Nov. 3, 1931. L. M. DEARDORF 1,829,953

GRADE GAUGER

Filed Aug. 7, 1929 3 Sheets-Sheet 1

FIG. 1.

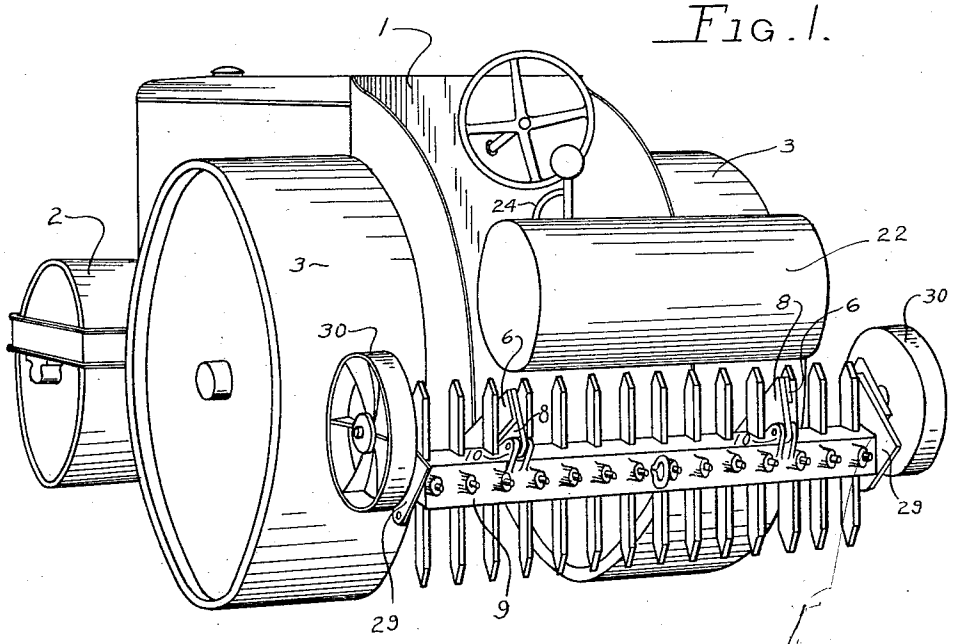
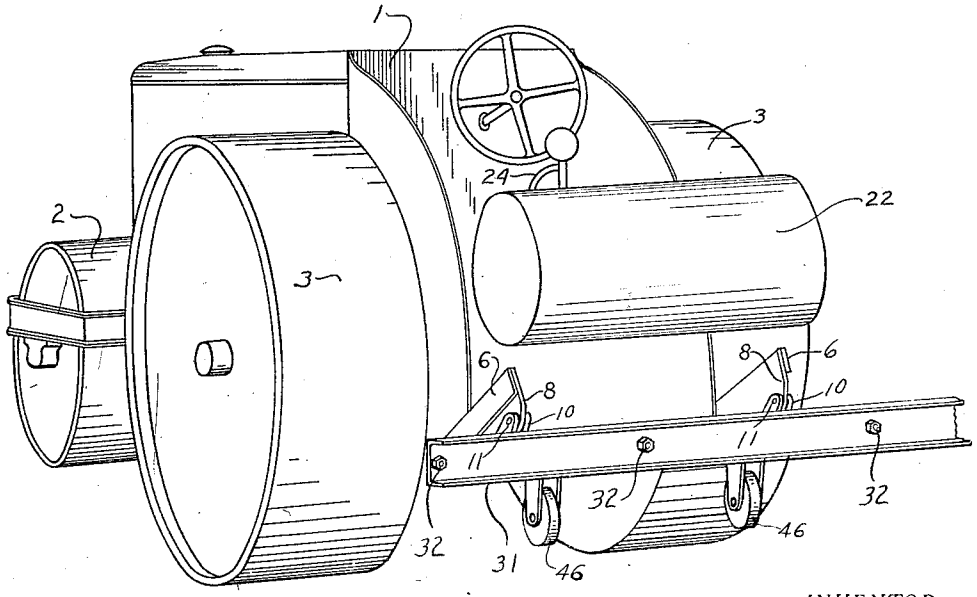


FIG. 2.



