Nov. 19, 1929. O. P. MAHONEY ET AL 1,736,352

MOLDBOARD FOR ROAD GRADING MACHINES

Filed Nov. 16, 1928

Fig. 1.

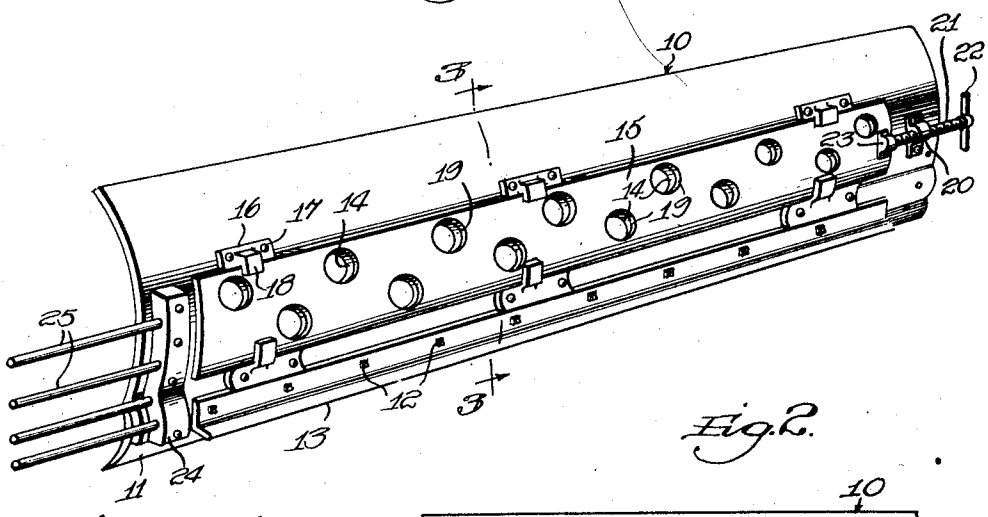


Fig. 2.

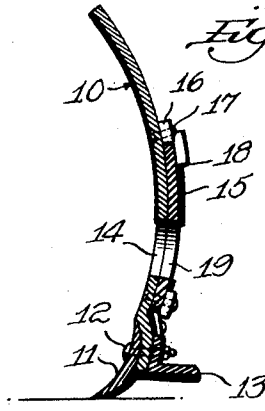


Fig. 3.

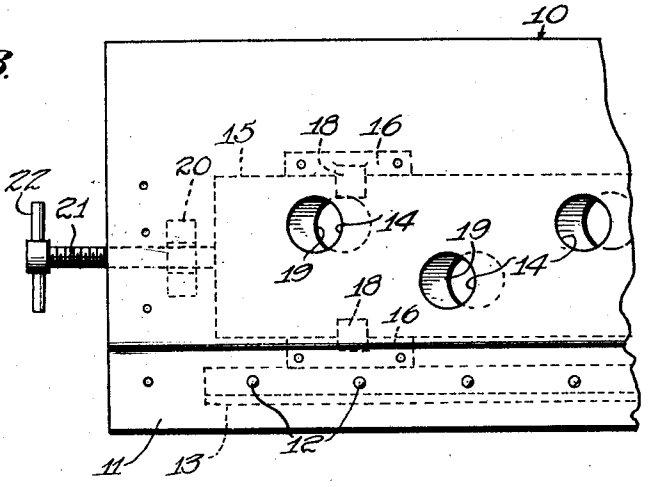
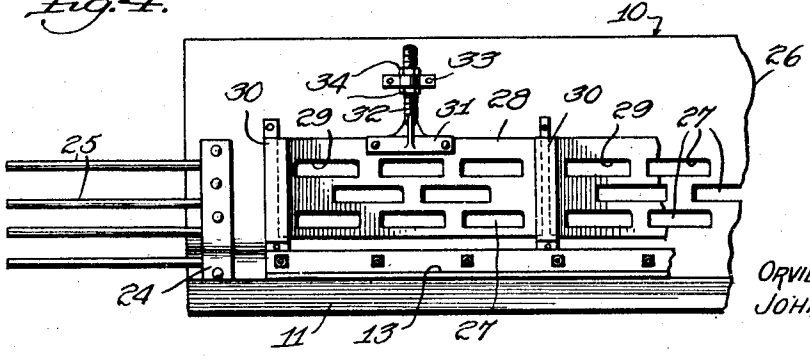


Fig. 4.



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Patented Nov. 19, 1929 1,736,352

UNITED STATES PATENT OFFICE

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MOLDBOARD FOR ROAD-GRADING MACHINES

Application filed November 16, 1928. Serial No. 319,944.

