

Nov. 11, 1958

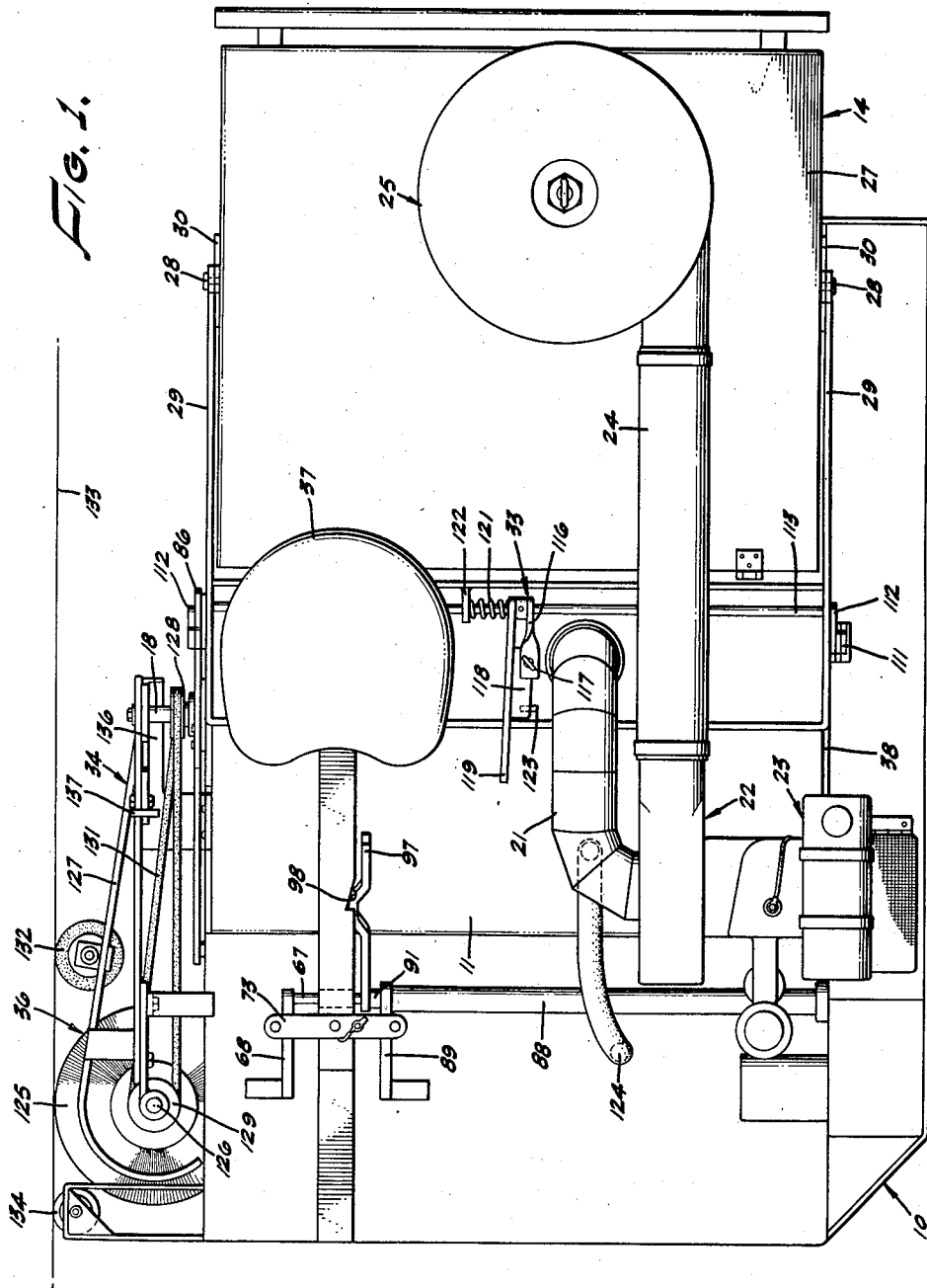
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2,859,461

