Oct. 14, 1969 L. L. HOPKINS 3,472,554

ASPHALT CUTTER WHEEL ASSEMBLY

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FIG. 1

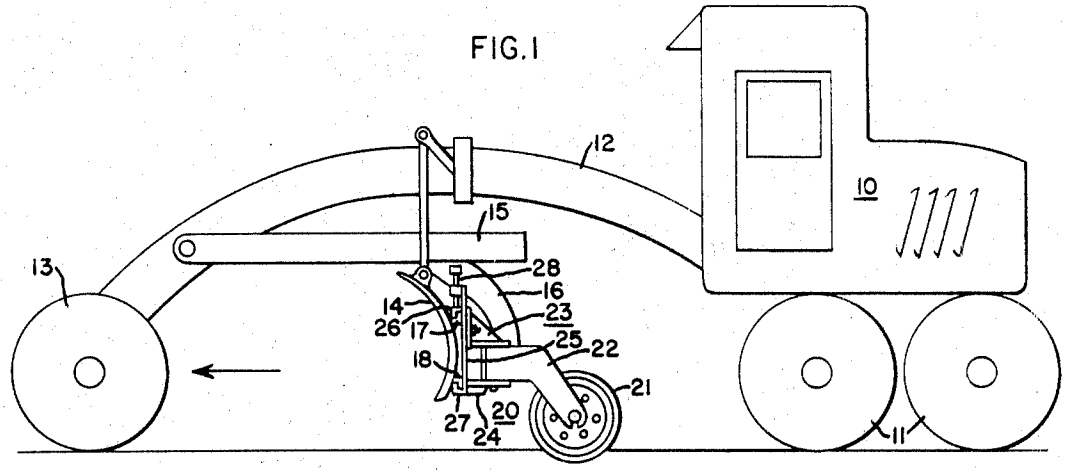
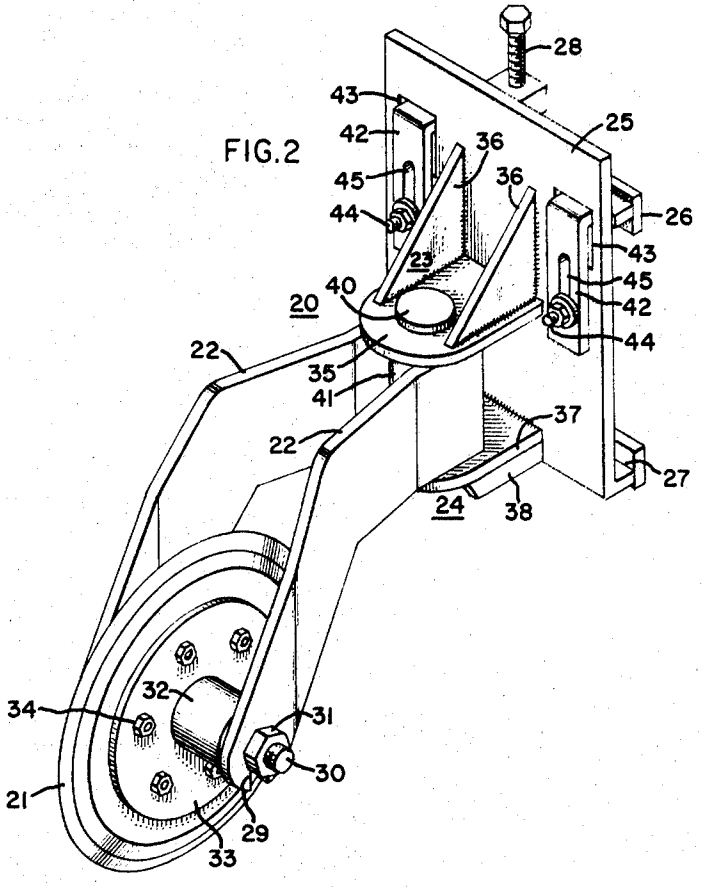


FIG. 2



INVENTOR:
LEONARD L. HOPKINS,
BY McGraw & Edwards
ATTORNEYS.

