

S. FRIEDMAN.
SNOW MELTING MACHINE.
APPLICATION FILED APR. 4, 1910.

977,724.

Patented Dec. 6, 1910.
2 SHEETS—SHEET 1.

Fig. 1,

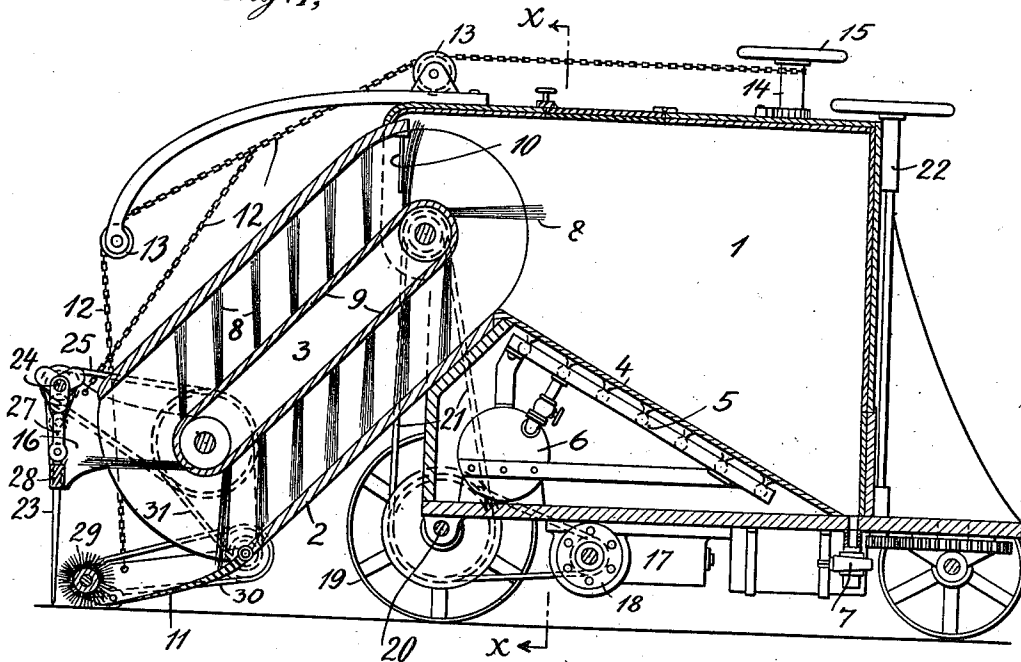
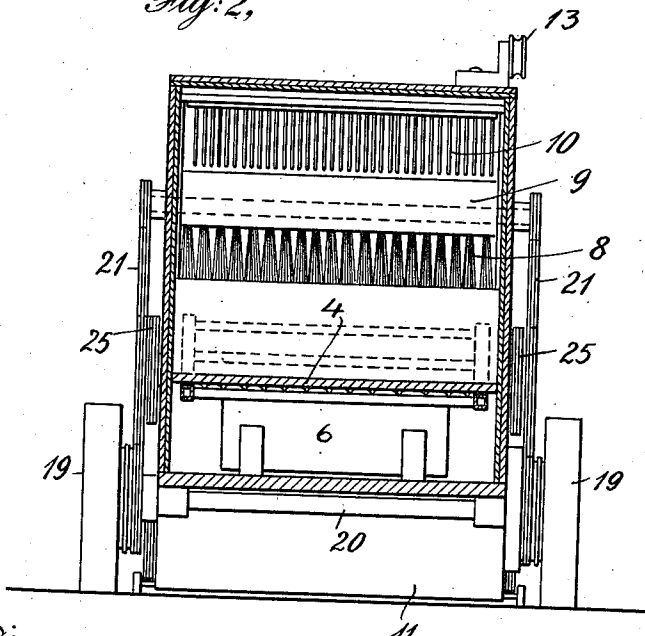


