Feb. 17, 1925.

J. F. SNYDER

1,526,510

ROAD GRADER

Filed July 25, 1922

4 Sheets-Sheet 1

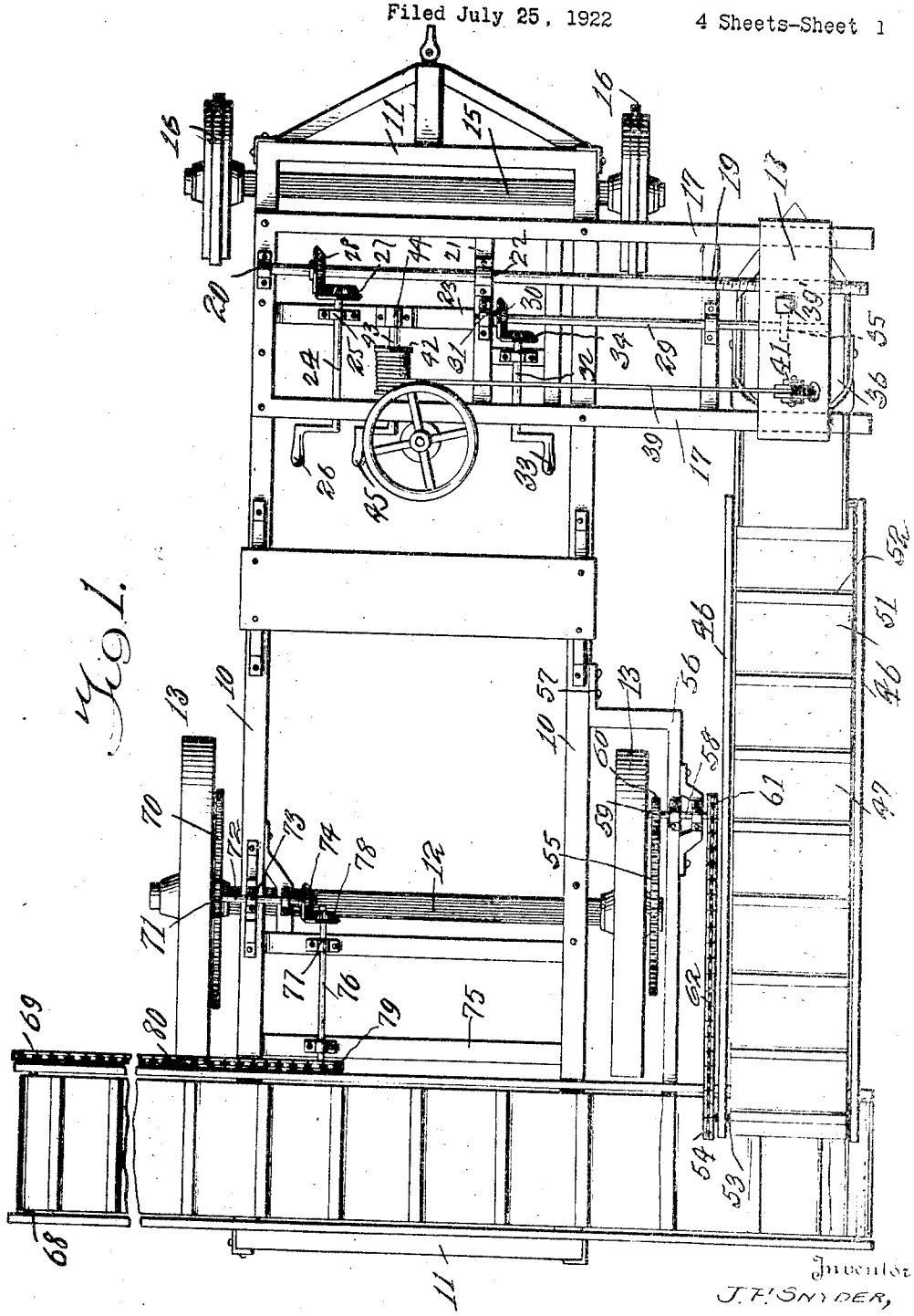


Fig. 1.