SWEeper DRIVE AND ADJUSTMENT CONSTRUCTION

Filed Feb. 12, 1954

4 Sheets-Sheet 1



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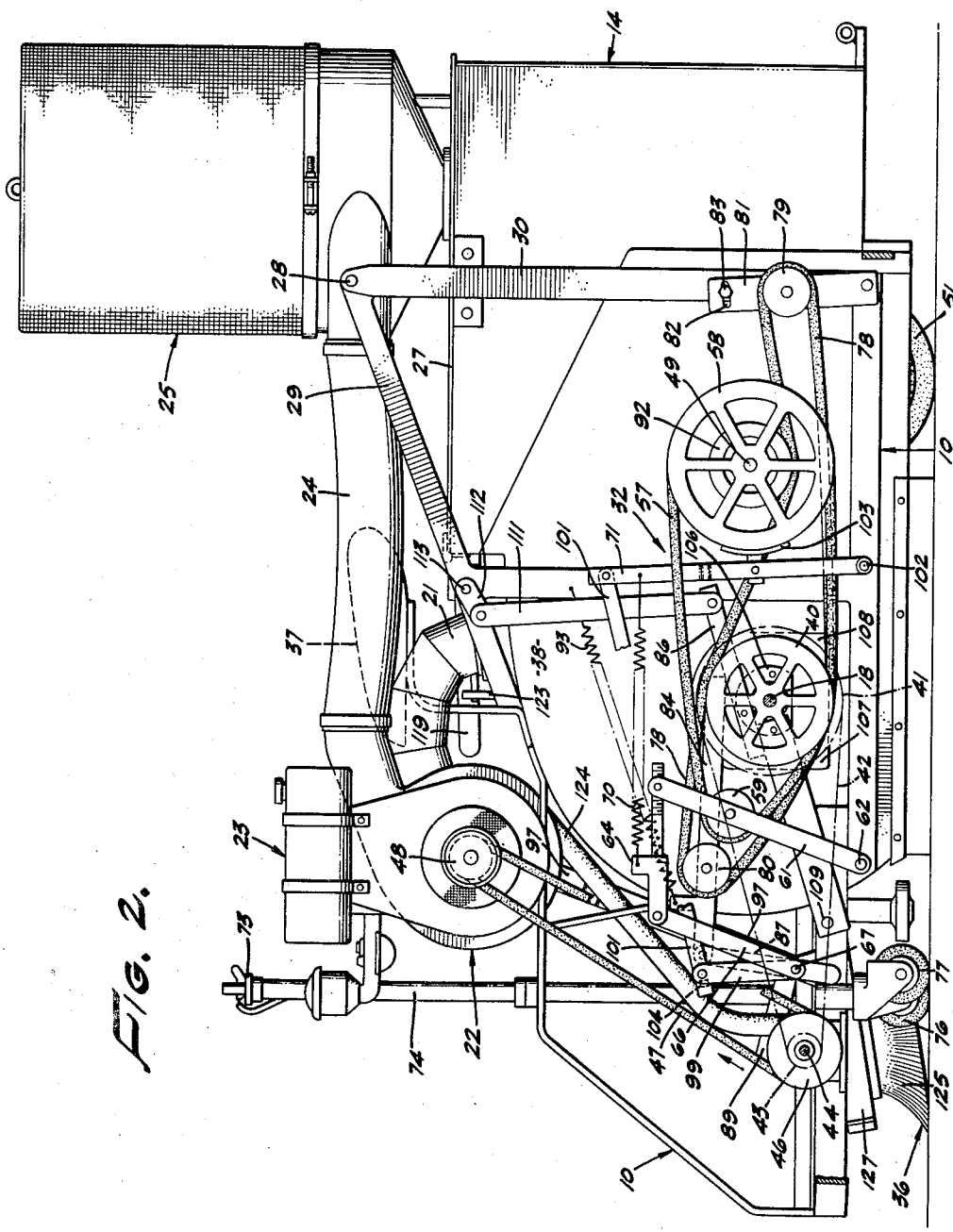
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SWEeper DRIVE AND ADJUSTMENT CONSTRUCTION

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4 Sheets-Sheet 2



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SWEEPER DRIVE AND ADJUSTMENT CONSTRUCTION

Filed Feb. 12, 1954

4 Sheets-Sheet 3

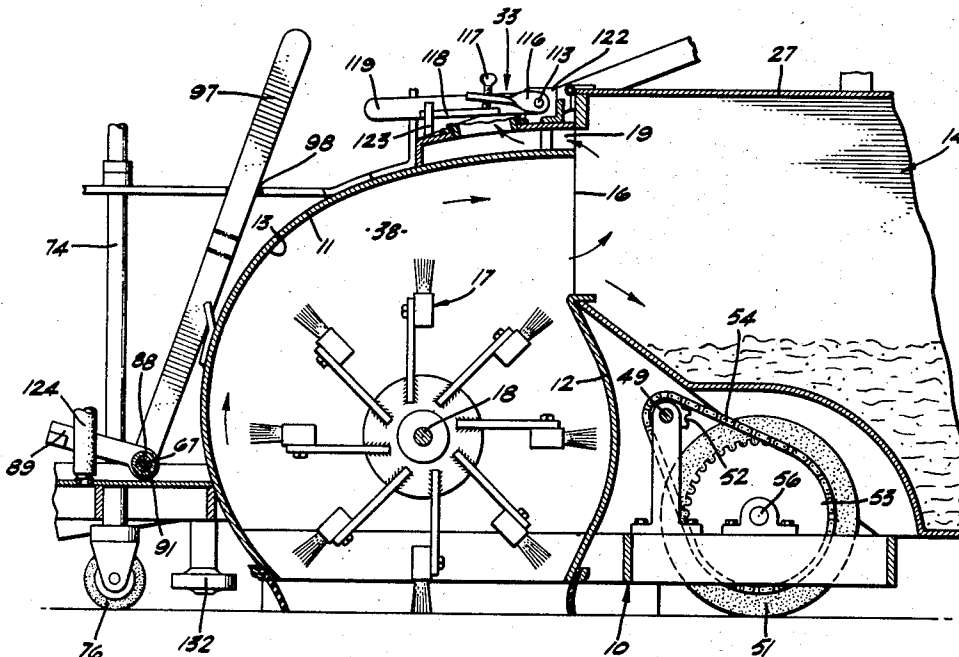


FIG. 4.

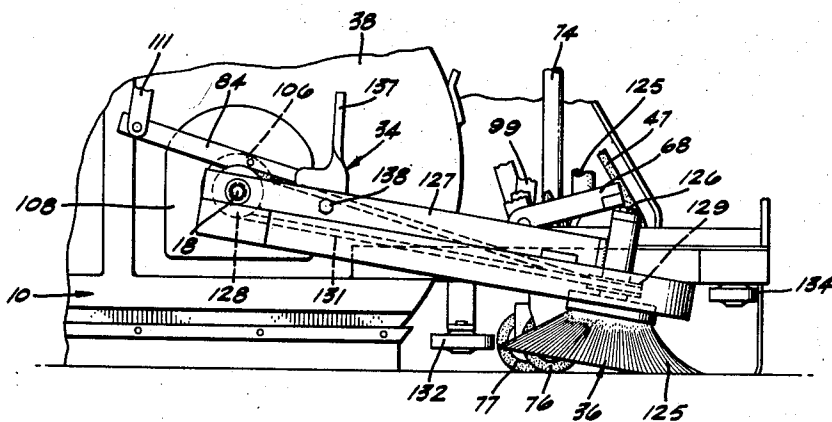


FIG. 5.