This invention relates to moldboards for road grading machines.

It is the common practice to drag a solid moldboard over dirt and similar roads for the purpose of filling in holes in the road surface and for cutting off the higher points of the road surface. In the moldboards commonly employed, the high points of the road are cut down, as desired, but usually little of the dirt or similar material passes beneath the moldboard to fill in the hollows in the road. On the contrary the angular position of the moldboard causes the material cut from the road to move outwardly transversely of the road to be deposited in a row along the end of the moldboard. The material thus deposited must be manually replaced upon the road to fill in the hollows therein.

An important object of the present invention is to provide a novel moldboard provided with means for depositing in the hollow portions of the road the material cut from the higher portions thereof.

A further object is to provide a moldboard of the character referred to having means for adjusting the amount of the dirt deposited upon the road.

A further object is to provide adjusting means of the character referred to which is adapted to permit the redepositing upon the road surface of substantially fine material and to prevent such redepositing, if desired, of coarser material such as large stones and the like.

A further object is to provide novel means for separating the larger stones from the finer material deposited in a row at the end of the moldboard.

A further object is to provide a moldboard having openings therethrough for the purpose of permitting the road material collected in front of the moldboard to pass therethrough to be redeposited upon the road and to provide means for effectually distributing the redeposited material on the surface of the road.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings we have shown several embodiments of the invention. In this showing,

Figure 1 is a perspective view of a moldboard showing the invention applied,

Figure 2 is a fragmentary front elevation of the same,

Figure 3 is a section taken substantially on line 3—3 of Figure 1, and,

Figure 4 is a fragmentary rear elevation of a modified form of the device.

Referring to Figures 1 to 3 inclusive, the numeral 10 designates a moldboard which may be of conventional construction, provided with a cutter 11 bolted to its lower portion as at 12. The bolts 12 also serve to secure to the moldboard an angle iron 13, which is adapted to brace the moldboard and to perform an additional function to be referred to later. The moldboard is provided with a plurality of openings 14, which may be circular, and which are preferably arranged in rows as shown in Figure 1.

A plate 15 extends longitudinally of the moldboard against the rear face thereof and corresponds in curvature with the curvature of the portion of the moldboard against which it fits, as clearly shown in Figure 3. A plurality of guides 16 are secured to the moldboard by rivets or the like 17, and are provided with lips 18 overhanging the edge portions of the plate 15 to guide the latter for adjustment longitudinally with respect to the moldboard.

The plate 15 is provided with a plurality of openings 19 which are adapted to be brought into registration with the respective openings 14, when desired. A screw bearing 20 is secured to the moldboard adjacent one end thereof and an adjusting screw 21 is mounted therein and provided with a suitable operating handle 22. The inner end of the screw 21 is connected to a swivel or similar element 23, which in turn, is secured to the plate 15.

The moldboard, in operation, preferably travels in an angular position with the end thereof adjacent the screw 21 arranged further forwardly than the opposite end of the moldboard. The latter end of the moldboard is provided with a support 24 to which

is connected a plurality of preferably parallel bars 25 which extend beyond the moldboard longitudinally with respect thereto. The opposite end of the moldboard is also provided with openings to receive the fastening elements of the support 24 whereby the parallel bars 25 may be mounted at either end of the moldboard.

A modified form of the device is illustrated in Figure 4 of the drawing. As shown, the moldboard 26 is provided with a plurality of elongated openings 27 which are preferably arranged in rows longitudinally with respect to the moldboard, and staggered vertically. Aside from the openings 27, the moldboard 26 may be identical with that previously described and need not be referred to in detail.

A plurality of vertically movable plates 28 is arranged against the rear face of the moldboard 26, and these plates are provided with openings 29 which are adapted to be brought partially or wholly into registration with the openings 27. The plates 28 are mounted to slide in guides 30 secured against the rear face of the moldboard.

A plate 31 is secured to the upper edge of each plate 28 and is connected to an upstanding screw 32 which extends through a bracket 33. A nut 34 is threaded on the screw 32 on each side of the bracket 33.

The operation of the form of the device shown in Figures 1 to 3 is as follows:

The moldboard is connected to a tractor or other suitable traction means in any desired manner. When the device is operated on fairly rough roads upon the surface of which there is little coarse stone, the screw 21 may be turned to bring the openings 19 into full registration with the openings 14. Thus practically all of the dirt or other material cut from the high points in the road will sift through the openings 14 and 19 to be deposited on the road to fill in the low places therein. The dirt falling from these openings strikes upon the horizontal portion of the angle iron 13, and the jarring of the moldboard causes the dirt thus falling to be evenly deposited upon the road.

