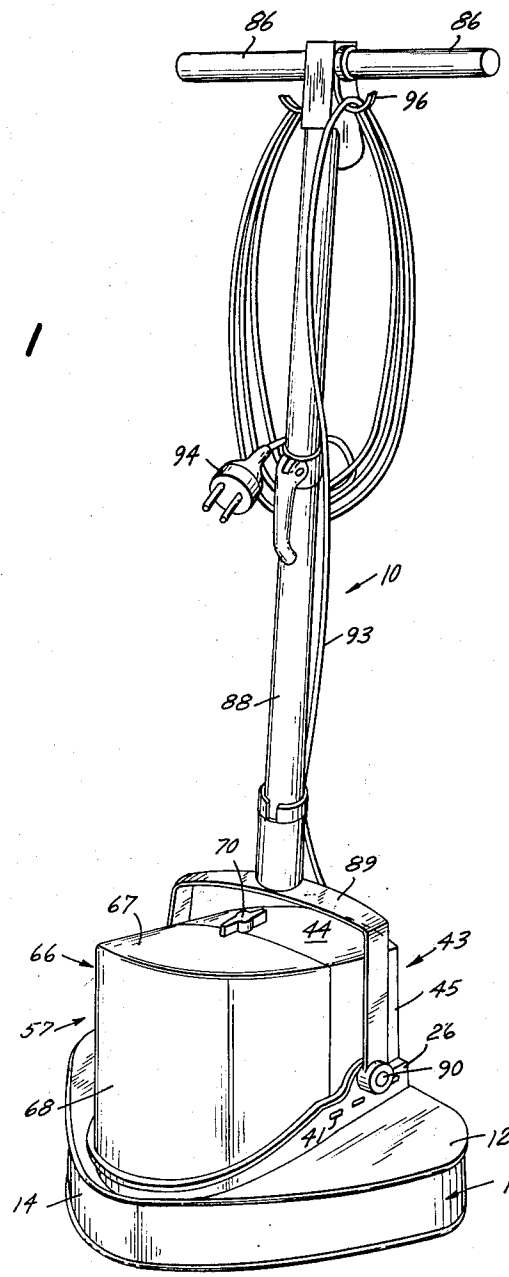
June 1, 1965 AKE EMIL FORSLUND 3,186,022

SURFACE TREATING APPARATUS

Filed April 4, 1961 5 Sheets-Sheet 1

FIG. 1



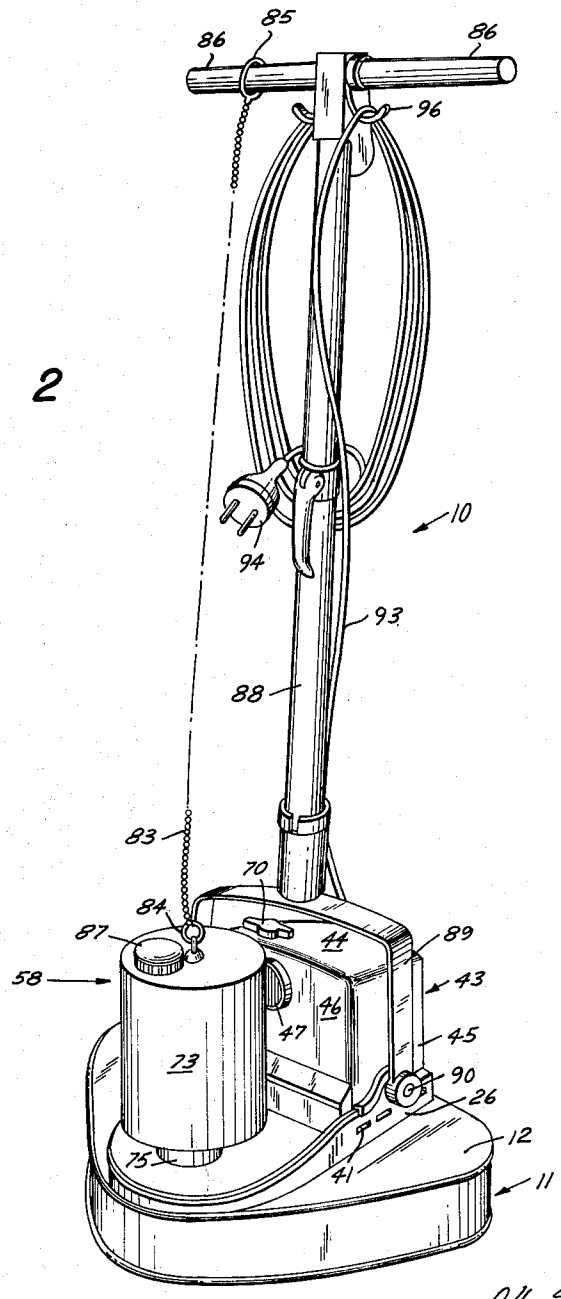
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SURFACE TREATING APPARATUS

