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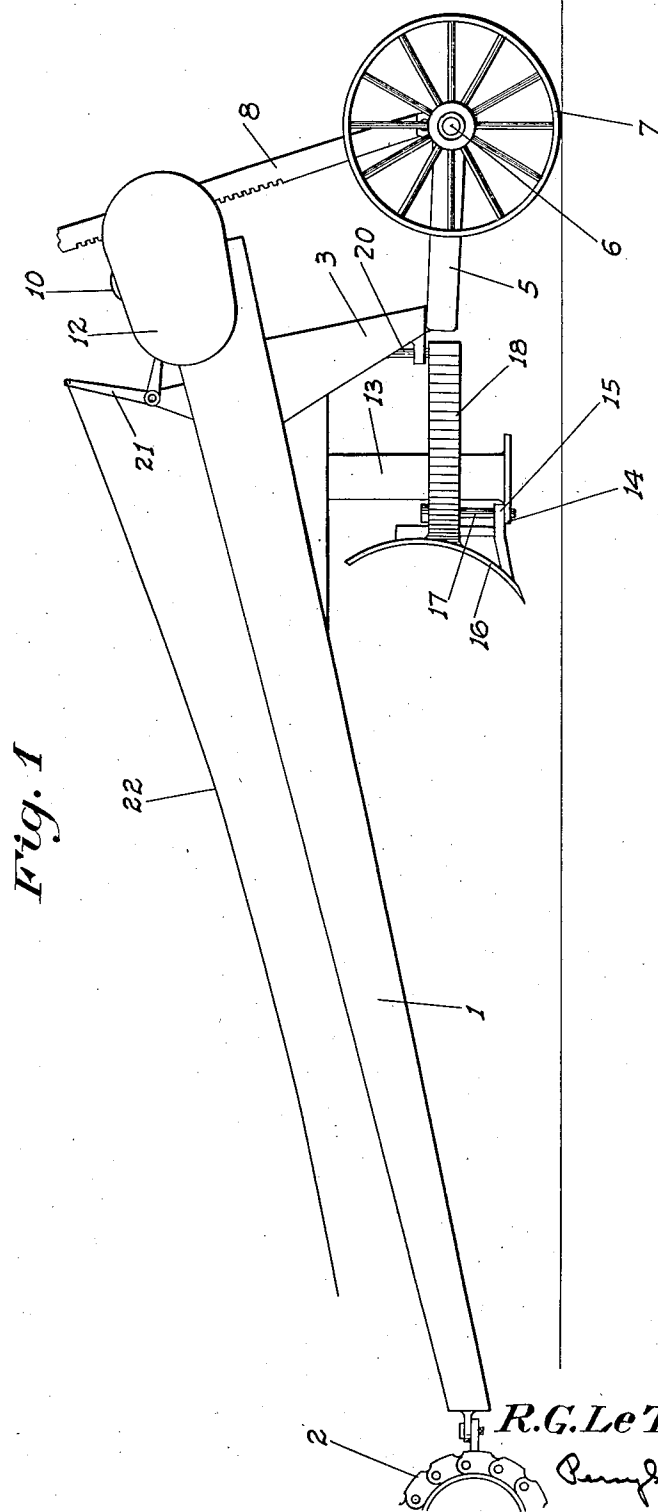
R. G. LE TOURNEAU

