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DISCHARGE CHUTE FOR SNOW CASTER

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FIG. 1

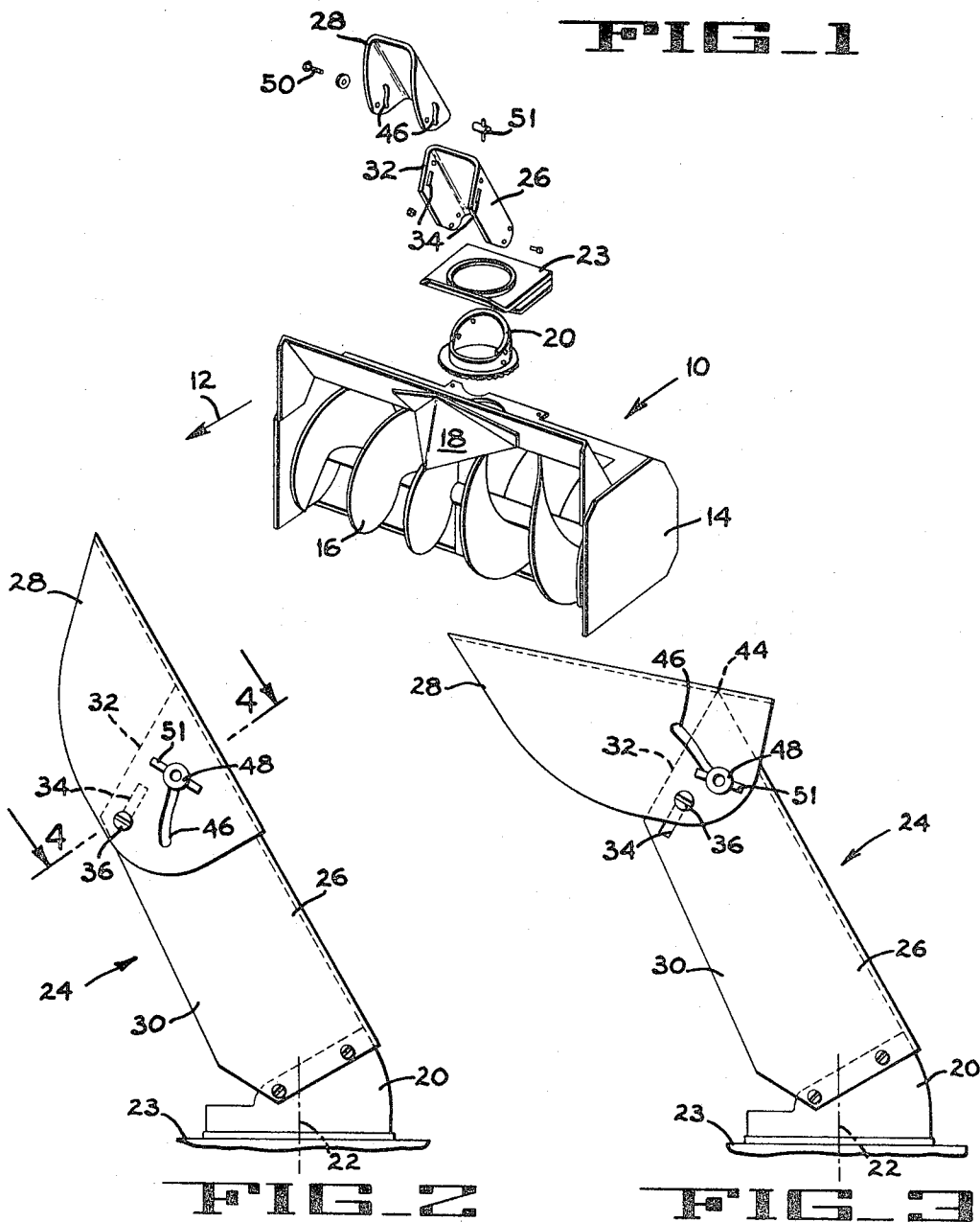


FIG. 2

FIG. 3

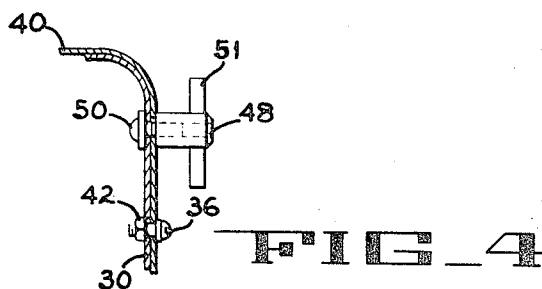


FIG. 4

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1

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DISCHARGE CHUTE FOR SNOW CASTER

