

Jan. 25, 1927.

A. SCHROEDER

1,615,348

STREET CLEANING MACHINE

Filed March 4, 1924

3 Sheets-Sheet 1

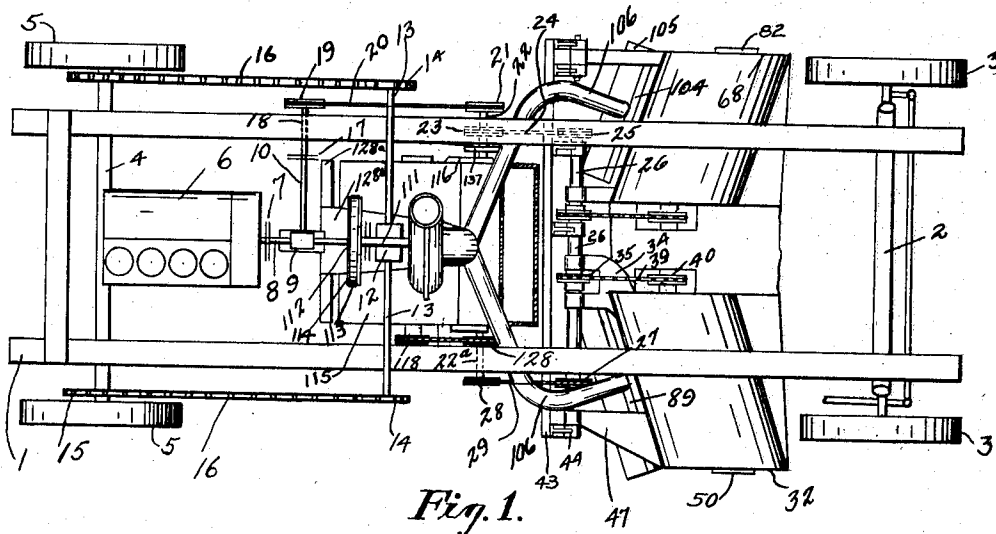


Fig. 1.

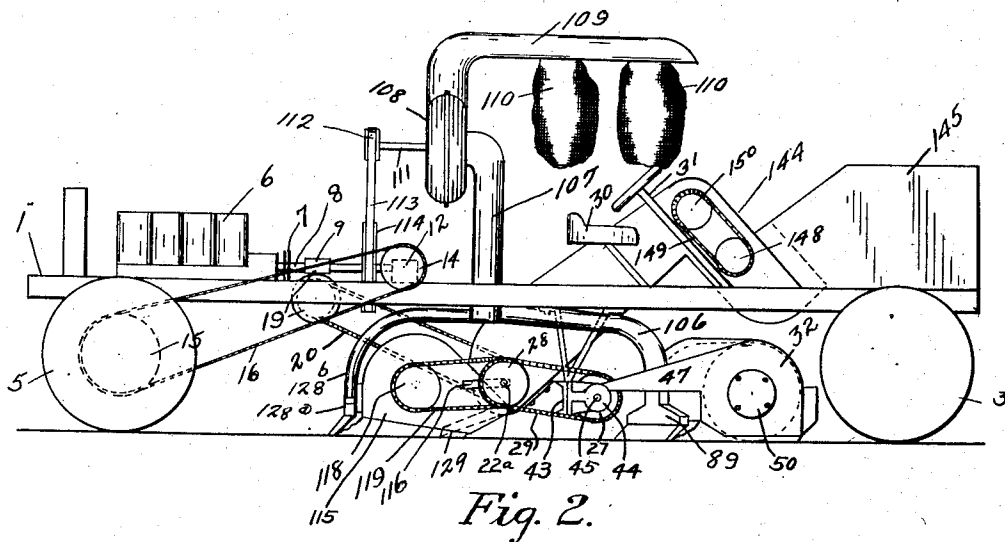


Fig. 2.

WITNESS:

William B. Hornell.

INVENTOR,

Albert Schroeder,

BY

Harold S. Smith,

ATTORNEY.

Jan. 25, 1927.

