

April 16, 1940.

R. W. KEELER

2,197,395

TRENCH ROLLER

Filed Jan. 21, 1937

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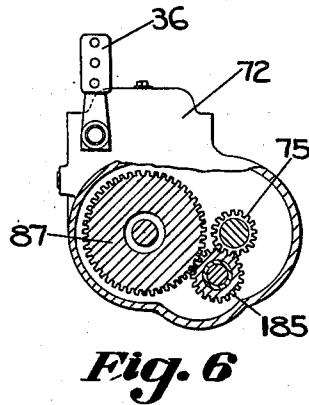
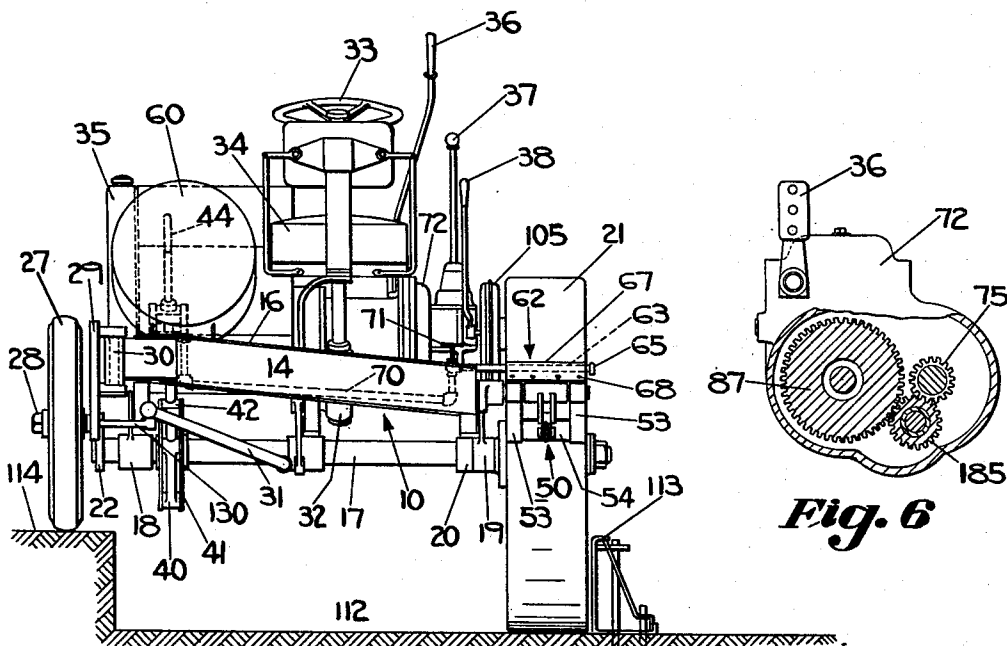
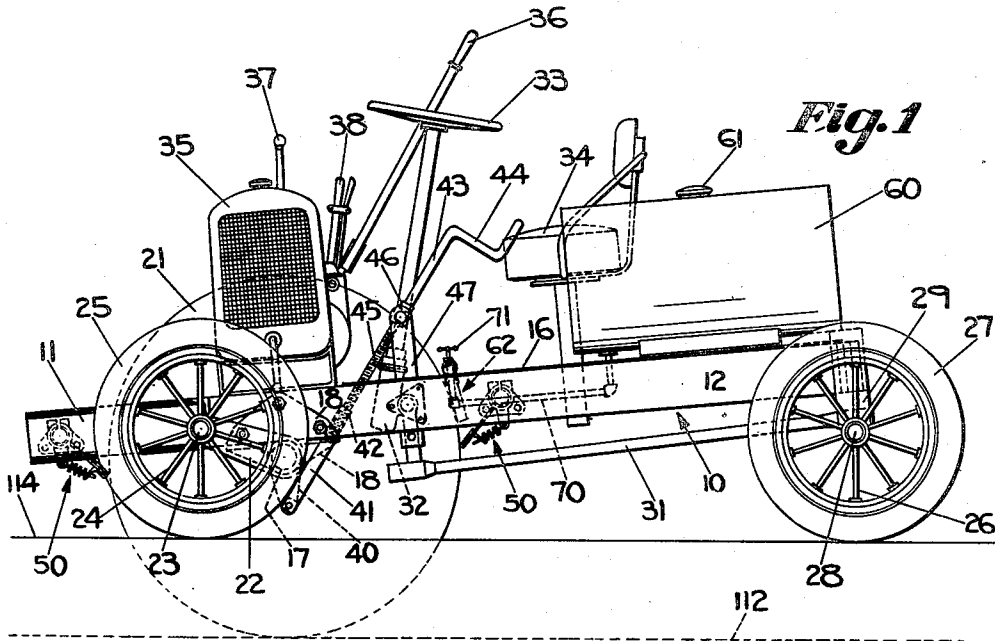


