Jan. 5, 1943. T. F. LEWIS 2,307,412

MACHINE FOR REMOVING SNOW

Filed Feb. 26, 1941 2 Sheets-Sheet 1

Fig. 1

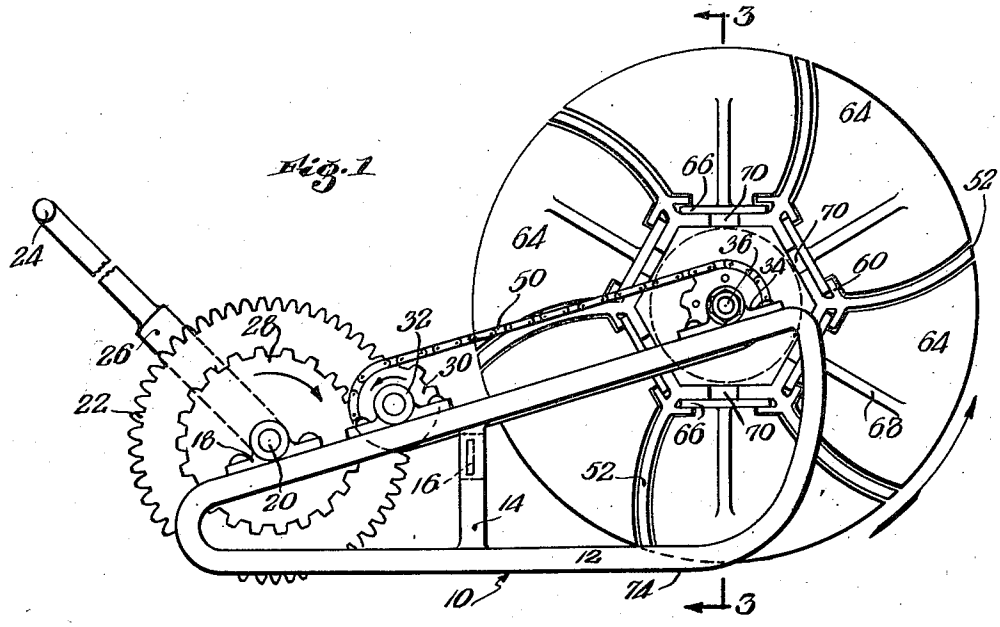


Fig. 2

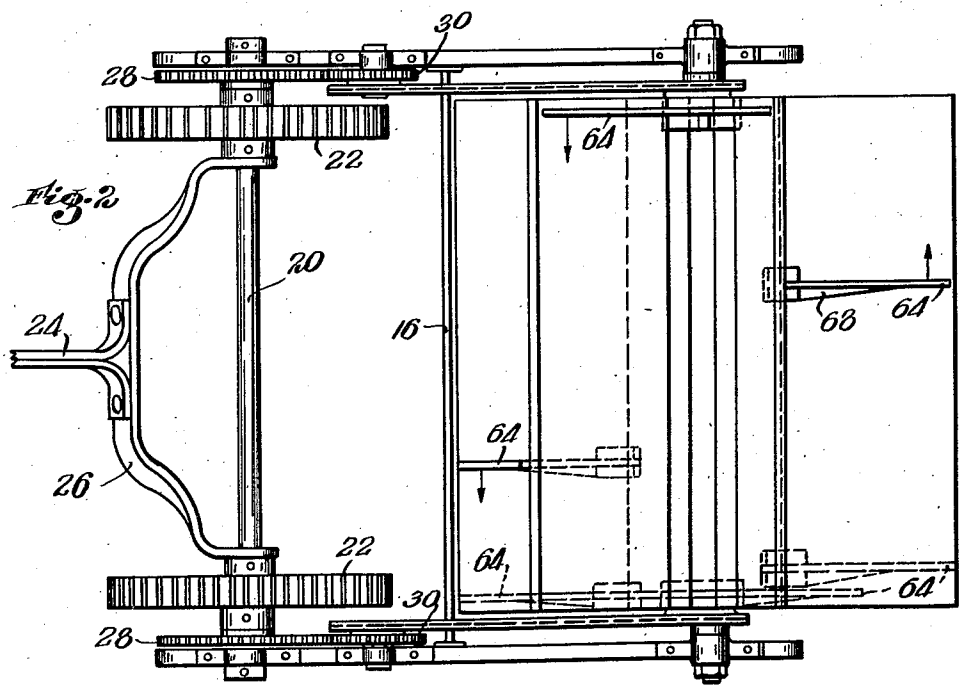
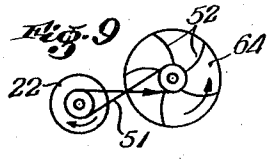


