United States Patent

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[54] **SNOW REMOVING APPARATUS**
4 Claims, 9 Drawing Figs.

[52] **U.S. Cl.** **294/54,** 294/53.5
[51] **Int. Cl.** **E01h 5/02**
[50] **Field of Search** 294/5.4, 53.5; 37/54

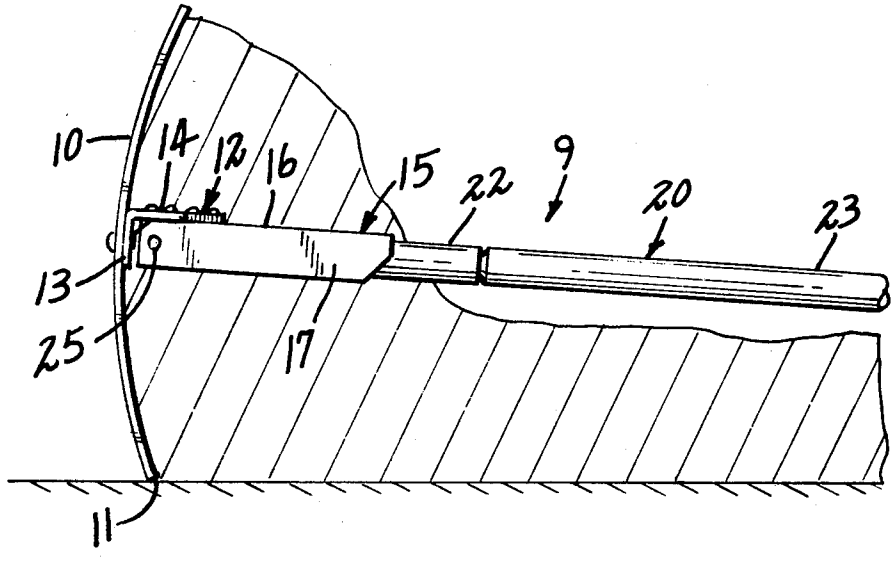
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Assistant Examiner—Douglas D. Watts
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ABSTRACT: A snow removing device wherein a snow-engaging blade is pivotally mounted to a handle, the blade being convex as viewed from the handle and being pivotal to an operating position generally parallel to the handle when the blade is pulled toward the operator so as to drag snow from roofs of buildings, and wherein the blade will collapse or pivot to a closed position generally parallel to the handle so that the blade will cam or slide over the snow as the blade is pushed away from the operator.