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3 Claims

ABSTRACT OF THE DISCLOSURE

A pivot stud and a locking stud interconnect two generally U-shaped conduit sections. The pivot stud operates in a linear slot, the locking stud operates in a curvilinear slot, and the studs are fixed relative to each other. The slots are so formed that one section can be angularly adjusted and locked, relative to the other, through a range of positions in which close spacing is maintained between the exterior surface of one conduit section and the interior surface of the other section to minimize leakage.

BACKGROUND OF THE INVENTION

The present invention concerns snow removal equipment, and more particularly concerns an adjustable discharge chute to direct the snow from the rotor housing of a snow removal machine to a selected point at either side of the machine.

The chutes disclosed in United States Pats. 2,786,453 and 2,735,199 are somewhat typical of the prior art, and each disclose an upright, rotatable inlet conduit having a discharge hood or deflector adjustably mounted to the conduit to control the trajectory of the discharged snow. In the first patent the deflector and the conduit are longitudinally curved so that a lengthwise adjustment of the two members alters the trajectory of the discharge, and in the other patent the deflector is pivoted to the conduit. The curved conduit and deflector assembly is virtually leak-proof because the two members have sliding contact, but is relatively costly. The pivotal deflector and conduit are relatively inexpensive but the pivotal motion precludes a close fit between the two members in all adjusted positions. Because of this leakage, some snow inevitably escapes, accumulates on the machine and eventually requires removal.

SUMMARY OF THE INVENTION

A two-section discharge chute, each section including transversely U-shaped walls, is provided with a pivot stud in one section and a linear operating slot for the pivot stud in the other section, and a locking stud in one section operating in a curvilinear slot in the other section. This forms an articulated joint connection in which when one section is angularly adjusted and locked relative to the other section, the base portions of the U-shaped walls are automatically maintained close together to inhibit leakage at the joint.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partially exploded perspective of a snow caster rotor, its housing and the discharge chute of the present invention.

FIGS. 2 and 3 are elevations of the discharge chute shown in FIG. 1, and illustrate the two limits of angular adjustment of the chute.

FIG. 4 is a section, at an enlarged scale, taken along lines 4—4 on FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates a snow caster 10 of the type which is attachable to a tractor or the like, and in operation is

2

propelled in the direction of the arrow 12. Snow enters the open front of a housing 14 which is provided with a driven rotor 16. The particular rotor shown is provided with a dual pitch helix which feeds the snow toward the rear center portion of the housing 14 behind a central shield 18. Snow is discharged upward through an elbow 20 which is rotatably adjustable about a vertical axis 22 (FIG. 2) to direct the snow to either side of the machine. The elbow 20 projects upward through an apertured retaining plate 23 that is secured to the housing 14.

The present invention concerns a discharge chute 24 which directs the snow delivered through the elbow 20. The chute 24 includes a fixed conduit section 26 that forms a rigid extension of the elbow 20, and a pivotable deflector section 28 which is mounted on the discharge end of the conduit section to control the trajectory of the discharged snow. Features of the discharge chute 24 are that no leakage will occur regardless of the angular relation of the deflector 28 and conduit 26, and that manually adjusting this angular relation automatically positions the deflector section to prevent leakage between the two sections of the discharge chute.

The conduit section 26 is provided with a semi-circular lower end portion secured to the elbow 20, and its wall 30 merges into U-shape near the upper end portion of the conduit. Near its outer end 32, each side wall of the conduit 26 is provided with a diagonal guide slot 34 which slidably receives a pivot bolt 36. The pivot bolt extends through an aperture 38 in the wall 40 of the deflector section 28 and is retained by a nut 42 which exerts no clamping action but allows free pivotal movement between the two sections.