Fig. 2,



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Fig. 3,

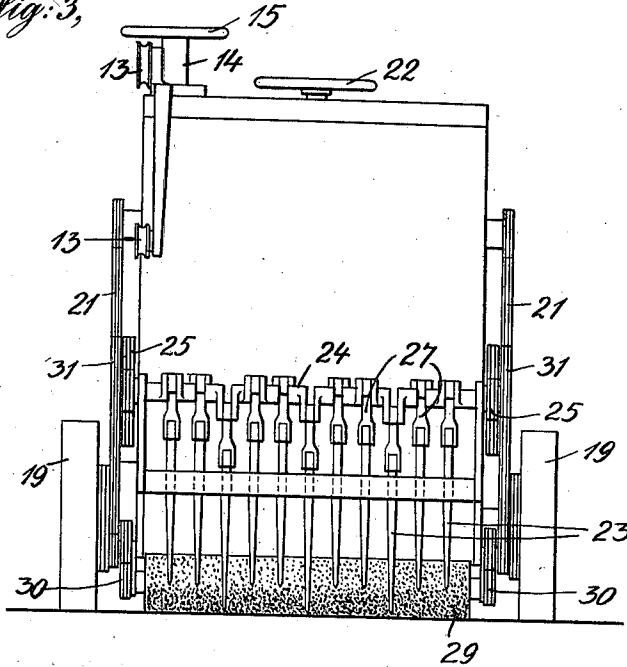
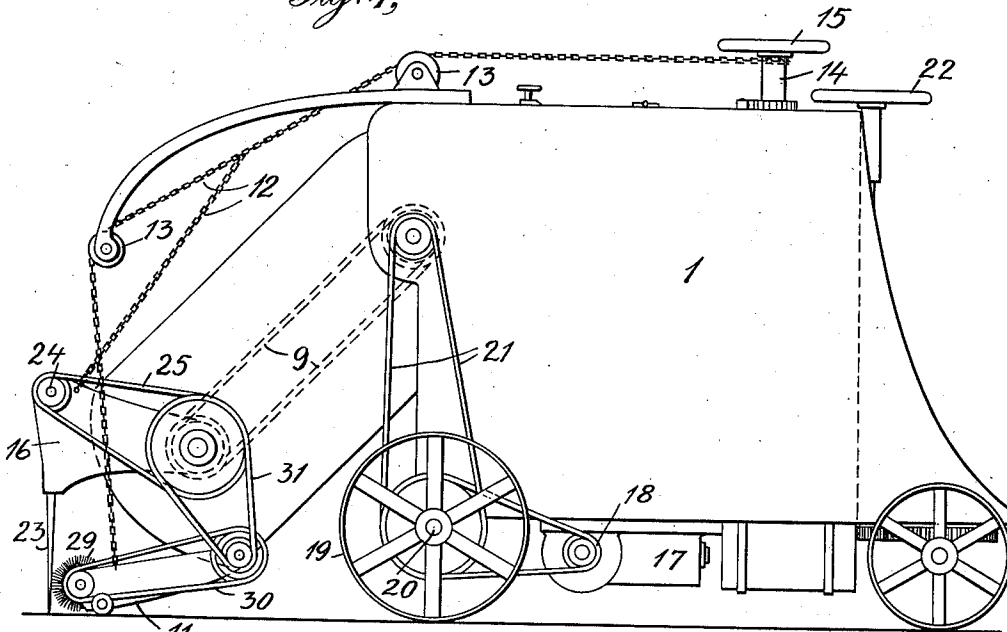


Fig. 4,



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UNITED STATES PATENT OFFICE.

SAMUEL FRIEDMAN, OF NEW YORK, N. Y.

SNOW-MELTING MACHINE.

977,724.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed April 4, 1910. Serial No. 553,300.

To all whom it may concern:

Be it known that I, SAMUEL FRIEDMAN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Snow-Melting Machines, of which the following is a specification.

My invention relates to improvements in snow melting machines and comprises improved means for feeding snow, ice and the like to a melting tank, improved means for heating such tank, an improved structure of a melting tank, and various other features as hereinafter described and particularly pointed out in the claims.

The objects of my invention are to improve and simplify snow melting machines, to make the same more efficient, and to reduce the cost of snow disposal in cities and the like.

I will now proceed to describe my invention with reference to the accompanying drawing, and will then point out the novel features in claims.

In the drawing: Figure 1 shows more or less diagrammatically a longitudinal vertical section of a machine embodying my invention; and Fig. 2 shows a transverse section of such machine on the line $x-x$ of Fig. 1. Fig. 3 shows a front elevation of the machine, and Fig. 4 a side elevation thereof.

In the drawing 1 designates a melting tank and 2 a chute having within it a brush conveyer 3 for sweeping snow, ice or the like from the street into the chute and thence conveying same up the chute to the tank 1. This tank has an inclined surface 4 preferably of a metal of high heat conductivity, upon which surface the snow so delivered by the conveyer falls. This inclined surface is arranged to be heated by suitable means, one of which means, illustrated in the drawings, comprises a series of open flame burners 5 fed from a suitable fuel tank 6; such tank being adapted to contain either gaseous or liquid fuel under pressure. But any other suitable or convenient means for heating said inclined plate 4 may be employed. It is my intention that this inclined surface 4 shall be of such length, and shall be so heated, that by the time the snow has fallen down such surface to any considerable extent, it will have been melted at least to the condition of a

slush which will run with substantially the freedom of water. The water or slush collecting in the tank may be drawn off, either continuously, or from time to time, through a valved discharge 7. The other walls of tank 1 are preferably metal or wooden walls, and if of metal, as illustrated, are preferably covered with asbestos or other non-conducting material, so that as much heat as possible may be retained within the tank 1.

