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ROTOR FOR SNOW PLOWS

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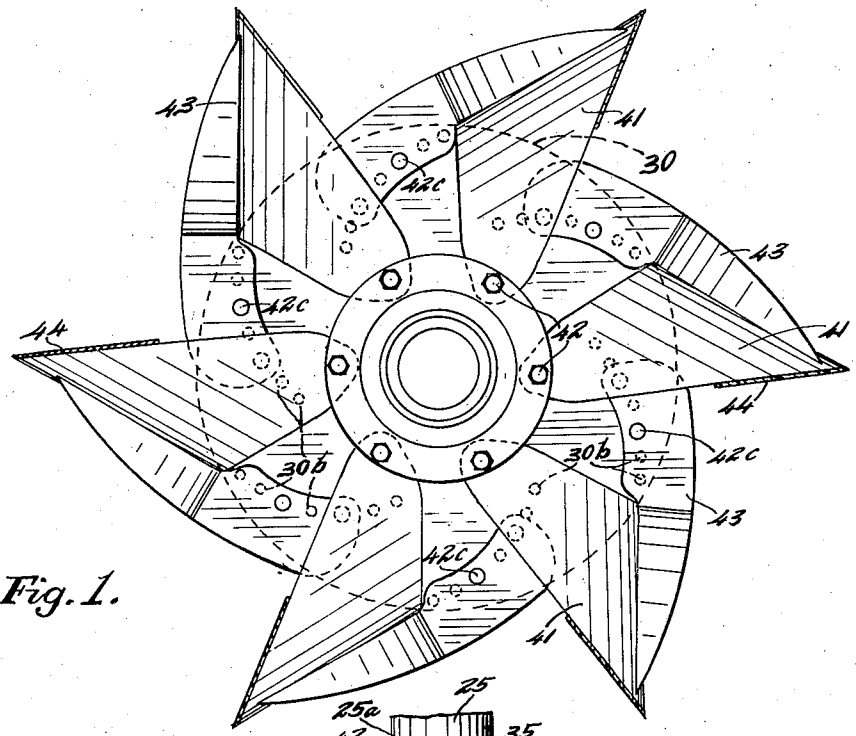


Fig. 1.

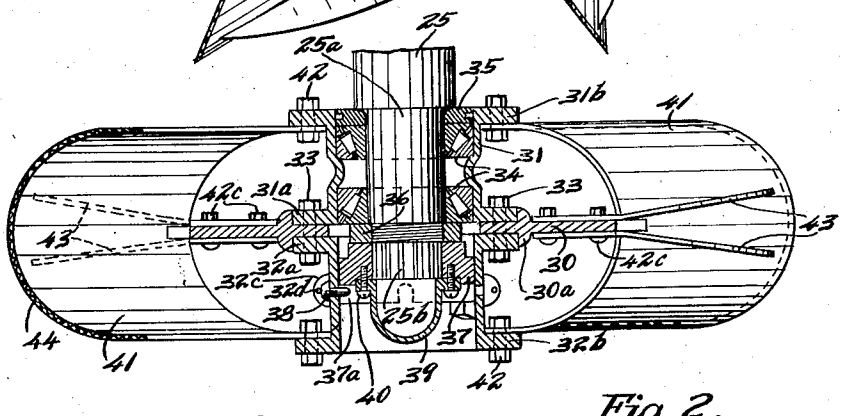


Fig. 2.

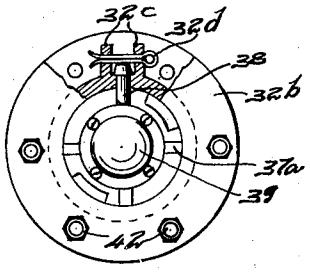


Fig. 3.

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ROTOR FOR SNOW PLOWS

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7 Claims. (Cl. 37—43)

This invention relates to a snow plow and particularly to a novel form of rotor for discharging snow from a snow plow.

