Dec. 13, 1932. J. B. JARMIN 1,890,649

ROAD MACHINE

Filed May 8, 1930 5 Sheets-Sheet 1

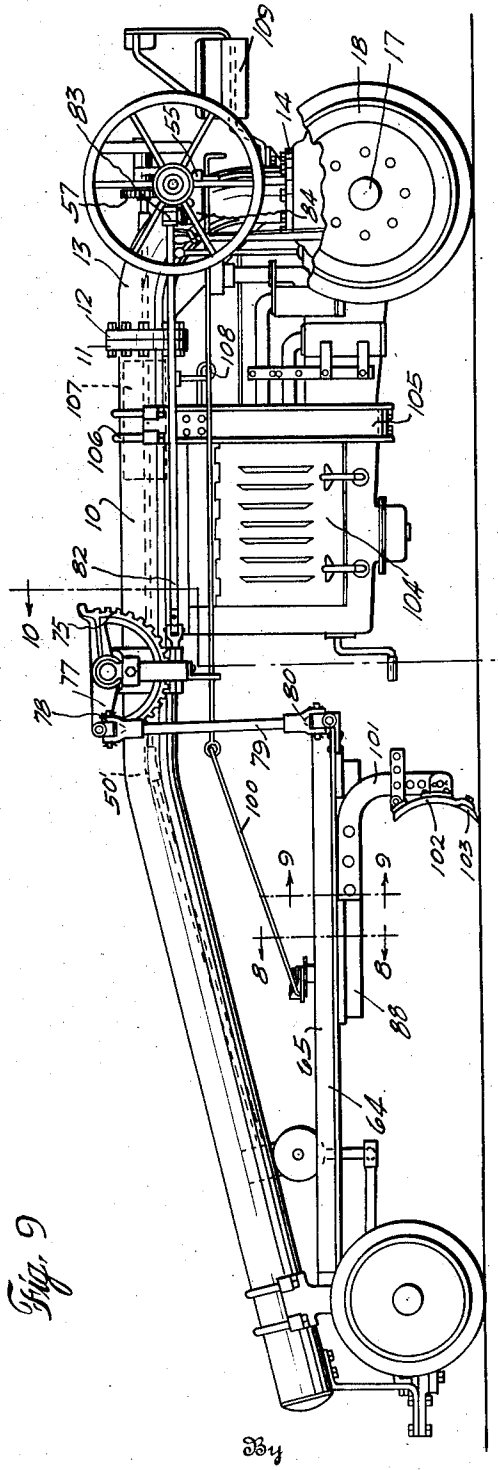


Fig. 1

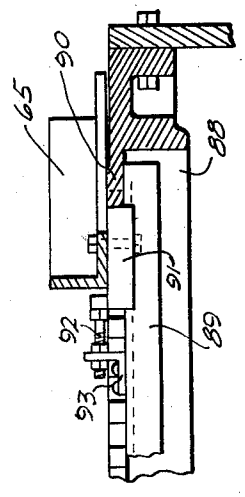


Fig. 9

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ROAD MACHINE

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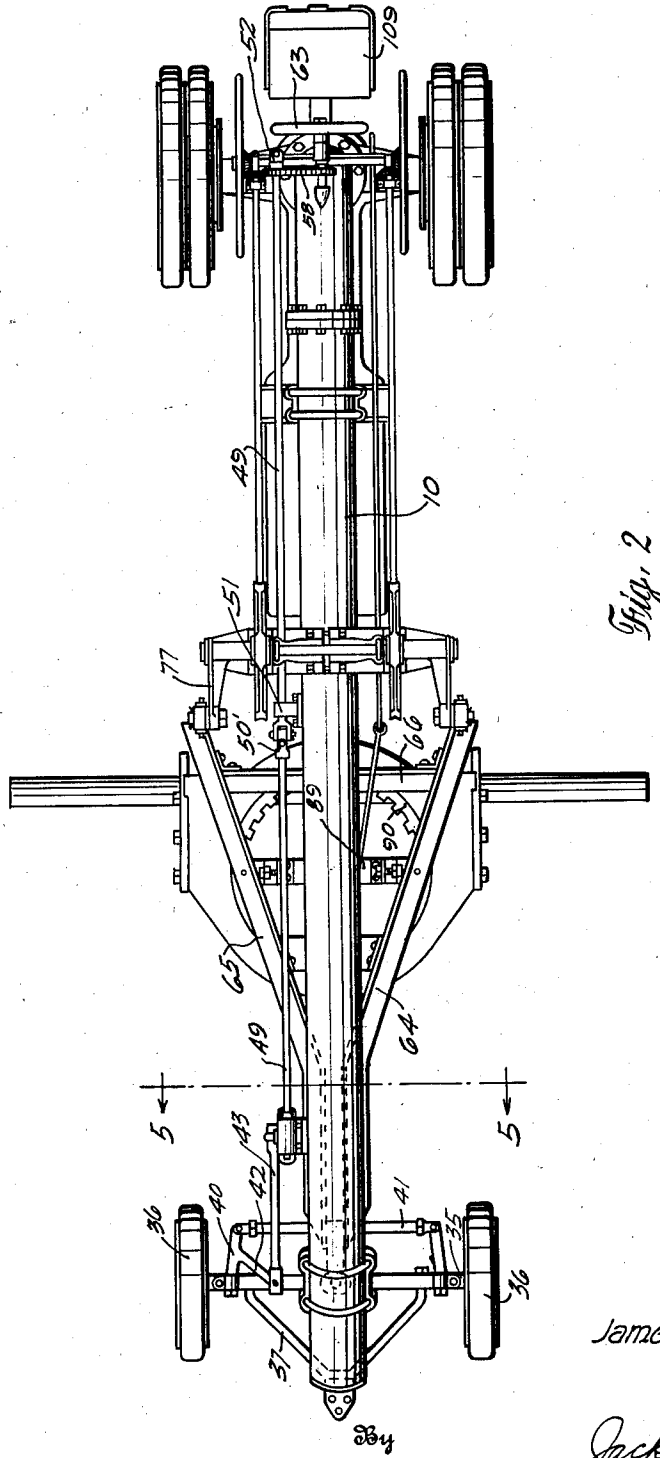


