Dec. 5, 1961

J. ZIEB

SNOW MELTING APPARA

Filed Jan. 17, 1958

Fig. 1.

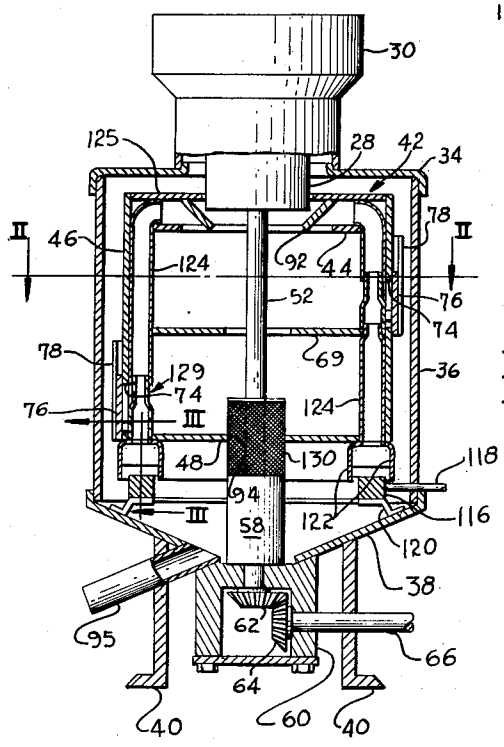


Fig. 2.

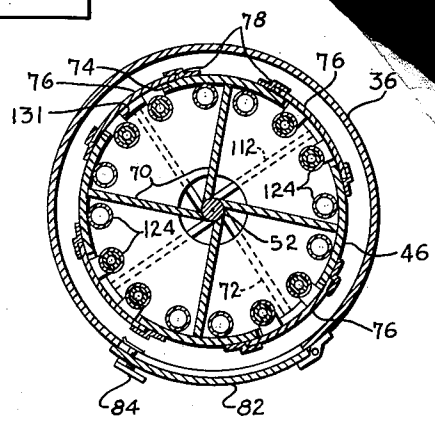


Fig. 3.

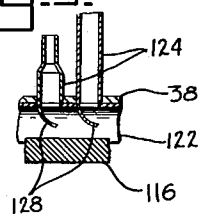
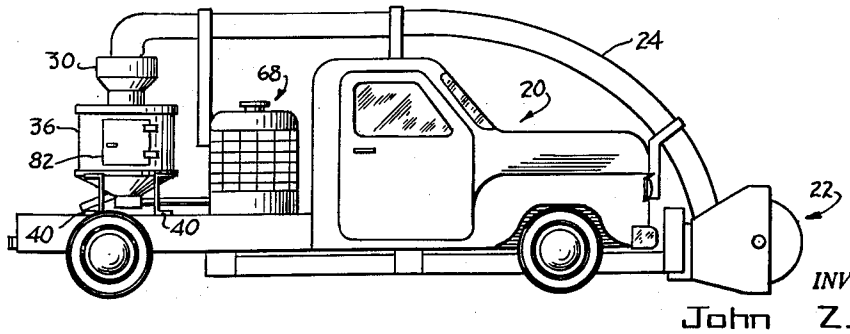


Fig. 4.



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SNOW MELTING APPARATUS

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The present invention relates to snow melting apparatus.

The general object of the invention is to provide improved apparatus for reducing snow to water so that it may be readily disposed of without creating an obstruction to motorists and pedestrians.

A more specific object of the invention is to provide improved snow melting apparatus which will be particularly adapted for use in removing piles of snow which are built up by snow plows in clearing streets and roads, particularly in the city where these piles of snow reduce the effective width of the street and occupy badly needed parking space.

The above and other related objects, as well as the various novel features of the invention will be apparent from a reading of the following description of the disclosure found in the accompanying drawings and particular novelty thereof pointed out in the appended claims.

In the drawings:

FIG. 1 is a vertical section showing an embodiment of the invention;

FIG. 2 is a section taken on line II—II in FIG. 1;

FIG. 3 is a fragmentary section taken on line III—III in FIG. 1, and

FIG. 4 is an elevation of a vehicle on which the device of the present invention is mounted.

A modified truck or the like, indicated generally by reference character **20** in FIG. 4, may be used to advance my improved snow melting apparatus from place to place to dispose of snow piles such as are left by plows at the sides of streets and roads. A rotary snow plow **22** is mounted on the front end of the truck **20** and is adapted through conventional means to blow snow through a chute or conduit **24** to the rear portion of the vehicle **20** to the snow melting apparatus **36** of the present invention (which is mounted at the rear of the vehicle **20**). Snow is discharged downwardly from the pipe **24** into an inner hopper **28**. An outer hopper **30** is spaced from the inner hopper **28** with webs providing support therebetween. The outer hopper **30** is mounted on a casing top wall **34** which caps off the top of the casing body **36**. The bottom of the casing is formed by a conical portion **38** which is supported on the frame of the vehicle **20** by channels **40**. A drum, indicated generally by reference character **42**, is mounted within the casing and comprises a top wall **44** through which snow is discharged from the chute **24** into the drum **42**. Secured to the top wall **44** is a cylindrical shell **46** formed of open work or perforated sheet metal, with the lower end of the drum **42** closed off by a bottom wall **48**. A shaft **52** is disposed concentrically within the drum **42** with its upper end being rotatably received in a bearing which is supported by webs secured to the inner hopper **28**. The interior portion of the drum **42** is subdivided into compartments by blades **70** and **72** (seen only in FIG. 2) which also secure the drum to the shaft **52**. The shaft **52** is provided with an enlarged portion **58** which transmits the axial thrust of the drum **42** to the top wall of a gear housing **60** secured to the bottom casing wall **38**. The shaft **52** continues downwardly into the gear housing **60** with a bevel gear **62** secured to its lowermost end. This gear meshes with a mating gear **64** secured to a drive shaft **66**. The drive shaft **66** is driven from an appropriate motor or engine, indicated generally by reference character **68** in FIG. 4, mounted on the vehicle **20**.