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FIG. 2



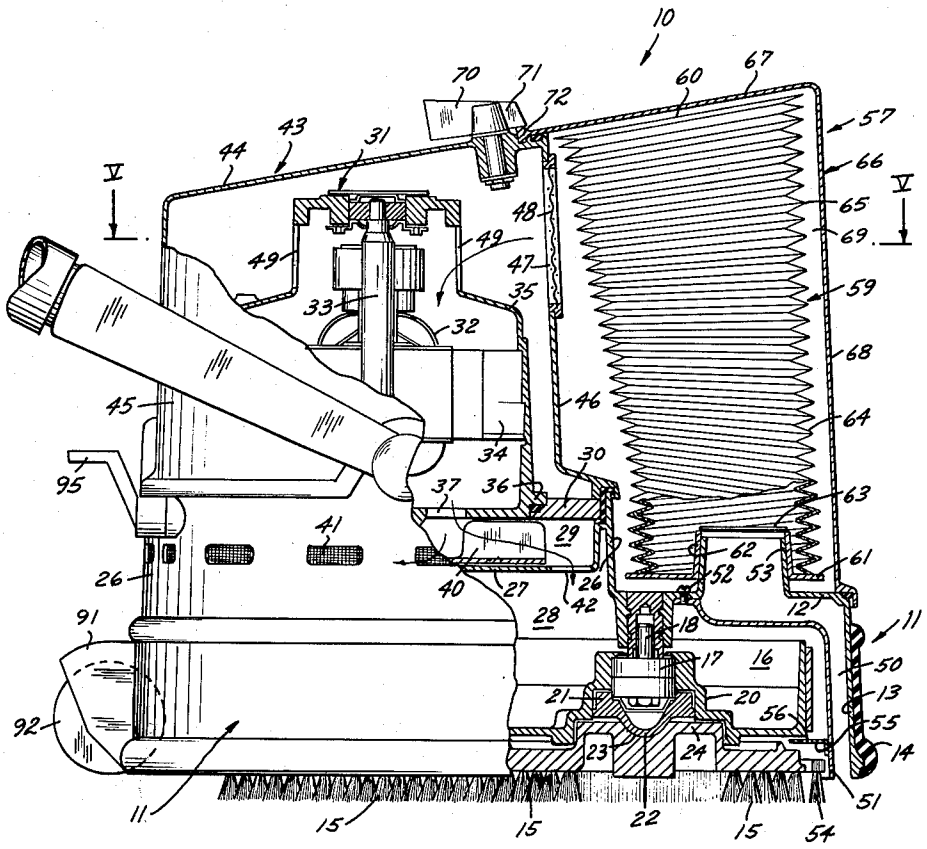
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SURFACE TREATING APPARATUS

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FIG. 3



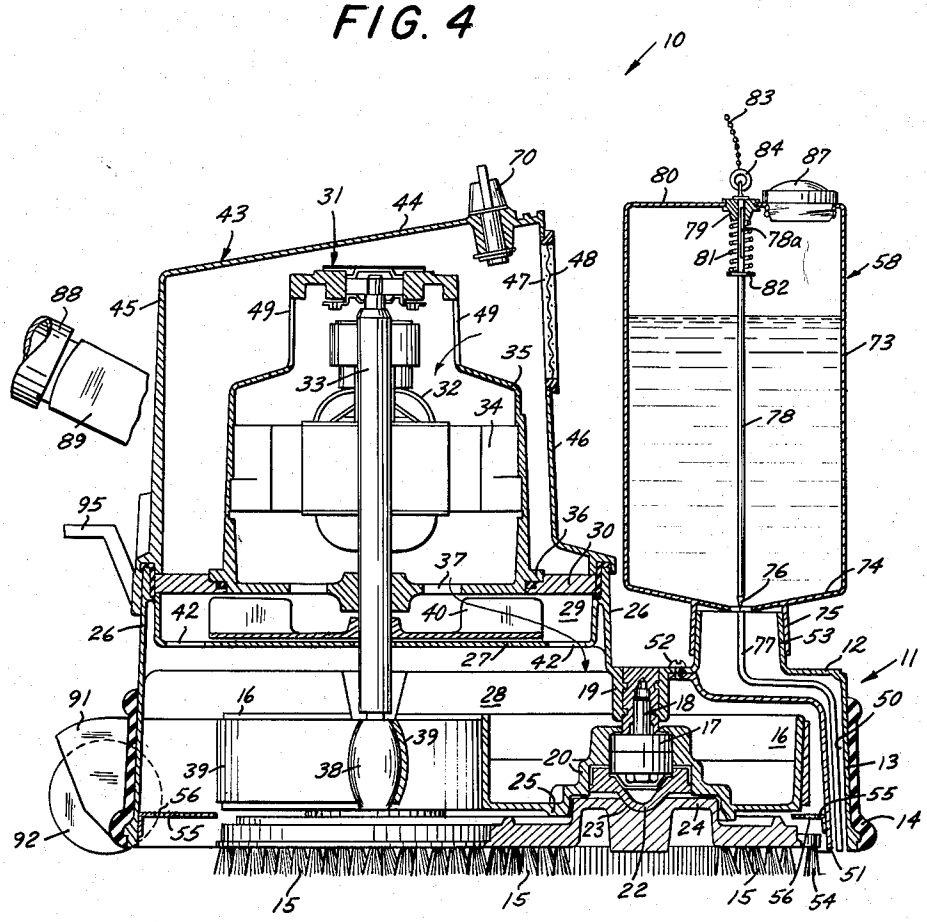
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SURFACE TREATING APPARATUS