When coarse stone is present upon the road surface, which it is desired to remove therefrom, the screw 21 is adjusted to move the openings 19 with respect to the openings 14 whereby the larger stones will be prevented from passing through these openings. Under such conditions, the coarse stone will travel toward the rearmost end of the moldboard to be intercepted by the bars 25, and to slide from the ends thereof. Thus the larger stones will be deposited in a row spaced from the adjacent end of the moldboard. At the same time, the material which does not flow beneath the cutter 13 when passing over low points in the road, or through the openings 14 and 19, will move toward the rearmost end of the moldboard to be discharged in a row on the road, inwardly of the deposited row of stones. The amount of dirt thus deposited will be relatively small and readily may be manually scattered wherever desired on the road. This dirt will be separated from the stones which may be readily removed from the road.

The operation of the form of the device illustrated in Figure 4 is substantially the same as that previously described except that a plurality of vertically movable plates is provided instead of the single longitudinally movable plate 15. The plates 28 may be adjusted vertically by proper operation of the nuts 34, whereby the openings 29 may be brought partially or wholly into registration with the openings 27, for the purpose previously stated.

From the foregoing it will be apparent that the amount of material passing through the openings in the moldboard may be varied as desired, and the size of these openings may be adjusted to prevent the passage of large stones therethrough. The device greatly facilitates the operation of grading the road by largely eliminating the necessity for moving back upon the road the material scraped therefrom.

It is to be understood that the forms of the invention herewith shown and described are to be taken as preferred examples of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

We claim:

1. A device of the character described comprising a scraper body provided with an aperture, and means for varying the effective area of said aperture.

2. A device of the character described comprising a scraper body provided with a plurality of apertures extending longitudinally of said body, and means for varying the effective areas of said apertures.

3. A device of the character described comprising a scraper body provided with a longitudinal row of apertures, and adjustable plate means provided with corresponding apertures adapted to be brought wholly or partially into registration with said first named apertures.

4. A device of the character described comprising a scraper body provided with a longitudinal row of apertures, and adjustable plate means provided with corresponding apertures, and means for moving said last named means to bring the apertures thereof wholly or partially into registration with said first named apertures.

5. A device of the character described comprising a scraper body provided with a plurality of apertures, and a plate slidably connected to said body and movable

to vary the effective areas of said apertures.

6. A device of the character described comprising a scraper body provided with a longitudinal row of apertures, adjustable plate means provided with corresponding apertures, guides for supporting said plate means against said scraper body for sliding movement with respect thereto, and means for slidably moving said plate means to bring the apertures thereof wholly or partially into registration with said first named apertures.

7. A device of the character described comprising a scraper body provided with a longitudinal row of apertures, a plate arranged parallel to and in contact with said scraper body and provided with corresponding apertures, and screw means for effecting sliding movement of said plate longitudinally with respect to said scraper body for bringing the apertures of said plate wholly or partially into registration with the apertures of said scraper body.

8. A device of the character described comprising a scraper body provided with a longitudinal row of apertures, a plate arranged parallel to and in contact with said scraper body and provided with corresponding apertures, screw means for effecting sliding movement of said plate longitudinally with respect to said scraper body for bringing the apertures of said plate wholly or partially into registration with the apertures of said scraper body, and means carried by said scraper body for scattering the material passing through said apertures.

9. A device of the character described comprising a scraper body provided with a plurality of apertures, means for varying the effective areas of said apertures, and means carried by said scraper body for scattering the material passing through said apertures.

10. A device of the character described comprising a scraper body provided with a longitudinal row of apertures, adjustable plate means provided with corresponding apertures, means for moving said last named means to bring the apertures thereof wholly or partially into registration with said first named apertures, and means carried by said scraper body for scattering the material passing through said apertures.

11. A device of the character described comprising a scraper body adapted to be drawn over a surface to be scraped with one end of said body arranged rearwardly of the other end, said scraper body being provided with apertures, means for varying the effective areas of said apertures, and a plurality of rods carried by and extending longitudinally beyond the rearmost end of said body.

12. A device of the character described comprising a scraper body adapted to be angularly arranged with respect to its line of movement and provided with a row of apertures, a plate provided with corresponding apertures adapted to be brought wholly or partially into registration with said first named apertures, and a plurality of rods carried by and extending longitudinally beyond the rearmost end of said body.

In testimony whereof we affix our signatures.

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