Sept. 30, 1952 N. REVERS 2,612,090

ROAD ROLLER

Filed Dec. 19, 1946 3 Sheets-Sheet 1

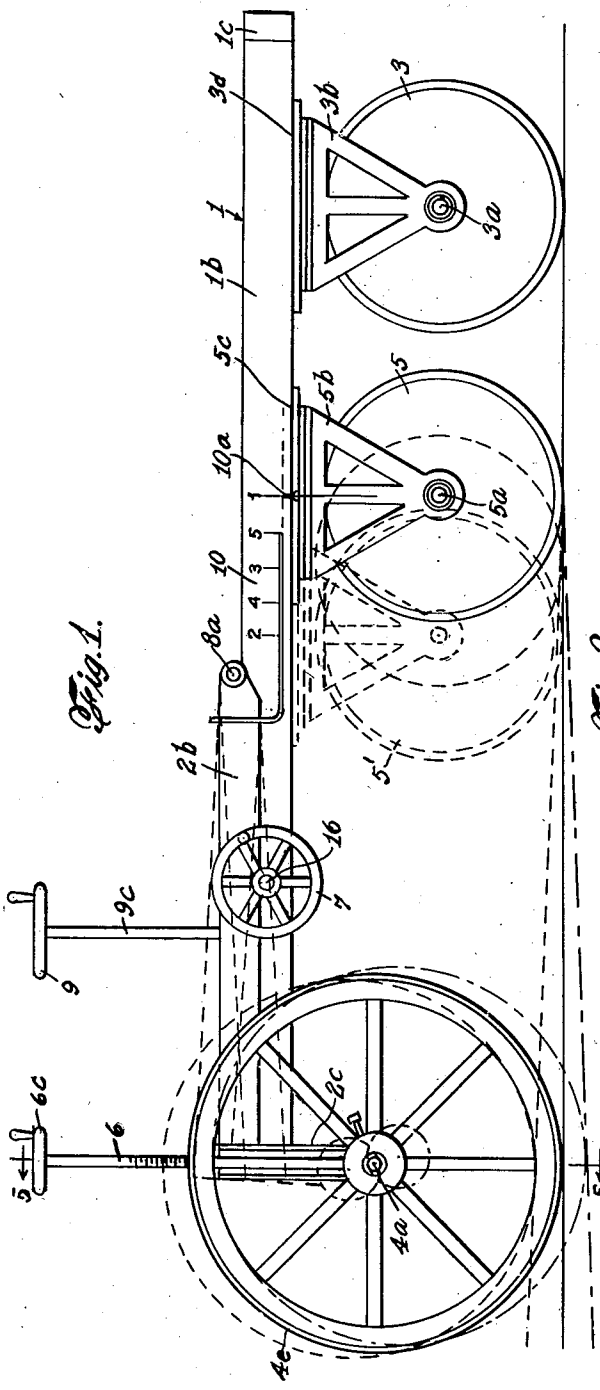

Fig. 1.

