Sept. 2, 1924. 1,507,010

W. S. SUTTON

VACUUM CLEANER

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Fig. 1.

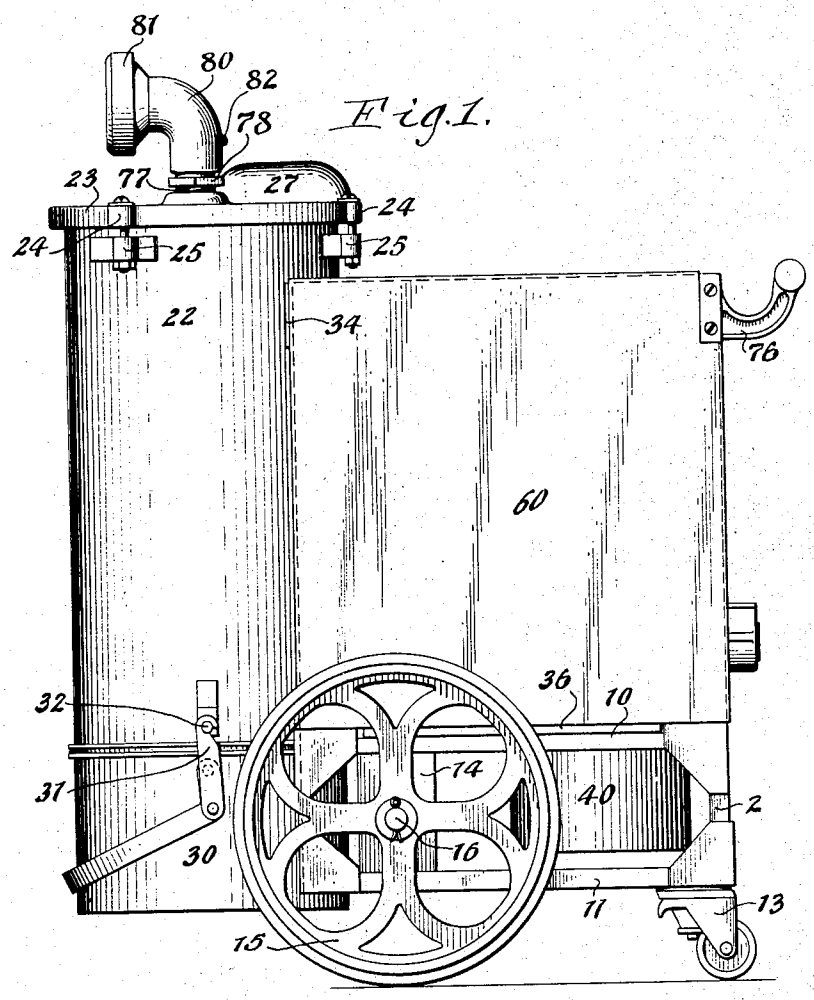
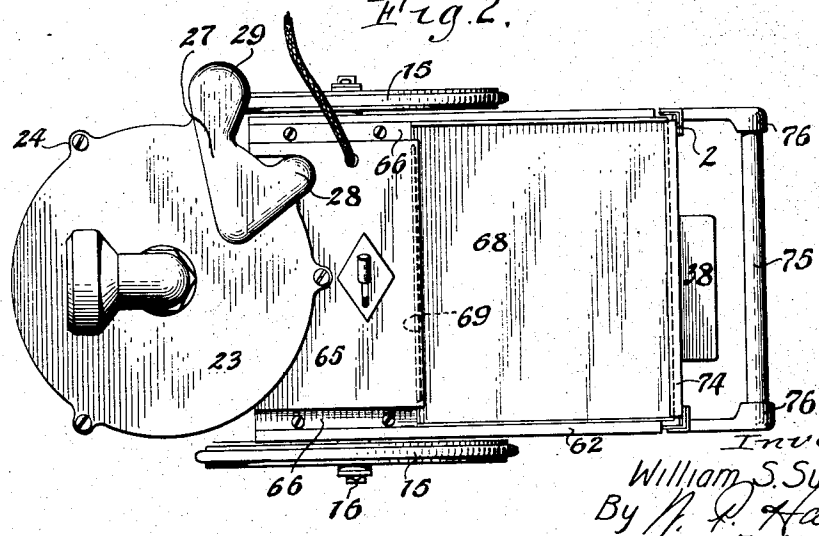


Fig. 2.



