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SNOW DISPOSAL METHOD

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One of the major problems which confronts municipal authorities, particularly in the larger cities, is snow removal. During severe winters, when the snow fall is considerable, the ingenuity and resources of the city departments are taxed to the utmost in an effort to rid the city streets, bridges and highways of snow accumulation.

For years, different men, methods and machinery have tried to combat the snow. Thousands of dollars are invested in expensive snow removal machinery and equipment which lies idle for nine months of the year, and often, during snowless winters, is not used at all. Thousands of men shovel away accumulated snow from the streets in the larger cities and are often seriously handicapped in their efforts by zero or near-zero temperatures and by inefficient and improper equipment. Each year, fresh efforts are made, both by new types of machinery or by the plans of newly-appointed city executives to solve the snow removal problem—all using basically the same method, namely, by allowing the snow to fall and accumulate, then gathering it up and carrying it away.

Snow permitted to accumulate in the streets and lie there for days or weeks is a serious menace to health and safety; it gathers dust and dirt and garbage; it prevents the proper functioning of the city drainage and sewage systems, and it causes serious accidents to pedestrians and vehicles. At the present time, snow is disposed of in one basic manner, namely, by gathering it up and carting it off to a point of disposal, sometimes in sewers, sometimes in a river or other nearby body of water. It is gathered up and so disposed of by two methods, one of which is by men shoveling it into trucks at the conclusion of the storm, which cart it away to the place of disposal. The other method is by using large, powerful and expensive snow and ice removal machinery, the purchase or acquirement of which seems to be a constant bone of contention between civic authorities. When a storm of considerable magnitude occurs, these snow removal efforts are severely handicapped, and the snow is then temporarily piled near the curb where it lies for weeks thereafter, until the squads of men and machinery can get around to shoveling it into trucks, or a thaw occurs to melt it away.

All snow removal efforts seem to be based on the theory of waiting for the cessation of the storm and then shoveling up and carting off the fallen snow. It seems that no efforts have been or are being made to forestall an accumulation of snow by conducting operations prior to a snow storm and during the fall of snow.

The object of this invention therefore, is to provide a method by which an accumulation of snow within any given area, particularly on city streets, bridges, or even on country roads, can be prevented by scientific, regulated use of a sodium chloride or brine solution which will melt the snow as it falls, or at least in case of heavy fall, convert it into a slushy mass which is easily flushed into the sewers.

Briefly, the invention contemplates the use of a brine composed of a mixture of salt and water; the proportion of salt to the water, the periods of flushing or sprinkling a given area being dependent upon and regulated by temperature conditions and snow precipitation.

I am aware that the use of salt as a disintegrator or melter of snow and ice is well known. All known uses of it however have been confined to small areas, such as a short stretch of sidewalk, the walks of a railroad station and the like, and in every instance the salt distributed over such areas is in lump, powdered, or dry condition with complete disregard for economy in use; disregard of temperature conditions and disregard to the amount of snow precipitation and the times of salt distribution.

In the practice of my invention, I contemplate mixing the salt with water, the quantity of salt employed in the mixture being dependent upon two factors, namely, the temperature prevailing and the rate of snow fall. The mixtures hereafter described have been exhaustively tested under actual conditions and were found satisfactory.

I have found that a mixture of one part of salt and slightly over three parts of water, by weight, produces a dense mixture in which absorption of the salt just about occurs. Thus, such a mixture will be hereinafter considered as a "100%" solution.

The following table has been found entirely satisfactory under various working conditions.

It shows the density of brine to be used at various degrees of temperature Fahrenheit, the freezing point of the brine being used, salometer degrees of brine at 60° F. to be reduced 1° of salometer for each 10° F. below 60° F. and other means to determine the density.

