J. J. KLEIN.

ROAD DRAG.

APPLICATION FILED APR. 12, 1916. RENEWED APR. 3, 1917.

1,230,723.

Patented June 19, 1917.

2 SHEETS—SHEET 1.

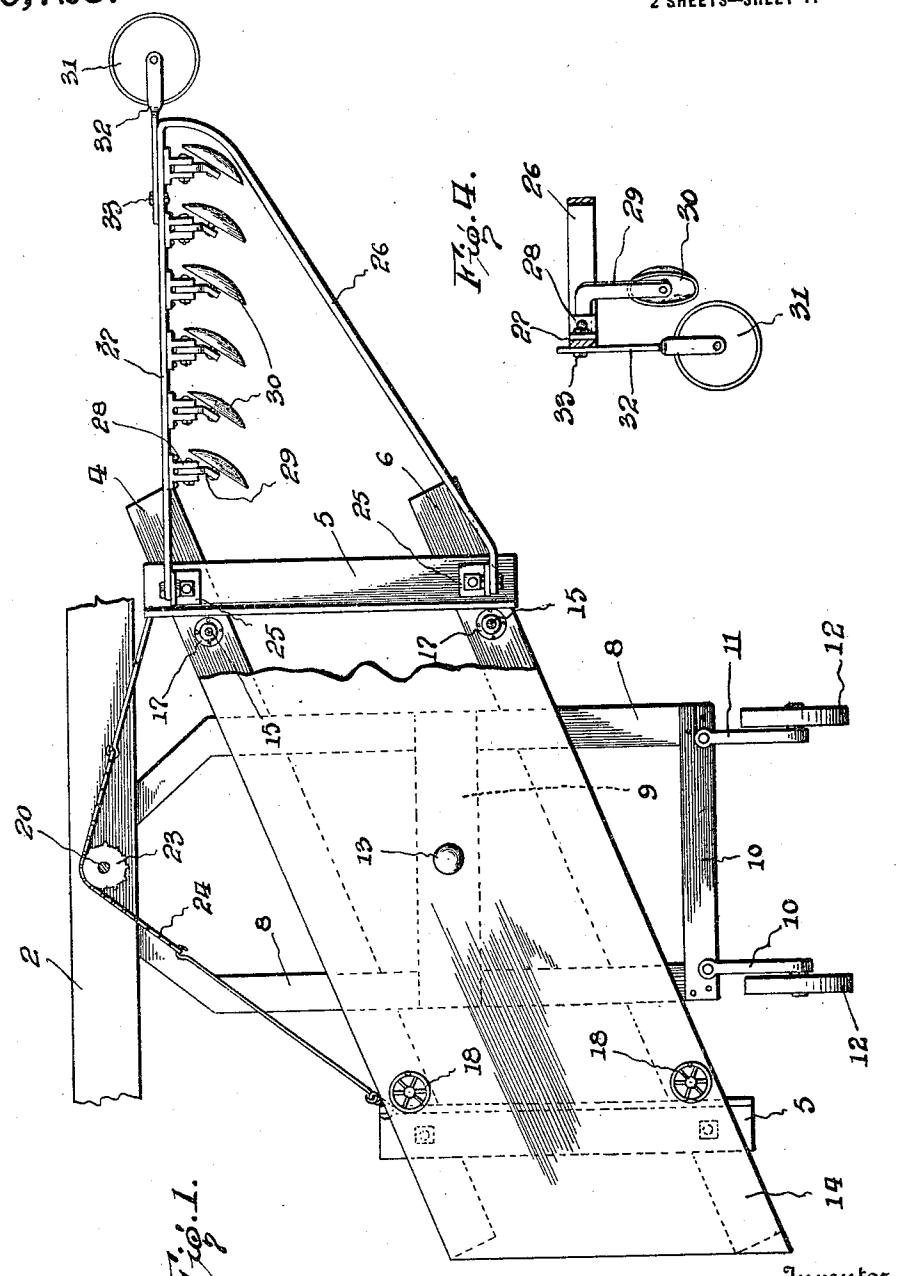


Fig. 1.

Fig. 4.