The length of the guide slot 34 is such that when the deflector section 28 is pivoted to its FIG. 3 limit of downward movement, the pivot bolt 36 is in the upper end of the slot and the outer edge 44 of the conduit 26 is closely spaced from the interior surface of the deflector wall 40 so as to prevent leakage downward over the conduit 26. This optimum interspacing is automatically effected, as the deflector is positioned, by means including a curved camming slot 46 and a locking stud 48.

The locking stud 48 includes a carriage bolt 50 having its square shank portion disposed in a square hole in the conduit 26. The round shank of the bolt extends outward through the camming slot 46, which is formed in the deflector section 28. A T-handled nut 51 is threaded on the bolt 50 so that the deflector can be clamped in adjusted position on the conduit by tightening the nut. When the nut 51 is loosened, the pivot stud 36, guide slot 34, the bolt 50 and the camming slot 46 cooperatively control the deflector 28 to maintain a minimum opening between the corner 44 and the inner surface of the deflector wall 40.

The geometrical relation among the various components to achieve the stated results, is most readily duplicated graphically for any pair of similar discharge chute sections. First, assume a centerline path, for the slot 34 of pivot stud 36, about 60 degrees from a plane normal to the longitudinal axis of the conduit section 26. The deflector section can then be plotted on a transparent overlay with an arbitrary location for the center of the pivot stud 36 so that the assembled sections appear as in FIG. 2 with the pivot stud center overlying the centerline of the slot 34.

An assumed location for the center of the locking stud 48 is marked on the conduit section 26 near the pivot stud 36, and the overlay is pivoted through a range of positions in each of which the pivot stud 36 is centered on the centerline path and the inner surface of the deflector wall 40 is tangent to the edge 44 of the conduit 26. In each of the positions the center of the locking stud 48 is marked on the deflector overlay, and these markings,

3

when connected, form the centerline of the camming slot 46. Transferring these plottings to chute sections, the deflector section will be automatically adjusted, when pivoted, in a similar manner to that described and illustrated for the discharge chute 24 whereby the edge 44 will maintain close sealing relation with the interior surface defining the transverse wall of the deflector section.

Although the best mode contemplated for carrying out the present invention has been herein shown and described, it will be apparent that modification and variation may be made without departing from what is regarded to be the subject matter of the invention as set forth in the appended claims.

Having completed a detailed description of the invention so that those skilled in the art could practice the same, I claim:

1. A deflecting chute for directing the discharge of the rotor of a snow casting machine comprising a conduit section communicating with the rotor of the machine, a straight deflector section forming an extension of the discharge end of said conduit, and means for pivotally mounting said deflector section on said conduit section for maintaining the straight inner surface of said deflector section in substantially sealed contact with the free end of said conduit section during pivotal movement of said deflector section, said means comprising a pivot stud connecting said deflector section to said conduit section for movement about an axis normal to the longitudinal axis of said conduit section, means defining a linear guide slot for said pivot stud in one of said sections, a locking stud interconnecting said sections, and means defining a curvilinear camming slot for said locking stud in one of said sections, said slots being so related that for any adjusted position of said pivot stud in said pivot slot there is a corresponding position for said locking stud in said camming slot, and in each adjusted position the discharge end edge of the wall of said conduit section is in substantially sealed contact relation with the inner surface of the wall of said deflector section.

2. A two-section deflecting chute for directing the discharge of a snow casting machine comprising an elongate

4

U-shaped inner conduit section communicating with the rotor of the machine and having vertical side walls, a straight elongate U-shaped outer deflector section having vertical side walls and forming an extension of the discharge end of said conduit, a pivot stud connecting each side wall of said deflector section to each side wall of said conduit section for adjustment of said deflector about an axis normal to the longitudinal axis of said conduit section, means defining a linear slot for said pivot stud in each side wall of said conduit section, said slot being diagonally related to said longitudinal axis, a locking stud connecting each side wall of said deflector section to each side wall of said conduit section, and means defining a curvilinear slot for each locking stud in a side wall of said deflector section, said slots being formed so that in any adjusted angular position of said deflector section about said pivot studs, the discharge end edge of the transverse wall of said conduit section is in substantially sealed relation with the inner surface of the transverse wall of said deflector section.

3. The chute defined in claim 1 wherein said sections are of inverted U-shape, and wherein said conduit section defines said linear guide slot and said deflector section defines said curvilinear camming slot.

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285—185; 302—61