M. M. SICKLER.

ROAD MACHINE.

APPLICATION FILED JUNE 2, 1908.

927,887. Patented July 13, 1909.

4 SHEETS—SHEET 1.

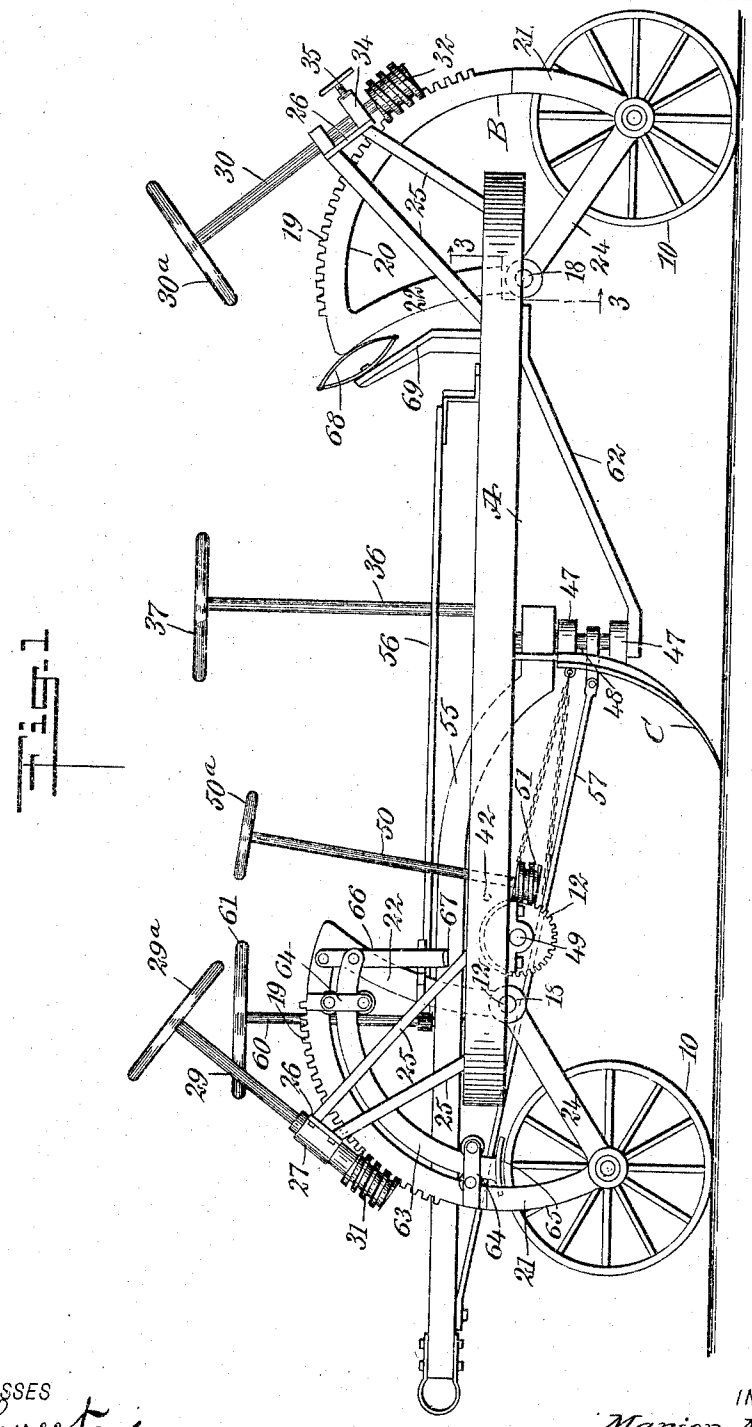


Fig. 1.

WITNESSES

F. D. Sweet.

INVENTOR

Marion M. Sickler

BY Munn & Co.

ATTORNEYS

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

M. M. SICKLER.

ROAD MACHINE.

APPLICATION FILED JUNE 2, 1908.

927,887. Patented July 13, 1909.