Fig. 2

Fig. 6

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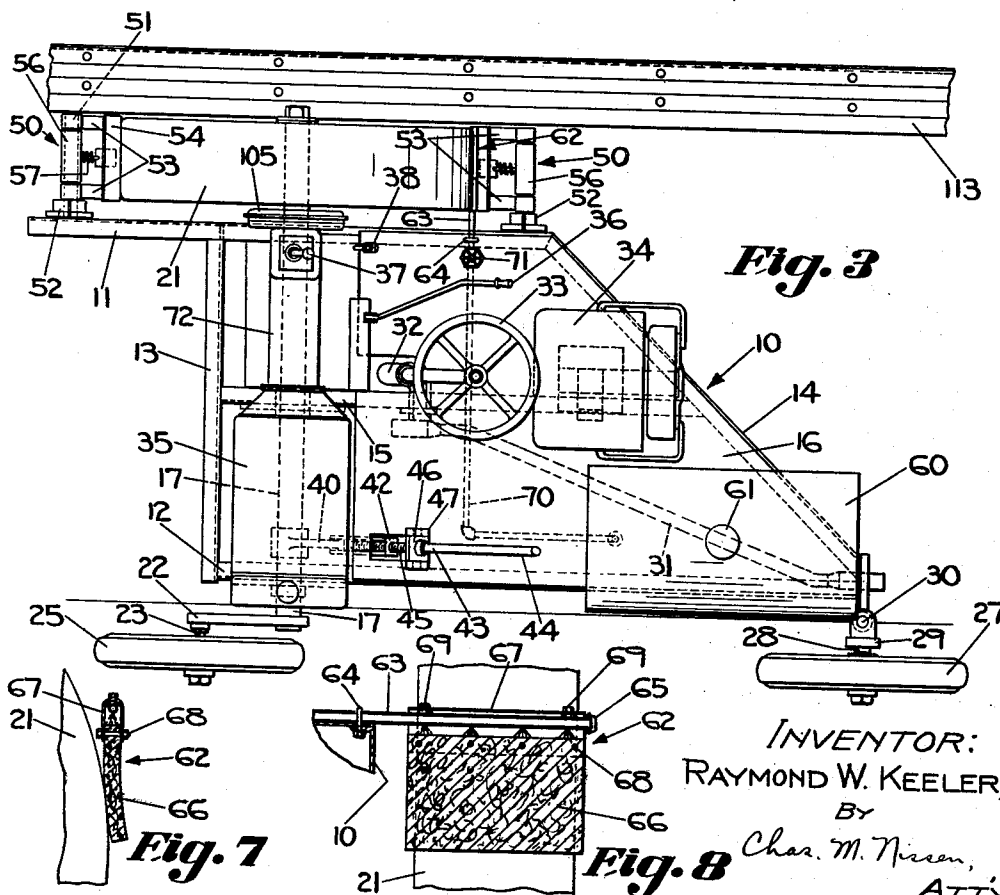
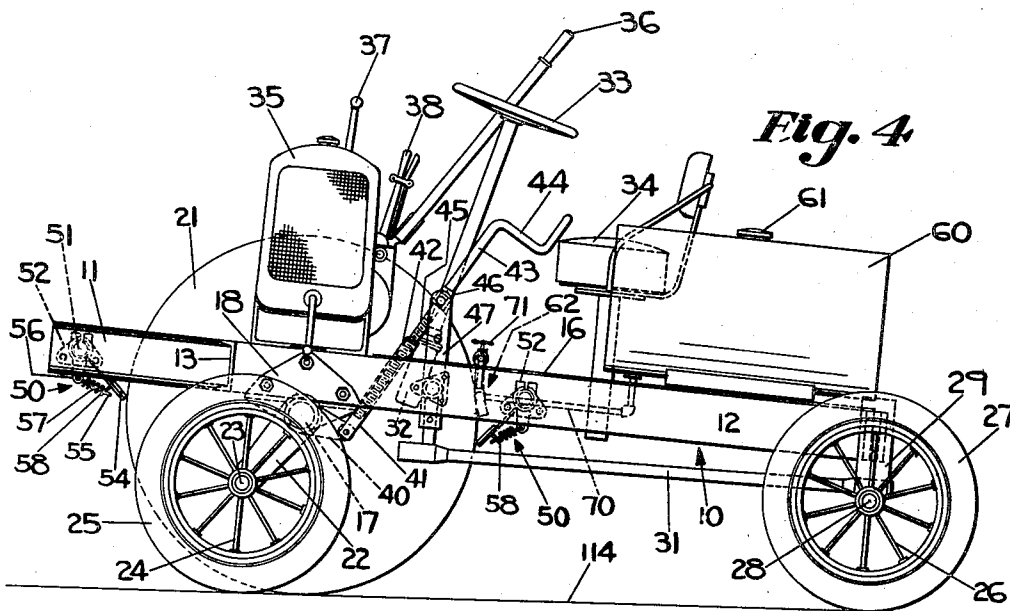
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TRENCH ROLLER

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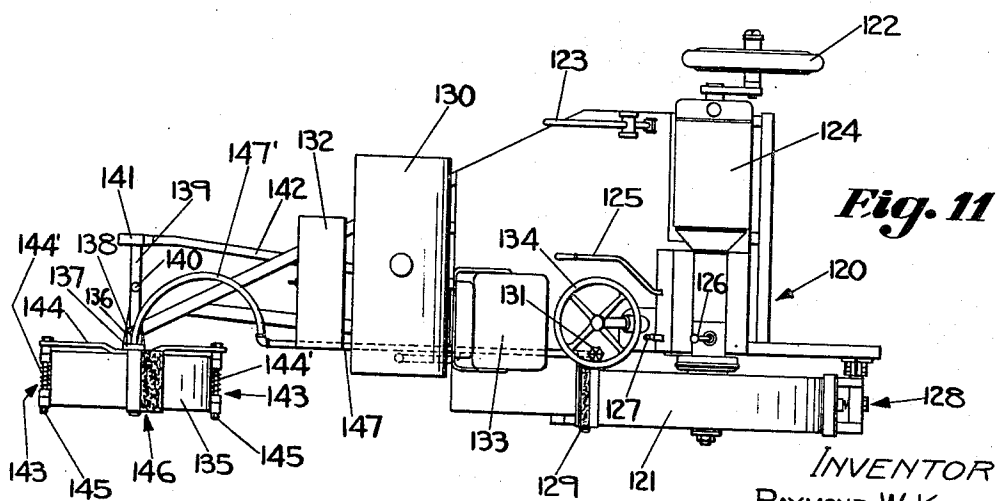
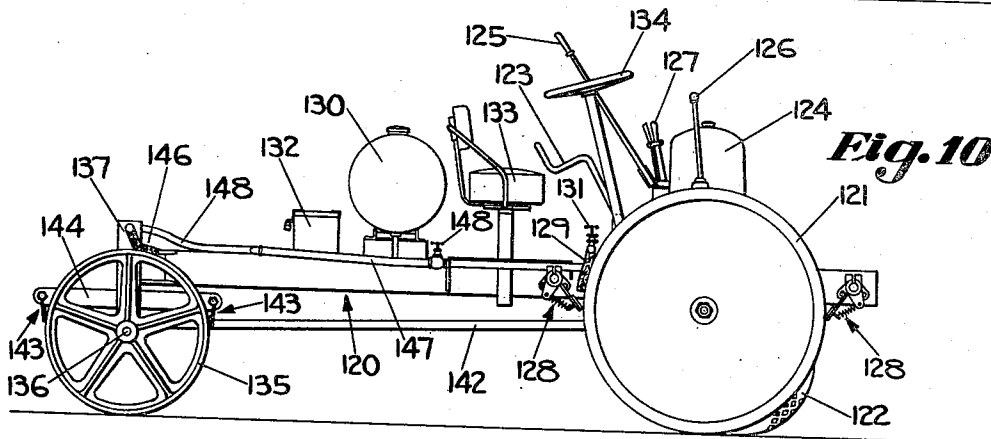
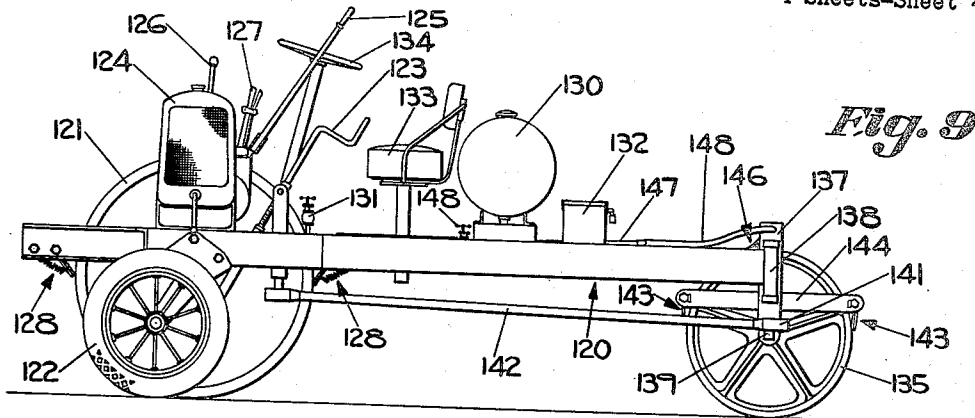
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TRENCH ROLLER

