

April 19, 1938.

F. D. WILSON ET AL

2,114,412

ATTACHMENT FOR ROAD ROLLERS

Filed Jan. 13, 1934

3 Sheets-Sheet 1

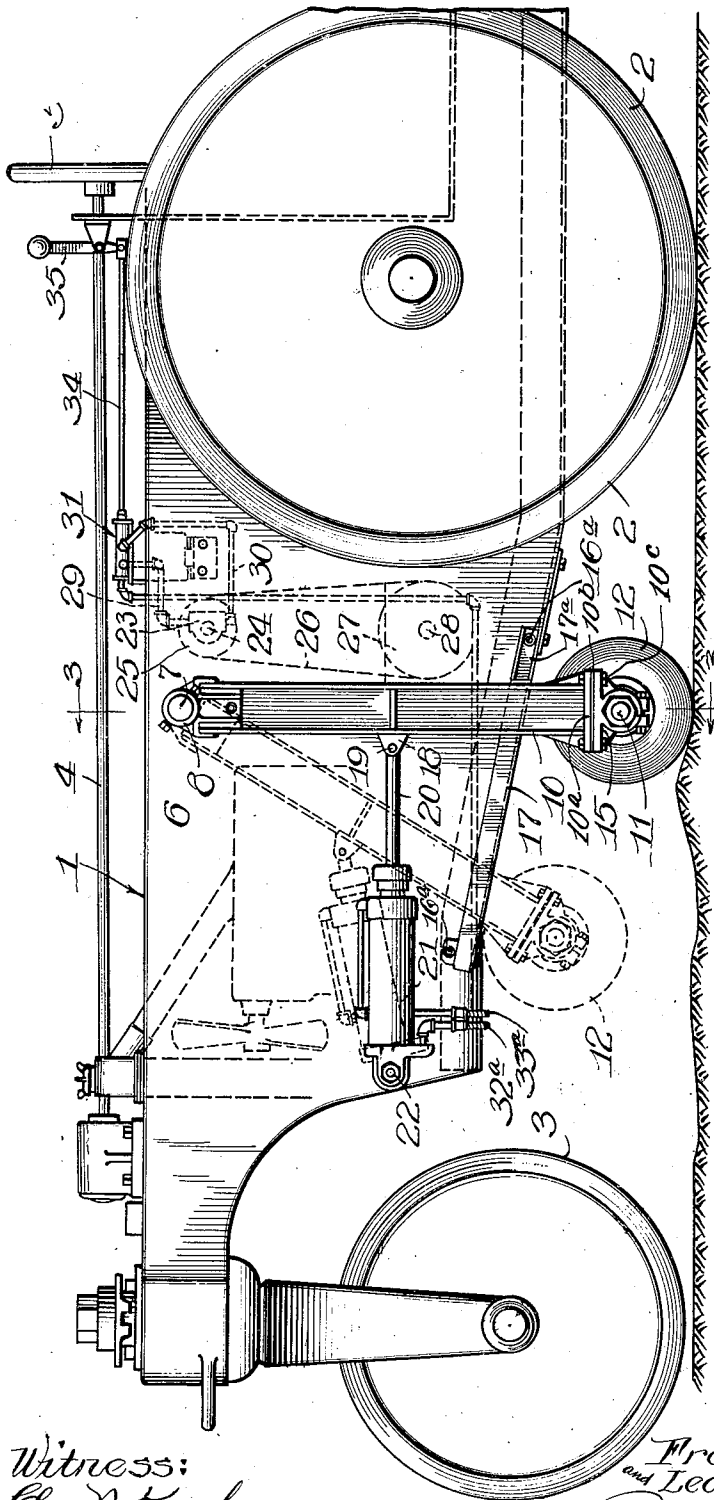


Fig. 1



Fig. 4

Witness:
Chas. R. Stursh.

Inventor:
Fred D. Wilson,
and Leonard S. Burns,
Parkinson Lane, Pitts

April 19, 1938.