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ROAD GRADER

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4 Sheets-Sheet 2

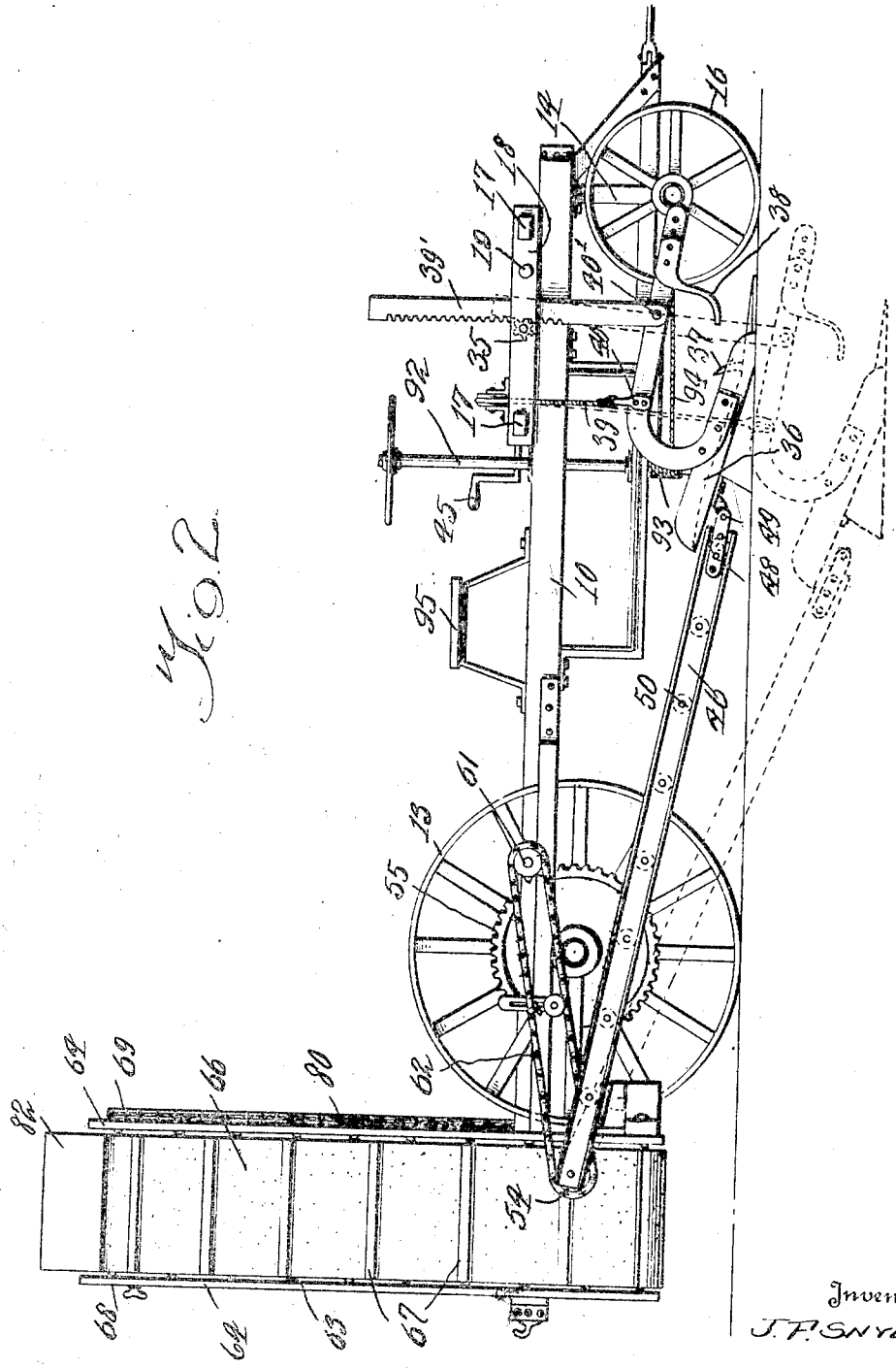


Fig. 2.