In a well known type of snow plow the snow is moved to rotors by means of plates or moldboards and the snow is then discharged by the rotor. The rotor thus has very heavy duty and it often must engage and propel chunks of ice and stones. The rotor thus must be of rugged construction and at the same time must be made to efficiently engage and discharge the snow.

It is an object of this invention to provide a simple and yet exceedingly strong and efficient rotor for a snow plow.

It is another object of the invention to provide a rotor driven by a central shaft and built about a central annular plate.

It is a further object of the invention to provide a rotor having one or more hubs and a plurality of trough-shaped blades, the sides of said blades being secured respectively to the inner and outer ends of said hubs.

It is still another object of the invention to provide a rotor comprising a hub having a bearing for rotating on the shaft of the rotor and also having means for connecting the hub of the rotor to the shaft to be driven thereby.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawing in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a view in side elevation of the rotor;

Fig. 2 is a central horizontal section of the rotor showing the driving shaft therefor; and

Fig. 3 is a view in end elevation of the central portion of the rotor, some parts being broken away and others shown in vertical section.

Referring to the drawing, a rotor structure for a snow plow is shown including a shaft **25**. Shaft **25** will be driven through suitable gearing (not shown) either from the motor of the propelling vehicle or by a motor mounted on the plow. The rotor proper comprises a central annular plate **30** illustrated as having a circular shoulder-forming bead **30***a* extending thereabout. A hub **31** has a flange **31***a* secured to one side of plate **30** and a hub **32** has a flange **32***a* secured to the opposite side of plate **30**, said flanges being secured by a plurality of circumferentially spaced headed and nutted bolts **33** extending through said flanges and plate **30**. The outer edges or peripheries of said flanges engage the shoulders formed by bead **30***a*. Hub **31** has an outer flange **31***b* and hub **32** has an outer flange **32***b*. A roller bearing **34** is disposed in hub **31** in which may run a reduced portion **25***a* of shaft **25**. A plate **35** is disposed between the end of bearing **34** and the shoulder or shaft **25**. A plate **36** is threaded on shaft **25** and engages the outer end of bearing **34**. Beyond plate **36** shaft **25** has a splined portion **25***b* and a driving member **37** is bored and slotted to fit portion **25***b* so as to rotate with shaft **25**. Member **37** has a plurality of radial slots or recesses **37***a* formed in its outer end and one or more frangible headed pins **38** extend through holes in hub **32** and into the recesses **37***a*. Hub **32** has outwardly projecting lugs **32***c* apertured to receive a split key **32***d* which holds the pin **38** in place. An end cap **39** has a semispherical end and also has a flange engaging the outer end of member **37** to which it is connected by the circumferentially spaced screws **40**. The rotor comprises a plurality of blades or scoops **41**, the same being trough-shaped or of concavo-convex form. Blades **41** are shown as formed of sheet metal plates, said plates being widest at their central portions and tapering toward their ends. The ends of said plates forming the sides of said blades or scoops are secured respectively to the inner sides of flanges **31***b* and **32***b* by and are swingable about the headed and nutted bolts **42**. Plates **43** which are of elongated and of general crescent form are disposed at either side of plate **30** and connected thereto by headed and nutted bolts **42***c*. Plate **30** is provided with additional holes **30***b* through which bolts **42***c* may extend with blades **41** in different positions. Blades **41** are provided at their ends adjacent the periphery of plate **30** with slots **41***a* to accommodate the swinging movement of said blades when they are adjusted to different positions. Plates **43** extend along and are connected to the rear or convex sides of the blades **41** in any suitable manner as by welding. As shown in Fig. 2 plates **43** diverge toward their outer ends. A bead or rod **44** of very hard metal is secured to the edge of blades **41** in any suitable manner as by welding.

