

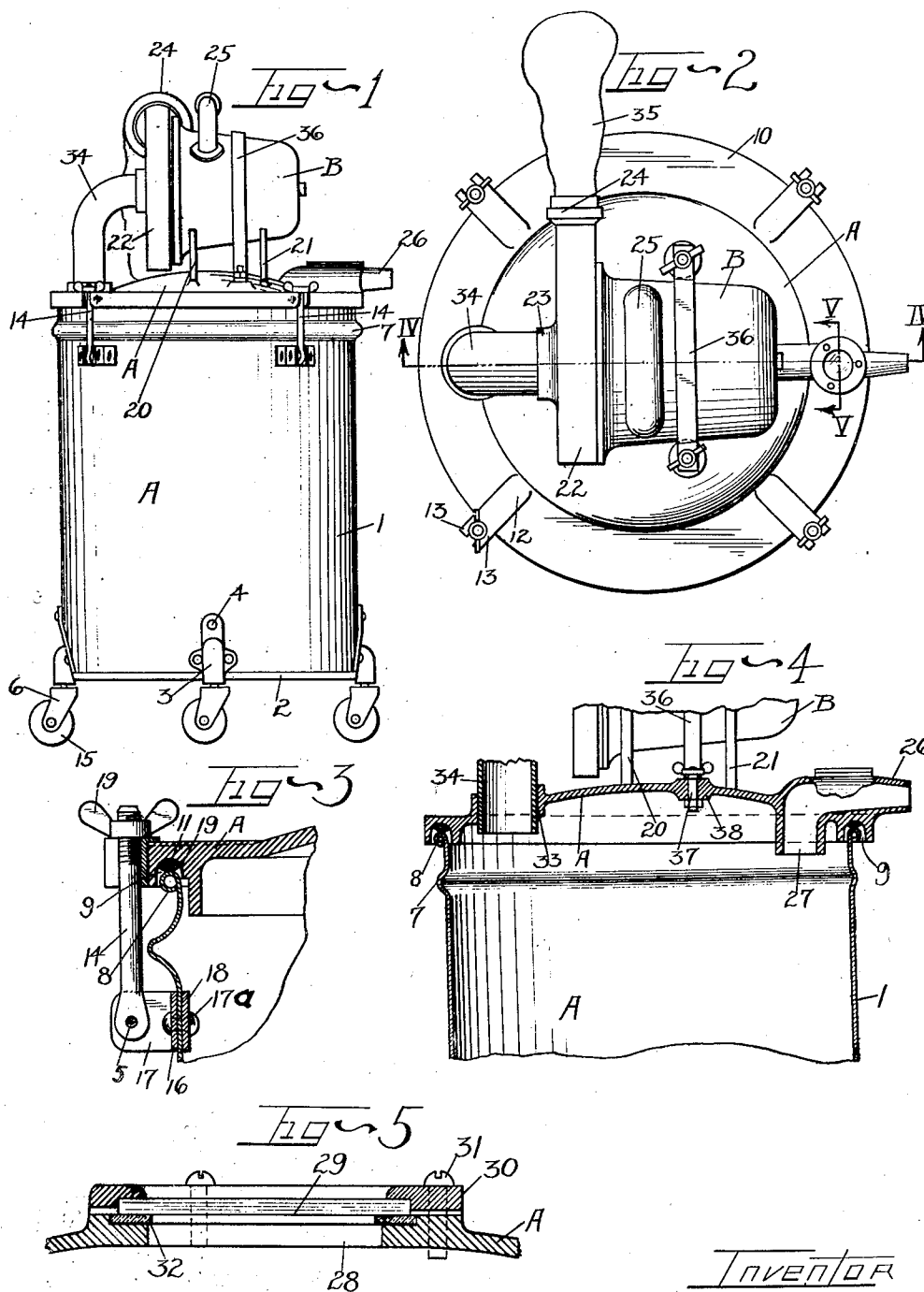
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PORTABLE SUCTION CLEANER

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PORTABLE SUCTION CLEANER

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This invention relates to a portable suction cleaner and more particularly to a wheel supported portable tank with a suction producing mechanism or device on the cover, whereby the cleaner may be readily rolled or wheeled from place to place for use.

An object of the invention is to provide a portable suction cleaner which may be readily wheeled from place to place while in use.

Another object of the invention is to provide a large capacity portable suction cleaner including a tank with a suction producing mechanism or device so associated with the tank that the suction stream passes through the tank to the suction producing mechanism or device for precipitating heavy particles in the tank and thus keeping away such particles from the suction producing mechanism or device for prolonging the usefulness and life of the latter device.

A further object of the invention is to provide a wheel supported suction cleaner including a tank with a suction producing mechanism or device on the cover of the tank and a suction inlet for a hose connection with the suction producing mechanism or device so arranged on the cover as to offset any tendency of the cleaner to tip over when the same is pulled along by the hose.