4 SHEETS—SHEET 2.

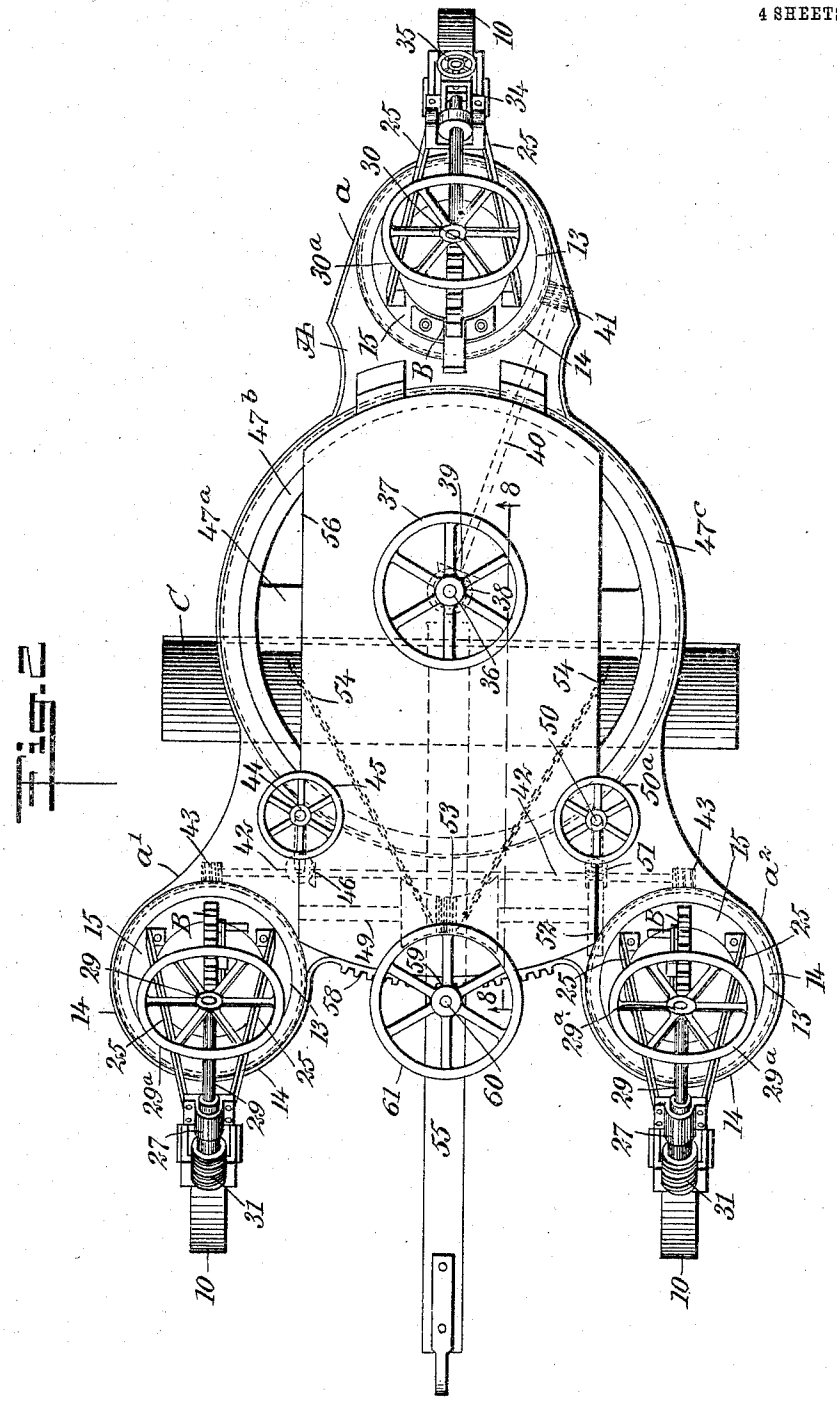


Fig. 2.

WITNESSES

F. D. Sweet

Chas. Ackley

INVENTOR

Marion M. Sickler

BY Munn & Co.

ATTORNEYS

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

M. M. SICKLER.

ROAD MACHINE.

APPLICATION FILED JUNE 2, 1908.

927,887. Patented July 13, 1909.