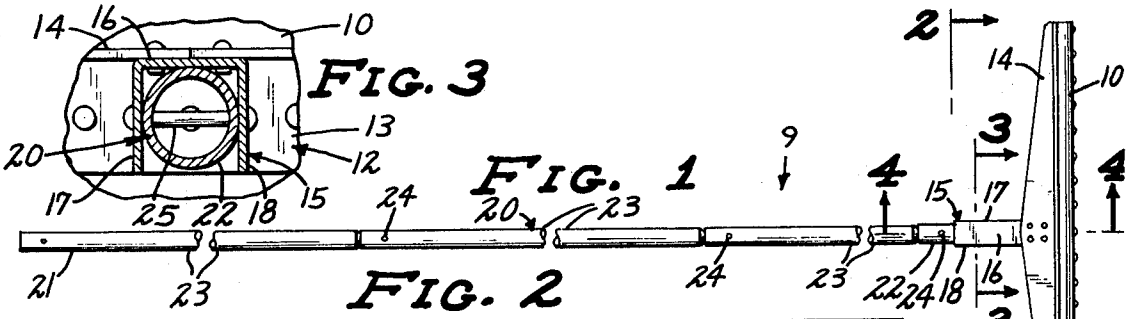


FIG. 3

FIG. 1

FIG. 2

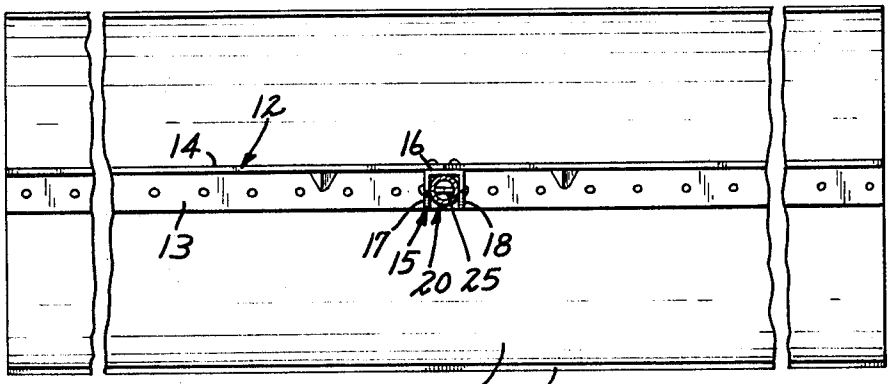


FIG. 7

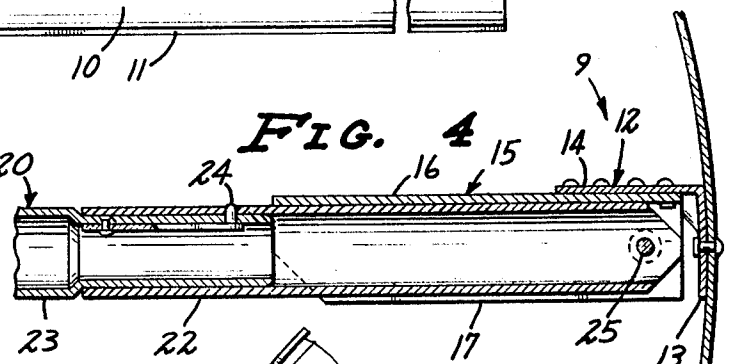
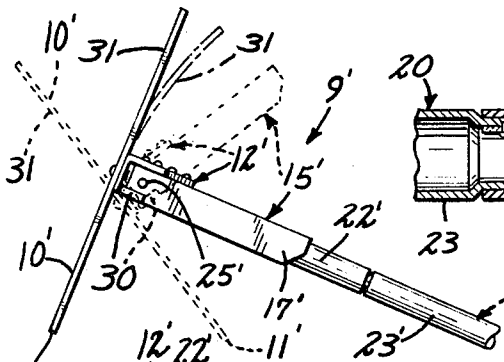


