

June 21, 1960

W. E. KLAUER
SNOW SWEEPER

2,941,223

Filed June 22, 1954

3 Sheets-Sheet 1

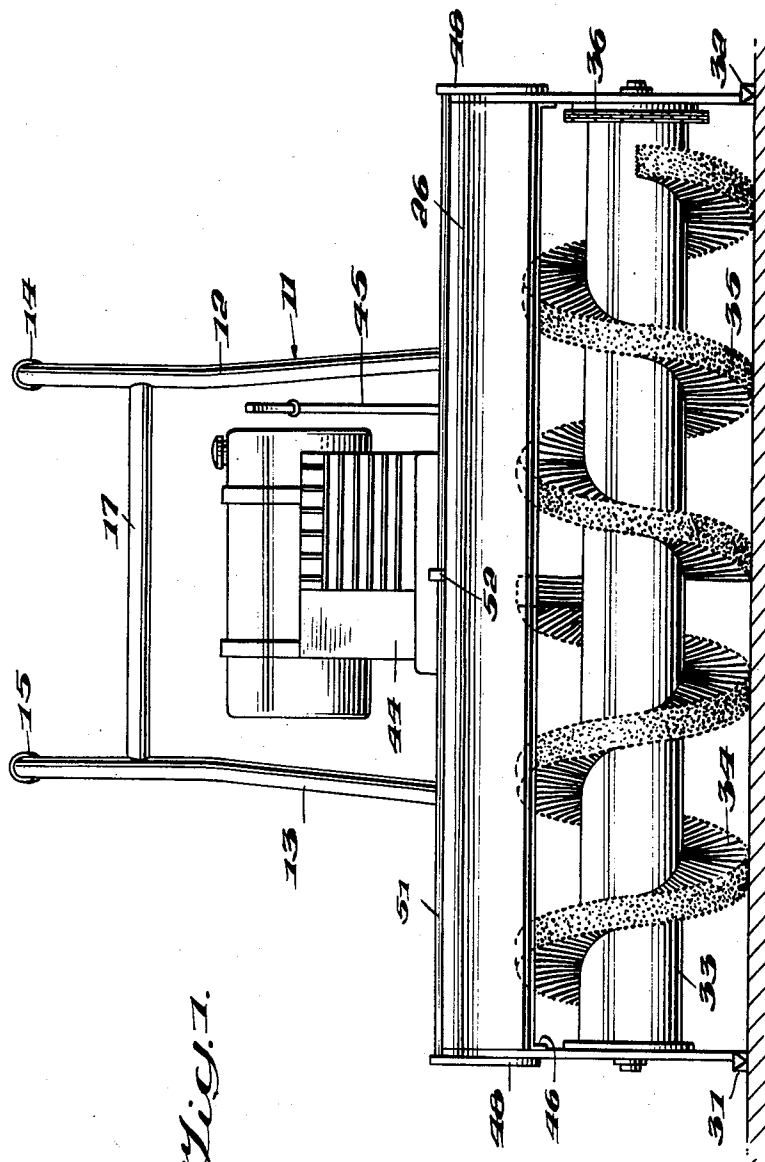


Fig. 1.