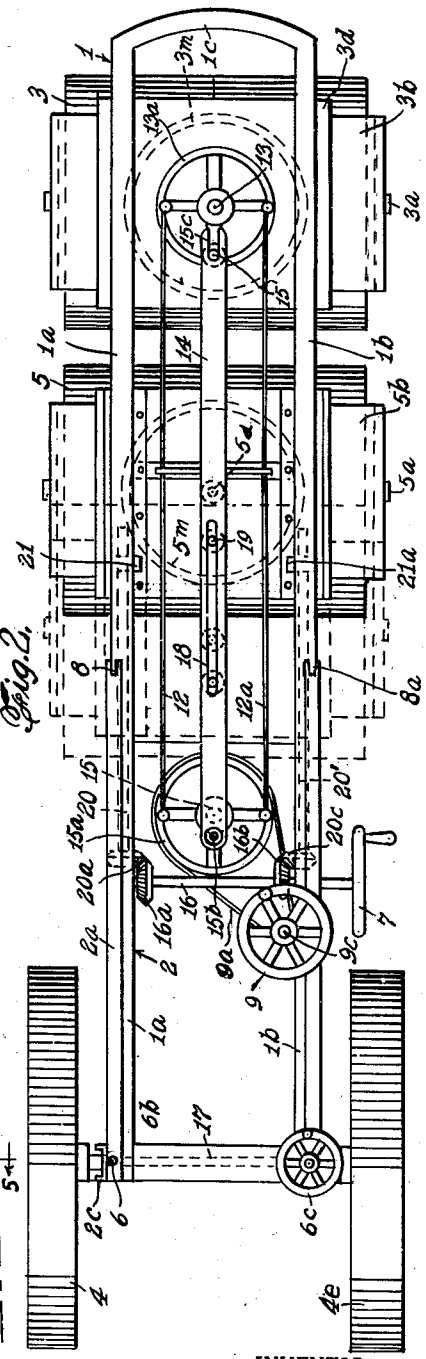

Fig. 2.

INVENTOR.
NICHOLAAS REVERS
BY Victor A. Bocey
ATTORNEY

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ROAD ROLLER

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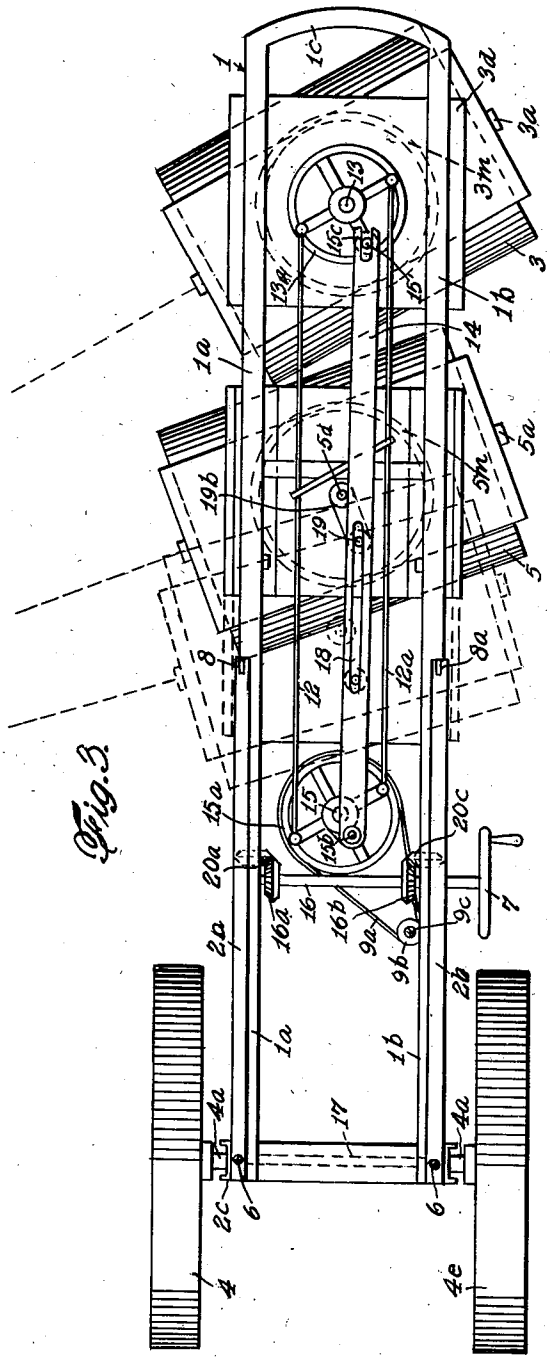

Fig. 3.