Fig. 2

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ROAD MACHINE

Filed May 8, 1930 5 Sheets-Sheet 3

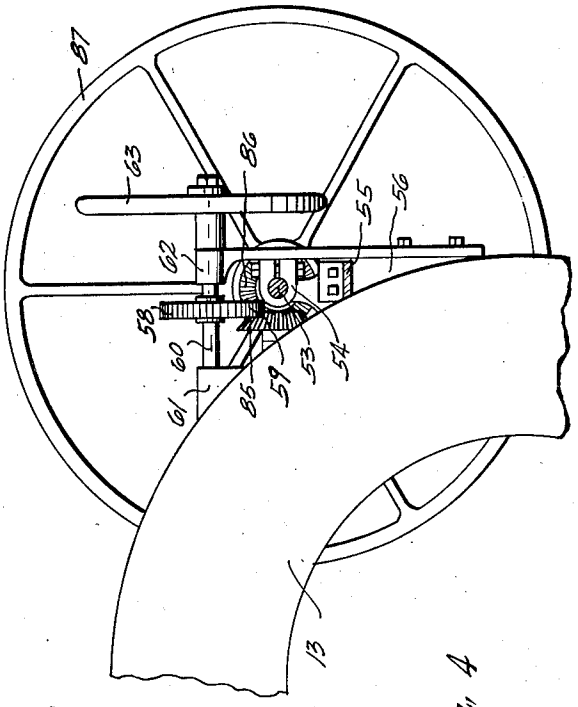


Fig. 4

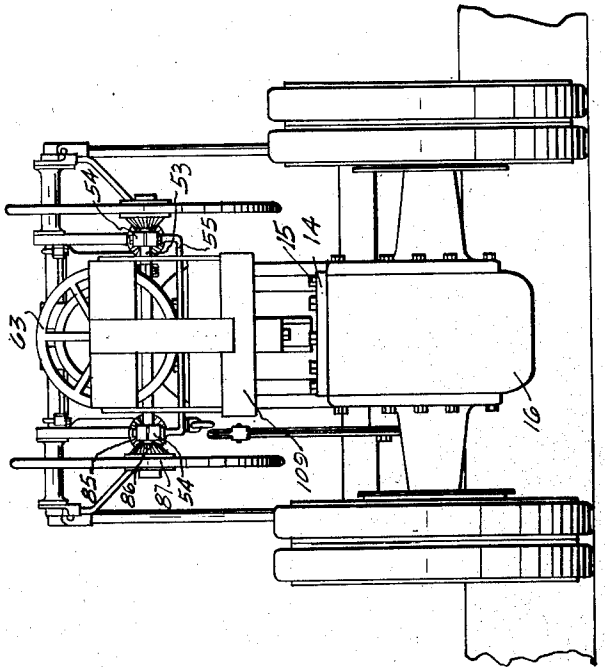


Fig. 3

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ROAD MACHINE

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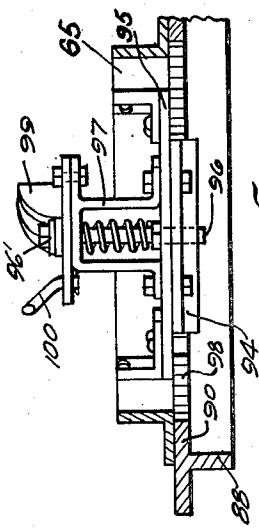