An annular burner **116** is mounted by legs **120** on the bottom wall **38** of the outer casing concentrically of

the drum **42** and is supplied with an appropriate combustible mixture through a pipe **118**. Concentric annular rims **122** extend downwardly from the drum **42** to protect the burner **116** from the melted snow as it passes from the drum **42** and outwardly through a pipe **95** as will later appear. The rims **122** also guide the heated air from the flame of the burner **116** upwardly towards tubes **124** which are secured to the inner side of the shell **46**. The top and bottom walls **44** and **48** and platform **69**, intermediate thereto, are suitably apertured to provide for mounting of the tubes **124**. The upper ends of the tubes **124** are turned inwardly to direct heat towards the interior of the drum **42**. A plate **125** is secured to an extension of the shell **46** and directs the heated air inwardly against an annular baffle **92** which in turn directs the heated air downwardly of the drum **42**. An opening **94** permits flow of the heated air outwardly from the bottom of the drum from which it passes outwardly and upwardly between the drum and the outer casing to heat the inner hopper **28**. An openwork tube **120** prevents snow from falling through the opening **94** while permitting flow of air therethrough.

To further improve the flow of heated air through the various tubes **124** there are provided scoops **128** (FIG. 3) at the lower ends of each of said tubes which are arranged to effectively facilitate the upsurgence of the heated air into the tube.

In passing it will be noted that the tubes **124** could be of most any cross-section or could have radiating fins thereon, the illustrated arrangement is thus only exemplary.

In order to provide a sufficient number of tubes **124** it will be seen that access openings **74** are blocked off by portions of the tubes **124**. The access openings are closed off by vertically slidable doors **76** which are mounted for vertically sliding movement on the exterior surface of the shell **46**. The portions of the tubes **124** which pass along the doors **76** are secured to said doors by blocks **131** and are arranged in telescoping fashion (as indicated at **129**) with the adjacent portions of the various tubes **124**. Thus it is possible to bring any one of the various doors **76** into register with a door **82** in the outer casing **36** and raise such doors **76**. A latch **84** normally maintains the door **82** closed. The portions of the tubes **124** secured thereto will also be raised to permit access to the interior compartment of the drum in order to remove rocks and other uncombustible materials.

The annular burner **116** provides heat for melting the snow interiorly of the drum **42** and the melted snow under the influence of centrifugal force is drawn outwardly of the performated shell **46** and is then drained through the pipe **95** for disposal in whatever manner is most desirable.

Having thus described the invention, what is claimed as novel and is desired to be secured by Letters Patent in the United States is:

1. Snow melting apparatus including a conduit, said apparatus being adapted for mounting on a vehicle having means for directing snow along the conduit; said apparatus comprising a casing, a drum mounted therein for rotation about a generally vertical axis, said drum having a central opening in its upper end disposed beneath said conduit to receive snow therefrom and an openwork peripheral shell, a plurality of vertical tubes mounted within said drum adjacent said shell and extending throughout its longitudinal length, said tubes each being spaced an equal radial distance from said axis, an annular burner formed on said radial distance and disposed beneath said drum, the bottom of said drum being apertured to permit the passage of heated air through said tubes to melt the snow in said drum, and means for rotating said drum to throw the melted snow therefrom under the influence of centrifugal force.

2. Snow melting apparatus as in claim 1 wherein the vertical tubes are open at their tops and baffling means are provided to direct the heated air downwardly of the drum and the bottom of said drum is centrally apertured to permit the passage of heated air downwardly through said drum.

3. Snow melting apparatus as in claim 2 wherein a pair of annular rims extend from the bottom of said drum in overlapping relation and on either side of the annular burner to protect the burner from melted snow and direct substantially all the heated air through said vertical tubes.

4. Snow melting apparatus as in claim 3 wherein passageway means permit the flow of heated air from the drum upwardly between the shell and the casing and an outer hopper is formed on the top of said casing and an inner hopper is secured to and spaced from the outer hopper to direct snow into the central opening in the upper end of said drum, the spacing between said hoppers communicating with the space between the casing and the shell.

5. Snow melting apparatus as in claim 1 wherein a door is provided on said casing and a vertically slidable door is provided on said shell and the portions of the vertical tubes disposed adjacent said shell door are fastened thereto and are arranged in telescoping fashion with the adjacent portions of the so attached tubes to permit vertical movement of the shell door, said shell door being registerable with said casing door to permit access to the interior of said drum.

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