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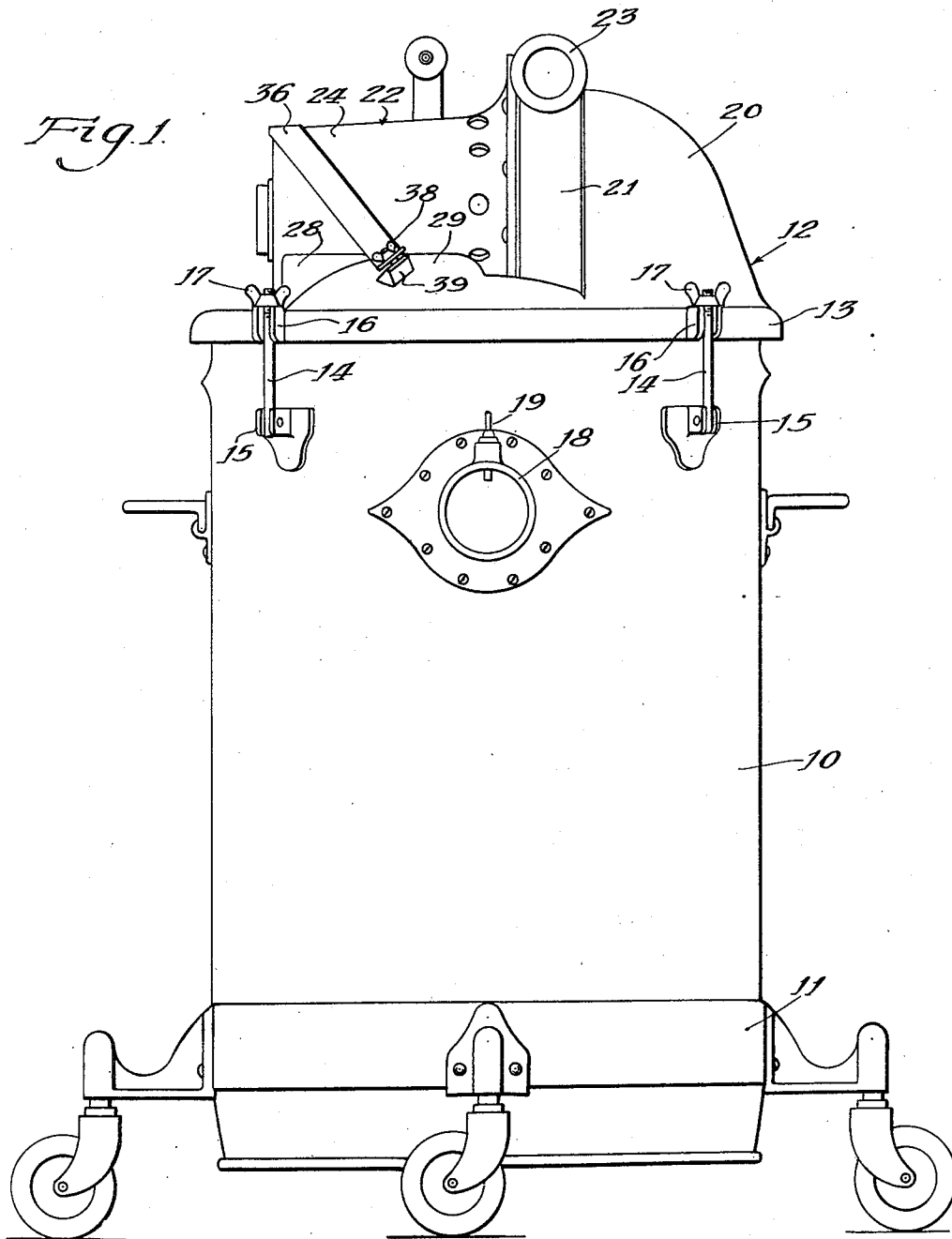
J. P. JASON

