April 13, 1937. J. A. DICKEY 2,076,626

ROAD GRADER

Filed Nov. 6, 1936

Fig. 1.

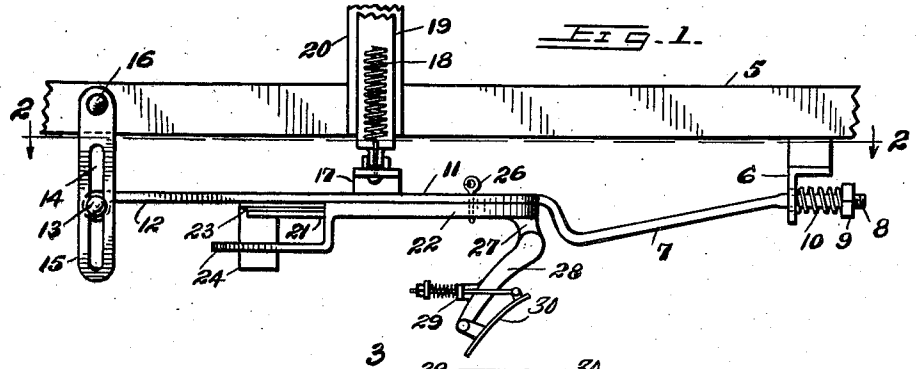


Fig. 2.

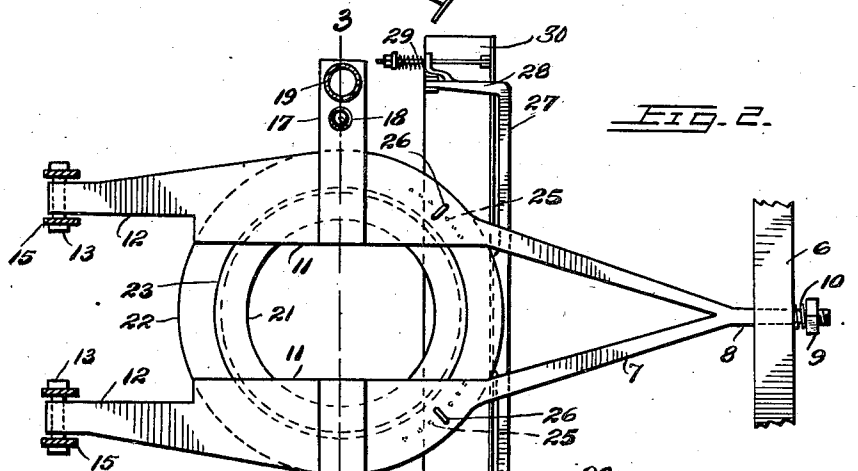


Fig. 3.

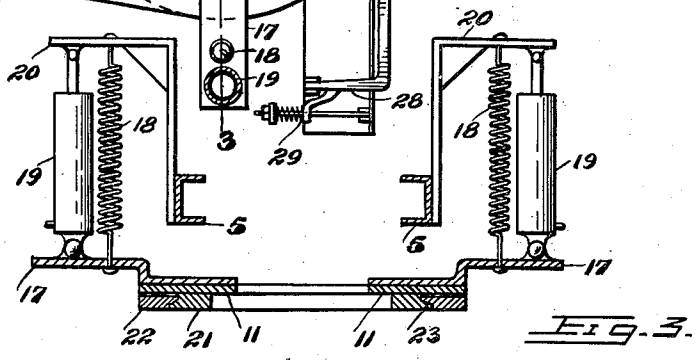
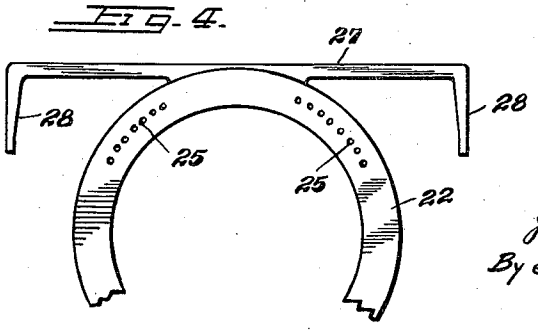


Fig. 4.



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Patented Apr. 13, 1937 2,076,626

UNITED STATES PATENT OFFICE

2,076,626

ROAD GRADER

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Application November 6, 1936, Serial No. 109,410
In Canada November 5, 1935

5 Claims. (Cl. 37—156)

The invention appertains to road grading apparatus and particularly to an appliance attached to the chassis of a motor truck in order to convert it into a grader.

The object of the invention is to produce a grading appliance incorporating a turntable that enables the scraper blade to be readily adjusted to change the transverse angle and yet accommodate unequal lowering or raising of the blade.

