POWER-DRIVEN CUTTING MACHINE FOR PAVEMENTS AND THE LIKE

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1. This invention has to do with an assembly particularly adapted to cut kerfs in road surfaces or the like, the primary object being to provide an adjustable, power driven, rotary cutting element having a mobile support so arranged as to minimize the binding of the cutter within the kerf occasioned by movement of the assembly over uneven terrain being cut.

It is the most important object of the present invention to provide a cutter for road surfaces and the like that includes a swingable cutterhead mounted on a mobile platform having a number of wheels to support the same with one of the wheels and axle assemblies swingably secured to the platform to compensate for uneven terrain and thereby reduce the amount of binding between the cutter itself and the kerf being cut, and further, for the purpose of facilitating manual handling of the apparatus as the same is pushed along or otherwise motivated and guided to cut on a straight line.

Another important object of this invention is the provision of a cutting assembly having a mobile platform, together with a frame swingable on the platform, the frame carrying a rotatable cutter and a prime mover for the latter, all movable as a unit as the frame is swung, to vary the height of the cutter blade and therefore, the depth of the slot being cut.

Other objects of this invention include the way in which the entire assembly is rendered adaptable for automatic guiding along a straight line; the way in which manually operable means is provided for the swingable cutterhead to vary the depth of the cut; and the details of construction relating not only to the above-mentioned pivotal connection between one of the wheels and axle assemblies of the support, but to the manner of adjustably mounting the auxiliary frame or cutterhead upon the platform-like support.

In the drawing:

Figure 1 is a front perspective view of a power driven cutting machine for pavements and the like, made according to the present invention.

Fig. 2 is a fragmentary, side elevational view thereof, parts being broken away and in section for clearness.

Fig. 3 is a detailed, sectional view of a portion of the manual control for the swingable cutterhead; and

Fig. 4 is an elevational view of a modified form of a wheel and axle assembly.

A suitable support for the component parts of the power driven cutting machine hereof, preferably takes the form of a flat, horizontal plat-
Internally tapped for receiving an externally-threaded, elongated rod 72 that passes through an opening 74 in the bracket 64 and has a crank arm 76 on the uppermost end thereof. The rod 72 depends from the bracket 64 and passes loosely through a perforated block 78 that is, in turn, pinned to an element 84 between a pair of fruncations extending outwardly from that end of the frame 40 opposite to disc 46, one only of such fruncations being illustrated and designated by the numeral 85. Each fruncation is provided with a pinhole 82 for rotatorily mounting the block 78 in the same manner as illustrated in Fig. 3, with respect to the block 68. Downward movement of the rod 72 with respect to block 78 is limited by means of a nut or collar 84, and a spring 86 coiled about the rod 72 is interposed between block 78 and a nut 88 on the lower-most end of rod 72.

Means for holding the rod 72 and parts associated therewith in a selected position to govern the depth of cut includes a split tube 93 circum-scribing the rod 72 having a pair of spaced-apart, laterally-projecting ears 92 which receive a clamping element 94 capable of contracting the tube 93 into and out of gripping relationship to rod 72 when element 94 is tightened.

A scale 95 formed on rod 72 has indicia thereon to guide the operator in setting tube 93 for stopping engagement with block 78 when cutter 46 reaches the desired depth in response to manual manipulation of crank arm 76. The tube 93 is set to hold cutter 46 in an elevated position in Fig. 1. When a cut having a depth of two inches, for example, is to be made, the tube 93 is adjusted along rod 72 to have its lower end in register with the two inch designation on scale 95. Thus, when arm 76 has been turned to draw rod 12 upwardly, allowing cutter 46 to lower to a place where tube 93 is against block 68, the cutter cannot be lowered further; and the cut is of a depth indicated on scale 95.

An arcuate fender or guard 104 is provided on the frame 40 for the disc 46 in overlying relationship to the latter, said guard 104 having a removable section 106. Section 106 is removed when the forward or front portion of the cutter 46 is to be moved against the wall, curbing or other vertical structure.

Fluids such as liquid coolants may be directed to the cutter disc 46 through the medium of a line 108 registering with guard 104 and having a manually-operable valve 110 interposed therein and mounted on the bracket 64. An arm 95 extending forwardly from clevice 105 is supported at its outermost end by a caster wheel 98, and the pointer 100 is pivotally secured thereto. An L-shaped pointer 102 is, also, pivotally carried by the platform 10 at the rearmost edge thereof as at 103.