A still further object of the invention is to provide a wheel supported portable suction cleaner with a tank of large capacity and a suction producing mechanism or device on the cover of the tank and with the parts so arranged that the suction stream passes through the tank to the suction producing mechanism or device. Every particle which is precipitated in the tank is kept away from the suction producing mechanism or device. The suction producing mechanism or device is removably associated with the cover for removal therefrom to use as a blower or suction mechanism if desired.

A yet further object of the invention is to provide a wheel supported portable suction cleaner including a tank with the suction producing mechanism or device supported on the cover of the tank outwardly of the same.

The above, other and further objects of the invention will be apparent from the follow-

ing description, accompanying drawing, and appended claims.

According to the invention, a wheel supported tank is provided with a cover on which is carried the suction producing mechanism or device which is in the form of an electrically driven suction fan. The cover is provided with a suction line inlet discharging into the interior of the tank and a connection passes from the interior of the tank to the suction side of the fan, whereby dirt laden air is drawn through the tank precipitating heavy particles in the tank, and keeping the same away from the fan.

An embodiment of the invention is illustrated in the accompanying drawing and the views thereof are as follows:

Figure 1 is a side elevational view of a suction cleaner embodying the present invention.

Figure 2 is an enlarged top plan view of the mechanism of Figure 1.

Figure 3 is an enlarged fragmental sectional view through a portion of the upper margin of the tank and the portion of the cover, showing one means for securing the cover to the tank.

Figure 4 is a fragmental vertical sectional view through the illustrated form of apparatus.

Figure 5 is an enlarged sectional view taken substantially on line V—V of Figure 2.

The drawing will now be explained:

The form of apparatus chosen to exemplify the present invention includes a cylindrical tank 1 having a bottom 2. The lower end of the tank adjacent the bottom is inclined inwardly for affording strength to the same.

A plurality of brackets 3 are secured to the lower end of the tank 1 by means of rivets 4 or similar attaching means. Rollers or wheels 5 are carried by swivel members 6 arranged in the brackets 3.

The upper end of the tank is provided with reinforcing means, shown in the present instance as consisting of bulge 7.

The upper end of the tank 1 is illustrated as formed with a bead 8 for making a smooth margin for the tank.

A removable cover A is provided and is

made preferably from aluminum for the sake of lightness.

The cover A has an annular depression 9 formed in the under surface of the flange 10 for fitting over the bead 8 of the tank body 1.

A gasket 11 of suitable material is inserted in the groove 9 for making an airtight joint between the cover A and the tank 1.

The flange 10 of the cover A is provided at intervals in its circumference with spaced members 12, each having a pair of spaced ears 13 formed integrally with the same. The members 12 and the spaced ears 13 form attaching lugs for securing the cover A to the tank body 1.

Bolts 14 are pivoted at 15 to attaching brackets 16, which brackets have outstanding ears 17 for the ends of the bolts 14. The brackets 16 are riveted or otherwise secured to the tank body 1 by rivets 17a passing through suitable openings in the brackets 16 and the body 1 and also through reinforcing straps 18 against the inner surface of the tank body 1.

There are four such bolts 14 shown.

The free ends of the bolts are threaded and every bolt carries a wing nut 19 to be tightened against the ears 13 of the members 12 when the cover A is applied to the body 1.

The cover A is provided centrally thereof with upstanding lugs 20 and 21, the upper ends of which are shaped to removably receive an electrically driven suction producing mechanism or device B.

The suction producing mechanism or device illustrated includes a motor compartment and a fan casing 22 within which is a fan (not shown) driven from the motor within the motor casing. The fan casing 22 has a suction inlet 23 at the center of the casing and tangential exhaust port 24.

A handle 25 is formed on the motor casing whereby the suction producing mechanism or device B may be carried when removed from the cover A or which serves as means for guiding the complete suction producing mechanism or device and in moving it from place to place.

The cover A is provided forwardly of the end of the suction producing mechanism or device B remote from the fan casing 22 with an inlet nozzle comprising, in the present instance, a tapered end 26 which diverges from the entrance thereof and a downwardly turned discharge end 27. The nozzle is provided also with an aperture 28 which normally is closed by a glass plate 29 held in position by a ring 30 secured by screws 31. A resilient gasket 32 is interposed between the underside of the glass 29 and the wall about the aperture 28. This opening is provided so that the operator may observe the nature of the incoming suction stream.

The cover A is provided with a horizontally

extending flange 33 defining an opening through the cover. This is disposed in line with the axis of the inlet nozzle and on the opposite side of the cover from the nozzle.

An elbow conduit 34 enters the circular flange 33 and communicates with the suction inlet port 23 of the suction producing mechanism or device B.

It will be observed that the suction stream enters the top of the tank at a point which is diametrically opposite to the outlet connection to the suction side of the suction producing mechanism or device B so that the suction stream will travel a considerable distance from the inlet nozzle to the outlet conduit 34, thus allowing precipitation of all particles except the suspended dust.