Filed Jan. 21, 1937

4 Sheets-Sheet 4



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2,197,395

TRENCH ROLLER

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Application January 21, 1937, Serial No. 121,601

26 Claims. (Cl. 94—50)

This invention relates to a trench roller, and particularly to such a roller adapted to roll and compact material in a trench along the side of a previously built road as a step in the widening of said road.

It is therefore an object of the invention to provide a trench roller of the above mentioned type.

Another object of the invention is to provide a trench roller in which a heavy roller is mounted at one side of the device with a pair of wheels at the other side of the device, which ride upon the road surface with the roller in the trench and including means to maintain the frame level in a transverse direction by adjusting one of said wheels vertically while providing for the steering of the device by the steering of the other of said wheels.

Still another object of the invention is to provide a road roller in which means are provided to maintain the roller free of any adhering material by both scraping said roller and washing it with a wetted mat.

Other objects of the invention will appear hereinafter, the novel features and combinations being set forth in the appended claims.

In the accompanying drawings,

Fig. 1 is a side elevational view of the device of my invention shown in operative position with the roller in a trench;

Fig. 2 is a rear end elevational view of the device of Fig. 1;

Fig. 3 is a plan view of the device in the position illustrated in Figs. 1 and 2;

Fig. 4 is a side elevational view of the device shown in transporting position or in a position completing the widening of the road surface;

Fig. 5 is a transverse composite sectional view showing the drive mechanism interconnecting the power unit and the road roller, the portion to the left of the line A—A being taken in a horizontal plane, and the portion to the right of said line being taken in a vertical plane;

Fig. 6 is a detail sectional and elevational view showing certain gears of the clutch of the power unit;

Fig. 7 is a transverse sectional view showing the mounting of the roller mat washer;

Fig. 8 is a longitudinal sectional view of the device of Fig. 7;

Figs. 9 and 10 are reverse side elevational views of another form of the device comprising my invention; and

Fig. 11 is a plan view of the device of Figs. 9 and 10.

Referring particularly to Figs. 1, 2, 3 and 4 of the drawings, the trench roller of my invention comprises a main frame 10 formed by a pair of longitudinally extending channel members 11 and 12, a forward transversely extending channel member 13, a rearward diagonally extending channel member 14, and an intermediately positioned longitudinally extending channel member 15. All of said channel members 11 to 15, inclusive, are rigidly attached together, as by welding.

Upon the rear portion of the main frame 10 and forming a part thereof, is a plate 16 forming a platform to support a number of elements, as hereinafter described in complete detail. Said plate 16 is rigidly attached to the channel members 11, 12, 14 and 15, as by welding.

Extending transversely of the main frame 10 at the forward end thereof is a shaft 17 which is pivotally attached to said main frame 10 by appropriate brackets 18 and 19, the former of which is rigidly attached to the channel member 12 and the latter of which is rigidly attached to the channel member 11. Said brackets 18 and 19 are provided with appropriate journal bearings to mount said shaft 17 for free rocking movement.

A collar 20 (see Fig. 2) is rigidly attached at one end of the shaft 17 to prevent axial movement of said shaft in one direction. Adjacent its outer end the shaft 17 carries a heavy roller 21 which is employed to level the material in a trench to be rolled, as is hereinafter described in full detail.

The hub of the roller 21 is journaled for free rotation on the shaft 17 and will be effective to prevent axial movement of said shaft 17 in one direction. As a consequence of the provision of the collar 20 and roller 21 on opposite sides of the bracket 19, said shaft 17 will be held against axial movement in either direction while being free to rock.

Adjacent the opposite end of the shaft 17 to that which carries the roller 21, I provide a level or arm 22 which is rigidly attached at one end to said shaft 17, and at its free end carries axle 23 upon which is journaled a wheel 24, preferably provided with a pneumatic tire 25.

Adjacent the rear end of the main frame 10 and on the same side thereof, at which the wheel 24 is located, I provide a steering and supporting wheel 26 having a pneumatic tire 27 and mounted upon an axle 28 rigidly attached to a bracket 29 which is mounted upon a king pin 30 for oscillation about an upright axis.