INVENTOR
Lee M. Deardorf
BY Toulmin & Toulmin
ATTORNEY

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FIG. 3.

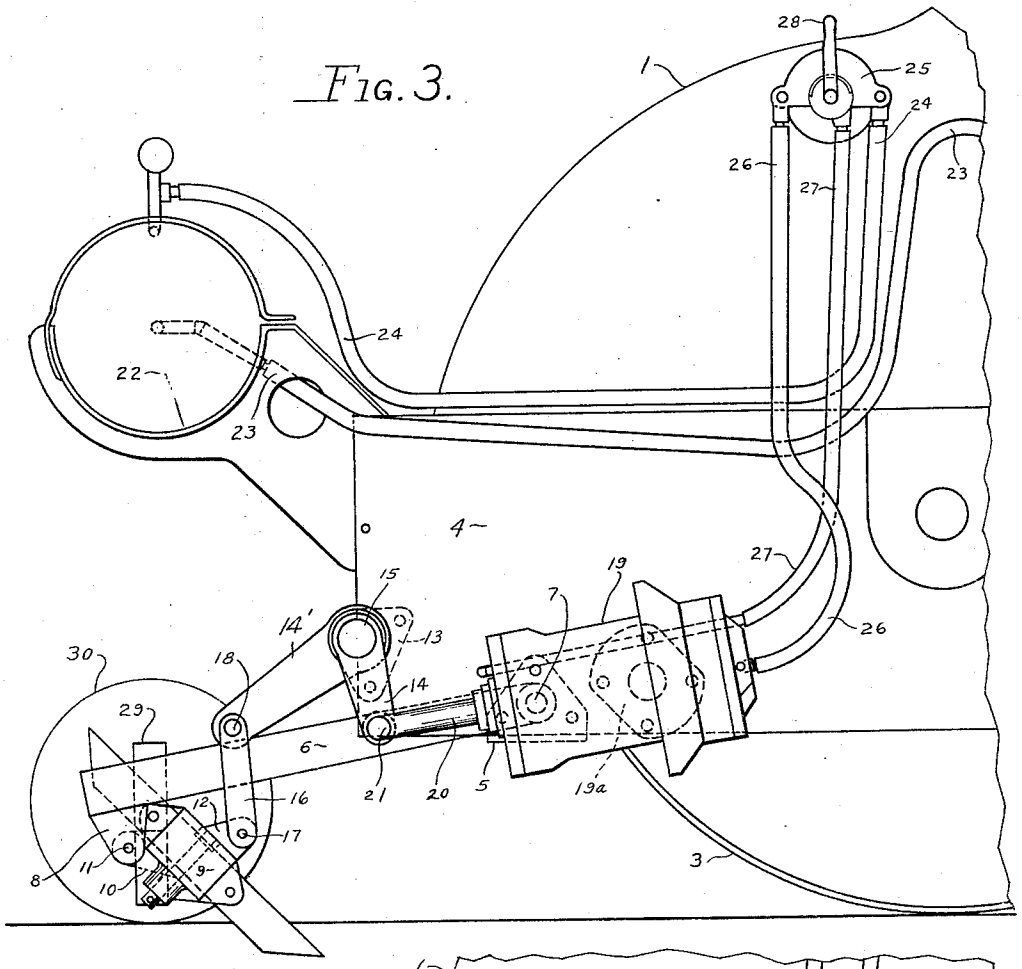
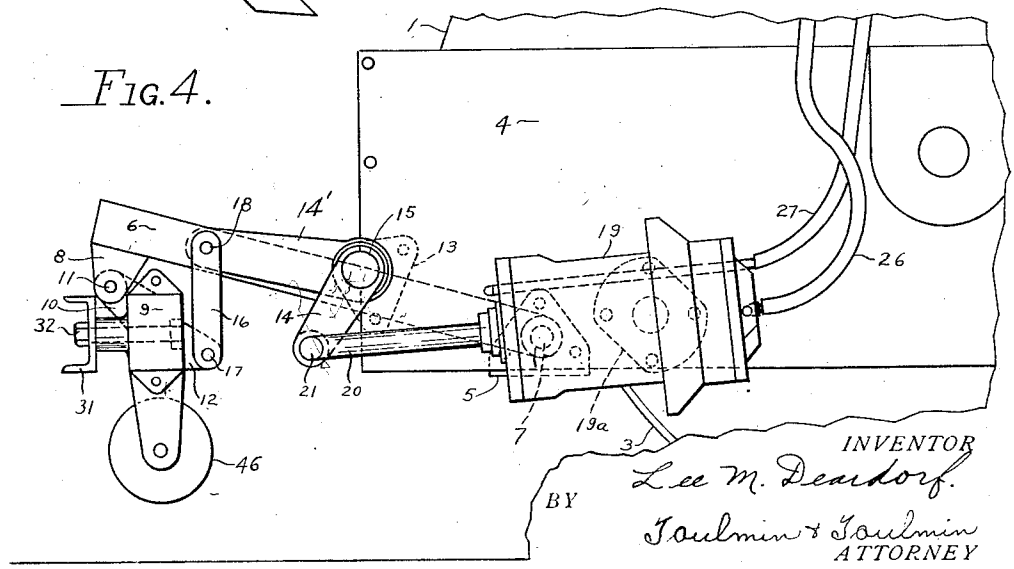


