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C. R. SHANNON

2,047,231

CLEANING DEVICE

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Fig. 1.

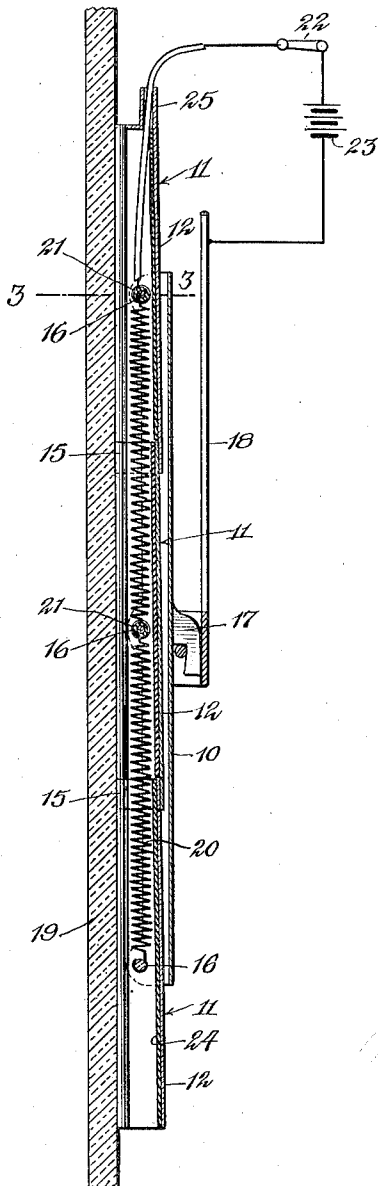


Fig. 2.

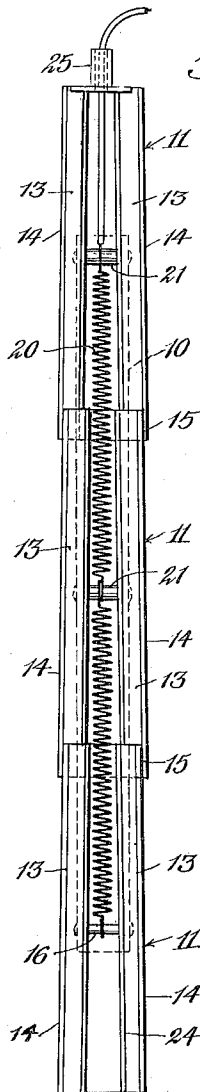
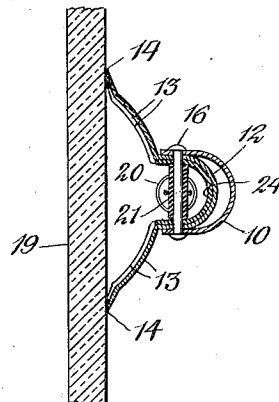


Fig. 3.



WITNESSES

James M. Ray
Chris Feinde

INVENTOR

C. R. Shannon

BY

Mum Anderson Raddy
ATTORNEYS

UNITED STATES PATENT OFFICE

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CLEANING DEVICE

Charles R. Shannon, Harlan, Ky., assignor of
one-half to T. R. Creech, Twila, Ky.

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5 Claims. (Cl. 15—250)

This invention relates to a device for cleaning a flat surface, and one which may be used advantageously for cleaning an automobile windshield.

5 An object of the invention is the provision of a device of the indicated character, which, by reason of the character of the materials used and the features of construction, will be effectual in use, durable, and inexpensive.

10 A further object of the invention is the provision of a device embodying a heating means which will be effective for removing ice or frost from a windshield in cold weather.

15 With the foregoing, other objects of the invention will appear from the embodiment of the invention, which, by way of example, is described in the following specification and illustrated in the accompanying drawing, in which:

20 Figure 1 is a sectional view through a device embodying the features of the invention, the device being shown in use;

Figure 2 is a view of the device looking toward the scraper edges thereof; and

25 Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Referring now more particularly to the several views of the drawing, it will be apparent, that the device of the present invention, generally stated, comprises a rigid element or bar 10 and a plurality of elongated scraper sections 11, which are connected with the element 10 for movement therewith and with respect thereto, said sections 11 being arranged endwise in alignment with respect to each other. The element 10 is constructed preferably of metal and is of channel formation or substantially U-shape in cross-section throughout its length. The scraper sections 11 are similar in construction and are approximately equal in length. It is to be understood that these sections 11 may be of any preferred length, and that any suitable number may be employed, there being three in the present instance. Each of the scraper sections is made of flexible metal, such as razor sheet steel. Each of the sections 11 is developed from a single piece of this kind of metal to make the same of channel construction consisting of a cross-sectionally U-shaped ridge or back portion 12 and relatively divergent portions 13 integral with the portion 12. In other words, the portions 13 are joined by the ridge or back portion 12 throughout the length thereof. Each of the portions 13 is beveled or sharpened to provide the same with a knife edge 14. The edges 14 diverge with respect to each other, or, in other