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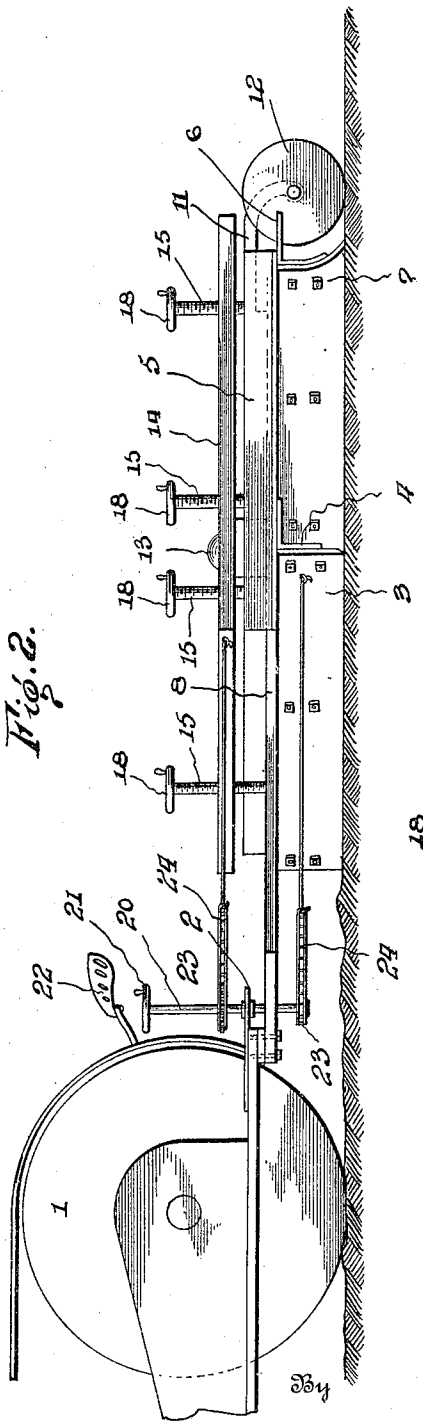


Fig. 2.

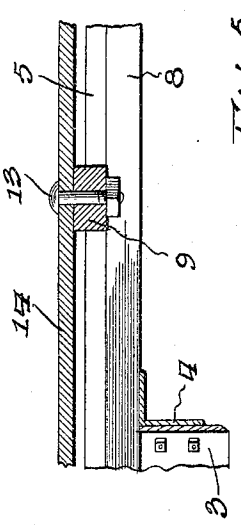


Fig. 5.

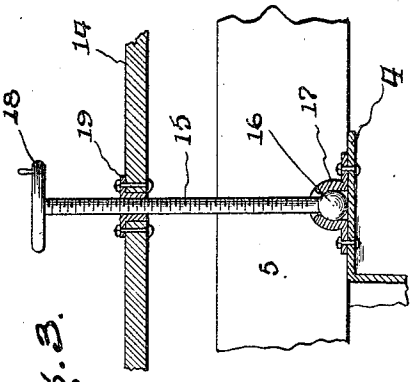


Fig. 3.

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UNITED STATES PATENT OFFICE.

JACOB J. KLEIN, OF KEARNEY, NEBRASKA.

ROAD-DRAG.

1,230,723. Specification of Letters Patent. Patented June 19, 1917.

Application filed April 12, 1916, Serial No. 90,697. Renewed April 3, 1917. Serial No. 159,562.

To all whom it may concern:

Be it known that I, JACOB J. KLEIN, a citizen of the United States, residing at Kearney, in the county of Buffalo and State of Nebraska, have invented certain new and useful Improvements in Road-Drags, of which the following is a specification.

This invention relates to that form of road graders which are commonly known as drags and one object of the invention is to provide a drag which may be connected with a tractor and thereby drawn over the road to be graded. Another object of the invention is to provide novel means for scarifying the surface of the road at the side of the same so as to destroy vegetable growth and also to roughen the surface and thereby cause the travel to seek the middle of the road. The invention also seeks to provide means whereby the inclination of the blade may be varied and the pressure exerted through the blade regulated. Other incidental objects of the invention will appear as the description of the same proceeds.

The invention is illustrated in the accompanying drawings and consists in certain novel features which will be particularly pointed out in the claims following the description.

In the said drawings—

Figure 1 is a plan view, partly broken away, of a drag embodying my improvements;

Fig. 2 is a side elevation of the same;

Fig. 3 is a detail section illustrating the means for adjusting the drag to the inclination of the road;

Fig. 4 is a detail view of the caster or guard wheel;

Fig. 5 is a detail showing the connection between the platform and the truck.

