

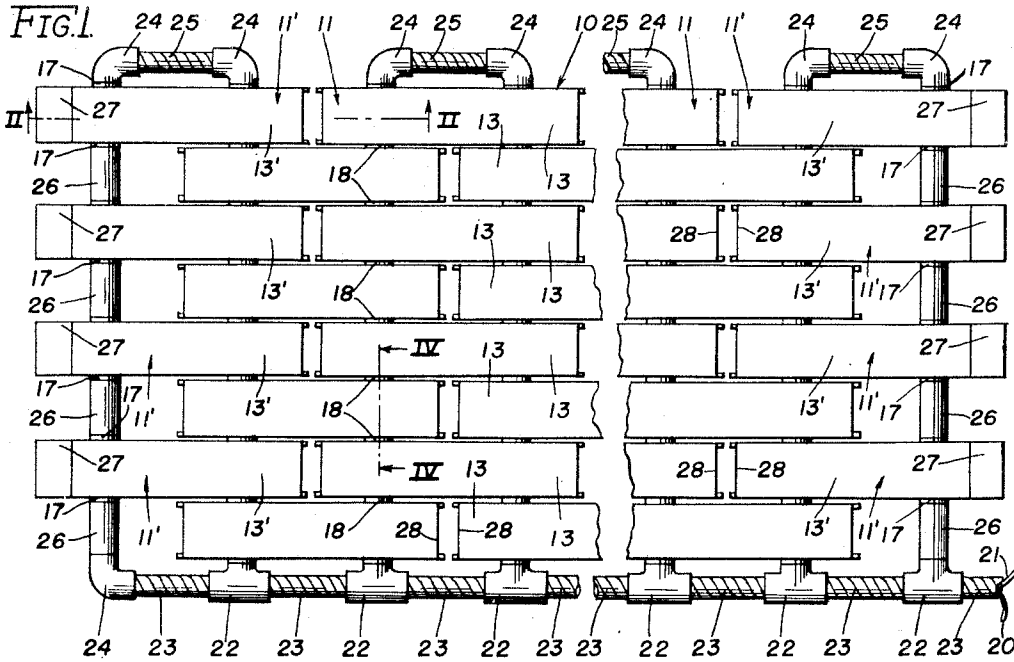
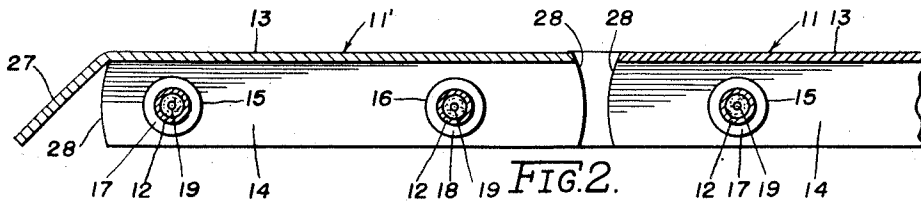
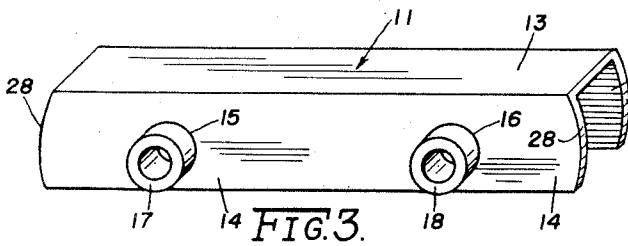
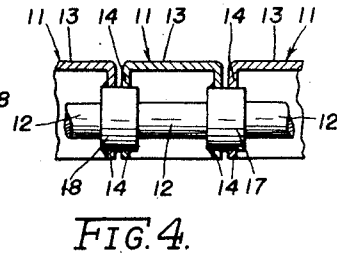
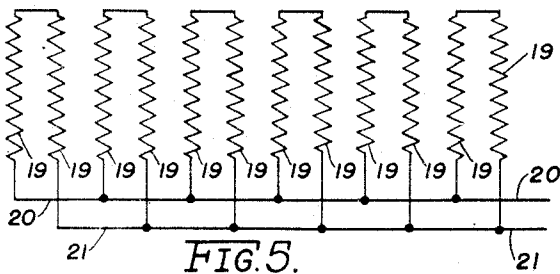
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THERMIC ICE AND SNOW REMOVER

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THERMIC ICE AND SNOW REMOVER

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4 Claims. (Cl. 219—19)

This invention relates to ice and snow removing devices and more particularly to thermic tread devices for covering exposed surfaces, although certain features thereof may be employed with equal advantage for other purposes.

It contemplates more especially the provision of an improved and simplified flexible tread link surface covering device having thermal means for effectively precluding and removing snow and ice formations.

