Jan. 29, 1957 R. R. HARRIS ET AL 2,779,426

DRIVE UNIT MOUNTING AND CONTROLS FOR WHEELS OF CUTTING MACHINES

Filed March 16, 1954 2 Sheets-Sheet 1

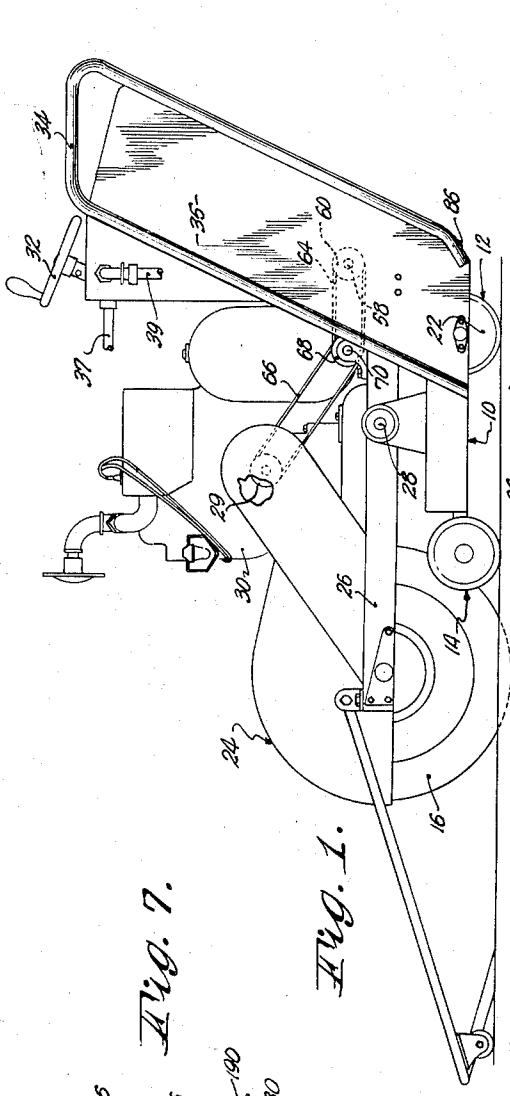


Fig. 1.

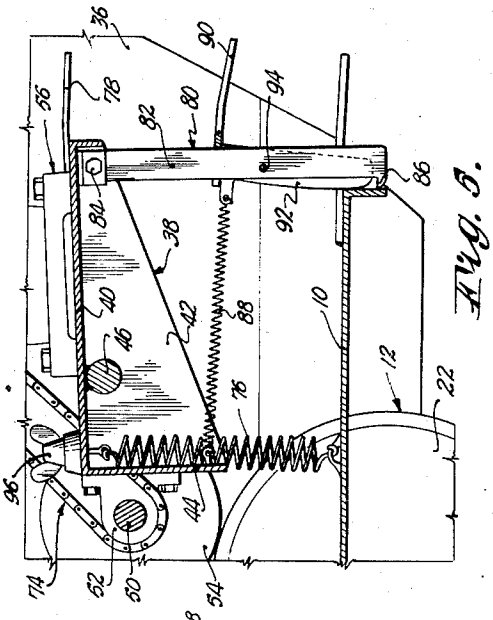


Fig. 5.

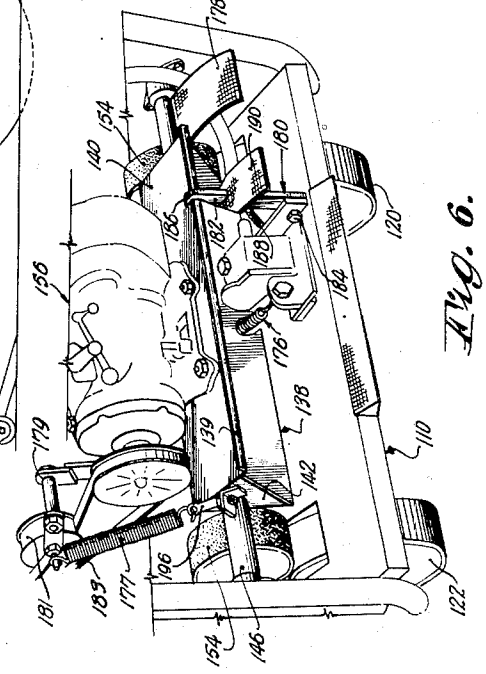


Fig. 6.