INVENTOR

WALTER E. KLAUER,

BY

Robert B. Kauer

ATTORNEY

June 21, 1960

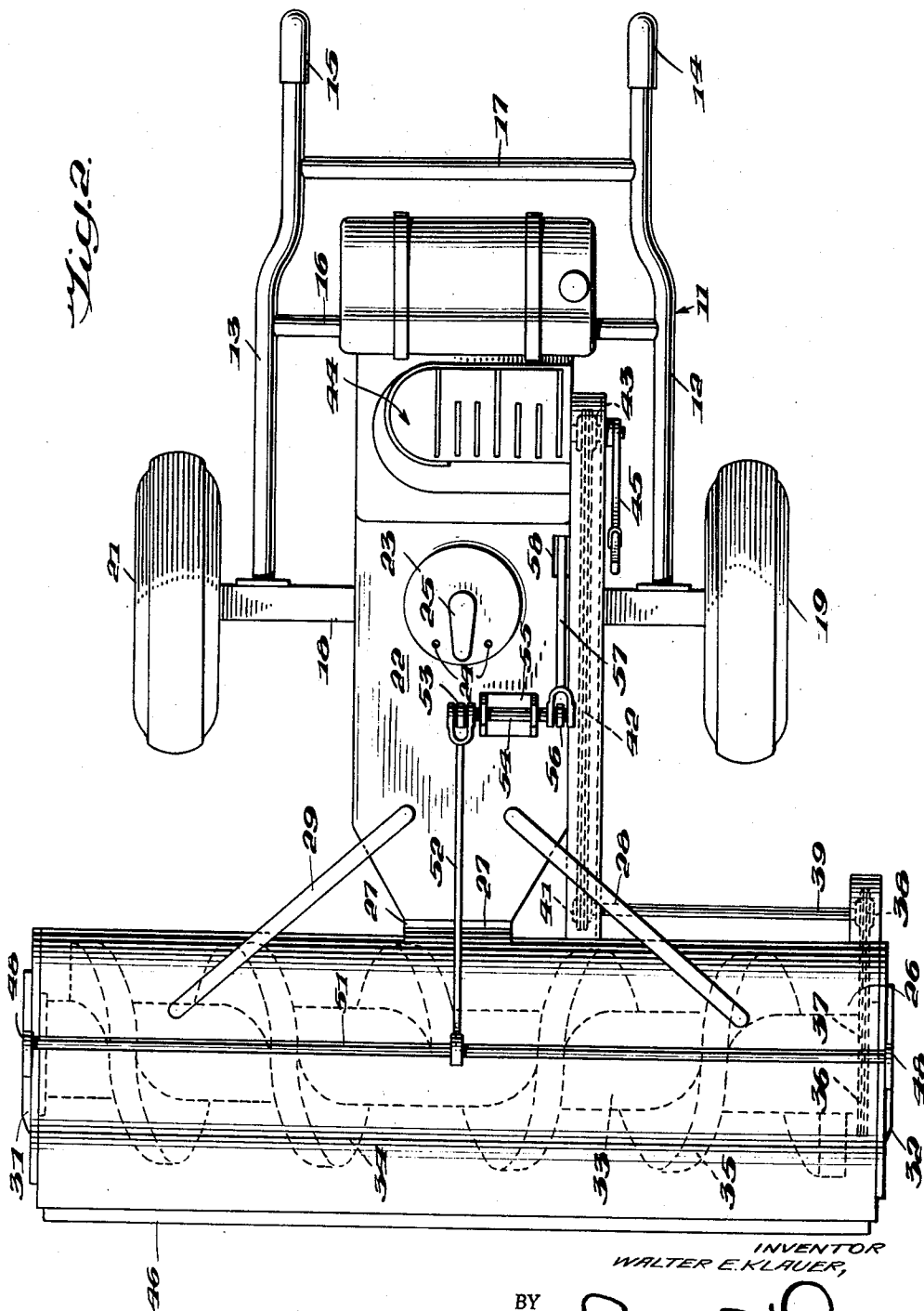
W. E. KLAUER

2,941,223

SNOW SWEEPER

Filed June 22, 1954

3 Sheets-Sheet 2



INVENTOR
WALTER E. KLAUER,

BY

Robert B. Pearson
ATTORNEY

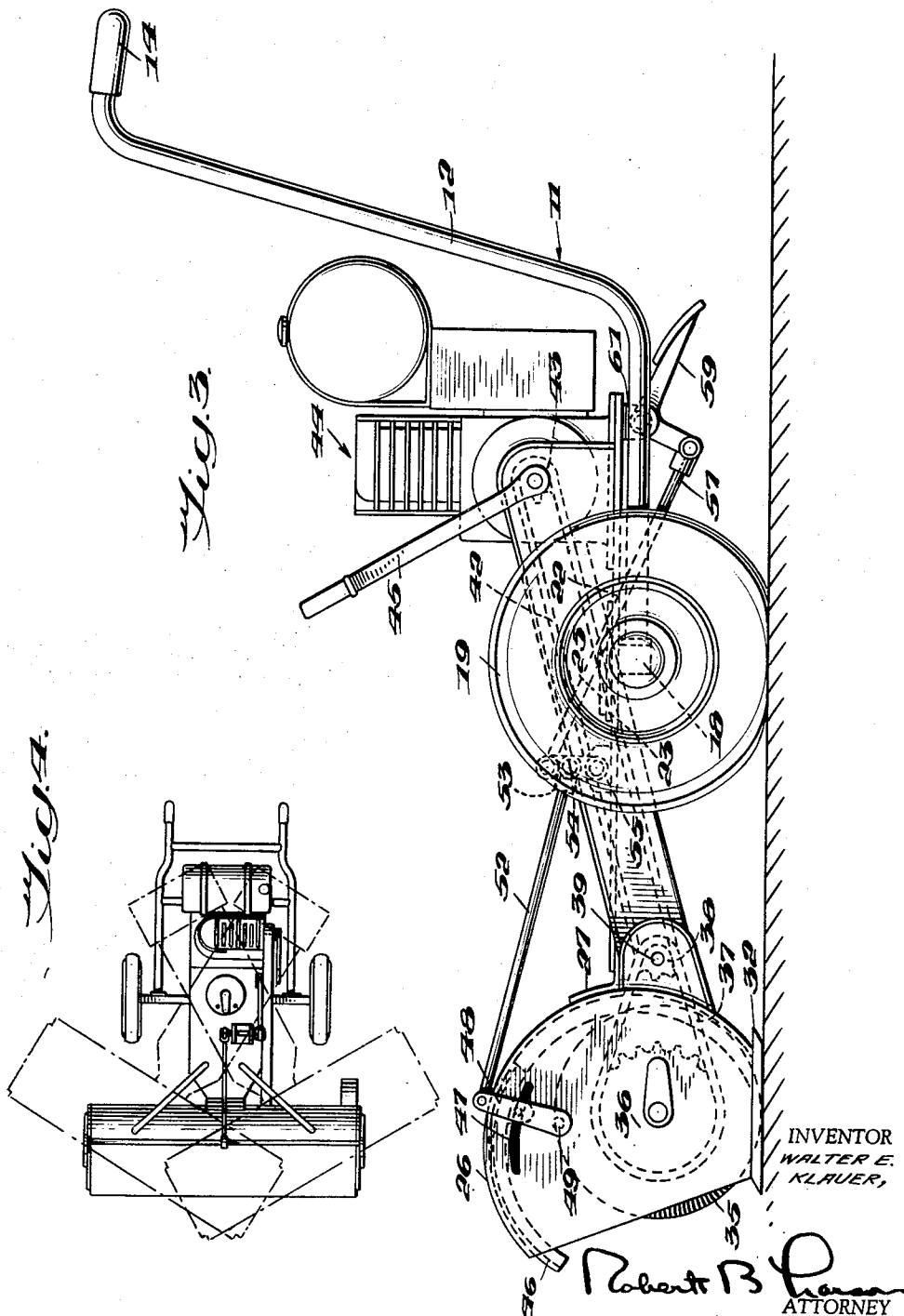
June 21, 1960

W. E. KLAUER
SNOW SWEEPER

2,941,223

Filed June 22, 1954

3 Sheets-Sheet 3



1

2,941,223

SNOW SWEEPER

Walter E. Klauer, Hotel Julian, Dubuque, Iowa

Filed June 22, 1954, Ser. No. 438,519

2 Claims. (Cl. 15—79)

This invention relates to a sweeper suitable for removing sand, dirt, dust and leaves but more specifically to a power operated snow sweeper which is particularly well suited for removing snow from sidewalks, drives, parking areas, roads, streets and the like.

Heretofore, there have been a great many small rotary snow plows on the market, all of which are designed for picking up snow and casting it away. These prior art snow plows are, however, very limited as to the depth of material which they are capable of removing and have the further objection that they do not completely clean the surface. On even surfaces such as pavements these plows leave a film of snow and consequently the surfaces need sweeping or they remain slippery. On uneven surfaces the prior art plows tend to ride up over the highest points of the uneven surfaces.

To provide a snow removal device which overcomes the above mentioned defects it was necessary to design a sweeper which would effectively remove snow by ejecting it forwardly. The present invention provides a rotatably-driven shaft having brushes disposed thereon preferably in two independent oppositely wound spiral paths, each of which extends from the center of the shaft to an end. There is further provided a motor to drive this shaft, and the spirally disposed brushes cause the snow or other material being removed to be given an impetus that will tend to guide it from the sides toward the center. The brush member and the motor are pivotally mounted on a wheeled frame so that the brush member and motor can be disposed at an angle with respect to the line of movement of the frame and the snow can be thrown off to the side of the area being cleaned. The purpose in mounting the motor and brush member pivotally on the frame is so that a direct drive between the motor and the brush member can be used rather than flexible couplings which would be necessary if one brush member alone were pivotal. When the brush is rotated in light snows, the material will be thrown out forwardly but in deep snows the brush will have a tendency to throw the material around the full radius of the brush. Consequently, a hood is provided over the rear portion of the brush, and an adjustable shield is mounted on the hood so that the vertical angle at which the snow is thrown outwardly can be controlled to prevent the snow from blowing back on the cleared area. The device is provided with convenient hand grips for moving and guiding. The wheeled frame and the brush member and motor are so balanced as to make the device easily movable. It can be seen, therefore, that this invention provides an efficient means for removing snow and the like from sidewalks and driveways.