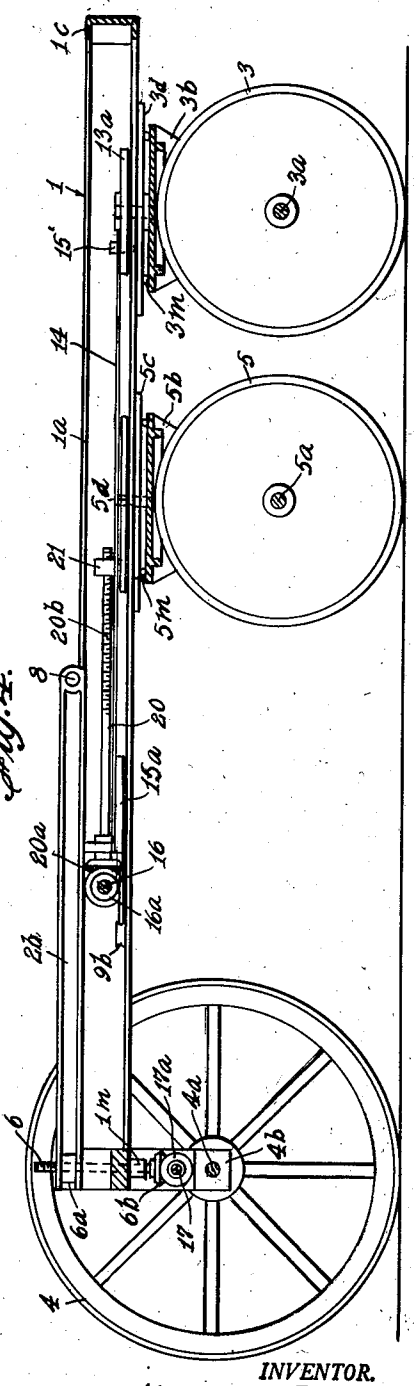

Fig. 4.

INVENTOR.
NICHOLAAS REVERS
BY Peter W. Berry
ATTORNEY.

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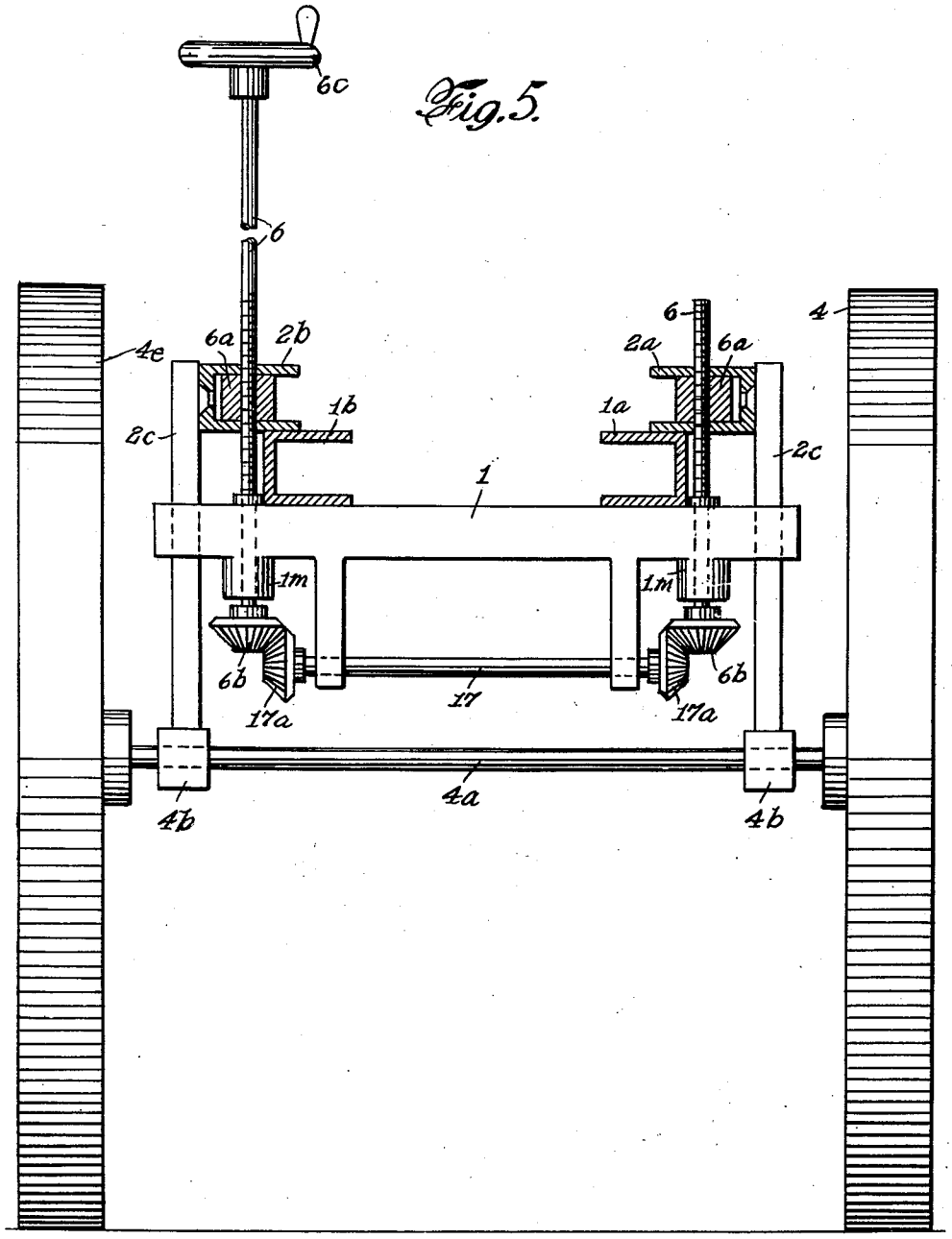
Fig. 5.