Fig. 8

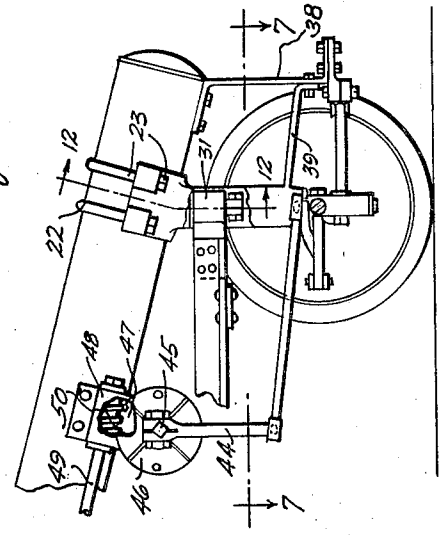


Fig. 6

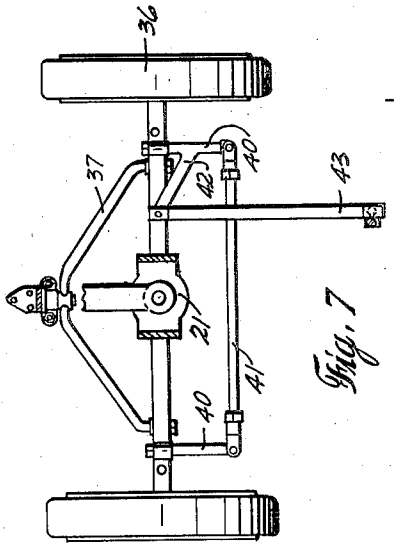


Fig. 7

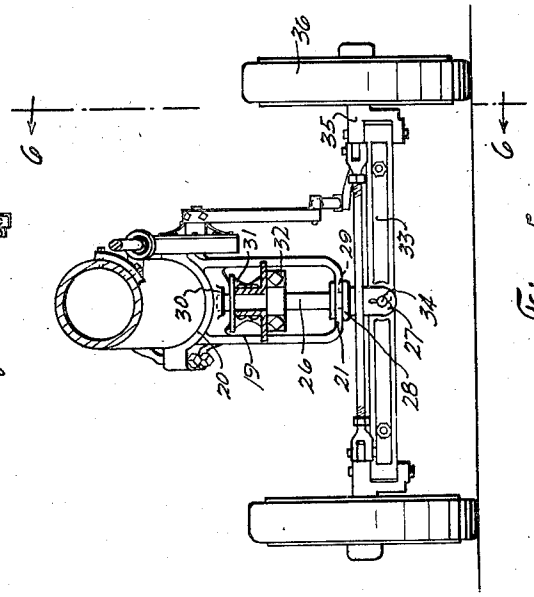


Fig. 5

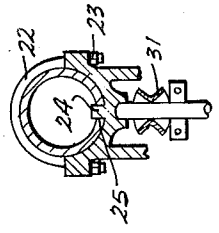


Fig. 12

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ROAD MACHINE

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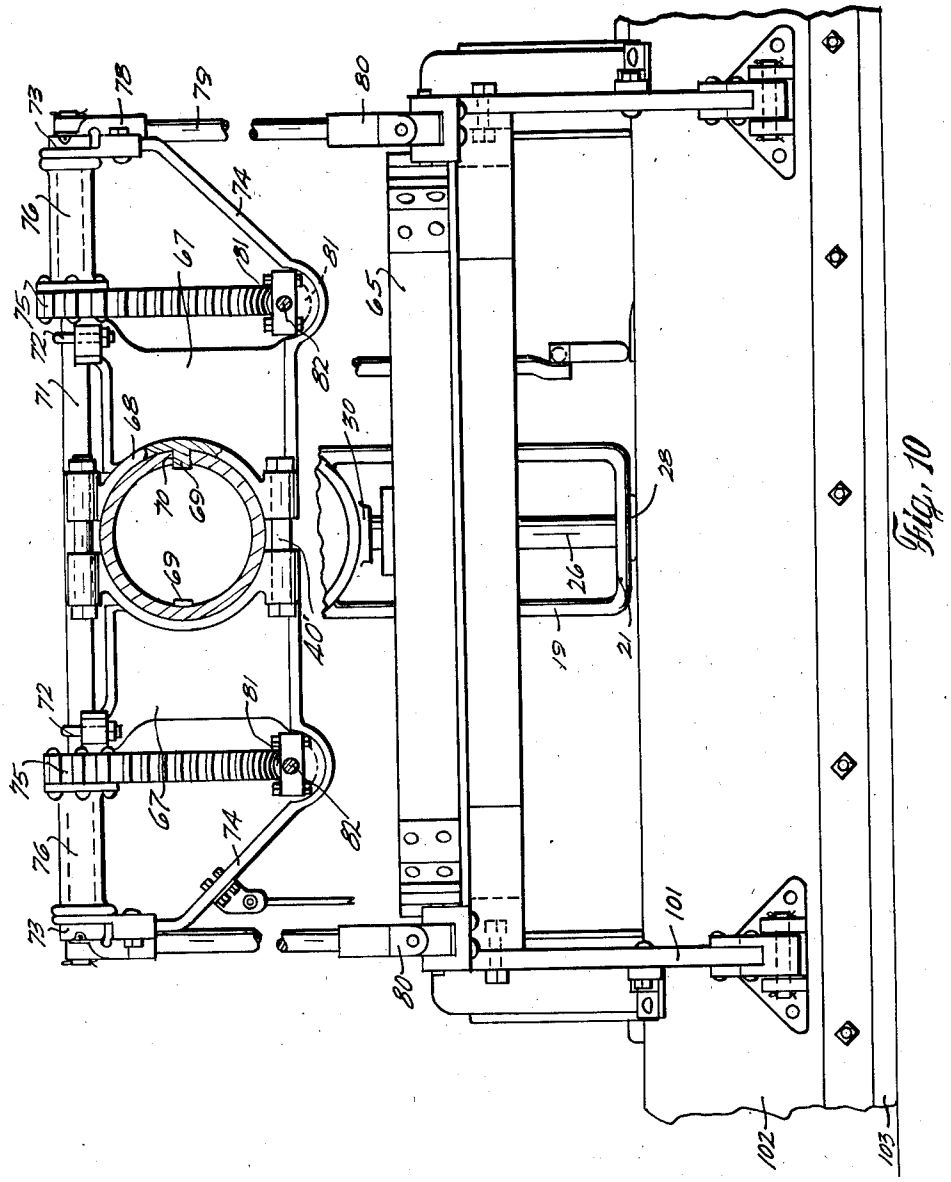


Fig. 10

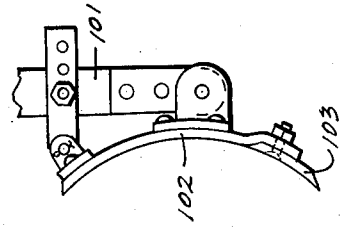


Fig. 11

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UNITED STATES PATENT OFFICE

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ROAD MACHINE

Application filed May 8, 1930. Serial No. 450,715.

This invention relates to new and useful improvements in road working machines.

The invention has particularly to do with motor driven machines in which the motor is built in as a part of the machine. It has been the practice to include in such machines a side bar frame from which the motor and the road working blade will suspend. These frames usually comprise spaced side members with connecting crossbars. Experience has shown that it is difficult to obtain sufficient rigidity with such a frame and prevent it from twisting and warping strains. This is somewhat due to the fact that the motor is usually located between the two side members and hangs below the same. Also the blade is suspended and subjects the frame to twisting.

One object of the invention is to provide a machine wherein a single tubular member or pipe is employed as a central overhead support and substitute for the usual frame, whereby a more rigid and substantial structure is produced.

