March 26, 1963 K. STEEB 3,082,554

SNOW SHOVEL

Filed Oct. 4, 1961

Fig. 1.

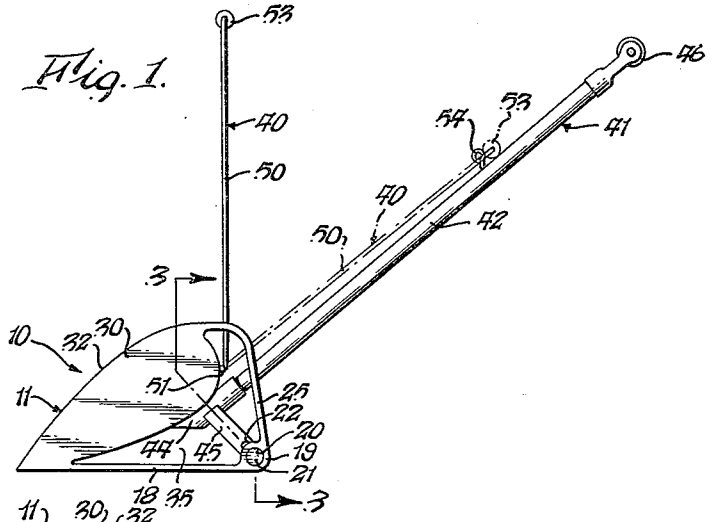
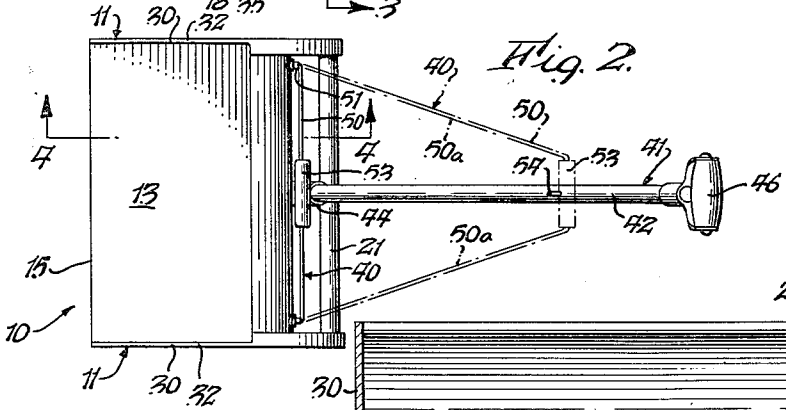


Fig. 2.



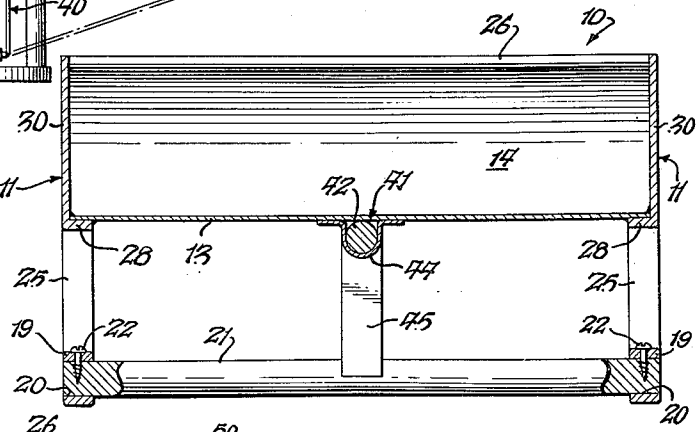
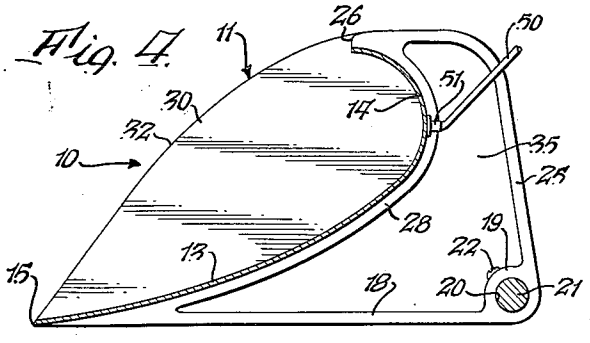


Fig. 3.

