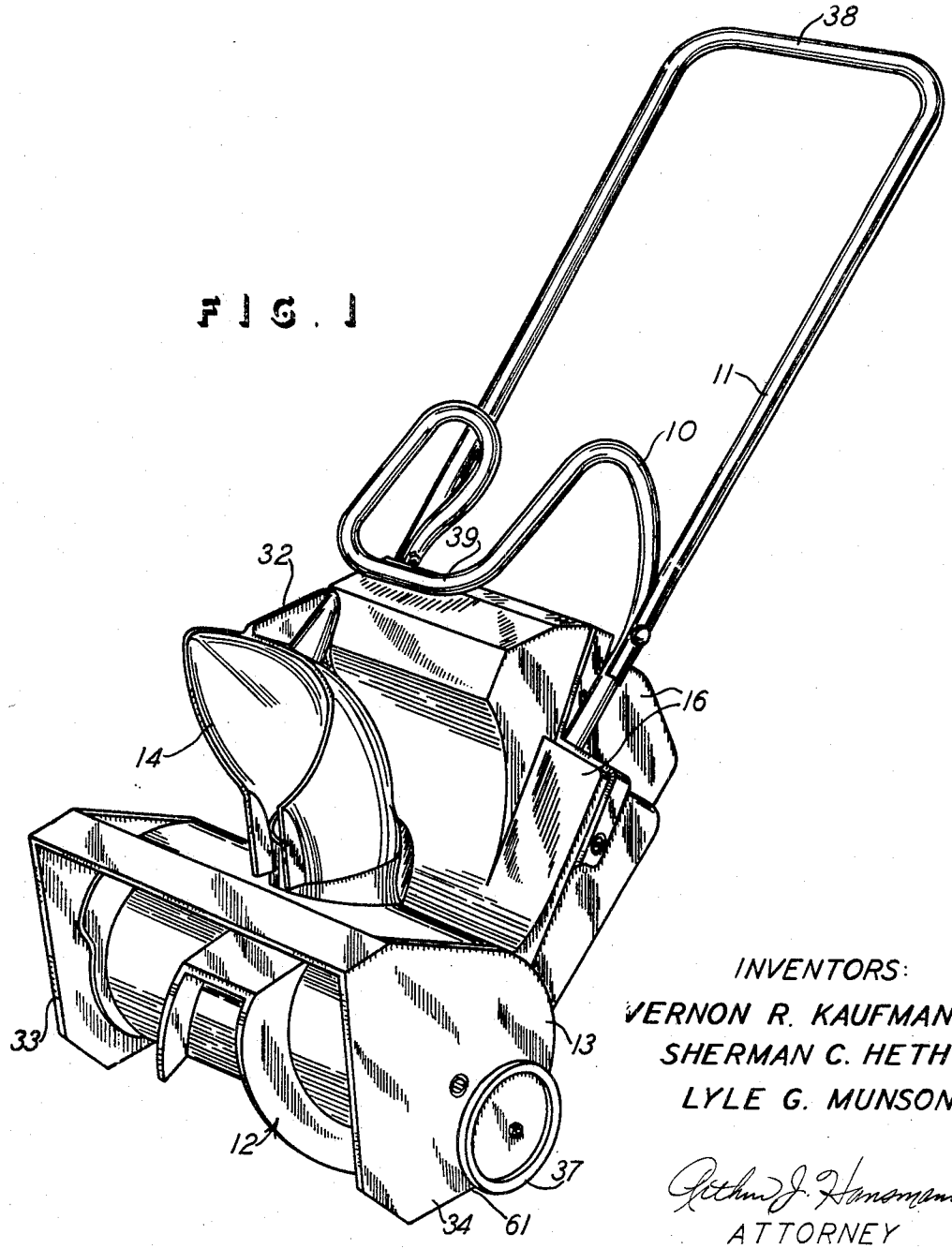
Jan. 13, 1970 S. C. HETH ET AL 3,488,869