A further object of the invention is to rigidly attach the tubular support directly to the motor structure thus producing an integral effect whereby the resistance to twisting offered by the tubular member is greater than the combined weight and strain to which it is subjected.

Another object of the invention is to directly connect the rear end of the tubular support to the differential gear housing and rear axle, while the front end of the support is carried by a pony truck thus making for stability and more positively holding the blade to the work.

A further object of the invention is to provide a central support in the form of a tubular member thus doing away with the usual side frame members and freeing the motor from this interference, thus making it more accessible to the operator and also reducing to a minimum all obstructions in his forward line of vision thereby enabling him to more readily observe the blade and work and to see a larger portion than where his view is obstructed by the usual frame.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings in which an example of the invention is shown, and wherein:

Figure 1 is a side elevation of the machine, constructed in accordance with the invention,

Figure 2 is a plan view of the same,

Figure 3 is a rear elevation of the machine,

Figure 4 is a detail of the adjusting means,

Figure 5 is a transverse vertical sectional view taken on the line 5—5 of Figure 2,

Figure 6 is a longitudinal vertical sectional view taken on the line 6—6 of Figure 5,

Figure 7 is a horizontal cross sectional view taken on the line 7—7 of Figure 6,

Figure 8 is a transverse vertical sectional view taken on the line 8—8 of Figure 1,

Figure 9 is a sectional view taken on the line 9—9 of Figure 1,

Figure 10 is an enlarged transverse vertical sectional view taken on the line 10—10 of Figure 1,

Figure 11 is a detail of the blade support, and

Figure 12 is a vertical sectional view taken on line 12—12 of Figure 6.

In the drawings the numeral 10 designates a main connecting member or reach which connects the front and rear axles and constitutes the sole connecting member and backbone of the machine. It is the essence of the invention to form this reach as a single central member extending longitudinally and being tubular or hollow so as to give strength and rigidity. It is preferable to use for this reach a length of pipe of comparatively large diameter, although an eye beam or channel structure may be used for the same purpose.

As an illustration, it has been found that a 12 inch pipe 16 feet long will safely carry a load of 54,000 pounds and the twisting strength of this size of pipe is approximately 84,000 pounds on an average of 10 feet in length. A machine constructed with this size of pipe would weigh less than 10,000 pounds, and therefore, the reach has an ample load carrying and torsion resisting capacity.

In carrying out the idea of simplicity and

practical construction the reach is provided with an annular flange 11 at its rear end which is bolted to the flange 12 of an elbow 13 preferably of the same diameter as the pipe.

As shown in Figs. 1 and 3 the elbow has a base flange 14 which is secured by bolts 15 to the top of a differential gear housing 16. The gear housing carries a rear axle 17 which is mounted in ground wheels 18. An operator's seat 109 has a spring mounting to the rear of the elbow 13.

An engine 104 is suspended from the reach by a stirrup 105 which is clamped to said reach by U-bolts 106. A fuel supply tank 107 is mounted within the reach and has a suitable fuel conductor 108 for supplying fuel to the engine. This mounting of the engine provides for accessibility to all parts thereof, thus making for convenience in the repairing and servicing of the engine. It is not considered necessary to go into details of construction which are in common use and are now being manufactured for the trade.

As shown in Figs. 1, 5 and 6, the reach is curved at its center downwardly and forwardly and is carried at its forward end by a post 19 having a saddle 20 at its upper end and a circular plate 21 at its lower end. The forward end of the reach is clamped in the saddle by U-bolts 22 and nuts 23. The saddle is provided with a lug 24 (Figure 12) engaging in an aperture 25 at the bottom of the reach whereby said reach is held against circumferential movement when clamped in position.

A king-pin 26 having a yoke 27 at one end and a circular boss 28 adjacent the yoke, extends through an opening 29 in the circular plate 21 with the boss engaging the plate, whereby a turntable is formed. The upper end of the pin seats in a boss 30 depending from the bottom of the saddle, whereby the pin is rigidly held in place. A bell shaped clevis 31 is mounted on the pin and held in position by an adjustable collar 32 secured to said pin.

The yoke 27 straddles an axle bar 33 and is pivotally connected to the center of the bar by a pin 34. The bar has axles 35 pivotally connected at its ends with the axles mounted in ground wheels 36. A V-shaped brace rod 37 has its ends secured to the axle bar adjacent the axle mounting and has a pivotal connection to the lower end of a support bar 38 depending from the forward end of the reach to which said bar is secured.