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FIG.3

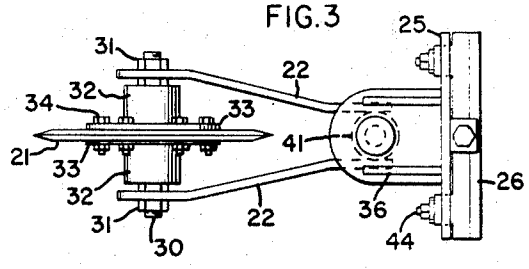


FIG.4

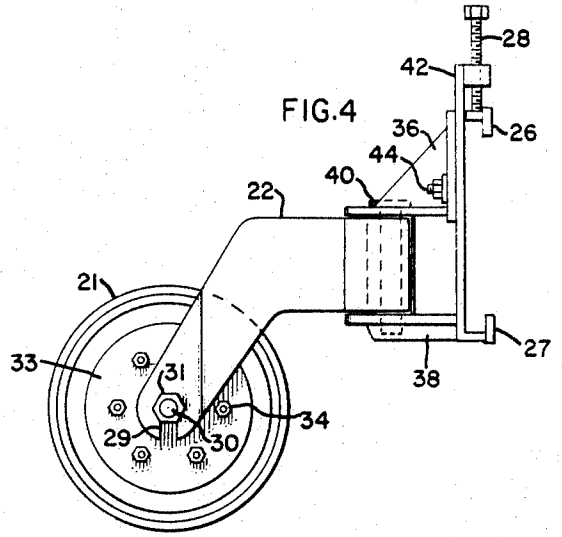


FIG.5

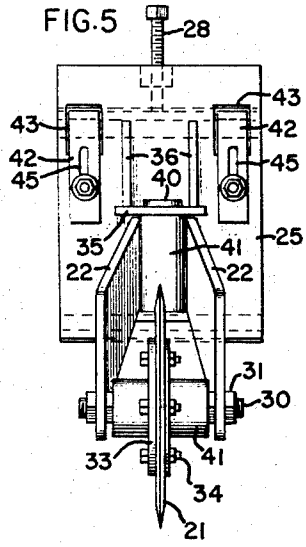
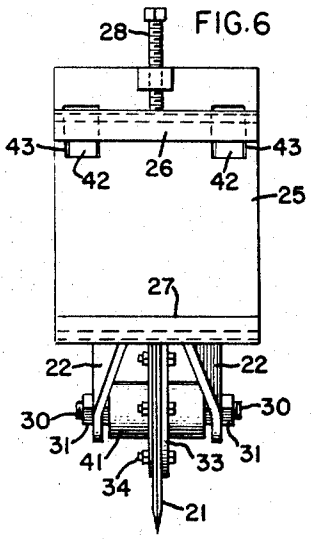


FIG.6



INVENTOR:
LEONARD L. HOPKINS,
BY Mc Gowan & Edwards
ATTORNEYS.

United States Patent Office 3,472,554 Patented Oct. 14, 1969

3,472,554

ASPHALT CUTTER WHEEL ASSEMBLY

Leonard L. Hopkins, Carlsbad, Calif., assignor to Over-Lowe Company, Inc., Denver, Colo., a corporation of Colorado

Filed Mar. 27, 1967, Ser. No. 626,281
Int. Cl. E21c 47/00; E01f 23/12; E02f 3/12
U.S. Cl. 299—40 3 Claims

ABSTRACT OF THE DISCLOSURE

A cutter wheel assembly for cutting asphalt pavement and the like comprises a cutter wheel arranged to be mounted as a caster on the back of the blade of a road grader or the like. A clean cut line is produced under direct visual guidance of the grader operator.

This invention relates to pavement cutter wheel assemblies for mounting on a road grader or other heavy road machinery and particularly to an improved cutter wheel assembly for assuring a clean cut line in the pavement.