Fig. 9



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Jan. 5, 1943. T. F. LEWIS 2,307,412

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Filed Feb. 26, 1941 2 Sheets-Sheet 2

Fig. 3

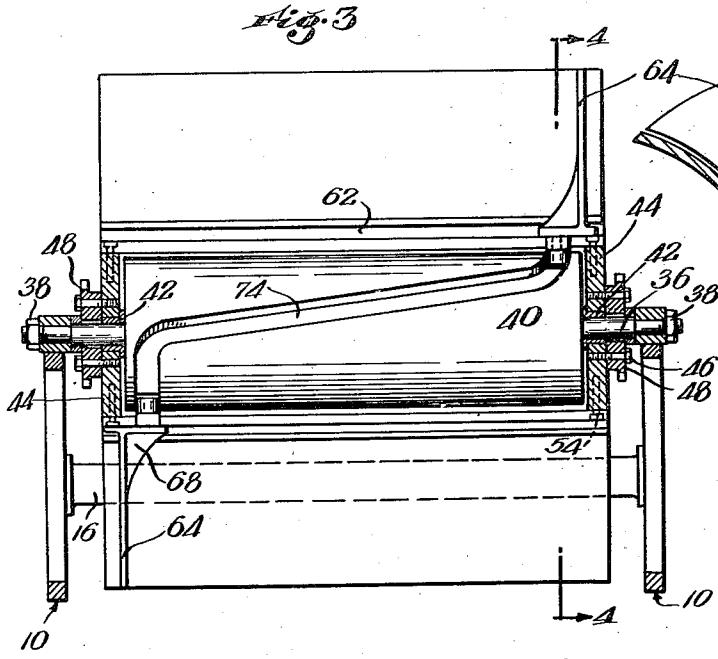


Fig. 4

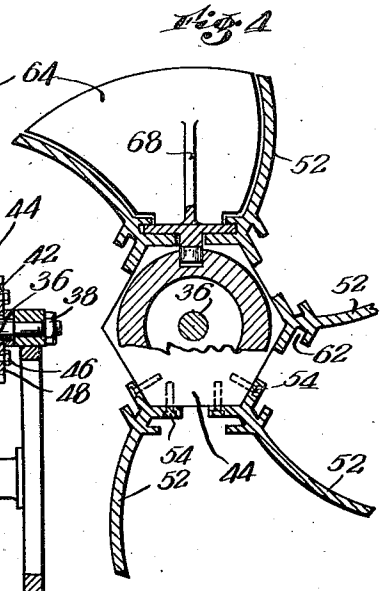


Fig. 6

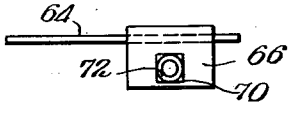


Fig. 5

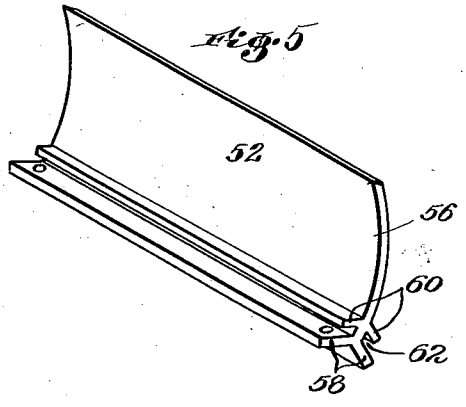


Fig. 8

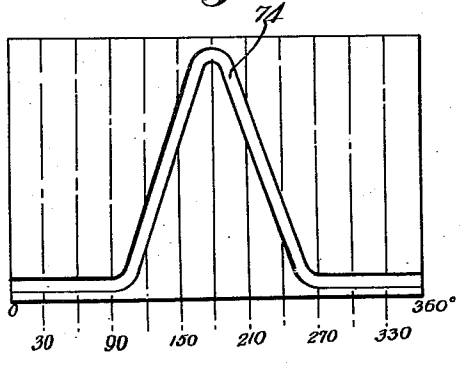
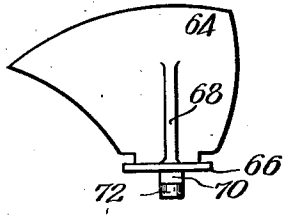


Fig. 7



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MACHINE FOR REMOVING SNOW

Thomas F. Lewis, Newburyport, Mass.