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VACUUM CLEANER

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Fig. 4.

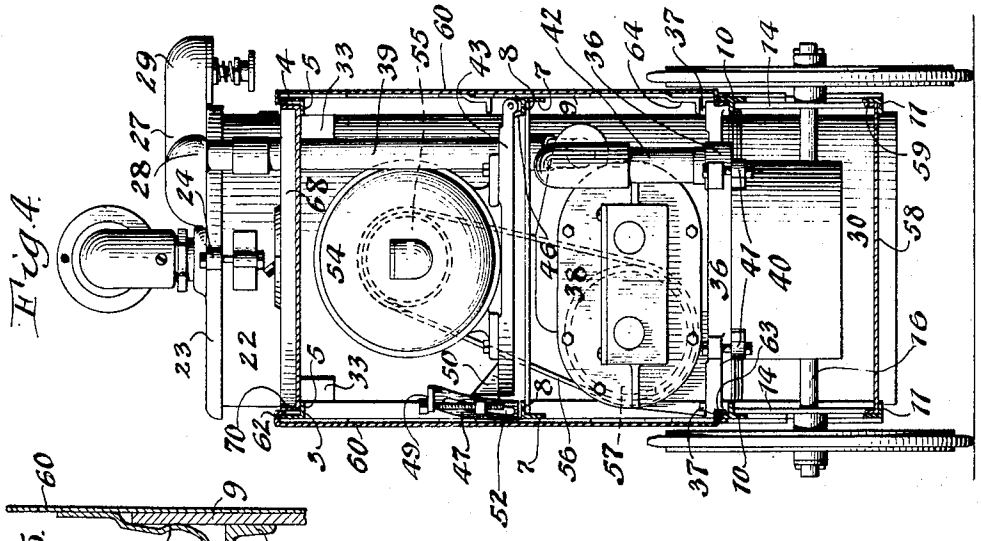
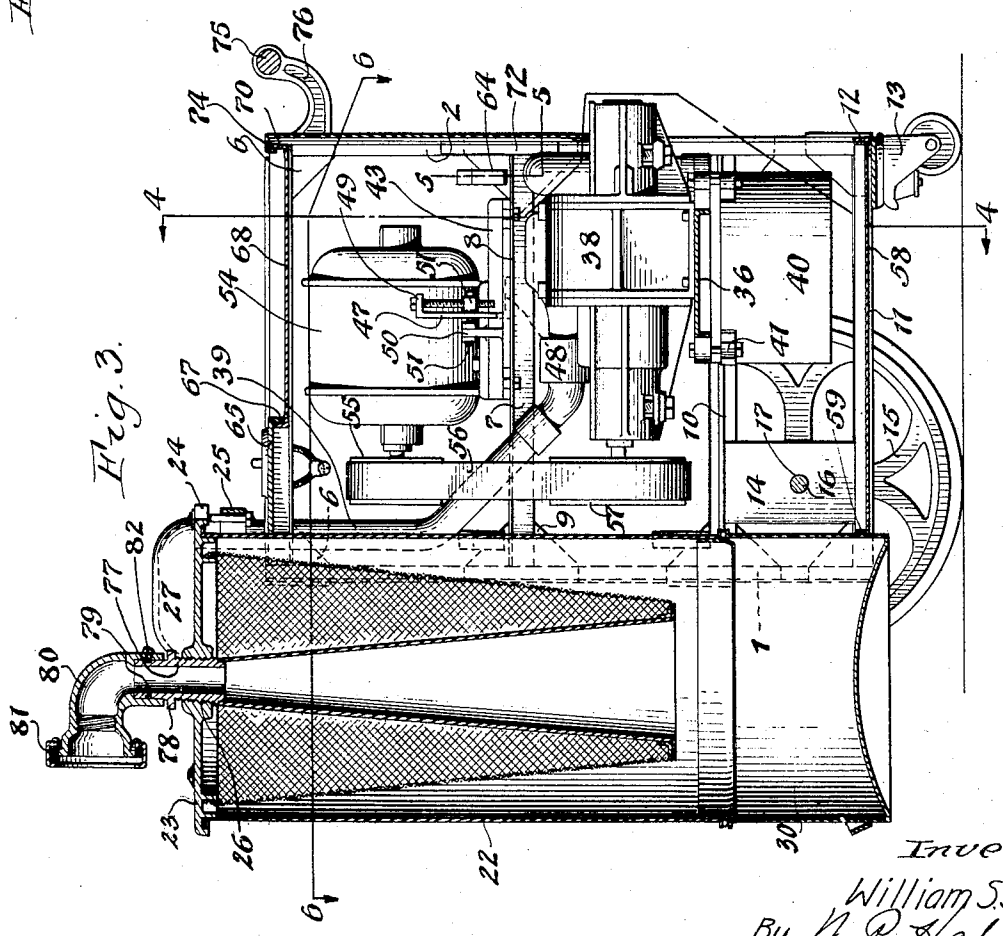


