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SCARIFIER BRACKET FOR GRADER BLADE

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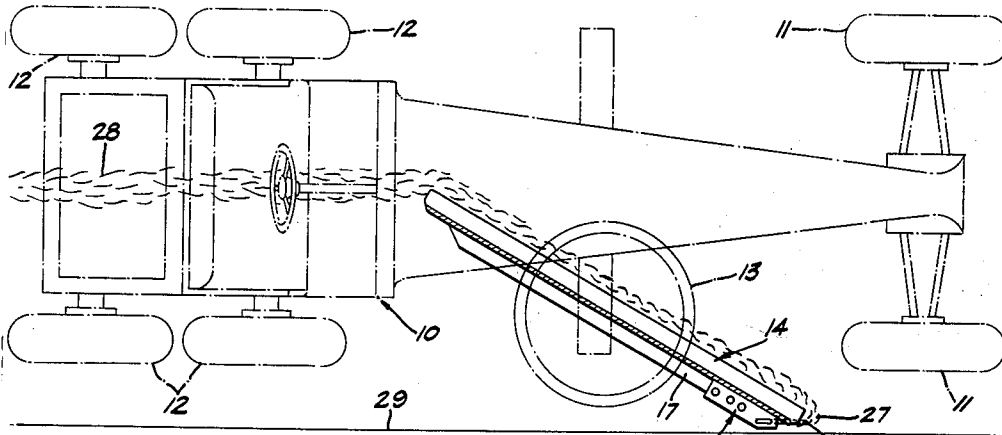


FIG. 1.

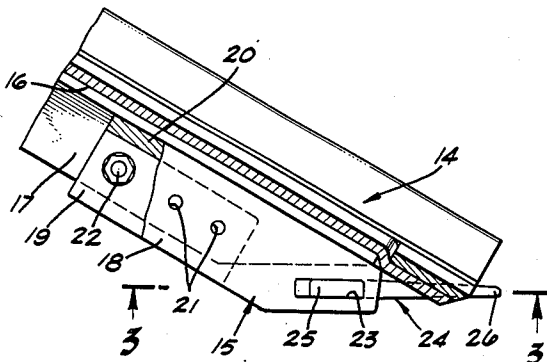


FIG. 2.

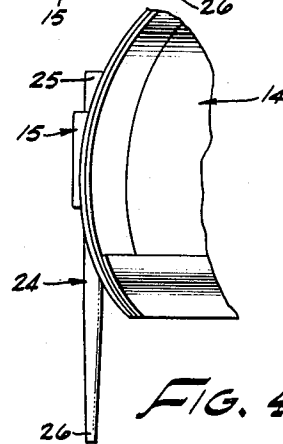


FIG. 4.

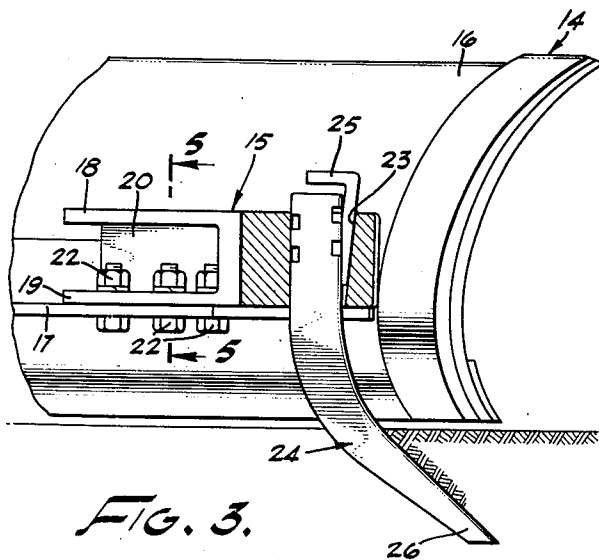


FIG. 3.

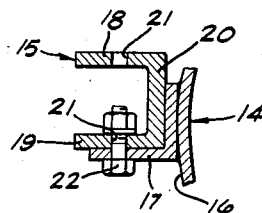


FIG. 5.

