

Nov. 17, 1942.

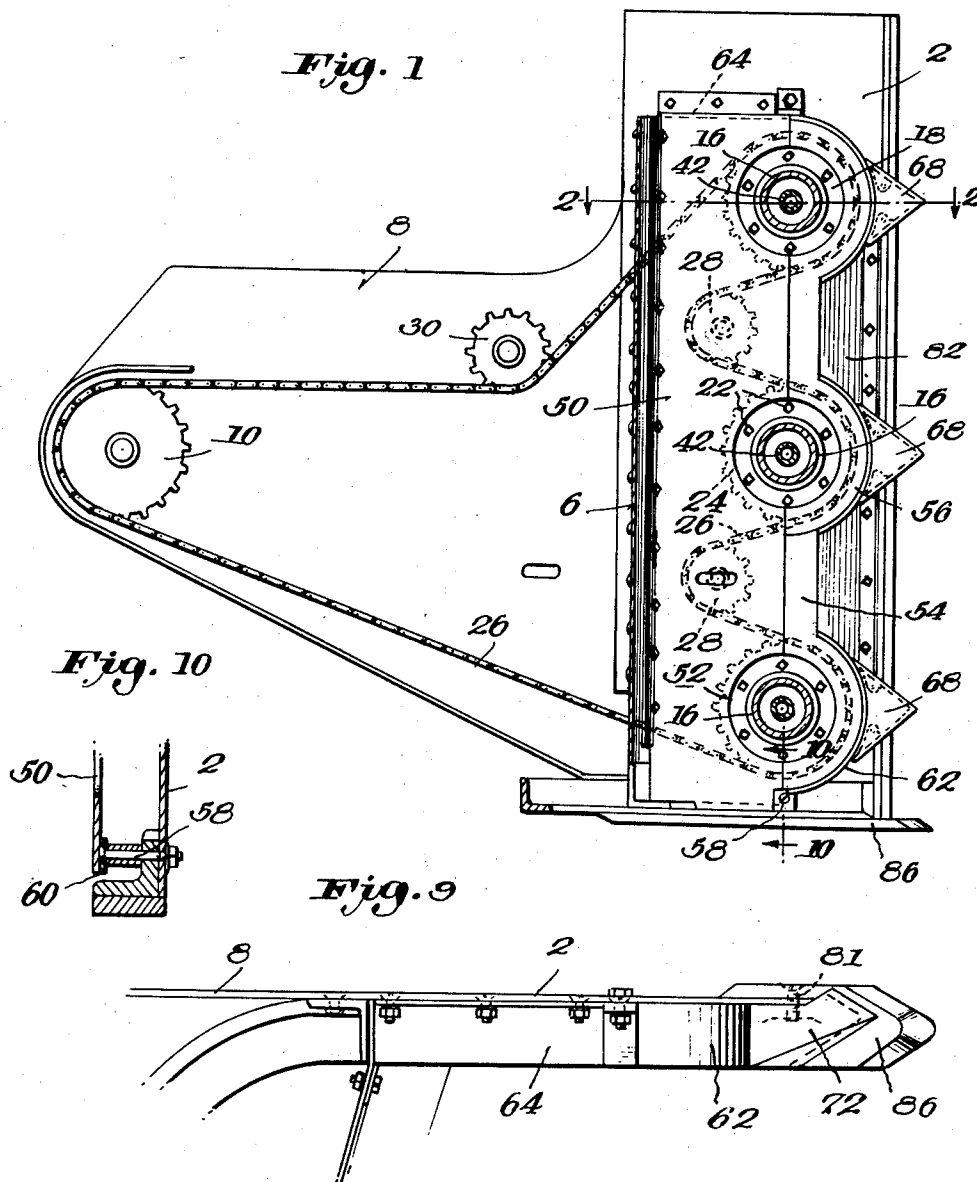
W. E. KLAUER

2,302,127

SNOW REMOVER

Filed Feb. 21, 1940

3 Sheets-Sheet 1