2,390,101

SUCTION CLEANING APPARATUS

Filed Nov. 10, 1943

2 Sheets-Sheet 1



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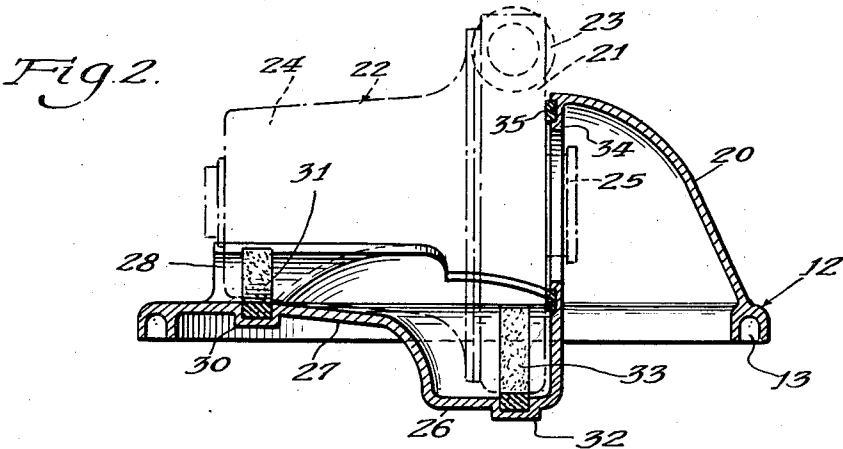
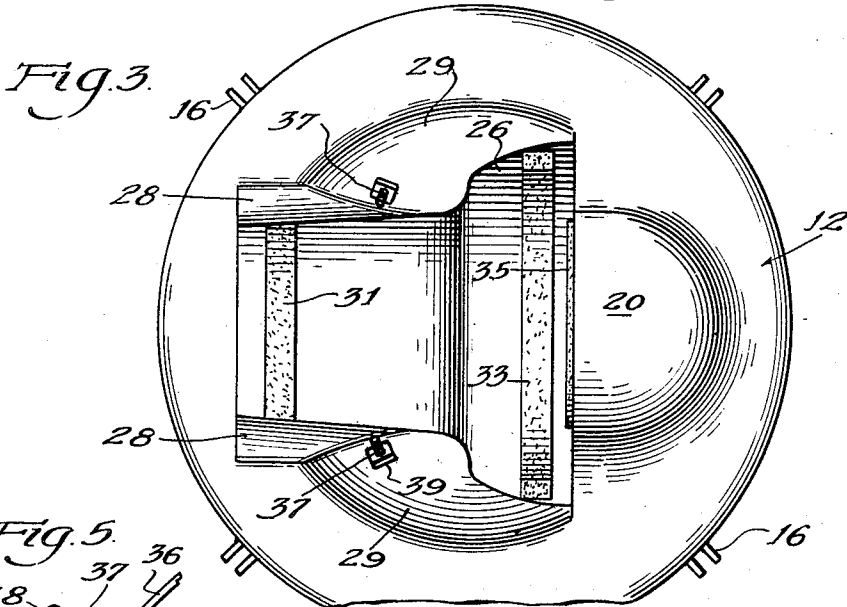
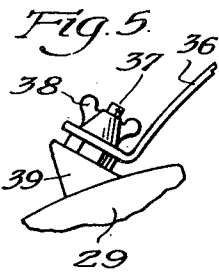
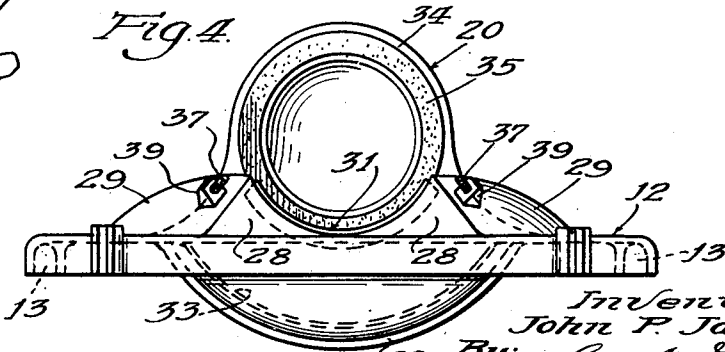
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SUCTION CLEANING APPARATUS

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3 Claims. (Cl. 230—132)

This invention relates to improvements in suction cleaners of the class wherein a wheeled supported heavy dust precipitation tank is employed in combination with a separable hand portable suction cleaner mounted on the cover of the tank.

