April 8, 1930. E. A. SMITH 1,753,757

SNOW REMOVAL

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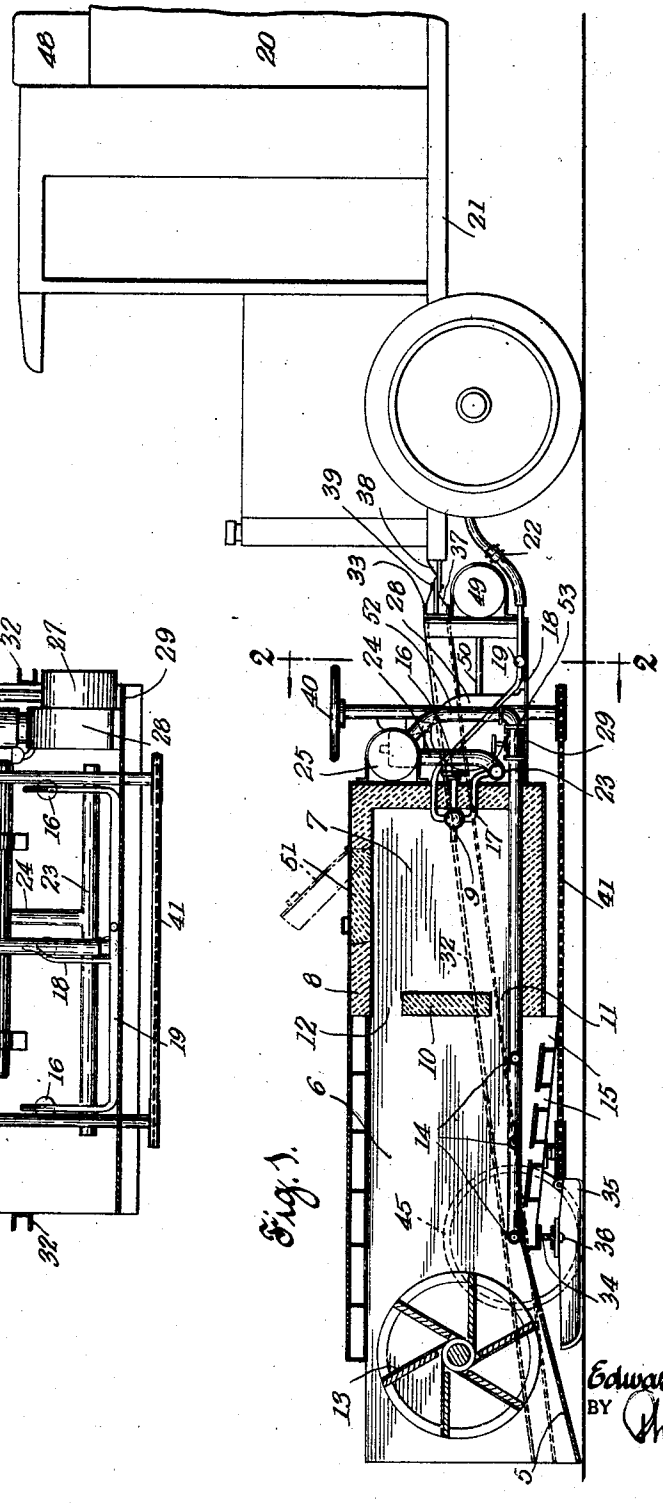


Fig. 2.

Fig. 1.

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Fig. 3.