words, the edges 14 are directed oppositely with respect to each other. Each of the scraper sections 11 is tapered so that when the sections are brought together in end to end relation, the adjacent ends of the sections are lapped as at 15. It will be obvious that in lapping the sections 11, the small end of one section fits in the large adjacent end of another section 11, as shown most clearly in Figure 2. By lapping the sections 11 in the manner illustrated continuous or uninterrupted scraping or wiping edges will be provided, thereby eliminating streaking of the surface being cleaned. Each of the sections 11 is connected with the rigid element 10 by a pivot pin or the like 16 extending transversely through the element 10 and the ridge or back portion 12 of the section 11. Each section 11 is allowed to have movement with respect to the element 10 and with respect to each other, in order to give a certain amount of flexibility, in consequence of which the edges 14 will always be in contact with the surface to be cleaned throughout the length of the device.

In order to oscillate the device with the edges 14 in contact with the surface to be cleaned, the element 10 has a hook 17 which is engageable with an arm 18 constituting a part of a suitable motor driven oscillator (not shown) in common use and which is usually mounted on the windshield at the top thereof. In the drawing, a portion of the windshield is designated by the numeral 19.

In accordance with another feature of the invention, the device is heated by suitable means, in order to melt frost or ice on the surface to be cleaned, while the device is in operation. As shown in the present instance, use is made of an electrical heating element or coil 20, which is disposed within the aligned scraper sections 11, preferably in the ridge or back portions 12 thereof, as shown. The coil 20 is supported by the pins 16. An insulator 21 surrounds two of the pins 16, and a portion of the coil 20 is looped around each insulator 21, and one terminal of the coil 20 is wrapped around the remaining bare pin 16, so that electrical connection will be established between one end of the coil 20 and the element 10 and the arm 18. The other terminal of the coil 20 is electrically connected with a suitable switch 22 included in an electrical circuit with a suitable source of electrical energy 23 and the arm 18, as shown diagrammatically in Figure 1. The ridge or back portions 12 of the scraper sections are lined with

suitable insulating and heat resisting material 24, the same being held in place by the pins 16.

In lieu of the electrical heating means, one of the scraper sections 11, preferably the upper section, may be provided with nipple 25 for connection with a suitable hot air tube (not shown) to deliver the air interiorly of the sections 11 for the purpose of heating the sections and also melting frost and ice on the surface to be cleaned, while the device is in operation.

From the foregoing, it will be obvious that when the device is oscillated, or moved in opposite directions, the oppositely directed knife edges 14 in contact with the surface to be cleaned will remove any matter adhering thereto, such as dust, dirt, or moisture; and that said edges will also serve to scrape the coating of frost or ice from the outer surface of a windshield while the device is in operation and heated by the means hereinabove referred to. It will also be obvious that the other objects of the invention mentioned hereinabove may be attained with a device having the features set forth.

I claim:

1. A device movable in opposite directions with respect to a flat surface to clean it, including a bar, and a plurality of elongated scraper sections connected with said bar for movement therewith and with respect thereto, said sections being arranged endwise in alinement with respect to each other and the adjacent ends thereof being lapped.

2. A device movable in opposite directions with respect to a flat surface to clean it, including a

bar, and a plurality of elongated scraper sections connected with said bar for movement therewith and with respect thereto, said sections being arranged endwise in alinement with respect to each other, each of said sections having spaced and oppositely directed longitudinal knife edges, the adjacent ends of said edges being lapped.

3. A scraper comprising a bar, a plurality of elongated scraper sections of flexible metal, said sections being arranged endwise in alinement with respect to each other and the adjacent ends thereof being lapped, and a pivotal connection between the bar and each scraper section, the pivot of said connection extending approximately at a right angle with respect to the longitudinal axes of the bar and related scraper section.

4. A scraper comprising a bar, a plurality of flexible metal scraper sections of channel construction to provide spaced and oppositely directed longitudinal scraper edges, and means pivotally connecting said sections with said bar endwise in alinement with respect to each other, the adjacent ends of said edges being lapped.

5. A scraper comprising a bar, a plurality of flexible metal scraper sections of channel construction to provide spaced and oppositely directed longitudinal scraper edges, and means pivotally connecting said sections with said bar endwise in alinement with respect to each other, each of said sections being tapered by virtue of which the adjacent ends of said edges are lapped.

C. R. SHANNON.