Devices of the foregoing class have previously been employed which generally comprised the horizontal positioning of the portable suction cleaner above the tank cover on upwardly extending mounting means and the employment of a separate elbow pipe, one end of which was connected to the suction cleaner inlet and the other extended into the tank through an opening in the cover. Such arrangements are difficult to assemble and demount since they are generally handled by unskilled persons, the operation of the apparatus is subject to considerable vibration, and the employment of a relatively narrow connecting elbow with its abrupt turn entails added friction and power loss and attendant inefficiency.

It is therefore an object of the present invention to provide a new and improved cover for a tank or heavy dust precipitation receptacle of the class described adapted to seat a separable hand portable suction cleaner and to provide such cover with an integrally formed enlarged path or conduit rising therefrom and terminating with an orifice opening to a vertical plane, whereby the suction cleaner may be quickly and conveniently mounted horizontally thereon and its suction inlet simultaneously connected with the tank through the cover without the necessity for the employment and engagement of a separate connecting elbow. Due to the construction and arrangement of parts the connecting path may be enlarged and the change in direction less abrupt with attendant decrease in friction and power loss, and the compactness in which the parts are associated and the reduction in number of parts together with the lowering of the center of gravity of the mounted suction unit permits substantial elimination of vibration in operation.

Other objects and advantages relating to the details of construction and economies thereof will be apparent from a consideration of the following specification and drawings, wherein:

Fig. 1 is a side elevational view of suction cleaning apparatus constructed in accordance with the present invention.

Fig. 2 is a vertical section of the cover of the assembly shown in Fig. 1, with hand portable suction unit shown in dotted lines engaged thereon.

Fig. 3 is a fragmentary plan view of my improved cover.

Fig. 4 is an elevation of my improved cover

viewed in a direction facing the orifice of the connection conduit.

Fig. 5 is a fragmentary detail view of a terminal for engaging the end of a retaining band which passes about the motor housing of the separable suction cleaner unit.

Referring to the drawings, the reference numeral 10 indicates a heavy dust particle precipitation vessel or tank supported on a wheeled mount generally indicated as 11. The tank is provided with a separable cover, generally indicated as 12, the cover being provided on its under side with an annular recessed rim 13 which seats on the lip of the tank. The cover is engaged to the tank by means of the bolts 14 pivoted to the tank wall at 15, the bolts being extendable into the slotted lugs 16 on the cover and the cover clamped in place by means of wing units 17. The tank is provided intermediate its height with a suction inlet 18 having an attachment fixture 19 to which a suitable suction hose, not shown, may be connected.

In the operation of the apparatus dust laden air is drawn into the tank 10 through the inlet 18 and the heavy dust particles are precipitated out and move downwardly and are retained in the tank, whereas the air and fine dust particles are drawn upwardly and outwardly through the enlarged cover conduit 20 and the fan casing 21 of the hand portable suction unit, generally indicated as 22, to exhaust through the tangential fan casing outlet 23. A suitable dust bag or muffler, not shown, may be connected to the outlet 23.

The suction unit 22 is a conventional hand portable blower and suction cleaner unit and may be and is of a type intended to be separately employed for such uses when not employed in the illustrated arrangement of the present invention. It comprises in general a motor encased in the housing 24 and a fan connected to the motor shaft enclosed in the fan housing 21. The fan housing is provided with a tangential outlet 23 and an axial inlet 25.

In the association of separately hand portable suction units with tanks of the class herein contemplated, it is preferable that the suction unit be mounted horizontally so as to prevent leakage or drainage of lubrication from the motor bearings and for the reason that such units are otherwise primarily constructed to operate and wear best in such general position. However, as previously indicated herein, mounting of the unit on the tank cover involves problems of proper association and support and connecting engagement

from the tank cover to the fan casing inlet which opens to a vertical plane.

Thus for the purpose of horizontally mounting the suction unit 22 on the cover 12, I form the cover with a concave depression or seat 26 generally conforming to a portion of the circumferential contour and transversely slightly longer than the thickness of the fan casing of the unit 22, and may further provide a contiguous longitudinally inclined or converging concavity at 27 for seating a portion of the motor casing.

For the purpose of providing better lateral support for the seated unit 22 I provide externally filleted and internally concave risers 28 for seating and laterally supporting the motor casing 24, and I may further provide the cover with externally convex elevated portions 29 extending from the lateral end portions of the major depression 26 to merging relationship with the fillets of the risers 28. For the purpose of aiding in damping vibration the motor casing seat may be provided with a groove 30 seating a gasket 31 and the fan casing depression may be provided with a similar groove 32 seating a gasket 33. It will be understood that the lateral supporting risers or units 28 and 29 may be otherwise externally contoured. Also the grooves 30 and 32 and their gaskets 31 and 33 respectively may be of other form, for example sectional, without necessity for further illustration.