POWERED SNOW THROWER OF THE AUGER TYPE

Filed Sept. 7, 1967 3 Sheets-Sheet 1

FIG. 1



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POWERED SNOW THROWER OF THE AUGER TYPE

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FIG. 2

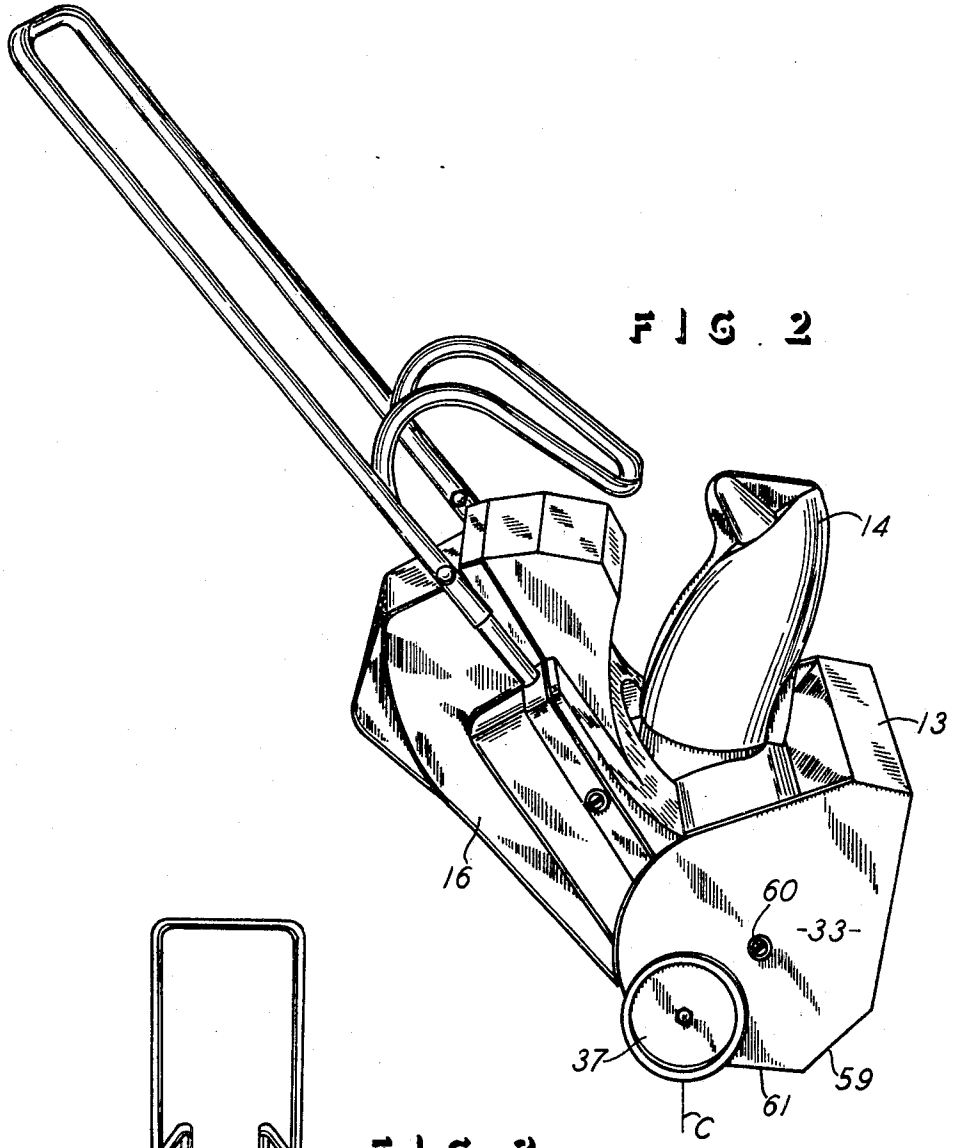
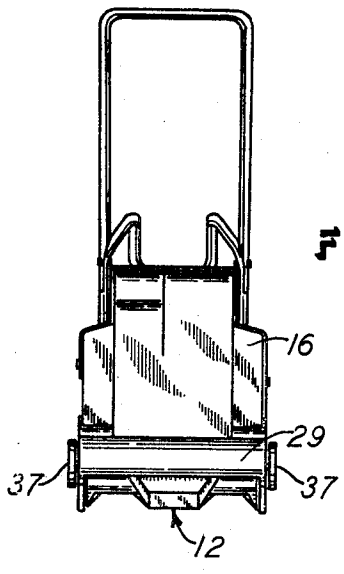