A. SCHROEDER
STREET CLEANING MACHINE

1,615,348

Filed March 4, 1924

3 Sheets-Sheet 2

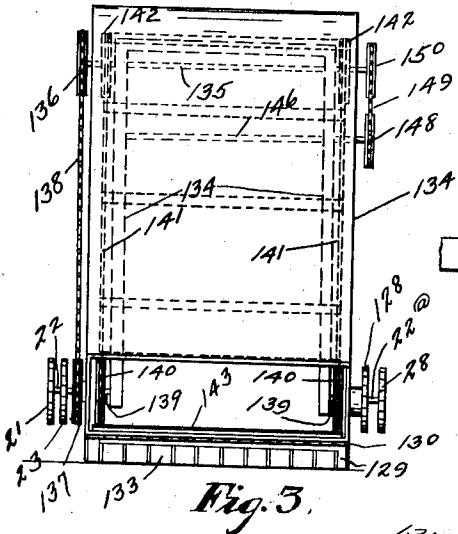


Fig. 3.

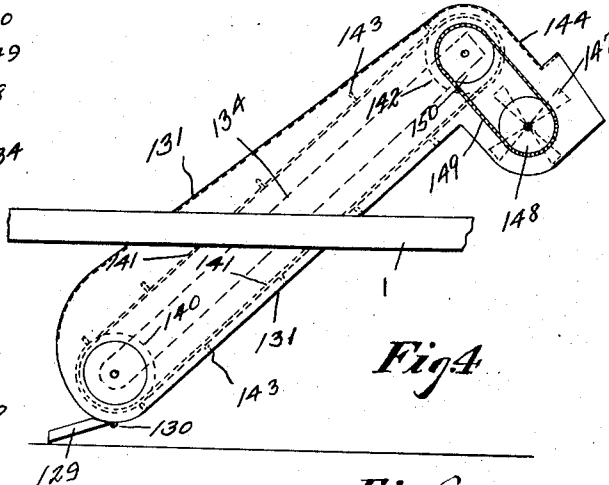


Fig. 4.

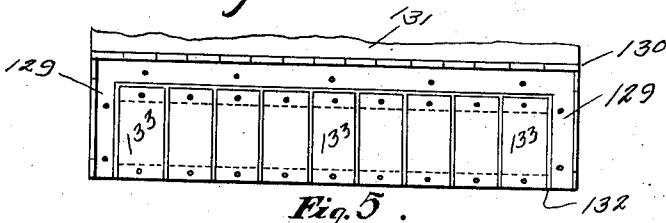


Fig. 5.

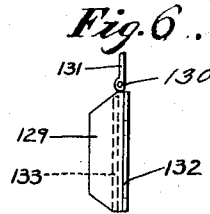


Fig. 6.

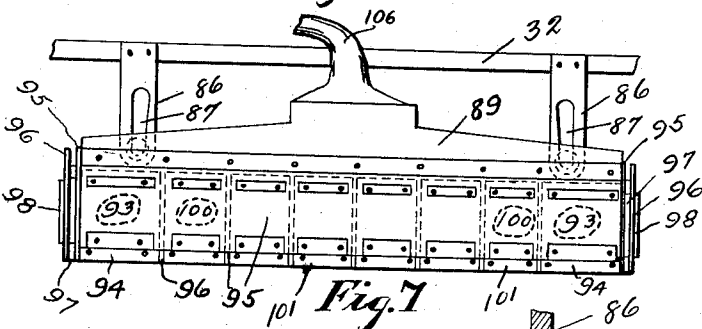


Fig. 7.

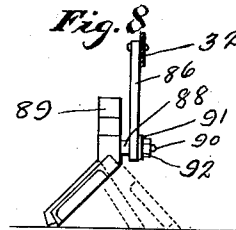


Fig. 8.

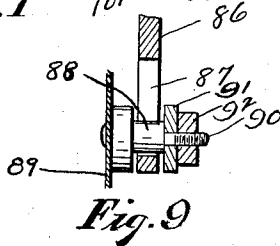
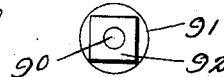


Fig. 9.

Fig. 10



WITNESS:

William B. Hornell

INVENTOR,

Albert Schroeder,

BY

Howard P. Smith,

ATTORNEY.

Jan. 25, 1927.

