Nov. 27, 1951 A. FIDUCCIA 2,576,829

SNOW AND ICE MELTING MACHINE

Filed Nov. 29, 1949 2 SHEETS—SHEET 1

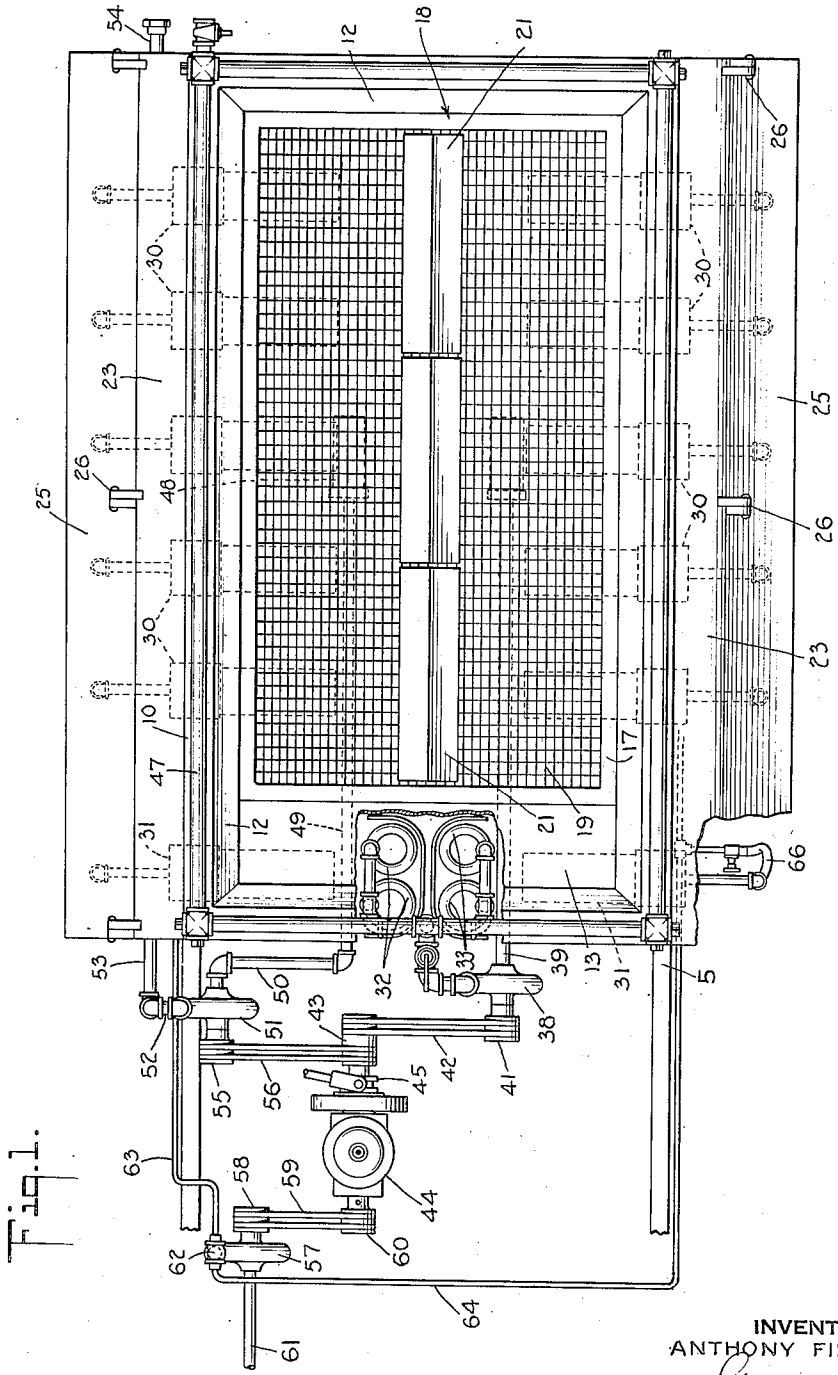


Fig. 1.

INVENTOR
ANTHONY FIDUCCIA
BY Gustav Drews
his ATTORNEY

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Fig. 2.