To effect oscillation of the wheel 26 to steer the

device, the bracket 29 carries an arm 130 to which is connected a steering rod 31 operable through reduction gearing 32 from a steering wheel 33 mounted upon the plate or platform 16. This steering mechanism is of a construction commonly employed in automobiles, the construction of which is well understood in the art. Also mounted upon the plate or platform 16 is an operator's seat 34.

Mounted adjacent the front end of the main frame 10 and preferably positioned directly above the shaft 17, is a power unit 35 preferably comprising an internal combustion engine with appropriate reduction gearing and operating clutches which may be controlled to drive the roller 21 in reverse directions and at two speeds. The power unit also preferably has a brake associated therewith and includes a clutch lever 36 biased to a normal position in which neither of two clutches is engaged and operable in reverse directions to cause reverse movement of the trench roller; and a gear shift lever 37 which may be operated to provide two speeds of movement of said device; and a brake lever 38 which may be operated to hold the device in any desired position. The structural details of the clutches, transmission gears and brake are illustrated in Fig. 5 of the drawings, and will be described in detail hereinafter.

As clearly illustrated in Figs. 1, 2 and 3 of the drawings, the trench roller is particularly adapted to operate with the roller 21 in a trench adjacent a previously built road in a road widening operation with the wheels 24 and 26 riding on the old road surface. Due to the lateral distance between said wheels 24 and 26 on the one hand, and the roller 21 on the other, which, for example, may be approximately five feet, a trench of any width up to five feet, and to a minimum of the width of the roller 21, may be rolled with my device with the wheels 24 and 26 on the previously built pavement.

In order to maintain the rolling surface of the roller 21 horizontal and thus to roll the bottom of the trench level while at the same time maintaining the frame 10 level laterally of itself, I provide means for adjusting the wheel 24 vertically by rocking it about the axis of the shaft 17. This adjustment also has a horizontal component of movement, but it is the vertical movement which is primarily of importance and where in the claims a vertical adjustment is called for, it is to be understood that the movement may or may not also have a horizontal component.

To provide for said vertical adjustment of the wheel 24 with respect to the frame 10 for the reasons above set forth, I provide means to rock the shaft 17. Said means comprises an oscillating lever or arm 40, rigidly attached or keyed to said shaft 17 to which lever 40 is pivotally attached a yoke 41 carrying a threaded nut 42. A shaft 43 provided with a crank handle 44 at one end and threaded at 45 at the other end, is journaled in a trunnion 46 supported from the plate or platform 16 by a bracket 47. The trunnion 46 holds the shaft 43 against axial movement in either direction while permitting free rotary movement thereof.

The threaded portion 45 of said shaft 43 threads into the nut 42 and cooperates therewith and with the yoke 41, to provide an extensible link. It will be obvious that upon a rotation of the shaft 43 in one direction, said extensible link will be lengthened, and upon rotation thereof in the other direction it will be shortened. The

lengthening and shortening of this link will cause rocking of the shaft 17 with a consequent vertical adjustment upwardly or downwardly of the wheel 24 with respect to the main frame 10. It is thus evident that the crank handle 44 may be operated by an operator on the seat 34 to maintain the bottom surface of the roller 21 horizontal, or in other words, to maintain the shaft 17 in a horizontal plane.

In the operation of the device there may be a tendency for the material in the trench to stick to the roller 21. To maintain said roller clean at all times, I provide both forward and rearward scraper mechanisms 50 carried by the channel member 11 and cooperating with said roller 21 to scrape material therefrom. Said scraper mechanisms 50 are of similar construction and each comprises a shaft 51 extending laterally from a bracket 52 which is rigidly attached to the channel 11. A pair of arms 53 are pivoted to the shaft 51 and carry a transversely extending scraper plate 54 which engages the roller 21.

To urge the scraper plate 54 into engagement with the roller 21 I provide a pin 55 carried on a downwardly extending bracket 56 mounted on the shaft 51, around which pin is provided a coil spring 57 which abuts a plate 58 through which the pin 55 extends. It will be evident that the spring 57 urges the scraper plate 54 into engagement with the surface of the roller 21.

It is also desirable in certain instances to provide means for wetting the surface of the roller 21. This is particularly true where the roller is employed in the finishing operation, and material, such as crushed stone held together by a bituminous binder, is employed for the final road surface. It has been found that by maintaining the surface of the roller 21 wet, a tendency for this material to adhere thereto is greatly reduced.

To provide for this wetting of the surface of said roller 21, I mount a water tank 60 on the rear end of the platform 16 and provide it with a removable cap 61. Positioned above the rear scraper mechanism 50 is a wiping device 62 (Fig. 4) for wetting the surface of said roller 21. Said wiping device comprises a pipe 63 extending laterally from the main frame 10 and rigidly attached thereto, as by a clamp 64. The bottom of the pipe is perforated at intervals and the end thereof is closed by cap 65. (See Fig. 3.)

Positioned below the perforations in the pipe 63 is a wiping element preferably in the form of a coco-mat 66 which is attached to and supported by said pipe 63 by an inverted U-shaped plate 67 and transversely extending nuts and bolts 68. The U-shaped plate 67 is rigidly attached to the pipe 63 by appropriate machine screws 69 which thread into appropriate threaded bosses carried by the pipe 63.

The pipe 63 is connected to the tank 60 by appropriate piping means 70, and the flow of fluid from said tank 60 to the spray pipe 63 is adjusted by a hand valve 71 in said piping system.

It will thus be evident that both scraper and wetting means are provided to maintain the surface of the roller 21 substantially free of adhering material.

Attention is now directed to Figs. 5 and 6 of the drawings which disclose the construction of the clutch and transmission gears of the power unit 35 and the driving connection between said power unit and the roller 21. Mounted upon anti-friction bearings within the clutch housing 72 is a shaft 73 provided with a pair of integral gears 75

74 and 75. The shaft 73 is splined at 76 and is driven from an element 77 connected with the fly wheel of the power unit. It is thus evident that shaft 73 will be driven from the motor of the power unit.

Also mounted within the clutch housing 72 upon anti-friction bearings is a splined shaft 78 to which is splined a shiftable collar 79 which may be shifted axially of the shaft 78 in reverse directions by a shipper 80, which will be operated by the clutch lever 36, previously mentioned.