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FIG. 4



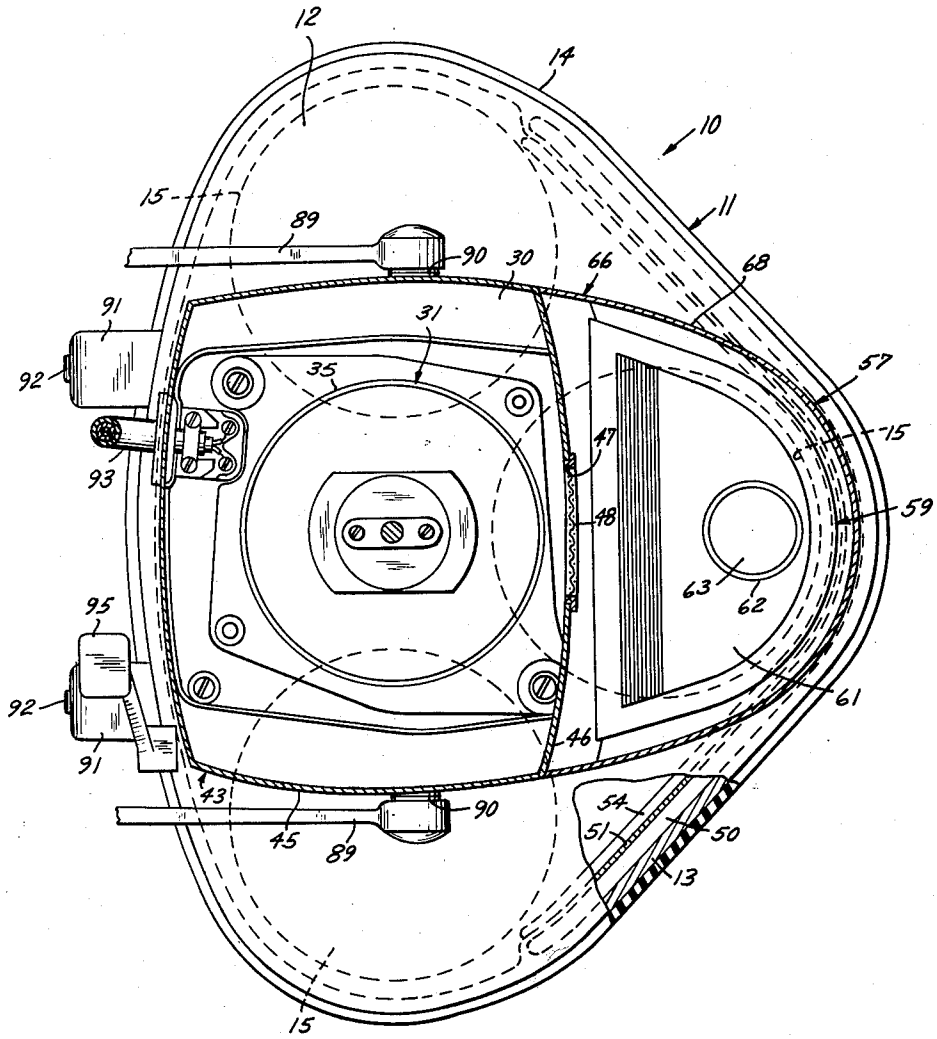
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SURFACE TREATING APPARATUS

Filed April 4, 1961 5 Sheets-Sheet 5

FIG. 5



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United States Patent Office 3,186,022 Patented June 1, 1965

3,186,022

SURFACE TREATING APPARATUS

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Claims priority, application Sweden, Apr. 9, 1960, 3,544/60
8 Claims. (Cl. 15—345)

This invention relates generally to a surface treating apparatus, and more particularly is directed to an improved surface treating apparatus capable of functioning as a floor polisher, scrubber, cleaner or sander.

An object of the present invention is to provide an improved surface treating apparatus of the described character having one or more surface treating members rotated by an electric drive motor which also operates a fan unit, and wherein the air under pressure exhausted from the fan unit is discharged, at least in part, toward the surface being treated so as to blow dust or other particles away from the rotated treating member, while the components of the apparatus are arranged so that either a filtering and dust collecting receptacle may be interposed between a suction passage opening adjacent the surface being treated and the inlet or suction side of the fan unit to remove dust or dirt from the surface being treated, or such filtering and dust collecting receptacle may be replaced by a dispenser for wax, cleaning liquid or other surface treating substance which is discharged onto the surface being treated through the suction passage.

