 21, by swinging the hangers 18, can be thrown to an elevated position and on the forward draft of the frame the road roller will be lowered onto the ground and the machine again set for road working action.

It should be apparent from the foregoing that manual power for conversion of the machine, either for road working activity or for transportation, is practically eliminated and in that particular it is only necessary that the wheels 40 be manually released from the latches 41 and the hangers 18 for the traction wheels 21 shifted as before set forth.

In Figures 9 to 13 of the drawings there is shown a modified form of the invention, wherein in lieu of the wheels 40 there are substituted cams 42, these operating identically with the wheels 40. Each cam 42 carries a suitable latching pin 43 which engages with the bearing for said cam to hold it in lifted or normal position. The rear traction rollers 44 are journaled upon swinging levers 45, each being pivoted, at 46, to the frame 10 of the machine so that when the said wheels 44 are freed from the ground or elevated the proper distance therefrom the levers 45, each, can be thrown to have the wheels 44 raised so that the road roller can have contact with the ground. The frame, at opposite sides of its axis of movement of the levers 46, carries suitable spring latches 47 with which the levers 45 engage to hold the wheels 44 in their two adjusted positions, that is, for contact with the ground when the road roller is elevated therefrom or raised from the ground when the road roller is in working or contacting condition with said ground.

In Figure 14 there is shown a modified form of cam 48, wherein the contacting side thereof is roughened, serrated or toothed, as at 49, to assure a firm gripping action upon the ground surface.

The handle 17 of the steering lever 16 is swing-

ingly arranged so as to permit the swinging of the hitch 22 without interference by said lever 16.

From the foregoing it is thought that the construction and manner of operation of the machine will be clearly understood and, therefore, a more extended explanation has been omitted. Further, it is to be understood that changes, variations and modifications may be made in the invention as fall properly within the scope of the appended claims, without departing from the spirit of the invention or sacrificing any of its advantages.

What is claimed is:

1. In a machine of the character described, a frame, a road roller journaled in said frame, rear wheels swingingly connected with the frame and movable to and away from a road surface, a front steering wheel, and means arranged with respect to the road roller and rear wheels for the automatic lifting of the frame on backward movement thereof to free the said roller and rear wheels from contact with the ground surface.

2. In a machine of the character described, a frame, a road roller journaled in said frame, rear wheels swingingly connected with the frame and movable to and away from a road surface, a front steering wheel, means arranged with respect to the road roller and rear wheels for the automatic lifting of the frame on backward movement thereof to free the said roller and rear wheels from contact with the ground surface, the said road roller formed of a plurality of independently rotatable sections, and power driven differential mechanism connected with the respective sections of said road roller.

3. In a machine of the character described, a frame, a road roller journaled in said frame, rear wheels swingingly connected with the frame and movable to and away from a road surface, a front steering wheel, means arranged with respect to the road roller and rear wheels for the automatic lifting of the frame on backward movement thereof to free the said roller and rear wheels from contact with the ground surface, the said road roller formed of a plurality of independently rotatable sections, power driven differential mechanism connected with the respective sections of said road roller, and means for latching the said means in inactive position.

4. In a machine of the character described, a frame, a road roller journaled in said frame, rear wheels swingingly connected with the frame and movable to and away from a road surface, a front steering wheel, means arranged with respect to the road roller and rear wheels for the automatic lifting of the frame on backward movement thereof to free the said roller and rear wheels from contact with the ground surface, the said road roller formed of a plurality of independently rotatable sections, power driven differential mechanism connected with the respective sections of said road roller, means for latching the said means in inactive position, and means for latching the rear wheels in the several adjusted positions.

5. In a machine of the character described, a frame, a road roller journaled in said frame, rear wheels swingingly connected with the frame and movable to and away from a road surface, a front steering wheel, means arranged with respect to the road roller and rear wheels for the automatic lifting of the frame on backward movement thereof to free the said roller and rear wheels from contact with the ground surface, the said road roller formed of a plurality of independently rotatable sections, power driven differential mechanism connected with the respective sections of said road roller, means for latching the said means in inactive position, means for latching the rear wheels in the several adjusted positions, and means on the frame and connected with the steering wheel for operating the same and including an extensible link and foldable operating handles.

6. In a machine of the character described, a frame, a road roller journaled in said frame, rear wheels swingingly connected with the frame and movable to and away from a road surface, a front steering wheel, means arranged with respect to the road roller and rear wheels for the automatic lifting of the frame on backward movement thereof to free the said roller and rear wheels from contact with the ground surface, the said road roller formed of a plurality of independently rotatable sections, power driven differential mechanism connected with the respective sections of said road roller, means for latching the said means in inactive position, means for latching the rear wheels in the several adjusted positions, means on the frame and connected with the steering wheel for operating the same and including an extensible link and foldable operating handles, and a power unit upon the frame.

7. In a machine of the character described, a frame, a road roller journaled in said frame, rear wheels swingingly connected with the frame and movable to and away from a road surface, a front steering wheel, means arranged with respect to the road roller and rear wheels for the automatic lifting of the frame on backward movement thereof to free the said roller and rear wheels from contact with the ground surface, the said road roller formed of a plurality of independently rotatable sections, power driven differential mechanism connected with the respective sections of said road roller, means for latching the said means in inactive position, means for latching the rear wheels in the several adjusting positions, means on the frame and connected with the steering wheel for operating the same and including an extensible link and foldable operating handles, a power unit upon the frame, and a swinging hitch connected with the fore end of the frame and movable past the last-named means on the folding of its handles.

8. In a machine of the character described, a frame, a road roller journaled in said frame, a front caster steering wheel at the fore end of the frame, swinging hangers carried at the rear end of the frame, rear wheels on said hangers and movable a distance beneath the lowermost point of the road roller and above the same, and eccentrically movable means at the rear end of said frame and engageable with a ground surface to automatically elevate the frame on movement thereof in one direction to raise the road roller and the rear wheels free of the ground.

9. In a machine of the character described, a frame, a road roller journaled in said frame, a front caster steering wheel at the fore end of the frame, swinging hangers carried at the rear end of the frame, rear wheels on said hangers and movable a distance beneath the lowermost point of the road roller and above the same, eccentrically movable means at the rear end of said frame and engageable with a ground surface to automatically elevate the frame on movement thereof in one direction to raise the road roller and the rear wheels free of the ground, and means for

latching the last-named mean- in inactive position.

10. In a machine of the character described, a frame, a road roller journaled in said frame, a front caster steering wheel at the fore end of the frame, swinging hangers carried at the rear end of the frame, rear wheels on said hangers and movable a distance beneath the lowermost point of the road roller and above the same, eccentrically movable means at the rear end of said frame and engageable with a ground surface to automatically elevate the frame on movement thereof in one direction to raise the road roller and the rear wheels free of the ground, means for latching the last-named means in inactive position, and means for latching the hangers when at the limit of the swing thereof.

EDGAR V. BILES.