Fig. 4.



INVENTOR.
Karl Steeb
BY
Popp and Sommer
Attorneys

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SNOW SHOVEL

Karl Steeb, 149 Harlem Ave., Buffalo, N.Y.

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This invention relates to a snow shovel and more particularly to such a snow shovel which permits of the removal of all types of snow, that is, heavy and light, fresh and partly refrozen, with less effort and fatigue than conventional shovels.

It is an important object of the invention to provide a lever and fulcrum action which, on depressing the rigid handle of the shovel will lift the entire scoop thereby to break all sides of a body of snow on the shovel from the snow bank.

It is another important object of the present invention to provide a snow shovel which embodies both such a lever and fulcrum action for initially raising the shovelful of snow from the ground and also a swinging handle arrangement for subsequently lifting and swinging the snow shovelful with a minimum of stooping or other exertion beyond relative movement of the arms of the shoveler.

Another object of the invention is to provide such a snow shovel in which the shovelful of snow does not interfere with the movement of any of the working parts and in particular in which none of the moving parts have to work through the shovelful of snow in the shoveling operation.

Another important object of the invention is to provide such a shovel which is securely held at three widely spaced points so that the shovel automatically levels itself to avoid both accidental discharge of a shovelful of snow and also to avoid the necessity of any effort to hold the shovel level.

Another object of the invention is to provide such a shovel which spaces itself at proper elevation from the ground to facilitate entry of the scoop into the snow bank, this being achieved by runners which also form part of the fulcrum structure.

Another object of the invention is to provide such a shovel in which its runners can also be used like a sled in moving the shovel from place to place.

A further object of the invention is to provide such a snow shovel which is shaped to cut the snow away in the form of a large block each time the shovel is used, this being achieved by high thin side walls for the scoop in combination with the lever and fulcrum action which lifts the entire scoop.

Another object is to provide such a shovel which is of light weight skeleton form but at the same time is adequately reinforced to be rugged and to stand up under conditions of severe and constant use without getting out of order or requiring repairs.

Other objects and advantages will appear from the following description and drawings in which:

FIG. 1 is a side elevational view of a snow shovel embodying my invention and showing the same in position to enter the bank of snow along the ground.

FIG. 2 is a top plan view thereof.

FIG. 3 is a transverse section on an enlarged scale taken generally on line 3—3, FIG. 1.

FIG. 4 is a vertical longitudinal section, on an enlarged scale, taken on line 4—4, FIG. 2.

In the accompanying drawings the parts of the snow

shovel are shown in the position which they would occupy in the hands of the user preparatory to entering the bank of snow along the ground.

The scoop of the snow shovel is indicated generally at 10 and is in the form of a rectangular piece of sheet metal having two side walls 11, the scoop being curved to form a bottom wall 13 and a reversely curved rear wall 14, the leading edge 15 of the scoop forming the horizontal bottom cutting edge of the shovel which is moved horizontally along close to the ground to cut under and elevate a shovelful of snow onto the bottom 13. To facilitate such movement and to avoid digging in of the forward edge 15 into the ground or gravel or upwardly projecting concrete pieces or other low obstacles which may comprise the surface being shoveled each side wall 11 is provided with a horizontal bottom runner 18 which extends horizontally rearwardly from the cutting edge in the position of the shovel preparatory to entering the bank of snow along the ground and each runner in this position preferably extends rearwardly beyond the rearmost extremity of the scoop 10 as best illustrated in FIG. 4. The rear of each runner 18 is formed to provide a socket 19 having a horizontal bore 20, the bores of the two side walls being in axial alinement with each other and each containing the end of a cross rod 21 which is preferably made of wood and of cylindrical form. This cross rod can be secured in position as by screws 22 extending through the walls of the sockets 19 and anchoring in the ends of the cross rod 21 as best shown in FIG. 3.