In operation, shaft **25** is driven as above described and the rotor is rotated at fairly high speed with the concave sides of blades **41** advancing. The snow is engaged by these blades and moved within or adjacent a suitable chute and is discharged centrifugally by the rotor through such chute. The rotor is driven from shaft **25** through member **37** and the frangible pins **38**

which connect member 37 to hub 32. Should any undue strain be placed upon the rotor as when engaging very hard snow or an excessively large piece of ice or stone, the pins 38 can break and thus prevent damage to the rotor. When pin 38 thus fails the rotor can revolve on shaft 25 and bearing 34 or shaft 25 may continue to rotate in bearing 34. The plow can then of course, be stopped and a new pin 38 placed in position. It is an easy and simple matter to remove the split key 32*d*, remove the old pin and insert a new one. By having the blades 41 secured at their sides to the hubs and also secured by plates 43 to the central plate 30 a very strong and rugged structure is produced and one in which the strains are for the most part centralized and taken by the strong central plate 30. As stated, the blades swing about bolts 42 and can be adjusted to various positions by having bolts 42*c* pass through different holes 30*b*. The adjustment of blades will be made to suit the character of snow being encountered.

From the above description it is seen that applicant has provided an exceedingly strong and rugged rotor and one which will perform the heavy duty required and yet one which is quite simple in construction. The parts of the rotor are all quite accessible and may be easily removed or renewed. The rotor has been amply demonstrated in actual practice and found to be very successful and efficient.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicants' invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A rotor for a snow plow comprising an annular plate, a hub secured to said plate, said hub having flanges at each end, a plurality of concavo-convex blades of sheet material having their concave sides directed forwardly for engaging snow, means pivotally connecting the outer edges of said blades to said flanges respectively, means secured to said blades and extending along said plate and means for securing said last mentioned means in different positions on said plate whereby said blades are held in different positions.

2. A rotor for a snow plow having in combination, alined inner and outer hubs, flanges adjacent the ends of said hubs, a plate between and engaged by said flanges, means securing said flanges to said plate, flanges at the remote sides of said hubs, blades formed of plates bent into trough-shape, said blades having their greatest width at their central portions and tapering toward their ends, the end portions of said blades being secured to said last mentioned flanges, plates secured to the outer sides of said blades and extending therealong and adjustably secured to said first mentioned plate.

3. A rotor for a snow plow comprising an annular plate, a hub secured to said plate, said hub having flanges at each end spaced from said plate, a plurality of blades formed from pieces of sheet metal bent into semi-cylindrical form and having their concave sides directed forwardly for engaging snow, the outer sides of said blades being secured to said flanges respectively, said blades being symmetrical about a central axis and disposed symmetrically with respect to said plate.

4. A rotor for a snow plow having in combination, a hub having spaced flanges adjacent the ends thereof, a plurality of circumferentially spaced trough-shaped blades of substantially semi-cylindrical form disposed about said hub, said blades being widest at their central portion and tapering from said central portions toward each end, said ends being secured respectively to said flanges, a plate secured to said hub and disposed centrally between said flanges to which said central portions extend, the forward edges of said blades being disposed substantially in one plane and the central portions of said blades extending in a straight line from the outer edge of said plate to the outer ends of said blade.

5. A rotor for a snow plow comprising an annular plate, a hub secured to each side of said plate adjacent its inner circumference, said hubs having flanges at their outer ends parallel to and thus spaced at either side of said plate, scoop members formed of plates bent into substantially semi-cylindrical form and tapering toward their ends, the same having said ends respectively secured to said flanges, the inner edges of said scoops being disposed at points along the outer circumference of said outer plate, the medial line of each scoop extending outwardly from said outer circumference in a substantially straight line at a decidedly acute angle to a tangent at said point and having their forward edges disposed substantially in one plane.

6. The structure set forth in claim 5, said scoops being symmetrical about a plane passing centrally through and parallel to said annular plate and said first mentioned plane making a slight angle to a radius of said annular plate extending to the outer edge of said scoop.

7. The structure set forth in claim 5, and a pair of plates for each scoop extending along the sides of said annular plate for an appreciable distance and secured thereto, the same extending outwardly along the convex sides of and secured to said scoops and substantially perpendicular to the surface thereof.

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