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MOLD BOARD ASPHALT CUTTER WHEEL ASSEMBLY

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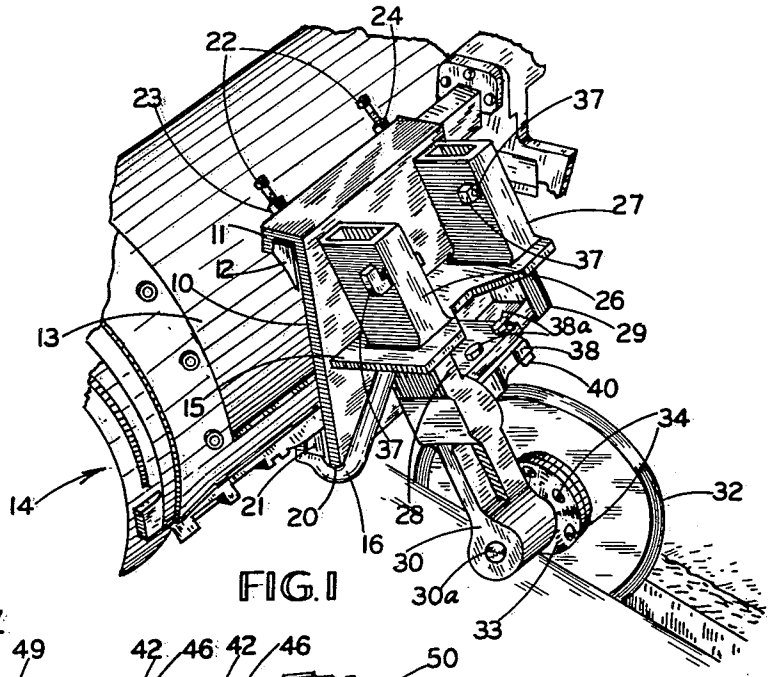



FIG. 1

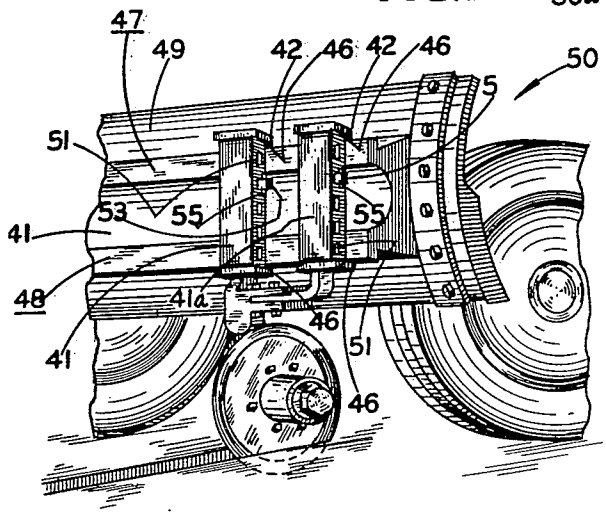



FIG. 2.

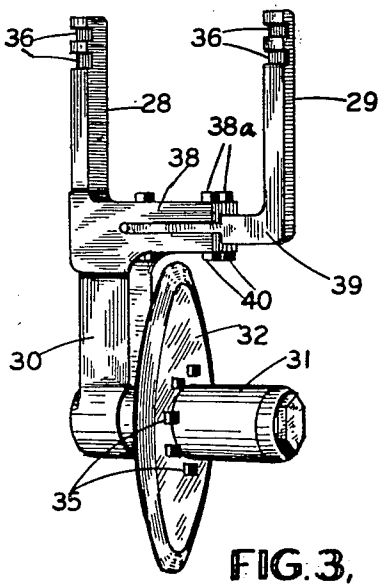



FIG. 3.

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# 3,140,898
# MOLD BOARD ASPHALT CUTTER WHEEL ASSEMBLY

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This invention relates to construction equipment and more particularly to attachments for heavy equipment of the type used in construction and repairing of roadways and the like.

It is common practice to provide attachments for various items of heavy construction equipment in order that the same prime mover is usable to accomplish plural tasks. An example is a road grader which is adapted for selective attachment of scarifier blades and asphalt cutters.

An asphalt cutter is usually a hard alloy steel wheel rotatably supported in suitable structure and arranged for selective attachment to a given item of heavy construction equipment, usually through some specially constructed mounting plate or the like. The cutting wheel often fractures or becomes dull, requiring replacement, which has previously entailed a time-consuming immediate substitution of an entire asphalt cutter assembly including its supporting structure with subsequent wheel replacement or repair at a remote site.

Accordingly it is an object of this invention to provide simple, durable and efficient asphalt cutter attachments for heavy construction equipment.

Another object of the invention is to provide an improved arrangement for the mounting of an asphalt cutter wheel on supporting structure whereby replacement of a wheel in situ is simply and rapidly accomplished.

A further object of the invention is to provide an improved supporting structure for asphalt cutters and the like.