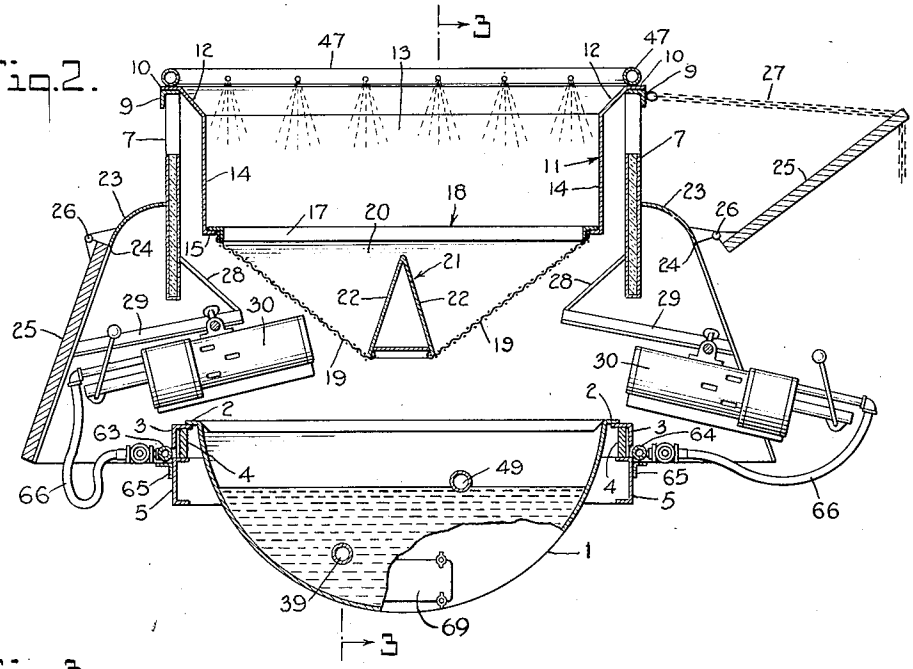
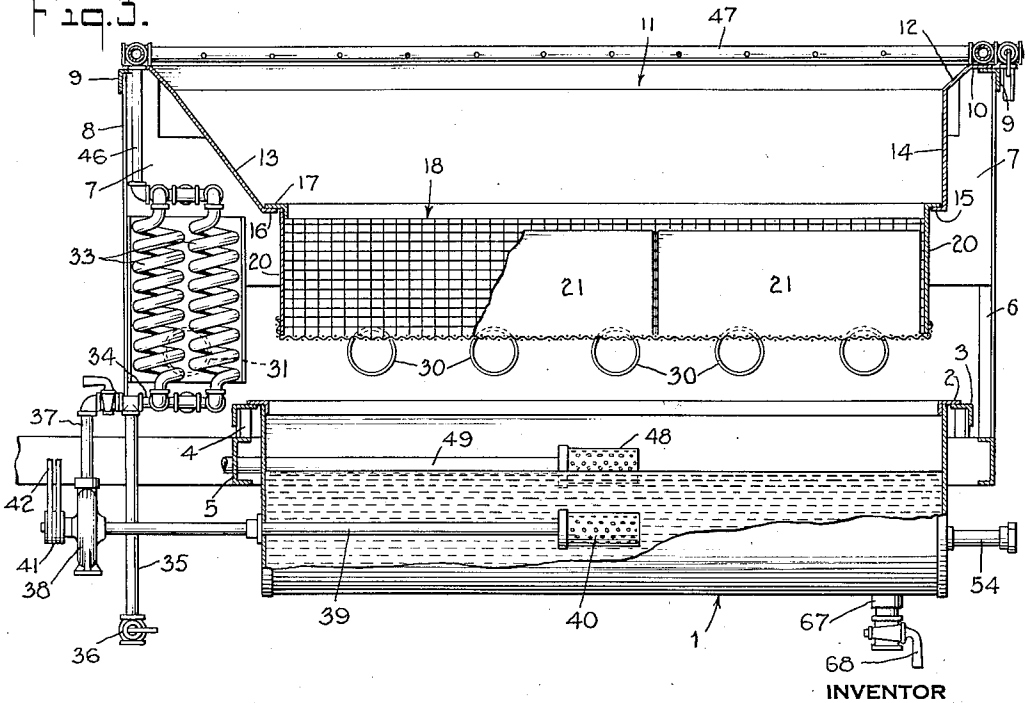


Fig. 3.



INVENTOR
ANTHONY FIDUCCIA
BY Gustav Drews
his ATTORNEY

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SNOW AND ICE MELTING MACHINE

Anthony Fiduccia, Cedar Grove, N. J.

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6 Claims. (Cl. 126—343.5)

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This invention relates to snow and ice melting machines in general such as disclosed in the United States Patent No. 2,471,733, issued May 31, 1949, to this applicant.

