Sept. 21, 1937. J. HANSEN 2,093,758

ROTARY SNOW PLOW

Filed Aug. 6, 1936

FIG. 1.

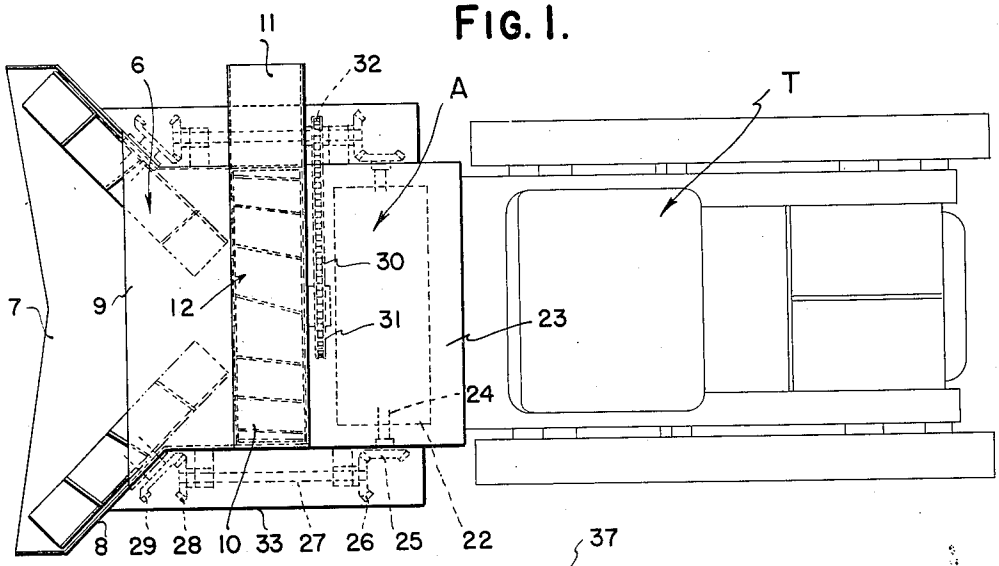


FIG. 2.

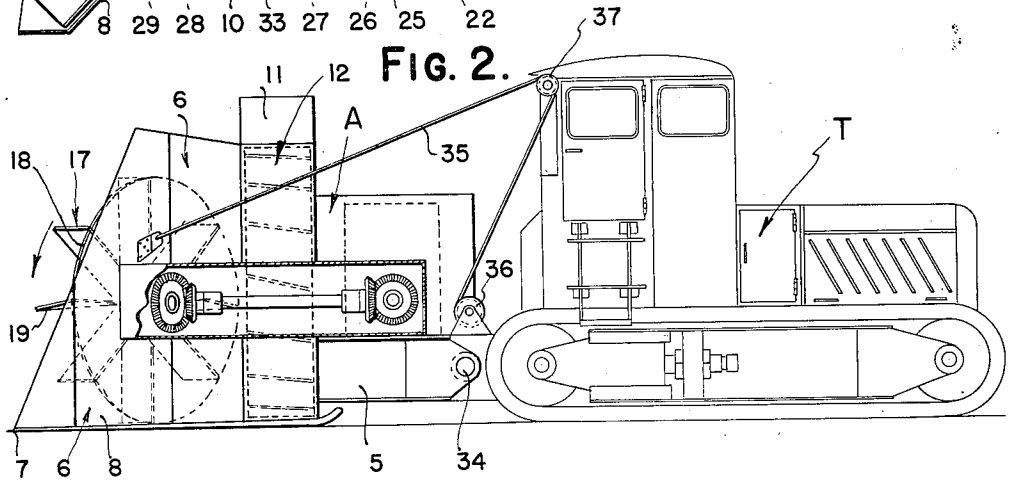
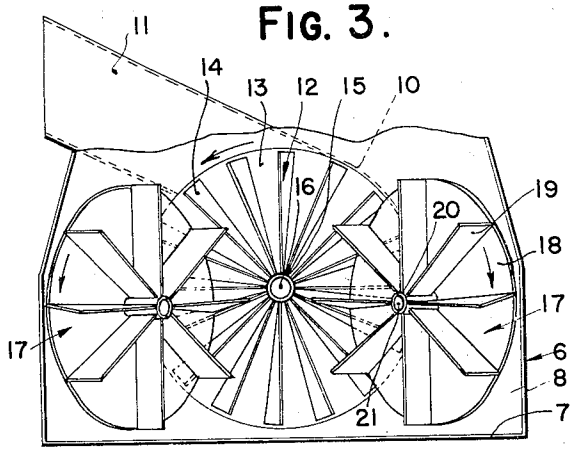


FIG. 3.



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ROTARY SNOW PLOW

Joseph Hansen, Cleveland, Wis.

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1 Claim. (Cl. 37—43)

This invention appertains to a novel appliance for removing snow from highways during the winter season, so that said highways can be quickly and efficiently opened for vehicular traffic.

With the use of ordinary push snow plows, the snow is merely crowded to one side of the roadway. This snow tends to drift back on the roadway in windy weather. Further, the accumulated banks of snow obstruct proper vision and result in serious head-on collisions of automobiles traveling over the road. Likewise, with the use of plows a great length of time is required to open a roadway, and in some instances the plows cannot break through the snow at all.

It is, therefore, one of the salient objects of my invention to provide a snow removing device so constructed and arranged as to cut its way through the snow, and for blowing the snow to a point distant from the roadway, whereby to eliminate the forming of the said banks of snow and to permit the expeditious opening of the highway for traveling.

Another primary object of my invention is to provide a motorized snow removing appliance embodying side snow engaging impellers or wheels for cutting into the snow and for delivering the snow to a centrally disposed blower, which functions to carry the snow a considerable distance away from the roadway.