Rising from adjacent to, and between the periphery of the cover 12 and the groove 32, is the integral elbow or conduit 20, the conduit terminating above the cover in an inward annular flange 34, the flange extending vertically in a plane normal to the longitudinal axis of the composite seat provided for the unit 22. The flange 34 is also provided with a suitable annular groove seating a gasket 35 against which the outer end wall of the fan casing 21 may bear when seated on the cover 12.

In engaging the unit 22 to the cover 12, the unit is lowered into the composite seat formed by the depression 26 and the adjacent portions 28, 29, etc., in a manner whereby the fan conduit 25 clears the flange 34, and thereafter the unit moved longitudinally, by provision of the enlarged width of the groove 26, as viewed in the section of Fig. 2, until the end wall of the fan casing abuts the gasket 35 with the fan casing inlet 25 extended with the cover conduit 20. The unit 22 is then secured in position by means of a strap or band 36 extended obliquely about the motor casing 24 to partially engage the end portion thereof, and terminally anchored on an intermediate cover portion as for example by means of the bolts 37 and wing units 38 or the lugs 39. Thus by means of the single strap the unit 22 may be firmly, quickly and conveniently secured in position on its seat in the cover 12 and the suction inlet 25 of the fan casing secured into communication with the tank 10 through the integral conduit 20 on the cover 12. It will be noted that conduit 20 may thus be formed with an enlarged cross-section relative to the fan suction inlet 25 and of gradual direction change, the communicating aperture between the cover 12 and the tank 20 being also relatively large and thus in operation there is a minimum of frictional loss with enhanced motor efficiency.

I claim as my invention:

1. A cover or lid for a portable suction cleaning apparatus, said cover being adapted for re-

movable application to a settling casing or tank having a suction inlet and being further adapted to horizontally support in operative association therewith and with said tank a portable suction producing mechanism of the class comprising a motor and encased fan having an axial suction inlet, said cover comprising an integrally formed elbow conduit rising therefrom and terminating in an annular flange extending in a vertical plane inwardly of the periphery of the cover, said flange being adapted to provide an abutment for said fan casing and to embrace its suction inlet to provide an enlarged communicating path thereto from said tank, a strap means for detachably connecting said suction producing mechanism to said cover by moving same downwardly against said cover and then axially to engage the suction inlet portion of the fan against the flange defining the outlet opening of said conduit.

2. A cover or lid for a portable suction cleaning apparatus, said cover being adapted for removable application to a settling casing or tank having a suction inlet and being further adapted to horizontally support in operative association therewith and with said tank a portable suction producing mechanism of the class comprising a motor and encased fan having an axial suction inlet, said cover comprising concave seat means for horizontally positioning and laterally supporting said suction producing mechanism thereon including a surface depressed portion adapted to receive a portion of the fan casing and further comprising an integrally formed elbow conduit rising therefrom and terminating in an annular flange extending in a vertical plane inwardly of the periphery of the cover, said flange being adapted to provide an abutment for said fan casing and to embrace its suction inlet to provide an enlarged communicating path thereto from said tank, and strap means for detachably connecting said portable suction producing mechanism to said cover by moving same downwardly against said concave seat means and then laterally to bring the inlet portion of the fan into seal-tight registry with the annular flange defining the outlet opening of said conduit.

3. A cover or lid for a portable suction cleaning apparatus of the class described, means on said cover for seating and laterally supporting a portable suction producing mechanism of the class comprising a motor having an encased fan of relatively larger diameter provided with an axial suction inlet, said seating means including a pocket formed in said cover adapted to seat a portion of said fan casing, an integrally formed elbow conduit rising from the cover, the base of the conduit extending from adjacent the periphery of the cover to said fan casing pocket, said conduit terminating in an annular flange extending above and adjacent to the end of said pocket and opening thereto in a vertical plane, said flange being adapted to provide an abutment for said fan casing and to embrace the suction inlet thereof to provide a communicating path through the cover, and strap means on said cover for retaining said suction producing mechanism in detachable seated engagement thereon with its fan casing in abutment with the conduit flange.

JOHN P. JASON.