W. P. LEISTER.

PNEUMATIC SWEEPER.

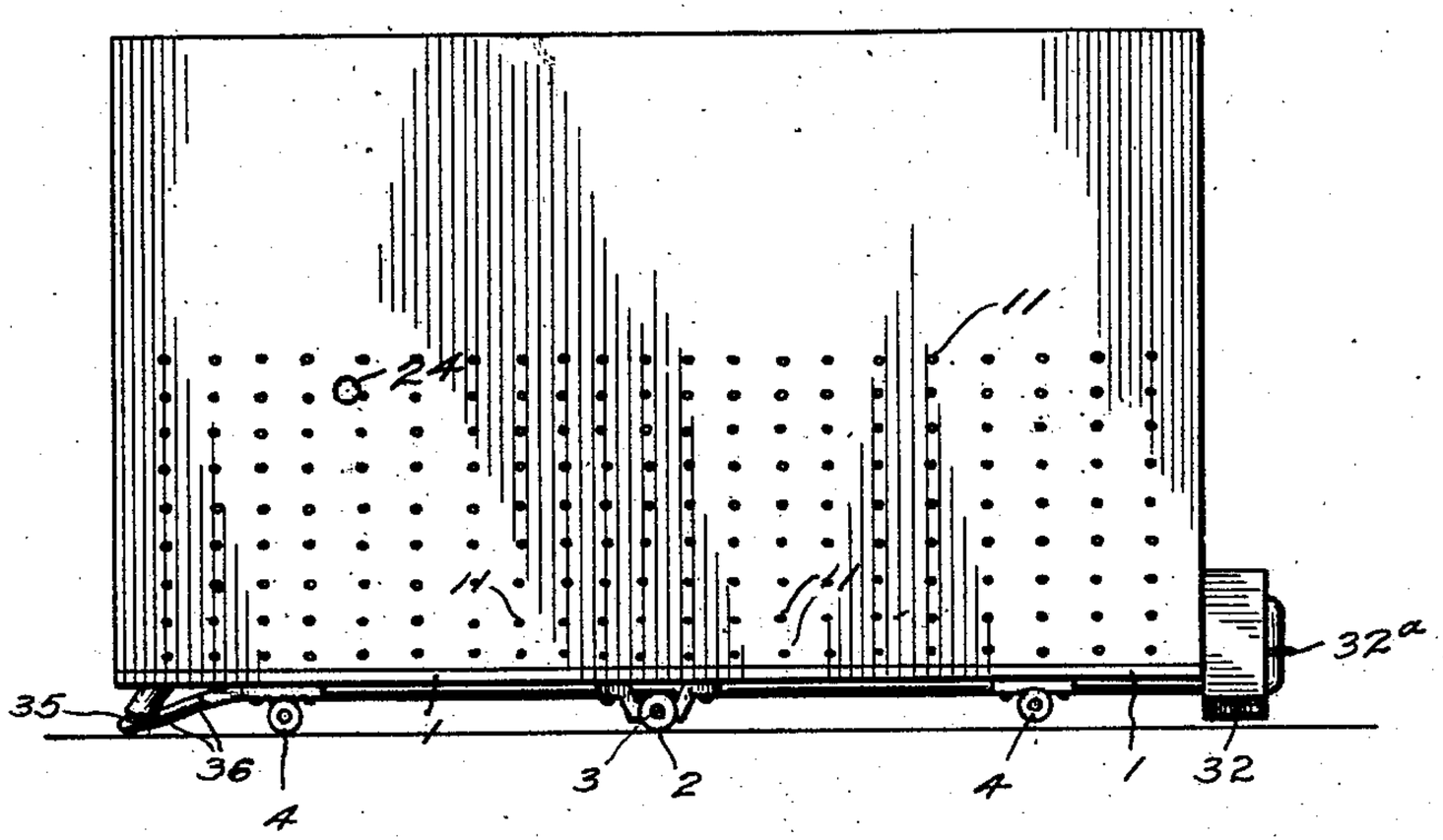
APPLICATION FILED JAN. 10, 1908.

915,613.

Patented Mar. 16, 1909.

