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DITCHING ATTACHMENT FOR GRADER BLADES

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Fig. 1.

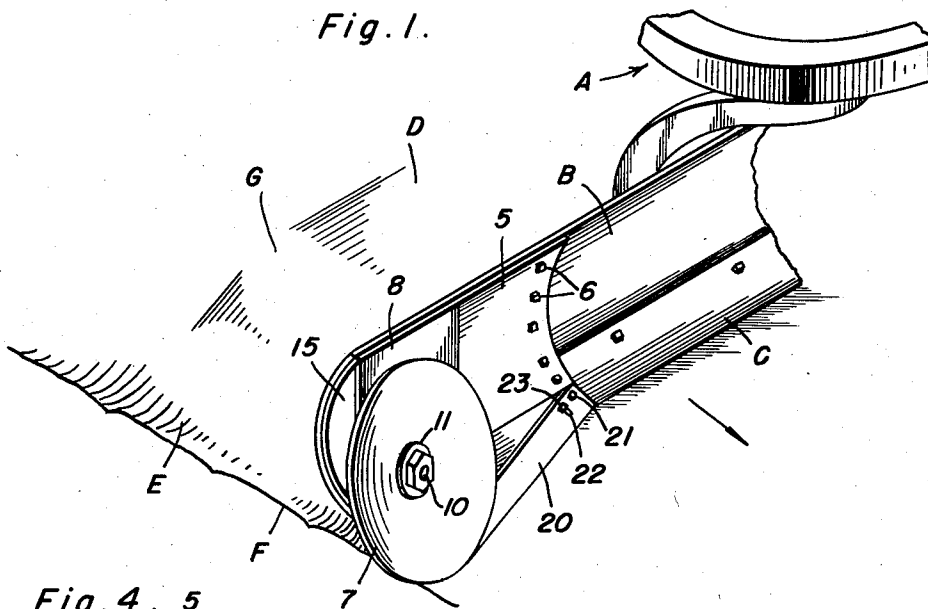


Fig. 4.

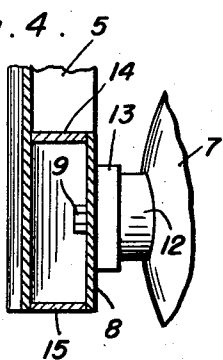
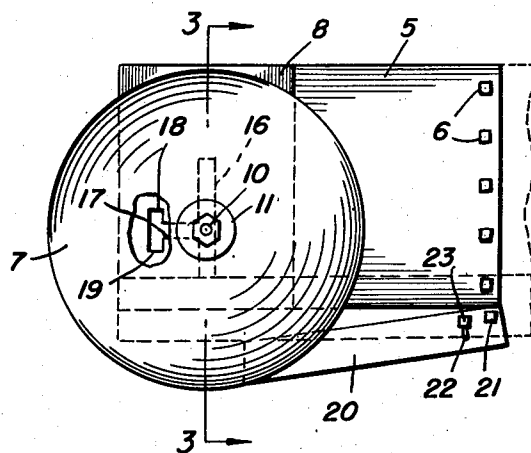
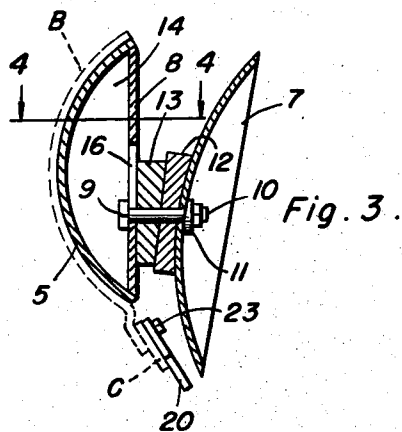


Fig. 2.



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DITCHING ATTACHMENT FOR GRADER
BLADES

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2 Claims. (Cl. 37-143)

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The present invention relates to a novel and improved attachment which is applicable to an end portion of a road grading machine grader blade, said attachment being expressly constructed and made so that, in use, it gouges and conditions the adjacent marginal edge of the road to effectively produce a properly shouldered drainage ditch or gutter.

More specifically related, I have evolved and produced a structurally distinct ditcher which takes the form of an attachment, the same being applicable to the right hand end of the stated grader blade so that it quickly and neatly grades a wanted shoulder of desired curvature resulting in a properly sloped and shaped drainage gutter or ditch.

It is a matter of common knowledge that the diagonally disposed grader blade now commonly in use is horizontally elongated and transversely cupped and is provided on the lower surface contacting edge with a renewable facing and grading strip. The opposite transverse ends of said blade are straight across and are not adaptable to performing the desired edging and curvate gouging results wanted. Such being the situation, I have discovered the need for practical and efficient gutter constructing means and I carry my ideas into effect through the instrumentality of the stated attachment.

In reducing to practice the preferred embodiment of the invention I provide an attachment which is characterized by a concavo-convex freely rotatable disk and adjustable adapter and mounting means whereby said disk may be properly and effectively attached to the aforementioned grader blade.

Other objects and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like numerals are employed to designate like structural elements and parts throughout the views:

Figure 1 is a fragmentary perspective view showing a portion of the grader machine, the grader blade and the improved ditch forming attachment on the blade and illustrating the manner in which said attachment functions.

Figure 2 is a front or face elevation of the attachment per se showing, in dotted lines, the old parts.

Figure 3 is a vertical section on the plane of the line 3-3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a fragmentary horizontal section on the plane of the line 4-4 of Figure 3, looking in the direction of the arrows.