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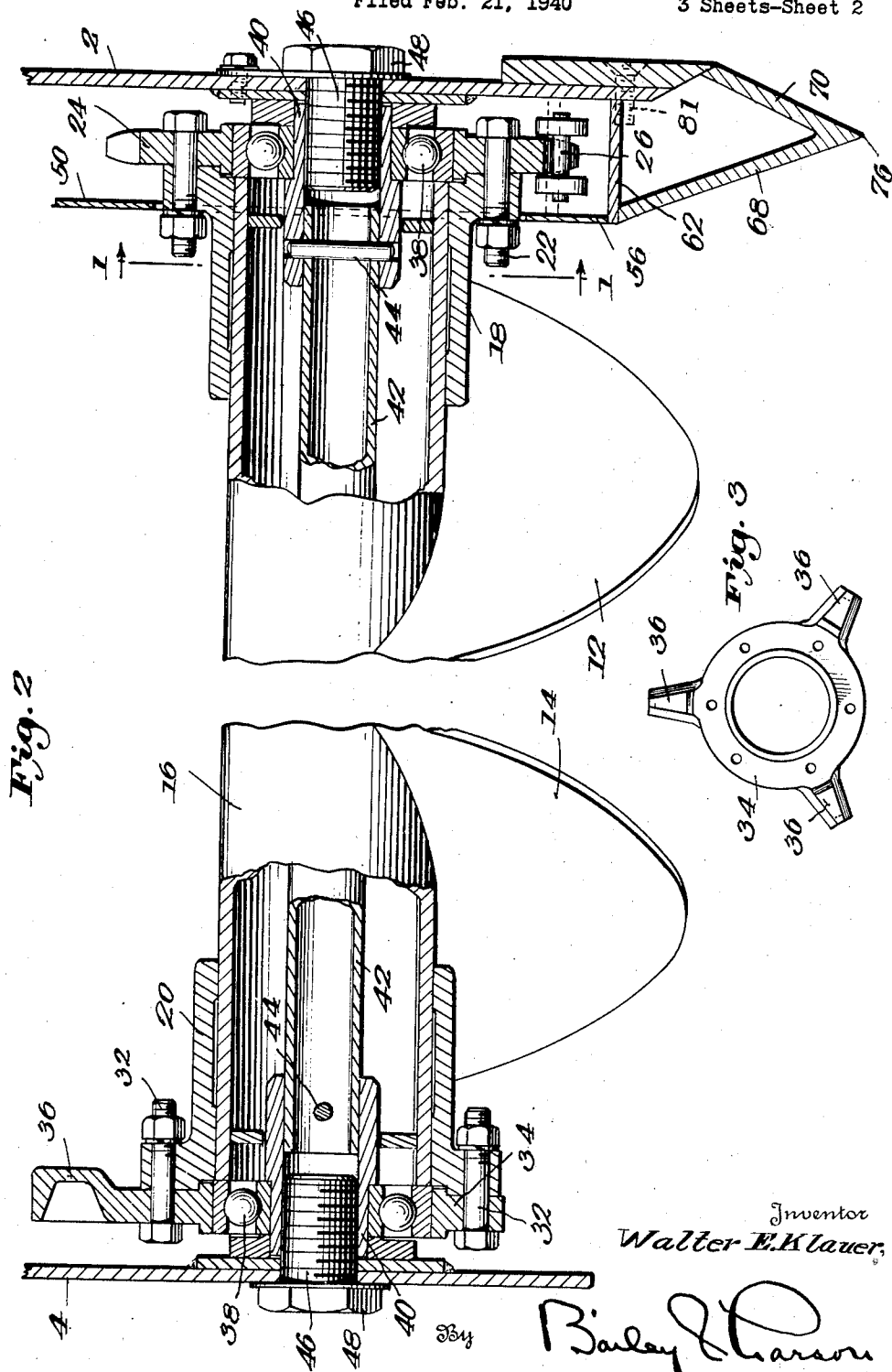
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3 Sheets-Sheet 2