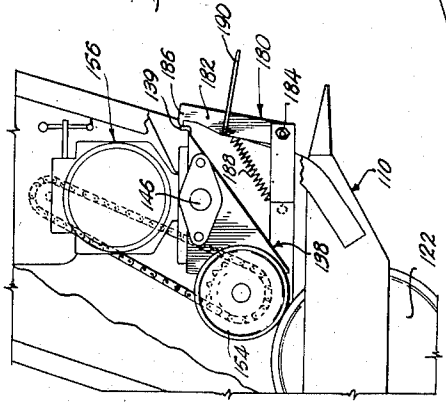


Fig. 7.

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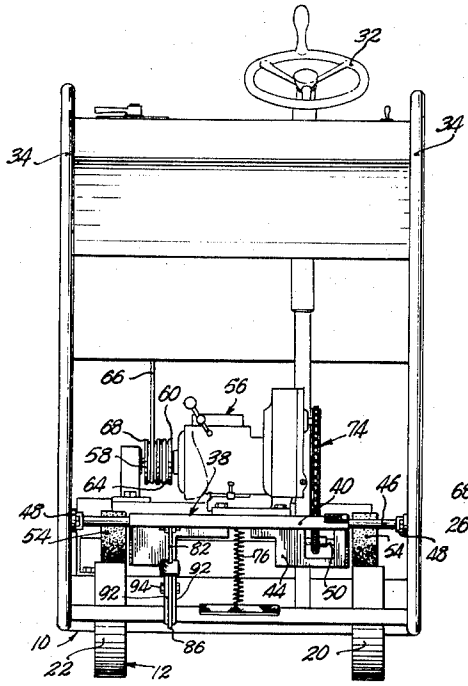


Fig. 2.

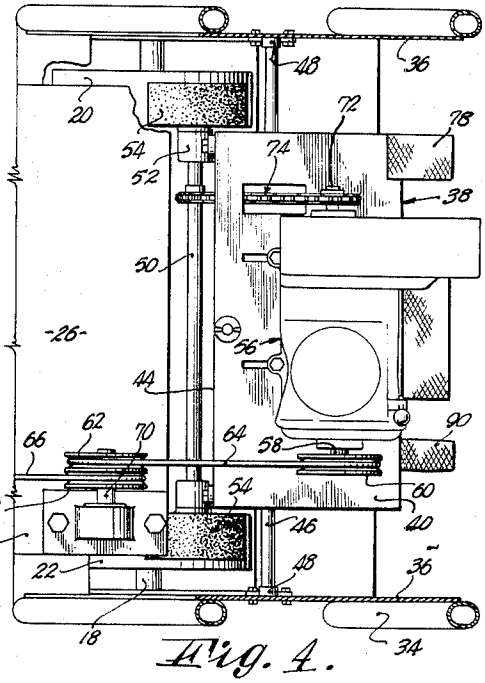


Fig. 4.