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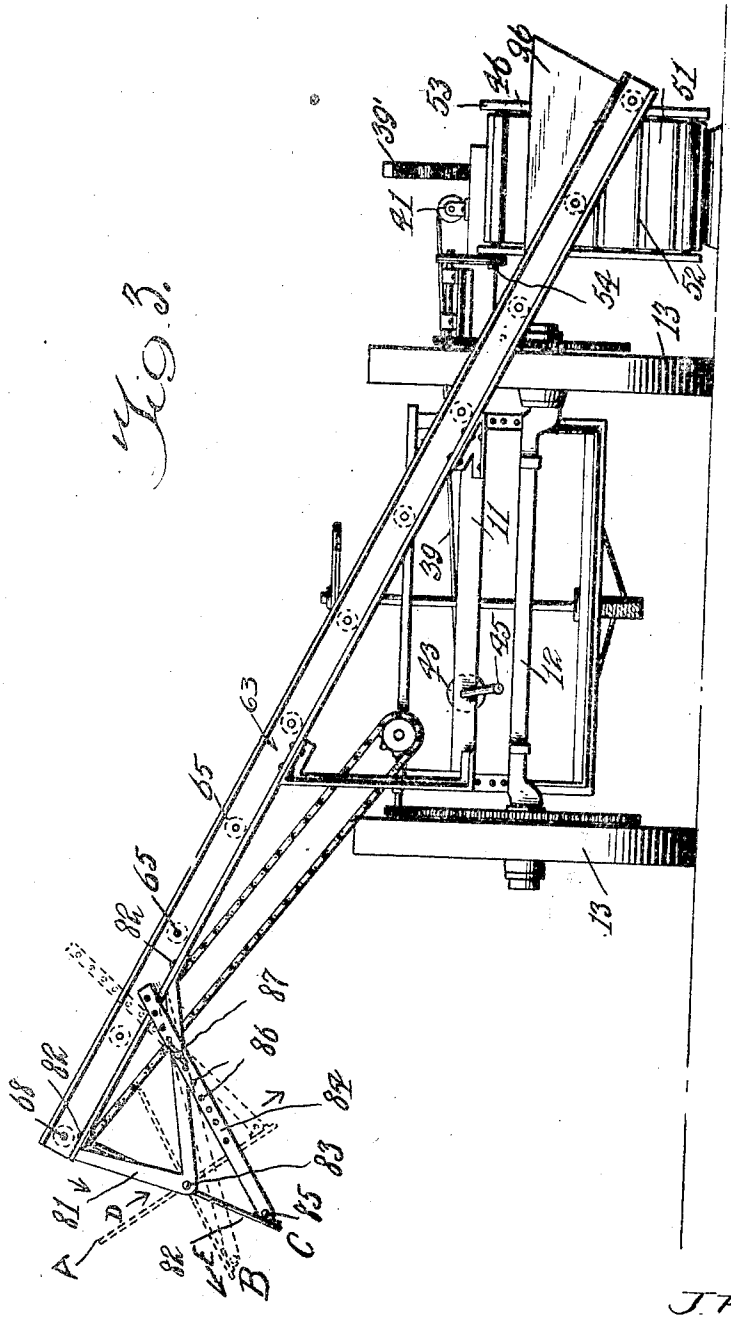
1,526,810

ROAD GRADER

Filed July 25, 1922

4 Sheets-Sheet 3

Fig. 3.