A. SCHROEDER

1,615,348

STREET CLEANING MACHINE

Filed March 4, 1924

3 Sheets-Sheet 3

Fig. 11.

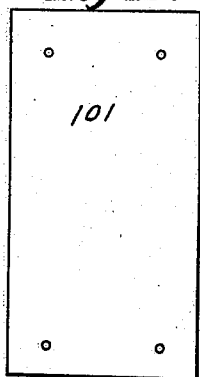


Fig. 13.

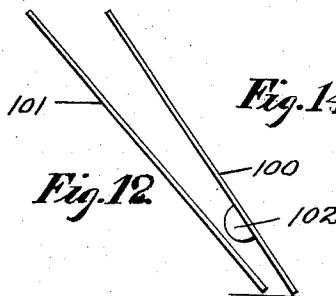
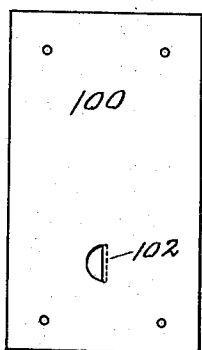


Fig. 14.

Fig. 15.

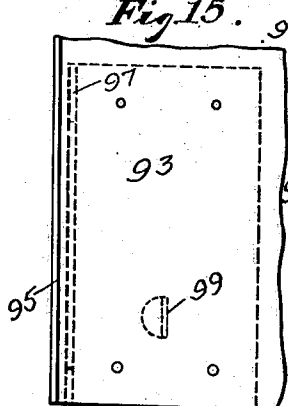


Fig. 18.

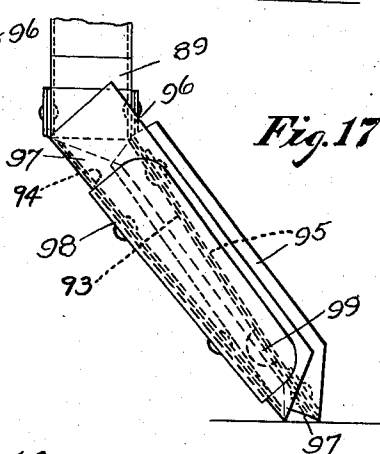
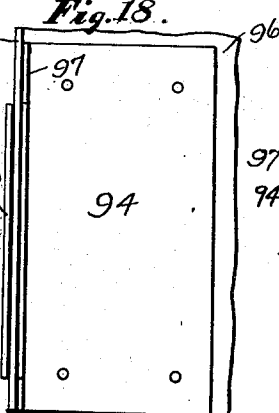


Fig. 17.

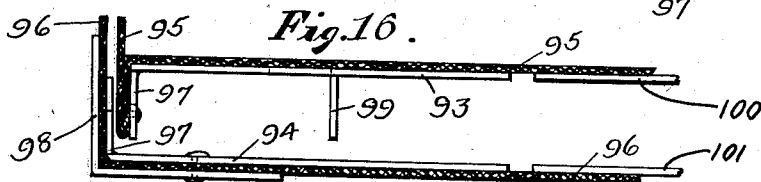
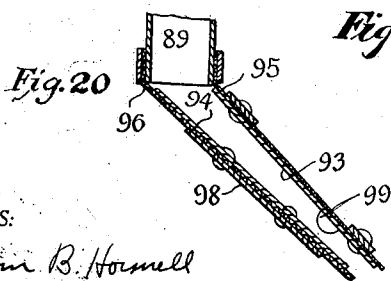


Fig. 16.

Fig. 19.



WITNESS:

William B. Hornell

INVENTOR,

Albert Schroeder,

BY

Howard P. Smith,

His ATTORNEY.

Patented Jan. 25, 1927.

1,615,348

UNITED STATES PATENT OFFICE.

ALBERT SCHROEDER, OF PIQUA, OHIO.

STREET-CLEANING MACHINE.

Application filed March 4, 1924. Serial No. 696,873.

This invention relates to new and useful improvements in street cleaning machines.

It is the principal object of my invention to provide for street cleaning machines, air-sucker hoods to which there are connected by flexible walls, snouts that automatically accommodate themselves to streets of irregular surfaces and which will reverse their positions when the machine is backing.