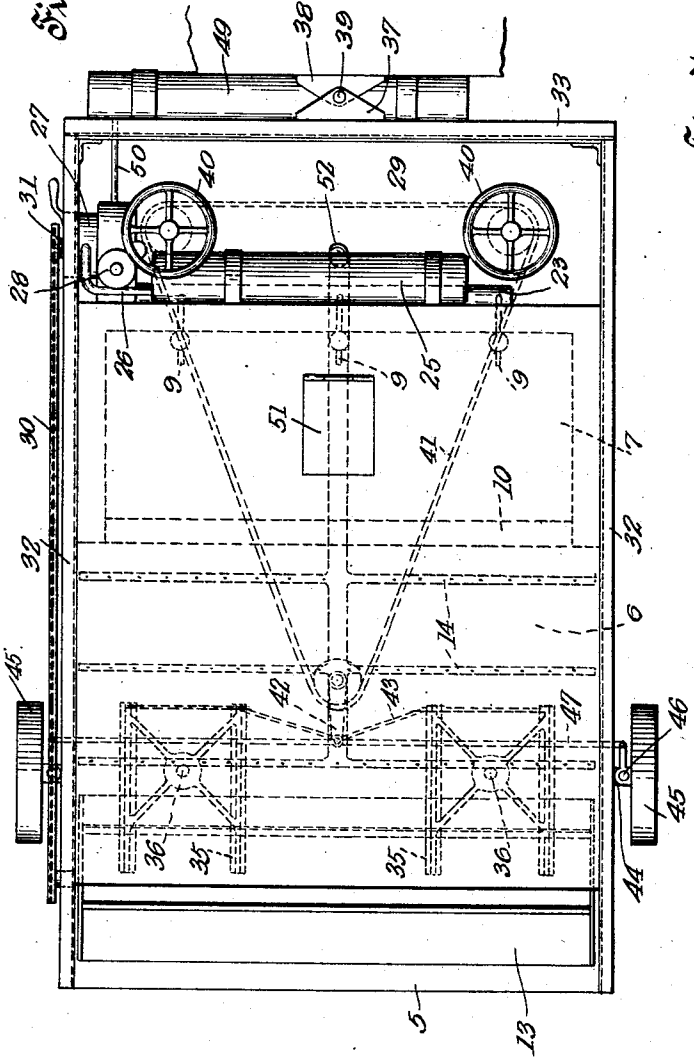
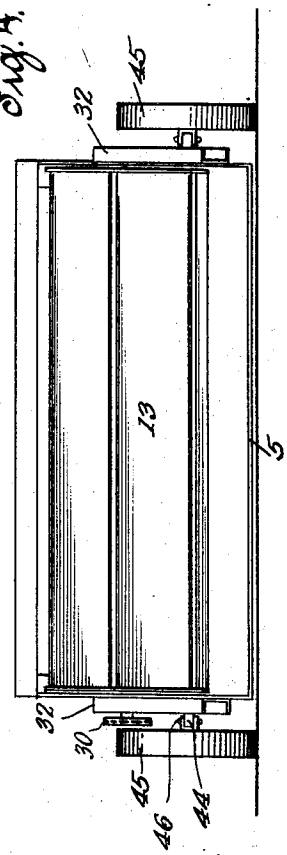


Fig. 4.



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UNITED STATES PATENT OFFICE

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SNOW REMOVAL

Application filed June 7, 1924. Serial No. 718,484.

This invention relates to the removal of snow from streets and roadways and the objects of the invention are to provide simple and practical apparatus for the purpose, which can be used in conjunction with the motor trucks ordinarily forming part of the equipment of a street cleaning department.

In the accompanying drawings I have illustrated one of the commercial embodiments of the invention, but wish it understood that the structure may be modified in various respects without departure from the broad spirit and scope of the invention as hereinafter defined and claimed.

Figure 1 is a longitudinal sectional view of the apparatus shown as propelled by and supplied from an oil tank truck of more or less conventional form.

Figure 2 is a transverse sectional view as taken on substantially the plane of line 2—2 of Figure 1.

Figures 3 and 4 are top plan and front end views respectively of the apparatus.

In this invention the removal of the snow is effected by melting the same in a portable fire box which is propelled over the roadway by a motor truck and is independently guided so as to reach in every direction.

The fire box is shown in the form of a relatively wide flat structure open at the forward end of the same in the nature of a scoop 5 and having a throat 6 leading backwardly to a combustion chamber 7 provided with a suitable refractory lining 8.

The heat is supplied in the present disclosure by a series of three burners 9 supported on the rear wall of the combustion chamber and discharging forwardly thereinto against a baffle wall 10 which is spaced clear of the bottom and the top of the chamber to leave flame passages 11 and 12 below and above the same.

A propeller or snow wheel 13 is shown journaled in the mouth of the scoop, arranged to break up the snow and throw it rearwardly into the influence of the heat from the combustion chamber and air blast pipes are shown provided at 14 for producing a further agitation. Passages 15 in the bottom of the melting chamber provide for the escape of the melted snow and this portion of the bottom is shown sloped rearwardly toward the combustion chamber to cause rapid melting and free flow of the melted products.