The bar 38 has a brace 39 extending rearwardly therefrom with its rear end mounted over the king-pin. By provision of the pivotal mounting of the pin 26 to the axle bar and the pivotal connection between the brace rod 37 and the support bar 38 the reach is provided with a single point of support at its front end.

As shown in Figs. 5, 6 and 7 the axles are each provided with the usual steering arms 40 connected at their outer ends by a tie rod 41. One of the steering arms has a bracket 42 extending therefrom and having a pivotal connection with one end of a drag link 43. The opposite end of the link has a pivotal connection to the end of a crank arm 44 mounted on a shaft 45. The shaft in turn is mounted in a gear housing 46 and carries a gear 47 within said housing. The housing 46 is made integral with a worm screw housing 48 which is secured to the reach and has mounted therein on one end of a shaft 49 a worm screw 50.

The worm screw is meshed with the gear 47 so that when the shaft 49 is rotated, the crank 44 is swung in an arc and thereby position the axles 35 and wheels 36. The shaft 49 extends parallel and longitudinal of the reach to the rear thereof and has a universal coupling 50′ therein, opposite the curved central portion of the reach. A bracket 51 is mounted over the shaft 49 opposite the coupling 50 and is secured to the reach for supporting said shaft.

The rear end of the shaft is journaled in a bearing bracket 52 mounted on a transverse shaft 53 which is supported at its end in clamps 54 of a transverse bracket 55. The bracket 55 is secured to a boss 56 protruding from the rear of the elbow 13. For rotating the shaft 49 a gear 57 is secured thereto at its rear end and has a chain 58 connecting it with a gear 59 on a shaft 60. This shaft has one end journaled in a bearing boss 61 of the elbow and its other end supported in a bearing bracket 62, the lower end of which is secured to the boss 56. A hand wheel 63 is mounted on the outer end of the shaft 60 for rotating the same whereby the shaft 49 will be rotated to position the axles 35 and wheels 36 as desired.

A longitudinal sub-frame 64 underlies the reach 10 and has its forward end rigidly attached to the clevis 31. This frame by reason of the pivotal mounting of said clevis may be raised and lowered at its rear end or swung in a transverse arc on its longitudinal axis. The frame is composed of side angle members 65 extending rearwardly from the clevis and diverging outwardly from each other at their rear ends. A cross angle bar 66 connects the rear ends of the members 65.

For supporting the rear end of the sub-frame 64, an adjustable hanger is fastened on the reach. This hanger includes a pair of laterally extending hanger brackets 67 which are in the form of castings having semi-circular clamp collars 68 at their inner ends. The clamp collars engage on each side of the reach and are connected by top and bottom bolts 40′. As is shown in Fig. 10, each collar has a lug 69 engaging in apertures 70 in the reach, whereby the brackets are sup-

ported against circumferential movement on said reach.

A shaft 71 is mounted transversely of the reach upon the brackets and secured thereto by U-bolts 72. The outer ends of the shaft 71 are journaled in caps 73 mounted on arms 74 extending upwardly and outwardly from the bottom of the brackets 67. A segmental gear 75 is mounted on each end of the shaft adjacent each of the brackets 67 and has secured thereto a sleeve 76. The outer end of each sleeve is provided with a crank arm 77 which has a universal coupling 78 at its outer end to one end of a drag link 79. The opposite end of each link 79 has a universal connection 80 to the rear end of one of the angle members 65. It will be seen that the frame 64 is freely hung for vertical adjustment both longitudinally and transversely and also for tilting or rotative adjustment on its longitudinal axis.

For adjusting the crank arm 77, the segmental gears 75 are driven by worm screws 81 journaled in the brackets 67, best shown in Figs. 1 and 10. The worm screws are mounted on the front ends of adjusting shafts 82 which extend rearwardly on each side of the reach and have their rear ends journaled in bearing supports 83 adjustably mounted on arms 84 of the bracket 55, best shown in Figs. 1 and 3. Each shaft has a beveled gear 85 on its rear end driven by a beveled gear 86 formed on the hub of a hand wheel 87 which is loosely journaled on one end of the shaft 53. By revolving the hand wheels the worm screws 81 associated therewith are rotated and the segmental gears 75 are swung, whereby the crank arms 77 are actuated and the frame 64 is either raised or lowered.