4 SHEETS—SHEET 3.

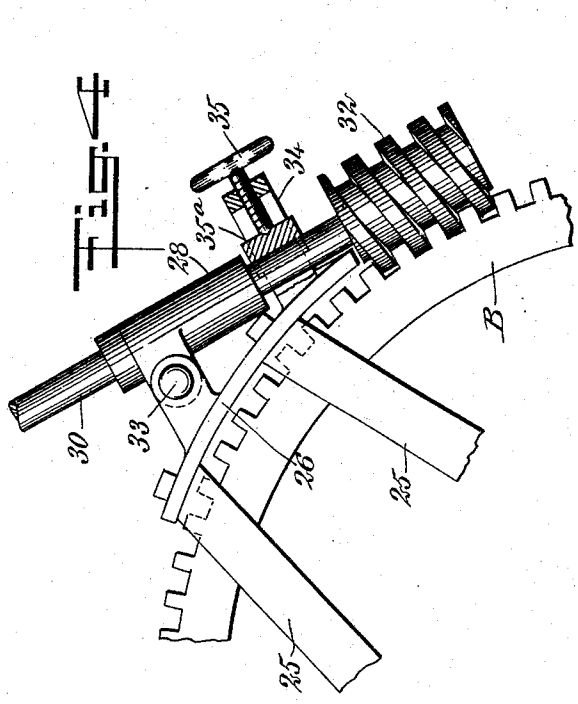


Fig. 4.

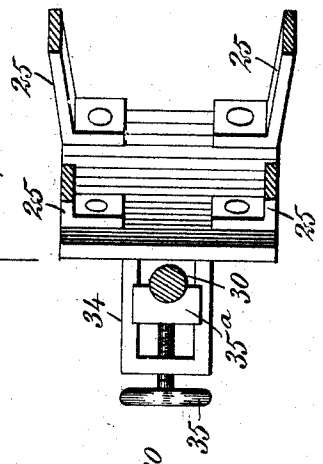


Fig. 6.

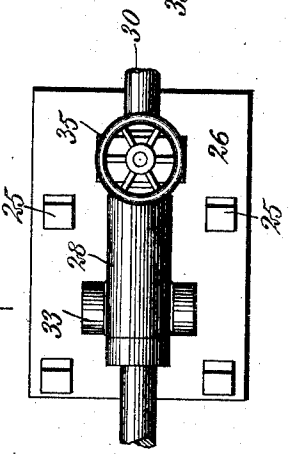


Fig. 5.

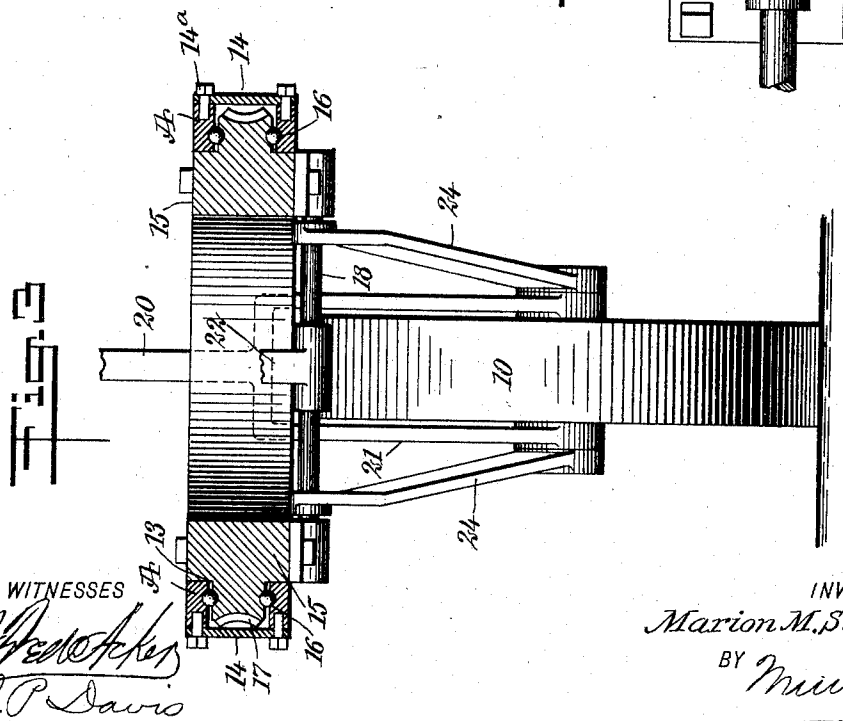


Fig. 3.

WITNESSES

J. P. Davis

INVENTOR

Marion M. Sickler

BY Munn & Co.

ATTORNEYS

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

M. M. SICKLER.

ROAD MACHINE.

APPLICATION FILED JUNE 2, 1908.