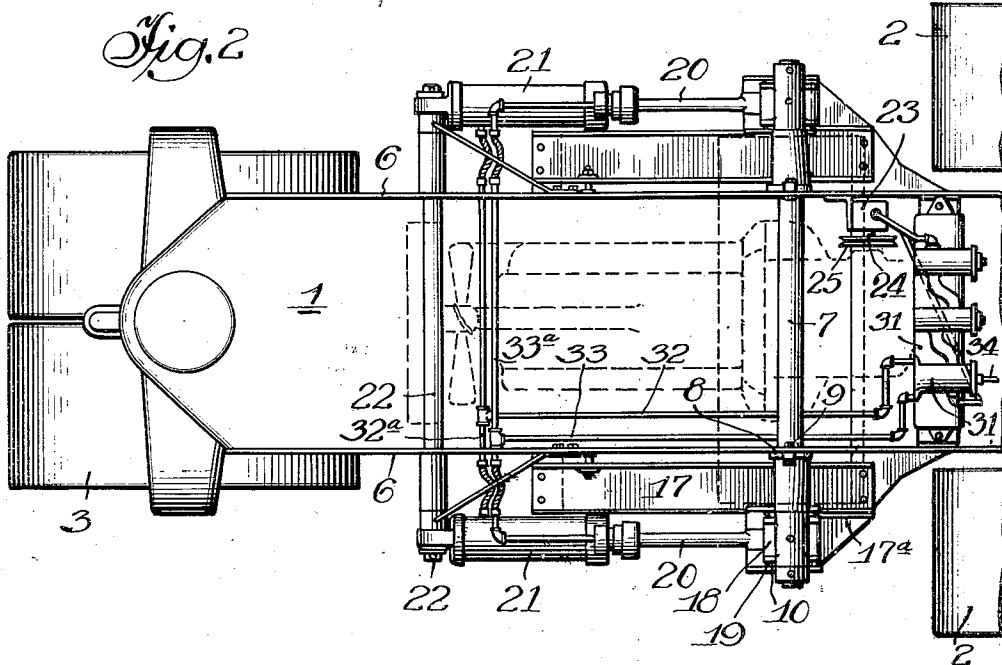
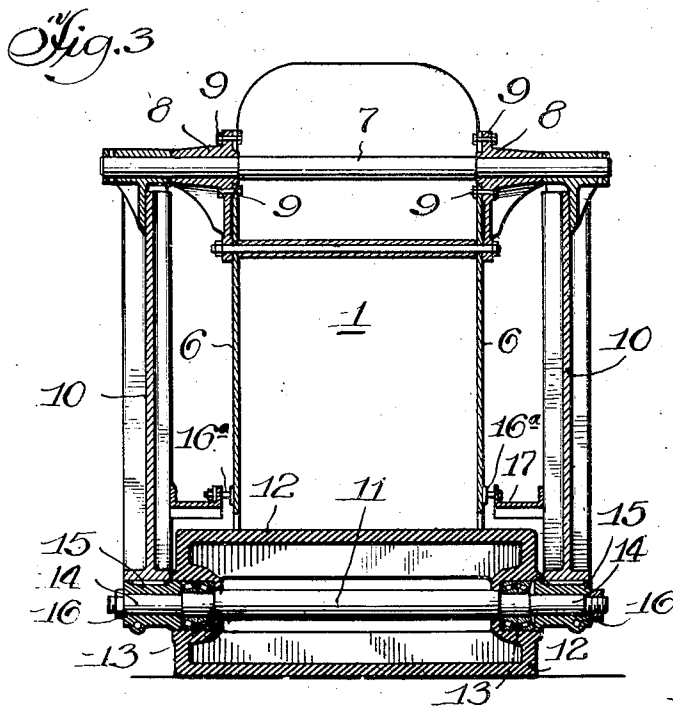
F. D. WILSON ET AL

2,114,412

ATTACHMENT FOR ROAD ROLLERS

Filed Jan. 13, 1934

3 Sheets-Sheet 2



Witness:
Charles H. Housh.

Inventor,
Fred D. Wilson,
and Leonard S. Burns,
Parkinson & Lane Attys.