FIG. 3



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FIG. 4

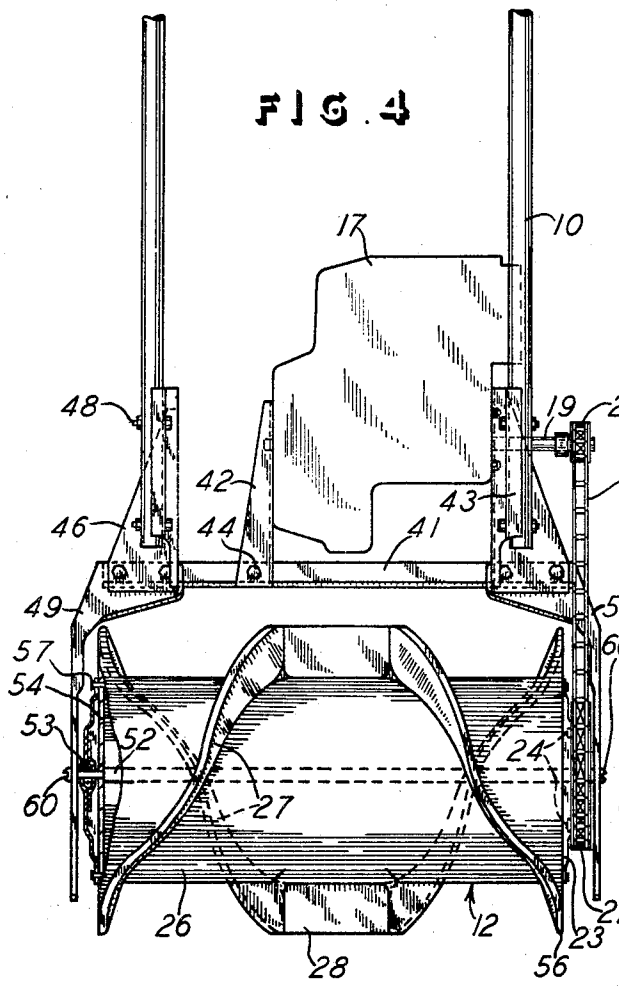
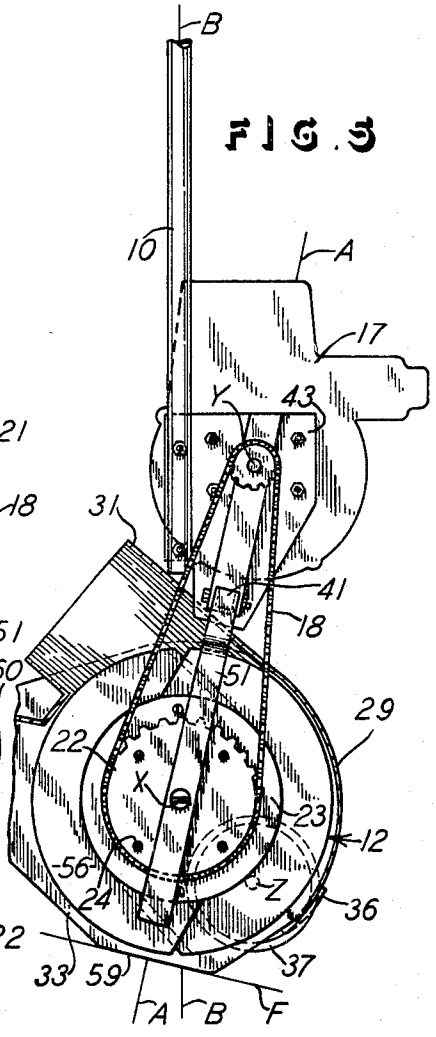