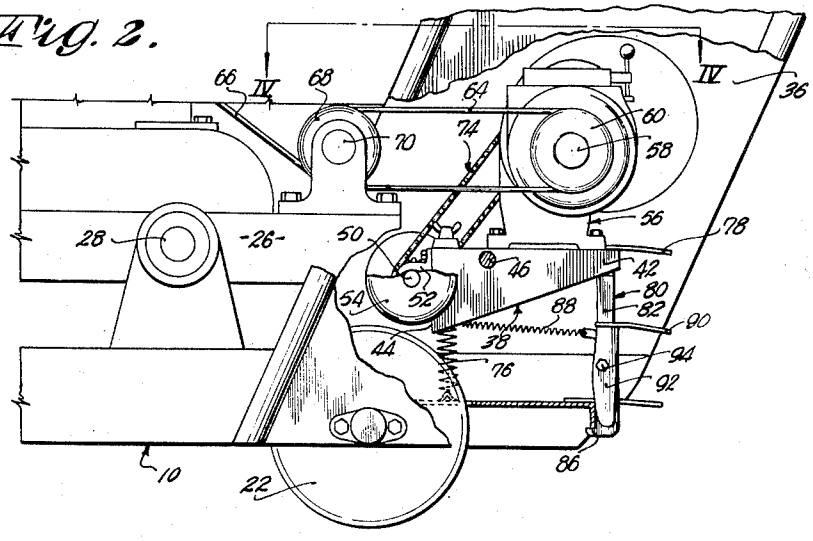


Fig. 3.

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2,779,426

DRIVE UNIT MOUNTING AND CONTROLS FOR WHEELS OF CUTTING MACHINES

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Application March 16, 1954, Serial No. 416,677

7 Claims. (Cl. 180—74)

This invention relates to pavement cutting appliances generally in the nature of that disclosed in my copending application, Serial No. 246,935, filed Sepember 17, 1951, now Patent No. 2,736,544 dated February 28, 1956.

The present invention has to do with a power drive unit adapted for operable attachment to the mobile support of pavement cutting machines.

It is one of the most important objects of the present invention to provide means for propelling a mobile saw support and taking the form of a self-contained unit that may be quickly and easily adapted for attachment to pavement cutters of various types without change in the overall construction of the machine.

Another important object of the present invention is to provide a power unit which, when attached to the machine, may take it power from the prime mover of the cutter itself and which may be adjusted to preselected speeds in either of two directions.

A still further important object of the instant invention is to provide a power unit that may be quickly and easily moved into and out of operative engagement with certain ground-engaging wheels that support the saw assembly so as to propel the machine forwardly or rearwardly by frictional interengagement between a drive roller and a ground wheel.

Another important object of the instant invention is the provision of a swingable bracket upon which the drive wheels are mounted and which bracket may be locked in an inoperative position through use of an easily and quickly manipulable latch.

Other objects include the way in which the friction rollers are held in operative engagement with the ground-engaging wheels by spring means; the way in which a gear unit for controlling the speed and direction of movement of the machine is mounted on the said bracket for swinging movement therewith; the manner of spring-loading the said latch means so that it automatically locks the power unit in an inoperative position when the bracket is swung in one direction on its pivot; the manner of permitting immediately and positive movement of the power unit to an operative position when the latch means is released; and many more minor objects all of which will be made clear as the following specification progresses.

In the drawings:

Figure 1 is a side elevational view of one form of power drive unit for concrete saws made pursuant to the present invention.

Fig. 2 is a rear elevational view thereof.

Fig. 3 is an enlarged, fragmentary, side elevational view similar to Fig. 1, parts being broken away and in section to reveal details of construction.

Fig. 4 is an enlarged, fragmentary, cross-sectional view taken substantially on line IV—IV of Fig. 3.

Fig. 5 is an enlarged, fragmentary, side elevational view similar to Fig. 3 partially in section to reveal details of construction, but showing the latch means released.

Fig. 6 is a fragmentary, rear perspective view of a modified form of power drive unit for concrete saws made pursuant to the present invention; and

Fig. 7 is a fragmentary, side elevational view, parts being broken away to reveal details of construction of the modification shown in Fig. 6.

The concrete saw that includes the improvements of the present invention includes a frame or support broadly designated by the numeral 10, rendered mobile by a rear wheel and axle assembly 12, and a front wheel and axle assembly 14, the latter of which may be swingably secured to the support 10 as set forth in my said copending application so as to maintain cutter blade 16 in a substantially vertical plane notwithstanding unevenness in the terrain over which the machine travels.