Among the objects of the present invention it is aimed to provide an improved snow and ice melting machine having a main snow and ice receiving container to receive the water from the melted snow in the bottom thereof, a second container in said main container above the level of the water having foraminous converging side walls with a deflector in the middle thereof to intercept the opposing flames and deflect the same into the snow and ice supply as it is introduced, in the interest of a maximum efficiency, that is, to obtain a maximum use of the heat generated by the burners.

It is still another object of the present invention to provide an improved snow and ice melting machine such as disclosed in the United States Patent No. 2,471,733 of this applicant in which the water from the melted snow received in the bottom of the main container is pumped up through a heater to a supply conduit having a plurality of discharge openings at the upper edge of the container whereby advantage is taken of the heat generated in the conduit and in the heated water discharging therefrom to melt the snow and ice as quickly as it is received and prevent it from accumulating along the upper edges of the container.

These and other features, capabilities and advantages of the invention will appear from the subjoined detailed description of one specific embodiment thereof illustrated in the accompanying drawings, in which

Fig. 1 is a plan view with parts broken away of the improved snow and ice melting machine.

Fig. 2 is a transverse section of the same

Fig. 3 is a section on the line 3—3 of Fig. 2.

In the embodiment shown, there is provided a trough 1, arcuate in transverse cross section as shown in Fig. 2, with flanges 2 at the upper free ends thereof extending outwardly to rest on the angle iron frame 3, in turn supported on the rectangular frame 4 mounted on the upper web of the channel iron frame 5 constituting part of the chassis of a truck, trailer or the like.

Supported on the upper web of the rear transverse cross piece of the frame 5 and extending upwardly therefrom, there are provided two angle iron uprights 6 which are secured to the ends of the heat insulated side wall members 7. The front ends of the wall members 7 in turn are secured to the angle iron uprights 8 extending

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upwardly from and supported on the upper faces of the upper webs of the frame 5. The upper free ends of the uprights 6 and 8 in turn may be connected by a rectangular angle iron frame 9 on which rest the outwardly extending flanges 10 of the impervious metal apron 11 having short inwardly and downwardly flaring extensions 12 at their sides and rear, and a comparatively long inwardly and downwardly flaring extension 13 at its front end. The extensions 12 in turn terminate in vertical extensions 14 having inwardly extending flanges 15 in line with the inwardly extending flange 16 of the extension 13 to form a support for the outwardly extending web of the angle iron frame 17 at the upper edge of the foraminous extension 18 having inwardly and downwardly flaring side wall members 19 and vertically extending impervious end wall members 20. The side wall members 19 at their lower ends are spaced from one another and have supported on the inner edges thereof the lower diverging ends of the tapering impervious deflector sections 21. The sections 21 as shown are provided with two impervious wall members 22 converging into engagement with one another at their upper ends.

Extending downwardly and outwardly from the insulated walls 7, there are provided the two outwardly and downwardly flaring supporting frames 23 having an opening below the edge 24, which opening, however, may be covered, as shown at the left side of Fig. 2, by the cover 25 hingedly connected at 26 to the frames 23 at the edges 24 thereof. These covers 25 may be maintained in raised or open position by any suitable means, such as the chain 27, connecting the lower edge of the cover 25 with the angle iron frame 9.

Extending inwardly from the walls 7 there are provided the brackets 28. From the lower ends of the brackets 28 to the supporting frames 23, in the present instance, there are provided a plurality of rails 29 to form a support for suspendingly securing the burners 30 and 31, the burners 30 being disposed as shown in Fig. 1 to direct flames at the foraminous extensions 19, and the burners 31 to direct flames at the two sets of heating coils 32 and 33. The heating coils 32 and 33 are connected at their lower ends to the inner conduit 34 having a drain connection 35 which may be shut off by the valve 36 and also having a connection 37 to the water pump 38 which is connected by the conduit 39 with the inlet cylinder 40 disposed in the trough 1 below the normal level of the water therein as shown. The shaft of the pump 38 is provided with a

sheave 41 drivingly connected by the belt 42 with the driven shaft 43 adapted to be drivingly connected to the motor 44 by the clutch 45.

The heating coils 32 and 33 are in turn connected to the conduit 46 connected to the rectangular discharge conduit 47 having spray outlets directed toward the supply of snow and ice fed into the container or apron 11. The conduit 47 is preferably mounted on the upper flanges 10 of the metal apron or container 11, as shown in Figs. 2 and 3.