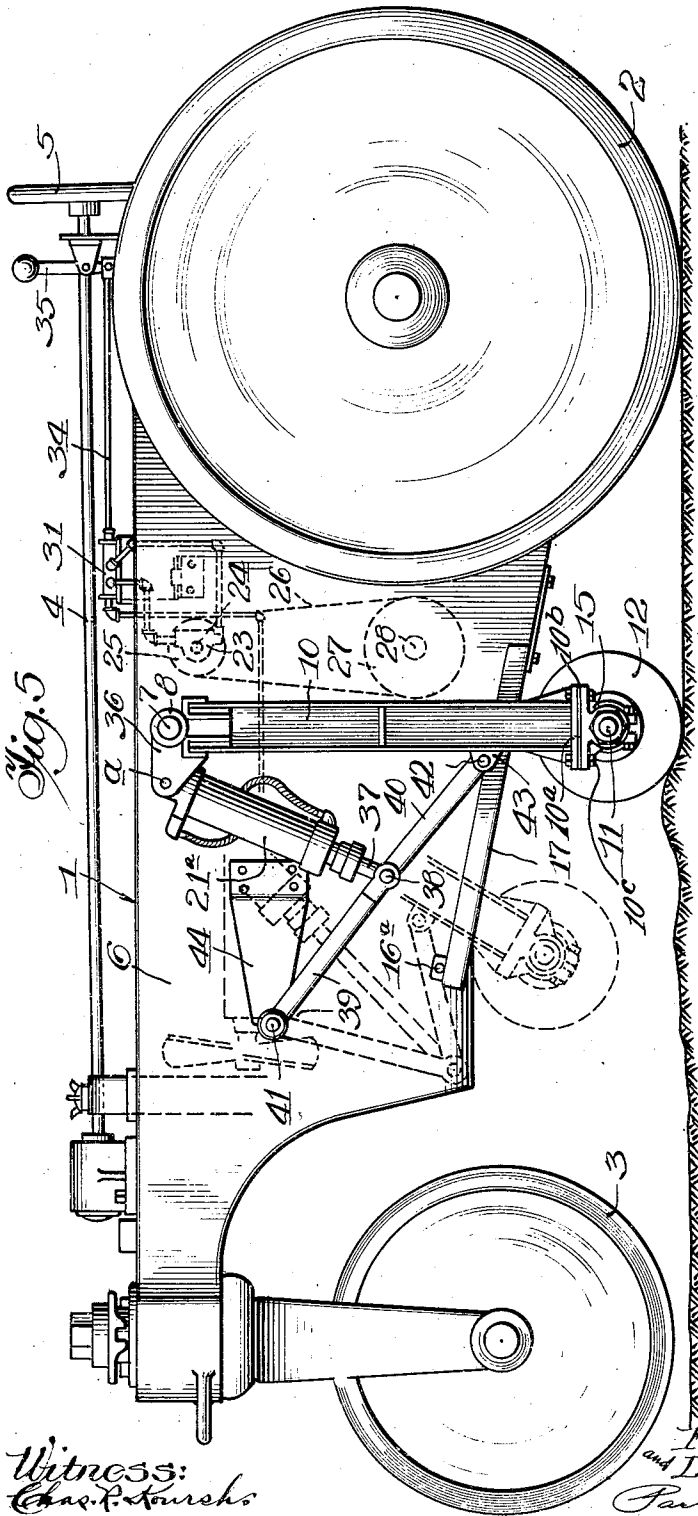
April 19, 1938.

F. D. WILSON ET AL
ATTACHMENT FOR ROAD ROLLERS

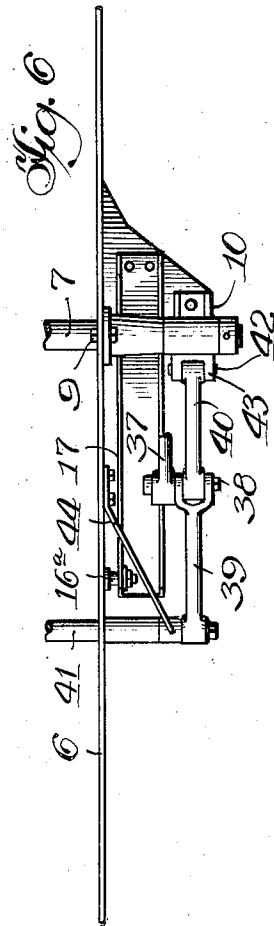
2,114,412

Filed Jan. 13, 1934

3 Sheets-Sheet 3



Witness:
Chas. P. Koush.