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Fig. 4

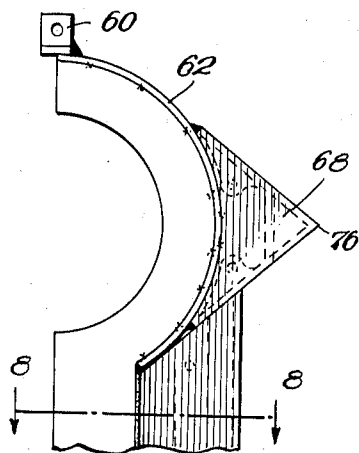


Fig. 5

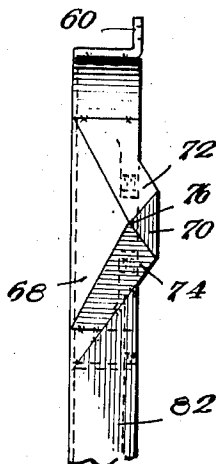


Fig. 6

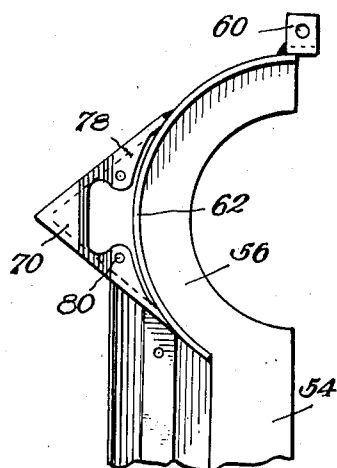
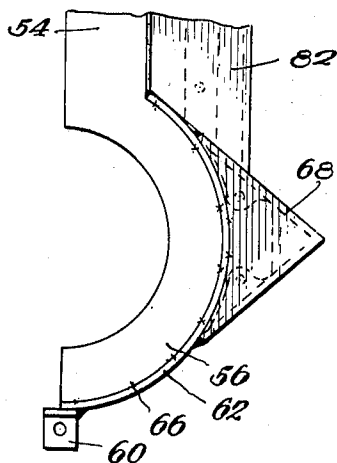
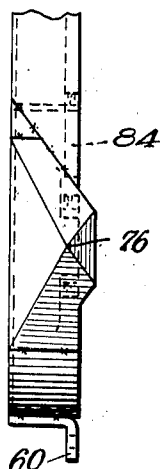
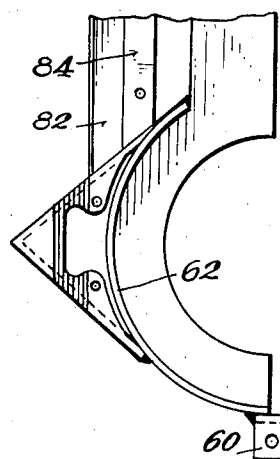


Fig. 8

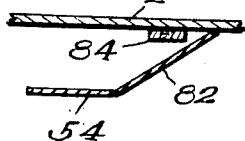
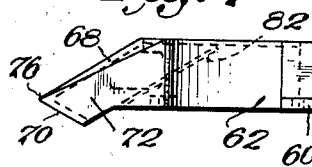


Fig. 7



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UNITED STATES PATENT OFFICE

2,302,127

SNOW REMOVER

Walter E. Klauer, Dubuque, Iowa

Application February 21, 1940, Serial No. 320,209

14 Claims. (Cl. 37-43)

The invention relates to snow removers and particularly to power operated snow removers of the horizontal auger type.

The primary object of the invention is to provide a mounting for the horizontal auger of power operated snow removers which supports the auger firmly while reducing to a great degree the friction resisting turning of the auger.

Still another object of the invention is to provide a novel enclosure for the auger-driving mechanism of a horizontal auger snow remover, and particularly the type in which a plurality of augers are mounted one above the other.

Still another object of the invention is to provide a housing for the auger-driving mechanism which also acts as an entering edge for one side wall of the snow remover, and which is so designed as to give proper balance to the snow remover as it moves into the snow and prevent lateral shifting of the snow remover, particularly when it is being used for widening a cut in the snow. According to this feature the front edge of the casing is tapered forwardly, but the inner tapered surface is of greater area in front projection than the outer surface so that the snow remover moves forward in a straight line and is not pushed sidewise by the pressure of the snow thereon. This balance is attained because the augers carrying the snow towards the center of the snow remover reduce the pressure per unit of area on the inside of the casing wall, while the full pressure of the snow is exerted on the outside. Thus a greater area on the inside is necessary to compensate for the reduction in the pressure per unit area thereon, in order to balance the two pressures.