Another object is to provide a surface treating apparatus of the described character having a compact arrangement of the components thereof when the apparatus is operated with either the filtering and dust collecting receptacle or the dispenser for treating substance installed thereon.

In accordance with an aspect of this invention, a surface treating apparatus comprises a downwardly opening base or hood from which one or more rotatable surface treating members project, a motor-fan unit mounted on top of the base and having an air inlet in a side thereof, a suction passage in the base opening at the bottom of the latter, connection means provided on the base adjacent the side of the motor-fan unit having the air inlet and communicating with the suction passage, such connection means being adapted to attach to the base either a filtering and dust collecting receptacle disposed in a removable housing defining a chamber between the suction passage and air inlet, or a dispenser for wax, cleaning liquid or other treating substance to be discharged therefrom through the suction passage.

In accordance with another aspect of this invention, the base of the surface treating apparatus is formed to define a downwardly open lower compartment from which the rotatable surface treating members project and an upper compartment defining the casing or housing for a fan or impeller rotated by an electric drive motor disposed in a housing mounted above the upper compartment of the base so that operation of the fan produces an air flow through the inlet opening provided in a side wall of the motor housing and then through the electric drive motor to cool the motor, and the suction passage opening at the periphery of the bottom of the base communicates with a tapered neck projecting from the top of the base adjacent the side wall of the motor housing and adapted either for attachment to a similar tapered neck on a container for wax, cleaning liquid or other treating substances discharged from the container through the suction passage, or for attachment to a similar tapered neck on a porous dust collecting receptacle disposed within a chamber defined by a removable cover and by the side wall of the motor housing having the air inlet opening therein.

In accordance with a further aspect of this invention, the upper compartment of the base defining the casing of the fan unit has discharge openings, at least some of which communicate with the lower compartment of the base to supply air under pressure thereto, and such air is exhausted downwardly from the lower compartment around the peripheries of the surface treating members to blow dust or other particles away from the latter.

The above, and other objects, features and advantages of the invention, will be apparent in the following detailed description of an illustrative embodiment thereof which is to be read in connection with the accompanying drawings forming a part hereof, and wherein:

FIG. 1 is a perspective view of a surface treating apparatus embodying this invention, and shown with its dust collecting assembly installed thereon;

FIG. 2 is a view similar to that of FIG. 1, but showing the surface treating apparatus with its dust collecting assembly replaced by a dispenser for wax, cleaning liquid or other surface treating substance;

FIG. 3 is an enlarged side elevational view, partly broken away and in vertical section, of the surface treating apparatus shown with its dust collecting assembly installed thereon as in FIG. 1;

FIG. 4 is a vertical sectional view of the surface treating apparatus, but with the dispenser for wax, cleaning liquid or other surface treating substance installed thereon as in FIG. 2; and

FIG. 5 is a horizontal sectional view taken along the line V—V on FIG. 3.

Referring to the drawings in detail, it will be seen that a surface treating apparatus embodying the present invention, and there generally identified by the reference numeral **10**, comprises a relatively broad and shallow base **11** of metal or suitably rigid plastic having a top wall **12** and a depending peripheral wall **13** which is preferably provided with a rubber or other elastic bumper strip **14** extending around its outer surface. The top wall **12** and peripheral wall **13** of base **11** define a downwardly opening hood having rotatable surface treating members, which may be pads of steel wool or lambs wool, or of abrading substances, such as, sandpaper, but which are shown as circular brushes **15**, projecting downwardly through the open bottom thereof. In the illustrated apparatus **10**, three circular surface treating brushes **15** are provided, as is apparent in FIG. 5, with two of the brushes being mounted side-by-side in the back portion of the hood or base **11** and the third brush being centrally mounted in the front portion of the hood or base, and the latter, accordingly, is conveniently given a generally triangular plan form configuration.

As is apparent in FIGS. 3 and 4, the rotatable mounting for each of the brushes **15** includes a pulley or sheave **16** rotatably mounted within the hood or base **11** on a ball bearing **17** or the like carried by an axle **18** depending from a boss **19** integral with top wall **12**. Each pulley **16** has a hollow hub **20** defining a downwardly opening recess which receives an insert member **21** having a downwardly facing hemisphere or ball **22**. The ball **22** seats in a similarly shaped socket **23** provided in the upper surface of the body **24** of the related brush **15**, and thus provides a ball and socket connection between each driving pulley **16** and the related brush **15** to permit slight rocking movements of the latter. A rotatable coupling is provided between each pulley and brush, for example, in the form of a projection **25** extending from the pulley **16** and received loosely between jaws or projections (not shown) on the body **24** of the brush.

Base **11** of apparatus **10** further has an endless flange **26** projecting upwardly from top wall **12** and a horizontal partition **27** extending thereacross near the base of the flange and encircled by the latter so that the partition

27 separates a downwardly opening lower compartment 28 defined within base 11, and which is coextensive with the peripheral wall 13 and houses the rotatable mountings and drive pulleys 16 for the brushes 15, from an upper compartment 29 disposed above partition 27 and confined by the upstanding flange 26 to the central rear portion of the base.