1,709,081

ROAD SCRAPER

Original Filed May 27, 1926

2 Sheets-Sheet 1



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Fig. 2

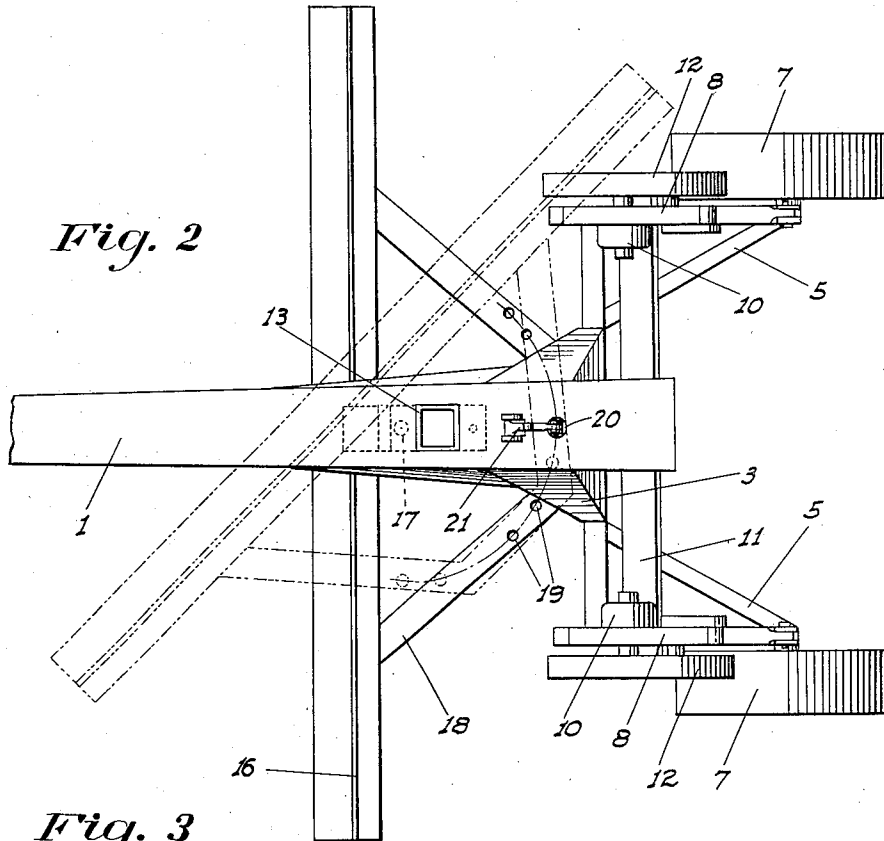
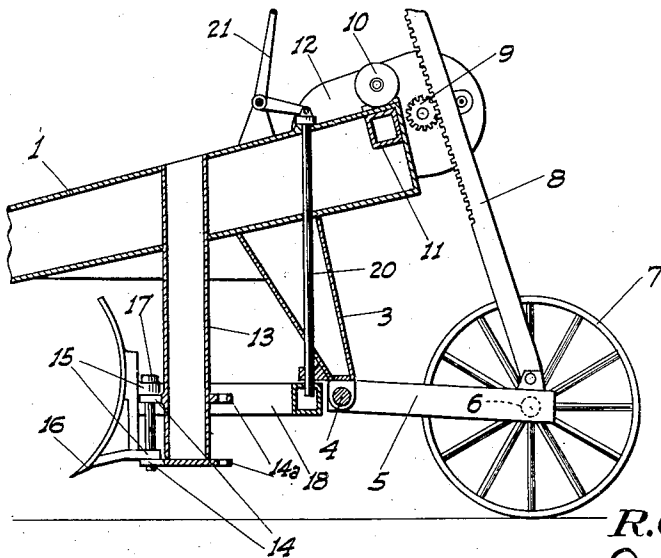


Fig. 3



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ROAD SCRAPER.

Application filed May 27, 1928, Serial No. 111,929. Renewed September 19, 1928.

This invention relates to improvements in the construction of road graders, my principal object being to provide an implement of this character so constructed that the grading or scraping blade will always be maintained a fixed distance from the main frame, while at the same time it may be easily raised and lowered relative to the ground level so as to allow it to scrape or grade to different depths.

A further object of the invention is to arrange the blade controlling means in such a manner as to enable the tilt of the blade in a transverse vertical plane to be easily altered so that the blade may work as effectively on a slope as on the level.

A further object is to provide independent and easily operated means for enabling the transverse setting of the blade, relative to the longitudinal plane of the grader, to be readily altered so that the blade may be positioned to deflect dirt to one side or the other, this means being so arranged that it will not interfere in any way with the operation of the vertical adjusting means.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side elevation of my improved grader.

Fig. 2 is a top plan view of the same.

Fig. 3 is a fragmentary longitudinal section of the device.

Referring now more particularly to the characters of reference on the drawings, the main frame of the grader comprises a single longitudinal beam 1, preferably built up of plates welded together to form a member of hollow box-like section—very strong and rigid yet relatively light. This beam normally slopes downwardly to its forward end, at which end it is adapted to be supported by and attached to a tractor indicated conventionally at 2.

Depending from the beam adjacent the rear end thereof is a transverse support 3 for an axle or shaft 4. This support is also a hollow member built up of plates

welded to each other and to the main beam.

Turnably mounted on the ends of the axle and normally projecting rearwardly from the support are triangular rigid arms 5 having outwardly projecting spindles 6 at their rear ends on which are turnably mounted the ground bearing wheels 7.

Pivoted onto the arms 5 adjacent the spindles and projecting upwardly therefrom are rack bars 8 engaging pinions 9. Each pinion is operated independently of the other by an electric motor 10 which is mounted on the outer end of a transverse beam 11, said transverse beam being supported by and projecting laterally from the main beam 1 at the rear end thereof. Reduction gearing of suitable character enclosed in a housing supported by the beam 11 is interposed between the motor and pinion so that the speed of the latter may be properly reduced.

It will therefore be seen that with this arrangement either wheel may be raised or lowered independently of the other, permitting the beam 1 to tilt laterally one way or the other about its forward end as a rocking point.

Depending from the beam 1 ahead of the support 3 is a substantially vertical post 13. This post is of hollow plate construction rigidly welded to the beam 1. Vertically spaced lugs 14 project longitudinally from the post ahead of the same. These lugs cooperate with similar lugs 15 projecting rearwardly from a blade 16 of suitable character, the blade being wider than the gage of the wheels. A pin 17 passes through the lugs 14 and 15 to pivotally connect the blade to the post, the lugs 15 being centrally disposed relative to the length of the blade. Lugs 14^a corresponding in size and location to the lugs 14 are also preferably mounted on the rear face of the post so that the blade may be reversed in position if desired.