A primary object of this invention is to provide a power operated snow removal device which is particularly well suited for cleaning sidewalks, driveways and the like.

Another object of this invention is to provide a snow sweeper having a rotatably driven brush member with the brushes disposed thereon in two oppositely wound

2

spiral paths so that the snow is thrown out forwardly towards the center.

Still another object of the present invention is the provision in a snow removal device of a brush member driven by a motor in which both the brush member and motor are pivotally mounted on a wheeled frame so that the brush member may be disposed at an angle with respect to the line of movement of the wheeled frame without the necessity for universal joints or flexible couplings between the motor and the brush member.

A further object of this invention is to provide an adjustable shield on a hood disposed over the brush member in a snow sweeper so that the vertical angle at which the material is thrown outwardly may be controlled.

Other objects and many of the attendant advantages of the present invention will become apparent in the light of this specification when considered in connection with the accompanying drawings wherein:

Fig. 1 is a front elevational view of a snow sweeper according to the present invention.

Fig. 2 is a plan view.

Fig. 3 is a side elevation, and

Fig. 4 is a plan view with parts shown in pivoted positions in dotted lines.

There is shown at 11 a wheeled frame including tubular members 12 and 13 having upwardly extending arms which form hand grips 14 and 15. The horizontal portions of members 12 and 13 are provided with cross brace 16, and brace 17 is connected to the upwardly extending arms to form a rigid structure. The lower ends of the members 12 and 13 are secured to a rectangular bar 18, the outer ends of this bar being extended on which are rotatably mounted in any desired manner wheels 19 and 21. The frame 11 may be made of any suitable material but the preferred construction contemplates the use of a strong light-weight metal which is not subject to rust such as, for example, aluminum.

There is provided an elongated plate or supporting member 22 which is pivotally mounted on bar 18 in any suitable manner whereby the plate can pivot in a horizontal plane with respect to frame 11. Secured to the upper surface of plate 22 is a disc 23 having recesses 24 therein for the reception of a spring pressed pin of a type well-known in the art which may be disposed in an extension 25 of the pivot pin. It can be seen that the spring pressed pin and detent retain the plate in the desired position with respect to the frame.

A hood 26 is secured to the forward end of plate 22 by means of flange 27 and braces 28 and 29. The bottom corners of the hood are provided with skids 31 and 32 which serve as runners for the hood. Rotatably mounted between the end walls of the hood is a shaft or drum 33 on which are secured the brushing elements. The bristles forming the brush are disposed in two independent oppositely wound spiral paths 34 and 35, each of which extends from one end of the shaft to the center thereof. Secured to one end of the shaft is a gear 36 which is driven through chain 37 by pinion gear 38. Pinion 38 is mounted on one end of shaft 39 (Fig. 2) on the other end of which is disposed gear 41. Gear 41 is driven through chain 42 by a gear 43 mounted on the drive shaft of a gasoline powered engine or motor generally designated by the numeral 44. Lever 45 provides a means for engaging a conventional clutch whereby the engine drives the rotatable brush. The engine is mounted on plate 22 in such a position that the plate is substantially balanced about the pivot on bar 18. It can be seen that by virtue of this construction, the plate 22 may be easily pivoted to its angular positions with respect to frame 11.

Slidably disposed within guides provided in the end walls of hood 26 is a shield 46 which is adapted to move from a retracted position within the hood to an extended

position to form a forward extension of the hood. Slots 47 are provided in the end walls of the hood through which extend pins (not shown) secured to the shield at their inner ends and to levers 48 at their outer ends. Levers 48 are pivoted as at 49 to the hood and have the upper ends thereof connected by means of rod 51. Link 52 is pivotally mounted on rod 51 and has a bifurcated end portion within which is pivoted a connecting rod 53 having the lower end portion thereof secured to a shaft 54. A U-shaped bracket 55 mounted on plate 22 provides a supporting means for shaft 54. On the end of shaft 54 is secured a second connecting rod 56 which has the upper end thereof pivoted within the bifurcated end portion of a link 57. Link 57 extends downwardly through a slot 58 in plate 22 and is pivoted to a foot pedal 59 which is in the form of a bell crank lever. A bracket 61 securely mounted on the underside of plate 22 provides a convenient pivotal mounting for the foot pedal. It can be seen that pivotal movement of the foot pedal will cause sliding movement of the shield 46 through the linkage described and in this manner the position of the shield may be adjusted with respect to the hood for purposes which will become apparent herein-after.