Inventor:
Fred D. Wilson,
and Leonard S. Burns,
Parkinson & Lane Attys

UNITED STATES PATENT OFFICE

2,114,412

ATTACHMENT FOR ROAD ROLLERS

Fred D. Wilson and Leonard S. Burns, Harvey,
Ill., assignors to Western-Austin Company

Application January 13, 1934, Serial No. 706,492

11 Claims. (Cl. 94—50)

The present invention relates to road rollers and more particularly to an attachment for such machines adapted to remove the waves and rough places from paving such as asphalt, oil macadam or other material which may be leveled or smoothed by compression.

It is well known that asphalt, oil macadam or other paving having similar properties, becomes rough and wavy and that the ordinary road roller does not have the proper distribution of weight or mechanism whereby to compress the humps or raised portions extending above the normal level of the road bed, so as to fill the depressions adjacent thereto and smooth or level the entire road surface. In other words, adjacent every hump or raised portion will be found a depression from where the material forming the hump has been taken. It is necessary to again replace the material taken from such depression so as to smooth or level the surface of the road bed and it is therefore an object of the present invention to provide a novel mechanism for compressing the raised portions in a road bed whereby to level or replace the surface.

It is a further object of the present invention to provide an attachment for the commercial road rollers which in no wise interferes with its normal operation, and which when in operative position, efficiently smooths the waves and rough places in a paving.

Another object of the present invention is the provision of an attachment for road rollers which may be readily placed or moved to operative or inoperative position at the will of the operator. The placing of the attachment in inoperative position may be desirable for facilitating the steering of the roller around corners or for certain kinds of work.

Still another object of the invention is the provision of an auxiliary roller placed intermediate the front and rear rollers of a commercial tractor for the purpose of smoothing the material forming the surface of the road bed.

Yet another object of the present invention is to provide a novel auxiliary roller actuated by an hydraulic system initiated by the operator from his station on the road roller.

Another object of our invention is to provide an auxiliary roller that may be readily moved into and out of operative position, and stop means or abutments carried by the frame and adapted to take the thrust from the roller carrying arms when the auxiliary roller is in operative position, the power applying means maintaining the arms

in firm contact with the stop means or abutments when the roller is in operative position.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly, and such further objects, advantages and capabilities as will later more fully appear, and are inherently possessed thereby.

The invention further resides in the combination, construction and arrangements of parts illustrated in the accompanying drawings, and while there is shown therein a preferred embodiment, it is to be understood that the same is susceptible of modification and change and comprehends other details and constructions, without departing from the spirit of the invention.

In the drawings:

Fig. 1 is a view in side elevation of the machine or road roller provided with the novel attachment;

Fig. 2 is a top plan view of the construction disclosed in Fig. 1;

Fig. 3 is a view in vertical cross section taken in a plane represented by the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary view in side elevation of the rollers and showing their alignment;

Fig. 5 is a view in side elevation similar to Fig. 1, but disclosing an alternate mechanism for operating the auxiliary roller;

Fig. 6 is a fragmentary top plan view of the mechanism shown in Fig. 5.

Referring more particularly to the disclosure in the drawings, the road machine or road roller 1 is provided with rear driving rollers 2 and front steering rollers 3, the front rollers being steered by means of a steering shaft 4 and steering wheel 5 located at the operator's station. The opposite sides of the main frame are formed as plates 6 which are suitably secured together and to the front and rear wheels or rollers.

Passing through these plates 6 is a stationary shaft 7 secured to the opposite sides of the frame by means of bracket members 8. In the present instance, said securing means comprises bolts 9, the mounting of this shaft being such as to sustain the entire weight of the machine. Pivotally mounted on the opposite ends of the shaft 7 are arms 10, the lower ends 10a of which are provided with bearing brackets 15 detachably secured thereto by a plurality of bolts 10c, which brackets are rigidly secured to and carry a shaft 11 which in turn carries a novel auxiliary roller 12 through the medium of roller bearings 13.

The opposite ends 14 of the shaft 11 are each received and seat in the bearing bracket 15. A lock nut 16 is threaded onto the opposite ends of

the shaft 11 to retain the arms 10 and maintain the shaft 11 in rigid position thereon.