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Referring now to the drawings by reference letters, the machine, a portion of the frame of which is illustrated, is denoted by the reference character A in Figure 1. The grader blade is denoted at B and the renewable facing and scraping shoe is denoted by the reference character C. The shoe C scrapes the customary traction surface D of the roadway and the attachment which I have devised and consider novel serves to gouge, shape and form the gutter or ditch E, marginal shoulder F and properly sloped and shaped junctural shoulder G between areas D and E.

All of the old parts, some of which are shown in phantom or dotted lines in Figures 2 and 3, are denoted by reference letters. The parts or elements which go to make up the stated attachment are denoted by reference numerals and attending lead lines.

With respect to the attachment the numeral 5 denotes a transversely curved adapter plate which conforms in shape to the grader blade B, said adapter plate being superimposed against the concave surface of the blade and bolted or otherwise secured removably thereto as at 6. I prefer that the adapter plate be readily attachable so that it may be optionally used where a drainage gutter is considered essential. An equally essential part of the attachment is the excavating, gouging and shaping disk 7. This is of appropriate diameter and stability and is concavo-convex to provide the desired cupping and scooping facilities. In order to properly and adjustably mount the disk in useful position in relation to the grader blade I provide a satisfactory mount. The latter comprises a flat plate 8 which as best shown in Figures 3 and 4 is centrally slotted to accommodate the headed end 9 of a supporting and adjusting bolt 10. The screw-threaded nut equipped end of the bolt is secured in the hub 11 of the disk. I provide spacing and angling washers and these are interposed between the convex side of the disk and flat surface of the plate. One washer, the washer 12, has the side facing the disk properly recessed to conform to the contour of the disk. The washer 13 has its left hand surface flat to provide the desired bearing against the correspondingly flat plate 8 as shown in Figure 3. The coacting surfaces of the respective washers are inclined for angular adjusting and regulating results. In practice, end or filler plates 14 and 15 (see Figure 4) are mounted in place to close in the space between the vertical edges of the plate 8 and the adapter plate 5. It follows that the mount is in the form of a hollow box. Referring to the slot means I

provide a vertical or main slot 16 as shown in full lines in Figure 3 and in dotted lines in Figure 2 and this communicates with a lateral or horizontal branch slot 17 (see Figure 2) which latter slot opens into a short vertical or auxiliary slot whose upper and lower ends form selectively usable keeper pockets 18 and 19 for the headed end of the bolt. It follows that the washer, bolt and disk assembly may be bodily adjusted vertically in the slot 16. Secondly, the bolt may be shifted laterally through the auxiliary branch slot 17 and the headed end fastened in either of the upper or lower pockets 18 and 19. This provides not only for sideways adjustment but also vertical adjustment. Or, to put it otherwise, we have main and auxiliary slot means 16, 18 and 19 and connecting branch slot 17 affording the facilities to accommodate the bolt and to allow for proper shifting and adjustment of same.

I also provide an auxiliary scraper shoe which is in the form of a rectangular cleat or strip 20 as shown in Figure 2. The inner end of the shoe is pivotally bolted in place as at 21 and said end portion has a slot 22 to accommodate a clamping bolt 23 whereby to permit said shoe to be properly angled. The purpose of the auxiliary shoe is to scrape the coating surface portion of the gutter and to give it the desired slope, that is to form the intervening shoulder or region G between the main road surface D and marginal gutter shoulder F.

The grader blade is set at an angle, when grading starts, and is used to grade the shoulder of the road while the cutting shoe grades the inside line of the drainage ditch and the cupped disk rounds out the ditch itself and defines a curved surfaced shoulder on the outer margin of the ditch. Thus, the combined action of the regular grader blade plus the ditching attachment defines the regular road traction surface D, the curvate gutter E, the curved surfaced gutter or drainage ditch shoulder F and the merging secondary shoulder G with proper inclination, between the gutter and surface D. The invention is in actual and practical use and is destined to prove out to be highly successful in the field of endeavor under advisement.

Changes in shape, size, materials and rearrangement of details and parts may be resorted to in actual practice, so long as they do not depart from the spirit of the invention or the scope of the appended claims, as is well understood.

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

1. An attachment for a conventional horizontally elongated grader blade comprising an adapter plate adapted to be superimposed against the leading surface of said grader blade, said adapter plate conforming in shape to the con-

caved shape of said blade, bolts carried by one end of said adapter plate and permitting same to be bolted to the blade with its outer end flush with the corresponding outer end of the blade, a flat companion plate vertically spanning the concave side of said adapter plate and secured at opposite ends to longitudinal edge portions of said adapter plate, said flat plate being provided with a pair of vertically disposed slots connected in communicative relationship by way of a horizontal slot, a bolt having a headed end portion selectively and detachably associable with said slot, a concavo-convex disc removably mounted on the shank of said bolt, and adjusting and assembling washers on the shank of the bolt and interposed between the convex side of the disc and said flat plate.

2. In a structural assemblage of the class shown and described, in combination, a grading machine embodying a conventional type grader blade, an adapter plate superimposed against and detachably bolted on the recessed side of said grader blade, said adapter plate having its outer end terminating flush with the corresponding outer end of said blade, a flat mounting plate, the latter being vertically disposed, spanning the recessed side of said adapter plate, being connected at opposite transverse ends to the longitudinal edge portions of the adapter plate and having its outward edge flush with the corresponding end of said adapter plate, said mounting plate having slot means, a bolt adjustably and detachably secured to said mounting plate by way of said slot means, a concavo-convex disc mounted on and carried by said bolt, adjustment and spacing washers surrounding the bolt and interposed between the convex side of the disc and said flat mounting plate, and a substantially rectangular relatively narrow ditch scraping and sloping shoe having one end hingedly and detachably connected to the lower edge portion of said grader blade and having its opposite end free and situated adjacent the lower edge portion of the disc between the disc and said mounting plate.

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