Snow and ice formations on weather exposed surfaces such as sidewalks, roads, garage drives, and open platforms are a constant source of danger which impede passage thereon to such an extent that frequent attention must be directed to the manual clearance of these climatic precipitations. With the teachings of the present invention, a simple, inexpensive, time and labor saving device is provided for maintaining various and diverse weather exposed surfaces free from snow and ice formations at all times without requiring manual effort or additional labor to accomplish the result. Then, too, such precipitation can be removed or precluded from formation during the night or at times when the surfaces are not in actual or frequent use.

One object of the present invention is to simplify the construction and improve the operation of snow and ice removing devices for covering weather exposed surfaces.

Another object is to provide an improved thermic snow and ice removing device of simple and inexpensive fabricated construction.

Still another object is to provide a flexible thermic snow and ice removing pad for covering weather exposed surfaces in its extended form and capable of being compactly collapsed into superimposed sections for storage purposes.

A further object is to provide a flexible thermic snow and ice removing pad defining a plurality of tread bar links interconnected to assume a collapsed shape by superimposing folds of tread links for storage purposes.

A still further object is to provide a thermic snow and ice removing pad comprising a plurality of tread bars in flexible connected relation through the medium of conduits serving as heating element containers for imparting a melting influence to the surrounding surfaces thereof.

Still a further object is to provide a flexible thermic snow and ice removing pad in combination with conduits operatively connected for

conduction of any available source of heat generating means.

An additional object is to provide a flexible thermic snow and ice removing surface tread member capable of heating the confronting weather exposed surface sufficiently to prevent formation of ice and snow thereon while permitting the safe and unimpeded passage of pedestrians, vehicles and animals thereover.

Other objects and advantages will appear from the following description of an illustrative embodiment of the present invention.

In the drawing:

Figure 1 is a fragmentary plan view of a device embodying features of the present invention.

Figure 2 is a sectional view in elevation taken substantially along line II—II of Figure 1.

Figure 3 is a perspective view of a tread bar link shown in Figure 1.

Figure 4 is a fragmentary sectional view in elevation taken substantially along line IV—IV of Figure 1.

Figure 5 is a schematic wiring diagram showing a circuit for electrical resistance coils constituting the heat generating means provided in the device shown in Figure 1.

The structure selected for illustration comprises a flexible thermic tread member 10 of substantially rectangular configuration to provide the desired surface covering expanse for any standard, special or predetermined surface. The tread member 10 is, in this instance, fabricated from suitable component elements which may take the form of alternately disposed and arranged tread bar links 11 and end tread links 11'. The tread links 11—11' have, in this instance, their extremities pivotally connected by means of transversely disposed conduit pipes 12 which define a flexible surface covering pad or tread member 10.

The individual tread links 11 are, in this instance, stamped, shaped or otherwise formed of substantially U-shaped inverted metallic heat conducting and radiating bars assembled into a flexible tread member 10. It should be noted that tread bars 11—11' are alternately disposed in a plurality of adjacent linear series, in this instance eight, to define the desired rectangular area and expanse therefor. The alternate extremities of the bars or links 11—11' are pivotally interconnected by means of conduit pipes 12 extending through the adjacent linear series of links 11 to present the comparatively light, flexible weight sustaining surface covering tread

pad or member 10 which may be subjected to the severest service conditions in operative position.

Nevertheless, the assembled tread member 10 is sufficiently flexible to be compactly folded into a small collapsed unit for storage purposes. To this end, each tread link 11 has a flat supporting surface 13 with lateral depending spaced walls 14 provided, in this instance, with horizontally aligned apertures 15-16 bored transversely therethrough to preferably though not essentially receive cylindrical tubular bushings 17-18 pressed, welded or otherwise permanently fixed into the apertures 15-16 on one of the link walls 14 to loosely project into the side walls 14 in adjacent links 11-11' for rigid pivotal support on transversely disposed conduit pipes 12 journaled therein. The extent to which the bushing 17-18 project from the side walls 14 of the tread links 11-11', determines their laterally adjacent spacing relative to each other.

In the present embodiment, the tread links 11 and their pivotal bushing conduit mounts 12 are heated through radiation and conduction and preferably though not essentially by electrical resistance wires 19 confined within and extending through the transverse conduit pipe sections 12 that extend for and partially beyond the maximum width of the tread member 10. The coils 19 are connected in parallel (Figure 5) to wires 20 and 21 to any suitable or available source of electrical energy such as an outlet plug or the like.

The extremities of the conduit pipe sections 12 are fitted with standard T pipe couplings 22 to threadedly receive short sections of flexible electrically wired conduit 23 therebetween. The other ends of the conduit pipe sections 12 are provided with standard elbow pipe couplings 24 attached thereon in any suitable manner and oppositely disposed in pairs (Figure 1) to receive short segments of flexible electrically wired conduit 25 therebetween. In order to maintain the tread links 11 in parallel spaced relation with the intermediate tread links 11', spacer collars 26 envelope the conduit 12 between the tubular bushings 17b extending from the side walls 14 thereof.