A mounting plate 30 of insulating material seats, at its outer periphery, on a shoulder provided at the inside of the upper edge portion of flange 26 and supports an electric drive motor 31 that includes a rotor 32 rotatable on a vertical motor shaft 33 within a stator 34 mounted in a motor casing 35. Plate 30 has a central opening which receives the lower end wall of motor casing 35 and the latter has a peripheral flange 36 seating on the inner peripheral edge portion of plate 30. Further, the lower end wall of motor casing 35 has openings 37 located adjacent its center to communicate with the chamber 29 which is otherwise closed, at its top, by the lower end wall of motor casing 35 and the mounting plate 30.

The shaft 33 of motor 31 projects downwardly from motor casing 35 through compartment 29 and through a central opening in partition 27 into the lower compartment 28, and a driving pulley or roller 38 (FIG. 4) is mounted on the lower end of shaft 33 and is in driving engagement with an endless belt 39 of rubber or other suitable resilient material which is under tension and passes around the peripheries of the pulleys 16 associated with the brushes 15. A fan or impeller 40, preferably of the centrifugal type, is fixed on motor shaft 33 within the upper compartment 29 which forms the housing of a fan unit. Screened air exhaust or discharge openings 41 are formed in the lateral and back portions of flange 26 (FIGS. 1, 2 and 3), while additional air discharge openings 42 are formed in partition 27 adjacent flange 26. Thus, when fan or impeller 40 is rotated by motor shaft 33, it creates a suction or vacuum adjacent the center of compartment 29 and a relatively high pressure adjacent the outer periphery of the latter so that air is drawn into compartment 29 through openings 37 and exhausted from compartment 29 partly through the openings 41 into the atmosphere, and partly through the openings 42 into the lower compartment 28.

The motor 31 is accommodated within a housing 43 having a top wall 44 and a depending peripheral side wall 45 which seats, at its lower edge, on the top edge of flange 26. The forwardly facing portion 46 of side wall 45 has an opening 47 disposed therein adjacent the top of motor housing 43 and provided with a screen or filter 48, while the upper portion of motor casing 45 is formed with openings 49 so that all of the air supplied to the fan unit must pass through the openings 47 and 49 and through the motor 31, for cooling the latter, prior to reaching the inlet openings 37 of compartment 29 housing the fan.

As is apparent in FIGS. 3 and 5, a suction passage 50 opens downwardly along the front portion of the periphery of base 11 and is preferably defined between the inner surface of peripheral wall 13 and a partition 51 which is spaced inwardly from the peripheral wall 13 and formed with a rearwardly directed top portion joined to the top wall 12, as by screws 52 (FIG. 3). The suction passage 50 communicates with connection means, for example, in the form of an erect, slightly tapered neck 53 projecting upwardly from top wall 12 of base 11 at a central location on the forward portion of the base.

A thin elongated brush 54 (FIGS. 3, 4 and 5) projects downwardly from the back surface of partition 51 along the length of the latter for engagement with the surface to be treated immediately in back of the bottom opening of suction passage 50. Further, an inwardly directed sealing plate or baffle 55 (FIGS. 3 and 4) projects inwardly from the back surface of partition 51 and from the inner surfaces of the side and back portions of peripheral wall 13 at a level immediately below the lower surfaces of the pulleys 16, and the sealing plate 55 is formed with a suitably selected pattern of openings 56 therein through which air can escape downwardly around the peripheries of brushes 15 from the lower compartment 28, as hereinafter described in detail.

The surface treating apparatus 10 is intended to be operated with either a dust collecting assembly 57 (FIGS. 1, 3 and 5) or a dispenser 58 for wax, cleaning liquid or other treating substance (FIGS. 2 and 4) mounted on base 11 in front of the motor housing 43.

The dust collecting assembly 57 includes a filtering and dust collecting receptacle or bag 59 preferably having a soft, porous paper side wall provided with a longitudinal series of peripheral pleats, a base or end wall 60 at the end of the pleated side wall which is uppermost in the operating position and, at the other end of the bag, an end wall or mounting plate 61 of cardboard, light sheet metal or the like provided with a central, slightly tapering collar 62 projecting into the bag 59 and adapted to telescope over the neck 53 of base 11. Thus, neck 53 and collar 62 form cooperatively engageable connecting means for attaching the bag 59 to base 11 with the interior of the bag in communication with suction passage 50. The inner end of collar 62 is closed by a rubber flap valve 63 which opens into the bag when subjected to a suction or vacuum in the latter. As is apparent in FIG. 3, the portion 64 of the pleated side wall of bag 59 nearest to the end or mounting plate 61 has uniform cross-sections, while the remainder 65 of the side wall of the bag increases progressively in its cross-sectional area toward the uppermost end wall 60.