A rigid hollow plate member 18 substantially of arch form and serving as a fifth wheel, is connected to the rear face of the blade on each side of the vertical plane of the lugs 15, and surrounds the post 13, extending rearwardly of the post to a point adjacent the forward end of the support 3. The member 18 has a plurality of suitably located vertical holes 19 which are disposed about a line concentric with the pin 17. A holding pin 20 is mounted for vertical

sliding movement in the beam 1 and support 3 and projects upwardly above the former, the lower end of said pin being adapted to project into any orifice 19. To enable this pin to be raised and lowered from a remote point, so that its lower end will clear the member 18, a bellcrank 21 is mounted on the top of the beam 1. One arm of the bellcrank engages the head of the pin while the other arm is connected to a pull rope 22 or the like, extending forwardly to the tractor so that the bellcrank may be manipulated by the operator of such tractor. With this apparatus the tractor pulling the grader is provided with a generator plant as shown in connection with the scraper in my Patent No. 1,530,779 dated March 24th, 1925, and leads from the motors 10 therefore extend to the tractor to be controlled by the driver of the tractor in the same manner as shown in connection with the scraper controlling motors of said patent. This arrangement eliminates the need of an operator on the grader and permits the machine to be entirely controlled in all positions by the driver of the tractor.

In operation it will be seen that the vertical position of the beam, determined by the vertical movement of the wheels, controls the height of the blade relative to the ground bearing faces of the wheels, such position depending on the depth to which it is desired to grade or scrape. It will be noted that with any such movement of the wheels and beam the space between the blade and the beam will remain constant. It will also be noted that as the beam is lowered, to cause the blade to dig deeper, the beam moves closer to a horizontal position giving a more direct pull as the blade is lowered and the load carried thereby is increased.

The wheels being independently movable, the main beam and consequently the blade may be tilted in a transverse vertical plane so as to engage the ground more on one side than on the other.

When it is desired to shift or angle the blade to one side or the other it is only necessary for the driver of the tractor to pull the pin 20 from the member 18, and raise or lower the wheels so as to cause one end or the other of the blade to engage the ground. This operation with the continued forward movement of the tractor will cause the blade to swivel about the axial pin 17, until the blade has reached the desired angular position. The pin 20 may then be released and allowed to engage the hole 19 then alined with said pin.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in de-

tail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended 70 claims.

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

1. A grader comprising a longitudinal rigid beam adapted at its front end for supporting attachment to a draft means, wheels supporting the rear end of the beam, a rigid post depending from the beam ahead of the wheels, a transverse blade having vertical hinged connection with the post centrally of the width of said blade, whereby the blade may be swung about its hinged connection, a rigid horizontal member attached to the back of the blade on each side of said hinged connection and surrounding the post, said member having a plurality of spaced vertical orifices arranged concentric with said hinged connection, and a vertically movable pin mounted in the beam for engagement with any orifice selectively. 80 90

2. A grader comprising a longitudinal beam, wheels supporting the rear end of the beam, a rigid post depending from the beam ahead of the wheels, lugs projecting from the front of the post, a transverse blade, lugs on the blade to cooperate with the post lugs, and a removable pin for insertion through the lugs. 95

3. A grader comprising a longitudinal beam, a post depending from the beam intermediate its ends, a transverse blade in front of the post, a vertical hinge connection between the back of the blade and the post at the front thereof, a horizontal brace structure directly connected to the back of the blade and surrounding the post in clearance relation thereto, and releasable means between the beam and structure for holding the latter immovable. 100 105 110

4. A grader comprising a longitudinal beam, a post depending from the beam intermediate its ends, a transverse blade in front of the post having vertical hinged connection therewith, a horizontal brace structure connected to the back of the blade and surrounding the post, said structure having a plurality of orifices concentric with the hinged connection, a support depending from the beam at the rear end of said structure, a releasable pin mounted in the support and normally engaging one of said orifices, arms pivotally connected to the support and extending thence rearwardly, wheels mounted on the rear ends of the arms, and means for turning the arms about their pivotal connections at will. 115 120 125

5. A grader comprising a longitudinal beam, a post depending from the beam intermediate its ends, a transverse blade in 130

in front of the post having vertical hinged connection therewith to enable the blade to swing to one side or the other, a support depending from the beam rearwardly of the post, arms connected to the support and extending thence rearwardly, wheels mounted on the rear ends of the arms, and means between the support and blade for normally holding the latter immovable.

10 6. A grader including a longitudinal beam, a transverse blade mounted there-

under, a support depending from the beam rearwardly of the blade, arms pivotally connected to the support and extending thence rearwardly, wheels mounted on the rear ends 15 of the arms, a transverse beam supported by the main beam and disposed rearwardly of the support, and means between the arms and transverse beam for controlling the turning of the arms. 20

In testimony whereof I affix my signature.

ROBERT G. LE TOURNEAU.