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2,859,461

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4 Sheets-Sheet 4

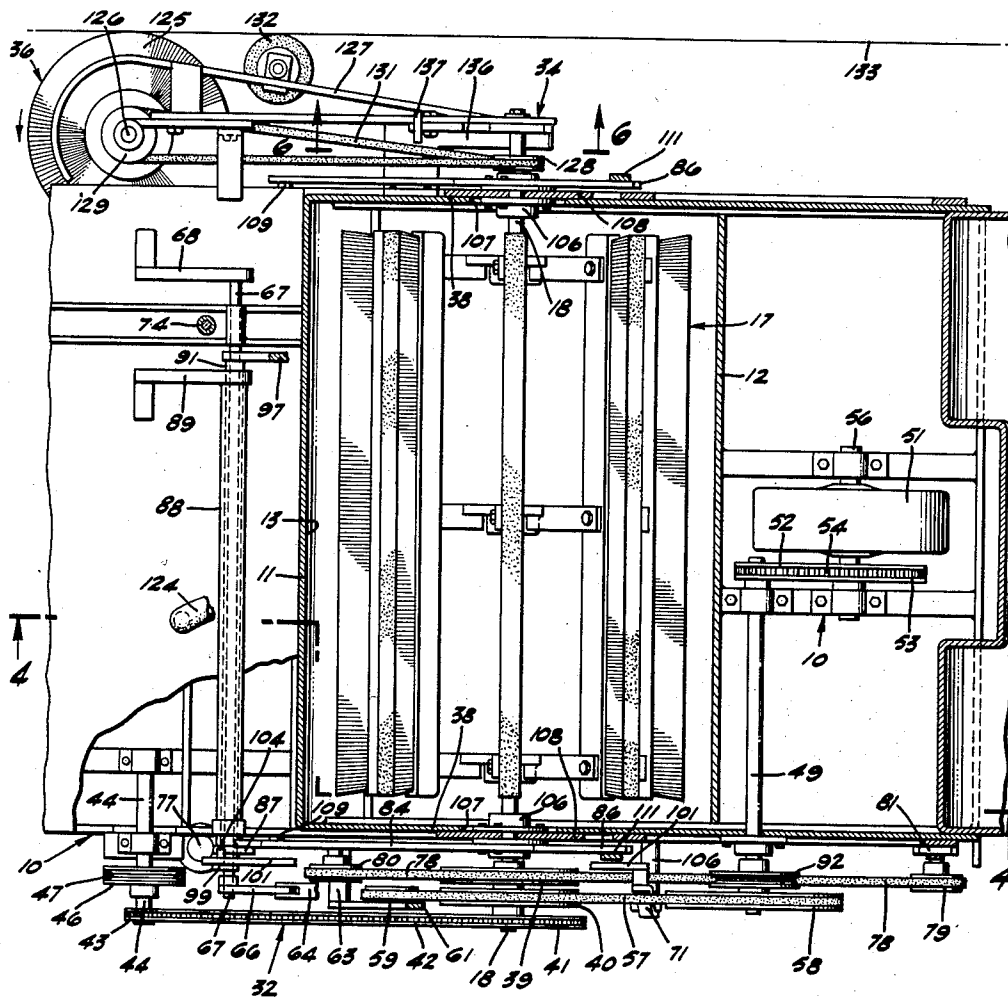


FIG. 3.

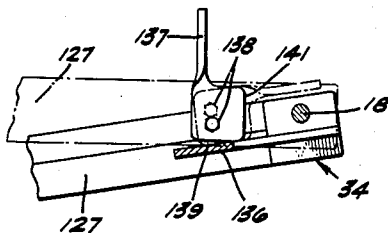


FIG. 6.

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2,859,461

SWEeper DRIVE AND ADJUSTMENT CONSTRUCTION

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Application February 12, 1954, Serial No. 409,823

21 Claims. (Cl. 15—83)

This invention relates to a drive and adjustment construction, and more particularly to a means for driving a power sweeper in forward and reverse directions and for effecting adjustment of the brushes of the sweeper.

In my co-pending application Serial No. 392,117, filed November 16, 1953, for a Sweeper Construction, there is shown and described a novel power sweeper and suction cleaner of the type adapted to be ridden by an operator and to clean relatively small or confined areas, such as factories, sidewalks, etc. The structure there described incorporates but a single relatively small gasoline engine which is adapted to operate not only the suction pump portions of the apparatus, but also to effect rotation of the various sweeper brushes and to propel the apparatus itself, so that laborious pushing of the sweeper is rendered unnecessary. The present application is directed to the driving arrangements by which the motor is utilized to effect brush rotation and effect forward and reverse driving of the sweeper, all under the control of an operator sitting on the upper forward portion of the apparatus. The application is also directed to the means by which the operator, while remaining in his seat, may effect various adjustments of the main cylindrical sweeper brush and also of the curb brush.

With relation to the drive portions of the sweeper, it will be understood that it is desirable that the operator be able to effect forward sweeper movement during the course of a normal sweeper operation, to effect rearward movement when it is desired to turn a sharp corner or to make a second pass over an area being swept, and to effect locking of the wheels when the implement is not in use. It is important that the controls for the forward and the reverse drives, and for the brake, be disposed closely adjacent the operator's seat. It is also important that the drive arrangement be relatively simple, flexible and inexpensive, so that the provision of a drive will not increase the cost of the sweeper unduly.

With relation to the means for adjusting the main and curb brushes, it is pointed out that long continued use of the apparatus causes a decrease in brush diameter making it desirable that the operator effect a progressive lowering of the brush shaft and thus compensate for the wear. Furthermore, there are many occasions when it is necessary and desirable to disengage completely the brushes from the ground, for example when the sweeper is being driven over an area which has already been swept. According to the present invention, both the fine adjustments, and the complete disengagement of the brushes from the ground, may be effected easily by the operator while remaining in his seat. The drive arrangements, and the brush adjustment arrangements, are necessarily interdependent in that the brush adjustments could not be made successfully in the absence of flexible drives which are operative despite substantial changes in the brush positions.

In view of the above factors characteristic of the field of drive and adjustment means for power sweepers of the

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type indicated, it is an object of the present invention to provide a simple and effective forward and reverse drive controllable by an operator seated on the upper portion of the apparatus.

It is another object of the invention to provide pulley and belt means by which a driving shaft and a driven shaft may be selectively associated with each other in a manner effecting either forward or reverse rotation of the driven shaft.

It is another object of the invention to provide a brake mechanism for a power sweeper, and which is correlated with the flexible forward and reverse drive of the sweeper in a manner preventing driving of the sweeper in a forward direction while the brake is on.