FIG. 4.



INVENTOR
Lee M. Deardorf.
BY
Toulmin & Toulmin
ATTORNEY

Nov. 3, 1931. L. M. DEARDORF 1,829,953

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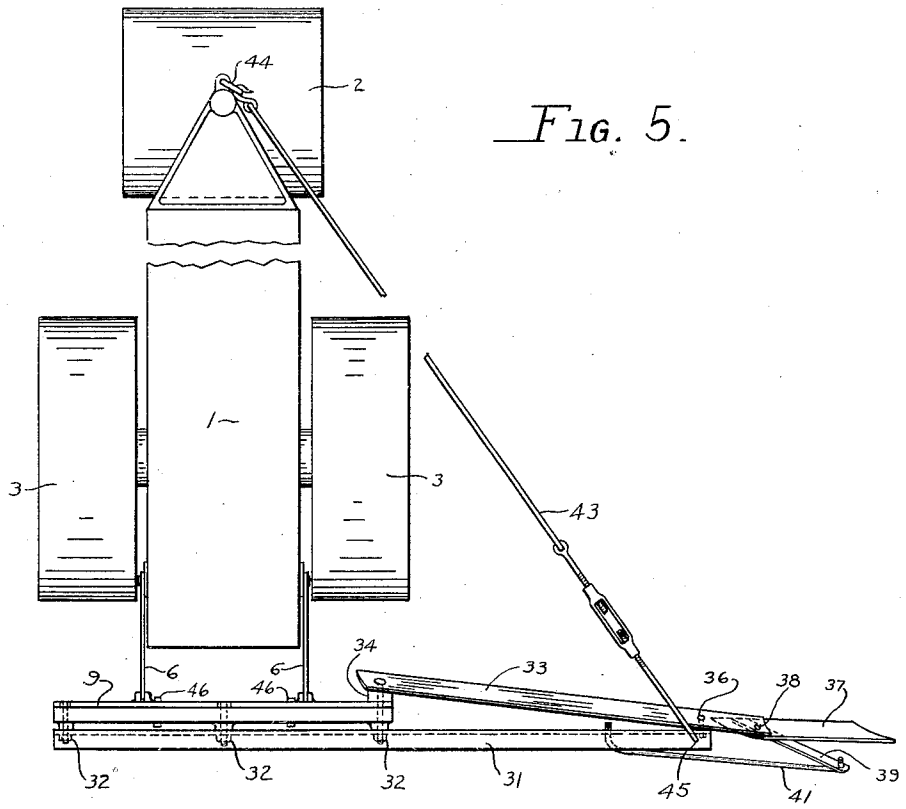


FIG. 5.