Fig. 5.

Fig. 3.



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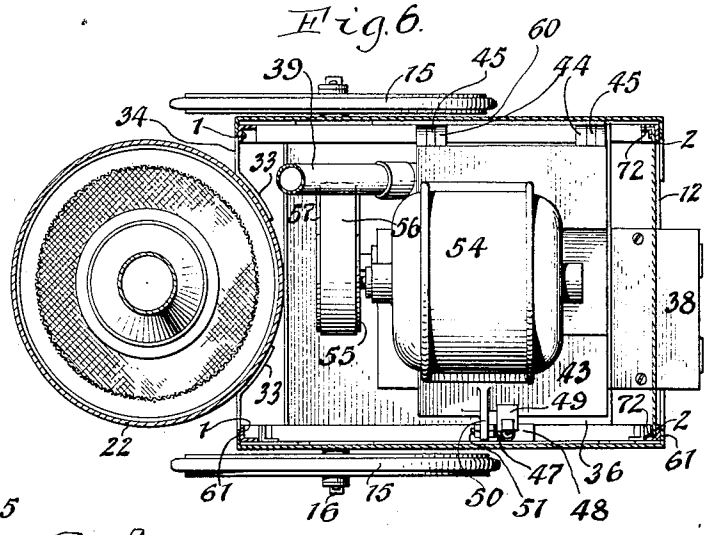
VACUUM CLEANER

Filed June 2, 1921 3 Sheets-Sheet 3

Fig. 6.