Both pointers 100 and 102 may be swung to an inoperative position about their respective mountings when the machine is not in use. These said pointers are in alignment with cutter 46 in which distances forwardly and rearwardly therefrom as to assure accuracy of cut and a minimum amount of binding.

During normal use, the entire assembly is moved forwardly by an operator grasping the handle bars 60 and directing his weight against the arcuate surface on intermediate tie member 61. Pointers 100 and 102 are maintained on a preformed line on the surface to be cut. The depth of the cut is determined by swinging of the frame 40, together with the cutter 46 and the prime mover 52 thereon as a unit about the axis of the shaft 38, which swinging movement is controlled by the rotation of rod 72 in block 68.

After the operator has lowered the cutter blade 46 from that illustrated in Figs. 1 and 2 by manipulation of crank arm 76 to a cutting position, the rod 72 is prevented from further rotation by longitudinal movement in one direction by the tube 90 which has been set as above explained. As the cutter blade 46 is caused to rotate by prime mover 52, any relatively hard obstruction within the path of travel of the cutter blade 46 tending to cause the latter to rise above its adjusted set position will be compensated for by the sliding movement of block 78 on rod 72 against the action of spring 86.

Irrespective of the advantages of a three-point mobile support for platform 10, the four wheels 20, 22, 28 and 29 have been provided so as to facilitate the guiding of the assembly by the operator along a straight line. In other words, at all times, irrespective of the unevenness of the surface being traversed, the platform 10 and all parts mounted thereon are supported at four points; and such is made possible because of the pivotal connection between tube 30 of axle 24 and the shaft 34 of platform 10.

The apparatus is further rendered highly maneuverable by virtue of the fact that the operator may raise or lower 46 the prime mover 52 continues in operation by simply bearing downwardly upon the handle bars 60 and member 61 and pivoting the platform 10 on axle 15. In view of the fact that the wheel and axle assembly 16 is relatively close to the cutting disc 46, binding or breakage at the kerf being formed will be prevented when the wheels 26 and 28 enter a cavity or pass over a rise in the pavement being cut. Since the operator has more control over the rear wheel and axle assembly than that of the assembly 16, he can prevent such binding of the disc 46 as the same becomes necessary when one of the rear wheels rises or falls.

The machine above described may be used with a pair of tracks 112 when slightly modified as illustrated in Fig. 4 when it is desirable to positively guide the assembly along a straight path of travel. Tracks 112 are L-shaped in cross-section, and the horizontal flanges thereof serve as a support for the wheels of assemblies 14 and 15. Additionally, one end of each axle 15 and 24 respectively is provided with a sheave 114 that is guided along the uppermost edge of the upright flange of one of tracks 112 and which may or may not ride upon such edge, as shown in Fig. 4.

The tracks 112 may be interconnected or anchored to the pavement being cut in any suitable and well-known manner to prevent movement out of relation with the line of cut therebetween.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A machine for cutting pavement or the like, said machine comprising a platform; a cutter rotatably carried by the frame; a prime mover on the frame operably coupled with said cutter;Means mounting the frame on the platform for swinging movement on an axis parallel with the axis of rotation of the cutter, with the cutter disposed forwardly of the platform and therebeyond; a rear wheel and axle assembly including an axle secured to said platform in parallelism with said axis of rotation and having a pair of wheels; a front wheel and axle assembly including an axle normally parallel with said
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axis of rotation and having a pair of wheels; a front axle support on the platform for swinging movement of the front axle with respect thereto on an axis parallel with the normal path of travel of the machine, said four wheels providing a four-point support for the machine, said rear wheels and said front axle support providing a three-point mounting for the platform, whereby to minimize binding of the cutter in the pavement as the machine is moved theretofore, during cutting and when the pavement is uneven; and structure interconnecting the frame and the platform for varying the depth of cut.

2. A machine as set forth in claim 1, wherein said structure includes an extensible member extending upwardly from the frame at one end thereof remote from the cutter, and means on the platform for mounting the uppermost end of said member, said axis of swinging movement of the frame being intermediate the ends of the latter.

3. A machine as set forth in claim 2, wherein said axis of swinging movement of the frame is above the platform and said axles, in a vertical plane disposed between the axles and parallel thereto.

4. A machine as set forth in claim 1, wherein said axis of swinging movement of the front axle is parallel to and substantially in alignment with the plane of rotation of the cutter.

5. A machine as set forth in claim 4, wherein said axis of swinging movement of the front axle is intermediate between the wheels of the front assembly.

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