In the accompanying drawings, I have indicated a portion of a tractor at 1 which may be of any desired construction, a draw bar 2 being arranged at the rear end of the tractor to provide means for attaching the drag thereto.

The drag comprises a blade 3 which will be constructed of stout steel as is the usual method and which will be preferably secured to a beam 4 of angle iron, this beam when in use being disposed at an inclination or angle to the line of travel so that the dirt cut off the surface of the road by the blade will be directed toward the center of the same. The beam 4 is connected by longitudinal beams or bars 5 of angle iron to a rear beam 6 similar to the beam 4 and this rear beam 6 has secured to the front side of its depending flange a resilient steel plate or leveler 7, this leveler being convex on its front face, as shown clearly in Fig. 2, so that it will not dig into the surface of the ground but will act as a trowel or leveling and packing member in order to smooth the surface and cause the loose dirt to fill the hollows. Should the road be in a muddy or soft condition the device may be adjusted so that the blade 3 will take lightly into the surface while the principal weight of the machine will be sustained by the leveler or packer 7 and the surface thereby made smooth as will be readily understood. The beams 4 and 6 are disposed below longitudinal beams 8 which constitute the main members of a truck, the said beams being connected centrally by a cross bar 9 and at their rear ends by a cross bar 10 while their front ends are connected to the draw bar or tractor. Brackets 11 are secured to the said cross bar 10 and rollers 12 are mounted upon the rear ends of said brackets to ride upon the road in rear of the leveler 7, and thereby support the machine so that the rear end of the same will not dig into the smooth surface of the road under the back pressure upon the machine due to the resistance offered by the rough hard dirt. A king bolt or pivot 13 is mounted in the central cross bar 9 and serves to connect to the truck a platform 14 upon which an operator may stand to adjust the drag as may be required. Mounted in the said platform near the front and rear edges thereof are vertically disposed screws or threaded shafts 15 which are equipped with balls 16 at their lower ends fitted in sockets 17 provided upon the beams 4 and 6. The several screws or threaded shafts are equipped with hand wheels 18 at their upper ends and their intermediate portions are engaged in threaded sleeves 19 secured in the platform. It will be readily understood that rotation of the screws 15 by means of the hand wheels will cause them to move vertically through the bearings or sleeves 19 and consequently the inclination of the blades may be varied as required. I am thus enabled to accurately set the blades to any desired dip and also vary the inclination of the same during the travel of the machine if conditions demand such adjustment.

In the draw bar 2 upon the tractor is

mounted a vertical spindle or shaft 20 having a hand wheel 21 at its upper end disposed in proximity to the seat 22 upon the tractor so that it may be conveniently manipulated. Upon the said spindle or vertical shaft are sprocket wheels 23 around which are trained sprocket chains 24, the lower chain being connected with the front ends of the longitudinal beams 5 and the upper chain being connected with the platform as shown clearly in Figs. 1 and 2. It will be readily understood that by partly rotating the spindle or shaft 20 the sprocket wheels will be rotated and act through the chains 24 to vary the angle of the blades to the line of draft. By the described arrangement the platform and the blade will be adjusted simultaneously so that they will not vary their relative positions, it being noted that the point of attachment of a chain with the platform is vertically over the point of attachment of a chain with the drag.

Upon the beam 5 at the right hand side of the machine I secure the brackets 25 to which are pivoted the inner ends of a laterally extending frame 26 consisting of a bar having its front and rear members converging away from the ends of the beams 4 and 6 as clearly shown in Fig. 1. To the front member 27 of this frame, I secure a plurality of forks or brackets 28 and in the said forks or brackets, I pivot standards or arms 29 which extend downwardly from the brackets and are equipped with roller disks 30 at their lower ends. These disks 30 will preferably be disposed at an angle to the line of draft, as shown in Figure 1, and they may be all of the same diameter or may be of different diameters as may be desired. It will be readily understood that as the machine is drawn forward, these disks will take into the surface of the road at the side of the same adjoining the ditch and will cut into and turn over the soil so that a supply of loose dirt will be fed toward the central portion of the road to be reduced to a level by the trowel or leveler 7. The front member 27 may be disposed at a right angle to the line of draft, as shown, or at some other angle as may be preferred and the disks may be turned up or down independently so that any desired number of them may be used as desired. In order to prevent the drag skidding or swinging around to the bank at the side of the road and destroying the same, I provide a guard wheel or roller 31 which is carried by a standard or supporting arm 32 pivotally attached, as at 33, to the front supporting bar 27 of the frame 26. When the machine is at work this arm 32 will be disposed in a horizontal position, as shown in Fig. 1, and the roller 31 will then ride along the side of the bank and consequently prevent the machine digging into the same. When the machine is to be drawn over the road without cutting into the surface thereof along the side of the ditch the arm or standard 32 is turned to a vertical position, as shown in Fig. 4, whereupon the roller 31 will ride along the surface of the ground and support the disks 30 out of contact therewith.