FIG. 4



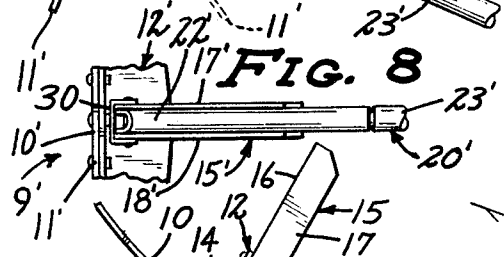


FIG. 8

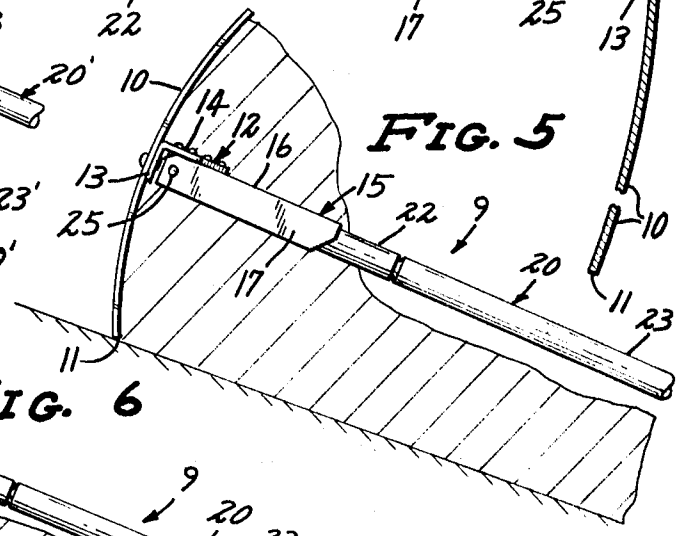


FIG. 5

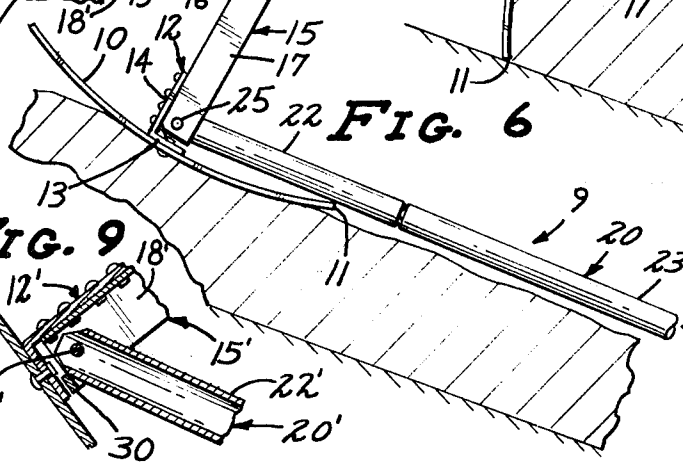


FIG. 6

FIG. 9

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SNOW REMOVING APPARATUS

BACKGROUND OF THE INVENTION

In many areas of the United States the accumulation of snow buildups on building roofs creates a serious problem every winter. This is particularly true of snow buildups on the roofs of residential houses having shingled roofs. A large buildup of snow on residential homes very often causes water to back up through the roofs and leak down inside destroying the plastered or paneled walls and/or ceilings of the houses' interiors. The water leakage is caused by heat transfer through the roof which melts the lower base of the snow buildup particularly during the daylight hours. When the temperature drops during the nighttime hours the melted snow refreezes and forms an ice layer and ice buildup on the roof. As further snow melts during succeeding days, the ice buildup forms a dam and the water is unable to drain off before it backs up underneath the shingles on the roof. As the ice and snow successively melts and freezes it causes leaks to occur in the shingle and the water backs up underneath the singles through the roof and into the house interior. The only effective way of solving this problem is to remove the snow from the roof before an ice layer has an opportunity to build.

The present invention is directed to a new and improved apparatus for removing snow from building roofs. Prior art snow removing devices suffer from serious disadvantages. For example, one form of snow removing device was simply a blade attached at right angles to a handle, this device being used to scrape the snow off of the building roof. The problem with this type of device is that as the edge of the apparatus is pushed back up the roof the blade portion will engage the edges of the shingles causing the shingles to be torn loose, thereby aggravating the roof leakage rather than correcting the problem. Other prior art devices have used a fixed blade-type snow remover wherein the edge of the snow removing blade at its outer extremity is formed in a curve or cylinder so as to reduce the tendency for the blade to catch or engage the shingles and create roof damage. Unfortunately, with this type of snow removing apparatus the central or snow-engaging portion of the blade is raised off of the roof a specific distance so that the blade cannot fully engage the roof and leaves a certain buildup of snow and ice on the roof and therefore the problem of water backup and ice damage is not corrected. Another disadvantage inherent with prior art devices is the weight factor thereof. That is, as an operator attempts to move the device to the uppermost portion of the roof for subsequent scraping operations, the device must be lifted above the level of the snow on the roof or above the asphalt shingles so as not to damage same. As the handle is extended, the scraping head becomes more difficult to maintain elevated over the roof or snow, and in some cases, practically impossible should the handle be extended far enough.

With the present invention, on the other hand, the blade has a snow removing edge which is substantially flat and which will ride directly on the roof's surface. However, the blade is pivotally mounted to the snow removing apparatus handle so that as the operator pulls the blade and handle toward him to scrape the snow from the roof the blade engages the snow and pivots to an upright position at generally right angles to the handle and scrapes the snow down and off of the building roof. Thereafter, when the operator pushes the snow removing apparatus back up the roof to make another pass, the pivotally mounted blade will collapse or pivot to a closed position wherein the blade is generally parallel to the handle. The blade of the snow removing apparatus is curved in a convex manner as viewed from the handle so that when it is in a closed position the rounded portion of the blade will cam or toboggan over the snow on the roof as the snow removing apparatus is pushed up the roof. This prevents the edge of the blade from engaging or damaging the roof shingles.