Many arrangements of asphalt cutter wheel assemblies have been provided which are designed for detachable mounting on road graders and the like. These assemblies have included mountings for ready attachment to the moldboard of graders and for holding the cutter wheel rigidly in position for cutting pavement. The assemblies of the prior art have proved satisfactory for many applications but have not fully met the requirements of all applications. Accordingly, it is an object of this invention to provide a pavement cutting wheel assembly including an improved arrangement for assuring the cutting of pavement and the like in a clean line.

It is another object of this invention to provide an improved pavement cutting assembly for road graders and the like which is capable of following accurately a predetermined line or course.

Briefly, in carrying out the objects of this invention in one embodiment thereof, an asphalt cutting wheel is mounted in an assembly which may be detachably mounted on the rear side of a road grader moldboard. The laterally extending guide rails of the moldboard are employed for receiving suitable clamping members on the assembly. The wheel is mounted in a bifurcated arm which is pivotally mounted in the assembly about an upright axis. The arm when mounted on the moldboard extends rearwardly and downwardly and when in pavement cutting position is capable of a caster-like action which enables the operator of the grader to guide the cutter wheel accurately along the desired line.

The features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. The invention itself, however, both as to its organization and manner of operation, together with further objects and advantages thereof, will best be understood upon reference to the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a somewhat diagrammatic side elevation view of a road grading machine provided with a cutter wheel assembly embodying the invention;

FIG. 2 is an enlarged perspective view of the cutting wheel assembly of FIG. 1;

FIG. 3 is a top plan view of the cutter wheel assembly;

FIG. 4 is a side elevation view of the assembly of FIG. 3;

FIG. 5 is a rear elevation view of the assembly of FIG. 3; and

FIG. 6 is a front elevation view of the assembly.

Referring now to the drawings, there is illustrated diagrammatically in FIG. 1 a road grader having a cab and engine unit **10** mounted on drive wheels **11** and provided with a main frame structure **12** extending forwardly to guide wheels **13**. A moldboard **14** is adjustably suspended from the frame **12** on horizontal supporting structure **15** and a downwardly extending supporting arm **16**. The moldboard **14** is provided with upper and lower laterally extending rails or guide bars **17** and **18**, respectively, whereby it is mounted in the supporting arm **16** in the usual manner so that it may be adjusted laterally of the grader to determine its lateral position. The moldboard may be rotated to change its angle with respect to the road by the usual mechanism, not illustrated in the drawing and not necessary to an understanding of the present invention.

A pavement cutter wheel assembly **20** is mounted on the moldboard and is illustrated in position with its cutter wheel indicated at **21** extending into the pavement in cutting position. The assembly **20** includes the wheel **21** supported on a bifurcated arm **22** attached to the moldboard on upper and lower brackets **23** and **24** which are rigidly secured to an upright plate **25** which forms the base of the wheel assembly. On the back of the plate there are mounted upper and lower clamping members **26** and **27**, respectively, the member **26** being vertically adjustable and being clamped in position by a threaded clamping bolt **28**.

The details of construction of the cutter wheel assembly **20** are illustrated in FIGS. 2 through 6. As shown in these figures the cutter wheel **21** is mounted on a fixed axle or shaft **30**, the outer ends of which are threaded, the shaft being secured to the respective sides of the bifurcated arm **22** by nuts **31**. The axle and wheel assembly may be removed from the arms **22** by loosening the nuts **31** and lowering the wheel from the arms, vertical slots **29** being provided in the arms for locating the shaft **30** and for affording its direct removal from the assembly.

The wheel **21** is mounted on the axle **30** on a hub comprising two halves **32** having respective mounting plates **33** which are bolted to the wheel by a plurality of bolts **34** extending through the wheel. The wheel **21** is freely rotatable on the shaft **30** in suitable bearings, not illustrated. The upper bracket **23** comprises a horizontal plate **35** and reinforcing gusset plates **36** all securely welded together and to the supporting plate **25** of the assembly. Similarly, the lower bracket **24** comprises a horizontal plate **37** and reinforcing gussets **38** welded thereto and to the plate **25**.