FIG. 5



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POWERED SNOW THROWER OF THE AUGER TYPE

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U.S. Cl. 37—43 1 Claim

ABSTRACT OF THE DISCLOSURE

A snow thrower having a frame supporting a prime mover and rotatably supporting an auger. A housing encloses the auger and has a chute for directing the discharge of the auger away from the snow thrower. A handle is attached to the frame and extends therefrom for steering and lifting the snow thrower which has wheels for moving over the ground. A housing encloses the prime mover and the handle portion adjacent the frame.

BACKGROUND OF THE INVENTION

Snow throwers known heretofore are generally large and heavy if they are provided with a pick-up auger and a discharge chute for directing the snow away from the thrower. Generally, these prior art throwers are difficult to maneuver in operation, and they are clumsy and difficult to store. It will of course be appreciated that it is desirable to have a snow thrower which can be moved into small spaces, and which can even be placed on steps or lifted to porches or other raised places even while the blower is operating and during the snow throwing process and for clearing the raised places of snow.

Accordingly, it is the object of this invention to provide a snow thrower which is light weight, easily maneuvered during operation, can be used on the steps and like elevations, can be readily and easily lifted, can be secured in an inoperative and stored space with a requirement of only a minimum of space, and which is compact. Still further, the snow thrower of this invention accomplishes the aforesaid purposes and objects, and it is efficient in its operation in throwing snow to any desired direction and for a reasonable distance. Still further, the snow thrower is easily operated, is sturdy in its construction, and is easily manufactured, maintained, and repaired. It is also signifiacnt to state that the snow thrower is safe for use in that it does not require any propeller or paddle for throwing the snow in a separate stage of snow removal. In the present instance, the snow is both picked up and impelled through the chute by a single auger.

Still further objects of the invention are the provision of a snow thrower wherein the several parts thereof are disposed in alignment and balanced relationship with respect to each other, including considering the center of gravity of the parts. That is, the thrower is provided with standing support means, and the parts aer disposed to be directly above the base of the support means so that it will be stable in the standing position. Also, a frame is provided in the snow thrower for assuring the positioning between the auger and a prime mover and to assure maintaining the positioning, particularly the spacing, between these two parts.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a front perspective view of a snow thrower of this invention.

FIG. 2 is a side perspective view of the snow thrower.

FIG. 3 is a rear elevational view of the snow thrower and showing it on a reduced scale, and with certain parts not shown.

FIG. 4 is a view of the internal parts of the snow thrower, with parts thereof broken away.

FIG. 5 is a right side elevational view of FIG. 4, with parts added thereto and broken away.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The snow thrower is of the powered type, and it includes handles **10** and **11**, a rotatably mounted auger **12**, and an auger housing **13**, a discharge chute **14**, and covers or housings generally designated **16**. FIG. 4 shows the gasoline engine **17**, which is a prime mover, in driving relation with the auger **12** by means of the chain **18**. Thus the engine crank shaft **19** carries a sprocket **21**, and the auger **12** has a sprocket **22** secured to the bearing housing **23** by conventional and suitable means, such as bolts indicated at **24**. Therefore the sprocket **22** and auger **12** rotate in unison, as they are driven by the prime mover **17** through the chain **18**.