The rearmost assembly 12 includes a horizontal axle 18 secured to the support 10 and having a pair of ground-engaging wheels 20 and 22.

The cutter blade 16 forms a part of a cutting unit broadly designated by the numeral 24, which includes a platform 26 pivotably mounted on the support 10 for swinging movement on a horizontal axis 28. The platform 26 not only operably carries the cutter blade 16, but mounts a prime mover 30 therefor. Platform 26 is swung on the axis 28 through manipulation of a hand wheel 32, and, since the details of operably connecting the hand wheel 32 with the platform 26 forms no part of the present invention, the same has not been disclosed and need not be further discussed.

The machine is manipulated through use of a pair of handle bars 34 secured to the support 10 and extending upwardly and rearwardly therefrom. A pair of spaced, upstanding walls 36 are in turn secured to the handle bars 34.

The power drive unit forming the subject matter of the present invention is carried by the walls 36—36 therebetween and above the support 10 as is best seen in Figs. 2 to 5 inclusive. It includes a bracket 38 having a top wall 40, a pair of end plates 42, and a front wall 44. An elongated rod 46 disposed horizontally between the walls 36—36 extends through the plates 42, beneath the top wall 40 and is secured to the latter. Rod 46 is pivotally carried by bearings 48 mounted on the inner faces of walls 36.

The front wall 44 of bracket 38 carries a shaft 50 in parallelism with the rod 46 through the medium of bearings 52 as seen in Figs. 3 to 5 inclusive, and a pair of rollers 54 are rigidly secured to the shaft 50. Friction rollers 54 are in direct alignment with the rear wheels 20 and 22 for movement to and from a position engaging the peripheries thereof as will hereinafter be made clear.

Rollers 54 are driven by the prime mover 30, and to this end there is provided a gear unit broadly designated by the numeral 56, that may be readily purchased on the open market and adapted for varying the speed of rotation of rollers 54 in either direction. The unit 56 is mounted directly upon the wall 40 of bracket 38 for swinging movement therewith on the axis of the rod 46. It is provided with an input shaft 58 having a pulley 60 thereon that is in turn connected with a pulley 62 by an elastic continuous belt 64. Pulley 62 is driven by an elastic belt 66 extending from the pulley 29 of prime mover 30 and connected with another pulley 68, pulleys 62 and 68 being rigid to an idler shaft 70 carried by the platform 26. Belt 66 may, in some instances, connect the pulley 29 of prime mover 30 with pulley 60. Idler shaft 70 may be a part of a booster pump for water that is usually supplied to blade 16 from tank 35 by way of tube 37. Obviously, in such instance, tube 37 will first be connected to such a pump (not shown) and the water from the pump will be forced to cutter 16. Water from

a source of supply reaches tank 35 by way of conduit 39.

Output shaft 72 of the unit 56 is operably coupled with the shaft 50 by chain and sprocket wheel means broadly designated by the numeral 74.

A relatively heavy coil spring 76 interconnects the wall 40 and the support 10 adjacent the wall 44 to yieldably hold the bracket 38 swung in one direction, thereby maintaining the drive rollers 54 in frictional engagement with wheels 20 and 22 as shown in Fig. 5. The periphery of these rollers are covered with abrasive material to prevent slippage. However, the bracket 38 may be swung in the opposite direction, i. e., clockwise viewing Fig. 5, by pressing downwardly on a foot treadle 78 secured directly to the wall 40 of bracket 38 at one end thereof and extending rearwardly therefrom as shown in Fig. 4. When the treadle 78 is thus depressed downwardly, latch means, broadly designated by the numeral 80, operates automatically to maintain the friction rollers 54 out of engagement with the wheels 20 and 22 in the manner shown by Fig. 3 of the drawings.

