

[54] **PAVEMENT GROOVING MACHINE
WITH HYDRAULIC WINCH**

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[51] Int. Cl. **E01c 23/09, E21c 29/10**

[58] Field of Search **299/39, 40, 41, 47-50;
173/24, 32, 33**

[56] **References Cited**

UNITED STATES PATENTS

469,260	2/1892	Mitchell.....	173/24 X
3,407,005	10/1968	Simms et al.....	299/39

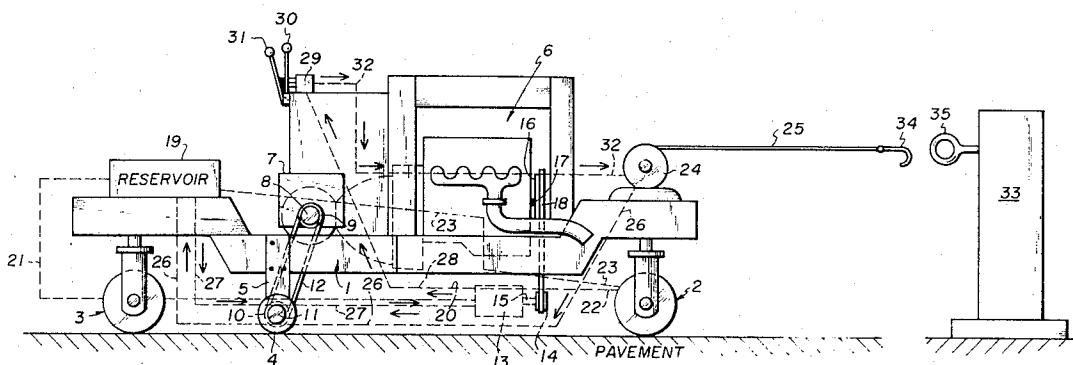
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[57] **ABSTRACT**

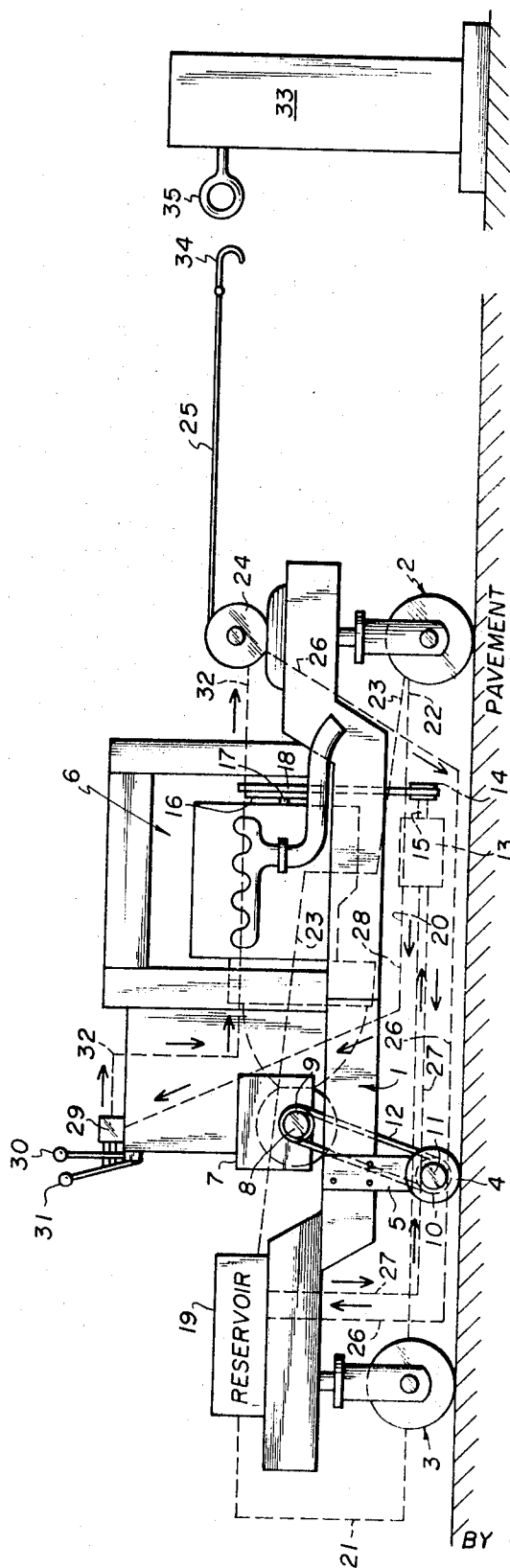
A pavement grooving machine comprising a frame having front and rear wheel means mounted thereon and carrying depending therefrom a rotary pavement cutter means mounted between the wheel means transversely of the frame and contactable with a pavement surface traversed by the machine. The frame has mounted thereon a power means for driving at least one of the front and rear wheel means, the cutter means, and also a winch means mounted on the machine. The winch means carries a cable connectable to an anchor means located forwardly of the machine whereby the machine is capable of being both self-propelled and towed along the pavement surface while the pavement is being grooved by the rotary cutter means.

3 Claims, 1 Drawing Figure



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PAVEMENT GROOVING MACHINE WITH HYDRAULIC WINCH

RELATED PATENTS

The invention relates to a self-propelled pavement grooving machine of the type disclosed in U.S. Pat. Nos. 3,195,957; Re 25,838; 3,201,173; 3,208,796; 3,269,775; 3,272,560 and more particularly to No. 3,407,005.