A further object is to provide drive means operated by a single motor to effect rotation of main and curb brushes, and also to effect forward and reverse movement of the sweeper, and being constructed and arranged to permit adjustment of the main and curb brushes without impairing or interrupting the drive.

An additional object is to provide means operable from the driver's seat to effect fine adjustment of the main brush position, to disengage completely the main brush from the underlying surface, and to disengage the curb brush from the underlying surface.

These and other objects and advantages of the invention will be more fully set forth in the following specification and claims considered in connection with the attached drawings to which they relate.

In the drawings:

Figure 1 is a top plan view of a sweeper embodying drive and adjustment means constructed in accordance with the present invention;

Figure 2 is a side elevational view of the sweeper illustrated in Figure 1, the drive housing, sprockets and chain being removed to expose the main drive components to view;

Figure 3 is a horizontal sectional view taken centrally of the apparatus and looking downwardly toward the brush and drive components;

Figure 4 is a vertical sectional view taken along the 4—4 of Figure 3;

Figure 5 is a fragmentary side elevational view showing the curb brush mechanism as viewed from the side of the sweeper opposite the side illustrated in Figure 2; and

Figure 6 is a fragmentary vertical sectional view taken along line 6—6 of Figure 3 and illustrating the means for raising and lowering the curb brush.

Referring to the drawings, the suction and sweeper components of the apparatus may be seen to comprise a suitable frame 10 formed of a number of welded bar components, forward and rear sheet metal walls 11 and 12 (Figure 4) mounted on frame 10 and forming a brush chamber 13, and a sheet metal trash receptacle 14 mounted rearwardly adjacent the brush chamber 13 and communicating with it through an opening 16. A suitable main cylindrical brush 17 is mounted on a horizontal brush shaft 18 in brush chamber 13 and is adapted to rotate clockwise, as viewed in Figure 4, to sweep debris and trash through opening 16 and into the receptacle 14. The heavier debris thus thrown into the trash receptacle falls immediately to its bottom, but the dust incident to the operation is sucked through a nozzle 19 and metal duct 21 (Figures 1 and 2) to a suction pump 22, the latter being mounted above forward brush chamber wall 11 and driven by a gasoline engine 23 located adjacent thereto.

The dust drawn through nozzle 19 and duct 21 is discharged from pump 22 and through a flexible conduit 24 to a filter apparatus 25 which is mounted on the hinged cover 27 of trash receptacle 14. After a quantity of dust has collected in the filter apparatus 25, the latter is emp-

tied into trash receptacle 14 with the emptied dust mixing with the heavier debris previously deposited in the receptacle due to operation of brush 17. The mixed dust and heavier debris may then be emptied from trash receptacle 14 by pivoting it upwardly and rearwardly on its horizontal pivot axis 28 (Figure 2) until the debris falls through opening 16 and is deposited on the underlying surface at the rear of the sweeper. It is to be noted that pivot axis 28 is located a substantial distance above trash receptacle cover 27, and that the actual pivot or joint construction includes a cradle formed of components 29 and 30 of the frame 10.

For a more complete description of the above-mentioned components of the sweeper apparatus, reference is made to my co-pending application cited above.

According to the present invention, the sweeping apparatus is driven by novel forward and reverse drive means 32, there being brake means to lock the apparatus against movement when not in use. The invention further contemplates the provision of means 33 (Figure 1) for raising and lowering shaft 18 of main brush 17 both to effect its adjustment and to disengage it completely from the underlying surface, and means 34 (Figures 1 and 6) to disengage a curb brush mechanism 36 from the ground. The means 33 for adjusting the main brush, and the means 34 for disengaging curb brush mechanism 36 from the ground, are operable despite the presence of the drive means 32 and whether or not the drive means are operating. The forward and reverse drive means 32, and also the various adjustment means 33 and 34, are controlled by an operator seated on a suitable seat 37 which is disposed above brush chamber 13 adjacent suction pump 22 and on the opposite side of the apparatus from the main portions of drive 32.

Referring particularly to Figures 2 and 3, it will be noted that the brush shaft 18 extends at both ends outwardly through the side walls 38 of brush chamber 13, there being two corresponding pulleys 39 and 40 and a sprocket 41 keyed to the end of shaft 18 which is remote from curb brush mechanism 36. Sprocket 41 is associated with a chain 42 which connects it to a relatively small sprocket 43, the latter being keyed at the outer end of a stub shaft 44 journaled at the forward portion of frame 10. The stub shaft 44 is, in turn, associated with a pulley 46 mounting a belt 47 which connects to a second pulley 48 on the shaft of engine 23. The direction of rotation of engine 23 is such that pulley 46, sprockets 41 and 43 and thus shaft 18 are driven clockwise, as viewed in Figures 2 and 4, to effect clockwise rotation of main brush 17.

The present invention is particularly directed to the means for associating pulleys 39 and 40 on the rotating brush shaft 18 with a drive shaft 49 for the drive wheel 51 of the sweeper, and in such a manner that both forward and reverse rotation of drive wheel 51 may be effected. Drive shaft 49 is suitably journaled in frame 10, parallel to brush shaft 18, and is associated by means of a pair of sprockets 52 and 53 (Figure 3) and a chain 54 with the axle 56 for drive wheel 51, the axle being also journaled in frame 10 and centrally of the sweeper beneath trash receptacle 14.

Proceeding first to a description of the portion of forward and reverse means 32 which effects selective connection between the brush shaft 18 and the drive shaft 49 in a manner resulting in reverse rotation of drive wheel 51, a belt 57 is mounted around the outermost pulley 40 of the pulleys 39 and 40 on brush shaft 18, and also around a relatively large outer pulley 58 which is keyed to the projecting outer end of drive shaft 49. Belt 57 also extends forwardly of pulley 40 and around a small idler pulley 59, the latter being journaled on a generally vertical lever 61 pivoted at its lower end 62 to a stud 63 (Figure 3) on frame 10. The upper end of lever 61 is pivotally connected to an adjustable link 64 (Figure 2) which in turn is pivoted to the upper end of a generally

vertical crank arm 66. Crank arm 66 may be seen, upon reference to Figure 3, to be mounted at the outer end of a horizontally disposed control rod 67 journaled in frame 10 and extending transversely of the sweeper, and forwardly of the lower portion of brush chamber wall 11, to a point beneath the operator's seat 37. At its inner end, remote from crank arm 66, the control rod 67 is provided with a foot-crank 68 adapted to be pressed by the right foot of the operator.