2 SHEETS—SHEET 1.

Fig. 1



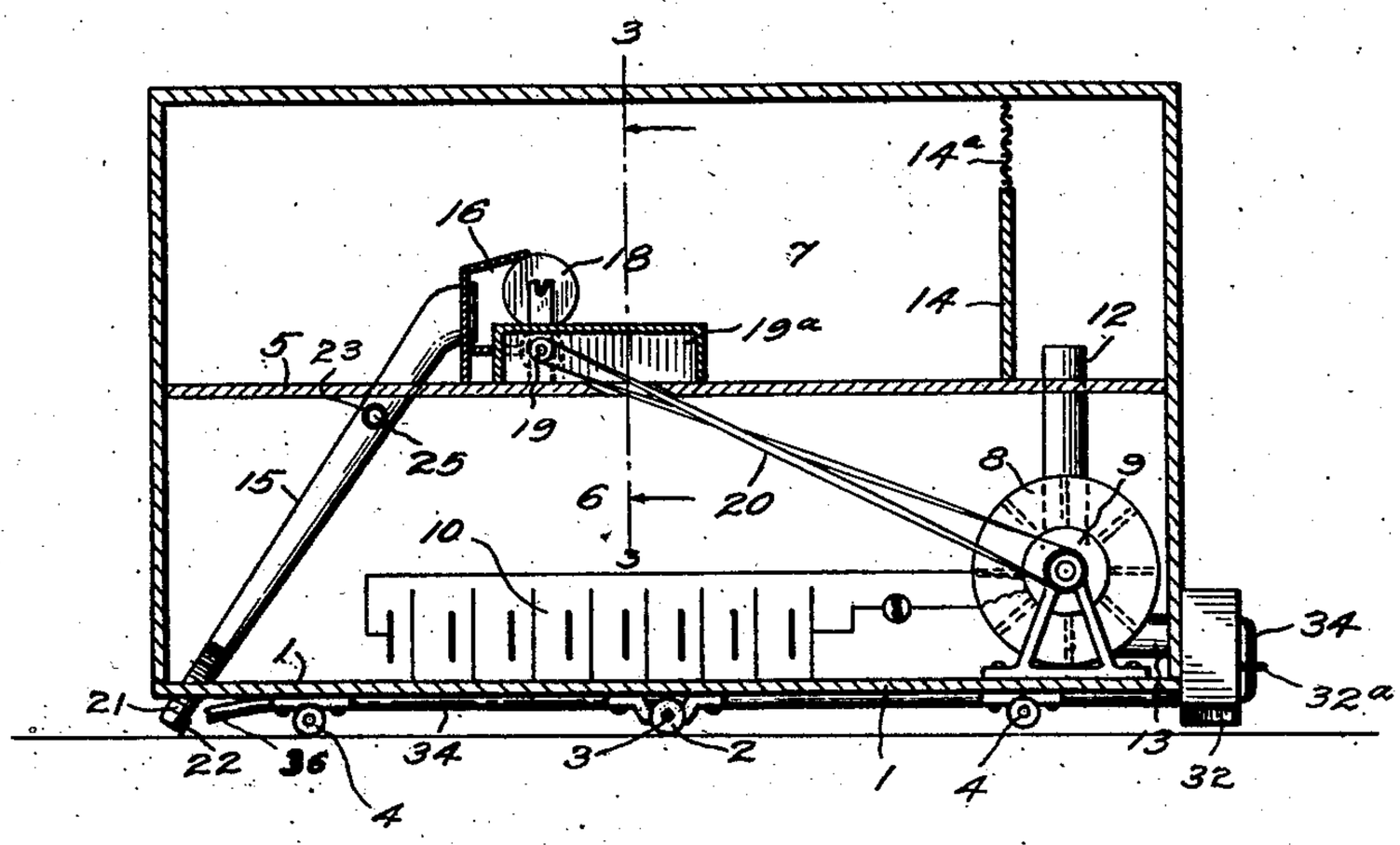


Fig. 2

Witnesses

R. C. Claflin

Frank J. Veihmeyer.