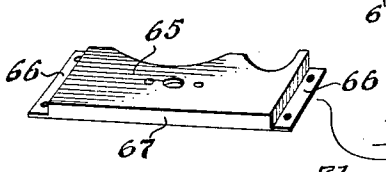
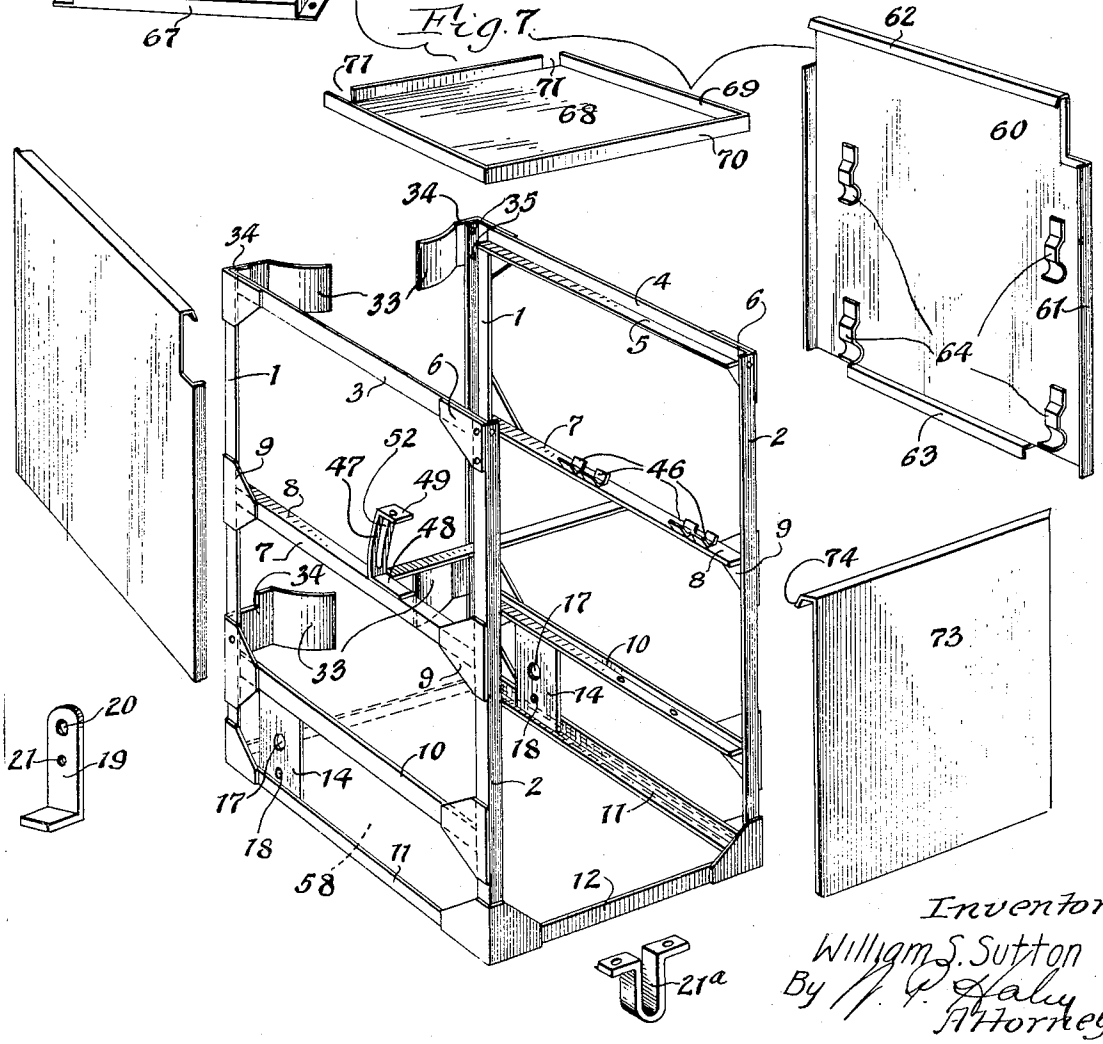


Fig. 7.



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Patented Sept. 2, 1924. 1,507,010

UNITED STATES PATENT OFFICE.

WILLIAM S. SUTTON, OF ROCKFORD, ILLINOIS, ASSIGNOR TO AMERICAN RADIATOR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

VACUUM CLEANER.

Application filed June 2, 1921. Serial No. 474,422.

To all whom it may concern:

Be it known that I, WILLIAM S. SUTTON, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Vacuum Cleaners, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in vacuum cleaners and has for one of its principal objects, the construction of a vacuum cleaner which shall be more readily assembled than the devices heretofore made; which shall be more easily handled than the devices heretofore made; and which shall be simpler in construction.

For the purpose of disclosing my invention I have illustrated one embodiment in the accompanying drawings in which:

Fig. 1 is a side elevation of one embodiment of my invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is longitudinal sectional view;

Fig. 4 is a transverse sectional view taken on a line 4—4 of Fig. 3;

Fig. 5 is a detail sectional view showing the means of holding the side panels in position; on line 5—5 Fig. 3;

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 3; and

Fig. 7 is an exploded view of the frame.

In the embodiment illustrated, I provide for supporting and carrying the various parts of the apparatus, a frame work consisting of two side frames, each side frame comprising a front post 1 and a rear post 2 preferably formed of angle iron, and a plurality of horizontally disposed bracing and supporting bars, preferably in the form of angle irons, extending longitudinally between these posts. The top angle iron 3 has one side 4 extending vertically, and the opposite side 5 arranged at the bottom and extending horizontally and inwardly, and is secured between the front and rear posts by means of corner braces 6 which are preferably spot welded in position. The first intermediate bracing horizontal bar 7 is reversed in position, i. e., the horizontal side 8 is at the top, while the vertical side extends downwardly, and this bar is likewise secured to the front and rear posts by means of braces 9 at its corners which are preferably spot welded to the respective parts. The second intermediate bar 10 as well as the bottom bar 11 is secured in the same manner as the top bar 3. The purpose of the disposition of these angles will more readily appear hereinafter.