The bifurcated arm **22** is pivotally mounted on the brackets **23** and **24** on a headed pin **40** extending through the brackets with the head engaging the top of the plate **35**. The arm is provided with a hub **41** which is journaled on the pin **40** and which, together with the bracket plates **35** and **37**, holds the bifurcated arm **22** so that it can move only by swinging about the pivot pin **40**. It will thus be apparent that the rearwardly and downwardly extending bifurcated arm **22** enables the wheel **21** to move with a caster action.

The lower clamping member **27** is of rigid channel angle cross section and the upper clamping member **26** is illustrated as a fabricated angle bar rigidly mounted on guide bars **42** which are vertically adjustable on the plate **25**. Each guide bar extends through a respective slot **43** in the plate **25** and is securely clamped to the plate by a bolt **44** which is rigidly secured to the plate **25** and extends through a slot **45** in the bracket **42**. Thus the bracket **42** may slide up and down and be clamped by the bolt **44** in its selected position.

When the wheel assembly is to be mounted on a moldboard the clamping bolt **28** is backed off sufficiently to

allow the clamping members **26** and **27** to be positioned in alinement with the guides **17** and **18** and the clamp member **27** is positioned over the guide **18** and then the bolt **28** tightened downwardly until the clamp **26** is tightened against the top guide **17** and the plate securely attached to the moldboard. The bolts **44** are then tightened and the wheel assembly is ready for use.

During the use of the wheel assembly for cutting pavement as illustrated in FIG. 1, the operator of the grader may look down directly onto the wheel **21** and observe its position on the line to be cut. He then guides the grader along the desired line, keeping the wheel **21** on the line. The wheel **21** is free to move to adjust its position laterally due to the caster mounting of the assembly and as a result the wheel is maintained in the direction of the line at all times and is not dragged laterally through the pavement in a manner such as to produce a rough cut. The freedom of movement of the wheel in its caster-like mounting makes it possible to operate the grader and cut a continuous and clean line without adjustment of the wheel assembly or backward movement of the grader to readjust the position of the wheel in the pavement.

The cutter wheel assembly of this invention has been found in operation to provide effective cutting of pavement along a predetermined accurate line with a smooth or clean action and with a substantial saving in operating time.

While the invention has been described in connection with a single specific embodiment thereof, other arrangements and applications will occur to those skilled in the art. Therefore it is not desired that the invention be limited to the specific details illustrated and described and it is intended by the appended claims to cover all modifications which fall within the spirit and scope of the invention.

I claim:

1. The combination of a road grader or similar road machinery and an asphalt cutter wheel assembly, said road grader including a grader blade or similar surface working implement and means for urging said grader blade into a surface to be cut, said cutter wheel assembly comprising a mounting member for securing said assembly to said grader blade, a wheel mounting arm, pivot means for securing said arm on said mounting member for free swinging movement about an upright axis, a cutter wheel mounted for rotation on said arm at a position remote from said axis for engagement with and penetration of the asphalt surface on which the grader is supported, said wheel being urged into the surface to be cut while being advanced by said grader whereby it may swing on said arm about said pivot means as a caster and may be guided effectively by guiding the grader along a predetermined arcuate line to be cut.

2. The combination of a road grader or similar road machinery and an asphalt cutter wheel assembly as set forth in claim **1** wherein said securing means comprises upper and lower clamping members for engaging the upper and lower guide bars on the rear side of the grader moldboard, and means for clamping said clamping members rigidly on the guide bars of the moldboard whereby the action of the cutter wheel may be observed directly by the operator of the grader during its use to cut pavement.

3. The combination of a road grader or similar road machinery and an asphalt cutter wheel assembly as set forth in claim **1** wherein said arm is bifurcated and comprises two side arm members extending outwardly of said pivot means and downwardly and wherein said wheel is rotatably mounted between said two side members.

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ERNEST R. PURSER, Primary Examiner

U.S. Cl. X.R.

172—602, 777