

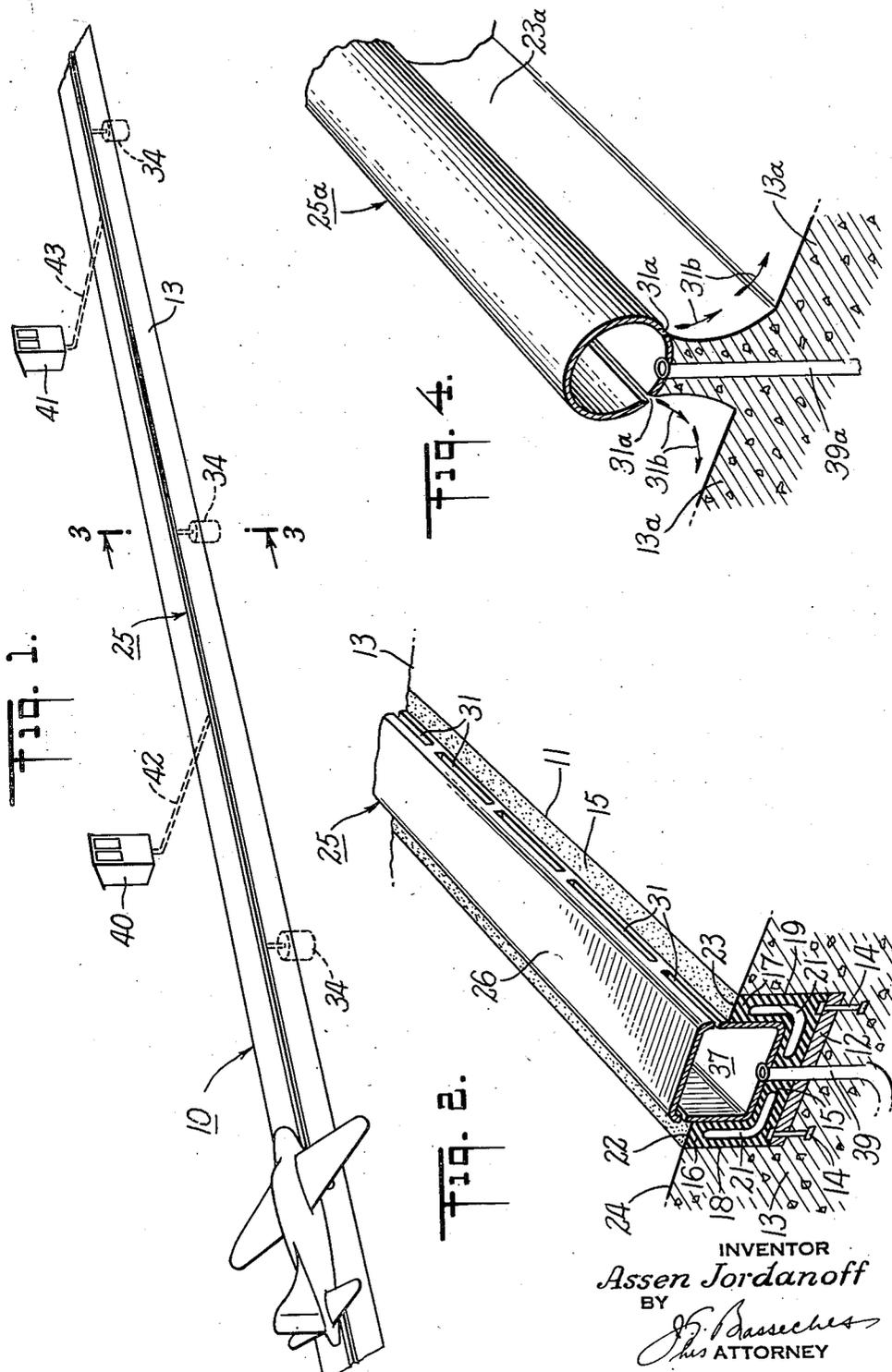
April 14, 1953

A. JORDANOFF
SNOW REMOVAL CONSTRUCTION

2,634,659

Filed May 25, 1950

2 SHEETS—SHEET 1



INVENTOR
Assen Jordanoff
BY
J. P. Bassichet
ATTORNEY

UNITED STATES PATENT OFFICE

2,634,659

SNOW REMOVAL CONSTRUCTION

Asseen Jordanoff, Brookville, N. Y., assignor of
one-half to John Hagan, New York, N. Y.

Application May 25, 1950, Serial No. 164,071

2 Claims. (Cl. 94-4)

1

This invention relates to right-of-way installations and more particularly to snow removal installations of pavements.