By

Inventor

William P. Leister

Edson Bros,

Attorneys

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Fig. 3

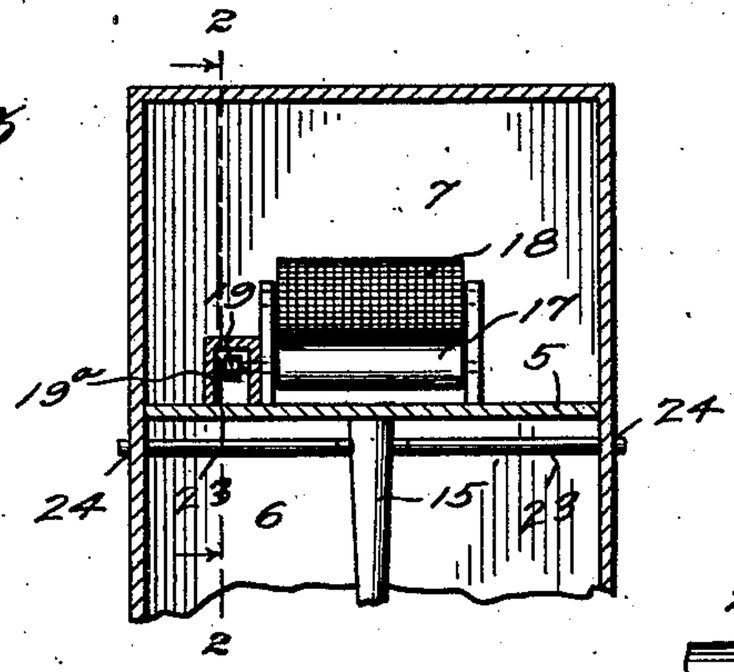


Fig. 8

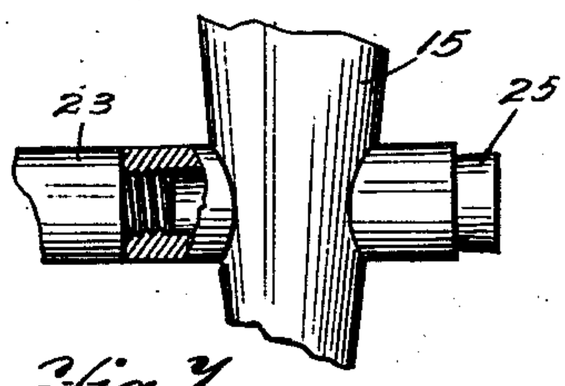


Fig. 4

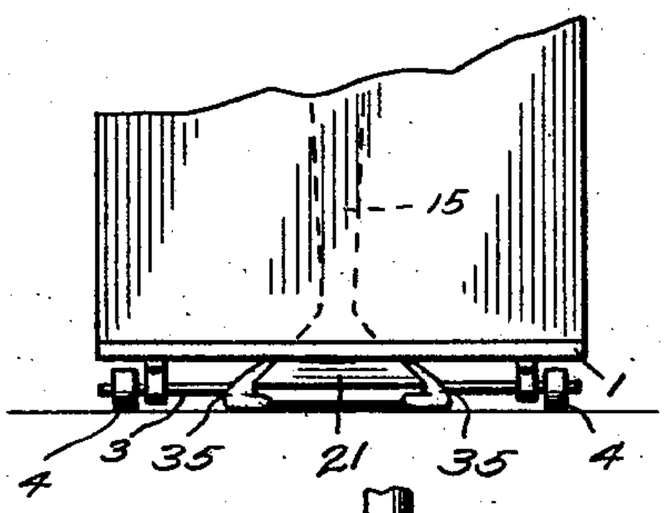


Fig. 7

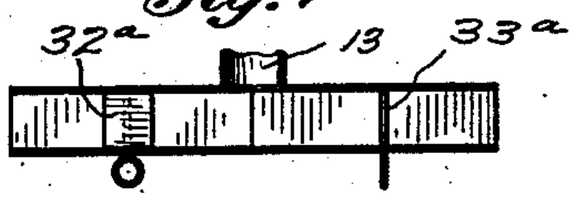


Fig. 9

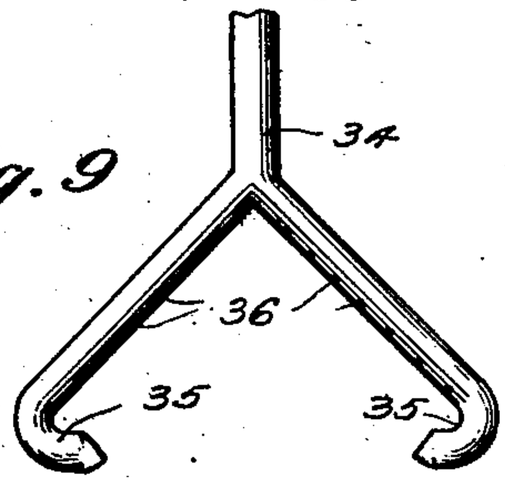


Fig. 5

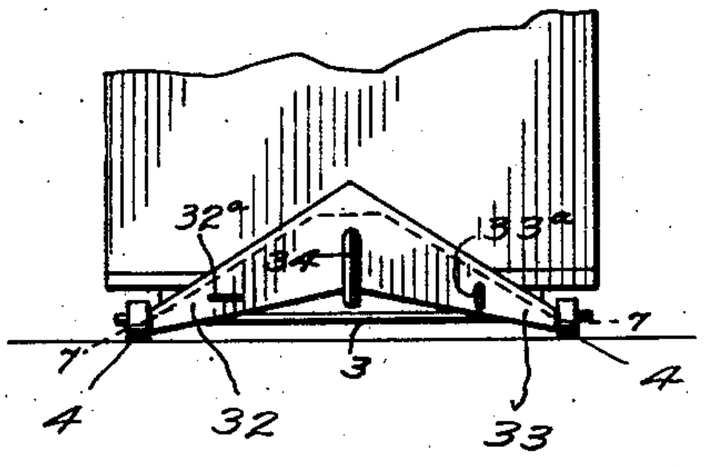
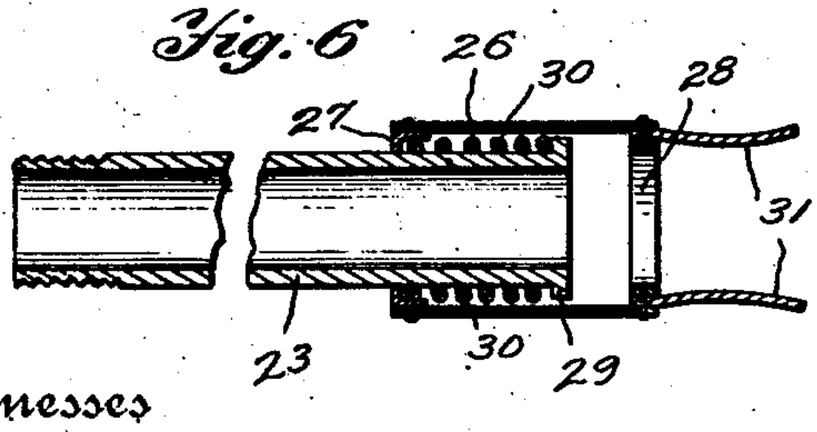


Fig. 6



Witnesses

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Frank J. Veihmeyer.

Inventor

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By Edson Bros,

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM P. LEISTER, OF CLIFFSIDE, NORTH CAROLINA.

PNEUMATIC SWEEPER.

No. 915,613. Specification of Letters Patent. Patented March 16, 1909.

Application filed January 10, 1908. Serial No. 410,143.

To all whom it may concern:

Be it known that I, WILLIAM P. LEISTER, a citizen of the United States, residing at Cliffside, in the county of Rutherford and State of North Carolina, have invented certain new and useful Improvements in Pneumatic Sweepers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to pneumatic sweepers and is designed as an improvement on the sweeper shown and described in the patent issued to Lafayette A. Hughes and myself on August 9, 1904, No. 767,296.

It has for its object to produce a sweeper which is especially constructed and adapted for removing lint and other refuse from the machines and floors in spinning and other factories.

It also aims to overcome the tendency of the material or refuse taken up by the machine to cover and stop up the screen at the end of the suction pipe leading from the fan to the refuse receptacle.

Further objects of the invention will become apparent from the following description.