The collar 79 carries two clutch elements 81 and 82 of a pair of disc type friction clutches 83 and 84, respectively. Also forming a part of the clutches 83 and 84, respectively, are the clutch elements 85 and 86 provided with integral gears 87 and 88, the former of which meshes directly with the gear 74 and the latter of which is connected to the gear 75 through the idler gear 85 (see Fig. 6), which has a width sufficient to be engaged by both said gears 75 and 88. It will thus be seen that upon rotation of the shaft 73 the clutch elements 85 and 86 will rotate in opposite directions, thus by operating the shipper 80 from the lever 36 to move the clutch elements 81 and 82 axially of the shaft 78, said clutches 83 and 84 may be selectively operated to drive the shaft 78 in reverse directions. As was previously stated, when the lever 36 is in its neutral position, neither of said clutches 83 or 84 will be operated, and thus the shaft 78 will remain stationary even though shaft 73 is rotating.

At its rear end the shaft 78 carries a pinion 89 which meshes with the internal teeth of a master gear 90 which is mounted upon a stub shaft 91 and keyed thereto, which stub shaft 91 is mounted upon anti-friction bearings in the clutch housing 72 and the gearing housing 92. The stub shaft 91 is provided at its rear end with an integral pinion gear 93 which meshes with a transmission gear 94 carried upon a hub 95 which is mounted upon a shaft 96 in the housing 92. The hub 95 also carries an integral gear 97 at one end.

Journalled upon anti-friction bearings in the housing 92, and in a cup 197 formed in the rear end of the stub shaft 91 is a drive shaft 98 which is splined at 99 to receive slidably a gear 100, which is slidable axially of said drive shaft 98 by a shipper 101 mounted on a shaft 102 and operable by the gear shift lever 37 previously mentioned.

In a neutral position of the gear shift lever 37, the gear 100 will be in the position illustrated in Fig. 5. If said gear shift lever 37 is moved to the left, as viewed in said Fig. 5, then it will pivot about the universal socket 103 thereof, and shift the gear 100 so that it is in mesh with the gear 97. As a consequence, the shaft 98 will be driven from the stub shaft 91 through the gears 93, 94, 97 and 100. In view of the fact that gear 94 is larger than gear 93, and gear 100 is larger than gear 97, this will effect a reduction in the speed of shaft 98, as compared with the speed of shaft 91. This will therefore provide a low speed or powerful drive for the shaft 98.

The gear 100 is also provided with internal teeth 104 and when said gear 100 is shifted to the left, as viewed in Fig. 5, said teeth 104 effect a direct drive from the shaft 91 through gear 93, teeth 104 of gear 100 to the shaft 98. Thus, shafts 91 and 98 will be directly connected under these circumstances, which will provide a relatively high speed of movement of the trench roller.

This shifting of the gear 100 will, of course, be effected by moving the gear shift lever 37 to the right, as viewed in Fig. 5 of the drawings.

Keyed to the inner end of the shaft 98 is a brake drum 105 and a drive pinion 106. Co-operating with the brake drum 105 is a brake shoe 107 which is operated by the brake lever 38 in a well-known manner. A stationary guard 108 is also provided to enclose the brake shoe 107, said guard 108 being rigidly attached to the gear housing 92. The pinion 106 meshes directly with a large ring gear 109 which is rigidly attached to the roller 21 in a recess 110 thereof as by screws 111. The ring gear 109 is concentric with the shaft 17.

As has been previously mentioned, the axis of the drive shaft 98 is preferably parallel with and directly above the axis of the shaft 17 when the main frame 10 is horizontal. This insures proper meshing of the teeth of the pinion 106 and the ring gear 109 at all times.

In Figs. 9, 10 and 11 of the drawings I have illustrated another form of my invention which follows the construction of the above described device except for certain differences specifically described hereinafter. Said device comprises a main frame 120 supported by a main front roller 121 and a front wheel 122 provided with a pneumatic tire. Wheel 122 is vertically adjustable by operating mechanism 123 similar to the mechanism described above and including crank handle 44, etc. Roller 121 is driven from a power unit 124, as was roller 21 driven from power unit 35. A clutch lever 125, gear shift lever 126 and brake lever 127 are provided and operate similarly to corresponding levers 36, 37 and 38, above described. Roller 121 is provided with front and rear scrapers 128 and a wiping device 129, the latter being supplied with water from tank 130, from which a flow of water to said wiping device 129 is controlled by hand valve 131. A tool box 132 is also provided on the frame 120. An operator's seat 133 is provided to support the operator near the levers 125, 126 and 127 and near a steering wheel 134.

It will be evident that the principal difference between the devices of Figs. 1 to 4, inclusive, and Figs. 9 to 11, inclusive, is in the position and construction of the rear supporting and steering wheel. In the device of said Figs. 9 to 11, inclusive, I provide a second roller 135 which is on the same side of the main frame 120 as roller 121 and in alignment with it. Said roller 135 will, therefore, also aid roller 121 in rolling the trench.

Said roller 135 is journalled on a shaft 136 mounted upon an upright plate 137 which plate is journalled by journal 138 to the rear end of the main frame 120. Extending laterally from the bottom of plate 137 and opposite shaft 136 is an operating lever 139 provided with a pair of balls, one of which is seen at 140, the other of which is received by a socket 141 on the rear end of a steering operating rod 142. Socket 141 may be placed on ball 140, if desired, thus providing for variation in the effective length of lever 139 with a consequent adjustment in the gear ratio between wheels 134 and 135. Rod 142 is operated from wheel 134 through a well-known gearing, as above described in connection with Figs. 1 to 4, inclusive.

Associated with roller 135 is a pair of scrapers 143 carried on a plate 144 which, in turn, is carried on plate 137. To urge the scrapers 143 into engagement with roller 135 I provide coil springs 75

144' on shafts 145, one end of each spring of which is attached to the pivoted plate of the scraper 143, the other end being held fast.

A wiping device 146, similar in construction to wiping devices 129 and 62, is carried on the top of plate 137 and wipes the roller 135. A pipe 147, controlled by a valve 148, supplies water from tank 130 to wiping device 146 through a rubber hose 147'.