A further important object of my invention is the provision of a snow removing appliance adapted to be driven over the roadway by an automobile, truck or tractor, and which embodies an internal combustion engine for driving novelly arranged side snow cutters and a blower which receives the snow from from said side snow cutters or impellers.

A further object of my invention is the provision of novel means for arranging the impellers and the blower on the frame of the snow removing appliance, whereby the snow can be efficiently directed toward the impellers and blower, and whereby the snow will be effectively scraped up from the roadway.

A still further object of my invention is to provide an improved snow removing appliance of the above character, which will be durable and efficient in use, one that will be comparatively simple and easy to manufacture, and one which can be placed upon the market at a moderate cost.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawing, in which drawing:

Figure 1 is a top plan view of my improved snow appliance, showing the same attached to a tractor of the endless chain type.

Figure 2 is a side elevation of the same, with parts of the snow removing appliance shown broken away and in section.

Figure 3 is a fragmentary front elevation of my improved snow appliance.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my improved snow removing appliance, and T a tractor which can be utilized in conjunction therewith.

In the present illustration, I have shown a tractor of the endless drive chain type, but it is to be understood that any other desired type of tractor or truck can be utilized for forcing the appliance A over the roadway.

My improved appliance A preferably embodies relatively heavy side channel beams 5, to which is firmly secured by rivets or welding a front housing or scoop 6. This front housing or scoop 6 embodies a bottom scraper or shear blade 7 and inwardly inclined upright side walls 8. These side walls 8 can be connected together by a top wall 9. The front edge of the scraper or shear blade is sharpened and, if so desired, the leading edges of the side walls 8 can also be sharpened.

In rear of the side walls 8 I arrange a relatively large blower casing 10. This casing 10 is rigidly connected with the side and top walls and to the frame beams of the tractor. Leading tangentially from the blower casing 10 is a blower outlet nozzle 11 for the snow.

A relatively large fan wheel 12 is arranged within the blower casing 10, and the fan or blower wheel 12 preferably consists of a back disc-shaped hub plate 13, to which is welded or riveted the outwardly extending fins or buckets 14. These fins or buckets 14 radiate from the hub 15 in which is secured the central drive shaft 16.

Arranged on each side and in front of the blower are snow cutting and impeller wheels 17. These wheels 17 each include a disc-shaped back hub plate 18 and radially extending blades 19 which radiate from the hubs 20. Rigidly secured to the hubs 20 are driven shafts 21 suitably mounted for rotary movement in bearings carried by the side walls 8. The snow cutting or impeller wheels 17 are arranged in close proximity to the side walls 8; hence, these wheels are inclined inwardly toward the blower.

While I can utilize independent motors for driving the snow cutting and impeller wheels 17 and the blower or fan wheel 12, I preferably utilize a single internal combustion engine 22 of the desired and necessary horse power.

This engine is mounted on the frame of the appliance and can be covered by a suitable casing 23, whereby the engine will be protected from the snow. The crank-shaft 24 of the engine extends beyond the opposite sides of the housing 23 and has keyed or otherwise secured thereto beveled gears 25 meshing with similar beveled gears 26 keyed or otherwise secured to the counter-shafts 27, which extend forwardly toward the snow cutting impellers 17.

The forward end of the counter-shafts 27 are connected to the stub shafts 21 of the impeller 17 by means of beveled gears 28 and 29. Obviously, equivalent means can be utilized for the beveled gears and counter-shafts without departing from the spirit or scope of my invention.

The fan wheel 12 can be driven by means of a chain 30 and sprocket wheels 31 and 32 carried respectively by the stub shaft 16 of the fan and one of the counter-shafts 27.

If so preferred and desired, housings 33 can be provided for encasing the counter-shafts and beveled gears.

The rear ends of the side beams 5 of my snow removing appliance A are preferably connected to the frame of the propelling truck or tractor by means of heavy hinge pins 34, whereby the appliance A can be raised or lowered relative to the roadway.

To facilitate the raising and lowering of the appliance on the truck or tractor, I can provide a pull cable 35, one end of which can be secured to the appliance and the other end of which can be wound about a windlass 36. An intermediate portion of the pull cable can be trained over a pulley sheave 37 mounted on the truck or tractor adjacent to its upper end.

The blades 19 of the impeller 17 can be riveted or welded onto the disc-shaped back plates 18, and where the blades are riveted the same can be of an angle-shape so as to provide an attaching flange for abutting against the said back plates.

In operation of my improved device, the same is pushed over the roadway by the propelling truck or tractor, and the blade 7 tends to scrape up the snow. The impellers 17 cut into the snow and carry the snow back to the fan blower, which effectively ejects the snow at one side of the appliance and blows the same a considerable distance from the roadway.

Due to the inclination of the impeller wheels 17, the snow is efficiently handled without strain on any of the parts.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

In a rotary snow removing appliance, a frame, a housing at the front of the frame including a bottom scraping blade, inwardly inclined side walls, and a connecting top wall, a transversely extending internal combustion engine carried by the frame having its crank-shaft extending inwardly from the opposite ends thereof, rotary snow cutting impellers carried by the side walls inclined inwardly toward the longitudinal axis of the appliance, a centrally disposed blower arranged directly in rear of the snow cutting impellers for receiving snow therefrom, said blower having a tangentially extending outlet leading from one side of the appliance, counter-shafts rotatably mounted on each side of the blower, means operatively connecting the counter-shafts to the ends of the crank-shaft of the engine, means operatively connecting the snow impellers to the forward ends of the counter-shafts, and means for operating the blower from one of the counter-shafts.

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