927,887. **Patented July 13, 1909.**

4 SHEETS—SHEET 4.

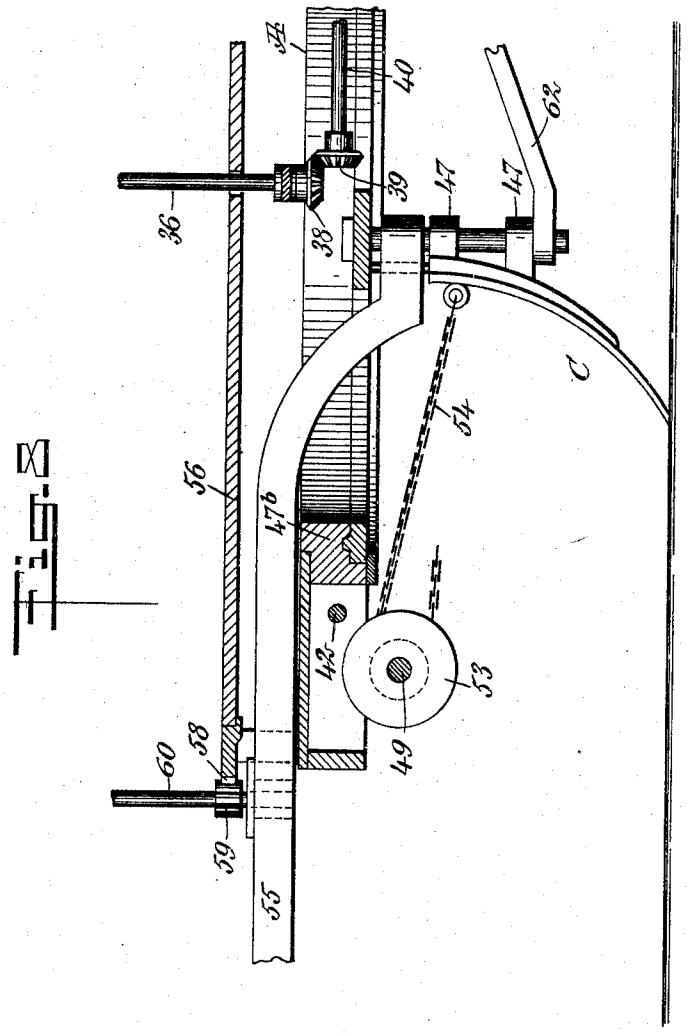


Fig. 5.

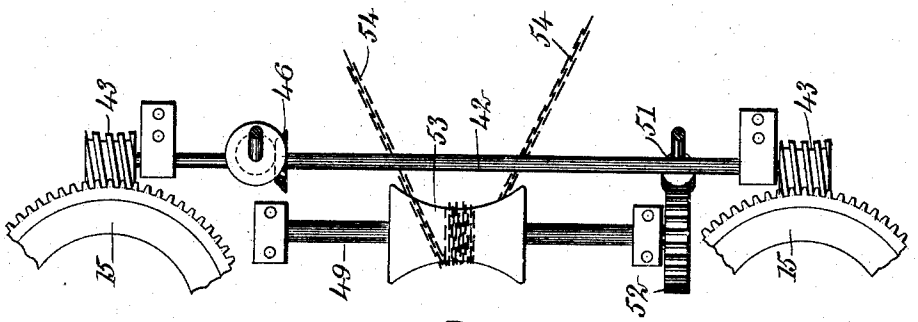


Fig. 6.

WITNESSES

F. D. Sweet

A. C. Kennon

INVENTOR

Marion M. Sickler

BY Munn & Co.

ATTORNEYS

ANDREW, B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MARION MARCELLUS SICKLER, OF PALA, CALIFORNIA.

ROAD-MACHINE.

No. 927,887. Specification of Letters Patent. Patented July 13, 1909.

Application filed June 2, 1908. Serial No. 436,294.

To all whom it may concern:

Be it known that I, MARION MARCELLUS SICKLER, a citizen of the United States, and a resident of Pala, in the county of San Diego and State of California, have invented certain Improvements in Road-Machines, of which the following is a full, clear, and exact description.

The device relates to certain improvements in road machines, and the object of the invention is to provide a machine in which the supporting wheels are operated by gearing, particularly worm gearing, instead of by chains as ordinarily, and wherein the various supporting wheels can be independently operated for steering the machine, and whereby the bed of the machine may be readily raised or lowered, thereby achieving results on a hillside not ordinarily obtainable since the improved machine can be practically level upon a decided slope.