Application February 26, 1941, Serial No. 380,685

2 Claims. (Cl. 37—53)

This invention relates to improvements in a machine for removing snow of the type which picks up the snow and deposits the snow at the side of the path being cleared by the machine.

It is an object of my invention to provide improvements in a machine for removing snow in which a rotary member at the front of the machine is provided with snow lifting blades for picking up and raising the snow from the ground and to further provide means for clearing the snow from the snow lifting blades and depositing the snow at the side of the path of travel of the machine.

It is a further object of my invention to provide a machine for removing snow which is of relatively light-weight construction and is designed to be manually pushed forward to clear a path in the snow, which machine is provided with means for lifting the snow and other means for depositing the snow at the side of the path of travel after the snow has been lifted.

A further object of my invention is to provide a machine for removing snow in which a rotary member at the front of the machine is provided with snow lifting blades which are movable as the machine moves forward to lift the snow from the ground, and to provide additional blade members mounted in the spaces between the snow lifting blades which blade members are movable to push the snow laterally from the spaces between the snow lifting blades.

Further objects and advantages of my improvements will be more readily apparent from the following description of a preferred embodiment thereof as illustrated in the attached drawings in which:

Fig. 1 is a side elevation of the machine for removing snow;

Fig. 2 is a plan view of the machine;

Fig. 3 is a vertical section taken on the plane indicated 3—3 in Fig. 1;

Fig. 4 is a vertical section taken on the plane indicated 4—4 in Fig. 3;

Fig. 5 is a perspective view of one of the snow lifting blades;

Fig. 6 is a bottom view of one of the pusher blades for the snow;

Fig. 7 is a side elevation of one of the pusher blades for the snow;

Fig. 8 is a diagrammatic layout showing the cam track; and

Fig. 9 is a diagram of a modified drive which eliminates the idler gears of Figs. 1 and 2.

The snow removal machine as illustrated is of relatively light-weight construction and is intended to be manually pushed forward by the operator to clear a path in the snow. If it is desired to design a machine which will take care of deeper snow and to clear wider areas, the machine could readily be made to be power operated.

The frame 10 comprises the approximately triangular side members 12 the side portions of which are braced by the vertical struts 14. The side members 12 are joined together by the cross strut or brace 16. Bearings 18 are mounted on the side members 12 and support the rear cross shaft 20. A pair of traction wheels 22 are fixed to the shaft 20 and raise the rear ends of the side members 12 above the ground as shown in Fig. 1. The machine may be pushed along by the handle 24 which is fixed to the yoke 26 carried by the shaft 20 and swingable with respect thereto. A pair of gears 28 are fixed to the shaft 20 between the traction wheels 22 and the side frame members 12, and the movement of the gears 28 is transmitted to idler gears 30 mounted in bearings 32 fixed to the side frame members 12.

At the front end of the machine bearings 34, fixed to the side frame members 12, support the front cross shaft 36. The shaft 36 is fixed against rotation with respect to the frame by the nut members 38. A cylindrical drum 40 is fixed to the central portion of the shaft 36. A pair of bearing sleeves 42 are mounted on the shaft 36 adjacent the ends of the drum 40 and serve as bearings for the hexagonal side plates 44 to which sprocket gears 48 are fixed by the bolts 46. Motion is transmitted from the idler gears 30 to the sprocket gears 48 by the chains 50. A modified drive as diagrammatically shown in Fig. 9 could be employed in which the idler gears 30 are eliminated but the drive chain 51 must be crossed. The snow lifting blades 52 are fixed at each end by the screw bolts 54 to the hexagonal side plates 44. The design of the snow lifting blades is shown in Fig. 5 to include the curved scoop-shaped blade portion 56, the angularly disposed flange members 58 which engage the corners of the hexagonal plates 44, and a second pair of flange portions 60 parallel to the flanges 58 but spaced to leave grooves 62 adapted to form guide tracks for the laterally movable blades as will be later described.

