Dec. 24, 1935. J. A. VAUGHN ET AL 2,025,257

ROAD DISK

Filed March 6, 1933 2 Sheets-Sheet 1

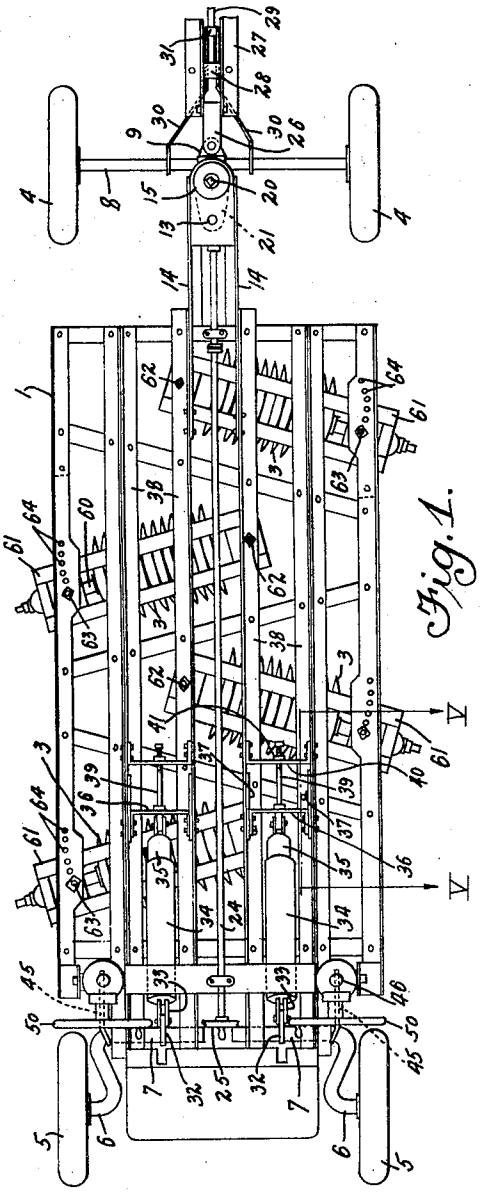


Fig. 1.

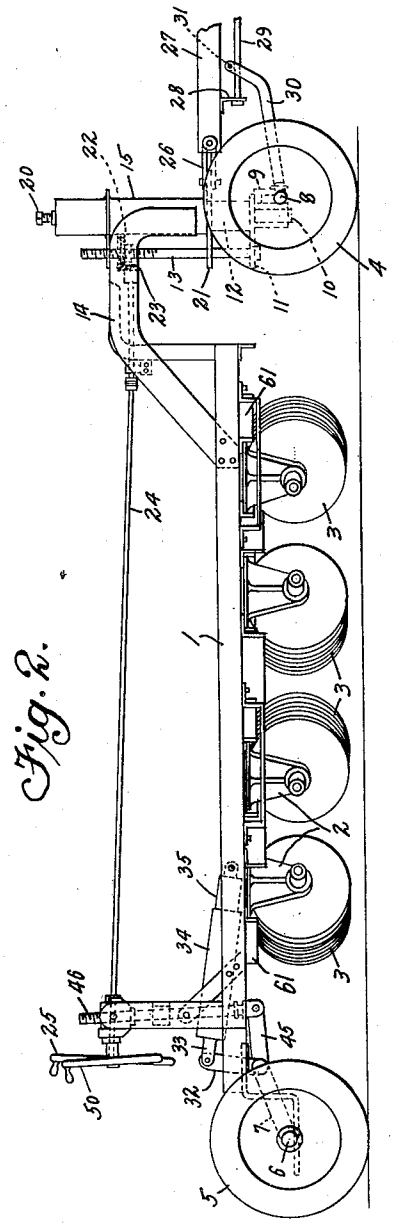


Fig. 2.

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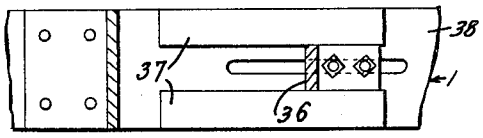


Fig. 5.

Fig. 3.

Fig. 4.

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ROAD DISK

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Application March 6, 1933, Serial No. 659,608

8 Claims. (Cl. 280—6)

This invention relates to road disks, and more particularly to an apparatus for disking the surface of a roadway.

An object of this invention is to produce a road disk in which means are provided for enabling the easy handling and manipulation of road disks vertically with reference to the road surface.

Another object of this invention is to provide a road disk in which means are provided for adjusting the disks and frame of the apparatus relative to the road surface, and which adjustment means includes a spring balanced means for relieving the weight from the adjustment means so that the adjustment may be more accurately and easily accomplished by the operator of the apparatus.