It is also the purpose of the invention to provide a brake for the forward wheels, capable of being quickly and conveniently applied, and which brake without the use of a tongue applied to the machine, will control the machine in its movement down an incline, without the necessity of bringing the scraper blade in contact with the ground, which latter action materially interferes with finished work. Furthermore, the application of the brake aforesaid, to one of the said forward wheels, provides a pivot point, enabling the machine to be quickly turned, and furthermore, the use of the brake applied to a wheel while the machine is in motion, increases the friction on the ground, forcing the wheel backward, and renders the operation of the worm-gear above referred to, much easier than under ordinary circumstances. The wheels, front and rear, have sufficient spread for good even work, but when necessary for turning, this distance can be reduced.

Another feature of the invention is the employment of a drum and chains, readily operated by the attendant, for starting the scraper-blade and bringing it quickly and positively to any desired angle, which chain mechanism also tends to support the scraper-blade where the support is most needed.

It is also an object of the invention to provide means for quickly and readily shifting the draft of the team, the draft of the team being applied at all times at the point of resistance, and since under the construction shown, the point of resistance does not pass practically through the frame of the machine, the said frame not having to sustain ordinary wear and tear, can be made much lighter.

It is also a further object of the invention, to so construct the machine that the front thereof will be heavier than the rear, enabling the machine to operate much more steadily or evenly than is customary with machines of similar type; and furthermore, by so regulating the machine when the scraper-blade strikes a rock, root, or other obstruction, which would tend to raise the frame of the machine, the forward wheels will follow the ground, but the rear wheel or wheels, if one or more be employed, will be raised.

It is another object of my invention to provide a cushioning device for the rear wheel or wheels, since if, under the conditions above set forth, the elevation of the platform is considerable and the descent is abrupt, the shock would tender to endanger the wheel; therefore, this cushioning device above referred to is provided to take up the recoil or to relieve the rear wheel or wheels from shock. The draft bar of the machine having a horizontal shifting arrangement, permits of the machine following any necessary contour, therefore the machine is rendered very valuable for ditching work and terracing land, as well as leveling land for irrigation.

The invention consists of novel features of construction and combinations and arrangements of the several parts of the improved machine, whereby certain important advantages are attained, and the device is rendered simpler, less expensive, and more convenient for use than machines of similar type, as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings that serve to illustrate my invention, I have shown a road machine embodying my improvements, in which various mechanisms have been illustrated for the operation of sundry of the parts of the machine, as for example, the raising and lowering of the bed of the machine and the spreading of the wheels of the machine and means for directing the machine; but I do not desire to be understood as limiting myself to the especial location and the especial application of the aforesaid

means, since such application and location may be changed with good results.

In the drawings, Figure 1 represents a side elevation of the machine; Fig. 2 is a plan view thereof; Fig. 3 is an enlarged vertical sectional view on the line 3—3 in Fig. 1, of a portion of the frame of the machine, illustrating the application thereto of one of the spreading wheels; Fig. 4 is an enlarged detail side elevation of a portion of the mechanism employed for controlling the gear wheel or wheels of the machine; Fig. 5 is a detail rear elevation of a portion of the mechanism illustrated in Fig. 4; Fig. 6 is a sectional perspective view of the parts shown in Figs. 4 and 5; Fig. 7 is a detail view of the steering mechanism and scraper adjustment; and Fig. 8 is a sectional view on the line 8—8 of Fig. 2.