In the accompanying drawings, Figure 1 is a top plan view of my street cleaning machine, with certain parts removed. Figure 2 is a side elevational view thereof. Figure 3 is a rear elevational view of the elevator and kicker mechanism. Figure 4 is a side view thereof. Figure 5 is a front elevational view, and Figure 6 is a side view, of the dust pan. Figure 7 is a rear elevational view of the air-sucker assembly. Figure 8 is a side elevational view taken of the same. Figure 9 is a sectional view taken through one of the air-sucker hood hangers. Figure 10 is an end view of the washer and nut therefor. Figure 11 is a top view of one of the plates for stiffening and protecting the flexible walls of the air-suckers. Figure 12 is an end view thereof. Figure 13 is a top view of one of said plates provided with a lip which acts as a stop to keep the plates apart. Figure 14 is an end view thereof. Figure 15 is a top view of one of the end plates. Figure 16 is a bottom view thereof, showing one of the flexible air-sucker strips that is fastened to it. Figure 17 is a side view of one of the flexible air-suckers. Figure 18 is a top view of one of the lower plates of the air-sucker assembly. Figure 19 is a bottom view thereof and Figure 20 is a sectional view taken through the air-sucker assembly, showing a flexible strip and a protector secured thereto.

In the accompanying drawings, the numeral 1 designates the main frame of my street cleaning machine which is preferably rectangular and mounted upon a front axle 2 and wheels 3, 3, and a rear axle 4 and drive wheels 5, 5. Supported in the rear part of the machine is a motor 6, preferably of the internal combustion type, which drives, through a clutch 7, a transmission shaft 8. The latter turns, through a gear assembly 9, a transverse shaft 10 for operating the sweeping mechanism. The shaft 8 also turns, through a gear assembly 12, transverse shafts 13, 13. (See Figures 1

and 2.) Secured to the outer ends of the shafts 13, 13 are sprocket wheels 14, 14 which are connected to sprocket wheels 15, 15 on the axle 4, by sprocket chains 16, 16 for the purpose of driving the rear wheels 5, 5.

Through a clutch 17 the transverse shaft 10 drives an axially aligned shaft 18 on whose outer end there is secured a sprocket wheel 19 around which passes a sprocket chain 20 for rotating a sprocket wheel 21 which is keyed to the outer end of a transverse shaft 22. Keyed to the shaft 22 near the sprocket wheel 21 is a sprocket wheel 23, which drives, through a sprocket chain 24, a sprocket wheel 25 secured to one end of a tubular jack shaft 26 for rotating the front and rear brooms to be hereinafter described. (See Figures 1 and 2.)

Secured to the right end of the jack shaft 26 is a sprocket wheel 27 by which said shaft drives a right transverse shaft 22^a through a sprocket wheel 28 mounted on the latter, and a sprocket chain 29. From the shaft 22^a, which is in axial alinement with the shaft 22, the rear broom is driven.

Mounted on the right side of the machine above the jack shaft 26 is a driver's seat 30, in front of which there is a steering assembly 31. (See Figure 2.)

Referring to Figures 1 and 2, there is mounted in the front part of the machine below, and a little in advance of, the driver's seat 30, a right, front broom assembly contained in a curtained housing 32.

On the left side of the machine opposite the housing 32 there is mounted a similar housing 68.

Secured to the rear lower part of the right, front broom housing 32, are two hangers 86, 86 which project downwardly therefrom at right angles to it. Formed in the lower part of each hanger 86 is a longitudinal slot 87 through which there is free to move a stud 88 on an air-sucker hood 89. (See Figures 7, 8, 9 and 10.) Each stud 88 has an outer reduced threaded end 90 which receives a washer 91 that is of larger diameter than the slot, and also a nut 92. The studs 88, 88 are permitted to move upwardly in the slots 87, 87 so that when the machine is backing, the hood 89 is free to be moved upwardly to protect the air-sucker mechanism now to be described.