Still another object of the invention is to provide means at the free or undriven end of an auger for engaging the snow and keeping it from becoming packed around the auger bearing.

Further objects and advantages of the invention will appear more fully from the following description, particularly when taken in conjunction with the accompanying drawings which form a part thereof.

In the drawings:

Fig. 1 is a cross section through a snow remover embodying my invention, substantially on the line 1-1 of Fig. 2;

Fig. 2 is a horizontal view, principally in section on the line 2-2 of Fig. 1;

Fig. 3 is a detail view of the left-hand end of Fig. 2;

Fig. 4 is a side elevation, from the inside, of the guard for the auger driving mechanism;

Fig. 5 is a front view thereof;

Fig. 6 is a view thereof from the outside;

Fig. 7 is a top plan view thereof;

Fig. 8 is a cross section on the line 8-8 of

Fig. 4;

Fig. 9 is a top plan view of the front part of the device shown in Fig. 1, on an enlarged scale, and

Fig. 10 is a cross section on the line 10-10 of Fig. 1.

The snow remover is generally of the type shown in my prior Patent No. 2,144,311. It is composed of a frame having a left-hand wall 2 and a right-hand side wall 4, between which extends a back wall 6. This back wall is preferably, as shown in the prior patent referred to above, provided with an opening leading into a fan casing having a discharge spout. The casing has a rearwardly extending portion 8 which carries a pinion 10 driven from a suitable source of power and which is intended to drive the augers.

The augers 12 are formed in two sections of opposed shape which are both adapted upon rotation to feed snow towards the center of the snow remover. Each auger is composed of flights 14 welded along the outside of a tube 16. Tube 16 at each end has welded or otherwise rigidly secured thereon collars 18, 20. The collar 18 at the right-hand side of Fig. 2 (the left-hand side of the snow remover) is connected by bolts 22 to a sprocket 24. In the form of the invention shown, there are three of the augers arranged in superposed relation to each other. Sprockets 24 are driven by a chain 26 which extends around the sprockets and over idling sprockets 28 and 30 to sprocket 10. Driving of sprocket 10 thus causes the turning of all the sprockets 24 and the rotation of the augers.

At the other end of each auger, the collar 20 is connected by bolts 32 to a wheel 34, shown also in Fig. 3. Wheel 34 is provided with a series of projecting points 36, which of course rotate with the auger and thus prevent the packing of snow around this end of the auger.

Tube 16 and the rigidly connected wheels 24 and 34 are mounted by ball bearings 38 on the outside of internally threaded sleeves 40. The two sleeves 40 at opposite ends of the auger are connected by a smaller tube 42 which is connected to the sleeves by pins 44. The sleeves 40 are engaged by bolts 46 having their stems threadedly engaged in the interior of the sleeves, and their heads 48 engaging the outsides of the walls 2 and 4 respectively.

It is obvious that with this assembly the auger

itself turns freely on the ball bearings 38, and has no other connection with the snow remover casing. The walls of the snow remover, on the other hand, are properly held in spaced relationship, and the auger is supported between them, by the bolts 46 which through the connecting pipe 42 can draw the walls 2 and 4 towards each other so as to hold them in proper position.

Another advantage of this construction is that to remove the auger all that is necessary is to remove bolts 46, whereupon sleeves 48 and the auger with them may be moved forward in the casing and easily taken out for repair or replacement.

The chain for driving the augers is protected from access of snow by the guard arrangement shown particularly in Figs. 4 to 10. This guard arrangement includes a rear plate 50 which is spaced from the wall 2, and which is provided with semicircular recesses 52 in its forward edge opposite each of the augers. The diameters of these recesses is substantially equal to that of the flanges of sleeves 18, and is less than that of the sprockets 24.

The front edge of the plate 50 is aligned with a second plate having straight portions 54 and semiannular portions 56 opposite and mating with the semicircular recesses 52 in the back plate 50, and of the same diameter. The opposed plates thus form a series of circular openings through which extend the auger tubes 16. The plate is connected at top and bottom to the side wall 2 by bolts 58 engaged through lugs 62 on the plate.