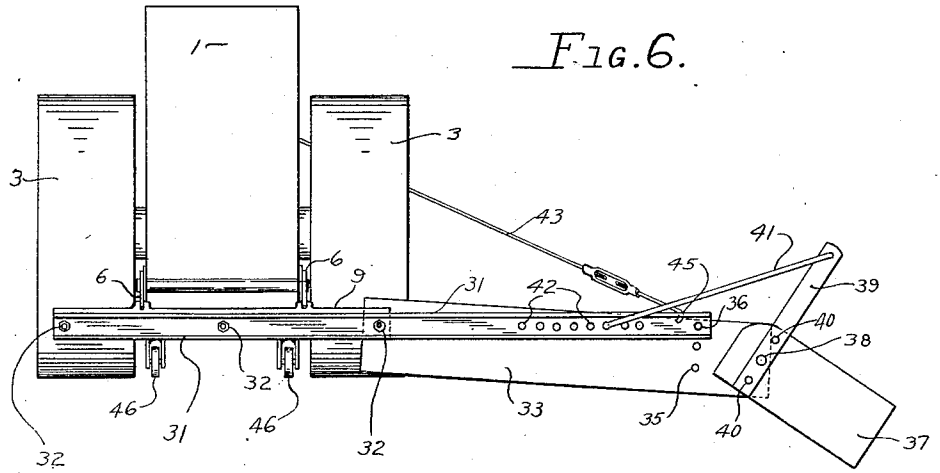


FIG. 6.

INVENTOR
Lee M. Deardorf.
BY Toulmin & Toulmin
ATTORNEY

Patented Nov. 3, 1931 1,829,953

UNITED STATES PATENT OFFICE

LEE M. DEARDORF, OF HICKSVILLE, OHIO, ASSIGNOR TO THE HUBER MANUFACTURING COMPANY, OF MARION, OHIO, A CORPORATION OF OHIO

GRADE GAUGER

Application filed August 7, 1929. Serial No. 384,178.

This invention relates to a new and improved apparatus for leveling, smoothing and finishing the shoulders, slopes or berms or that part of a roadway which is composed of soft dirt adjacent the hard surface of the roadway.

It is a further purpose of this invention to provide an attachment adapted to be used in connection with road rollers, road maintainers or any road building machine.

It is usually attached to the scarifier bar or some other vertically adjustable part of a road machine so that it can be raised and lowered quickly by either hydraulic, pneumatic or mechanical means.

It is especially the object of this invention to provide a road leveling apparatus having a blade attached at one end to the frame of a scarifier and so attached that the other end may be adjusted vertically.

It is also an object to provide at the outer end of the blade a second and vertically adjustable blade for the purpose of removing the shoulders, slopes and berms and properly shaping the edge of the road beyond the hard surface.

These and other advantages will appear from the description taken in connection with the drawings.

Referring to the drawings:

Figure 1 is a rear view of a road scarifier to which this apparatus is adapted to be attached.

Figure 2 is a view similar to Figure 1 showing the scarifier teeth removed and the supporting member for the leveling apparatus attached thereto.

Figure 3 is a side view of the rear part of the scarifier showing the manner of the attachment and the manner of elevating and lowering the scarifier, and showing the scarifier in lowered position.