Other objects and advantages of this invention it is believed will be apparent from the following detailed description of a preferred embodiment thereof as illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a top plan view of a road disk embodying our invention.

Figure 2 is a side elevation thereof.

Figure 3 is an enlarged section of the front end adjusting means.

Figure 4 is a sectional view of one of the means provided for adjusting one side of the frame relative to the road surface at the rear.

Figure 5 is a sectional view taken substantially on the line 5—5 of Figure 1.

In the preferred embodiment of our invention illustrated in the accompanying drawings, 1 illustrates a frame to which there are secured by bearing brackets 2 a plurality of gangs of road disks 3. The road disks 3 are mounted in alternate staggered relation in a manner well understood in the art. The frame 1 is supported at its forward end by means of a caster wheel 4 and at its rear end by means of a pair of wheels 5 which are journaled on the spindles 6 of crank axles 7.

Means are provided for adjusting the frame with reference to the road surface either so that the road disks 3 may follow the crown of the road or may be adjusted to a horizontal position or may be moved above the road surface to permit the free transportation of the implement without the disks 3 engaging the road surface, which means are herein illustrated as including means which permit the free adjustment without imposing upon the adjustment means the weight of the frame and disk assembly. The forward ground wheels 4 are mounted upon axle 8 which is at its central portion rectangular in effect and is secured to a bracket 9. Mounted on the ends of the axle 8 and the spindle thereof are the road wheels 4.

The bracket 9 is journaled on a spindle 10, which spindle is welded to a plate 11. Welded to the upper surface of the plate 11 is a cylinder 12. Secured to the rearward extension of the plate 11 is an adjustment screw 13. Secured to the frame bridge 14 is a second cylinder 15 which is concentric to the cylinder 12. The cylinder 15 is mounted over the cylinder 12. Interposed between the cylinders 12 and 15 are a plurality of springs 16, 17 and 18, forming a compound spring structure, the springs being such that they are self-sustaining within the cylinder 12. For example, the springs 16 may be right-hand coil, spring 17, left-hand coil, and spring 18, right-hand coil. The springs are supported on the plate 11 at their lower end and extend upwardly through the cylinder 12 and into the cylinder 15 at their upper end where they engage an adjustment plate 19 which is adjustably mounted within the upper portion of the cylinder 15 and held in adjusted position by means of an adjustment screw 20 which adjusts the initial pressure to which the springs 16, 17 and 18 are adjusted. The screw 13 projects upwardly through a guide plate 21 which is secured to the lower end of the cylinder 15 and passes through and is threaded within a bevel gear 22, which meshes with a bevel gear 23 mounted on the end of the adjustment shaft 24.

The adjustment shaft 24 extends rearwardly to the rear end of the frame 1 and is there provided with a wheel 25 for rotation of the shaft 24 to rotate the gear 23 and hence by the direction of rotation to raise or lower the frame 1 with reference to the forward ground wheels 4. By this construction the weight of the frame 1 and attached parts are relieved from the adjustment means permitting easy rotation of the wheel 25 and an accurate and fine adjustment of the position of the disks 3 with reference to the road surface.

Any suitable or desirable means is provided at

the forward end of the implement for moving the implement forward such, for example, as a clevis 26 which is secured to the forward end of the guide plate 21 and which in turn may be secured to any suitable form of draft tongue 27. Secured to the draft tongue 27 by means of a bracket 28 is a rod 29 which extends forwardly to the tractor or other draft implement to cause the caster wheels 4 to turn with the direction of turn of the draft implement. In order to accomplish this result, a yoke 30 is mounted upon the bar 29 on a roller 31 and extends rearwardly and is clamped to the rectangular portion of the front axle 8.

The rear wheels 5 and the front wheels 4 are supported and balanced in a similar manner. In order to accomplish this result, each crank axle 7 is journaled upon the frame and carries a rear wheel 5 which is provided with balancing arms 32 which are pivotally secured to base arms 33 of an exterior cylinder 34. The interior cylinder 35 is secured to an adjustment slide 36, which adjustment slide 36 is mounted between guides 37 secured to the angles 38 of the frame 1. Secured to the slide 36 is an adjustment rod 39 which extends forwardly and is threaded to a bracket 40 which is securely riveted to the angle 38.

A lock nut 41 is provided for locking the adjusted position of the slide 36 and thus the initial compression provided in concentrically disposed springs 42, 43 and 44 mounted within and between the cylinders 34 and 35. Secured to crank axles 7 are adjusting arms 45, which arms 45 are pivotally secured to the lower ends of screws 46, which screws 46 are at their upper ends threaded through bevel gears 47. The bevel gears 47 mesh with bevel gears 48 which are secured to the adjustment shafts 49. The adjustment shafts 49 extend rearwardly and are provided with an adjustment handle 50. The construction of the balancing and supporting means for each of the wheels 5 is the same, so that it is not deemed necessary to describe more than one.