It is thought the advantages of my improved device will be readily understood from the foregoing description, taken in connection with the accompanying drawings. The machine will be drawn over the road by the tractor in the same manner that drags are now ordinarily drawn by draft animals. If the surface at the side of the road along the ditch is in the proper condition the roller 31 may be lowered so that the disks 30 will be supported in an inoperative position, but if the disks are to be used the roller will be turned to run on the side of the bank, as before stated. The forward travel of the machine will cause the disks 30 to cut into and turn over the soil at the side of the road, while the blade 3 will cut off the hummocks or small hills of dirt in the traveled portion of the road and will deflect the earth thus loosened toward the central part or crown of the road. The edge of the blade 3 will, of course, be straight and it will, therefore, serve to reduce the surface of the road to a level condition and any clods which may escape the blade will be acted upon by the coverer so that after the machine has passed, the road will be smooth and free of ruts or ridges. The disks 30 by taking into the ground at the sides of the road will cut up and destroy all weeds and vegetable growth and will pulverize the soil so that it may be easily moved by the drag onto the grade to be packed by travel. All ruts will be eliminated in the space between the traveled portion of the road and the ditch and the grade will be uniform from the ditch to the crown of the road. By the use of the disks, the surface at the side of the road will be made rough and loose and travel will, consequently, avoid the side and seek the middle of the road. If some of the disks be swung upwardly and forwardly they may be supported by the bar 27 and they may be secured in this position before the drag is hauled over the road. If the frame 26 be swung upwardly upon its pivots, the disks will all be raised clear of the ground and the drag may be operated close to the bank. It will be noted on reference to Fig. 1 that the pivots for the disks consist of bolts inserted through brackets 28 and standards 29 and equipped with retaining nuts. By turning the nuts home, the standards and disks may be secured in any position to which they may be adjusted. If the machine is to be drawn over a narrow road or through a narrow gate-way, the frame 26

may be raised and held raised in any convenient manner so that none of the members mounted on the said frame will be on the ground.

The device is simple in the construction and arrangement of its parts and may be produced at a low cost, while it will be found highly efficient in use.

Having thus described the invention, what is claimed as new is:

1. In an apparatus for the purpose set forth, the combination of a truck, a frame mounted below the truck, a blade carried by the said frame, a draw bar connected to the truck, a platform supported over the truck, connections between the platform and the frame, and movable connections between the draw bar and the platform and between the draw bar and the frame whereby to vary the horizontal inclination of the blade while maintaining the platform and the frame in a fixed relation.

2. In an apparatus for the purpose set forth, the combination of a truck, a transverse scraper blade disposed below and at the front side of said truck, and a leveler carried by the truck in rear of said blade and consisting of a transversely disposed resilient plate.

3. In an apparatus for the purpose set forth, the combination of a blade carrying frame, a laterally extending support attached to one end of said frame, ground treating members carried by said support, and a roller attached to the outer portion of said support and arranged to run in a vertical or a horizontal plane.

4. In an apparatus for the purpose set forth, the combination of parallel beams, longitudinal bars connecting said beams, a platform disposed above and in spaced relation to the said bars and beams, a truck interposed between the platform and said beams and having a pivotal connection with the platform, a scraper blade carried by the forward parallel bar, a leveler carried by the rear parallel bar, a draw bar connected to the front end of the truck, and connections between the draw bar and the forward parallel bar and between the draw bar and the platform.

In testimony whereof I affix my signature.

JACOB J. KLEIN. [L. S.]

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."