On pressing of foot-crank 68, the control rod 67 and crank arm 66 are rotated counterclockwise as viewed in Figure 2, operating through link 64 to effect counterclockwise rotation of lever 61 on its pivoted lower end 62. This operates to tighten the belt 57 against the rear portion of pulley 58 on drive shaft 49, the position of idler 59 being such that the lower belt portion is also tightened against the underside of pulley 40 on brush shaft 18. Since brush shaft 18 and the pulley 40 thereon are driven clockwise as previously indicated, the pulley 58 and drive shaft 49 are also driven clockwise which effects, through sprockets 52 and 53 and chain 54, the clockwise rotation of drive wheel 51 to cause reverse movement of the sweeper. Upon release of foot-crank 68 by the operator, the parts return to their initial positions under the force of a helical tension spring 70 which is connected between a lug on link 64 and a brake lever 71 to be described subsequently. The belt 57 then becomes loose and its lower portion drops away from the pulley 40, so that rotation of the latter has no effect in rotating the drive shaft 49 and reverse movement of the sweeper no longer occurs.

It is to be understood that the direction of reverse sweeper movement, and also of forward sweeper movement effected as will be described subsequently, are under the control of the operator who grasps a handle bar 73 disposed forwardly of operator's seat 37. The handle bar 73 is provided at the upper end of a vertical steering shaft 74 which is suitably journaled in frame 10 and extends downwardly to a steering wheel 76, the latter being mounted at its lower end as shown in Figures 2 and 4. In addition to the drive wheel 51 and the steering wheel 76, the sweeper apparatus is provided with a caster wheel 77 which is mounted at the forward portion of frame 10 adjacent pulley 46. A three-point support is thus provided, and which provides effective balanced support for the apparatus while permitting it to be turned in a small space.

Referring next to the portion of forward and reverse drive means 32 which effects forward movement of the sweeper, a second belt 78 is mounted around inner pulley 39 on brush shaft 18 and also around a pair of relatively small idler pulleys 79 and 80. One of the idlers numbered 79, is mounted rearwardly of drive shaft 49 on a vertical adjustment bar 81 which is pivoted at its lower end to the frame 10. The upper end of adjustment bar 81 is formed with a slot 82 which permits, upon loosening of a bolt 83 extended therethrough and into component 30 of frame 10, a slight movement of the bar and the pulley 79 to effect a permanent adjustment of belt tension. To be contrasted with rear idler 79, which is only adjusted at infrequent intervals, is the other idler 80 which is mounted forwardly of the brush shaft 18 and a substantial distance thereabove. Idler 80 is journaled on a relatively horizontal adjustment bar 84 the rear end of which is slidably seated above shaft 18 on a bar 86 which forms part of the adjustment means 33 to be described subsequently. At its forward end, bar 84 is connected pivotally to the upper end of a crank 87 which is keyed to one end of a control sleeve 88, the other end of the control sleeve being provided with a foot crank 89 adapted to be pressed by the left foot of an operator seated on seat 37. The control sleeve 88 is journaled on a second control sleeve 91 which in turn is journaled on the control rod 67 for the reverse portion of the drive, the arrangement being such that the

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rod 67 and sleeves 88 and 91 are movable independently of each other.

Referring particularly to Figure 2, it will be noted that belt 78 not only passes around pulleys 39, 79 and 80, but also passes beneath a relatively small pulley 92 which is keyed on drive shaft 49 inwardly of pulley 58. The arrangement of the pulleys, and their relative diameters, are such that the upper component of belt 78 engages the underside of pulley 92 when the belt is tightened. This occurs when idler pulley 80 is shifted forwardly as a result of downward pressing of foot-crank 89, which operates to rotate sleeve 88 and crank arm 87 counterclockwise, as viewed in Figure 2, and shift bar 84 and pulley 80 forwardly. When the pulley 80 is thus in its forward position, the upper and lower portions of belt 78 are in close engagement with drive pulley 39 so that the clockwise rotation of the pulley 39 will effect counterclockwise rotation of pulley 92 and thus of drive wheel 51 to propel the sweeper forwardly. When the foot-crank 89 is released the bar 84 and idler pulley 80 are returned to their original rearward positions by a tension spring 93 connected between a lug and bar 84 and the upper portion of frame 10. The tension on belt 78 is then lessened so that it drops out of driving contact with pulley 92 and also out of operating contact with pulley 39 to effect cessation of drive wheel movement. The rearward-shifted or inoperative positions of idler pulley 80, and also of idler 59 for the reverse drive, are under the control of suitable stops, not shown.

From the above it will be observed that a relatively simple means has been provided to effect selective forward and reverse rotation of drive shaft 49 by means of power transmitted brush shaft 18 which operates constantly in a single direction. Forward and reverse sweeper movements may be effected merely by pressing the foot-cranks 68 and 89, and stopped merely by releasing the same. Because of the mounting of idlers 80 and 59 forwardly of the brush shaft 18, the lengths of the connecting members 64 and 84 are maintained at a minimum. The provision of idler 79 at the rear of the apparatus is important since it permits adjustment of the operating tension and position of belt 78 in a matter of minutes, merely by loosening the bolt 83 and pivoting bar 81.