Mounted directly above the roller 12 and secured to the opposite sides 6 of the main frame by means of bolts or the like 16a, are provided guide members 17 for controlling the lateral position of the arm 10 relative to the frame of the machine. The bolts 16a, there being one at each end of the guide member 17, permit ready adjustment thereof. A stop member 17a is provided adjacent the rear end of each guide member, to limit the rearward movement of the arms 10 and also receive the thrust and pressure of the arms 10 when the road roller is moving forwardly. Intermediate the opposite ends thereof, the arm 10 is provided with a lug 18 to which is pivotally attached at 19 a piston rod 20 operated by oil or other hydraulic fluid through the medium of a piston within a cylinder 21 at each side of the main frame. Each cylinder is pivotally mounted on a shaft 22 which is rigidly attached to the opposite side plates 6 of the main frame in any suitable manner.

The hydraulic system comprises a pump 23 driven by a shaft 24 on a pulley 25, the latter in turn being rotated by means of a belt 26 and pulley 27 driven by a shaft 28 connected to the transmission of the engine. Pipes or conduits 29 and 30 lead from the pump to a manifold 31. From the manifold, pipes or conduits 32, 32a and 33, 33a lead to each of the cylinders 21. The manifold 31 is provided with a valve operated by the lever or rod 34 and handle 35 positioned adjacent the operator's station at the rear of the machine. The flow of oil or fluid from the pump is controlled through the valved manifold 31 and pipes 32 and 32a when the pistons and piston rods 20 are pushed outwardly or, in other words, when they move toward the arms 10.

When it is desired to move the arms 10 in the opposite direction, the oil or fluid is released and allowed to flow back through the pipes 32a and 32, by means of the valve within the manifold 31 and then flows through the pipes 33 and 33a which are in communication with the opposite side of the pistons in the cylinders 21. To permit movement of the cylinders 21 with reference to the frame, a section of each of the pipes or conduits 32a and 33a is made flexible. Continued operation or movement of the pistons and piston rods 20 in the direction of the front steering wheel 3 lifts the roller 12 to the position shown in dotted outline in Fig. 1 of the drawings.

When the roller 12 is in the position shown in dotted outline in Fig. 1, it is entirely inoperative and the road machine or road roller may be employed for all of its regular purposes. When the auxiliary roller is placed in the position shown in full outline in Figs. 1 and 4, this auxiliary roller functions to smooth out and level the road surface. As clearly shown in Fig. 4 of the drawings, the front, rear and auxiliary rollers are all in alignment or in a straight line or plane tangent to all three of the rollers.

In Figs. 5 and 6 there is disclosed an alternate mechanism for carrying and operating the auxiliary roller. In this embodiment, each cylinder 21a, there being one on each side of the machine, is pivotally connected at 35a to a bracket 36 which in turn is mounted on the stationary shaft 7 and carries the arm 10 which carries the auxiliary roller 12. The piston rod 37 of each cylinder is connected to a pin 38 joining links 39 and 40 of a toggle arrangement. The other end of the link 39 is pivoted on a stationary shaft

41, while the other end of the link 40 is pivoted at 42 upon a lug 43 formed or provided on each arm 10. By reason of this construction, no stops are necessary on the guide members 17 since the links 39 and 40 to which the piston rods are attached, act both as a controlling and as a raising member. In order to add to the rigidity of the shaft 41, a bracket 44 is secured to each side 6 of the frame and to this shaft.

In this alternate construction, when the pistons and piston rods 37 are forced outwardly, the auxiliary roller is raised from its operative position as shown in full lines in Fig. 5, to the dotted line position of this same figure.

It will be apparent that when a hump or raised portion is engaged by the auxiliary roller, the greater portion of the entire weight of the road machine or road roller is placed upon this auxiliary roller or applied thereto so as to compress the raised surface of the road bed and thus move or displace the same. It is a well known fact that wherever a raised portion or hump occurs in a paving such as asphalt, oil macadam or the like, a depression is always found adjacent thereto. In other words, the material taken from the depression forms the raised portion or hump. By means of the present invention, the auxiliary roller by compressing this hump or raised portion will again place the road surface or paving in its original position. In the ordinary road roller having but the front steering wheels and rear drive wheels for compressing or smoothing the surface, when either of these wheels or rollers engages the hump or raised portion, it will merely roll over the same, the frame being tilted in proportion to the condition of the surface over which the wheels are running since there is nothing about the machine which will cause it to roll in a straight or level path with relation to the road surface. This is true either when building a new road or when repairing an old one.