A cover 66 is also included in the dust collecting assembly 57 and has a top wall 67 and a curving side wall 68 depending from the front and lateral edge portions of top wall 67 and seating, at its lower edge, on top wall 12 of base 11. The cover 66, when in its operative position, as shown in FIGS. 1 and 3, cooperate with the forwardly facing portion 46 of side wall 45 of the motor housing 43 to define a compartment 69 accommodating the dust collecting bag or receptacle 59 and communicating with the air inlet opening 47 of housing 43. The cover 66 is releasably held in its illustrated operative position by a latch 70, which may be in the form of a knob rotatably mounted on the top wall 44 of motor housing 43 and having a nose 71 adapted to overlie a rim 72 extending along the back edge of top wall 67 of cover 66. Thus, knob 70 normally retains cover 66 on base 11 where it forms an extension of the motor housing 43, as is apparent in FIG. 1, but the turning of knob 70 toward one side or the other, as in FIG. 4, withdraws the nose 71 from contact with the rim 72 and thereby permits removal of cover 66 preparatory to disengagement of the collar 62 of dust collecting bag or receptacle 59 from neck 53.

The dispenser 58 for wax, cleaning liquid or other treating substance includes a sheet metal or plastic tank or container 73 formed with a bottom wall 74 that is inclined downwardly towards the center and having a slightly tapered collar 75 concentric with the center of bottom wall 74 and depending from the underside of the latter to fit on the neck 53 of base 11 and thereby cooperate with neck 53 to form the connecting means by which the tank or container 73 is releasably attached to the base. The bottom 74 of tank 73 has a central opening 76 from which there extends a flexible tube 77 preferably formed of rubber or light plastic. When the dispenser 58 is to be mounted on the base 11 in place of the dust collecting assembly 57, the tube 57 is thrust through neck 53 and down suction passage 50, as in FIG. 4, with the flexible tube 77 bending suitably to conform to the shape of passage 50.

The discharge opening 76 at the bottom of tank 73 is normally closed by a needle valve 78 which extends slidably through a bearing 59 in the top wall 80 of the tank. A helical compression spring 81 is interposed be-

tween bearing 79 and an abutment 82 fixed on needle valve 78 to yieldably urge the latter downwardly to a position where the lower pointed end of needle valve 78 closes the discharge opening 76. The needle valve 78 may be pulled upwardly against the force of spring 81 to open the discharge opening 76 to any desired extent by means of a pull chain 83 which extends from a ring 84 at the upper end of needle valve 78 to a ring 85 (FIG. 2) engageable with the handle 86 by which the surface treating apparatus 10 is guided or manipulated during its operation. Polishing wax, cleaning liquid or other treating substance may be poured into tank or container 73 through an opening which is provided in the top wall 80 thereof and normally closed by a cap or cover 87. Preferably the tank 73 is vented during the discharge of treating substance therefrom, for example, by a longitudinal groove 78*a* formed in the upper portion of needle valve 78 so that, when the latter is raised, the upper end of groove 78*a*, which is normally situated in bearing 79, is disposed above the latter while the lower end of groove 78*a* still extends below the bearing for communication with the space in tank 73 above the liquid treating substance.

The handles 86 by which the apparatus 10 may be manipulated extend laterally from the upper or free end of an elongated rod 88 which is suitably connected to the base 11, for example, by a bail or fork 89 secured at its center to the lower end of rod 88 and having its opposite ends pivoted on pins 90 projecting from the lateral portions of flange 26 of base 11. Further, the base 11 may have a pair of downwardly and rearwardly opening housings 91 projecting from the back thereof with wheels 92 being rotatably mounted in housing 91 so as to be normally raised from the surface being treated when the base is horizontally disposed and supported by the rotated brushes 15. However, the wheels 92 are engageable with such surface to provide a wheeled support for the apparatus 10 when the latter is rocked rearwardly during travel between the locations of storage and use.

Electric current for operating the drive motor 31 may be supplied through conductors housed in a flexible cable 93 and connected, at one end, to a conventional plug 94 and, at its other end, to a switch (not shown) in motor housing 43 which is adapted to be controlled by an externally disposed foot operated pedal 95 (FIGS. 3, 4 and 5). The elongated rod 88 carrying the manipulating handles 86 may be conveniently provided with hooks 96 or other holders on which the flexible cable 93 can be coiled during storage of the apparatus, as in FIGS. 1 and 2.