Figure 4 is a view similar to Figure 3 but showing the scarifier in elevated position and the scarifier teeth removed therefrom and the supporting member for the leveling apparatus attached thereto.

Figure 5 is a diagrammatic plan view showing a scarifier and leveling apparatus attached thereto.

Figure 6 is a rear view of the apparatus as shown in Figure 5.

In Figure 1 there is shown a customary and usual scarifier used for the purpose of tearing up roadbeds for repair. The numeral 1 designates the machine as a whole, while the reference character 2 represents the front wheel and the reference character 3 the rear wheels. As shown in this figure the scarifier is attached to a roller, but the scarifier may be attached to any suitable power means.

Extending from the rear frame of the roller apparatus is a rear frame member 4, one for each side of the scarifier or roller. On each side of the apparatus and attached to the rear frame is a drag arm bracket 5, to which is pivoted a drag arm 6. These arms extend rearwardly and are pivoted to the drag arm brackets as indicated by the numeral 7. On the extreme rear end of each drag arm there is a downwardly extending bracket 8.

Extending across the rear of the roller is a scarifier arm 9 which has extending upwardly and rearwardly therefrom two or more bracket arms 10. These brackets 10 are pivoted to the brackets 8 at a point indicated by the numeral 11 so that the scarifier arm may swing to the rear end of the drag arm 6. Extending forwardly and downwardly from the scarifier bar are brackets 12. There may be any number of these brackets. In the present instance there are two.

There are also attached to the rear frame of the roller brackets 13, one on each side. Pivotally mounted upon these brackets 13 is a shaft 15 having a lever 14 extending downwardly from the center thereof. There is a rearwardly extending arm 14′ on each end of shaft 15. To the rearwardly extending arms there are pivoted links 16 at points indicated by the numeral 18. These links 16 are pivoted to the brackets 12 at points indicated by the numeral 17.

Midway of the roller and to the rear frame thereof there is attached a cylinder 19 by means of a support 19*a*. In the cylinder there is a piston having extending therefrom, through one end of the cylinder, a piston rod 20. This piston rod extends rearwardly and has its rear end pivoted to the lower arm of

the lever 14 at a point indicated by the numeral 21. For the purpose of supplying air pressure to the cylinder there is provided an air pressure tank 22 which has leading thereto an inlet pipe 23. The air may be forced into this tank by any suitable means preferably by a pump operated by the motor that drives the apparatus.

Leading from the tank 22 is an outlet pipe 24 which leads to a valve 25. From this valve 25 there extends a pipe 26 to the rear of the cylinder and a second pipe 27 to the front of the cylinder. The valve is operated by means of a handle 28 for the purpose of controlling the direction of the air pressure to the cylinder to determine whether the pressure shall be admitted to the front or the rear of the pistons.

As shown in Figure 3 the piston is in the front end of the cylinder and the scarifier is in scarifying position whereas in Figure 4 the piston is in the rear end of the cylinder and the scarifier is elevated into idle position.

On each end of the scarifier bar is a bracket or arm 29 upon which is mounted a roller 30. These rollers are adjustably mounted upon the scarifier bar and may be operated by any suitable means for the purpose of supporting the scarifier bar and determining the depth to which the teeth supported by the bar shall be permitted to enter the surface being scarified.

When the apparatus is to be used for grading and leveling purposes the teeth are removed and the scarifier bar has attached thereto a supporting member 31. This supporting member is attached to the scarifier bar by means of bolts 32 which pass through both the supporting member and the scarifier bar. This supporting member is supported in substantially a horizontal position and is adapted to carry on one end thereof blades for the purpose of leveling and surfacing the road. The righthand end of the supporting member extends beyond the roller and supports the leveling and grading apparatus entirely to the right of the power mechanism that transports the apparatus.

On the supporting member 31 are adjustable gauge wheels indicated by the numeral 46 for the purpose of gauging the depth of the blades. One such roller might be placed on the outer end of the supporting bar.