In the operation of the device comprising my invention, as exemplified in the form seen in Figs. 1 to 4, inclusive, a trench 112 (Fig. 2) is first formed adjacent the edge of a previously built road with a view of widening said road. Adjacent the outer edge of said trench 112, as determined by the extent to which the road is to be widened, is positioned a frame 113. The trench roller is then rolled with the roller 21 in said trench 112, and with the wheels 24 and 25 on the surface of the previously built road 114. The trench roller is moved forwardly and rearwardly while being steered to move it laterally so that the roller 21 rolls over and compacts firmly the entire surface of the trench 112. To maintain the surface of the roller 21 level, and as an incident thereto, to maintain the axis of the shaft 17 level, the wheel 24 may be adjusted vertically by the previously described mechanism, including the handle 44. The road roller will, of course, be steered by the operation of the steering wheel 33, which is effective to move the steering wheel 26. After the surface of the trench 112 has been completely leveled or rolled compact, material may be fed to said trench to fill it at least partially. In general, the material is fed in layers and rolled after each layer. As the trench 112 becomes gradually filled, a vertical adjustment of the wheel 24 will, of course, be necessary to maintain the shaft 17 level at all times.

When the trench 112 has been substantially completely filled, the last stratum of material will be the surfacing material which, for example, may be chipped stone and a bituminous binder, or it may be any other material, such as poured concrete or brick. If it is the former, the roller may be employed to finish the surfacing of said material in which the roller wetting means 62, and the scraper mechanisms 50, will be particularly useful. The scraper mechanisms 50 will also be useful to remove any other material, such as dirt, from the roller 21 during the earlier stages of the road widening operation. If desired, the roller wetting mechanism may be omitted entirely, but I prefer to incorporate it as part of my invention.

The device disclosed in Figs. 9 to 11, inclusive, operates in a manner very similar to the above described operation of the device of Figs. 1 to 4, inclusive, except that rollers 121 and 135 both roll in the trench.

It should be particularly noted that the power unit 35 is directly connected by means of the power-transmission mechanism shown in Fig. 5, to the trench roller 21. By reason of the friction clutches 81, 82 associated with the reversing mechanism, sudden application of the power to the road roller 21 by the operator can not injure any of the apparatus because of the slippage at the friction clutches. As shown in Fig. 5, a relatively slow and a relatively fast speed may be obtained for both forward and rearward travel of the road roller.

By placing the power unit and the power transmission mechanism adjacent the road roller,

not only may direct propelling action be secured for the roller, but the weight of the power unit and the power transmission mechanism is added to the weight of the frame to increase both the driving traction of the roller and its rolling effect on the material in the trench or at the side of the roadway.

As shown in Figs. 1 and 2, the adjustment in elevation of the axis 23 of the wheel 25 relative to the vehicle frame enables the axis 17 of the roller 21 to be maintained substantially horizontal so that the roller 21 will roll the surface to a horizontal plane. The elevation of the axis 28 of the steering wheel 27 relative to the vehicle frame 10, remains fixed. There being a single steering wheel at that end of the frame 10 opposite the large roller 21, the vehicle frame may be tilted laterally without interfering in any way with the steering operation. When the roller operates along a deep trench, as shown in Fig. 1, with the axis of the roller substantially horizontal, the forward end of the vehicle frame 10 may be tilted downwardly while the axis 28 of the steering wheel 27 remains substantially horizontal and at fixed elevation relative to the frame. In Fig. 4 the forward end of the frame 10 is tilted upwardly while the roller 21 and the adjusting wheel 25 are traveling over a roadway having a horizontal surface. In both Figs. 1 and 4 the steering wheel unit maintains the same relation with the vehicle frame 10.

In the form shown in Figs. 9, 10 and 11 both ends of the supporting frame may always be maintained at the same elevation relative to the road surface, and therefore the frame 120 may be maintained in horizontal position both during trench rolling operations and during transportation. This arrangement may be more comfortable to the operator who sits on the seat 133 while controlling the power transmission mechanism and while operating the steering roller unit and effecting adjustment in elevation of the axis of the wheel 122 relative to the supporting frame 120.

Patch rolling may be effected by either the form of the machine shown in Figs. 1 to 4, inclusive, or by means of the form shown in Figs. 9, 10 and 11, because in both forms transverse inclination of the axis of the roller may be adjusted so as to be parallel with the surface to be rolled. Furthermore, if the roadway is crowned and a horizontal lateral extension of the roadway is to be rolled, the axis of the roller may be maintained horizontal or parallel to such extension surface by adjusting the axis 23 of the wheel 25 of Fig. 1 relative to the frame, or by adjusting the axis of the wheel 122 of Fig. 9 relative to the frame 120.

By the use of the frame 113 shown in Fig. 2 the width of the trench 112 may be definitely limited, thereby avoiding any waste of material and avoiding any more rolling than is necessary. Furthermore, the frame 113 may serve as a guide abutment for the roller 120 when the rolling operation along the frame 113 is being carried out.

By referring to Figs. 1 and 4 it will be seen that the wiping device 62 for wetting the surface of the roller 21, is located immediately above the rear scraper device 50. The arrangement may be such that sufficient water is directed from the nozzle 63 of Fig. 8 under the upper edge of the coco-mat 66 as to cause sufficient flow of water to thoroughly wet the material adhering to the wheel 21 before it moves upwardly into

engagement with the scraper 50. In other words, by adjusting the co-relation of the parts of the roller wetting apparatus, a sufficient flow of water may be obtained to thoroughly wet and soak the adhering material before it moves upwardly to the scraper 50, and therefore when the latter acts it can more efficiently remove the adhering material from the surface of the roller 21, and what is not thus removed may be easily wiped off by the coco-mat 62.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended, and I therefore wish not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of my invention, what I desire to secure by Letters Patent of the United States is:

1. In a road roller, the combination with a vehicle frame, of a rock shaft extending transversely of said frame, a lever arm connected to one end of said shaft to swing up or down relatively to said frame when said shaft is rocked, a heavy leveling roller journaled on that end of said shaft remote from said lever arm to occupy a position at one side of said frame, a supporting wheel journaled to the free end of said lever arm to occupy a position at the other side of said frame, and means for rocking said shaft to cause said lever arm to vary the distance of the axis of said supporting wheel from said frame while the axis of rotation of said roller remains fixed relative to said frame, the construction and arrangement being such that the roller always remains in ground engaging position and always serves as a frame supporting roller in co-operation with said wheel.
2. In a trench roller, the combination with a vehicle frame, of self-contained power-operated driving mechanism mounted on said frame, mechanism located solely at one side of said frame comprising a road engaging wheel for supporting the adjacent side of said frame at various elevations relative to the road surface, a leveling roller located solely at the other side of said frame for rotation relatively thereto on an axis fixed relative to said frame and connected to said driving mechanism to be rotated thereby to transport the machine along the roadway, and mechanism comprising a wheel at the rear end of the machine for steering the machine.
3. In a road roller, the combination with a vehicle frame, of a leveling roller at one side of said frame, means on the opposite side of said frame for adjusting the adjacent side of said frame relative to the road surface to maintain horizontal the axis of rotation of said roller, and self-contained power-operated driving mechanism located on said frame adjacent to said leveling roller to increase the weight on said roller.
4. In a road roller, the combination with a vehicle frame, of a rock-shaft extending transversely thereof, a heavy leveling roller on one side of said frame, a supporting wheel at the other side of said frame, means between said shaft and said supporting wheel to effect adjustment in elevation of the adjacent side of said frame upon the rocking of said shaft, and self-contained power-operated mechanism on said frame and connected to said roller to drive the same and thereby propel the machine along the roadway.

5. A road working machine comprising a vehicle frame having parallel spaced-apart side members of different lengths and connected by transverse members one of which is diagonal at one end of the frame, means comprising ground engaging wheels on opposite sides of the frame including a steering wheel located at one end of the frame where the diagonal member makes an acute angle with the adjacent side member, and steering mechanism connected to said steering wheel.

6. A road roller comprising a vehicle frame having spaced side members of different lengths connected by cross-pieces one of which is diagonal, means comprising a road roller for supporting said frame for travel along a roadway, a scraper for the said roller, and an extension from the shorter side member serving to support said scraper in association with the periphery of said roller while spaced above the road surface.

7. In a road roller, the combination with a vehicle frame, of means for supporting the same for travel along a roadway comprising a single steering wheel at one end of said frame and a roller and a supporting wheel at the other end of said frame and on opposite sides thereof, mechanism for adjusting the elevation of the axis of the last-named supporting wheel relative to said frame to maintain the axis of the roller substantially horizontal while the elevation of the axis of the steering wheel remains fixed relative to said frame, and steering mechanism connected to said steering wheel to effect steering of the machine irrespective of the tilt of said frame on the axis of the steering wheel.

8. A wetting device for a road working machine comprising a coco-mat, a spray pipe, an inverted U-shaped plate secured to said spray pipe, and means for suspending the mat from said plate with the upper edge of the mat extending upwardly into said U-shape plate but spaced below said pipe.

9. In a road roller, the combination with a vehicle frame, of a steering wheel at one end of said frame, an adjustable supporting roller at the other end of said frame on one side thereof, a relatively large leveling roller at the said other end of said frame on that side thereof opposite said supporting wheel and in position to be in front alignment with the steering roller, steering mechanism connected to said steering roller, and mechanism connected between said frame and said supporting wheel to adjust the elevation of the axis of the latter relative to said frame to enable said rollers to travel along a depression in the roadway while the axes of the rollers are maintained substantially horizontal.

10. In a road roller, the combination of a vehicle frame, and supporting means therefor comprising a rock shaft extending transversely of said frame with a heavy roller journaled on one end of said shaft at one side of said frame and a supporting wheel connected to the other end of said shaft by means of a lever arm with both the said roller and said wheel always in ground engaging positions and both always co-operating to support said frame, and means for rocking said shaft to swing said lever arm on the axis of the shaft and thereby vary the elevation of said wheel relative to said frame to permit said wheel and roller to ride along surfaces at different levels while said shaft remains substantially horizontal.

11. In a road roller, the combination with a vehicle frame, of a heavy leveling roller at one

side of said frame, two spaced-apart wheels at the other side of said frame, self-contained power-operated mechanism connected to said leveling roller to drive the same and thereby propel the machine along a roadway, means operable from an operator's station on the vehicle frame for controlling the operation of said self-contained power-operated mechanism, steering mechanism connected to one of said wheels and operable from said station, and means connected between the other wheel and said frame and actuable from said station for varying the elevation of the frame relative to the road surface.

12. In a trench roller, the combination with a vehicle frame, of a trench roller of relatively large diameter and connected to one side of one end portion of said frame, a supporting wheel of relatively small diameter and located at the other side of said frame opposite said trench roller, means connected to said wheel to lift and lower the same bodily relatively to said frame to enable said roller to rotate on a horizontal axis while traveling along a trench having a horizontal bottom surface spaced below the horizontal surface of the roadway on which said supporting wheel travels, and means connected to the other end of said frame for steering the machine to keep said roller in said trench.

13. In a road roller, the combination with a vehicle frame, of a supporting wheel of relatively small diameter on one side of said frame in position to travel along the road surface, a heavy roller of relatively large diameter on the other side of said frame in position to travel along a lowered road surface while the axis of rotation of such roller remains substantially horizontal, self-contained power-operated apparatus on said frame and connected to said heavy roller to drive the same and thereby propel the machine along the roadway, an operator's station on said frame, steering mechanism connected to said frame and extending to said operator's station for operation therefrom, means for controlling said propelling apparatus from said operator's station, and means operable from said station for bodily adjusting the elevation of said supporting wheel relatively to said frame to enable the axis of the roller to remain horizontal while such roller moves along a relatively low horizontal surface and said supporting wheel moves along a relatively high horizontal surface.

14. In a road roller, the combination with a vehicle frame, of a heavy roller of relatively large diameter on one side of one end portion of said frame, a steering roller at the other end portion of said frame in position to track said first-named roller on the same side of the machine, a supporting wheel on the other side of said frame opposite the first-named roller, self-contained power-operated apparatus for driving said first-named roller to propel the machine along the roadway, an operator's station, steering mechanism connected to said steering roller and extending to said operator's station for operation therefrom, mechanism operable from said operator's station for controlling said propelling apparatus, and means connected to said supporting wheel for operation from said operator's station to adjust the elevation of such wheel bodily relatively to said frame to enable said wheel to travel along a relatively high horizontal road surface while said first-named roller travels along a relatively low horizontal road surface with the axis of rotation of said last-named roller retained substantially horizontal.