Witnesses

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ROAD GRADER

Filed July 25, 1922

4 Sheets-Sheet 4

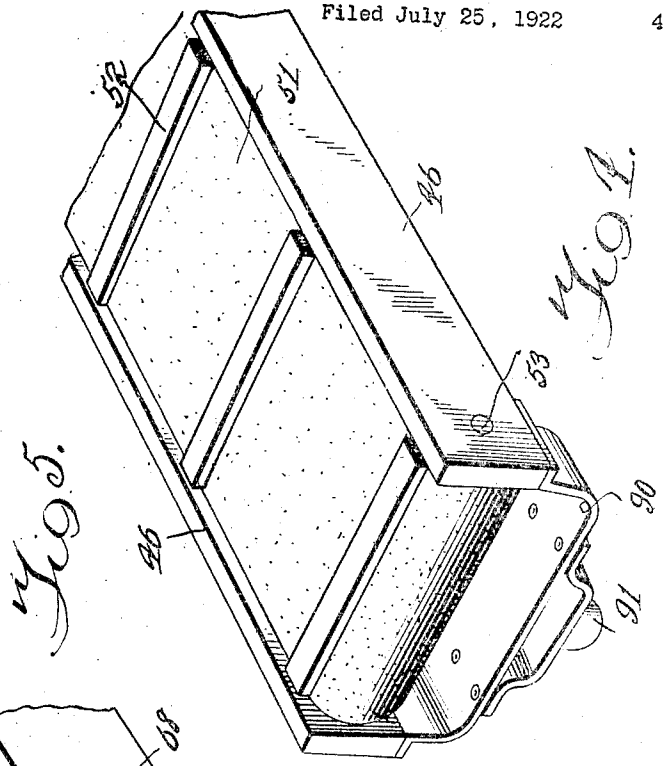
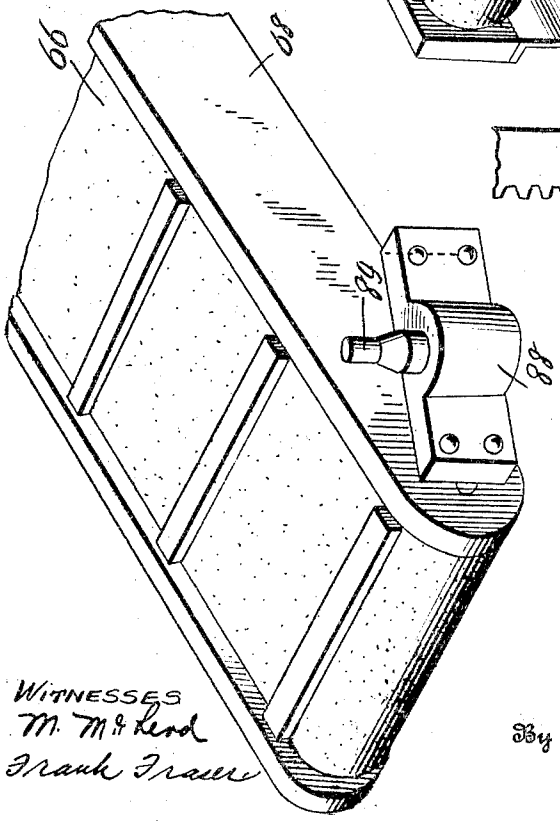


Fig. 5.

Fig. 4.



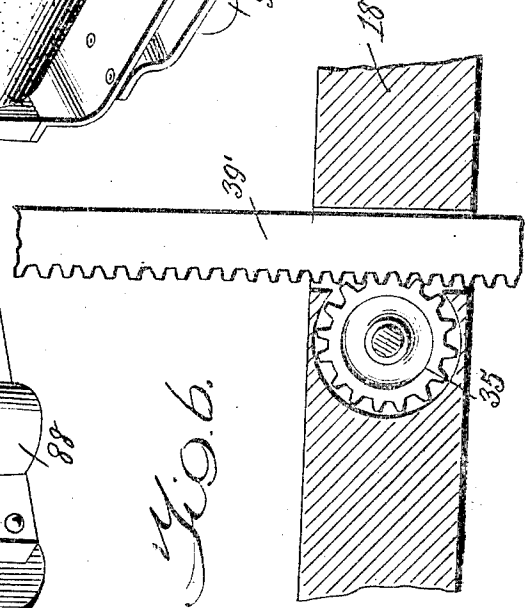


Fig. 6.

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Patented Feb. 17, 1925. 1,526,510

UNITED STATES PATENT OFFICE.

JOHN F. SNYDER, OF GLIDDEN, IOWA.

ROAD GRADER.

Application filed July 25, 1922. Serial No. 577,361.