The operation of the snow sweeper herein described is as follows: The plate 22 is shifted to an angular position with respect to the frame 11, the motor 44 is started and the clutch is engaged to rotate the brush. The brushes rotate clockwise as viewed in Figure 3 so that the spirally wound brushes will tend to bring the snow towards the center. The snow is thrown out forwardly and is given an impetus towards the center by the spiral brushes 34 and 35. This action is brought about by the pressure of the snow held between the spiral brush paths and by the resiliency of the bristles which are bent when engaging the cleared surface. The frame is pushed along the path to be cleared and it can be seen that the snow will be thrown off to the sides as each half of the path is cleared. In a relatively light snow the brush may be positioned in alignment with the frame in which case the frame may be shifted angularly periodically to throw the accumulated snow off to one side. When used in connection with removing unusually deep material the device may be tilted about the wheels so that only the upper layer of snow is removed. The balancing of the elements on plate 22 about the pivot point facilitates this operation. The shield 46 may be adjusted by operation of the foot pedal to prevent the material which is thrown out forwardly of the sweeper from blowing back on the cleared path.

The adjustable shield permits the vertical angle at which the material is thrown out to be adjusted. It can be seen that the configuration of this shield can be varied from the straight form as shown to a dome shape, higher at the center than at the sides so that it assists in confining or narrowing the stream of material inward to the center.

It can be seen that the present invention provides a broom or sweeper which will eject material forward and upward with a controlled discharge. The sweeper can be adjusted to an angle with respect to the line of movement of the frame and the device can be guided manually while

power means is utilized to drive the rotary brush. The mountings of the motor and brush are arranged for easy balancing so that the sweeper can be raised with a minimum of effort by pressing down on the handles. Thus the broom does not have to be kept in contact with the sidewalk, street or ground but can be raised up to work down from the top of the material by taking a little off on each movement. The spiral arrangement of the brushes causes the material to be centered and ejected in a narrowing stream. It can be seen that the present invention provides a versatile sweeper which is easy to operate and particularly well adapted for removing snow from sidewalks and the like.

Having thus described the invention it is apparent that numerous changes in design and construction of the same may be employed without departing from the essentials thereof.

I claim:

1. A sweeper of the character disclosed comprising in combination, a horizontally disposed frame having wheels mounted thereon for supporting said frame, a pair of upwardly extending arms on said frame to form hand grips, a supporting plate on said frame, a hood secured to one end of said plate, said hood having an open front end, the rear end of said hood extending downwardly to the supporting surface and having runners mounted thereon for engagement with the supporting surface, brush means rotatably mounted within said hood, said brush means being oppositely spirally wound from each end thereof to sweep material angularly towards the center and forwardly through the open front end of the hood, material collecting at the rear of said hood being drawn towards the center by the rotating oppositely wound brushes, and power means for driving said brush means mounted on the opposite end of said support plate.

2. A sweeper according to claim 1 further comprising a shield and means interconnecting said shield and said hood whereby the shield may be positioned to form an extension of said hood such that the angle at which material is thrown forwardly by said brush means may be varied.

References Cited in the file of this patent

UNITED STATES PATENTS

31,762	Hope	Mar. 19, 1861
380,534	Snyder	Apr. 3, 1888
1,495,182	Hoover	May 27, 1924
1,579,509	Brown	Apr. 6, 1926
1,846,507	Boring	Feb. 23, 1932
2,148,841	Senior	Feb. 28, 1939
2,171,075	Blazier	Aug. 29, 1939
2,235,277	Bradley	Mar. 18, 1941
2,248,012	Phillips	July 1, 1941
2,631,418	Ronning	Mar. 17, 1953
2,654,106	Parker	Oct. 6, 1953
2,700,783	Parker et al.	Feb. 1, 1955
2,711,511	Wagner et al.	June 28, 1955
2,727,264	Dunham	Dec. 20, 1955
2,765,483	Le Blanc	Oct. 9, 1956