The structure provides for compound movement of the blade to suit various working conditions and the manner of performing the grading work. The turntable permits the blade to swing in a substantially horizontal plane so that it may be set to a suitable angle to the roadway to be graded. The turntable is so mounted and guided beneath the chassis that it can be lowered uniformly by fluid cylinders to bring the blade down evenly, or if required the turntable may be transversely tilted in order to depress one end of the blade to a greater extent than the other end.

The turntable is hitched to the chassis by a forwardly extending draft member and guided by rearwardly extending arms operably disposed in guides depending from the chassis.

The invention provides an efficient and easily controlled road grader that is inexpensive to manufacture.

Referring to the accompanying drawing, Figure 1 is a side elevation of the invention.

Figure 2 is a horizontal sectional view taken on line 2—2 of Figure 1.

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a plan view detailing the rotatable element of the turntable that carries the scraper blade.

Like numerals of reference indicate corresponding parts in each of the figures throughout the drawing of the invention.

The drawing is illustrative of one practical application of the invention in which the reference numeral 5 denotes the usual chassis of a motor truck.

A transverse drawbar 6 is attached to the chassis so as to be suspended rigidly beneath the same. A rearwardly extending draft member 7 is connected at its forward end to the drawbar medially of the width of the chassis. The connection may consist of a shank 8 of the draft member which is lodged in a hole in the drawbar with a nut 9 or other shoulder-forming element on the outer end of the shank. The hole is large enough to permit the rear end of the draft member to have movement in substantially a vertical plane. The draft member may be cushioned by a spring 10. This swivel connection is given by way of preference but not of limitation.

The draft member is shown as composed of a pair of diverging members having their rear portions integral with plates 11, 11 having rearwardly extending arms 12, 12. The arms are provided with headed pins 13 lodged in vertical slots 14 of depending guide bars 15. The guide bars are pivoted to the chassis at 16 in depending relation in order to accommodate the arcuate movement of the arms when lowered and raised in relation to the swivel connection of the draft member.

Outwardly disposed brackets 17 are secured to the plates in order to serve as attaching means for tension springs 18 and fluid cylinders 19 which are suspended from the brackets 20 carried by the chassis. The springs support the weight of the movable grader structure and normally retain it in the elevated position shown in Figure 1.

The cylinders are swivelly connected to the brackets 17 and 20, and have pistons operated by fluid under pressure by which either of the brackets 17 may be urged downwardly against the spring pressure. The cylinders have independent controls which may be operated concurrently or individually as occasion requires. The control mechanism of the cylinders is not shown since it is of known construction.

The turntable is carried by the plates 11 and consists of an inner ring 21 and an outer ring 22 interfitted by a tongue and groove 23 which enables one ring to turn with respect to the other without displacement. The inner ring is fixed to said plates at the under side thereof, while the outer ring rotatably bears against the under side of the plates in order to retain the interfitting engagement of the tongue and groove. It will be evident that the construction provides for circular movement of the outer ring about a substantially vertical axis. The rear portions of the rings may be bent downwardly as at 24 to give sufficient clearance for the propeller shaft of the motor truck, however this is only a matter of construction and does not concern the invention.

Means are provided to lock the outer ring in various angular positions, which means may consist of a circular arrangement of spaced holes in the outer ring 22 as at 25, and pegs as at 26 removably inserted in the plates 11 for selective engagement in the holes 25.

The outer or rotatable ring carries the scraper blade **30** by means of the hanger **27**, which may be integral or secured to this range. The blade transversely extends beneath the turntable and is pivoted to the depending end members **28** of the hanger. These end members carry a known type of mechanism, denoted at **29**, for regulating the scraping angle of the blade.

It will be manifest that by this construction the blade can be swung about the vertical axis of the rotatable ring **22** in order to assume any desired angular position. When once the blade has been set to a particular position, the pegs **26** lock this ring against turning movement. The springs **18** normally hold the blade clear of the road surface. The cylinders **19** depress the blade into contact with the road surface to be graded. The separate cylinders provide for transverse tilting of the turntable so as to lower one end of the blade to a greater extent than the other as required for properly grading a road surface.

The draft member **7** takes the pull from the draw bar and at the same time allows lateral tilting of the turntable and blade. The arms **12** sustain the lateral thrust and permit vertical movement of the turntable in the lowering and raising of the blade.