Extending between the two side frames at the bottom, is a cross member 12 taking the form of an angle and which provides a mounting member for the rear caster 13 upon which the frame rests. Corner braces spot welded in position fasten this cross member to the corner post at the front end of the frame and between the side members 10 and 11 I connect a pair of vertical plates 14 which provide means for securing in position the front wheels 15 of the device. The axles 16 of these wheels pass through openings 17 in the plates and the wheels are secured in position on the axle by any suitable means such, for instance, as cotter pins, nuts, or the like. It will be noted that in addition to the axle openings 17 I provide a second opening 18 so that in the event it is desirable to stationarily mount the apparatus, legs 19 may be substituted for the wheels, bolts for securing the legs in position passing through the openings 20 and 21 in the legs and through the opening 17 and 18 in the side plates. When such legs are substituted for the wheels, the caster 13 is removed and the rear leg 21^a secured in position in place thereof.

The separator for the cleaner is mounted at the forward end of the frame work above described, and comprises a cylinder 22 having a top preferably formed of cast iron 23. This top, as shown, is provided with a plurality of lugs 24 and the cylinder has a plurality of co-operating ears 25 which align with the lugs, and by passing bolts through the lugs and ears, the top may be securely clamped in position. This top is provided with a hose connecting opening 26 and with a branched port conduit 27. One branch of this conduit is connected to the exhauster and the opposite branch 29 has arranged therein a relief valve. On the underside of the cover there is supported a hollow cone which at its apex is connected to the inlet coupling 26 and at its bottom has connected thereto the lower end of the dust screen, the upper end of the dust screen being connected to the underside of the

cover. Beneath the separating chamber there is mounted a removable bucket 30 which constitutes in effect, a part of the separator and is detachably connected in position by means of hooks 31 arranged to engage over ears 32 secured to and extending from the side of the cylinder.

For securing the separator in position on the frame I provide at the top and bottom of the cylinder, a pair of arcuate plates 33 which are preferably secured to the cylinder by spot welding and have laterally extending ears 34 secured to the two front corner posts 1 by means of screws 35. It is thus seen that the two side frames constituting the supporting frame work, are tied together at their front by means of the separator.

Supported on the frame work and extending between the two lower intermediate connecting rods 10 I mount an exhauster base 36 which is preferably cast iron. This base at its outer edges rests upon the inturned sides of the angle 10 and is secured in position by bolts 37 passing through the base and through the angles. The two side frames are thus additionally tied together at this point. Mounted above and on top of the base, is the exhauster 38 which is connected by means of the pipe 39 with the exhaust coupling 28. Secured on the underside of the base is an oil collector and muffler 40 which is provided with a plurality of laterally extending ears 41 through which, bolts extending through the base pass for securing the collector and muffler in position. This collector and muffler communicate by means of an opening in the base with an exhaust muffler 42 mounted on the upper side of the base. If desired, a pipe connection may be made at this point instead of the muffler and a blowing connection thus established.

Mounted upon and extending between the upper intermediate horizontal bars 7 is the supporting base 43 for the driving motor. This base on one side is provided with two pairs of ears 44, each pair being arranged to engage on opposite sides of post 45 bolted to the frame and are adapted to rest in bearing guides 46. A pivot pin passes through the ears and the posts to thereby secure the base rigidly to the side member 7. On the opposite side member 7 I provide a vertically extending guide and supporting plate 47 which at its lower end is provided with a securing lug 48 preferably spot welded on to the side member 7, and at its upper end has an overhanging ear 49. The motor base is provided with a bracket 50 having extending therethrough a bolt 51 which also extends through a slot 52 in the plate 47. Passing downwardly through the ear 49 is an adjusting screw 53 which extends through the free end of the bolt 51. By tightening the nut the bracket 50 may be clamped to the plate 47, or by loosening the nut the bracket may be disengaged from this plate to permit the vertical adjustment of the motor base by means of the screw 53.

The motor 54 which is mounted on the base 43 has its pulley 55 connected by means of a belt 56 with the pulley 57 of the exhauster, and the above described means for vertically adjusting the base of the motor provides a means for maintaining the belt tension between the pulleys of the motor and the exhauster.

The motor and exhauster parts are all mounted within the frame, and for enclosing these parts, protecting them against dust, enclosing the moving parts of the apparatus, and preventing oil being splattered by these moving parts, I provide removable panels for the frame work, as well as a removable bottom oil collecting tray, and a removable top tray.