15. In a road roller, the combination with a vehicle frame, of a rock shaft extending transversely of said frame, a heavy roller journaled on one end of said shaft at one side of said frame, a lever arm connected to the other end of said shaft at the other side of said frame, a wheel connected to said lever arm in position to co-operate with said roller in the support of the said frame with the roller at one side of said frame and the wheel at the other side thereof, and means for rocking said shaft to swing said lever arm on the axis of said shaft and thereby vary the elevation of said wheel relative to said frame to permit said roller at one side of said frame and the wheel at the other side thereof to travel along surfaces at different levels while said shaft remains substantially horizontal.

16. In a road roller, the combination with a vehicle frame, of a single ground-engaging wheel on one side of said frame, spaced-apart tracking ground engaging rollers on the other side of said frame, steering mechanism connected to one of said leveling rollers, and means connected to said single ground-engaging wheel for adjusting the same relative to said frame to enable said wheel to travel along one level while the rollers travel along a different level on substantially horizontal axes while said vehicle frame is supported solely by said wheel and said rollers.

17. In a road roller, the combination with a vehicle frame, of a leveling roller connected to one side of one end portion of said frame, a ground-engaging wheel on the opposite side of the said end portion of said frame, means for adjusting the elevation of said wheel relative to said frame so that when the road surfaces on opposite sides of said frame are at different levels the axis of rotation of the roller may be maintained horizontal, and a steering wheel unit at the other end of said frame.

18. In a road roller, the combination with a vehicle frame, of a heavy leveling roller located in its entirety on one side of one end portion of said frame, a ground-engaging wheel at the other side of said end portion of said frame, means for adjusting the elevation of said wheel relative to said frame to maintain the axis of said roller horizontal when the road surface engaged thereby is at a different level from the road surface engaged by said wheel, and a steering roller unit at the other end of said frame in tracking relation to said heavy leveling roller.

19. In a trench roller, the combination with a vehicle frame tapering from its front portion to its rear end at one side thereof, of a relatively heavy ground-engaging leveling roller located entirely to one side of said forward portion of said frame, a relatively light ground engaging wheel at the other side of the forward portion of said frame, and a ground-engaging leveling roller connected to the rear tapered end of said frame in position to track said heavy roller, the construction and arrangement being such that the two leveling rollers and said wheel constitute the sole support of the frame above the roadway.

20. A road roller comprising a vehicle frame having forwardly diverging side members connected by a transverse cross-piece, one side member being straight and longitudinal of the path of travel of the machine and the other side member being relatively diagonal, frame supporting means comprising a roller adjacent the forward end portion of the straight side member, a scraper supported by said frame in

association with the rear periphery of said roller, an additional scraper, and a forward extension from the said straight side member serving to support said additional scraper in association with the forward periphery of said roller while spaced above the road surface.

21. In a road roller, the combination with a vehicle frame, of frame supporting mechanism comprising tracking ground engaging rollers at one side of said frame, steering mechanism connected to the rear roller, means comprising mat wetting devices associated with the peripheral faces of said rollers for flowing liquid over such faces, scrapers associated with said peripheral faces below said wetting devices but spaced above the ground surface, a liquid containing tank on said frame, and means for directing liquid from said tank to said wetting devices for flow over said peripheral faces downwardly past said scrapers.

22. A road roller comprising the combination with a vehicle frame, of a single heavy leveling roller at only one side of said frame, a supporting wheel of less diameter than the diameter of said roller and located on the other side of said frame opposite said roller, and means for adjusting the elevation of the axis of rotation of said wheel relative to said frame to maintain horizontal the axis of rotation of the roller while the latter travels along the bottom of a trench at a lower elevation than the road surface supporting said wheel.

23. In a road roller, the combination with a vehicle frame, of tracking spaced-apart rollers on one side of said frame, a sole supporting wheel on the opposite side of said frame, mechanism connecting said rollers and said wheel to said frame for rotation relatively thereto on parallel axes to enable said rollers and said wheel to serve as the sole ground-engaging supports for said frame, and mechanism for adjusting the elevation of said sole supporting wheel relative to said frame to bring said parallel axes each to the horizontal when the rollers travel along a trench the bottom of which is at a lower elevation than the road surface along which said wheel travels.

24. In a road roller, the combination with a vehicle frame, of a heavy leveling roller mounted at one side only of said frame for rotation on a transverse axis fixed relative to said frame, a ground-engaging wheel at the other side of said frame opposite said roller, and mechanism connected between said ground-engaging wheel and that side of said frame opposite the roller to lower the elevation of the frame adjacent to the said wheel and thereby adjust the axis of the roller to occupy a horizontal position while the roller travels along a horizontal surface spaced below the horizontal surface of the roadway on which the said wheel travels.

25. In a road roller, the combination with a vehicle frame, of means consisting of a heavy leveling roller and two spaced-apart wheels connected to said frame to support the same, said roller and said wheels being in triangular ground-engaging relation to serve as the sole support for said frame for travel along a roadway, and mechanism connected between one of said wheels and said frame to adjust the axis of the leveling roller to the horizontal when the elevation of the road surface at one side of the roadway is different from the elevation of the road surface at the opposite side of said frame.

26. In a road roller, the combination with a vehicle frame having a rectangular forward portion and a triangular rear end portion, of mechanism consisting of a heavy leveling roller and two spaced-apart wheels connected to said frame to afford the sole support of said frame for travel along a roadway, said roller being mounted at one side of said rectangular portion of said frame and one of said wheels being mounted at the other side of said rectangular portion opposite said roller, mechanism connected to said last-named wheel to adjust the elevation thereof relative to said frame to effect adjustment of the roller axis to horizontal for travel of the roller on a relatively low surface while said adjustable wheel travels along a relatively high surface, and steering mechanism connected to the wheel spaced from the adjustable wheel.

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