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SCARIFIER BRACKET FOR GRADER BLADE

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4 Claims. (Cl. 37-145)

This invention relates generally to earth moving apparatus and more particularly to power-driven road grader apparatus.

Road graders of conventional type commonly employ a scraper blade which is mounted on a mobile frame between front and rear wheels. In such devices power means are provided on the frame for swinging the scraper blade about an upright axis in order that it may extend at an angle to the direction of travel. Furthermore, road graders often provide means for laterally shifting the position of the swinging mount for the blade so that the blade may extend for a maximum distance to either side of the grader, as desired.

It is common practice in the maintenance of black-top roads and streets to resurface them from time to time. At such times scarifier teeth are employed to dig up and remove part or all of the old road surface. Difficulty is encountered in many cases because the scarifier teeth cannot be operated close enough to curbs and other obstructions. The reason is that the scarifier teeth are subjected to extremely heavy loading and, therefore, are mounted directly on the frame. In such conventional devices, the scarifier teeth are positioned so that the material removed from the roadway passes between the rear wheels of the grader. In such devices the scarifier teeth cannot be shifted laterally to approach a curb.

It has been proposed to mount one or more scarifier teeth upon the grader blade. So far as I am aware the scarifier teeth in such proposed constructions are positioned in front of the blade so that chunks of earth or road material which are dug up by the scarifier teeth may be bladed to a position away from the curb. However, in such proposed constructions the presence of the scarifier teeth and mounting brackets on the front side of the blade renders the apparatus unsuitable for any purpose except that of digging. With the scarifier teeth considerable time and effort are required so that the grader blade may be used in the conventional manner. This is a definite disadvantage because it is often desirable to use the grader blade alternately with a scarifying operation.

In accordance with my invention I mount a bracket on the rear side of the grader blade near one or both ends thereof. The bracket has an angularly shaped socket or receptacle shaped to receive a scarifier tooth. The bracket may remain on the blade without interfering in any way with the normal action of the grader blade. When it is desired to use a scarifier device next to a curb or other obstruction, a scarifier tooth is inserted into the bracket and the grader blade is swung to an angle so that the scarifier tooth is at the leading edge of the grader blade. I have found that although the tooth is positioned on the rear side of the grader blade that the chunks of earth or road material which it digs up are raised in front of the grader blade so that they may be graded laterally and discharged at a position to form a windrow between the two rear wheels. In this way the wheels do not roll

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over the material removed from the roadway. The single scarifier tooth may be readily removed whenever desired and the time required for the changeover is almost negligible, since the bracket remains in place. Consequently my invention makes it feasible to use the grader alternately for blading and scarifying.

Accordingly it is the principal object of my invention to provide a novel form of mounting for a scarifier tooth on a grader blade which produces the advantages described above.

Other and more detailed objects and advantages will appear hereinafter.

In the drawings:

Figure 1 is a plan view in diagrammatic form showing a preferred embodiment of my invention.

Figure 2 is a sectional plan view partly broken away showing the position of the scarifier tooth with respect to the grader blade.

Figure 3 is a side elevation partly broken away taken substantially on the lines 3-3 as shown in Figure 2 showing the scarifier tooth received within its mounting bracket.

Figure 4 is a front elevation partly broken away.

Figure 5 is a transverse sectional view taken substantially on the lines 5-5 as shown in Figure 3.

Referring to the drawings:

The frame generally designated 10 is mounted on laterally spaced front wheels 11 and laterally spaced rear wheels 12. Mechanism, not shown, supports and provides lateral shifting movement for the ring 13. The grader blade 14 is mounted on the ring 13 and is adapted to be swung about a general vertical axis passing through the center of the ring 13. This much is conventional.

In accordance with my invention, I mount a bracket 15 on the rear face 16 of the grader blade 14. The bracket 15 may be supported on the ledge 17 or secured in any other suitable or desirable fashion. As shown in the drawings, the bracket 15 includes an upper flange 18, a lower flange 19 and a web 20 connecting the flanges. A series of apertures 21 is provided in each of the flanges 18 and 19. Threaded fastening elements 22 extend through the apertures 21 and serve to secure the bracket 15 in position on the ledge 17.