The invention consists in the features of construction and combinations of parts hereinafter described and specified in the claims.

In the accompanying drawings, illustrating the preferred embodiment of my invention: Figure 1 is a side elevation with the branch suction pipes removed. Fig. 2 is a longitudinal section. Fig. 3 is a cross section showing the branch suction pipes in place. Figs. 4 and 5 are broken front and rear end views respectively. Fig. 6 is an enlarged longitudinal section of the outer end of one of the branch suction tubes, and Fig. 7 is a section through the outlet or blast chutes taken on the line 7—7 of Fig. 5 showing the valves therein. Fig. 8 is an enlarged broken detailed view showing the connection of one of the branch suction pipes with the main suction chute, and also one of the plugs in position, and Fig. 9 is an enlarged detailed view of the end of the exhaust pipe which branches to extend around opposite sides of the lower end of the main suction chute.

In carrying out the invention, I mount the working parts of the sweeper upon a platform 1 supported upon centrally arranged wheels 2 on an axle 3 and end wheels 4. The wheels 2 preferably extend lower than the wheels 4 whereby only one of the latter wheels engage the floor at a time. On said platform is arranged a box or receptacle divided by a horizontal partition 5 into lower and upper chambers or compartments 6 and 7, respectively.

In the lower compartment there is located a fan 8, an electric motor 9 connected up with said fan and storage batteries 10 for driving said motor. The sides of said lower compartment are perforated, as at 11; to keep the batteries cool. The intake pipe 12 of said fan extends up through the horizontal partition 5 while the exhaust pipe 13 shown in Fig. 2 runs out through the rear end of the receptacle.

In the upper compartment 7 a vertical transverse partition 14 incloses a part at the rear end over the end of the intake pipe of the fan. The opening in said partition is covered with a screen 14^a of wire netting to prevent lint or refuse from being drawn into the fan.

From the forward end of the platform a suction chute or pipe 15 extends through the lower compartment and opens into a casing 16, the opposite end of which is closed by a small solid roller 17 and a larger roller 18 of wire mesh. Said rollers contact with one another and are revolved by a pulley 19 on the shaft of the smaller roller driven by a belt 20 from the motor. Said pulley is inclosed by a boxing 19^a which covers the opening in the horizontal partition through which the belt 20 passes. The function of said rollers is to deliver the refuse and litter upon the bottom of the upper receptacle and prevent it from collecting at once upon the screen 14^a. Said suction pipe is preferably inclined rearwardly, as shown, and is flared at its lower end as at 21. Its rear edge projects lower than its front edge and is provided with an edging 22 of rubber or other suitable flexible material which reaches to the floor. When this flexible edging is used there is no danger of the bottom of the pipe or chute itself being injured in case the floor is uneven.

Branch suction pipes 23 may be detachably connected to the main suction pipe 15, as shown in Fig. 3 and Fig. 8. When in position, said branch pipes extend through apertures 24 in the sides of the lower compartment of the receptacle. When said branch pipes are not used the openings in the main suction pipe are stopped by plugs 25. On the

outer end of each branch pipe there is mounted a flexible tube section 26 secured at its opposite ends to rigid rings or bands 27 and 28 respectively. The band 27 is mounted around the pipe 23 as illustrated clearly in Fig. 6, and between it and an extending flange 29 on the end of said pipe is arranged a coiled spring 30. Said spring normally retracts said flexible tube section 26 partially over the end of the pipe leaving a portion of said tube projecting beyond said pipe. The ring 28 on said projecting end carries flat spring arms 31 adapted to engage the spindle carrying rail of a spinning machine and hold the flexible tube against said rail as the machine is moved along whereby the lint is sucked through said branch pipes into the dust receptacle. It is the present custom to brush off this lint, which collects very thickly on said rail, with a small broom or flap from eight to twelve times a day. The great convenience and saving incident to the use of my machine will therefore be readily understood.

The exhaust pipe 13 of the fan leads to branch chutes 32 and 33 arranged at the rear end of the sweeper and extending downwardly and toward each side as shown in Figs. 5 and 7. Valves 32ª and 33ª are arranged in said chutes whereby the blast may be directed to either side of the machine. By this means the dust and lint may be blown from under the machines into the next aisle as the sweeper moves along an aisle.