INVENTOR.
NICHOLAAS REVERS
BY

ATTORNEY.

Patented Sept. 30, 1952

2,612,090

UNITED STATES PATENT OFFICE

2,612,090

ROAD ROLLER

Nicolaas Revers, Limmen, Netherlands

Application December 19, 1946, Serial No. 717,295
In the Netherlands November 30, 1945

Section 1, Public Law 690, August 8, 1946
Patent expires November 30, 1965

1 Claim. (Cl. 94—50)

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This invention relates to a road roller having two front rollers arranged one behind the other, and two driving rollers arranged side by side at the rear of the road rolling machine. The said front rollers are both turnable, so that each roller obtains a rolling movement.

In the rollers heretofore known, the rear roller of the front rollers is so arranged as not to be displaced in a horizontal direction, that is to say, in the longitudinal direction of the road rolling machine.

The present invention improves this kind of road rollers in the manner that the rear roller of the front rollers is arranged displaceably in the longitudinal direction of the road rolling machine.

By this improvement it is made possible that undulations in the road surface may be wholly removed.

Thus, by the fact that the rear roller of the front rollers may be placed in a different, or changed, position, undulations that may have been formed, after the rolling machine has worked the road surface once, may be completely removed, so that a flat road surface is obtained.

To provide the displacement of the rear roller of the front rollers in a way that assures a solid construction without diminishing the effect of the rolling movement of the front rollers, it is preferable that the foremost roller of the front rollers is steered by means of two bars driving a wheel fixed at the vertical shaft of said foremost roller, said bars being driven by means of a corresponding wheel, both of said wheels being connected by means of a strip that is turnably connected with two equi-positioned points, one at each wheel, while the connection of said strip with the foremost roller enables a longitudinal displacement of the strip, and moreover at such distance from the center of said foremost wheel that the distance is greater than the distance of the equi-positioned point of the other or rear wheel with respect to the center of said last mentioned wheel; said strip having a groove or slot guiding a pin connected to the vertical turning shaft of the rear roller of the front rollers by means of an arm.

In the drawings:

Figure 1 shows schematically a side view of the frame of a road rolling machine according to the invention.

Figure 2 shows a plan view of same.

Figure 3 shows also a plan view in which both steering front rollers are placed in a turned position while

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Figure 4 shows a longitudinal section of the rolling machine.

Figure 5 is a view in vertical section, taken on line 5—5 of Figure 1, looking in the direction of the arrows.