BACKGROUND OF THE INVENTION

A pavement grooving machine of the type contemplated comprises a frame having front and rear wheel means and carrying depending therefrom a rotary pavement cutter means mounted between the front and rear wheel means transversely of the frame and contactable with a pavement surface over which the machine traverses. The wheels and cutter means are driven by a power means mounted on the frame. The cutter means comprises a transverse shaft having mounted thereon a bank of transversally spaced cutting or saw blades for grooving the pavement surface as the machine traverses the pavement surface. The cutter means is of the type particularly illustrated and described in the above-mentioned related patents. With a pavement grooving machine, such as the type described in U.S. Pat. No. 3,407,005, the satisfactory cutting of the grooves in the pavement surface is accomplished at a rate of approximately 3 feet per minute. Attempts to increase the groove cutting rate by speeding up the machine power drive resulted in either a loss of traction and excess wear of wheel surfaces or an overriding of the cutter blades in the grooves resulting in less than satisfactory groove depth. Thus, it is herein contemplated to increase the groove cutting efficiency of pavement grooving machines.

SUMMARY OF THE INVENTION

In accordance with the invention, there is provided a groove cutting machine of the type described in U.S. Pat. No. 3,407,005 comprising a frame having front and rear wheel means mounted thereon and carrying depending therefrom a rotary pavement cutter means mounted transversely of the frame between the wheel means and contactable with a pavement surface traversed by the machine, a power means mounted on the frame for driving at least one of the front and rear wheel means, the cutter means, and a winch means mounted on the machine, the winch means carrying a cable connectable to an anchor means located forwardly of the machine whereby the machine is capable of being both self-propelled and towed along the pavement surface while the pavement is being grooved by the rotary cutter means.

DESCRIPTION OF THE DRAWING

The FIGURE illustrates a partly elevational side view and a partly schematic view of the pavement grooving machine of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the FIGURE, the groove cutting machine of the invention comprises a frame 1 having front wheel means 2 and rear wheel means 3 mounted thereon and also carrying depending therefrom a rotary pavement cutter means 4 mounted transversely of the frame on bearing bracket 5 located between the front and rear wheel means and of the type more particularly illustrated in U.S. Pat. No. 3,407,005. The frame 1 has mounted thereon a power means 6, preferably an internal combustion engine, and linkage means 7 connected between the power means and transverse shaft 8 on which is mounted a pulley 9. A pulley 10 is also mounted on cutter shaft 11 and a belt 12 is mounted on pulleys 9 and 10

whereby the cutter means 4 is power driven.

The front and rear wheels means are hydraulically operated. The hydraulic operating system is schematically illustrated in the drawing. A hydraulic pump 13 is mounted, for example, below the engine 6 and comprises a pulley 14 mounted on the pump shaft 15. A pulley 16 is mounted on engine shaft 17 and belt 18 is mounted on pulleys 14 and 16 whereby the pump 13 is operated. The frame 12 carries a hydraulic fluid reservoir 19 mounted thereon. The hydraulic wheel driving means is particularly illustrated by U.S. Pat. No. 3,407,005 and is herein shown as hydraulic line 20 leading from pump 13 to a hydraulic motor (not shown) cooperative with the rear wheel means 3 and a hydraulic line 21 leading from the rear wheel means to the reservoir 19 for driving the rear wheels. A similar hydraulic line 22 is shown leading from pump 13 to a hydraulic motor (not shown) cooperative with the front wheel means and a hydraulic line 23 leading from the front wheel means to the reservoir 19 for driving the front wheels.

In combination with the pavement grooving machine hereinabove described, and which is particularly illustrated by U.S. Pat. No. 3,407,005, the invention comprises a winch means 24 carrying a winch cable 25. The winch is hydraulically operated by means of the hydraulic pump 13 driven by the belt 18. For the operation of the winch, hydraulic line 26 leads to reservoir 19. From the reservoir 19 hydraulic line 27 leads to pump 13, hydraulic line 28 leads from pump 13 to a speed control variable flow valve 29 operated by levers 30 and 31 and from valve 29 hydraulic line 32 leads to the winch 24. Thus, the hydraulic system associated with the winch 24 is operable independently of the wheel driving means or in combination therewith when the machine is in motion while the cutter means 4 is grooving the pavement. The winch 24 by means of cable 25 is connectable to an anchor means 33 in such manner that hook 34 is engageable with the ring 35 mounted on the anchor means. The anchor means is herein merely schematically illustrated as a stationary means, but it may as well be truck means or a means so movable that it can be relocated transversally of the grooved surfaces of the pavement when new surfaces are to be grooved.

As above mentioned, the machine, while being self-propelled, is capable of grooving the pavement at a certain maximum traction rate for effective grooving. However, when the winch is operated in combination with the self-propelled wheels, it has been found that the groove-cutting rate can be effectively at least doubled, thus introducing a greater efficiency to the grooving of the pavement.

Various modifications of the invention are contemplated within the scope of the claims.

I claim:

1. A pavement grooving machine comprising a frame having front and rear wheel means mounted thereon, rotary pavement cutter means depending transversely of the frame between the front and rear wheel means and contactable with a pavement surface, power means mounted on the frame, drive means connecting the power means and the cutter means, winch means carrying a tow cable and mounted on the frame, hydraulic pump means mounted on the frame, driving means connecting the power means and the hydraulic pump means, and hydraulic linkage means connecting the pump with the winch means and at least one of the front and rear wheel means.

2. A pavement grooving machine according to claim 1, comprising hydraulic speed control means mounted on the machine, and hydraulic linkage means connecting the pump with the speed control means.

3. A pavement grooving machine according to claim 1, comprising an anchor means located forwardly of the machine, the tow cable being connectable with the anchor means.

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