It is one object of the present invention, therefore, to provide an improved snow removing apparatus.

It is another object of the present invention to provide a snow removing apparatus having a blade which is pivotally mounted to a handle so that the blade will move to an operable snow removing position when moved in one direction, and will move to a closed position and the blade will cam over the snow when the snow removing device is moved in an opposite direction.

It is a further object of the present invention to provide a snow removing apparatus having a curved snow removing blade.

These and other objects of the present invention will become apparent to those skilled in the art upon consideration of the accompanying specifications, claims and drawings.

DESCRIPTION OF THE DRAWINGS

Referring to the drawings wherein like numerals are used to designate like parts throughout the several views,

FIG. 1 is a view in top plan of a preferred embodiment of the present invention, portions thereof being broken away;

FIG. 2 is an enlarged view in section as seen generally from the line 2–2 of FIG. 1, portions thereof broken away;

FIG. 3 is a greatly enlarged transverse sectional view as seen from the line 3–3 of FIG. 1;

FIG. 4 is an enlarged sectional view as seen from the line 4–4 of FIG. 1, portions thereof broken away;

FIG. 5 is a view partially in side elevation and partially in vertical section showing the structure of FIG. 1 in a position to remove snow from a roof, portions thereof broken away;

FIG. 6 is a view similar to FIG. 5 showing the scraping blade thereof in a collapsed or closed position for movement away from an operator, portions thereof broken away;

FIG. 7 is a side elevational view of a slightly modified structure showing a full line scraping position and a dotted line position for movement away from an operator, portions thereof broken away;

FIG. 8 is a fragmentary view in bottom plan of the structure of FIG. 7; and

FIG. 9 is an enlarged detailed sectional view of a portion of FIG. 7 showing the parts thereof in the dotted line position of FIG. 7.

DETAILED DESCRIPTION

Referring to the drawings, and initially to FIGS. 1—6, there is shown a snow removing apparatus, indicated generally by the numeral 9, having a blade 10 which has a snow-engaging surface 11 along one edge thereof.

A longitudinal L-shaped support member 12 having a leg 13 and a leg 14 is connected to blade 10 by any suitable means, for example, as by riveting. As shown in the drawings, the leg 13 of the L-shaped member 12 is riveted to blade 10, and leg 14 of the support member 12 extends outwardly from blade 10.

A longitudinal U-shaped channel 15 has a wall portion 16 and generally parallel sidewall portions 17 and 18 connected by the wall portion 16.

One end of channel 15 is connected by an suitable means, for example, as by riveting, to the outwardly extending leg 14 of support member 12. Channel 15 is connected generally centrally of the outwardly extending leg 14 of support member 12, and is connected so that the channel 15 extends longitudinally outwardly from support member 12. As can be seen in FIG. 3 of the drawings, channel 15 is connected to leg 14 of support member 12 by means of rivets which extend through leg 14 of support member 12 and the wall portion 16 of the U-shaped channel 15.

The snow removing apparatus 9 has a handle 20 having one end 21 and an opposite end 22. Handle 20 is separable into a plurality of predetermined lengths 23. As shown in FIG. 4 of the drawings, the various sections 23 of handle 20 telescope into each other and are held in a connected condition by means of spring loaded catches 24. It should be understood that any suitable means of interconnecting the various segments of handle 20 could be used. For example, the various sections 23 could be threaded into one another.

End 22 of handle 20 is pivotally mounted in the U-shaped channel 15 adjacent the blade 10. Handle 20 is pivotal about a shaft 25 which has an axis generally perpendicular to the parallel sidewall portions 17 and 18 of the U-shaped channel 15.

Blade 10 of snow removing apparatus 9 is curved convexly as viewed from the handle 20.