To all whom it may concern:

Be it known that I, JOHN F. SNYDER, a citizen of the United States, residing at Glidden, in the county of Carroll and State of Iowa, have invented certain new and useful Improvements in Road Graders, of which the following is a specification.

My invention relates to improvements in road graders.

An object of my invention is to provide a road grader, whereby the cutting elements may be regulated to penetrate the earth at various depths.

A still further object of my invention is to provide a road grader, whereby the sod and top soil may be easily separated from the under soil and clay.

A still further object of my invention is to provide a road grader, wherein the cutting element is provided with improved sod cutters so that the sod will more easily be elevated, and will lay better on the road when they are discharged from my grader.

A still further object of my invention is to provide a road grader, in which the conveyors are operated from the movement of the vehicle upon the ground.

A still further object of my invention, is to provide a road grader, with means whereby the cutting element may be brought into close proximity to the frame of my grader, or moved away from, so that it is not necessary that the grader frame or body be run in a ditch or gutter, in order that the cutting elements be put into operation.

A still further object of my invention is to provide a road grader, wherein all of the various parts may easily be disassembled for repair or storage.

A still further object of my invention is to provide a road grader, which is strong, durable, simple and inexpensive in construction, and which is well adapted to the use for which it is designed.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of the specification and in which like numerals are employed to designate like parts throughout the same—

Figure 1 is a top plan view of the apparatus embodying my invention,

Figure 2 is a side elevation of the same,

Figure 3 is a rear elevation of my invention,

Figure 4 is a fragmentary perspective view of the lower conveyor showing means whereby it is connected to the upper conveyor,

Figure 5 is a fragmentary perspective view of the upper conveyor, showing means whereby it is connected to the lower conveyor, and

Figure 6 is a detail of the means whereby the cutting element is raised or lowered.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 represents longitudinal beams which form the sides of the frame of my improved road grader. The longitudinal beams 10 are connected at their ends by transverse beams 11, which form the ends of my grader, thereby making a frame, which is mounted upon the axle 12 which is carried by the wheels 13 near the end of the frame. Near the front end of the frame is mounted a standard or spring 14 which is mounted on the axle 15 carrying the smaller wheels 16.

Mounted near the front of the longitudinal beams 10 are spaced transverse beams 17, which extend a substantial distance beyond the right hand beam 10. Mounted on the transverse beams 17 near the outer edge thereof is a carriage 18, adapted to receive a screw threaded shaft 19, said shaft being journalled at its opposite end on the left hand longitudinal beam 10 by means of a journal 20. A bracket 21 supports the shaft 19 intermediate its ends, and is connected thereto by means of a journal 22. A stub beam 23 is connected to the bracket 21 and the left hand longitudinal beam 10, and carries a longitudinal shaft 24, by means of a journal 25, one end of the shaft 24 being provided with a crank 26 and the opposite end being provided with a beveled gear 27,

said gear 27 being adapted to engage or mesh with a similar beveled gear 28 which is keyed to the transverse shaft 19. By rotation of the crank 26, the carriage block 18 is moved accordingly. A transverse shaft 29 is mounted within the carriage block 18 at one end, and is journalled to the bracket 21 by means of a journal 31 at its opposite end, and is adapted to carry a beveled gear 30. A longitudinal shaft 32 is so mounted, as to carry a beveled gear 34 to mesh with the gear 30, so that the rotation of the crank 33 will similarly rotate the shaft 29. A pinion 35 is carried on the opposite end of the transverse shaft 29 and is positioned within a recess in the carriage block 18.

The numeral 36 designates any type of plow or any other earth working element, but a double beam plow is preferable. The earth working element 36 is provided with sod cutters 37, which will cut the sod so that they will be easier to handle, and which will adapt them to be more easily used, when discharged from my machine.