Yet another object of the invention is to provide improved supporting structure for asphalt cutters adapted for mounting on the scarifier block of a motor grader blade; which attachment may be made to conventional mounting means on a blade without requiring specialized modification thereof.

Briefly, in one embodiment, an asphalt cutter attachment for road graders and the like according to this invention includes an improved mounting or support structure, and a cutter wheel support with an integral hub adapted for selective reception of a cutter wheel. The supporting structure includes a base plate having one face so fabricated as to encompass the spaced horizontal bars of the mold board of a motor grader and be locked in position thereon. The opposite face of such a base plate carries a pair of spaced, parallel tubular members. A generally Y-shaped bifurcated member is adapted to have its upper arms selectively passed into the said parallel tubular members and locked in position at a selected height. The other or bottom extension of the Y-shaped member carries a hub which extends perpendicular thereto and is adapted for selective reception of an asphalt cutter wheel.

A feature of the foregoing arrangement is that the selective mounting of asphalt cutter wheels on the hub may be accomplished without removal of any of the supporting structure from the mold board of a motor grader.

The practice of the instant invention will be readily understood from the following description referring to the accompanying drawings in which like reference numerals are used to designate like parts in the several views. In these drawings:

FIG. 1 is a perspective view of the right side of an asphalt cutter assembly constructed according to this invention shown in position on a fragmentary portion of a mold board of a road grader;



FIG. 2 is a perspective view of the left side of the asphalt cutter assembly of FIG. 1 with an alternative support structure mounted on the mold board of a road grader; and

FIG. 3 is a perspective view of an asphalt cutter wheel and a portion of its support structure for mounting in the manner shown in FIGS. 1 and 2.

As shown in FIG. 1, a supporting structure for an asphalt cutter wheel includes a base plate **10** having a channeled flange **11** at an upper edge thereof adapted to encompass a beam **12** of mold board **13** of a motor grader **14**. The other face of base plate **10** carries a second plate **15** in a perpendicular relation. A pair of rods **16** obliquely extend from the lower face of plate **15** and are attached adjacent opposite parallel edges, intermediate the ends thereof. The lower portion **20** of rod **16** is shaped to form an upwardly opening channel, opposite the channel in flange **11**, and are adapted to encompass the lower beam **21** of mold board **13**. A pair of threaded bolts **22** passing through spaced internally threaded apertures **23** and **24** formed through flange **11** are adapted to lock the base plate on the mold board when installed.

Mounted on the upper face of plate **15** and opening therethrough are a pair of rearwardly inclined parallel tubular channel members **26** and **27**. Channel members **26** and **27** receive a pair of parallel arms **28** and **29** of a generally Y-shaped or bifurcated cutter wheel hub support (best seen in FIG. 3). A lower arm or extrusion **30** carries a horizonatl shaft **30***a* upon which is mounted a hub **31** and associated cutter wheel **32**. Suitable bearings are included in the hub for rotation of the wheel **32**, but these have not been shown in the drawings since they may be any of many conventional types.

A circular plate **33** on hub **31** has a plurality of bolt receiving apertures arranged circumferentially for reception of the plurality of bolts **34** secured by nuts **35**.

The pair of parallel arms **28** and **29** are adapted to be locked in selective position within the tubular channel members **26** and **27**. For this purpose, a plurality of slots or recesses **36** are formed transversely through upper portions of the arms as best seen in FIG. 3. While only two slots are shown in FIG. 3, any desired number may be provided and they are adapted to cooperate with locking devices **37** which are inserted through apertures in side walls of the channel members, to lock the wheel assembly at a selected elevation.

Other mounting assemblies according to this invention may be provided for an asphalt cutter assembly and to this end the pair of parallel arms **28** and **29** are adapted for spacing adjustment. A bifurcated channel **38** extends from and is perpendicular to the first parallel arm **28**. Arm **29** likewise has a perpendicular shank member **39** which is fitted in the bifurcated channel **38** and clampingly held in selected position therein by bolts **38***a* and nuts **40**.

An alternative mounting arrangement for the cutter wheel hub support is shown in FIG. 2 and includes a pair of similar tubular members **41** and **41***a*. Each of these members has upper and lower rearwardly extended flanges **42**. Each of these flanges terminates at its outer end in a lip portion **46**, the one on the upper flange extending downwardly and the one on the lower flange extending upwardly. The respective pairs of lips on the channel members are adapted to grip the parallel beam portions **47** and **48** of a mold board **49** of a motor grader **50**, similar to the arrangement of FIG. 1. Suitable locking devices, similar to the pair of threaded bolts **22** and threaded apertures **23** and **24** of FIG. 1 are provided for fastening the cutter wheel assembly.

A series of apertures 51 and 52 extend through the side walls of each of the channel members 40 and 41 for the reception of locking devices or keys 53 and 54, respectively, which are selectively inserted into register with one of the slots 36 formed in arms 28 and 29 of the cutter wheel hub support. It is preferable to have the ends of keys 53 and 54 apertured for reception of pins 55 so as to prevent vibration from loosening them.