It is pointed out that the entire hanger assembly is clamped upon the reach member by the bolts 40′, thus making simplicity in assembling the machine.

A blade ring 88 is suspended from the subframe 64 and is supported at its central portion by a transverse hanger bar 89 secured to the angle member 65 and engaging under a lip 90 of the ring as best shown in Figs. 2 and 9. For securing the blade ring against any loose movement on the hanger bar 89, dogs 91 slidable upon the hanger bar are positioned against the inner edge of the lip 90 at opposite sides of the ring by adjusting bolts 92 mounted in angle brackets 93 which are secured on said hanger bar.

The forward end of the ring 88 is supported on a transverse bracket 94, (Fig. 8) engaging under the lip 90 and secured to a transverse bar 95 mounted between the angle members 65. A spring pressed plunger pin 96 carried by a bracket 97 mounted on the bar 95 engages in teeth 98 formed in the lip 90 of the ring, whereby the ring is held against rotation. To release the ring a wedge 99 mounted on top of the bracket 97 and pivoted at one side to said bracket engages under a head 96′ of the pin 96 so that by sliding the wedge underneath the head 96′ the pin is raised from engagement with the teeth 98. For slidably operating the wedge 99 a rod 100 has one end secured to the wedge and extends to the rear of the machine, as shown in Fig. 1.

Standards 101 are secured to opposite sides of the ring 88 for suspending a blade 102 which is adjustably secured to the lower ends of said standards whereby the blade may be adjusted at any desired pitch. As best shown in Figs. 1 and 11 the blade is provided with a replaceable cutting edge 103.

For rotating the ring 88 to swing the blade 102 to a desired angle the sub-frame 64 is tilted so that one end of the blade will engage in the ground, then by raising the plunger pin 96 and moving the machine either forward or backward, the ring 88 will be rotated on the hanger bar 89 and the transverse bracket 94.

In this manner the position of the blade may be adjusted without the operator leaving his seat. By reason of the single central pipe member 10 and the freedom from supports on each side thereof, the vision of the operator is unobstructed and he may look along each side of said pipe member and clearly see the blade, the road and the steering gear at the front wheels.

It will be remembered that the invention has only been described as a road machine because of the application of a road scraper blade to said machine. But, it is to be understood that the invention is not to be limited to the sole use of the road scraper blade as farm implements such as harrows, plows, cultivators and the like may be applied to the machine for use as desired.

Various changes in the size and shape of the different parts, as well as modifications and alterations, may be made within the scope of the appended claims.

What I claim, is:

1. In a road machine, a single central longitudinal reach having its forward portion inclined downwardly and its rear portion disposed horizontally, a low front wheel assembly, an upright support mounted in the front wheel assembly and secured to the inclined end of the reach, a tractor having its entire forward portion suspended from the horizontal portion of the reach, and a rigid connection between the rear end of the reach and the tractor, the single reach and its forward inclined portion providing an unobstructed view from the tractor.

2. In a road machine, a single central longitudinal reach having its forward portion inclined downwardly and its rear portion disposed horizontally, a low front wheel assembly, an upright support mounted on the front wheel assembly and secured to the

inclined end of the reach, a tractor having the major portion of its length suspended from the horizontal portion of the reach, and a rigid connection between the rear end of the reach and the differential housing of the tractor, the single reach and its forward inclined portion providing an unobstructed view from the tractor.

3. In a road machine, a front axle having steering wheels, a rear transverse axle including a differential housing, a central tubular member connecting the front and rear axles and constituting the sole connection therebetween, the rear portion of said tubular member being elevated a substantial distance above the rear axle, a tractor engine underlying the elevated rear portion of the tubular member immediately in front of the differential housing with which it is connected, and means for suspending the engine under the rear portion of the tubular member, the entire engine being located between the front and rear axles and below the tubular member, whereby the driver has an unobstructed vision along each side of the tubular member and above the engine.

4. In a road machine, a front axle having steering wheels, a rear transverse axle including a differential housing, a central longitudinal pipe member connected with the front axle and elevated above the rear axle, an elbow having its upper end secured to the rear end of the pipe member and its lower end fastened to the differential housing, a tractor engine underlying the rear portion of the pipe member and the upper portion of the elbow directly in front of the differential housing with which it is connected, and means for suspending the engine from the pipe member.

In testimony whereof I affix my signature.

JAMES B. JARMIN.