My invention is concerned with the problem of maintaining paved rights-of-way, such as airplane runways, bridges, roadways, driveways clear of falling snow, and more particularly to include an installation for treating the surfaces of pavements, roadways, runways and the like areas to prevent the accumulation of falling snow and to assure the serviceability of such traction areas whereby service may be maintained on such areas.

Still more particularly it is contemplated by my invention to provide a roadway construction wherein air blast means may be employed to prevent the accumulation of falling snow on a pavement serving as a traction surface, such as an airport runway, roadway, bridge approaches and thoroughways, sidewalks and home driveways, which may be continuously exposed to the weather, and through which operation is assured by avoiding the accumulation of water of condensation or melting snow, ice or rain.

Known to me is the proposal to prevent the accumulation of ice and sleet on store front windows and windshields of airplanes by spraying thereon heated air or air with liquids tending to reduce the melting point of rainwater or melted snow. Such devices have a high order of drainage for melted snow and are not designed or suitable for level surfaces or slow draining areas.

Furthermore, the economics involved in treating extended areas, such as runways with heated air and/or freezing point depressants, as well as the limitation upon drainage have led to the retention of old procedure of removing snow after it has accumulated, to make such passages or area accessible to vehicles.

According to my invention, it is an object thereof to provide an installation for maintaining exposed areas such as airplane runways, grades of highways, driveways or approaches and runways of bridges clear of snow by an airblast directed thereon under conditions which assure the formation of a blanket of rapidly moving air over the surface to be treated, including a mode of operation which prevents a rise in temperature tending to melt the snow and to take off any water which may accumulate by reason of condensation, whereby the pavement surfaces involved will be kept clear of snow under all conditions, and likewise to prevent the accumulation of water tending to freeze or obstruct the formation of the air blanket over the pavement areas.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, I make reference to the accompanying drawing forming a part hereof, in which—

Figure 1 is a perspective view diagrammatically

2

illustrating my installation as part of an airplane runway;

Figure 2 is a perspective view, partly in section of a portion of the installation shown in Figure 1, magnified to show details;

Figure 3 is a fragmentary section on the line 3-3 of Figure 1;

Figure 4 is a perspective view, partly in section, of another embodiment of my invention.

Summarizing my invention, I provide a runway or the like with a conduit substantially flush with the runway area, and project from this conduit a blast of air directed to skim the surface of the driveway and form a blanket preventing the accumulation of falling snow which may be carried off during snowfall and leave a clear area.

More specifically, I provide a conduit substantially flush with the pavement or traction area of a runway, which yields under the weight of a vehicle thereover, or is so close to it as not to obstruct the same, and to provide a curtain of air through which falling snow may not penetrate, thereby to leave a snow clear pavement area and further to provide a structure in the nature of a road surface, such as a runway or driveway, which serves to prevent the accumulation of melted snow and to prevent spraying this area with water formed by condensation which may, in impinging upon the snow, melt the same and obstruct rather than clear the roadway or pavement of the character described.

Making reference to the drawing, I illustrate an airplane runway 10 along the center of which there is formed a trough 11, having a supporting plate 12 anchored to the concrete or roadbed 13 by anchor bolts or the like 14. Within this trough there is positioned a resilient channel 15, whose branches 16 and 17 lie against the side walls 18 and 19, respectively, of the trough, and whose bottom branch 20 lies on the plate 12 or is adhesively united to the same. The channel 15 may be made of resilient rubber or similar yieldable material including desirably air pockets 21 where additional resiliency is found necessary. The ends 22 and 23 of the channel are arranged to lie flush with the surface 24 of the runway or pavement. The pitch of the runway or paved area is in accordance with the location of the channel, as will be described hereinbelow. Tubes 32 serve to drain condensed liquid into dry wells 34.

The channel 15 has spaced between the branches 16 and 17 a conduit 25 which may desirably be formed oblong in cross section, and is designed to have its upper wall 26 project slightly above the surface 24. Side walls 27 and 28 are formed near the round elbows 29 and 30 with perforations or air nozzles 31. These nozzles are spaced slightly above the pavement surface 24 and their position over this area may be adjusted

by the adjustment on the anchoring pipes 32 which press through the drill hole 33 of the plate 12 to a dry well or the like 34. An adjusting member, such as a nut 35, may engage the plate 12 to control the upward projection of the conduit 25.