Each side wall 11 also includes a generally vertical bar 25 extending upwardly from the socket 19 and at its upper end curving forwardly to terminate at the upper horizontal edge 26 of the rear wall 14 of the scoop 10. From this point each side wall is continued downwardly in the form of a curved bar 28 which conforms to the shape of the sheet metal scoop 10 and joins the forward end of the runner 18, the edges of the sheet metal scoop 10 being secured to one face of this curving bar 28, as by welding. Each of these curving bars 28 is in the form of a curved flange extending inwardly from an imperforate side wall 30 which side walls form the vertical sides above the scoop and the upper edges 32 of which form cutting edges which separate the sides of the shovelful of snow being removed from the bank both to facilitate removal of the shovelful of snow and also to insure shoveling a path having vertical sides.

Each entire side wall 11 can be made in the form of a single stamping and it will be noted that it is provided with a large opening 35 in the rear of the scoop 10 thereby to reduce both the weight and the cost of the shovel.

A feature of the invention resides in the provision of a bail-like handle indicated generally at 40 in addition to the more or less conventional stiff or rigid handle indicated generally at 41. The rigid handle can be in the form of a wooden shaft 42 having its lower end inserted into a sheet metal socket 44 secured, as by welding, to the rear face of the scoop 10 intermediate its bottom wall 13 and rear wall 14. At this point the shovel can be reinforced by a sheet metal strut 45 which is shown as being of square tubular form in cross section with its upper end secured as by welding to the socket 44 and its lower end bearing against the center part of the wooden cross bar 21. The outer end of the stiff handle 41 is shown as having a conventional handle grip 46.

The bail-like handle **40** preferably includes a somewhat stiff length of wire or cable **50** the opposite ends of which are secured in anchor fittings **51** which later are secured to the rear face of the rear wall **14** at the opposite extremity thereof so as to be widely spaced from the center of the shovel. A tubular grip **53**, preferably made of wood, surrounds the center part of the stiff cable **50** and can be secured in position in any suitable manner (not shown), the sides **50***a* of the cable diverging from the ends of the grip **53** to the anchorages **51**. When not in use the grip **53** can be attached to the stiff handle **41** in any suitable manner as shown by dotted lines in FIGS. 1 and 2, the shaft **42** being provided for this purpose with a catch, shown as being in the form of an eye **54** by which the grip **53** is caught. It will be noted from an inspection of FIG. 1 that with the runners **18** of the scoop **10** riding horizontally on the ground and the bail like handle **40** raised to an upright position, the grip **53** of this handle is at approximately the same height as the grip **46** of the rigid handle **41**.

In the use of the snow shovel the operator moves the rigid handle **41** so as to cause the cutting edge **15** of the scoop **10** to cut down into the snow bank (not shown) until the runners **18** are brought into engagement with the surface of the ground the full length thereof. The shoveler then releases the grip **53** of the bail-like handle **40** from the catch **54** and seizes this grip **53** with one hand and the grip **46** with the other hand. By a horizontal pressure applied to the grip **46** of the rigid handle **41** he then causes the scoop **10** to move forwardly with its runners **18** travelling along the surface of the ground so as to cause the cutting edge **15** to travel under the shovelful of snow to be removed and so as to cause this shovelful to be piled up on the scoop. In this movement the top edges **32** of the side walls **11** of the scoop cut the sides of the shovelful of snow being removed so as to produce vertical side walls in the shoveled path. This function of the vertical side walls **11** is particularly advantageous when shoveling through deep snow.

After a full load of snow has been gathered on the shovel, the shoveler presses downwardly on the grip **46** of his rigid handle **41**. This causes the sockets **19** to be brought into pressure contact with the ground and to act as a fulcrum in lifting the entire scoop **10**. In this lifting or upward movement of the scoop **10** the upper edges **32** of the side walls **11** of the scoop cut upwardly through the body of snow to be removed thereby to further separate this body from the surrounding bank. Also the forward cutting edge **15** is moved upwardly so as to cut the forward end of the shovelful of snow being removed from the bank. The net effect of this upward movement of the scoop **10**, particularly with heavy or somewhat packed snow is to separate a complete block of snow from the bank as the shovelful to be removed.

Accordingly, the loaded shovelful can now be moved rearwardly preparatory to the final swing and in this rearward movement the grip **53** of the bail-like handle **40** is lifted slightly so as to free the fulcrum engagement of the sockets **19** from the ground and the grip **46** of the stiff handel **41** is moved rearwardly.