Referring to Figures 7, 8, 15, 16, 17, 18 and 19, there are secured to the hood 89 flex-

ible strips preferably made of canvas which, together with plates to which they are attached, form flexible snouts for sucking dust and air. Not only do these strips provide
 5 a flexible connection between the hood and the sucker plates, but they form curtains to prevent the dust from escaping and make it possible for the air pressure under them to be less than the outside pressure. The out-
 10 side air then rushes in to fill the vacuum, carrying with it the dust that is lying on the street and forcing it into the blower to be hereinafter described.

Coming to a more specific description of
 15 this mechanism, the numerals 93 and 94 designate top and bottom end plates respectively for each side of the hood 89, and which are secured to the latter by canvas strips 95 and 96 respectively. These plates have outer
 20 flanged sides 97 that taper outwardly from their front ends. The upper canvas strip 95 is secured at its upper edge to the air-sucker hood 89, and at its lower side portions it is riveted or otherwise suitably se-
 25 cured to the outer surfaces of the top end plates 93, and also to the outer flanged sides 97 of the same. (See Figures 15, 16 and 17.)

The lower canvas strip 96 is secured at its upper edge to the air-sucker hood 89, and at
 30 its lower side portions it is secured by flanged protector plates 98 to the bottom surfaces and flanged sides of the bottom end plates 94. As will be seen from Figures 25 and 26, the flanged protector is preferably
 35 riveted to the bottom of its respective end plate, and serves not only to firmly hold the flexible strip 96 against the bottom and side flange of the plate so that it will perform its function properly, but it also protects it
 40 from wear.

The top and bottom end plates 93 and 94 are flexibly held together by the canvas strips 95 and 96 respectively, to form air-
 45 sucker snouts. In order to prevent the top and bottom end plates from being sucked together at their non-flanged sides, a lip 99 is punched out and turned downwardly from the inner surface of each top end plate 93. This lip engages the surface of the plate 94
 50 below to hold the plates 93 and 94 a proper distance apart at all times. (See Figures 15, 16 and 17.)

Referring to Figures 11, 12, 13 and 14, inter-
 55 mediate top and bottom plates 100 and 101 are riveted or otherwise suitably attached to the top and bottom flexible strips 95 and 96 between the end plates 93 and 94 above described. Each intermediate bottom
 60 plate 101 is nothing more than a rectangular plate. (See Figures 11 and 12.) Each top intermediate plate 100 has punched out and turned down from its inner surface a
 65 lip 102 similar to the lips 99, to engage the bottom plate so that it will not be drawn flat against the latter by suction. In other

words, these lips 102 keep the intermediate plates 100 and 101 at a proper distance apart at all times.

It will thus be seen that the flexible strips 95 and 96 which attach the end and inter-
 70 mediate plates to the air-sucker hood 89, act as a universal hinge for the plates, so that they may swing from said hood to seek the angular position that will best accommodate them to the irregularities of the street and
 75 the direction in which the machine is moving. Should the machine start to back, the plates will assume the reverse positions shown in dotted lines in Figure 8. In these positions,
 80 the plates, when the machine is backing, will drag in the same manner that they do when the machine is going forward.

The top flexible strip 95 is secured to the side flanges of the end plates 93 so that it will co-operate with the bottom strip,
 85 which is held firmly against the flanges of the lower end plates, to cover any gaps that might occur along the sides of the end plates when the latter assume different po-
 90 sitions.

On the left side of the machine there is secured to the housing 68, an air-sucker
 hood 104 to which there is attached a flexible snout mechanism 105 similar to the air-
 95 sucker snouts described in connection with the right air-sucker hood 89. (See Figure 1.)

Attached to the open top of each one of the air-sucker hoods 89 and 104, is a flexible
 100 tube 106. These tubes 106, 106 extend rearwardly, and then inwardly, to the lower end of a stationary vertical tube 107 which has an upper curved end for connection to a
 105 blower 108. (See Figures 1 and 2.)

Secured to the top of the blower 108 is an
 105 upwardly and forwardly projecting outlet tube 109 from the horizontal portion of which there depend filter bags 10 through which the air is blown, leaving the dust to settle within them. The blower 108, which
 110 may be of any common type, is driven from a shaft 111 on the outer end of which there is secured a pulley 112. Passing around the latter is a belt 113, which is driven by a
 115 pulley 114 on the shaft 8. (See Figures 1 and 2.)