Salometer degrees	Specific gravity	Weight in lbs. per cu. foot	Lbs. per cu. ft.		Freez. pt. brine used	Temp. to use	Approx. wt. snow
			Salt	Water			
88	1.178	73.42	17.12	56.31	−6.0	−15.4	6.2
84	1.168	72.83	16.15	56.68	−2.8	−17.0	7.2
76	1.152	71.77	14.40	57.37	−2.2	−20.2	8.2
70	1.139	70.96	13.11	57.85	−5.2	−22.3	9.2
64	1.126	70.15	11.85	58.30	−8.9	−24.4	10.2
58	1.114	69.40	10.63	58.77	−12.8	−28.2	11.6
50	1.098	68.40	9.03	59.37	−15.4	−30.0	11.9
44	1.086	76.66	7.86	59.80	−17.9	−32.0	12.3

The above figures are based on a 15 ft. stretch down the crown of a street 34 ft. wide, with a precipitation of .30 in. per hour, to be decreased or increased in relation to decreasing or in-

creasing volume of snow fall, and where economy is desired, agitation by motor vehicle or other traffic is a major ally of this plan, and in practice it has been found that the range of time between treatments will be from 45 minutes in a wet snow fall at 34° to three hours in a storm at 20°, thus we have an average time of treatment of one hour, 52 minutes, 30 seconds, by increasing the density of brine and treating a larger area of street surface the time between treatments or spraying can be increased considerably.

In suggesting that the brine be sprayed or otherwise distributed along a portion of the width of the street, namely along a fifteen foot wide stretch down the crown of the street, I take advantage of the natural tendency of water to flow from the crown of the street toward the edges or gutters. Thus, when a fairly strong brine solution is sprayed down the crown of the street and it reduces the falling snow into liquid of lesser salt density due to mixture of the falling snow with the sprayed brine solution, the liquid so produced will run by gravity toward the gutters and melt the snow down on opposite sides of the sprayed areas into liquid to flow into the sewers. Thus, when the rate of snow precipitation is known and the prevailing temperature is known also, the proportion of the sprayed area with the relation to the unsprayed area and the salt density of the solution to be used can be regulated accordingly.

The most practical method of distribution of the brine, produced as above set forth, is by means of sprinkler trucks, such as used for example in New York city for washing or flushing streets, and which carrying and distributing the brine, proceed slowly over a given section of street, or over a given mileage. It is recommended that either shortly before or just at the beginning of a snowfall, the trucks proceed over an alloted area and sprinkle or spray the brine over the roadway.

The sprinkling or flushing of the streets by the brine solution should be periodically repeated, the intervals of time between flushings being governed by prevailing temperature and snow precipitation, as above pointed out.

While I have recommended the use of sprinkler trucks for the distribution of the brine, it will be understood that fixed tanks may also be employed for distribution over an adjacent area. For example, public buildings, large store buildings and other places may find it desirable or expedient to utilize one or more fixed tanks either inside or outside of the buildings for containing the brine and provide attached sprinkling means such as hoses or other sprinkling systems whereby the area of street adjacent to the building, including the surrounding side-walks may be sprinkled with the brine at intervals both before and during a storm to thereby prevent the adherence of snow or formation of ice. Where facilities permit, the brine can be heated, either by heating devices provided on the sprinkler trucks when such means are employed for distribution of the brine, or by steam or other heating means in the case of fixed tanks.

What I claim is:

1. The method of snow elimination comprising, flooding or spraying an elevated portion of an area with a brine composed of a salt and water mixture during a snow fall, and controlling the quantity of salt employed in the brine according to both the temperature prevailing during the flooding or spraying operations and the rate of snow precipitation during the storm and allowing the brine from the sprayed area to flow over the unsprayed portions of the area.

2. The method of snow elimination comprising, sprinkling a given portion of a selected area with a brine composed of a salt and water mixture before, during, and after a snow storm, regulating the quantity of salt employed in the brine according to the temperature prevailing during the flooding or spraying operation, and also according to the rate of snow precipitation and allowing the brine from the sprayed portion of the area to flow by gravity over unsprayed portions of the area.

3. The method of snow elimination comprising mixing a brine composed of salt and water, regulating the amount of salt employed in the mixture according to prevailing temperature, namely, increasing the salt at lower temperature and decreasing it at higher temperature, sprinkling the solution over a given area of roadway, and repeating the sprinkling operation at intervals according to the rate of snow precipitation and the prevailing temperature.

4. The method of snow elimination comprising, flooding or spraying an area of highway with a brine composed of a salt and water mixture before and during a snow storm, and controlling the quantity of salt employed in the brine according to the temperature prevailing during the flooding or spraying operation.

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