The auger **12** includes the base cylinder **26** and the auger flights **27**. Thus rotation of the auger **12** will cause pick-up of snow, and it will also cause the impelling of the snow out of the housing **13** and through the chute **14**, and this impelling is by means of the paddles **28** included in the auger flights. FIG. 5 shows the auger housing **13** includes the rearwardly disposed cylindrical portion **29** spaced immediately adjacent the tips of the auger flight **27**. An outlet portion **31** of the housing **13** is in snow-flow communication with the auger portion **29**, so snow is impelled up the cylindrical outlet **31**, as desired. Finally, the chute **14** is in flow communication with the portion **31**, and is swivelable on the portion **31** so that the chute **14** will direct the snow away from the thrower and preferably either forwardly or to the left or right side. A control handle or the like **32** on the chute **14** permits the operator to rotate the chute **14** on the outlet portion **31** for throw direction desired.

The housing **13** also has side or end pieces **33** and **34**. It also has a lip **36** which may be detachable and separately provided for extending along the curved piece **29** and for engaging the ground or being disposed at least near the ground in the operation of the snow thrower. In actual manufacture, it is desirable to make the housing parts described, and to even make the auger **12**, of a plastic material so that it is both durable and light weight, as well as having other advantages. Thus the piece **36** can be made of a material appropriate for serving as the forward lip in the advance of the snow thrower along the ground. Also, two wheels **37** are rotatably mounted on the housing ends **33** and **34**, respectfully, for mobilizing the snow thrower during operation.

It will therefore be noticed that the handle portion **11** has hand-grip means **38** for pushing and steering the snow thrower in operation thereof. Also, the handle portion **10** has hand-grip means **39** which are available for lifting the snow thrower either for transporting it or for controlling it during operation such as when the operator has one hand on the grip **38** and another hand on the grip **39** and is standing to the side of the snow thrower. This may be when the snow thrower is being used on a step or small porch or any other similar structure.

FIGS. 4 and 5 show a cross frame piece **41** extending between the prime mover **17** and the auger **12** and providing the mounting and support for these two parts. That is, a bracket **42** and a bracket **43** are suitably secured to the frame **41** by means of bolts, such as the bolt **44**, and the brackets **42** and **43** extend to the prime mover **17** and are bolted thereto for supporting the prime mover **17** in a fixed position with respect to the frame piece **41**. Also, brackets **46** and **43** are shown bolted to the opposite ends

of the frame piece **41**, and these brackets **46** and **43** extend upwardly and provide a means for mounting the handles, such as the handle portion **10**, which are secured by the bolts **48** and the like.

Finally, brackets **49** and **51** are also bolted to the opposite ends of the frame piece **41** and extend forwardly thereof and provide the rotatable mounting for the auger **12**. That is, a shaft **52** extends between the brackets **49** and **51** and through the auger **12**, as an auger shaft but being fixed or nonrotatable in the arrangement shown. Bearings **53** are piloted on the dead shaft **52** and the bearings are shown bolted to the auger ends **54** and **56**, by means of bolts **57** so that the bearing outer housing shown will rotate with the auger body **26**, as desired.

Thus the shaft **52** provides the desired spacing between the brackets **49** and **51** at the forwardly extending portion of these brackets, and screws **60** secure the shaft **52** to the brackets **49** and **51**. This arrangement presents only a minimum of strain on the auger proper, and it permits the auger **12** to be made of a plastic material and light weight so that it can be maneuvered and operated for the purposes mentioned herein.

Thus the frame means, including the brackets described, provide the desired spacing and relative location of the prime mover **17** and the auger **12**. FIG. 5 shows that the axis of the auger **12**, and designated X in FIG. 5, lies along a plane defined by line B, which plane also lies along the handle means **10**. The axis or center of gravity of the prime mover **17**, and the axis or center of gravity being designated Y, lies on the line defined by the length direction of the brackets **43** and **51**. This line is designated A, and it is close to, if not on, being coincident with the line or plane B. Thus the handle portion **10** extends on a plane on which the prime mover **17** is also located. Also, the grip portion **39** of the handle portion **10** is adjacent the prime mover **17**. This is all for the purpose of providing an easily lifted and maneuvered snow thrower.