A represents what may be termed the bed or platform of the machine which is horizontally located and is supported by wheels 10, usually three in number, one wheel being located at the rear of the said bed, and two at the forward end, one adjacent to each side of the bed, and the said bed A is given a suitable shape to accommodate the aforesaid disposition of said wheels. Where the wheels 10 are located, openings 13 are produced in the bed, and these openings 13 are of regular shape, as is illustrated particularly in Fig. 2. At each of said openings 13 an annular shell 14 is provided, constituting a portion of the bed but being removable therefrom, and attached thereto by means of bolts 14^a or their equivalents. In each of said openings 13, a ring carrier 15 is mounted to turn, as is shown in Fig. 3, which view is illustrative of the carriers for each of the supporting wheels 10. Each rotating carrier 15 is provided with a roller bearing 16, as is also shown in Fig. 3, and each of said rotating carriers 15 is likewise provided with a peripheral thread 17 adapted for engagement with a worm gear, as will be hereinafter particularly specified. Below the opening in each ring or wheel carrier 15, a shaft 18 is suitably journaled, as is also best shown in Fig. 3. In connection with each of the supporting wheels 10, a segment B is employed and the arc 20 of each of said segments is provided with a series of teeth 19, as is clearly shown in Fig. 1, and in the construction of each of said segments, the lower portion 21 is bifurcated in order to receive the supporting wheel 10 and be properly applied to the axle of such wheel; and in the further construction of each segment B an upper plain member 22 is provided that meets a lower plain member 24, the said lower plain member being also bifurcated to span a wheel 10; and when the two aforesaid members 22 and 24 are brought together, the segments are pivoted upon the shaft 18, shown in Fig. 3, as above referred to, which shaft is also illustrated in Fig. 1. The toothed portions of the segments B for the forward wheels 10 face to the front, while the corresponding portion of the segments B for the rear wheel, faces rearward. Braces 25 extend from the ring carriers 15 adjacent to the openings 13 therein, at the front and at the rear, the braces at the front having an upward and a forward inclination, and those at the rear, an upward and a rearward inclination. These braces 25 are connected at their upper ends by an arched plate 26 that is located over the toothed portion 19 of the segment in connection with which the braces are employed, since these braces are located at each side of a segment B. The arch plates 26 are adapted to support bearings, designated as 27 for those used in connection with the forward segments B, and 28 in connection with the rear segment B, as is shown in Figs. 1 and 4. The forward bearings 27 are stationary bearings, while the rear bearing 28 is a pivoted bearing.

The bearings 27 and 28 above referred to, are adapted to receive shafts, the forward shafts being designated as 29 and the rear shaft as 30. By the operation of these shafts, the bed A may be raised and lowered, as desired, and to that end the lower portions of the forward shafts 29 are provided with worms 31, that engage the teeth of the forward segments, as is particularly shown in Figs. 1 and 2, and said shafts are provided with suitable hand wheels 29^a whereby they may be conveniently operated. With reference to the shaft 30 for the rear segmental rack B controlling the rear wheel, said shaft 30 is provided with a hand wheel 30^a at its upper portion, and furthermore, in connection with the rear operating shaft 30, a worm 32 is provided at the lower end thereof, that meshes with the thread 19 of the rear segment, as is particularly shown in Fig. 4, and the bearing 28 for the said rear shaft 30 is pivoted to an offset from the connecting plate 26 for the braces 25, as is shown at 33 in Fig. 4. The rear shaft 30 is made also to pass through an auxiliary bearing 34, also supported by the rear connecting plate 26, as illustrated in Fig. 4, and this bearing is provided with a set screw 35 that engages with a shoe 35^a which in turn engages with the shaft 30, so that by tightening up the set screw 35, the worm 32 is held in engagement with the teeth of the rear segment B, and when it is desirable to render the rear wheel absolutely free, by loosening the set screw 35 the worm 32 on the rear shaft 30 may be disconnected entirely from the said rear segment.

In connection with each of the carriers 15 for a supporting wheel, I employ devices to be hereinafter particularly described, that enable the wheels to be turned in one or the other direction, in order to steer the machine in a necessary direction. The rear wheel 10

of the machine is turned by means of the following mechanism—namely, a shaft 36 is provided with a suitable hand wheel 37 at its upper end, and provided at its lower end with a bevel gear 38 that meshes with a similar gear 39, carried by a shaft 40 that is provided with a worm 41 at its rear end, meshing with the teeth of the ring carrier device 15 for said rear wheel, as is shown in Fig. 2. With reference to the means for turning the two forward wheels 10, a shaft 42 is provided, see Figs. 1, 2 and 7, and at each end of this shaft a worm 43 is produced, these worms meshing with the teeth of the ring carriers 15 for the said forward wheels, as is also illustrated in Fig. 2. This shaft is actuated through the medium of a vertical shaft 44 having a hand wheel 45 at its upper end, and this shaft 44 is suitably geared to a wheel 46 located on the shaft 42, as is also shown in Fig. 2, whereby, upon operating the vertical shaft 44 the forward wheels may be turned either to the right or to the left.