When the surface treating apparatus 10 is operated with the dust collecting assembly 57 installed on the base 11, brushes 15 are rotated by motor 31 through drive pulley or roller 38, belt 39 and pulleys 16 so as to polish or buff the floor or other surface to be treated. Simultaneously, motor 31 drives fan or impeller 40 so that the suction or vacuum thereby created adjacent the center of compartment 29 produces an air flow upwardly through suction passage 50 for removing dust or other particles from the surface being treated in advance of the brush 54 which loosens the dust or other particles. The dust laden air flow passes from suction passage 50 through neck 53 and the suction opened flap valve 63 into the interior of porous bag 59, and the air flow then passes through the porous side wall of bag 59 which filters the dust therefrom so that the latter is collected in the receptacle or bag 59. After passing through the porous side wall of bag or receptacle 59, the air is drawn from compartment 69 through the screen or filter 48 in the opening 47 into the housing 43 containing the motor 31, and then passes through the openings 49 and 37 at the upper and lower ends, respectively, of the motor casing 35 for cooling the motor prior to entering the compartment 29 forming the housing or of the fan 40. The air under pressure discharged from compartment 29 is partly exhausted to the atmosphere through the screened discharge openings 41 and partly exhausted through openings 42 into the lower compartment 28 of base 11 to create a relatively increased pressure in compartment 28 above the pulleys 16 and the sealing plate or baffle 55. Such relatively increased pressure produces downwardly directed air flows through the openings 56 of baffle 55 adjacent the peripheries of brushes 15 to blow dust or other particles on the surface being treated away from the operative areas of the brushes.

On the other hand, when the dust collecting assembly 57 is replaced by the dispenser 58 for wax, cleaning liquid or other treating substance, as previously described herein, such treating substance is discharged, at will, through tube 77 passing downwardly in passage 50 and onto the surface being treated in advance of the brushes 15 rotated by operation of motor 31. During such use of the apparatus 10, air is drawn from the atmosphere into housing 43 through the screened opening 47, and once again passes through the motor 31 for cooling the latter prior to entering the housing or compartment 29 of the fan 40. Further, as previously described, the operation of the fan causes a part of the air exhausted under pressure from compartment 29 to be discharged downwardly through the openings 56 in sealing plate or baffle 55 near the peripheries of the brushes 15, thereby to blow away dust or other particles from the operative areas of the brushes which polish or buff the surface being treated or scrub the latter, depending upon the treating substance discharged from the tank 73 of dispenser 58.

From the foregoing description of an illustrative embodiment of this invention, it will be apparent that a surface treating apparatus has been provided which is constructed and arranged so as to be conveniently adapted to perform multiple surface treating operations. Further, the interchangeable dust collecting assembly 57 and dispenser 58 are adapted for mounting on the base 11 next to the motor housing 43 to provide a compact arrangement in either case.

Although an illustrative embodiment of the invention has been described in detail herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to that precise embodiment, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of the invention, except as defined in the appended claims.

What is claimed is:

1. In a surface treating apparatus of the described character; the combination of a downwardly opening base, rotatable surface treating means mounted within said base and projecting downwardly from the latter for contact with a surface to be treated, a motor-fan unit on said base having air inlet means at a side of said unit and air outlet means, said motor-fan unit being operative to drive said surface treating means and to produce a decreased pressure at said air inlet means for inducing an air flow into the latter, said base having a suction passage opening at the bottom of the base, connection means on said base located adjacent said side of the motor-fan unit and communicating with said suction passage, dust collecting means including a porous receptacle having a mouth engaged with said connection means and a cover removably mounted on said base to define a chamber enclosing said receptacle and communicating with said air inlet means of the motor-fan unit so that the decreased pressure produced at the air inlet means causes air flow into said suction passage and through said porous receptacle in the compartment with dust entrained by said air flow being filtered and collected in said porous receptacle, and said air outlet means of the motor-fan unit opening, at least in part, into said base so that, upon operation of said motor-fan unit, air under pressure exhausted from the latter is discharged downwardly around said surface treating means to blow dust away from the latter.

2. In a surface treating apparatus of the described

character; the combination of a base having a downwardly opening lower compartment and an upper compartment separated by a partition extending across the latter, rotatable surface treating means mounted within said lower compartment and projecting downwardly from the latter for contact with a surface to be treated, a motor housing mounted in said upper compartment and containing an electric drive motor having a shaft extending downwardly through said upper and lower compartments, transmission means in said lower compartment to drive said surface treating means from said shaft, a fan on said shaft in said upper compartment, said upper compartment having air outlet means opening, at least in part, through said partition into said lower compartment, air inlet means for supplying air to said upper compartment and including an opening in a side wall of said motor housing, said base further having means defining a suction passage opening downwardly along a portion of the lower edge of said base, said base further having connection means communicating with said suction passage and opening at the top of said base adjacent said side wall of the motor housing, a removable cover mounted on said base to enclose a chamber into which said opening and said connection means both open, and a removable, porous dust collecting receptacle disposed in said chamber and having a mouth releasably engaged with said connection means so that, upon operation of said motor, rotating movement is imparted to said surface treating means, and said fan draws air in through said suction passage, to collect dust entrained by the air in said receptacle, and exhausts air into said lower compartment for downward escape from the latter around said surface treating means.

3. In a surface treating apparatus of the described character; the combination as in claim 2, wherein said motor has a casing within said motor housing, and said casing has openings at its upper and lower ends included in said air inlet means and communicating with the interior of said motor housing and with said upper compartment, respectively, so that all of the air drawn into said upper compartment by said fan must first pass through said casing of the motor to cool the latter.

