Our invention relates to ice removing devices, and particularly to those for use in breaking up and removing ice or snow coatings of a hard or packed consistency.

One feature of our invention is the provision of a rotatable device, such as a drum, whose cylindrical tread surface has numerous conic apertures with apical or inner ends which open through the wall of the drum, with headed detents having conic frustal stems which are fitted in said conic apertures loosely enough to permit of their being partially rotated therein to seat the detents with their outer tread portions or heads disposed in directions on the drum related in special arrangements to each other, in rows or staggered, or set in variously directed pairs, to thus arrange them for their special and associated functions.

Another object of our improvements is to associate with the dentated drum means for lifting and lowering it, and a translatable vehicle upon which it is suspended and supported adjustable and associated with power driven means for rotating the drum forwardly when in progress ahead in operating upon an ice or snow coating on a highway surface or other surface.

Another object of our improvements is to also associate with said drum a scraping device to follow it, operating to gather and deliver ice fragments lodged by the drum detents.

We have attained the above objects in actual construction and practical tests, by the means and mechanism which are hereinafter described and claimed, and illustrated in the accompanying drawings.

It is to be understood that various modifications in the details of construction of parts of the apparatus and its connections may be made without departure from the principles and scope of the invention as defined herein.

Referring to Figs. 2 to 4 inclusive, which show the assemblage of the removable detents with the drum in one relation or arrangement thereof, each dent has a conic frustal stem 4b of steep angularity and to fit into a drum socket 1a of the same angularity, but binding therein closely enough to permit of its being at times sufficiently rocked to a desired position in its seat and to a desired extent, while being held frictionally as to not leave its seat without the exercise of a reasonable force thereon. Further, as the drum rotates and brings successively these detents into contact with a surface beneath, the detents are kept in place without turning therein. The 50 detents may be, before use, turned to any desired extent in their seats, to arrange them relatively to each other as desired. A bead or annulus 45, however, prevents further movement of the stem inwardly. On the stem 4b is an integral wedge-
shaped transverse head 4 projecting outwardly from the drum. These detents are numerously distributed around the drum 1, and may be positioned in any predetermined pattern thereupon, whether in longitudinal rows or otherwise. It has been found that the detents should be rather closely set, and preferably in staggered row relation as indicated in Fig. 3, where the detents 4 are in reversely directed pairs in each row, and the detents in the rows to either side staggered with the detents in the medial row therebetween. Also, as shown in this figure, the blade-shaped heads are preferably inclined obliquely relative to the direction of the rows. As the detents are close set, their opposed obliquities while the drum is in rotation, causes them while penetrating a layer of ice or compacted snow, to strain the ice laterally while penetrating it, so that the combination of transverse or obliquely directed strains with rearward compression thereon as the drum rolls forward and carries under rearwardly the detents, not only cracks the ice in different directions, but comminutes it, reducing it to non-adherent fragments, which then are gathered by the scraper blade 23, the latter preferably being adjusted slightly angularly across in the rear of the drum. Actual tests have demonstrated this action in practice. The wedge shape of the detents obliquely forces the ice fragments excavated between them to clean the surface traversed as the scraper gathers them and delivers them laterally.

We claim:

1. In combination, an ice removing device, said device including a rotatable hollow drum having a plurality of inwardly coned aperture seats in staggered relation circumferentially, and a like plurality of tooth devices having conic stems fitted rockably in said seats and having heads projecting outwardly from the drum, said heads being wedge-shaped and wider than the stems, and with certain of their wedge parts relatively inclined with respect to the other associated wedge parts, whereby the opposed wedge parts cooperate in penetrating ice in different directions along the drum to shatter and dislodge the ice traversed for ready removal.

2. In combination, in an ice removing device, a rotatable drum having a plurality of inwardly coned aperture seats therearound, and a like plurality of tooth devices having coned stems to removably fit said seats with heads of wedge shape in spaced longitudinal rows and with the wedges in each row alternately oppositely inclined, whereby the wedges operate to penetrate and fracture ice traversed, in opposed directions.

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