The scraper C is located at the central portion of the platform A, and beneath it, and is given the customary curvature in a forward direction, but this scraper may be given any desired form necessary for the work in hand. This scraper C is provided with eyes 47 at its rear, and these eyes 47 are mounted upon what may be termed a king pin 48, as is shown in Fig. 1, which pin is attached to and extends down from a cross-bar 47^a, that forms a portion of a ring 47^b, that turns preferably on ball bearings in an opening made at the central portion of the platform A, as is illustrated in Fig. 2, the ball bearings being located substantially in the same manner as is illustrated in Fig. 3. The said scraper plate C is given any desired inclination relatively to a central line drawn longitudinally through the frame of the machine, by means of a shaft 49 that is located in advance of the shaft 42, and this shaft 49 is operated through the medium of a vertical shaft 50, having a suitable hand wheel 50^a at its upper end, and there is a gear connection between the vertical shaft 50 and the shaft 49, which is horizontal, the said connection consisting of a worm 51 at the lower end of the shaft 50 that meshes with a suitable gear 52 on the aforesaid shaft 49. The shaft 49 carries by preference at its central portion a drum 53 shown in Fig. 2, and the forward ends of two chains 54 are secured to the said drum in such a manner that when one chain is wound on the drum, the other chain will be unwound therefrom. Thus it will be observed that the scraper C may be placed in any desired position relatively to the ground to be worked.

The tongue or pole 55 employed in connection with the machine, is by preference carried rearwardly over the frame, and down through the opening surrounded by the ring 47^b to which the scraper is attached, and the rear end of this pole or tongue is pivoted to the king pin 48, as is shown in Fig. 1, and the said pole or tongue is generally provided with a brace 57 that is attached to its forward portion, and is pivotally connected with the said king pin 48, as is also best shown in Fig. 1.

A platform 56 is by preference provided for the convenience of the operator, extending from the forward portion of the machine to a point near the back, and provision is made for the vertical shafts where it is necessary for them to pass through the said platform.

The tongue of pole 55 is moved to the right or left, as may be required by the conditions of work, and so as to equalize the draft, preferably by utilizing a vertical shaft 60 that is mounted to turn in the said tongue, and which is provided at its lower end with a pinion 59 and at its upper end with a hand wheel 61; and the said pinion 59 is made to engage with a rack 58 that is produced upon the forward portion of the platform A between the sections thereof at which the supporting wheels are sustained, as is also shown best in Fig. 2; thus it will be observed that the pole or tongue may be turned either to the right or to the left, and be operated independently of other portions of the machine.

In connection with each of the forward segments supporting the wheels of the frame, I employ a brake 63 which consists of a segmental section that is located within and which follows the contour of the rack portion of a forward supporting section B, as is shown in Fig. 1, and this brake arm 63, as it may be termed, is passed through suitable bearings 64, having rollers to prevent friction, and which brake arm 63 is provided at its lower end with a brake shoe so positioned as to engage with the peripheral portion of a forward wheel, as is also shown in Fig. 1. The brake shoes are normally out of engagement with the forward wheels, but they may be immediately brought into action, one or the other, through the medium of levers 66. These levers are pivoted to the forward segmental supports B, and are pivotally attached to the brake bars 63, and each lever 66 has a pedal 67 attached thereto, whereby the brakes may be brought into action by the foot of the operator or operators. Suitable guides are usually provided for the levers 66, and these guides, as is illustrated in Fig. 1, are so constructed that the levers operating in connection therewith may be held in a certain position.

In order that the jar or shock often necessarily sustained by the rear segmental support B, may be in a measure relieved, I employ a cushion 68 that engages with the upper rear portion of said segment, as is also

best shown in Fig. 1, and the said spring cushion 68, which is illustrated as being of an elliptical form, is supported by a standard 69, and it may be here remarked that a suitable brace 62 extends from the king pin 48 to the rear end portion of the platform A.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In road machines, a bed, segmental racks at the front and rear ends of the bed and having members pivotally connected with said bed, supporting wheels for the bed having their axles connected with said racks, and means for moving said racks to raise or lower the said bed.

2. In road machines, a platform, supporting wheels therefor, a segmental rack connected with the platform and with the wheels, means for moving the rack to raise or lower the platform, and means for shifting the wheels in the direction of one or the other side of the machine.

3. In road machines, a platform, supporting wheels therefor, means for raising and lowering the platform, means for shifting the wheels laterally, a brake mechanism for sundry of the wheels, and means for operating said brake mechanism.

4. In road machines, a platform, supporting wheels therefor located at the front and rear, means connected with the platform and with the wheels for raising and lowering the platform, means for shifting the front and rear wheels in the direction of either side of the machine, said means being under manual control, a brake mechanism for sundry of said wheels, and means for operating said brake mechanism.

5. In road machines, a platform, supporting wheels therefor located at the front and rear, independent means for raising and lowering the platform and for shifting the front and rear wheels in the direction of either side of the machine, said means being under manual control, brake mechanisms for the forward wheels, and releasing means for the shifting mechanism for the rear wheels.