What I claim is:

1. A road grader composed of a wheeled frame, a turntable substantially horizontally disposed thereunder incorporating a non-rotatable member and a rotatable member, a transverse drawbar depending from the frame in advance of the turntable, a draft member forwardly extending from the non-rotatable member aforesaid and swivelly connected to the drawbar in longitudinal alignment with the centre of the turntable, the swivel connection being such as to permit a universal movement of the turntable, a transverse hanger submounted on the rotatable member aforsaid, a scraper blade carried thereby, a pair of spaced arms rearwardly extending from said non-rotatable member, depending bars spaced correspondingly to the spacing of said arms, the upper ends of said bars being pivoted to the aforesaid frame to swing forwardly and rearwardly thereof, the depending extent of the bars having a lateral thrust-sustaining connection with the distal ends of the respective arms whereby the arms have unhampered vertical movement on the bars, and means carried by the aforesaid frame for raising, lowering, or transversely tilting the turntable relative thereto.

2. A road grader composed of a wheeled frame, a turntable substantially horizontally disposed thereunder incorporating a non-rotatable member and a relatively rotatable member, means for securing the rotatable member in angular adjustment, a transverse drawbar depending from the frame in advance of the turntable, a draft member forwardly extending from the non-rotatable member aforesaid and swivelly connected to the drawbar in longitudinal alignment with the centre of the turntable, the swivel connection being such as to permit a universal movement of the turntable, a transverse hanger submounted on the rotatable member aforesaid, a scraper blade carried thereby, a pair of spaced arms rearwardly extending from said non-rotatable member, depending bars spaced correspondingly to the spacing of said arms, the upper ends of said bars being pivoted to the aforesaid frame to swing forwardly and rearwardly thereof, the depending extent of the bars having a lateral thrust-sustaining connection with the distal ends of the respective arms whereby the arms have unhampered vertical movement on the bars, and means carried by the aforesaid frame for raising, lowering, or transversely tilting the turntable relative thereto.

3. A road grader composed of a wheeled frame, a turntable substantially horizontally disposed thereunder incorporating a non-rotatable member and a relatively rotatable member having a circular series of holes therein, a peg detachably carried by the non-rotatable member for selective insertion in the holes of the rotatable member to secure it in angular adjustment, a transverse drawbar depending from the frame in advance of the turntable, a draft member forwardly extending from the non-rotatable member aforesaid and swivelly connected to the drawbar in longitudinal alignment with the centre of the turntable, the swivel connection being such as to permit a universal movement of the turntable, a transverse hanger submounted on the rotatable member aforesaid, a scraper blade carried thereby, a pair of spaced arms rearwardly extending from said non-rotatable member, depending bars spaced correspondingly to the spacing of said arms, the upper ends of said bars being pivoted to the aforesaid frame to swing forwardly and rearwardly thereof, the depending extent of the bars having a lateral thrust-sustaining connection with the distal ends of the respective arms whereby the arms have unhampered vertical movemet on the bars, and means carried by the aforesaid frame for raising, lowering, or transversely tilting the turntable relative thereto.

4. A road grader composed of a wheeled frame, a turntable substantially horizontally disposed thereunder incorporating a non-rotatable member and a rotatable member, a transverse drawbar depending from the frame in advance of the turntable, a draft member forwardly extending from the non-rotatable member aforesaid and swivelly connected to the drawbar in longitudinal alignment with the centre of the turntable, the swivel connection being such as to permit a universal movement of the turntable, a transverse hanger submounted on the rotatable member aforesaid, a scraper blade carried thereby, a pair of spaced arms rearwardly extending from said non-rotatable member, depending bars spaced correspondingly to the spacing of said arms, the upper ends of said bars being pivoted to the aforesaid frame to swing forwardly and rearwardly thereof, the depending extent of the bars having lengthwise slots, transverse fastening elements slidably connected in said slots and attached to the distal ends of said arms whereby the arms have unhampered vertical movement on the respective bars, and means carried by the aforesaid frame for raising, lowering, or transversely tilting the turntable relative thereto.

5. A road grader composed of a wheeled frame, a turntable substantially horizontally disposed thereunder incorporating a non-rotatable member and a rotatable member, a transverse drawbar depending from the frame in advance of the turntable, a draft member forwardly extending from the non-rotatable member aforesaid and swivelly connected to the drawbar in longitudinal alignment with the centre of the turntable, the swivel connection being such as to permit a universal movement of the turntable, a transverse hanger submounted on the rotatable member aforesaid, a scraper blade carried thereby, a pair of spaced arms rearwardly extending from said non-rotatable member, depending bars

spaced correspondingly to the spacing of said arms, the upper ends of said bars being pivoted to the aforesaid frame to swing forwardly and rearwardly thereof, the depending extent of the bars having a lateral thrust-sustaining connection with the distal ends of the respective arms whereby the arms have unhampered vertical movement on the bars, coilspring means carried by the aforesaid frame for sustaining the weight of the turntable and the attached elements and vertical fluid cylinders connected to the opposite sides of the turntable and having pistons therein connected to the frame for raising, lowering, or transversely tilting the turntable relative to the frame.

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