The beam of the earth working element 36 is provided with a depth gauge 38, said depth gauge being regulated by a pivoted rack bar 39', pivoted to the beam by means of a bolt or the like 40', said rack bar meshing with the pinions 35 on the shaft 29. It will thus be seen that the rotation of the shaft 29 will raise or lower the rack bar 39 which will in turn adjust the depth gauge 38. The earth working element 36 is regulated by a cable 39 which is connected at one end to the beam by means of a clip 40. The cable 39 passes over a pulley 41 which is mounted upon the carriage block 18, and is connected at its opposite end to a drum 42, said drum being mounted on a shaft 43 which is journalled by means of a journal 44 to the transverse beam 3. The drum 42 is operated by means of a crank 45. It will thus be seen that by rotating the crank 45 the drum will likewise be rotated, and the cable 39 will be wound or unwound therefrom, depending upon the direction in which the crank 45 is moved, and the earth working element 36 will be raised or lowered accordingly.

The numeral 46 designates the side beam of the lower conveyor or elevator, which is designated in its entirety by the numeral 47. The earth working element 36 is connected to the side beams 46 by means of a bracket 48 which is universally joined at 49, to allow for the various adjustments. Mounted between the side beams 46 of the conveyor are rollers 50. The numeral 51 represents a canvas or the like, endless belt having the usual slats 52. The driving roller 53 is mounted at the upper end of the two beams 46, said driving roller being provided with a sprocket 54. The numeral 55 designates a gear wheel which is carried by the right hand wheel 13 and is rotated therewith. A U-shaped frame member 56 is so situated as to encircle the right hand gear wheel 13 and is connected to the right hand longitudinal beam 10 by means of bolts 57. Mounted on the U-shaped frame 56 is a small shaft 58 which is journalled to the frame 56 by means of a journal 59. On one end of the shaft 58 is a pinion 60 which is adapted to mesh with the larger gear wheel 55, and the other end of the shaft 58 being provided with a sprocket 61. A sprocket chain 62 is adapted to connect the sprocket wheels 54 and 61.

It will thus be seen that when the vehicle or road grader is moved the large gear wheel 55 will rotate, thereby rotating the pinion 60 which in turn will rotate the shaft carrying the sprocket 61, thereby imparting movement to the sprocket chain 62 which will rotate the sprocket wheel 54, which will likewise rotate the drum 53 which will move the endless carrier or belt 47.

The numeral 63 represents the upper conveyor in its entirety. The conveyor 63 is provided with two side beams 64, which are spaced apart by means of the rollers 65, over which a canvas belt 66 runs, said canvas belt being provided with the usual slats 67. Near the ends of the beams 64 is a driving drum 68 which is provided with a sprocket wheel 69. Carried by the left hand wheel 13 is a large gear wheel 70 which meshes with a pinion 71 which is carried by a shaft 72 journalled to the left hand beam 10 by means of a journal 73, said shaft being provided on its opposite end with a beveled gear 74. Mounted on transverse beams 75 is a shaft 76 journalled thereto by means of journals 77. One end of the shaft 76 is provided with a beveled gear 78 adapted to mesh with the beveled gear 74, and the opposite end of said shaft is provided with a sprocket wheel 79. A sprocket chain 80 connects the sprocket wheels 69 and 79. It will thus be seen that by movement of the road grader, the large gear wheel 70 will rotate thereby rotating the smaller pinion 71 which in turn will rotate the shaft 72 which will rotate the beveled gear 74. The beveled gear 78 meshing with gear 74 will be caused to rotate and will likewise rotate the shaft 76 carrying the sprocket wheel 79, thereby rotating the sprocket chain 80 which will rotate the sprocket wheel 69 rotating the endless belt 66.

Mounted on the under side of the upper conveyor, is a mechanism which is adapted to separate the clods and top soil from the under soil and clay. The numeral 81 represents a depending V-shaped bracket which is secured to the under side of the upper conveyor beam 64 by means of bolts 82. Of course similar depending V-shaped brackets are provided on both of the beams 64. A

deflector plate 82 is pivoted between the V-shaped brackets 81 by means of the pins 83, and is adapted to be swung in the various positions as is shown in Figure 3 of the drawings, in full lines and dotted lines. A link 84 is pivoted to the deflector plate 82 at 85, and is adapted to be adjustably secured to the lower arm of the V-shaped brackets 81, by reason of the apertures 86 and the pin 87. It will be seen that when the dirt strikes the deflector plate when it is in the position as is indicated by the letter A in Figure 3, the dirt will fall in the direction of the arrows D, into the center of the road. However, when the deflector plate is tilted in the position as is indicated by the letter B, the dirt will be thrown to one side of the road as is clearly illustrated by the arrow E. When the deflector plate is situated in the position indicated in heavy lines by the letter C, the dirt will fall in a vertical position.