The brush conveyer 3 used for delivering the snow to tank 1, preferably comprises a plurality of rows of brush tufts 8 secured to an endless link chain or belt 9. The brush tufts preferably project rearwardly, instead of projecting normal to the conveyer belt. However, I do not restrict myself to the use of brush tufts so inclined, but may set said tufts at whatever angle proves to be best adapted for the purpose. It is desirable to provide means for cleaning such a brush conveyer so that it may be freed of snow and ice clinging to the brush tufts; hence I provide a comb 10 for that purpose, the teeth of the comb adapted to pass between the brush tufts as the latter sweep through the chute.

At its lower front end, the chute 2 is provided with a plow 11 adapted to take up snow, ice, etc., from a pavement, and also to break up caked snow.

It is intended that this machine shall be driven somewhat slowly along a street from which the snow is to be removed, taking up the snow from the street pavement as it moves. Obviously the machine may be moved in any suitable manner, but I have indicated an automobile drive comprising a driving motor 17 connected through a suitable automobile power transmission device, indicated diagrammatically at 18, to the driving wheels 19 on axle 20, and I have indicated a drive belt 21 for driving the conveyer 3 from these driving wheels. I have also indicated more or less diagrammatically, suitable steering gear 22 for the machine.

As streets to be cleaned often have considerable layers of ice or highly compacted snow, which a mere plow or scraper is hardly able to take up, I provide means for breaking up such ice or compacted snow layers, comprising a plurality of vertical movable picks 23 reciprocated in any suitable manner. One mechanism for reciprocating said picks is illustrated in the draw-

ings, and comprises a crank shaft 24 driven from the lower drum of conveyer 9 by a belt 25, the cranks of which crank shaft operate connecting rods 27 pivotally connected to the picks 23. 28 designates a guide for the picks. It is also frequently desirable to positively brush the snow or ice upon the plow 11 instead of relying solely upon the forward motion of the wagon for bringing the snow or ice upon said plow, and for this purpose I provide a further rotary brush 29 driven by belts or chains 30 and 31.

As it will frequently be desirable to be able to raise both the plow 11, the brush 29, and the ice breaking mechanism, I provide for this purpose chain cables 12 passing over suitable pulleys 13 and leading to a winding drum 14 adapted to be rotated by a hand wheel 15. As shown particularly in Fig. 1, the plow 11, upon which plow the brush 29 is mounted, is pivoted and so capable of being raised in this manner, and the shaft 24 by which the picks are operated is carried by arms 16 also pivoted to the frame of the machine and so capable of being raised and, when raised, of raising the picks.

What I claim is:—

1. A snow melting machine comprising in combination an inclined melting surface, means for heating the same, and means for delivering snow to such inclined melting surface comprising a brush conveyer, and cleaning means for said conveyer comprising comb-teeth between which the tufts of the brush-conveyer pass.

2. A snow melting machine comprising in combination melting means and means for delivering snow and the like thereto, comprising a conveyer, and ice breaking means operating in advance of the conveyer, and arranged to break up layers of ice and the like for reception by the conveyer.

3. A snow melting machine comprising in combination melting means, means for delivering snow and the like thereto, comprising a conveyer, a plow supported in proximity to the road surface, and a brush for sweeping street coverings upon such plow.

4. A snow melting machine comprising in combination melting means, means for delivering snow and the like thereto, comprising a conveyer, a plow supported in proximity to the road surface, a brush for sweeping street coverings upon such plow, ice breaking means operating in advance of such plow, and means for operating the same.

5. A snow melting machine comprising in combination melting means and means for

delivering snow and the like thereto, comprising a conveyer, and ice breaking means operating in advance of the conveyer, and arranged to break up layers of ice and the like for reception by the conveyer, and means for adjusting vertically the position of such ice breaking means.

6. A snow melting machine comprising in combination melting means, means for delivering snow and the like thereto, comprising a conveyer, a plow supported in proximity to the road surface, a brush for sweeping street coverings upon such plow, and means for adjusting vertically the said brush.

7. A snow melting machine comprising in combination melting means, means for delivering snow and the like thereto, comprising a conveyer, a plow supported in proximity to the road surface, a brush for sweeping coverings upon such plow, ice breaking means operating in advance of such plow, means for operating the same, and means for adjusting vertically the said plow.

8. A snow melting machine comprising in combination melting means and means for delivering snow and the like thereto, comprising a conveyer, ice breaking means comprising a plurality of picks operating in advance of the conveyer and arranged to break up layers of ice and the like for reception by the conveyer, and means for operating said picks.

9. A snow melting machine comprising in combination a melting tank having an inclined melting surface of high heat conductivity, and an inclined chute the lower side of which is connected to said inclined melting surface, and means for brushing the snow up the lower side of said chute to said inclined melting surface, as and for the purposes set forth.

10. A snow melting machine comprising in combination a melting tank having an inclined melting surface of high heat conductivity, and an inclined chute the lower side of which is connected to said inclined melting surface, and means comprising rearwardly inclined brushes for brushing the snow up the lower side of said chute to said inclined melting surface as and for the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SAMUEL FRIEDMAN.

Witnesses:

EMANUEL ARNSTEIN,
LEO J. MATTY.