FIG. 5 also shows, along with FIGS. 1 and 2, that the auger housing ends **33** and **34** have a flat supporting edge **59** which is disposed on a plane designated F, and this plane may be referring to the floor. That is, the edges **59** would rest along a floor or the plane F, and the entire thrower would be balanced and can stand in that position. This is true since the plane F is transverse to the plane A which defines the plane extending through the center of gravity of at least the bulk of the snow thrower, as mentioned.

Of course with this elongated arrangements of parts described, that is with the engine and the auger extending substantially straight off from the handle means, the snow thrower could also be hung in a vertical position and occupy only a minimum of space against a wall or the like on which it may be hung.

It is further significant to notice that the wheels **37** have their axes designated Z imposed on a plane designated C which is shown upright in FIG. 2 and which therefore extends between the auger axis X and the center of gravity designated Y with regard to the prime mover **17**. Therefore, the wheels **37** are only two in number, but they are arranged for optimum balancing of the thrower with a portion of the thrower extending forwardly of the wheels and with a portion of the thrower extending rearwardly of the wheels, both with respect to the vertical plane C extending through the axes of the wheels **37**. Of course the lower edges of the wheels extend below the auger lowest housing edge **61**, shown in FIGS. 1 and 2, so the wheels **37** will support the entire snow thrower on the ground in a mobile position, when the snow thrower is disposed at the operative positions shown in FIGS. 1 and 2.

An important feature of the frame, including the rearwardly and forwardly extending brackets, is both to provide and maintain the mounting and relationships of spacing and stability between the prime mover and the auger. A fixed spacing between the prime mover and auger, as assured by this frame means, provides proper tensioning and adjustment of the drive from the prime mover to the auger, for both normal and shock conditions. Of course the prime mover may also be an electric motor powered by a source remote from the unit itself and having an extension cord extending thereto, much in the manner of running electric motors to mobile implements, such as lawn mowers. The electric motor shaft would be in a position of the engine shaft **19**, and it would also be mounted on the brackets **42** and **43**.

What is claimed is:

1. In a snow thrower of the type movable in a forward direction along a fore-and-aft axis through said snow thrower, a prime mover, a prime mover housing, an auger operatively connected to said prime mover to be driven thereby and being disposed forwardly of said prime mover, an auger housing, a chute disposed on said auger housing and in direct snow-flow communication therewith for directing snow from said auger and away from said snow thrower, handle means included in said snow thrower for manual control of said snow thrower and extending rearwardly on said snow thrower, the improvement comprising a frame piece extending laterally across said snow thrower in the direction transverse to the fore-and-aft axis of said snow thrower and between said auger and said prime mover, first mounting means on said frame piece and extending to said prime mover for supporting the latter, second mounting means on said frame piece and extending to said auger for rotatably supporting the latter, and third mounting means on said frame piece and extending in the direction of said first mounting means, said handle means being rigidly connected to said third mounting means and being elongated and extending rearwardly on said snow thrower in an extent along a plane which lies along the axis of rotation of said auger, said prime mover housing being arranged and disposed to enclose said prime mover and said frame piece and the portion of said handle means adjacent said third mounting means, the centers of gravity of both said prime mover and said auger being disposed on a common plane extending along said centers, said auger housing including two opposite side portions disposed at the ends of said auger and each having a flat edge disposed at the extremity of said housing and on a plane transverse to said common plane for standing said snow thrower on a floor in a self-supporting position with said common plane being vertically disposed.

References Cited

UNITED STATES PATENTS

2,642,680	6/1953	Curtis et al.	37—53
2,735,199	2/1956	Wanner et al.	
2,768,453	10/1956	Adams	37—53
3,253,356	5/1966	Haban	37—43
D. 190,433	5/1961	Williamson.	
3,359,661	12/1967	Speiser et al.	37—43
2,794,308	6/1957	Cavanaugh	56—249

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U.S. Cl. X.R.

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