Should there be weight enough added to the vehicle as a whole to compress a ridge or hump when the machine passes thereover, that same weight would be constantly present and would compress the entire surface in like proportion. By means of the present attachment or auxiliary roller which is vertically, rigidly mounted when in operative position and capable of sustaining the entire weight of the machine if necessary, it is possible to apply all or the greater portion of the weight of the road roller or machine through the medium of the auxiliary roller so as to compress the raised portion or hump occurring in the surface of the pavement.

It will be readily apparent that the invention comprehends a novel attachment for road rollers or road machines and which greatly adds to the utility thereof.

Having thus disclosed the invention,

We claim:

1. In a road vehicle having a wheeled frame; arms journaled on the frame adjacent the center of the vehicle; a ground roller carried by the lower ends of said arms adapted to support the greater portion of the weight of the vehicle when the roller is in operative position contacting with the ground; abutments carried by the frame adapted to take the thrust from the arms and to fix the operative position of the roller; and means for simultaneously pivoting the arms through equal arcs, said means maintaining said arms in firm contact with the abutments when the roller is in operative position; said abutments

and means coacting to rigidly support the arms with respect to the frame.

2. In a road vehicle having a wheeled frame; arms journaled on the frame adjacent the center of the vehicle; a ground roller carried by the lower ends of said arms adapted to support the greater portion of the weight of the vehicle when the roller is in operative position contacting with the ground; abutments carried by the frame adapted to take the thrust from the arms and to fix the operative position of the roller; means for simultaneously pivoting the arms through equal arcs, said means maintaining said arms in firm contact with the abutments when the roller is in operative position; said abutments and means coacting to rigidly support the arms with respect to the frame; and a bearing bracket detachably secured to the lower end of each of said arms, said roller being rotatably mounted between said bearing brackets.

3. In a road roller provided with a frame and front and rear rollers; a pair of arms swingably mounted on said frame, one on each side thereof intermediate the front and rear rollers; bearing brackets detachably secured to the lower portion of said arms; a roller rotatably supported between said bearing brackets; fluid pressure means to simultaneously swing said arms and roller into and out of contact with the surface to be rolled; and stop means on the frame against which the arms abut when roller is in contact with the surface to be rolled.

4. In a road roller provided with a frame and front and rear rollers, arms swingably mounted on the frame and positioned one on each side of the machine intermediate of the front and rear rollers, an auxiliary roller rotatably mounted on the lower portion of said arms, said arms being swingable together from approximately a vertical position with the auxiliary roller in rolling contact with the surface being rolled to an inclined position with the auxiliary roller out of contact with the surface being rolled, power means connected to each of said arms for simultaneously swinging said arms from said approximately vertical position to said inclined position, and vice versa, said auxiliary roller and arms being so constructed and arranged as to carry the greater part of the weight of the machine when the auxiliary roller is in operative engagement with a resistant hump in the surface being rolled so that the weight on the auxiliary roller will compress the hump and smooth the surface being rolled.

5. In a road roller provided with a frame and front and rear rollers, a pair of arms swingably mounted on said frame and arranged one on each side thereof intermediate of the front and rear rollers, an auxiliary roller rotatably carried by the lower portion of said arms, said arms when the auxiliary roller is in operative position occupying approximately a vertical position in or adjacent to a transverse vertical plane passing through the center of gravity of the machine, said arms being swingable from approximately a vertical position with the auxiliary roller in contact with the surface being rolled to an inclined position with the auxiliary roller out of contact with the surface being rolled, power means connected to said arms for simultaneously swinging them into and out of approximately vertical position to carry the auxiliary roller into or out of contact with the surface being rolled, the said arrangement of the arms when the auxiliary roller is in operative position, causing the

greater part of the weight of the machine to be thrown upon the auxiliary roller when the auxiliary roller is in operative engagement with a resistant hump in the surface being rolled, to compress the hump and level said surface.

6. In a road roller provided with a frame and front and rear rollers, a pair of arms swingably carried by said frame one on each side thereof intermediate the front and rear rollers, an auxiliary roller carried by the lower portion of said arms, said arms when the auxiliary roller is in operative position occupying substantially a vertical position in or adjacent to a transverse vertical plane passing through the center of gravity of the machine, said arms being swingable from a substantially vertical position with the auxiliary roller in contact with the surface being rolled to an inclined angular position with the auxiliary roller out of contact with the surface being rolled, power means connected to said arms for simultaneously swinging them into and out of substantially vertical position to carry the auxiliary roller into and out of contact with the surface being rolled, the arms taking substantially the entire thrust from the auxiliary roller during operation of the latter, whereby humps or irregular upstanding portions of a roadway may be rolled to a substantially smooth surface, and when a hump of sufficient resistance is contacted by the auxiliary roller the latter will receive the greater part of the weight of the machine, and stop members with which said arms contact when the auxiliary roller is in operative engagement with a hump or upstanding portion.