Referring to the drawings, the numeral 1 designates a main frame having parallel side bars, or members 1*a* and 1*b*, and a rigid connecting end bar 1*c*, and 2 designates a secondary frame, having parallel side bars 2*a* and 2*b*, which is located over end portion of the main frame.

Under the opposite end of the main frame 1 a ground roller 3 is mounted to rotate on the axle 3*a*, which is supported by the U-shaped bracket 3*b*, swivelled at 13 to the horizontal plate 3*d*, carried by the parallel side bars 1*a* and 1*b* of the main frame. Inwardly of the roller 3 a second ground roller 5 is mounted to rotate on the axle 5*a*, which is supported on the U-shaped bracket 5*b*, swivelled to the horizontal plate 5*c*, carried by the side bars 1*a* and 1*b* of the main frame, as at 5*d*. Circular bearings 3*m* and 5*m* are interposed between bracket 3*b* and plate 3*d*, and between bracket 5*b* and plate 5*c* respectively.

A vertical shaft 13 is connected with the bracket 3*b*, and on its upper end a wheel 13*a* is mounted. A shaft 15 is supported vertically on the main frame, endwise of the roller 5, and carries a wheel 15*a*. A bar 14 is pivotally connected at 15*b* with a projection on the wheel 15*a* and is formed with a longitudinal slot 15*c* at the end adjacent to the roller 3, while a pin 15′ carried eccentrically by the wheel 13*a* works in the end slot 15*c*. Intermediate of the ends of the bar 14 a longitudinal slot 18 is formed, which is engaged by the pin 19, on the outer end of crank arm 19*b* which is in turn carried by pivot shaft 5*d* connected to bracket 5*b*.

The wheel 13 is connected to the wheel 15*a* by means of the parallel bars 12 and 12*a*, at the ends of the latter, and on opposite sides of the pivot axes of the wheels 13*a* and 15*a*.

The wheel 15*a* is engaged by a drive chain or cable 9*a*, which also engages the sprocket or drive gear 9*b*, carried by the shaft 9*c*, on which the hand wheel 9 is mounted. By operating the wheel 9 the rotary motion of the sprocket or drive gear 9*b* will be transferred by the chain 9*a* to the wheel 15*a*. This will produce a longitudinal shifting motion on the parallel bars 12 and 12*a*, and a longitudinal shifting motion on the intermediate bar 14, which will cause the wheel 13*a* to turn in the same direction that the wheel 15*a* is caused to turn. This will result in the turning of the bracket 3*b* and the roller 3 in a corresponding direction.

Normally the intermediate bar 14 occupies the position shown in Figure 2, with the rollers 3 and 5 disposed in parallel relation to each other and at right angles to the main frame. When the wheel 15*a* is turned either to the right or to the left, the intermediate bar 14 will be displaced laterally from its normal central position, and this will cause the bar 14 to swing the pin 19 in an arc concentric to the axis 5*d* of the bracket 5*b* of the roller 5, and thereby turn the roller 5 in the same direction of turning produced on the roller 3, which may be non-parallel to the latter.

A horizontal shaft 16 is mounted to rotate on the main frame 1, and is equipped on its outer end with a hand wheel 7, and inwardly thereof with a bevel gear 16*a*, and near the remaining end with a bevel gear 16*b*. The bevel gear 16*a* has driving engagement with the bevel gear 20*a* of the longitudinal side shaft 20, which is formed with a screw or worm thread 20*b*, that extends through the nut 21. This nut is connected with the plate 5*c*, which is mounted to slide under and against the main frame 1. The bevel gear 16*b* engages a bevel gear 20*c* on the companion shaft 20', which is also formed with a screw or worm thread, and which engages the nut 21*a*, also connected for turning to the plate 5*c*. The threads of the shafts 20 and 20' may be right and left, and when the cross shaft 16 is rotated by the manual turning of the hand wheel 7, the bracket 5*b* will be shifted with its roller 5, longitudinally of the main frame. To permit this the longitudinal slot 18 of the bar 14 is made of considerable length, so that the pin 19 can freely move therein for the length of travel of the bracket 5*b* on the main frame.