When it is desired to use a cutter wheel attachment assembly according to this invention, the flanged side of the base plate or flanged faces of the channel members are easily slidable over the parallel beams normally found on the forward face of a motor grader mold board. When the channel members are positioned and locked on the mold board, the upper parallel pair of arms of the hub assembly is inserted into the channel members and locked in a selected position therein. Thereafter, movement of the motor grader, with its weight exerted on the mounting assembly and hub support, presses the asphalt cutter wheel into a surface to be cut.

When an asphalt cutter attachment of this invention fractures or becomes dulled, a very simple manipulation of nuts and bolts allows replacement of the wheel without requiring dismounting of the supporting structure therefor. Because of novel cooperation between parts it is possible to selectively vary the depth to which a cutter wheel is directed into a road surface being cut. In addition, the diameter of the hub is large enough to provide a bearing surface limiting the depth of cutter wheel penetration in the asphalt. This is an advantageous feature as there are many instances when an asphalt road is very cold and plural passes must be made before it is cut to a desired thickness. Thus, a first pass may be made with the hub support in its most retracted position which causes penetration of the cutter wheel to only a limited degree. Thereafter, by adjustment of the fastening devices the hub support is progressively extended for repeated passes until such time as the cutter wheel has penetrated the entire thickness of the asphalt roadway, and the hub position prevents excessive penetration by the wheel.

Because of the provision of a mounting arrangement for asphalt cutter wheels which may be placed on the forward or front face of the mold block of a motor grader, the weight of the front end of the machine is usually sufficient to cut through the asphalt. However, if added weight is necessary it may easily be mounted above the mold board or elsewhere on the forward end of the machine to facilitate penetration.

The bearings which are used in the hub assembly may be of any conventional type as mentioned above. However, it has been found that bearings of heavy duty bronze are preferable. Lubrication of the bearings is accomplished by a fitting in the leg or extended end of the axle shaft within the hub assembly.

The foregoing arrangement is excellent for trenching work in streets and roadways, for trimming road edges preparatory to widening, and also for patching operations. The cutting action crimps the edge of remaining asphalt so that new material when rolled in is fused together with the old so completely that the surface is much the same as if never disturbed.

Having thus described the invention with sufficient particularity to enable those skilled in the art to practice it, what is desired to be protected by Letters Patent is set forth in the following claims.

I claim:

1. An asphalt cutter wheel assembly comprising main support structure including spaced apart parallel channel members arranged to be secured on the mold board of self-propelled construction equipment, a blade mount having an upper bifurcated portion arranged for selective positioning with said main support structure by securing each upper bifurcated member into one of said channel members, said upper bifurcated members being interconnected at their bases and having an extension depending downwardly at one side thereof, a depending hub assembly mounted on and normal to said extension, said hub being positioned below and generally between said upper bifurcated members, a rotatable cutter blade releasably mounted on said hub, and means cooperative between said channel members and said bifurcated members for securing said blade mount at selected positions relative to said main support structure and the mold board.



2. An asphalt cutter wheel assembly comprising main support structure including spaced apart parallel channel members arranged to be secured in generally upright position on the mold board of self-propelled construction equipment, a blade mount having an upper bifurcated portion arranged for selective positioning with said main support structure by securing each upper bifurcated member into one of said channel members, said upper bifurcated members being interconnected by an adjustable base so as to vary their distance apart, said base having an extension depending downwardly at one side thereof, a cantilever hub assembly mounted on and normal to said extension, said hub being positioned below and generally between said upper bifurcated members, a rotatable cutter blade releasably mounted on said hub, and means cooperative between said channel members and said bifurcated members for securing said blade mount at selected positions relative to said main support structure and the mold board.

3. An asphalt cutter wheel assembly comprising main support structure including spaced apart parallel tubular members arranged to be secured in generally upright position on the mold board of self-propelled construction equipment, a blade mount having an upper bifurcated portion arranged for selective positioning with said main support structure by telescoping each upper bifurcated member into one of said tubular members, said upper bifurcated members being interconnected at their base and having an extension depending downwardly at one side thereof, a depending hub assembly mounted on and normal to said extension, said hub being positioned below and generally between said upper bifurcated members, a rotatable cutter blade releasably mounted on said hub, and means inclusive of releasable pins selectively positioned in apertures in said tubular members and slots in said bifurcated members for securing said blade mount at selected positions relative to said main support structure and the mold board.

4. An asphalt cutter wheel mount assembly comprising a blade mount having an upper bifurcated portion arranged for selective positioning on a mold board by separately securing each upper bifurcated member, said upper bifurcated members being interconnected by an adjustable base so as to vary their distance apart, said base having an extension depending downwardly at one side thereof, a cantilever hub assembly depending from and normal to said extension, said hub being positioned below and generally between said upper bifurcated members, a rotatable cutter blade releasably mounted on said hub so as to be positioned between said bifurcated members, and means for securing said bifurcated members to the mold board.

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