At the end of the rearward swing the shoveler moves the grip **46** of the stiff handle **41** forwardly and at the same time progressively lifts the grip **53** of the bail-like handle **40** so that the movement of the shovel ful of snow is upwardly and forward, taking full advantage of the return pendulum action of the load from its rearward swing. In this forward movement the scoop is guided to swing to one side and in this movement it will particularly be noted that the shoveler has full control of the movement of the shovel from three widely spaced points, namely the grip **46** of the stiff handle **41** and the widely spaced anchor fittings **51** for the bail-like handle **40**. At the end of the swing the shovel is brought to a stop but the shovelful of snow continues sliding off the scoop **10** to the side of the path being shoveled.

It will be noted that by virtue of the long rigid handle **41** in relation to the fulcrum provided by the sockets **19** a very powerful leverage advantage is provided in lifting up the entire scoop **10** to carve out a shovelful of snow from the bank, this being accomplished with little effort and being particularly effective where the snow is heavy and packed or partly refrozen. At the same time by locating these fulcrum points **19** behind the scoop **10** the entire scoop is lifted so that the full length of the cutting edges **32** provided by the side walls **11** is effective in cutting through the body of snow to be removed as a shovelful and also the horizontal cutting edge **15** of the scoop is lifted a very substantial distance so as to cut away the front part of the shovelful of snow from the bank. It will also be noted that by the wide spacing of the anchor fittings **51** the scoop is supported from three widely spaced points and under full control at all times. It will also be noted that by securing the anchor fittings **51** to the rear face of the rear wall **14** of the scoop, the bail-like handle **40** never comes in contact with the shovelful of snow and does not interfere with its free release at the end of the discharge swing of the shovel. It will also be noted that the rails **18** are effective in holding the cutting edge **15** of the scoop at the proper elevation and to avoid this cutting edge digging into the ground obstacles and that also the rear ends of these rails, as well as the fulcrum points provided by the sockets **19** are adequately strengthened and also acts as a reinforcement by virtue of the strut **45** between the center of this rod and the socket **44** for the rigid handle **41**.

Also each side wall **11** can be made of low cost sheet metal and by virtue of the large opening **35** therein behind the piece **12** of sheet metal, it can be made light in weight and lower in cost. Also, by virtue of the runners **18** the shovel can be moved from place to place with little effort.

I claim:

1. A snow shovel comprising in its operative position a scoop having a pair of spaced vertical side walls joined to the side margins of a sheet of metal having a bottom wall, the horizontal leading edge of which extends between the forward extremities of said side walls, and a reversely curved rear wall, runners severally extending horizontally rearwardly from said forward extremities of said side walls and forming a fulcrum arranged below and in rear of said scoop, a rigid handle projecting rearwardly and upwardly from the rear face of said reversely curved rear wall of said scoop, a grip portion at the outboard end of said rigid handle, means jointly supporting said handle both directly from said reversely curved rear wall and also from said runners, a bail-like swinging handle comprising a length of wire having a grip portion and legs diverging from said grip portion, and pivot means connecting the outboard ends of said legs to said scoop adjacent the rear face of said rear wall to swing on a horizontal axis generally parallel with said leading edge, said grip portions, in the upright position of said bail-like handle, being at approximately the same height.

2. A snow shovel comprising in its operative position a pair of spaced sheet metal side structures each made of a single sheet of metal and comprising a side wall, a runner projecting horizontally rearwardly from the forward extremity of each side wall and forming a fulcrum at its rear end, and an integral generally vertical bar rising from the rear end of its runner and connected at its upper end with the upper rear part of its side wall, a sheet of metal connected at its opposite side edges to said side walls and having reversely curved rear wall and a bottom wall the horizontal leading edge of which extends between the forward extremities of said side walls, an upwardly opening socket secured to the rear face of said reversely curved rear wall, a rigid handle fixed in said socket and projecting upwardly and rearwardly therefrom, a grip portion at the outboard end of said rigid handle, a horizontal cross bar connecting said rear ends

of said runners, a strut rising from said cross bar and supporting said socket, a bail-like swinging handle comprising a length of wire having a grip portion and legs diverging from said grip portion, and pivot means connecting the outboard ends of said legs to the said rear wall adjacent the rear face thereof to swing on a horizontal axis generally parallel with said leading edge, said grip portions, in the upright position of said bail-like handle, being at approximately the same height.

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