The dirt which is swept to the center of the machine by the front right and left
 broom assemblies 32 and 68, is picked up
 120 by a rear broom assembly 115.

The dust pan assembly comprises an in-
 125 clined U-shaped flanged frame 129 secured at its rear end by a hinge 130 to an elevator housing 131. Secured to the top and sides of the frame 129, is a flexible strip 132
 130 preferably made of canvas. To this strip there is secured a series of rectangular plates 133. (See Figures 5 and 6.) These plates are flexibly connected together by the strips 132 so that they may accommodate
 135

themselves to any irregularities in the street over which the machine is drawn.

Over the flexibly connected plates 133 the dirt is swept into the elevator housing 131 which comprises an upwardly inclined chute that is mounted in the frame 1 to cover an elevator frame 134. The latter is hinged at its upper end upon a transverse shaft 135 secured in proper bearings in the housing 131, so that it may be raised at its front end by any obstruction it encounters to protect the elevator mechanism now to be described, from injury. Secured to the left end of the shaft 135 is a sprocket wheel 136 by which it is driven from a sprocket chain 138. (See Figure 3.)

Journalled within the lower end of the elevator frame 134 are stub shafts 139 on the inner ends of which sprocket wheels 140, 140 are fast. Around these wheels pass chains 141, 141 that are received at their upper ends by sprocket wheels 142, 142 on the shaft 135. Then, when the latter is turned, the sprocket wheels 142, 142 will rotate the chains 141, 141 to which there are secured radial slats 143 which carry the dirt upwardly to a kicker broom soon to be described. Should one of these slats encounter a brick or other like object on the street, the elevator frame, being hinged to the shaft 135, will yield sufficiently to permit the conveyer mechanism to maneuver the brick into the elevator housing, and through it into the dirt box.

Referring to Figures 2, 3 and 4, the elevator housing 131 terminates at its upper end in a double-bend neck portion 144 which opens into a dirt box 145 mounted in the main frame 1. Secured within the neck portion of the elevator housing 131 is a transverse shaft 146 on which there is mounted a kicker broom 147. For the purpose of driving the latter, there is mounted on the right side of the shaft 146, a sprocket wheel 148 which is turned through a chain 149, by a sprocket wheel 150 fast on the shaft 135.

The mouth of the elevator chute points upwardly and forwardly within the rear part of the dirt box 145, so that the dirt may be thrown by the kicker broom 147 to the front of the box, thereby filling the latter from front to rear. If the kicker broom were omitted, only the rear part of the box

would be filled, but where it is employed and arranged as in my device, the entire box will be filled with dirt.

Having described my invention, I claim:

1. In a street cleaning machine, the combination with an air-sucker hood, of two flexible strips secured thereto along their inner side edges, a top plate secured to one strip and a bottom plate secured to the other strip, and a projection on one plate for engagement by the other plate to prevent said plates being drawn together.

2. In a street cleaning machine, the combination with an air-sucker hood, of two flexible strips secured thereto along their inner side edges, and end plates having outer flanged sides to which the outer edges of said strips are secured after being attached to their top and bottom portions.

3. In a street cleaning machine, the combination with an air-sucker hood, of two flexible strips secured thereto along their inner side edges, top and bottom end plates having flanged outer sides, fastening elements securing the top flexible strip to the bottom and side flange of the top end plate, protective means and fastening elements for securing the bottom flexible strip and the latter to the bottom flange of the bottom end plate.

4. In a street cleaning machine, the combination with an air-sucker hood, of two flexible strips secured thereto along their inner side edges, a top end plate having a flanged outer edge secured to the top strip, and a lower end plate upon which the top end plate rests, having a flanged outer edge secured to the lower flexible strip.

5. In a street cleaning machine, the combination with an air-sucker hood, of two flexible strips secured thereto along their inner side edges, a top end plate secured to the top strip, a lower end plate having a flanged outer side, an angle piece, and fastening elements for securing said angle piece to the lower strip and the latter against the bottom of the lower end plate for the purpose specified.

In testimony whereof I have hereunto set my hand this 25th day of February, 1924.

ALBERT SCHROEDER.