The burners may be of any approved construction and are shown as controlled by individual hand wheels 16 which govern admission of compressed air through piping 17 and oil through piping 18. The oil piping 18 is shown as branched from a header 19 supplied from an oil tank 20 on the power truck 21, the supply connections including a flexible detachable coupling at 22.

The air piping 17 is indicated in the form of branches from a header 23 connected by pipe 24 with the compressed air tank 25, which latter is connected by pipe 26 with a compressor 27.

The compressor is illustrated as driven by a gas engine 28 mounted on the platform 29 at the rear of the fire box structure and this prime mover is also utilized in the illustration to drive the snow wheel through the sprocket gearing 30, such drive connections including a clutch 31 which can be operated at will to throw the snow wheel into or out of operation.

The entire melting apparatus is shown mounted in a frame made up of side bars 32 connected at the rear by a cross bar 33, said side bars being inclined downwardly and forwardly from the rearmost point and connected toward the front by a transverse axle bar 34 to which runners 35 are shown pivoted at 36. The cross bar at the rear of the frame is shown provided with a bracket 37 supported on a bracket 38 at the forward end of the truck and pivoted thereto by a detachable pin or bolt 39. The rearward end of the device is thus pivotally supported by the motor truck to which it is detachably connected and the forward end is supported on runners which can be shifted for steering purposes in the illustration by steering wheels 40 connected by sprocket chain 41 to a steering arm 42 from which links 43 are extended to the steering sleds.

In this particular disclosure the ends of the axle beam are shown extended at the sides of the machine to receive stub axles

44 of wheels 45, these stub axles being detachable when the wheels are not needed by the removal of the pivot bolts 46. When the wheels are used they may be connected by linkage 47 with the steering arm so as to be shifted in the same manner as the runners. The provision of two steering wheels provided at opposite sides of the machine, as illustrated, enables an operator to walk along either side of the machine and steer while observing operations.

The head of liquid within the tank ordinarily provides sufficient pressure on the liquid fuel furnished the burners, but if desired, the fuel may be supplied under positive pressure from a pump 48 mounted on the truck. The fuel for operating the prime mover is shown carried in a tank 49 and supplied to the engine by piping 50.

A hinged door 51 is shown provided in the top of the combustion chamber to facilitate lighting of the burners, inspection of the combustion chamber, etc.

When not needed, the device can be readily uncoupled from the motor truck and being relatively compact can be stored in a fairly small place. The attachment to the motor truck is a simple operation so that the device can be quickly brought into use whenever required. The machine may then be propelled along the roadway at the speed best suited to melt the snow, this action being governed by the fact that the snow is melted very rapidly because of the intense heat generated in the combustion chamber and the snow being broken up and hurled rearwardly into the path of the flames and toward the hot baffle wall 10.

The blower pipes 15 are shown connected with the compressed air tank by piping 52 and this is shown equipped with a hand valve 53 so that the action of these blowers may be readily regulated.

What is claimed is:

1. In snow removal, melting apparatus open at the forward end and having a frame including side bars extending from the forward end of the apparatus rearwardly and connected at the rear by a cross bar, said cross bar provided with a pivot bracket for enabling pivotal engagement of the frame with the forward portion of a motor truck, said side bars extending from the pivotal support forwardly on a downward incline, an axle beam underneath the forward portions of said side bars and steering supporting means connected with said axle bar.

2. Snow removal apparatus, comprising a portable snow melting chamber open to receive the snow, a combustion chamber in rear of said melting chamber, a baffle wall between the melting chamber and combustion chamber having flame passages above and below the same, a burner at the rear of the combustion chamber directed against the baffle wall to enable combustion of fuel within the combustion chamber and passage of flame over and under said baffle wall into the forward melting chamber and means for steering the apparatus to direct the open melting chamber according to requirements.

3. Snow removing apparatus, comprising a portable chamber open at the front to receive the snow, a rotating snow wheel at the entrance to said chamber adapted to break up the snow and throw it up in flaked form into the rearward portion of said chamber, a combustion chamber in rear of said snow receiving and flaking chamber and a burner discharging into said combustion chamber and directing a hot blast forwardly into the rearward portion of the snow receiving chamber, communication between the combustion chamber and the snow chamber consisting of flame passages through which the burner discharges, preventing entrance of snow into the combustion chamber and whereby to instantaneously melt the flaked snow floated in the snow chamber by the rotating snow wheel.

In witness whereof, I have hereunto set my hand this 28th day of May, 1924.

EDWARD A. SMITH.