The laterally movable blades 64 shown in detail in Fig. 7 are shaped to fit the space between the snow lifting blades 52 as shown in Fig. 4. Each of the blades 64 is formed with integral flange portions 66 which are adapted to fit in

the grooves 62 as shown in Fig. 4. The back side of each of the blades 64 is strengthened by a brace portion 68. The blades 64 also have an inwardly directed square-shaped boss 70 adapted to fit in the space between the flanges 58 of adjacent snow lifting blades 56. The blades 64 are thereby held from turning with respect to the blades 56. The boss 70 carries a roller 72 which engages in a cam track 74 formed in the drum 40.

Since the drum 40 is stationary and the snow lifting blades 56 rotate around the drum 40, the laterally movable blade 64 will be moved to push the snow off to the side after the snow has been lifted. As shown in Fig. 8, each of the blades 64 remains stationary through approximately the lower 180° of movement, while the adjacent snow lifting blades are entering the snow and while the snow is being initially lifted; then during the upper part of the travel of the snow lifting blades the laterally movable blades 64 will be caused to move from one side to the other of the machine thereby depositing the snow at the side. The transverse movement of the blade 64 takes place during approximately 90° of travel and during the next 90° of travel the blade 64 will be returned to its initial position.

Referring to Fig. 1, it should be noted that the bottom portion of the front of the side frame members 12, as indicated at 14, will rest upon the ground and form track or runner members for the machine. The blades 52 are thereby free to move without touching the ground. As the machine is pushed forwardly, the snow lifting blades 52 will turn counterclockwise as shown in Fig. 1 thereby picking up the snow and lifting it upwardly at the front of the machine.

My snow removal machine as illustrated and described provides rotatable means at the front of the machine for picking up the snow from the ground and lifting it above the level of the snow on the ground. Further means are provided for pushing the snow laterally after it has been raised whereby the snow is deposited at the side of the path of travel of the machine.

Various modifications may be resorted to in the details of construction without departing from the spirit of my invention as covered by the appended claims.

I claim:

1. In a machine for removing snow to clear a path, a frame comprising substantially triangular side members the lower forward ends of which provide runner portions adapted to slide on the ground, a cross shaft fixed to the upper forward ends of said side members, said shaft having a continuous cam track formed therein, a snow lifting wheel mounted to rotate with respect to said cross shaft, said wheel comprising side plates journaled on said cross shaft, a plurality of scoop-shaped snow removing blades fixed at their ends to said side plates and a plurality of pusher blade members mounted in the spaces between said scoop-shaped blades and having curved side edges closely fitting the curvature of said scoop-shaped blades, said pusher blades being mounted to slide transversely with respect to said scoop-shaped blades through the provision of guide channels formed at the base of said scoop-shaped blades, said pusher blade members having inwardly directed pin-shaped projections the inner ends of which are round and slidably engage the cam track in said cross shaft, said pusher blades being held against rotation by engagement of said pin-shaped extensions with the base portions of adjoining scoop-shaped blades and means for rotating said snow lifting wheel in a direction opposite to the forward travel of the machine, said cam track being designed to cause said pusher blades to move laterally after the snow has been lifted and to deposit the snow at the side of the path being cleared.

2. In a machine for removing snow to clear a path, a frame comprising substantially triangular side members the lower forward ends of which provide runner portions adapted to slide on the ground, a cross shaft fixed to the upper forward ends of said side members, said shaft having a continuous cam track formed therein, a snow lifting wheel mounted to rotate with respect to said cross shaft, said wheel comprising side plates journaled on said cross shaft, a plurality of snow lifting blades fixed at their ends to said side plates and a plurality of pusher blade members mounted in the spaces between said lifting blades, said pusher blades being mounted to slide transversely with respect to said lifting blades through the provision of guide channels formed at the base of said lifting blades, said pusher blade members having inwardly directed pin-shaped projections the inner ends of which slidably engage the cam track in said cross shaft, said pusher blades being held against rotation by engagement of said pin-shaped extensions with the base portions of adjoining lifting blades and means for rotating said snow lifting wheel in a direction opposite to the forward travel of the machine, said cam track being designed to cause said pusher blades to move laterally after the snow has been lifted and to deposit the snow at the side of the path being cleared.

THOMAS F. LEWIS.