A dust bag 35 is connected to the outlet port 24 in the usual manner and the air discharged through the outlet port 24 carrying the suspended dust passes through the bag, depositing the dust in the bag for removal as desired.

A suction hose (not shown) is connected to the end 26 of the inlet nozzle and is useful in pulling the cleaner from place to place while in use.

The suction producing mechanism or device B is removably supported on the lugs 20 and 21 by being placed thereon and held in position by a strap 36 which passes over the suction producing mechanism or device and has its ends removably fastened to bolts 37 passing through apertures in enlarged bosses 38 of the cover A.

A cleaner made in accordance with the present invention is especially useful in large buildings, such as factories, warehouses, and the like, and is also very useful in cleaning furnaces, as the tank 1 is of relatively large capacity and the suction producing mechanism or device B is also of sufficient capacity to remove clinkers, cinders and the like from the furnaces. Clinkers, ashes, and other large particles removed from a furnace, for instance, would be drawn into the tank through the inlet nozzle 26, and because of the fact that this nozzle opens directly into the tank and not into the suction producing mechanism, such large particles would, because the volume of the incoming air is increased, allow such heavy particles to fall to the bottom of the tank as such expansion of the incoming air stream loses the power to carry the large particles in suspension, whereby the air and whatever dust there may be in it then escapes through the conduit 34 to the suction mechanism, then to the dust bag 35.

The arrangement of the suction producing mechanism or device and the cover of the tank or container 1 in relation to the nozzle 26 is such that, whenever the cleaner is moved about by means of the hose, the suction producing mechanism or device will counteract

any tendency to tip over the cleaner, due to the pull on the hose. This is an important feature, especially when an apparatus of this sort is used to clear large surfaces and the operator has to move his hose a considerable distance to pick up all of the dirt from such surface.

The operation of the motor in the suction producing mechanism or device is controlled in any well known manner.

It is a further advantage to pass the suction current through the tank and deliver the suction current to the tank near the upper end thereof and also withdraw the same from the tank near the upper end thereof, as such action allows ready precipitation of the heavy particles so that no heavy particles of any character whatsoever reach the fan to destroy or damage the same and also keeps these particles out of the dust bag.

The cover A may be readily applied to and removed from the tank 1 by releasing of the fastening means heretofore described. The provision of the gasket 11 between the cover A and the bead 8 of the tank enables the making of an air-tight joint so that the tank 1, when the cover is applied thereto, will be air tight resulting in escape of no dust and also aiding in the full efficiency of the suction created by the suction producing mechanism or device.

Should it be desired to use the suction producing mechanism or device B separately from the tank A and its associated parts, then the device may be removed by loosening the wing nuts 19 and disconnecting the conduit 34 from the suction inlet of the fan casing 2. When the device has been removed, it may be used as a blower or as a smaller suction cleaner, in which event it is equipped with the proper tools or connections for such purposes.

The invention has been described herein more or less precisely, yet it is to be understood that the invention is not to be limited thereby, as changes may be made in the arrangement and proportion of parts and that equivalents may be substituted without departing from the spirit and scope of the invention as claimed.

The invention is claimed as follows:

1. A portable suction cleaner comprising a vertical tank supported on wheels, a cover removably secured on said tank, an elongated suction producing mechanism mounted on the top of said cover and disposed centrally thereof, said mechanism including a motor and a fan, outlet conduit means extending through said cover and connected to the inlet of said suction producing mechanism, an inlet elbow on said cover having a portion thereof extending beyond the periphery of said cover to provide a hose connection in communication with the interior of said tank, said extending portion of said elbow being

disposed away from said mechanism along the horizontal axis of said mechanism, said fan being disposed to rotate in a plane perpendicular to the horizontal axis of the mechanism, and to the axis about which the cleaner tends to tip when pull is exerted thereon by a hose connected to said hose connection.

2. A portable suction cleaner comprising a vertical tank supported on wheels, a cover removably secured on said tank, suction producing mechanism mounted on the top of said cover, an aperture in said cover formed with an annular flange, an outlet elbow connected to the intake of said mechanism extending through said aperture communicating with the interior of said tank, an inlet elbow formed integral with said cover having a portion thereof extending beyond the periphery of said cover to provide a hose connection, said inlet elbow and said aperture being spaced apart on opposite marginal portions of said cover.

3. A suction cleaner comprising a vertical tank, a cover removably secured on said tank, suction producing mechanism mounted on top of said cover, an outlet conduit connected to the intake of said mechanism extending vertically through a marginal portion of said cover to provide communication with the interior of said tank, an inlet conduit extending vertically through the diametrically opposite marginal portion of said cover, said inlet conduit having a portion thereof extending above said cover and being reduced to provide a nozzle to receive a hose, the interior of said tank being unobstructed whereby a zone is provided for the precipitation of solids from an oppositely directed stream of air passing from said inlet to said outlet conduits.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

ADAM A. BREUER.