In order to provide for the adjustable mounting of the disk gangs 3 so that these gangs may be adjusted in their angular relation to the surface being worked, the gang rods 60 which carry the disks are journaled in bearings carried by sub-frames 61. The sub-frames 61 are pivotally secured at one end by pivot bolts 62 to the central members of the frame 1 and at their outer ends are secured by means of bolts 63 to the side members of the frame. The bolts 63 are adapted to be passed through any one of a plurality of adjustment holes 64 formed in the side frame members.

Having fully described our invention, it is to be understood that we do not wish to be limited to the details herein set forth, but our invention is of the full scope of the appended claims.

We claim:

1. In a road vehicle, the combination of a frame, wheels supporting one end of the frame, including means for connecting the wheels with the frame comprising concentric cylinders for each of said wheels, spring means interposed between said concentric cylinders, and means for adjusting the position of the wheels relative to the frame, and means operatively connecting said adjusting means and said concentricaly disposed cylinders so that the spring means balance the weight of the frame to enable easy operation of said adjusting means.

2. In a road vehicle, the combination of a frame, wheels supporting the respective ends of the frame, including a pair of rear wheels, crank axles journaled to the frame supporting the rear wheels, a pair of concentric cylinders for each crank axle, springs mounted between the concentric cylinders, means connecting one cylinder with the crank axle to yieldably resist rotation of the crank axle, means connecting the other of said concentric cylinders with the frame, and screw means connected with the crank axle for adjusting the position of the crank axle with relation to the frame.

3. In a road vehicle, the combination of a frame, wheels supporting the respective ends of the frame, including a pair of rear wheels, crank axles journaled to the frame supporting the rear wheels, a pair of concentric cylinders for each crank axle, springs mounted between the concentric cylinders, means connecting one cylinder with the crank axle to yieldably resist rotation of the crank axle, means connecting the other of said concentric cylinders with the frame, screw means connected with the crank axle for adjusting the position of the crank axle with relation to the frame, and means for connecting one of said concentric cylinders with the frame, including means for adjusting the position along said frame of the connection between said cylinder and the frame.

4. In a device of the class described, the combination of a frame, wheels supporting the frame, means interposed between the frame and the wheels for connecting the wheels to the frame, said means including for each of said wheels a pair of concentrically disposed cylinders, compound spring means mounted within the cylinders, means for adjusting the initial compression of said springs, and means for adjusting the position of said cylinders one within the other to adjust the height of the frame with reference to the supporting surface upon which the wheels are mounted.

5. In a road vehicle, the combination of a frame, wheels supporting one end of the frame, means connecting the wheels with the frame, including a pair of concentrically disposed cylinders, means connecting the cylinders with the axles supporting the wheels, a plurality of concentrically disposed springs mounted within the cylinders, means for relatively adjusting said cylinders to determine the initial compression of said springs, and means for relatively adjusting said cylinders to determine the force exerted by said springs tending to elevate the frame relative to the wheels, and means operatively connected between the wheels and the frame for adjusting the elevation of the frame relative to the surface upon which the wheels are mounted.

6. In a device of the class described, the combination of a frame, a ground wheel for supporting one portion of the frame, a crank axle journaled from the frame, the ground wheel being journaled on the crank axle extension of said crank axle, means for yieldably holding said crank axle from rotation relative to the frame, said means including a plurality of concentrically mounted spring members, means for securing said spring members at one end to the frame, an arm secured to the crank axle, means for securing the other end of the spring means to said arm, and means mounted on said frame and secured to said crank axle for adjusting the rotative position of the crank axle relative to the frame to determine the position of the frame relative to the surface on which the ground wheel is supported.

7. In a device of the class described, the combination of a frame, ground wheels supporting one end of said frame, an axle member on which said ground wheels are journaled, a cylinder, means securing said cylinder to said axle member, a second cylinder secured to the frame, said cylinders being concentrically positioned, spring means mounted within said cylinders, and means secured to said axle and to said frame for adjusting the position of the ground wheels relative to the frame.

8. In a device of the class described, the combination of a frame, ground wheels supporting one end of said frame, an axle member on which said ground wheels are journaled, a cylinder, means securing said cylinder to said axle member, a second cylinder secured to the frame, said cylinders being concentrically positioned, spring means mounted within said cylinders, means secured to said axle and to said frame for adjusting the position of the ground wheels relative to the frame, and means for adjusting the spring means positioned within said concentrically disposed cylinders to determine the pressure exerted by said cylinders to balance the load imposed upon said adjusting means during the operation of said device.

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