7. In a road roller having a frame and front and rear rollers, a pair of thrust arms swingably mounted on the frame one on each side thereof intermediate of the front and rear rollers, a bearing block on the lower end of each of said arms, an auxiliary roller rotatably mounted between said bearing blocks to transmit the upward thrust of the auxiliary roller to said arms, said arms when the auxiliary roller is in the position of maximum thrust occupying substantially a vertical position, said arms being swingable from a substantially vertical position with the auxiliary roller in contact with the surface being rolled to an inclined position with the auxiliary roller out of contact with the surface being rolled, fluid pressure means comprising piston rods pivotally connected to said arms for simultaneously swinging them into or out of contact with the surface being rolled, and means for detachably securing the bearing blocks to the lower ends of said arms.

8. In a road roller having a frame and front and rear rollers, a pair of thrust arms swingably mounted on the frame one on each side thereof intermediate of the front and rear rollers, a bearing block detachably secured to the lower end of each of said arms, an auxiliary roller rotatably mounted between said bearing blocks to transmit the upward thrust of the auxiliary roller to said arms, said arms when the auxiliary roller is in the position of maximum thrust occupying substantially a vertical position, said arms being swingable from a substantially vertical position with the auxiliary roller in contact with the surface being rolled to an inclined position with the auxiliary roller out of contact with the surface being rolled, fluid pressure means comprising piston rods pivotally connected to said arms for simultaneously swinging them into or out of contact with the surface being rolled, and stop mem-

bers for said arms, said stop members being adapted to be contacted by said arms when the auxiliary roller is in operative engagement with a resistant hump in the surface being rolled.

- 5 9. In a road roller provided with a frame and having steering and driving rollers, a rigid shaft transversely mounted in said frame intermediate of the steering and driving rollers, the ends of the shaft extending beyond the sides of the frame, 10 a pair of arms mounted one on each end of said shaft, a bearing block detachably bolted to the lower end of each of said arms, an auxiliary roller rotatably mounted between said bearing blocks, 15 said arms being swingable with relation to the frame to carry the auxiliary roller into and out of contact with the surface being rolled, a fluid pressure cylinder pivotally mounted on each side of said frame, each of these cylinders having a piston rod pivotally connected to said arms re- 20 spectively for simultaneously swinging said arms to bring the auxiliary roller into and out of contact with the surface being rolled, that portion of said arms between the ends of said rigid shaft and the auxiliary roller occupying a substantial- 25 ly vertical position when the auxiliary roller is in engagement with a resistant hump, and stop members one on each side of the frame against which said arms are adapted to abut when the auxiliary roller is in engagement with a resistant 30 hump in the surface being rolled.

10. In a road roller provided with a frame and the usual steering and driving rollers, a pair of

arms swingably mounted on the frame and positioned one on each side thereof intermediate of the steering and driving rollers, an auxiliary roller carried by the lower portion of said arms, said 5 arms occupying a substantially vertical position when the auxiliary roller is in contact with the surface being rolled, power means for swinging said arms into and out of said substantially vertical position, and stops fixed to said frame 10 against which the arms abut when in position for rolling operation of the auxiliary roller, whereby the power means may swing the arms into and away from contact with said stops, and the stops receive the lateral thrust from the arms 15 when the auxiliary roller is in operation with the machine moving forward.

11. In a road roller having a main frame and the usual steering and driving rollers, an auxiliary frame carrying an auxiliary roller mounted 20 between the steering and driving rollers, said auxiliary frame and roller having both operative and inoperative positions, the operative position being when the said auxiliary roller is in contact with the surface being rolled, means for moving said auxiliary frame and auxiliary roller 25 into and out of operative position and stop means carried by the main frame to locate the said auxiliary frame and the auxiliary roller when in an operative position and to resist thrust during the forward movement of the road roller. 30

FRED D. WILSON.

LEONARD S. BURNS.