6. In road machines, a platform, supporting wheels therefor located at the front and rear, means for raising and lowering the platform, means for turning the said front and rear wheels in the direction of either side of the machine, brake mechanisms for the forward wheels, releasing means for the shifting mechanism of the rear wheels, and a cushioning device for the raising and lowering mechanism at the rear end of the platform.

7. In a road machine, or a machine of like type, a bed, supporting wheels therefor, rings revolubly mounted in said bed, connections between the said rings and the said supporting wheels, and means for turning the said rings to move said wheels laterally relatively to the said bed.

8. In a road machine, or a machine of like type, a bed, carriers revolubly mounted in said bed, supporting wheels and devices connected with the wheels and pivotally connected with the carriers for raising or lowering the bed.

9. In a road machine, or a machine of like type, a platform, wheel carriers revolubly mounted in said platform, and means connected with the wheels for raising and lowering the platform.

10. In a road machine, or a machine of like type, in combination, a platform, supporting wheels therefor, members revolubly mounted in the platform, shafts carried by said members, bearing members for the wheels pivotally connected with the said shafts, and means for adjusting the bearing members.

11. In a road machine, or a machine of like type, in combination, a platform, supporting wheels therefor, members revolubly mounted in the platform, bearing members for the wheels, connected with the said revoluble members, said bearing members being pivotally mounted, and means for adjusting said bearing members.

12. In a road machine, a turn-table, a drum shaft, a scraper pivotally connected with the turn-table, a driving shaft, flexible connections between the scraper and the drum shaft, and a driving connection between the drum shaft and the driving shaft.

13. In a road machine, or a machine of like type, the combination with a platform and supporting wheels therefor, of members mounted to revolve in the said platform, segmental racks pivotally connected with said revoluble members, shafts mounted to raise and lower the said racks, worms carried by the said shafts for engaging with the teeth of the said racks, and means for rotating said revoluble members.

14. In a road machine, or a machine of like type, the combination with a wheel-supported platform, and a scraper carried thereby, of a pivotally mounted tongue, and means for shifting the tongue in the direction of either side of the machine, the said means comprising a vertical shaft mounted to turn in the said tongue and provided with a pinion, and a rack engaged by said pinion.

15. In a road machine, or a machine of like type, the combination with a wheel supported bed, a downwardly extending pin carried by said bed, a scraper mounted upon said pin, a tongue pivoted at its rear end upon said pin, and means for shifting the tongue in the direction of either side of the machine.

16. In a road machine, a bed, a ring mounted to turn in said bed and provided with a cross bar, a pin extending downward from said cross bar, a scraper mounted on said pin, a shaft, a drum on said shaft, flexible connections between the scraper and the drum, and means for turning the drum shaft.

17. In a road machine, or a machine of like type, the combination with a bed and supporting wheels, of revoluble members mounted in the said bed, shafts carried by said revoluble members, segmental racks having bifurcated lower ends embracing the supporting wheels and mounted on the axles thereof, members extending from the upper ends of the racks and pivoted at their lower ends on the shafts carried by said revoluble members, members mounted at their lower ends on the axles of the wheels and pivoted at their upper ends on the shafts carried by said revoluble members, means for rotating said revoluble members, and means for adjusting the said racks.

18. In road machines, a bed, supporting wheels therefor located at the front and rear, segmental supports at the front and rear ends of the bed and connected with the wheels and bed, means for moving said segmental supports to raise and lower the bed, a standard carried by the bed, and a spring cushion supported by the standard and adapted to be engaged by the segmental support at the rear end of the bed.

19. In road machines, a bed, supporting wheels therefor, means for raising and lowering the bed, means for shifting the wheels laterally, and a brake mechanism comprising a segmental brake arm provided at its lower end with a brake shoe, and means for operating the brake mechanism.

20. In a road machine, or a machine of like type, the combination with a wheel supported bed, a ring mounted to turn in an opening in the bed at the central portion thereof, the ring being provided with a cross bar, a pin extending downward from said cross bar, and a scraper mounted upon said pin, of a tongue extending rearwardly over the bed and down through the opening surrounded by said ring, the rear end of said tongue being pivoted to the said pin, and means for shifting the tongue in the direction of either side of the machine.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARION MARCELLUS SICKLER.

Witnesses:
E. C. BATCHELDER,
JOHN A. GIDDNEY.