The bottom oil tray 58 comprises a flat tray having an upturned edge flange 59 and this tray rests upon the inturned sides of the bottom braces 11, being prevented from lateral displacement by the vertical sides of the angles and prevented from longitudinal displacement in one direction by the vertical side of the cross angle 12. The tray is slid into position from the front of the frame, which, it will be noted, is open, and is held against longitudinal displacement in one direction by means of the removable bucket, when the bucket is placed in position.

The side panels each comprise a flat plate arranged to be mounted on the exterior of the side frames. Vertically extending on each of the side panels 60 is an inturned flange 61 adapted to lap over the corner posts, and the metal of the top of the side panel is bent to form a hooked shaped rest 62 arranged to engage over the top side brace 3. The metal of the bottom of the panel is inturned and then bent downwardly to form a lip 63 which, when the panel is inserted in position, engages behind the vertical side of the bottom side angle 11 whereby the panel is slidingly secured in position, and in order to more securely lock the panel in place I provide on the inner face thereof, spring clips 64 which are arranged to engage over the corner braces 9. While I have shown and described these clips 64 which are preferably spot welded in position on the panels, these clips, if desired, may be dispensed with, as the hook flange 62 and engaging lip 63 I find under some circumstances are quite sufficient to hold the panel in position.

Arranged at the front of the frame-work and immediately adjacent to separator, I provide a switch housing 65 which is preferably formed of sheet metal and has a pair of downwardly extending sides provided with out-turned lips 66 resting on the hori-

zontal sides of the top angle members 3 and bolted thereto. This housing is also provided with a downwardly extending front lip 67, and the housing at its opposite side, is cut away to make a close fit with the separator cylinder. In addition to the switch housing which partially covers the top, I provide a top tray 68 having upturned side and end flanges 69 and 70. The end flange adjacent to the switch housing is slightly notched out as in 71 so that this end flange when the tray is placed in position may engage under the side wall 67 of the housing and be thereby locked in position relatively to the housing. The opposite end of the tray bears against the inturned side of the angles forming the two rear posts and the tray rests upon the inturned side of the side angles 3.

Extending vertically on the two rear posts and spaced apart from the sides thereof, I provide a pair of guides 72 for the front panel 73 which panel consists merely of a flat sheet of metal adapted to slide between these guides and the sides of the posts, and thereby be held in position. The top of the front panel has its edges bent to form a hooked lip 74 which, when the panel is inserted in position, engages over the upturned flange 70 of the top tray to interlock therewith.

For the purpose of moving the apparatus about from point to point, and to enable ready handling of the same, I provide a handle 75 which is secured between the handle brackets 76 bolted to the two rear end posts.

In order that the hose may be moved to different positions without turning the entire machine a hollow threaded stud 77 is screw threaded in to the opening 26. Near its upper end this stud is provided with a collar 78 and above the collar with an annular groove 79. An elbow 80 having a hose coupling 81 fits over the upper end of the stud being limited in its downward movement by the collar 78 and is provided with a screw or pin 82 fitting in the groove 79 to prevent the elbow from being displaced and at the same time permit it to swivel on the stud.

While I have shown and described one embodiment of my invention, it will be understood that various modifications and changes may be made therein without departing from the spirit of the invention as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A machine of the character described comprising a frame, wheels on said frame, wall members detachably secured to said frame, an exhauster and a motor mounted within said frame and operatively associated, a vertical separator secured to one end of said frame and arranged exteriorly with respect thereto, and forming a rigid end wall of said casing, a dust collecting receptacle detachably secured to the base of said separator, and means for operatively connecting said separator with said exhauster, substantially as specified.

2. A machine of the character described comprising a frame, wheels on said frame, a handle secured to said frame at one end thereof, removable wall members for said frame, means for detachably securing said wall members to said frame, an exhauster and a motor mounted within said frame and operatively associated, a tray on said frame at the bottom thereof, a vertical separator secured to one end of said frame and arranged exteriorly with respect thereto and forming a rigid end wall, a dust collecting receptacle detachably connected to the base of said separator and retaining said tray in position on said frame and means for operatively connecting said separator with said exhauster, substantially as specified.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM S. SUTTON.

Witnesses:
F. K. HOUSTON,
G. V. KLAEGER.