The leveling blade is indicated by the numeral 33 and is pivotally attached at one end by a bolt 32 and held in spaced relation to the scarifier bar by means of a block 34, as indicated in Figure 5. This block is so shaped as to give the blade a backwardly tilting position from the vertical so as to have a shaving effect upon the road. The extreme outer end of the leveling blade 33 has a series of vertically arranged holes therein, indicated by the numeral 35, which are adapted to receive bolts 36 for the purpose of adjustably supporting this end of the leveling blade in regard to the outer end of the supporting member 31, which has a hole to receive the bolt 36. As shown in Figure 6 the outer end of the leveling blade 33 has three positions of adjustment.

On the extreme outer end of the leveling blade is a short berm blade 37 pivoted at a point indicated by the numeral 38. Extending from this short berm blade is an arm 39 attached thereto by means or rivets 40. Extending from the upper end of the arm 39 is a link 41 which fits in a series of holes 42 in the supporting member for the purpose of adjusting the slant of the blade 37. By this means the slope or slant of the blade may be adjusted from substantially a straight line with the cutting blade to an angle even greater than that shown in Figure 6.

For the purpose of supporting the extreme rear end of the supporting member and the leveling blade carried thereby there is provided a cable or link 43, which is attached to the front end of a roller, as indicated by the numeral 44. The other end of this cable is attached to the extreme outer end of the supporting member at a point indicated by the numeral 45. This link passes over the top of the leveling blade and to the rear thereof, and in engagement with the supporting member.

Here I have shown and described a leveling apparatus adapted to be attached to a scarifier without any modification or adjustment thereof except the removal of the teeth. There is also provided a leveling blade adjustable so as to vary the slope of the road from the center to the edges, and furthermore there is provided on the extreme outer end of the blade a second or short blade adapted to form the edges or shoulders of the road to give them proper shape and slope in regard to the body of the road.

While the present road machine has been described as used with the scarifier here shown and described, it may be used with any other suitable make of road roller or scarifier, whether operated by steam, compressed air or other means.

I desire to comprehend within my invention such modifications as may be clearly embraced within my claims and the scope of my invention.

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

1. In a road machine, in combination with a scarifier having a scarifier bar, a supporting member attached to said bar and extending out beyond one end thereof, a leveling blade pivotally attached at one end to said bar and to said supporting member and adjustably attached at its other and outer end to the outer end of said supporting member,

a berm blade pivotally attached to the outer end of said leveling blade, an arm extending upward from said berm blade and attached thereto, a link attached to the upper end of said arm and adapted to engage in any one of a series of holes in said supporting member to hold the berm blade in adjusted position, and an adjustable link extending from the outer end of said supporting member to the front of said machine for supporting the outer end of said blade.

2. In a road machine, in combination with a sacrifier bar, a supporting member removably attached to said bar, a leveling blade pivotally attached at one end to said bar and to said supporting member and adjustably attached at its other end to one end of said supporting member, a berm blade pivotally attached at one end to one end of said leveling blade, an arm extending upward from said berm blade, a link connecting said arm to said supporting member, said supporting member having a series of holes therein for receiving one end of said link, and a link extending from the outer end of said supporting member to the front of said road machine for supporting said supporting member.

3. In a road machine, in combination with a scarifier having a scarifier bar, a supporting member adaped to be removably attached to said bar and extending out beyond one end thereof, a leveling blade pivotally attached at one end to said bar and to said supporting member and adjustably attached at its other and outer end to said supporting member, an adjustable support extending from the outer end of said supporting member to said road machine, a berm blade pivotally attached at one end to the outer end of said leveling blade, and means to hold said berm blade in pivotally adjusted position in relation to the leveling blade.