4. In a surface treating apparatus of the described character; the combination as in claim 2, wherein said air outlet means also open from said upper compartment directly into the surrounding atmosphere so that a portion of the air exhausted from said upper compartment passes directly into the atmosphere.

5. In a surface treating apparatus of the described character; the combination as in claim 2, wherein said dust collecting receptacle has its mouth adjacent the bottom of the receptacle, and the latter further includes valve means normally closing said mouth and being opened by air flow through the latter.

6. In a surface treating apparatus of the described character; the combination of a base having a top wall and a depending peripheral wall defining a downwardly opening hood, surface treating members rotatably mounted in said hood and projecting downwardly from the latter for contact with a surface to be treated, means defining a housing on a portion of said top wall of the base, a fan rotatable in said housing above said portion of the top wall, a drive motor in said housing above said fan and connected to the latter and to said surface treating members for effecting simultaneous rotation thereof, said housing having air inlet means including an opening in a side of the housing through which air is drawn in by the fan during rotation of the latter, said housing further having air outlet means through which air is exhausted from the housing upon rotation of the fan, said base including means defining a suction passage opening downwardly along a portion of the lower edge of said peripheral wall and opening upwardly at said top wall adjacent said side of the housing, a removable cover enclosing a chamber alongside said housing and into which said opening of the air inlet means and said suction passage both open so that the air drawn in by the fan passes successively through said suction passage and said chamber, and a removable porous dust collecting receptacle disposed in said chamber and having a mouth engaged with said suction passage to collect dust entrained by said air drawn in by the fan, said air outlet means including openings in said portion of the top wall of the base so that part of the air exhausted from said housing upon rotation of the fan is directed into said hood, and baffle means in said hood extending around said surface treating members so that air pressure builds up in said hood above said baffle means, said baffle means having openings therein through which air escapes forcefully in response to the build-up of air pressure so as to blow dust away from said surface treating members.

7. In combined floor polishing and suction cleaning apparatus, the combination of a unit adapted to be moved over a surface, rotatable brush means at the underside of the unit and projecting downward therefrom for contact with the surface, a motor mounted on the unit at a level which is above and in the general vicinity of the brush means, a fan having an inlet and outlet for air, means including the motor for driving the brush means and the fan, the unit having an upwardly extending suction passage provided with suction inlet means for air at one level at the vicinity of the surface and air outlet means at a higher level, the suction passage communicating with an opening in a wall of the unit, dust collecting means including a removable porous dust bag having an air inlet connected to the air outlet means of the suction passage, the motor being disposed at a first zone of the unit and the dust bag being disposed at a second zone of the unit adjacent to and laterally removed from the first zone, the dust bag extending upward alongside the motor, the unit comprising structure providing a housing for both the motor and the dust bag, the housing structure including a partition to provide separate compartments for the motor and dust bag, respectively, the air outlet means of the suction passage being accessible within the dust bag compartment which is defined in part by the wall having the opening in communication with the suction passage, the partition having an opening to enable air passing outwardly through the porous dust bag to flow from the dust bag compartment, the inlet of the fan being in communication with the opening in the partition to induce upward flow of air through the suction passage into the dust bag, the housing structure including a removable cover for the dust bag compartment, the motor compartment being defined in part by an apertured wall of the housing structure which is in communication with the fan outlet for discharging a part of the air exteriorly of the unit in a first path of flow, and the unit including structure providing a second path of flow for air from the fan outlet in a downward direction to the underside of the unit at the vicinity of the brush means.

8. In a surface treating apparatus of the described character; the combination of a base having a top wall and a depending peripheral wall defining a downwardly opening hood, surface treating members rotatably mounted in said hood and projecting downwardly from the latter for contact with a surface to be treated, means defining a housing on a portion of said top wall of the base, a fan rotatable in said housing above said portion of the top wall, a drive motor in said housing above said fan and connected to the latter and to said surface treating members for effecting simultaneous rotation thereof, said housing having air inlet means including an opening in a side of the housing through which air is drawn in by the fan during rotation of the latter, said housing further having air outlet means through which air is exhausted from the housing upon rotation of the fan, said base including means defining a suction passage opening downwardly along a portion of the lower edge of said peripheral wall and opening upwardly at said top wall adjacent said side of the housing, a removable cover enclosing a chamber alongside said housing and into which said opening of

the air inlet means and said suction passage both open so that the air drawn in by the fan passes successively through said suction passage and said chamber, a removable porous dust collecting receptacle disposed in said chamber and having a mouth engaged with said suction passage to collect dust entrained by said air drawn in by the fan, a neck projecting upwardly from said top wall of the base and forming an extension of said suction passage, and wherein said mouth of the dust collecting receptacle has a collar telescopically engaged with said neck, said dust collecting receptacle having a rigid mounting plate from which said collar extends and a porous pleated paper side wall extending upwardly from said mounting plate, and said side wall of the receptacle having uniform cross-sections in the portion adjacent said mounting plate and increasing progressively in cross-sectional area toward the opposite, normally upper end of the receptacle.

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