The plate is provided around each of the annular portions 56 with a flange 62 extending outwardly up to the wall 2. Along the top of the machine the space between plate 50 and wall 2 is also closed by a flange 64. These flanges are welded along the edges of the semiannular portions 56 as indicated for example at 66 in Fig. 4.

Mounted on the front faces of flanges 52 are point-forming members. These are generally pyramidal in shape, each having an inner face 68, inclined outwardly, an outer face 70 inclined inwardly, and upper and lower faces 72 and 74 inclined downwardly and upwardly respectively, all of these faces meeting at a point as at 76. These pyramidal members have also inner portions 78 provided with holes 80 by which they may be bolted to the side wall 2 of the casing as by bolt 81 (Fig. 9). The pyramidal members are welded onto the flanges 62 and point forwardly therefrom.

The vertical space between the pyramidal members, and between plate sections 54 and the wall 2, is closed by inclined walls 82 which at their front edges are closely adjacent to the casing wall 2, while the plates slope inwardly and at their back edges are welded to the front edge of portions 54 of the plate 52. Within the space between side plates 32 and side wall 2 extend bars 84 welded at their ends to the pyramidal members, by which these members may be secured to the casing wall 2.

It will be noted that the area of space 60 in front projection is considerably greater than that of space 70, and that plates 32 also add to the inner surface as compared with the outer surface. This construction tends to balance the effect of the snow on the side casing wall, inasmuch as the pressure per unit of area on the inside of the wall is less than on the outside because of the continuous removal of snow away from the casing wall by the augers. It is thus

possible to obtain adequate balance so as to prevent the snow remover from shifting laterally from its proper direction.

The snow removed casing is completed by a shoe 86 which is mounted at the bottom of the side wall 2 and is adapted to rest on the highway when the snow remover is in use.

While I have described herein one embodiment of my invention I wish it to be understood that I do not intend to limit myself thereby except within the scope of the appended claims.

I claim:

1. In a snow remover having a casing provided with a wall and means within said casing to move snow away from the wall, said wall having means thereon for entering the snow, said entering means tapered from the front towards both sides and having in projection on a transverse vertical plane a greater area on the inside of the wall than on the outside thereof.

2. In a snow remover having a casing provided with a side wall and means within said casing to move snow laterally from the side wall towards the center of the casing, said side wall having means thereon for entering the snow, said entering means tapered from the front towards both sides and having in projection on a transverse vertical plane a greater area on the inside of the wall than on the outside thereof.

3. In a snow remover, a casing having a side wall, an auger, means mounting said auger in the side wall of said casing to turn about a transverse horizontal axis, a sprocket on said auger, a chain engaging said sprocket for driving the same, and covering means for said chain and sprocket, said covering means comprising a plate at the rear of said augers having in its front edge a semicircular recess extending around said auger, means securing said plate in spaced relation to the side wall of the casing, a second plate having a semicircular recess in its rear edge, said recess mating with the recess in said first plate, and a pyramidal member in front of the portions of said second plate in which said recess is located, said pyramidal member having its apex pointing forwardly.

4. In a snow remover, a casing having a side wall, an auger, means mounting said auger in the side wall of said casing to turn about a transverse horizontal axis, a sprocket on said auger, a chain engaging said sprocket for driving the same, and covering means for said chain and sprocket, said covering means comprising a plate at the rear of said augers having in its front edge a semicircular recess extending around said auger, means securing said plate in spaced relation to the side wall of the casing, a second plate having a semicircular recess in its rear edge, said recess mating with the recess in said first plate, and a pyramidal member in front of the portions of said second plate in which said recess is located, said pyramidal member having its apex pointing forwardly, and a member extending vertically from said pyramidal member comprising a plate having its front edge close to the front edge of the casing wall and having its rear edge connected to the front edge of another portion of said second plate.

5. In a device as claimed in claim 3, said pyramidal portion having inner, outer, top and bottom sloping faces.

6. In a device as claimed in claim 3, said pyramidal portion having inner, outer, top and bot-

tom sloping faces, the inner face having a greater area in front projection than the outer face.