For insuring that the level of the water in the trough 1 does not exceed a predetermined height, that shown in Figs. 2 and 3 as an instance, a discharge inlet 48 is located at a predetermined altitude above the level of the inlet cylinder 40 in the trough 1 connected to the inner discharge conduit 49 which extends out of the trough 1 into connection with the conduit 50 which is connected to the water pump 51 having the discharge conduit 52 connected to the conduit 53 extending rearwardly and terminating at 54 for connection to a hose or the like to facilitate directing the water discharged to a sewer or the like. The shaft of the pump 51 is provided with the sheave 55 drivingly connected by the belt 56 to the driven shaft 43. Consequently when the clutch 45 is actuated to connect the driven shaft 43 with the motor 44, not only the pump 38 but also the pump 51 will be actuated.

The fuel to the burners 30 and 31 in turn is supplied under pressure and is fed to the burners 30 and 31 by the pump 57, the shaft of which is provided with the sheave 58 which is drivingly connected by the belt 59 with the sheave 60 of the motor 44. The pump 57 in turn is connected to the fuel supply line 61 and with the connection 62 for supplying the fuel to the fuel conduits 63 and 64 which preferably are supported on the angle iron rails 65 secured to the channel iron frame 5. The conduits 63 and 64 in turn are connected by the flexible extensions 66 to the burners 30 and 31.

As shown, when the burners 30 and 31 are not in use, they may be moved up into the position shown at the left hand side of Fig. 2, and the cover 25 lowered into the position shown. In turn, when the burners 30 and 31 are to be used they are slidably moved to the position desired, secured in place, and the cover 25 anchored in the raised position shown at the right hand side of Fig. 2.

The deflector 21 serves to deflect the flames from the burner 30 upwardly into the mass of snow and ice being received, and to protect the opposing walls of the foraminous extension 13 from overheating.

Preferably the trough 1 as shown is also provided with a drain 67 controlled by the valve 68. Similarly the rear wall of the trough 1 is provided with a sludge cleanout door 69 as shown in Fig. 2.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. In a snow and ice melting machine, the combination of a water receiving trough, an enclosure for receiving a mass of snow and ice to be melted above said trough including an upper impervious wall structure, a lower wall structure extending down from said upper wall structure and located above said trough, said lower wall structure having downwardly dependent converging foraminous walls, means for directing flames toward the outer sides of said foraminous walls, heating coils to heat water, a horizontally disposed spray conduit connected to said heating coils parallel to and in engagement with, the upper edges of said upper wall structure with the spray outlets facing inwardly to direct heated water from the heating coils into the mass of snow and ice to be melted received within said upper wall structure, and a pump for supplying water through said heating coils to said spray conduit.

2. The combination as set forth in claim 1 having a conduit extending from the trough to the pump to enable the water supplied to said pump to be drawn from said trough by said pump.

3. The combination as set forth in claim 1 in which said flame directing means consists of burners disposed on opposite sides of said foraminous walls, and other burners disposed adjacent to the heating coils to direct flames onto the same to heat the same.

4. The combination as set forth in claim 1 in which said flame directing means consists of burners disposed on opposite sides of said foraminous walls, and impervious metal deflecting means disposed inside of said foraminous walls to intercept the flames from the burners.

5. The combination as set forth in claim 1 in which said flame directing means consists of burners disposed on opposite sides of said foraminous walls, and metal deflecting means having upwardly extending converging walls disposed inside of said foraminous walls to intercept the flames from the burners.

6. The combination as set forth in claim 1 in which the water supply to said pump is drawn from said trough, a supply conduit being disposed in said trough having an inlet to draw in the water from said trough, said latter conduit being connected to said pump to enable said pump to advance water from said trough through said heating coils into said spray conduit, an inner discharge conduit disposed above the level of the inlet of said supply conduit in said trough having an inlet to draw in water from said trough, an outer discharge conduit disposed outside of said trough, a second pump connecting said inner discharge conduit with said outer discharge conduit to draw off water from said trough and maintain the water in the trough at a predetermined level, said flame directing means consisting of burners disposed on opposite sides of said foraminous walls, a fuel supply means, a third pump for feeding fuel from said fuel supply means to said burners, and a motor operatively connected to drive said three pumps.

ANTHONY FIDUCCIA.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
840,444	Elliot	Jan. 1, 1907
1,117,985	Denemark	Nov. 24, 1914
1,160,205	Smith	Nov. 16, 1915
1,204,400	Brauminger	Nov. 14, 1916
1,702,029	Coic	Feb. 12, 1929
1,821,292	Chase	Sept. 1, 1931
2,471,733	Fiduccia	May 31, 1949