The brake means for stopping the sweeper, after its movement in either a forward or a reverse direction, comprises a brake arm or crank 97 which is welded to the inner end of sleeve 91 and extends upwardly, as best shown in Figures 1 and 4, for engagement with a notch 98 formed in the component of frame 10 which supports the driver's seat 37. The movement of brake crank 97 forwardly, after it has been shifted laterally out of notch 98, effects counterclockwise rotation of sleeve 91 and thus of an upwardly extending crank 99 mounted at the outer end thereof. Crank 99 is pivotally connected at its upper end to a bar 101 extending rearwardly for pivotal connection to the upper end of brake lever 71 previously indicated. The brake lever 71 is then pivoted forwardly, about its pivot stud 102 which extends outwardly from frame 10 as shown in Figure 3, to disengage a brake shoe 103 from the pulley 58 on drive shaft 49. The pulley 58 and drive shaft 49 are then freely rotatable until the brake crank 97 is again shifted rearwardly into its notch 98, which effects engagement between brake shoe 103 and the pulley 58 to lock drive shaft 49, and thus drive wheel 51, against rotation.

It is a feature of the invention that the movement of brake crank 97 into notch 98 prevents the foot-crank 89 from being operated to effect forward movement of the sweeper. This is accomplished by providing a lug 104 (Figure 3) on the inner surface of crank 101, the position of the lug being such that it prevents forward movement of crank 87 of the forward drive. The crank 87, and thus the idler 80, are then prevented from being shifted forwardly to tension belt 78 and start the forward drive until

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the brake crank 97 is itself shifted forwardly to cause movement of lug 104 away from crank 87.

Proceeding next to a description of the means 33 for adjusting the height of brush shaft 18 and main cylindrical brush 17, it will be seen upon reference to Figures 2 and 3 that the brush shaft 18 is journaled at its end portions in bearings 106 disposed in relatively large apertures or openings 107 in brush chamber side walls 38. Bearings 106 may thus move vertically in openings 107, there being extension plates 108 mounted radially of bearings 106 to block the passage of air through openings 107 regardless of the bearing positions. Each bearing 106 is rigidly mounted, as best illustrated in Figure 2, upon the adjustment bar 86 previously indicated, the bar 86 being formed of two components welded in lapped relationship. The bar 86 at each end of the brush shaft is pivotally connected at its forward end 109 to the frame 10, and at its rearward end to a link 111, the latter extending upwardly for pivotal connection to a short crank 112. The crank 112 at each side of the apparatus is welded or keyed to a shaft 113 (Figure 1) which is journaled on the upper portion of the sweeper beneath seat 37.

In order to turn the shaft 113 and thus effect vertical adjustment of brush shaft 18 and brush 17, a crank 116 is keyed to the central portion of shaft 113, as illustrated in Figures 1 and 4, and is provided at its outer forward portion with a thumb screw 117 the lower end of which seats on a horizontal plate 118 welded to a raise arm 119. The raise arm 119 is freely pivotable on shaft 113, being held against the hub of crank 116 by a compression spring 121 seated on a lug 122 on frame 10. The plate 118 on arm 119 normally seats, under the effect of gravity, on a stop 123 disposed therebeneath, and the crank 116 is held a distance above plate 118 which may be varied by turning the thumb screw 117.

In order to decrease the height of main brush 17, for example to compensate for wear thereon, the operator seated in seat 37 merely turns the thumb screw 117 in a direction decreasing the vertical distance between crank 116 and plate 118. Shaft 113 is thus permitted to rotate counterclockwise a slight amount, as viewed in Figures 2 and 4, and crank 112 also rotates counterclockwise to effect lowering of link 111. Bar 86 is thus permitted to pivot clockwise to effect lowering of bearings 106 and brush shaft 18 as desired. Should the operator desire to effect complete disengagement of brush 17 from the underlying surface, he merely reaches downwardly with his left hand and lifts the raise arm 119 to effect clockwise movement of crank 116. The various cranks, shafts and levers are then operated in a direction, and for a sufficient distance, to effect a substantial brush raising action.

The curb brush mechanism 36 (Figures 1, 3 and 5) is adapted to sweep trash and debris laterally of the sweeper from a curb or building wall into an initial suction chamber which is provided forwardly of brush chamber 13 as described in detail in my copending application. After having thus been swept into the initial suction chamber, the heavier debris remains on the surface until main brush 17 sweeps it as previously indicated. Any dust in the initial suction chamber is sucked through a hose 124 leading to the metal duct 21 at the intake of suction pump 22.

The curb brush mechanism 36 comprises a bull's-eye brush 125 mounted on a vertical shaft 126 which is journaled in a movable frame 127 formed of welded bar components. The frame 127 extends rearwardly from the brush 125 and shaft 126 for pivotal connection to an extension of brush shaft 18, the arrangement being such that the frame and shaft may pivot or rotate independently of each other. The drive for the brush 125 comprises a pair of pulleys 128 and 129 mounted, respectively, on the shafts 18 and 126, and a belt 131 mounted around the pulleys in such a way that counterclockwise rotation of shaft 18 (Figure 4) effects

counterclockwise rotation of the brush 125 as viewed in Figure 1. A curb wheel 132 is mounted on frame 127 for engagement with the curb, indicated at 133, and a corresponding wheel 134 is mounted on the frame 10 of the sweeper for engagement with curb 133 forwardly of and above the wheel 132 as shown in Figure 5.

The means 34 for disengaging the curb brush mechanism from the ground are best illustrated in Figure 6, and comprise a horizontal plate or bearing surface 136, which is riveted or otherwise secured to the frame 10 of the sweeper, and a cam lever 137 which is pivotally connected at its lower end to the curb brush frame 127 as by a bolt 138. The lower or pivoted end of the cam lever is squared, and is formed with a first edge 139 which is a relatively short distance from pivot bolt 138, and a second edge 141 a substantially longer distance therefrom. When the cam lever is in a vertical position, the edge 139 is resting on the plate 136 and the curb-brush frame 127 is in its lower position effecting engagement of brush 125 with the ground or floor. However, when the cam lever 137 is pivoted clockwise as viewed in Figure 6, which may be effected by the right hand of an operator seated in seat 37, the edge 141 is in engagement with the plate 136, and the bolt 138 and frame 127 are elevated from the solid to the dashed line positions shown in Figure 6. The frame being thus elevated, the curb brush 125 is lifted off the ground as is desired.