Mounted near the lower end of the upper conveyor 63 is a bracket member 88 which is adapted to receive a vertically extending pin 89. Mounted on the upper end of the lower conveyor, is a bracket 90 which is adapted to receive a socket member 91, said socket member being adapted to receive the pin member 89 forming a connection, or support between the two conveyors. This road grader is guided by means of a steering wheel 92 having a drum 93 which carries a cable 94 to the front wheels. The driver's seat is designated by the numeral 95, and it will be seen that all of the operating mechanism is readily accessible from this seat.

The operation of the device is as follows: The earth working element 36 is set to any depth desired by means of the cranks 33 and 45. The dirt is carried from the earth working element on the conveyor 47 to the conveyor 67, which conveyor is provided with a deflector plate 82 which determines in which direction the dirt or sod, as the case may be, shall be thrown. If this machine is used on new ground, the deflector plate will be set in the position as is illustrated by the letter B in Figure 3 of the drawings, thereby causing the sod to be thrown to one side. After the sod has been removed, the deflector plate may be set as is designated by the letters A or C, and the earth will be allowed to fall vertically or deflected inwardly toward the center of the road. This deflector plate will aid considerably in forming the necessary crest that is desired for the purpose of drainage, in the making of a new road. It will further aid in cutting so-called ridges and filling up the hollows so as to form a level road.

Furthermore it is often times inconvenient to run a road grader too near to the edge of the road, and to take care of this difficulty, I have provided means whereby the earth working element may be adjusted toward or away from the frame of the road grader, so that the road grader may run on comparatively level ground while the earth working element is cutting a ditch or the like. It is to be further noted that the power required to operate the endless conveyors is derived directly from the movement of the vehicle, in such a manner, that it will readily be seen that as the speed of the road grader is increased the speed of the conveyors will likewise increase. It is to be noted that any form of power may be used to propel this road grader, but is preferred that this road grader be pulled instead of pushed.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. In a road grader, a wheeled frame, a transverse frame mounted upon the wheeled frame adjacent to the forward end thereof and projecting laterally from one side thereof, a carriage block slidably mounted upon the transverse frame outwardly of the wheeled frame, a longitudinally extending conveyor disposed in rear of the transverse frame and alongside of the wheeled frame and supported thereby, an earth working element disposed below the laterally projecting portion of the transverse frame and in front of the conveyor, a universal joint connection between the forward end of the conveyor and the rear end of the earth working element, means for adjusting the earth working element on the carriage block in a vertical plane from the wheeled frame, and means for sliding the carriage block on the frame from said wheeled frame.

2. In a road grader, a wheeled frame, a transverse frame mounted upon the wheeled frame adjacent to the forward end thereof and projecting laterally from one side thereof, a carriage block slidably mounted upon the frame outwardly of the wheeled frame, a longitudinally extending conveyor disposed in rear of the transverse frame alongside of the wheeled frame and supported thereby, an earth working element disposed below the projecting portion of the transverse frame and directly in front of said conveyor, a universal joint connecting the earth working element with the forward end of the conveyor, means adjustably connecting the earth working element with the block for permitting the adjusting of the

earth working element in a vertical plane, means for operating said adjusting means from the wheeled frame, and adjusting means for said block to permit the earth working element to be adjusted in a horizontal plane including feed screws carried by the wheeled frame engaging the carriage block and cranks for adjusting said feed screws arranged adjacent to the means for operating the adjusting means of said earth working element.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. SNYDER.

Witnesses:
W F. SHORE,
GUY W. POOLE.