7. In a snow remover, a casing having a side wall, an auger, means mounting said auger in the side wall of said casing to turn about a transverse horizontal axis, a sprocket on said auger, a chain engaging said sprocket for driving the same, and covering means for said chain and sprocket, said covering means comprising plate means having a circular recess therein extending around said auger, means securing said plate in spaced relation to the side wall of the casing, and a pyramidal member in front of the portion of said plate means in which said recess is located, said pyramidal member having its apex pointing forwardly.

8. In a snow remover, a casing having a side wall, an auger, means mounting said auger in the side wall of said casing to turn about a transverse horizontal axis, a sprocket on said auger, a chain engaging said sprocket for driving the same, and covering means for said chain and sprocket, said covering means comprising plate means having a circular recess therein extending around said auger, means securing said plate in spaced relation to the side wall of the casing, and a pyramidal member in front of the portion of said plate means in which said recess is located, said pyramidal member having its apex pointing forwardly, and a member extending vertically from said pyramidal member comprising a plate having its front edge close to the front edge of the casing wall and having its rear edge connected to the front edge of another portion of said plate means.

9. In a snow remover, a casing having a side wall, a plurality of augers, means mounting said augers in the side wall of said casing to turn about transverse horizontal axes, sprockets on said augers, a chain engaging said sprockets for driving the same, and covering means for said chain and sprockets, said covering means comprising a plate at the rear of said augers having in its front edge semicircular recesses extending around said augers, means securing said plate in spaced relation to the side wall of the casing, a second plate having semicircular recesses in its rear edge, said recesses mating with the recesses in said first plate, and a pyramidal member closing the space between the portions of said second plate in which said recesses are located and the side wall of the casing, said pyramidal member having its apex pointing forwardly.

10. In a snow remover, a casing having a side wall, a plurality of augers, means mounting said augers in the side wall of said casing to turn about transverse horizontal axes, sprockets on said augers, a chain engaging said sprockets for driving the same, and covering means for said chain and sprockets, said covering means com-

prising a plate at the rear of said augers having in its front edge semicircular recesses extending around said augers, means securing said plate in spaced relation to the side wall of the casing, a second plate having semicircular recesses in its rear edge, said recesses mating with the recesses in said first plate, and a pyramidal member closing the space between the portions of said second plate in which said recesses are located and the side wall of the casing, said pyramidal member having its apex pointing forwardly, and a member extending between adjacent pyramidal members comprising a plate having its front edge close to the front edge of the casing wall and having its rear edge connected to the front edge of the portion of said second plate between said semicircular recesses.

11. In a snow remover, a casing having a side wall, a plurality of augers, means mounting said augers in the side wall of said casing to turn about transverse horizontal axes, sprockets on said augers, a chain engaging said sprockets for driving the same, and covering means for said chains and sprockets, said covering means including a pyramidal member in front of each of said augers adjacent the casing wall, said pyramidal member having its apex pointing forwardly.

12. In a snow remover, a casing having a side wall, a plurality of snow engaging means, means mounting said snow engaging means in the side wall of said casing to turn about transverse horizontal axes, sprockets on said snow engaging means, a chain engaging said sprockets for driving the same, and covering means for said chains and sprockets, said covering means including a pyramidal member in front of each of said snow engaging means adjacent the casing wall, said pyramidal member having its apex pointing forwardly.

13. In a snow remover, a casing having a side wall, snow engaging means, means mounting said snow engaging means in the side wall of said casing to turn about transverse horizontal axis, means on said snow engaging means for driving the same, and covering means for said driving means, said covering means including a pyramidal member in front of said snow engaging means adjacent the casing wall, said pyramidal member having its apex pointing forwardly.

14. In a snow remover, comprising a casing, bearings mounted in the side walls of the casing, a snow-engaging conveying member having means thereon for moving snow transversely thereof mounted in said bearings to turn about a transverse horizontal axis, and means on one end of said conveying member adjacent a side wall of the casing and in clearing relation to one of said bearings for breaking up snow, said means comprising a wheel having a plurality of points thereon.

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