As the snow removing apparatus 9 is used to remove snow from the roof, the apparatus will be pulled toward an operator standing on the ground at which time the edge 11 of blade 10 will engage the snow on the roof and will cause the blade to be pivoted to an operable position wherein blade 10 is at generally right angles to handle 20, and the blade will scrape snow off of the building roof. As the operator pushes the blade back up the roof to make another pass, the edge 11 will engage the snow and cause the blade to pivot on shaft 25 to an inoperative or closed position wherein blade 10 is generally parallel to handle 20, as shown in FIG. 6. Since blade 10 is curved the blade will have a tendency to slide or toboggan over the snow as the ice removing apparatus 9 is pushed up the roof, and therefore, any possibility of roof shingles being torn or loosened on the roof is eliminated.

Referring to FIGS. 7—9, there is shown a modified embodiment of the snow removing apparatus. Portions thereof similar to the structure shown in FIGS. 1—6 will be indicated by like numerals with a prime mark added. As shown, the modified structure 9' includes a relatively flat blade 10' which has a snow-engaging surface 11' along one edge thereof. The blade 10' is secured, in a manner similar to the structure 9 of FIGS. 1—6, to the L-shaped support member 12', and the L-shaped member 12' is in turn secured to the U-shaped channel 15'. The U-shaped channel 15' is pivotally mounted by means of shaft 25' to the end 22' of handle 20', in the manner of the structure of FIGS. 1—6.

For the purpose of limiting pivotal movement of the blade 10' from the full line position of FIG. 7 to the dotted line position thereof, there is provided a stop element 30. Stop element 30 is in the nature of a strap extending across the forwardmost end of the U-shaped channel 15' with opposite ends thereof secured by rivets or the like to adjacent sidewall portions 17', 18'. As seen, particularly in FIG. 9, movement of the blade 10' from the full line position of FIG. 7 to the full line position of FIG. 9 causes the stop element 30 to come into engagement with the end 22' of handle 20'. In this manner, movement of the snow removing device 9' away from an operator causes the lower edge 11' of blade 10' to engage the snow and pivot on shaft 25' to an inoperative or closed position such as illustrated by the dotted lines of FIG. 7. In this position blade 10' will slide or toboggan over the snow or shingles on the roof as it is moved up the roof. Thus, any damage to the shingles is eliminated and there is no need to attempt to lift the snow removing device 9' above the shingles or snow as it is moved up the roof.

It will be understood that the upper portion 31 of blade 10' may be formed on a curve such as illustrated by the broken lines of FIG. 7 or that blade 10' may take the form of the curved blade of FIGS. 1—6 to facilitate movement of the blade 10' over the snow or shingles as it is pushed up the roof. Also, it will be appreciated that the stop element 30 may be positioned to limit movement of the blade 10' to any desired angular relationship of the blade 10' with respect to the handle 20 as it is moved up the roof, depending on the particular shape of the blade 10'.

I claim as my invention:

1. Snow removing apparatus comprising:
   a. a blade having a snow-engaging surface along one edge thereof;
   b. a handle; and
   c. mounting means pivotally mounting one end of said handle to said blade so that in use said blade will be in an open position at a generally right angle to said handle when said blade is moved in one direction and said blade will be in a closed position generally parallel to said handle when said blade is moved in an opposite direction, said mounting means including a longitudinally extended channel having a U-shaped section with generally parallel sidewall portions and a connecting wall portion with means connecting one end of said channel to said blade whereby said channel extends longitudinally outwardly generally perpendicular to said blade, and wherein one end of said handle is pivotally mounted in said channel adjacent said blade, said handle being pivotal about an axis generally perpendicular to the parallel sidewalls of said channel.

2. Snow removing apparatus as defined in claim 1 wherein said blade is concave transversely thereof as viewed from said handle.

3. Snow removing apparatus as defined in claim 1 wherein said U-shaped channel is connected to said blade by means of a longitudinally extended L-shaped support member having one leg thereof connected to said blade, said support member being generally parallel to the edge of said blade, said U-shaped channel having one end thereof connected to the other leg of said L-shaped support member generally centrally of said support member, said channel extending longitudinally outwardly from said support member.

4. Snow removing apparatus as defined in claim 1 wherein said blade includes upper and lower portions and in which at least said upper portion is curved rearwardly toward said handle.