The spacer collars 26 conform in exterior diameter with the bushings 17 and are interposed in spaces between the end tread links 11' to maintain them in their proper spaced relation. So that the end links 11' will afford minimum obstruction to walking on and off of the tread member 10, the top tread surfaces 13' of the extend links 11' extend beyond the side walls 14 to present an outwardly inclined extension 27 that terminates in line with the bottom edges of the side walls 14 of the end links 11'. In order that the top surfaces 13 and 13' of the intermediate links 11 and end links 11' may extend as close as possible to each other to present an expansive and protective tread member surface with the minimum of interruption, the extremities 28 of the tread links 11-11' are preferably though not essentially arcuately curved so as to permit pivotal clearance between each other when the tread member 10 is collapsed by reverse folding of one series of links 11 or 11' relative to the next adjacent series of links 11 or 11'.

The bores or apertures 15-16 aligned in the confronting side walls 14 of the tread links 11-11' are so positioned that their spaced axial distance relative to each other in each side wall 14 is somewhat greater than twice their re-

spective distances to the extremities 28 of the tread links 11-11', thereby affording the reverse folding of longitudinally disposed links so that they can be effectively and compactly collapsed to occupy the minimum space when not in use. The collapsing is afforded by the flexible conduits 23-25 and the additional mounting of the tread links 11-11' relative to the transverse conduits 12 that determines the width of the tread member 10.

Thermal means other than the electrical heat members 19, may be substituted. For instance, the heat element 19 can be dispensed with and live steam directed through the transverse conduits or pipes 12 which, in this instance, would be connected in series by substituting hollow flexible tubing for the alternate short sections 23 on one side and all of the sections 25 on the other side so that the steam would follow a circuitous path through the conduits or pipes 12. In that way, the heat generated from the steam would be radiated and conducted through the pipes 12 and the body of the tread links 11-11'. Other heating expedients may be resorted to and it is apparent that the tread member 10 can be assembled to approximate any required size, shape and expanse depending upon the surface to be covered for melting any snow and ice precipitation thereon and precluding any further formation.

Various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages of the invention or any features thereof, and nothing herein shall be construed as limitations upon the invention, its concept or structural embodiment as to the whole or any part thereof except as defined in the appended claims.

I claim:

1. A device for removing snow and ice from weather exposed surfaces comprising a plurality of flat metallic chambered links to define a flexible metallic tread surface member of predetermined area, said chambered links being staggered to collectively present weather exposed top flat surfaces, conduit means alternately connected to opposite extremities of adjacent chambered links to serve as pivotal interconnecting means therefor, and heat producing means provided in said conduit means for elevating the temperature of said links and the surrounding areas thereof to transmit a melting influence to foreign substances proximate to the surfaces of said chambered links.

2. A device for removing snow and ice from weather exposed surfaces comprising a plurality of flat metallic chambered links to define a flexible metallic tread surface member of predetermined area, said chambered links being staggered to collectively present weather exposed top flat surfaces with confronting open bottoms, conduit means alternately connected to opposite extremities of adjacent chambered links to serve as pivotal interconnecting means therefor, and heat producing means provided in said conduit means for elevating the temperature of said links and the surrounding areas thereof to transmit a melting influence to foreign substances proximate to said surfaces.

3. A device for removing snow and ice from weather exposed surfaces comprising a plurality of flat metallic chambered links to define a flexible metallic tread surface member of predeter-

mined area, said chambered links being staggered to collectively present weather exposed top flat surfaces with confronting open bottoms, conduit means alternately connected to opposite extremities of adjacent chambered links to serve as pivotal interconnectors therefor, means disposed between said interconnected links for effecting the predetermined spacing thereof and supporting said conduit means, and heat producing means provided in said conduit means for elevating the temperature of said links and the surrounding areas thereof to transmit a melting influence to foreign substances proximate to said surfaces.

15 4. A device for removing snow and ice from weather exposed surfaces comprising a plurality of flat metallic chambered links to define a flex-

ible metallic tread surface member of predetermined area, said chambered links being staggered to collectively present weather exposed top flat surfaces with confronting open bottoms, conduit means alternately connected to opposite extremities of adjacent chambered links to serve as pivotal interconnectors therefor, heat producing means provided in said conduit means for elevating the temperature of said links and the surrounding areas thereof to transmit a melting influence to foreign substances proximate to said surfaces, and means interposed between the interconnected links forming the end tread members for maintenance thereof in proper spaced relation.

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