Latch means 80 includes an elongated central bar 82 depending from the bracket 38 at the rearmost edge thereof and swingably secured thereto by a pivot 84. Bar 82 has a hook 86 on the lowermost end thereof that is adapted to latch beneath the support 10 in the manner shown by Fig. 3 and to be yieldably held in such operable position by a coil spring 88 that is considerably lighter than the spring 76 and which interconnects the bar 82 and the wall 44. Latch 80 may be released from the position shown in Fig. 3 by depressing a foot pedal 90 rigid to and extending rearwardly from the uppermost ends of a pair of links 92 that embrace the bar 82. Links 92 are swingably secured to the bar 82 by a pivot pin 94.

While the operation of the power unit shown in Figs. 1 to 5 inclusive is readily apparent from the foregoing, it is to be pointed out that whenever the hook 86 of the latch 80 is engaged beneath the support 10 at the rearmost edge of the latter, spring 76 is stretched and the bracket 38 swung to a position where the friction rollers 54 are out of engagement with the ground-engaging wheels 20 and 22. As soon as the machine is properly positioned ready for cutting, it is but necessary for the operator to trip the trigger means 90—92 for latch 80 by depressing the foot pedal 90 until the hook 86 is disengaged with respect to the support 10. Downward swinging movement of the pedal 90 causes the bar 82 to swing rearwardly by virtue of the links 92 being in engagement with the support 10 and because of the swinging movement of the bar 82 on the bracket 38 and the pivotal interconnection as at 94 between the links 92 and the bar 82. As soon as the hook 86 is forced rearwardly from beneath the support 10, the spring 76 will raise the bar 82 to the position shown in Fig. 5 and maintain the rollers 54 in frictional engagement with the wheels 20 and 22.

In this respect, the extent of pressure of the rollers 54 on the wheels 20 and 22 may be varied by adjusting the tension of the spring 76 through use of an adjusting nut 96.

Manifestly, wheels 20 and 22 are driven by the prime mover 30, through the belts 66 and 64, thence through the unit 56, chain and sprocket means 74, shaft 50 and rollers 54. The speed of travel of the machine and the direction of movement may be varied to suit the desires of the operator by adjustment of unit 56.

When it is desired to stop movement of the machine either forwardly or rearwardly, the operator, manipulating the machine at the rear thereof through use of handle bars 34, need merely depress the treadle 78 downwardly against the action of spring 76, thereby swinging the friction rollers 54 clear of the wheels 20 and 22 as shown in Fig. 3. Spring 88 will thereupon act automatically to pull the bar 82 inwardly and effect the latching operation causing hook 86 to engage beneath support 10.

The cutting machine illustrating the principles of the embodiment shown in Figs. 6 and 7, is essentially the same as the machine above described and depicted by Figs. 1 to 5 inclusive. To this end, therefore, there is included a support 110 carried by ground-engaging wheels, the rearmost of which are shown in Fig. 6 and designated by the numerals 120 and 122. Bracket 138 differs from bracket 38 only in that there is included an upstanding flange 139 at the rearmost edge of the top wall 140 thereof.

A rod 146 swingably mounts the bracket 138 in the same manner as above described, and the bracket 138 carries a pair of friction rollers 154 having a surface of abrasive material on the periphery thereof to prevent slippage, for operable engagement with the wheels 120 and 122 as above explained. A foot treadle 178 is utilized to swing the rollers 154 to an inoperable position in the same manner as the treadle 78, it being noted only that treadle 178 extends radially from the rod 146 in a rearward direction rather than being affixed to the bracket 138 as in the case of the foot treadle 78. A spring 177 connected to one of the side plates 142 of bracket 138 by adjusting means 196, extends upwardly and forwardly from the bracket 138 to a point of connection with a bracket 179 which holds an idler 181 for a belt 183, the latter interconnecting the prime mover for the blade of the machine with power unit 156 mounted on support 110 of the machine. Spring 177 serves to yieldably hold the rollers 154 in frictional engagement with the wheels 120 and 122 in the same manner as spring 76.