By this arrangement the spacing between the roller 3 and the roller 5 may be varied considerably, to concentrate pressure or rolling effort on the roadway, or to distribute such pressure or rolling effort, as local conditions may require.

The auxiliary or secondary frame 2 is pivoted at 8 and 8*a* to the side bars 1*a* and 1*b* of the main frame, and on its outer ends carries a cross shaft 4*a* on which the ground traction wheels 4 and 4*e* are mounted. Normally this auxiliary frame rests on the upper side of the main frame. Each side bar of the auxiliary frame is provided with a pendant bar 2*c*, the lower end of which carries the bearing 4*b* for the axle, or shaft 4*a*. Each side bar of the auxiliary frame is provided with a nut 6*a*, which is engaged by the screw shaft 6, and the lower end of this shaft is mounted to turn in a bearing 1*m* carried by the main frame. The lower end of the shaft 6 is equipped with a bevelled gear 6*b*, which engages the bevelled gear 17*a* on the end of the cross shaft 17. One of the shafts 6 is equipped on its upper end with a hand wheel 6*c*, and the other shaft 6 is made short. By turning the hand wheel 6*c* both screw shafts 6 will be turned simultaneously and the auxiliary and upper frame 2 will be lifted, so as to elevate the wheels 4 and 4*e*, and thereby lower the level of the main frame 1.

The main frame 1 is provided on one or both sides with a horizontal scale 10, and the bracket 5*b* of the roller 5 is provided with a pointer or indicator 10*a*, which is moved horizontally across the scale 10, when the roller 5 is shifted longitudinally of the main frame.

It will be seen, therefore, that my invention provides means for increasing or reducing the spacing between the rollers 3 and 5, and of rotating both rollers from right-angular pressure positions, and of raising and lowering the wheels 4 and 4*e* relative to the main frame.

In Figures 2 and 3 I show in dotted lines, concentric with the vertical shafts 5*d* and 13, circular bearings for the brackets 5*b* and 3*b*.

The bracket 3*b* and the plate 3*d* form a carriage and swivel head respectively for the roller 3, which turns on the pivot shaft 13, which extends through the plate 3*d* from the bracket 3*b*. The bracket 5*b* and the plate 5*c* form a swivel head and carriage respectively for the roller 5, and the pivot shaft 5*d* extends from the bracket 5*b* through the plate 5*c*. This carriage is adapted to slide on the main frame under control of the adjustment screw shafts 20 and 20', and permits of independent swivel movement of the roller 5.

I claim:

A road roller, comprising a main frame, a first bracket swivelled on a pivot shaft under the forward portion of the main frame and being provided with a road roller mounted to rotate therein, a second bracket, rearwardly of said first bracket, swivelled on a pivot shaft which extends through a secondary frame slidable on the main frame and said second bracket is provided with a road roller mounted to rotate therein, a steering wheel mounted on a vertical shaft rearwardly of said brackets, said wheel being provided with opposed pins spaced on opposite sides of said shaft, a similar wheel mounted on the pivot shaft of said first bracket and provided with eccentric pins, parallel rods connected at their ends with the spaced pins of both wheels, a bar located between the parallel rods and having eccentric end connection with one of the wheels and provided with a slot on the opposite end, an eccentric pin carried by the other wheel engaging said end slot adjacent and over the first bracket, the pivot shaft of said second bracket being provided with an eccentric arm having an outer pin engaging an elongated intermediate slot in said bar, screw shafts mounted longitudinally of the main frame, a cross shaft having gear driving connection with both screw shafts, a nut carried on each end of the sliding secondary frame and engaging each screw shaft, whereby the last named bracket may be shifted longitudinally of the main frame, and vertically adjustable rear wheels on the main frame spaced longitudinally of the rollers.

NICOLAAS REVERS.

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