It is to be noted that the flexible drive between brush shaft 18 and shaft 126 for the curb brush 125 permits raising and lowering of the latter either while operating or stationary. Furthermore, the flexible forward and reverse drive means 32 for the sweeper permits the raising and lowering of the main brush 17 and its shaft 18, due to the operation of adjustment means 33. As the main brush shaft 18 and the brush 17 are thus raised and lowered, the frame 127 for the curb brush mechanism is also raised and lowered since it is pivoted at its rearward end to the shaft 18. It follows that the various drive and adjustment means are interdependent since all parts are interconnected and mutually cooperate.

To summarize briefly the operation of the sweeper apparatus, the engine 23 operates both the suction pump 22 and, through belt 47, the pulley 46, sprocket 43 and sprocket 41 on brush shaft 18. The brush shaft and its brush 17 are thus rotated clockwise, as viewed in Figure 4, to actuate debris through the opening 16 into trash receptacle 14. The dust incident to the operation is sucked through nozzle 19, duct 21 and suction pump 22, from which it is discharged through flexible conduit 24 to the filter means 25 which may be emptied periodically into trash receptacle 14, the latter being pivotable on its axis 28 when it is desired to empty the trash therein. As the brush shaft 18 rotates clockwise, the curb brush 125 is also rotated due to operation of pulleys 128 and 129 and belt 131. This effects actuation of debris into the initial suction chamber, at the front of the apparatus, any initial dust being sucked up through hose 124 and into the suction pump.

When it is desired to effect reverse movement of the sweeper, the operator presses his right foot against foot-crank 68 to rotate control rod 67 and crank arm 66 counterclockwise as viewed in Figure 2. The link 64 is thus shifted forwardly to pivot lever 61 counterclockwise and shift idler pulley 59 forwardly, thus tensioning belt 57 into operating contact with pulleys 40 and 58. Pulley 58 is thus driven clockwise, or the same direction as brush 17, to effect clockwise rotation of drive wheel 51, as shown in Figure 4, and cause rearward sweeper movement. When the operator, seated in seat 37 and steering by means of handle bars 73, desires to effect forward movement of the sweeper he releases foot-crank 68 and presses his left foot on foot-crank 89. This effects counterclockwise rotation of crank 87 (Figure 2) to shift bar 84 and idler pulley 80 forwardly

thereby effecting tensioning of belt 78. Since the upper component of belt 78 is in engagement with the underside of pulley 92 on drive shaft 49, the latter is rotated in the opposite direction from brush shaft 18, the pulley 39 of which is then in driving contact with the belt 78. It follows that the drive wheel 51 is rotated in the forward direction as desired.

In order to release the brakes of the sweeper, brake crank 97 is disengaged from its notch 98 (Figure 4) and shifted forwardly or counterclockwise. This operates, through crank 99, bar 101, and lever 71 to disengage brake shoe 103 from pulley 58 and unlock the drive wheel 51.

The main brush shaft 18 may be raised or lowered, under the control of the operator seated on seat 37, upon operation of the adjustment means 33 shown in Figure 1 and described in detail above, while the curb brush mechanism 36 may be shifted out of engagement with the underlying surface upon operation of the adjustment means 34 described heretofore.

While the particular apparatus herein shown and described in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

I claim:

1. In combination, an operator-controlled, self-propelled street sweeper having a driving motor, power driven sweeper means, means for effecting selective forward and reverse rotation of a driven shaft relative to a driving shaft coupled to said motor, said means comprising a first driving pulley mounted on said driving shaft, a first driven pulley mounted on said driven shaft, a first idler pulley, a first belt encompassing all of said above mentioned pulleys, a carrier for said first idler movable to effect tensioning of said first belt into operating engagement with said first driving and driven pulleys and cause rotation thereof in the same direction, a second driving pulley mounted on said driving shaft, a second driven pulley mounted on said driven shaft, a second idler pulley, a second belt encompassing said second idler pulley and one of said second driving and driven pulleys and disposed entirely to one side of the other of said driving and driven pulleys, a carrier for said second idler movable to effect tensioning of said second belt into operating engagement with said second driving and driven pulleys and cause rotation thereof in opposite directions, the engagement of said second belt with said other of said second driving and driven pulleys being between the outer belt surface and an arcuate section of said other of said second driving and driven pulleys, means to effect selective movement of said idler carriers and idlers to alternately tension and loosen said first and second belts, and means to drive said sweeper means in the same direction irrespective of the direction in which said sweeper is being propelled.

2. The invention as claimed in claim 1, in which each of said idlers is disposed to one side of its associated driving and driven pulleys and in general alignment therewith.

3. The invention as claimed in claim 2, in which said idlers are disposed on the same side of all of said driving and driven pulleys.

4. The invention as claimed in claim 1, in which a third idler pulley is adapted to be encompassed by said second belt, said third idler pulley being mounted on an idler carrier which is movable to permit adjustment of said second belt.

5. The invention as claimed in claim 4, in which said second and third idlers are disposed on opposite sides of said second driving and driven pulleys and in general alignment therewith.

6. The invention as claimed in claim 1, in which said one of said second driving and driven pulleys is said second driving pulley, and said other of said second driving and driven pulleys is said second driven pulley.

7. A self-propelled pavement sweeper having a main chassis supporting power driven sweeping means, forward and reverse drive means for the sweeper, a motor driven brush shaft, and a drive wheel shaft connected to the drive wheel of the sweeper, a first driving pulley mounted for rotation by said brush shaft, a first driven pulley mounted to rotate said drive wheel shaft, a first idler pulley, a first belt encompassing all of the above named pulleys, a carrier for said first idler mounted on said frame and movable to effect tensioning of said first belt into operating engagement with said first driving and driven pulleys and cause rotation thereof in the same direction, a second driving pulley mounted for rotation by said brush shaft, a second driven pulley mounted to rotate said drive wheel shaft, a second idler pulley, a second belt encompassing said second driving pulley, and second idler pulley and disposed to one side of said second driven pulley, a carrier for said second idler mounted on said frame and movable to effect tensioning of said second belt into operating engagement with said second driving and driven pulleys and cause rotation thereof in opposite directions, the engagement of said second belt with said second driven pulley being between the outer belt surface and an arcuate section of said second driven pulley, means to effect selective movement of said idler carriers and idlers to alternately tension and loosen said first and second belts, and means to drive said sweeping means in the same direction irrespective of the direction in which said sweeper is being propelled.