A pipe 34 leads from near the juncture of the exhaust chutes and runs along below the platform of the sweeper to the lower flared end 21of the suction pipe 15 where it branches into two pipes 35 which extend around opposite sides of said flared end and terminate in front and below the open end of said flared portion. The branch pipes 35 are perforated on their under surfaces, as at 36. The blast delivered through said perforations and ends of said branch pipes is directed upon the floor at an angle toward the suction pipe and serves to loosen the litter and dust and blow it under said pipe enabling said material to be more readily taken up by said suction pipe.

The operation of the sweeper will be readily understood from the foregoing description. The fan, of course, creates the suction to draw the litter and refuse from the floor and the spindle carrying rails of the spinning machines into the dust receptacle through the main and branch suction pipes. The wire roller arranged at the upper end of said main suction pipe delivers the refuse on the bottom of said dust receptacle and prevents it from clogging the screen covering the opening leading to the intake pipe of the fan. Said fan also creates the blast which blows the lint from below the machines and loosens it from the floor and directs it under the open end of the main suction pipe. These various operations take place while the sweeper is being pushed through the aisles by the operator.

I claim:

1. In a sweeper of the character described, the combination, with a dust receptacle and a fan, of a suction pipe leading from said receptacle, and having means on its outer end for slidably attaching it to the spindle carrying rail of a spinning machine.

2. In a machine of the character described, the combination, with a dust receptacle and a fan, of a suction pipe leading from said receptacle, a flexible tube on the end of said pipe, and means on said tube for attaching it to the spindle-carrying rail of a spinning machine.

3. In a sweeper of the character described, the combination, with a dust receptacle and a fan, of a suction pipe leading from said receptacle, a flexible tube on the end of said pipe, a rigid ring on the outer end of said tube and resilient arms secured to said ring for the purpose specified.

4. In a sweeper of the character described, the combination, with a dust receptacle and a fan, of a suction pipe leading from said receptacle, a flexible tube on the end of said pipe, rigid rings on the ends of said tube, a coiled spring arranged between said pipe and tube and abutting against the ring on the inner end of said tube and also against a flange on the outer end of said pipe, and means carried by the other ring on said tube for attaching it to the spindle-carrying rail of a spinning machine.

5. In a sweeper of the character described, the combination, with a dust receptacle and a fan, of a suction pipe leading from said receptacle, a flexible tube on the end of said pipe, rigid rings on the ends of said tube, a coiled spring arranged between said pipe and tube and abutting against the ring on the inner end of said tube and also against a flange on the outer end of said pipe, and resilient arms secured to the other ring on said tube for the purpose specified.

6. In a sweeper of the character described, the combination, with a dust receptacle and a fan, of a suction pipe adapted to take up refuse from the floor and deliver it to said receptacle, branch exhaust chutes communicating with the exhaust pipe from said fan and extending to opposite sides of the sweeper, and cut off valves in said chutes.

7. In a sweeper of the character described, the combination, with a dust receptacle and a fan, of a suction pipe adapted to take up refuse from the floor and deliver it to said receptacle, the rear edge of said suction pipe extending lower than its front edge, and an exhaust pipe leading from the fan to the lower end of said suction pipe where it separates into two branches which extend around at either side of said suction pipe and

terminate in front of said suction pipe, said branch exhaust pipes having perforations in the portions thereof arranged behind said suction pipe adapted to direct blasts at an angle upon the floor and toward the open end of said suction pipe.

8. In a sweeper of the character described, the combination, with a dust receptacle and a fan, of a suction pipe adapted to take up refuse from the floor and deliver it to said receptacle, branch exhaust chutes communicating with the exhaust pipe from said fan and extending to opposite sides of the sweeper, an exhaust pipe opening into said exhaust chutes at the juncture of the two branches thereof and leading to the lower end of said suction pipe, said exhaust pipe having openings therein for the purpose specified.

In testimony whereof, I affix my signature, in presence of two witnesses.

WILLIAM P. LEISTER.

Witnesses:

L. I. GREGORY,

O. MCBRAYER.