The anchoring pipe 32 has a connecting passage 36 leading to the chamber 37 of the conduit 25. A counterboring 38 permits movement of the nut 35 therewith while restraining the movement of the pipe through the boring 33 of the plate 12. Connected to the conduit 25 is a pipe line 39 which leads to a source of air under pressure (not shown). This may be a localized air pumping station as from a wind tunnel or sirocco fan, whereby air at high velocity is projected into the conduits. The source of such air driven at high velocity through the conduit 25 is not shown. However, it may be generated by the propeller of an airplane engine or the exhaust of a jet turbine engine, with cooling means to reduce the temperature whereby cold air which is found desirable is projected into the conduit. Where extended stretches of runway are encountered, tending to form a drop in air velocity, there may be additionally provided booster stations 40 and 41 having conduits 42 and 43 leading into the conduit 25 which overcome the drop in velocity to the more distant points.

By the installation which has been described, the runway 10 is operated during the falling of snow and is preferably initiated before any accumulation of snow occurs. The direction of the airblast through the nozzles 31 is calculated to furnish a curtain of rapidly moving air at temperatures preventing melting of the snow and tending to disperse the snow flakes as they reach the area of the runway. It is my explanation that the rough concrete forms deflecting areas of desirable effect but I do not wish to be bound by this explanation. During heavy snowfall the curtain of air having a drift off of the same maintains the runway clear by preventing the accumulation on the runway, the snow being driven to one side of the runway where, as the velocity of the air diminishes, the snow flakes will be free to drop.

By anchoring of the conduit, warping of the conduit above the plane of the surface 24 is minimized. The rounded corners 29 and 30 form no obstruction to the wheels of an airplane or any other vehicle. The weight of the airplane will compress the conduit 25 into the resilient channel 15, depressing the anchoring nuts into the counter-boring 33. Water of condensation formed in the conduit 25 is drained off into a dry well 34 or sewer, assuring that the air emanating from the nozzles does not spray water over the runway, and that during the falling of snow, air free from water is emitted to provide the protective air curtain.

While I have shown and described a runway with the conduit 25 along its center and with the nozzles directed in opposite directions, it will be understood that I may provide a pair of these conduits along the side edges in parallelism, with the air nozzles operating in the same direction, to have one stream supplement the other in carrying the drift of air and the snow with it off the pavement area under consideration.

It will also be understood that while I have

shown and illustrated my invention in connection with a runway, other vehicle traction surfaces or pavements may be similarly constructed and grade roadways, particularly those which usually require sanding, may have the installation indicated embodied therein to form a curtain of air thereover, to disperse the snow flakes and prevent accumulation thereof in dangerous drifts or layers. It will be understood, also, that while I have described and illustrated a yieldable support with drainage provision whereby no obstruction is formed on the road surface, and avoiding the formation of major eddies or currents tending to form drifts, it will be understood that I may, under certain circumstances, embody the construction as part of a curb, such as a parting curb on bridges or highways.

It is understood that while the devices may be put into action when snow is encountered by vigilant observation, it is contemplated by me to have sections of the highways or runways of airplanes self-patrolled so that as snow begins to fall, these devices will be put into operation without involving the human factor.

Figure 4 shows a modification of Figure 2 wherein a conduit 25a of circular cross section is supported on curb base 23a and air is supplied under pressure through pipe line 39a. It will be apparent that a series of drain lines may be used to extend into dry wells or other run-off means as in the prior embodiment. The side walls of the curb base 23a are arcuate and merge gradually into the plane of the roadway surface 13a. The series of slots 31a are positioned adjacent the surface of the curb base 23a to direct the stream of air along and parallel to the contiguous surface of the curb base and the roadway or pavement surface, as shown by the arrows 31b.

In other respects the principle of the prior embodiment is substantially retained as will be readily understood.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is:

1. An open air pavement, a conduit partially embedded in the surface of said pavement, the walls of which conduit have nozzles which project above said surface in a series along said surface and means to supply air to said conduit under pressure for projection through said nozzles across the surface of the pavement to deflect falling snow.

2. An open air pavement in accordance with claim 1 wherein said surface is provided with a trough within which said conduit rests, a resilient channel in said trough supporting said conduit, a portion of said conduit projecting above said surface of the pavement having said nozzles extending therefrom.

ASSEN JORDANOFF.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
966,395	Gothan	Aug. 2, 1910
1,656,653	Von Keller	Jan. 17, 1928
1,945,810	Holtz	Feb. 6, 1934
2,148,773	Ozias	Feb. 28, 1939
2,229,179	Langdon	Jan. 21, 1941
2,483,704	Leigh	Oct. 4, 1949