A slot 23 is provided on the extreme end of the bracket 15 and this slot extends at an angle. A scarifier tooth 24 of conventional type may be inserted downward through the slot 23 and then fixed in position by means of the wedge key 25. The lower end 26 of the scarifier tooth 24 extends in a forward direction and extends under at least a portion of the grader blade 14.

In operation, the scarifier tooth 24 is inserted into the slot 23 and the blade 14 is swung to the angle shown in Figure 1. In this position, the scarifier tooth 24 extends in the direction of motion of the frame 10. Chunks of earth or road material 27 removed by the scarifier tooth build up in front of the grader blade 14 and are bladed to form a windrow 28 passing between the rear wheels 12. The rear wheels therefore are not required to roll over the material raised by the scarifier tooth 24. The device is particularly adapted for operation adjacent a curb or other obstruction 29.

An advantageous feature of my invention is that the stresses imposed on the frame 10 are not excessive because the blade 14 operates at an acute angle rather than at a right angle with respect to the curb 29.

The bracket 15 may be removed from the right end of the grader blade 14 and placed on the left end thereof, if desired. This is readily accomplished by simply inverting the bracket 15 and bolting it in its new position. The scarifier tooth 24 may then be used on the other end of the grader blade 14.

It is to be understood that the term "earth" when used in this specification and claims shall include road material or any other material which the blade or scarifier tooth engage in contact.

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

I claim:

1. A device of the class described, comprising in combination: a mobile frame having front and rear laterally spaced wheels, a ground-engaging scraper blade, means on the frame positioned between the front and rear wheels and adapted for supporting the scraper blade for turning movement, the scraper blade having front and rear surfaces, a bracket fixed to the scraper blade adjacent one end thereof and adjacent the rear surface, the bracket having an angularly positioned socket adjacent said rear surface, a scarifier tooth behind the blade and removably received in said socket and extending in the direction of travel when the scraper blade is placed at an angle, whereby broken earth pieces raised by the scarifier tooth during the forward movement of the device pile up in front of the scraper blade and are carried inward along the blade to form a windrow between the rear wheels.

2. In a road grader device of the class described, the combination of: a mobile frame having front and rear laterally spaced wheels, a ground-engaging scraper blade, means on the frame positioned between the front and rear wheels and adapted for supporting the scraper blade for turning movement, the scraper blade being curved in cross-section and having a front and rear surface, a bracket fixed to the scraper blade adjacent one end thereof, and adjacent said rear surface, the bracket having an angularly positioned socket opening, a scarifier tooth removably mounted in said opening and positioned rearward of the scraper blade, the tooth extending in the direction of travel when the scraper blade is placed on an angle, whereby material dug up by the scarifier tooth during the forward movement of the device piles up in front of the scraper blade and is carried

inward along the blade to form a windrow between the rear wheels.

3. A device of the class described, comprising in combination: a mobile frame having front and rear laterally spaced wheels, a ground-engaging scraper blade, means on the frame positioned between the front and rear wheels and adapted for supporting the scraper blade for turning movement, the scraper blade being curved in cross-section and having a front and rear surface, a horizontal ledge extending along the rear surface of the blade, a bracket fixed to the said ledge adjacent one end of the blade, the bracket having an angularly positioned opening, a scarifier tooth behind the blade removably mounted in said opening and extending in the direction of travel when the scraper blade is placed on an angle, whereby broken earth pieces raised by the scarifier tooth during the forward movement of the device pile up in front of the scraper blade and are carried inward along the blade to form a windrow between the rear wheels.

4. For use with a road grader having a mobile frame with front and rear laterally spaced wheels and having a ground-engaging scraper blade mounted to turn on the frame, the improvement comprising: a bracket adapted to be detachably secured to the scraper blade adjacent one end thereof and adjacent the rear surface thereof, the bracket having an angularly positioned opening, a scarifier tooth removably received in said opening and positioned rearward of the scraper blade, the tooth extending in the direction of travel when the scraper blade is placed on an angle, whereby material raised by the scarifier tooth during the forward movement of the road grader piles up in front of the scraper blade and is carried inward along the blade to form a windrow between the rear wheels.

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