4. In a road machine, in combination with a scarifier having a scarifier bar, a supporting member adapted to be removably attached to said bar and extend out beyond one end thereof, a leveling blade pivotally attached at one end to said bar and to said supporting member and adjustably attached at its other and outer end to said supporting member, a support extending from the outer end of said supporting member to said road machine, and a berm blade pivotally and adjustably mounted on the outer end of said leveling blade.

5. In a road machine, in combination with a scarifier having a scarifier bar, a supporting member adapted to be removably attached to said bar and extend out beyond one end thereof, a leveling blade pivotally attached at one end to said bar and to said supporting member and adjustably attached at its other and outer end to said supporting member, and a berm blade adjustably and pivotally supported at one end to the outer end of said leveling blade.

6. In a road machine, in combination with a scarifier having a scarifier bar, a supporting member adapted to be removably attached to said bar and extend out beyond one end thereof, a leveling blade attached at one end to said bar and to said supporting member and attached at its other and outer end to said supporting member, and a second blade attached to the outer end of the leveling blade and adapted to be set at an angle thereto.

7. In a road machine, in combination with a scarifier having a scarifier bar, a supporting member adapted to be attached to said bar and extend out beyond the end thereof, and a pair of pivotally and adjustably connected blades attached to said supporting member.

8. In a road machine, in combination with a scarifier having a scarifier bar, a supporting member adapted to be attached to said bar and extend out beyond one end thereof, and a berm blade pivotally and adjustably supported adjacent the end of said supporting member.

9. In a road machine, in combination with a scarifier having a scarifier bar, a pair of pivotally and adjustably connected blades adapted to be supported by said bar, and means for attaching said blades to said bar.

10. In a grading apparatus for roads, a supporting member having a hole at one end and a hole near the center and a plurality of intermediate holes, a leveler blade attached at one end to the center hole and at its other end to the end hole, a berm blade pivoted at one end to one end of said leveler blade, an arm extending up from said berm blade, and a link extending from the upper end of said arm and adapted to engage in one of said intermediate holes for adjusting the angle of the berm blade to the leveler blade.

11. In a road grading apparatus, a supporting member having a plurality of holes therein, a leveler blade pivoted at one end near the center of said supporting member and adjustably supported at its other end by one end of said supporting member, a berm blade pivoted at one end to the end of the leveler blade, and means extending from said berm blade and engaging one of said holes to hold the berm blade in adjusted position.

12. In a road grading apparatus, a supporting member in the form of a long bar, and a plurality of pivotally attached blades pivotally supported adjacent the center of the bar and adjustably supported by said bar adjacent one end thereof.

13. In a road grading apparatus, a supporting member in the form of a long bar, a pair of pivotally attached blades pivotally supported adjacent the center of the bar and adjustably supported adjacent one end of said bar, and means engaging said blades

and said supporting member to hold the blades in adjusted position.

14. In a road grading apparatus, a supporting member in the form of a bar, and a pair of pivotally attached blades pivotally supported adjacent the center of the bar and adjustably supported at one end of said bar.

15. In a road grading apparatus, a supporting member in the form of a bar, a long blade pivoted at one end to said supporting member, a short blade pivoted at one end to the other end of said long blade, and means engaging said supporting member to hold the blades in adjusted position in relation to the supporting member and in relation to each other.

16. In a road machine, in combination with a scarifier having an adjustable scarifier bar, a supporting member attached to said bar, a leveling blade pivotally and adjustably supported by said supporting member, a berm blade pivotally attached at one end to one end of said leveling blade, and means engaging said berm blade and said supporting member to adjust said berm blade.

17. In a road machine, in combination with a scarifier having an adjustable scarifier bar, a supporting member attached at one end to said bar, and a pair of blades pivoted to each other and adjustably supported by said supporting member.

18. In a road machine, in combination with a scarifier having an adjustable scarifier bar, a supporting member attached at one end to said bar, and a pair of blades pivoted to each other and pivotally and adjustably supported by said supporting member.

In testimony whereof I affix my signature.

LEE M. DEARDORF.