8. The invention as claimed in claim 7, in which said idlers are both disposed forwardly of said driving and driven pulleys and in general alignment therewith.

9. The invention as claimed in claim 7, in which the last-named means comprises operator-pressed pedals and linkage means associating said pedals with said idler carriers.

10. The invention as claimed in claim 7, in which a brake shoe is associated with one of said driven pulleys, and linkage means are provided to associate said brake shoe and an operator controlled brake member, whereby said brake shoe may be forced against said one driven pulley to brake said drive wheel shaft and said drive wheel.

11. The invention as claimed in claim 10, wherein means are provided on said linkage means to prevent, when said brake shoe is in braking engagement with said one driven pulley, the movement of said first mentioned idler pulley in a direction effecting tensioning of its associated belt.

12. In a power sweeper apparatus, a frame, a brush shaft journaled horizontally in said frame, means to adjust the elevation of said brush shaft, motor means to drive said brush shaft and effect rotation of the main cylindrical brush of the apparatus, a drive wheel shaft journaled in said frame rearwardly of said brush shaft and generally parallel thereto, a drive wheel associated with said drive wheel shaft for driving movement in forward and reverse directions depending upon the direction of rotation of said drive wheel shaft, a first driving pulley mounted on said brush shaft, a first driven pulley mounted on said drive wheel shaft, a first idler pulley, a first belt encompassing said pulleys, a carrier for said first idler mounted on said frame and movable to effect tensioning of said first belt into operating engagement with said first driving and driven pulleys and cause rotation of the latter, a second driving pulley mounted on said brush shaft, a second driven pulley mounted on said drive wheel shaft, a second idler pulley, a second belt encompassing said second idler pulley and one only of said second driving and driven pulleys, a carrier for said second idler mounted on said frame and movable

to effect tensioning of said second belt into operating engagement with said second driving and driven pulleys and cause rotation of the latter, and means to effect selective movement of said idler carriers and idlers to alternately tension and loosen said first and second belts.

13. The power sweeper apparatus as claimed in claim 12, in which a curb brush mechanism is mounted on said frame and is driven by means of a belt and pulley arrangement associated with said brush shaft, and means are provided to effect selective engagement and disengagement of the brush portion of said curb brush mechanism relative to the underlying surface.

14. In a power sweeper apparatus, a wheeled frame, an engine mounted on said frame, a main sweeper brush and brush shaft journaled on said frame in floating relationship, a drive wheel, flexible drive means for operatively connecting said engine to said main brush shaft and to said drive wheel, means to adjust the elevation of said main brush shaft, a curb brush frame pivotally connected to said main brush shaft, a curb brush having a shaft journaled in said curb brush frame, flexible drive means operatively connecting said main brush shaft to said curb brush shaft, and means to pivot said curb brush frame about said main brush shaft to adjust the elevation to said curb brush.

15. A forward and reverse drive for a sweeper having a frame, a motor mounted on said frame, and a cylindrical brush journaled in said frame for operation upon an underlying surface, which comprises first and second driving pulleys mounted on said frame and driven by said motor, first and second driven pulleys mounted on said frame and operatively associated with the drive wheel of the sweeper, first and second idler supports movably mounted on said frame, first and second idler pulleys mounted, respectively, on said idler supports, first and second belts associated, respectively, with said first and second driving, driven and idler pulleys, and means to move selectively said first idler support to tension said first belt into operative relationship with said first driving and driven pulleys, and said second idler support to tension said second belt into operative relationship with said second driving and driven pulleys, the operative relationship being such that the tensioning of said first belt effects forward rotation of said sweeper drive wheel, that the said tensioning of said second belt effects reverse rotation of said sweeper drive wheel, and means for driving said cylindrical brush in one predetermined direction irrespective of the direction in which said sweeper is propelled.

16. The invention as claimed in claim 15, in which said means to move selectively said idler supports includes pedals adapted to be pressed by the operator of the sweeper.

17. A self-propelled surface sweeper comprising a chassis having a single power-driven supporting wheel means centrally of its rear and a pair of non-driven operator-steerable supporting wheels near its opposite forward corners, a power-driven sweeping brush extending transversely of said chassis between said forward and rear supporting wheels including means for driving said sweeping brush in the same direction irrespective of the direction in which said sweeper is being propelled, a corner-cleaning brush supported for rotation about an upright axis, a propelling motor, selectively operable driven means including a plurality of belts and belt pulleys connecting said motor with said rear supporting wheel, with said transverse brush and with said curb brush, and control means for tensioning different ones of said belts to propel said sweeper forwardly and rearwardly independently of the operation of said transverse brush and of said curb brush.

18. A short-wheel-based, sharp-turning, self-propelled operator-carrying surface sweeper having a three-wheeled chassis including a power-driven centrally mounted rear wheel and a pair of steerable small diameter front wheels

all mounted within the confines of said chassis, a propelling motor mounted laterally of an operating station located between said front and rear wheels, means floatingly supporting a transverse sweeping brush and a corner-cleaning brush, flexible driving means interconnecting said motor, said brushes and said single rear chassis wheel, said driving means including a plurality of belts and operator-controlled tensioning means for controlling the tension in different ones of said belts between a taut power-transmitting condition and a lax non-power-transmitting condition.

19. A surface sweeper as defined in claim 18 wherein one of said belts is effective when tensioned to drive said sweeper forward and wherein a second belt when tensioned is effective to drive said sweeper rearwardly.

20. A surface sweeper as defined in claim 19 including manually releasable brake means operable from said operating station for braking said single rear wheel against movement in either direction irrespective of the tensioned condition of said driving belts.

21. A surface sweeper as defined in claim 18 including independent means terminating at said operating station manually adjustable to shift said transverse and corner brushes to compensate for wear as well as into and out of surface-cleaning positions.

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