Belt 183 shown in Fig. 6 is a V-belt with idler 181 maintaining the same in a taut condition. It is possible to substitute an elastic belt for said V-belt and thereby eliminate said idler and associated parts.

Latch means broadly designated by the numeral 180 includes an elongated bar 182 swingably mounted on the support 110 by a pivot pin 184. Bar 182 has a hook 186 adapted to engage over the flange 139 as shown in Fig. 6, and a spring 188 interconnecting the bar 182 and the support 110, yieldably biases the bar 182 toward the operable latching position. A foot pedal 190 rigid to the bar 182 extends rearwardly therefrom.

The top wall 140 of bracket 138 carries a gear transmission 156 and the manner of operably coupling the rollers 154 with the prime mover of the machine, through the unit 156, may be the same in the modification shown by Figs. 6 and 7 as above described with respect to the form illustrated in Figs. 1 to 5 inclusive.

It is clear that the embodiment of Figs. 6 and 7 includes the same novel characteristic of ready attachment as a unit to the machine for operable connection with the prime mover which drives the cutter blade as in the form shown in Figs. 1 to 5 inclusive. The operation is likewise essentially the same in that when foot pedal 190 is depressed, bar 182 swings rearwardly against the action of spring 188. The heavier spring 176 thereupon swings the bracket 138 to move the friction wheels 154 into operable engagement with the ground wheels 120 and 122. This normal operating position is shown in Fig. 7 of the drawings, and when it is desired to stop forward or rearward movement of the machine, the operator need merely press downwardly on the treadle 178 and spring 188 will automatically cause the hook 186 to engage over the flange 139 of bracket 138.

Details of construction differing still further from the modified form of the invention, may be included without departing from the spirit of the invention and therefore, it is desired to be limited only by the scope of the appended claims.

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

1. In a cutting machine having a platform provided with means of support including a wheel and axle assembly, there being a cutter and a prime mover for the cutter mounted on the platform, the improvement of which comprises an attachment adapting the prime mover ad-

ditionally as a drive for said assembly, said attachment including a bracket having transmission means mounted thereon; pivot means mounting said bracket on the machine above the platform for swinging movement on an axis substantially parallel with the axle of said assembly; a shaft mounted on the bracket to one side of said pivot means for rotation on an axis substantially parallel with said axle; means operably connecting the shaft with said transmission means; a roller on the shaft in alignment with a wheel of said assembly; means operably coupling the prime mover with the transmission means; resilient means connected with the bracket for yieldably holding the same swung in one direction about said pivot means to maintain said roller in frictional engagement with the wheel; and a swingable latch adapted to interconnect the platform and the bracket at the opposite side of said pivot means and thereby hold the bracket swung in the opposite direction about said pivot means with the roller spaced from the wheel.

2. In a cutting machine as set forth in claim 1 wherein is provided a foot treadle for swinging the bracket in said opposite direction, and wherein said latch has a resilient device operably connected therewith for swinging the same to a position interconnecting the bracket and the platform when the treadle is depressed.

3. In a cutting machine as set forth in claim 1 wherein said latch extends upwardly from the platform and is swingable toward and away from the bracket, said latch having a hook on the uppermost end thereof engageable over the bracket.

4. In a cutting machine as set forth in claim 1 wherein said latch depends from the bracket and is swingably secured thereto, said latch having a hook on the lowermost end thereof engageable beneath the platform.

5. In a cutting machine as set forth in claim 4 wherein said latch has a trigger element swingably mounted thereon intermediate the ends of said element, one end of the element being engageable with the platform for withdrawing the hook from beneath the platform upon actuation of the opposite end of the element to swing the element in one direction relative to the latch.

6. In a cutting machine as set forth in claim 5 wherein is provided spring means connected with the latch for yieldably biasing the same toward the platform.

7. In a cutting machine as set forth in claim 6 wherein is provided a foot treadle for swinging the bracket in said opposite direction whereby the spring means swings the latch to a position where its hook engages beneath the platform.

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