J. S. THURMAN.

SINGLE TANK VACUUM CLEANING APPARATUS.

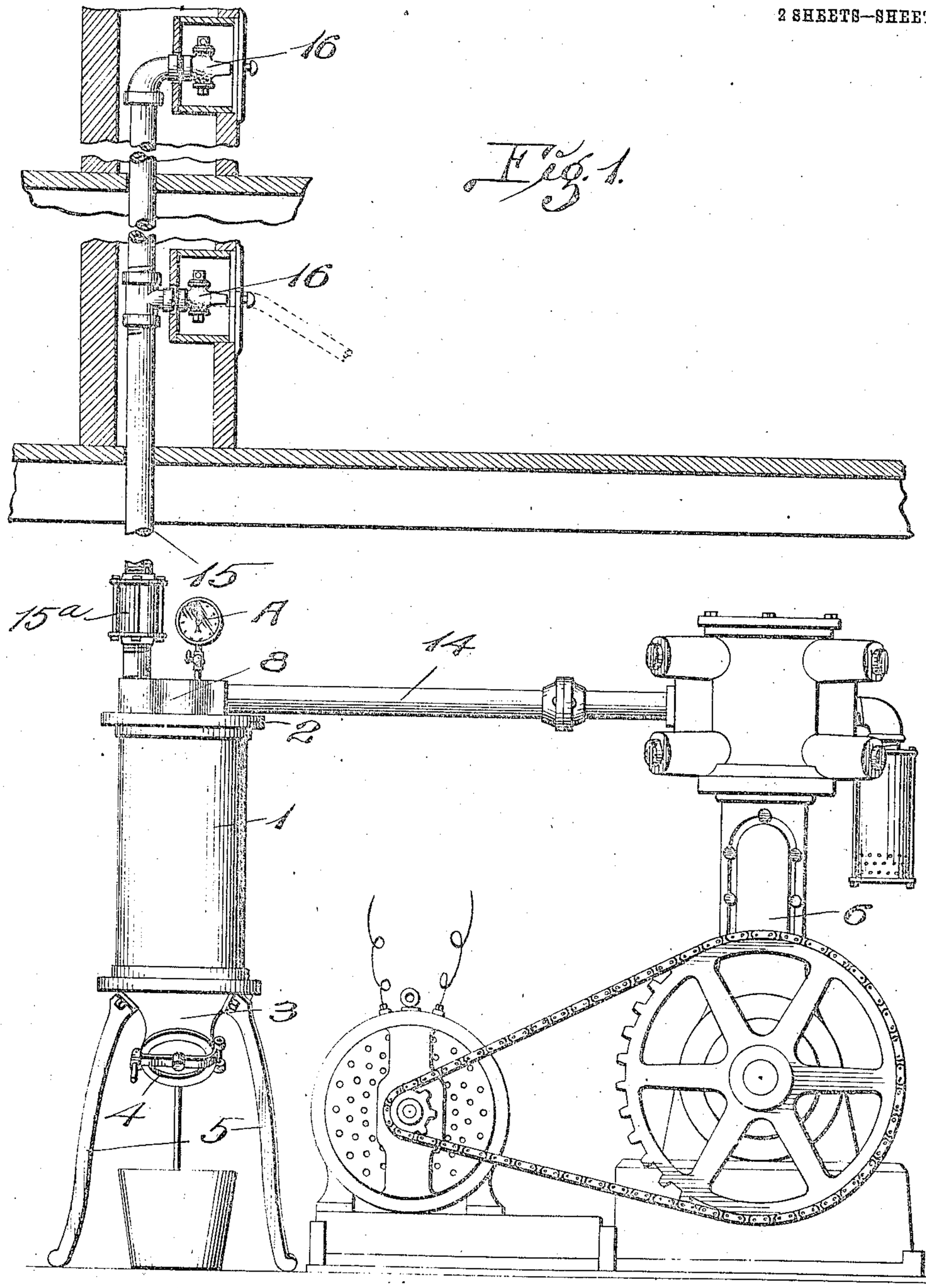
APPLICATION FILED MAR. 2, 1908.

956,231.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

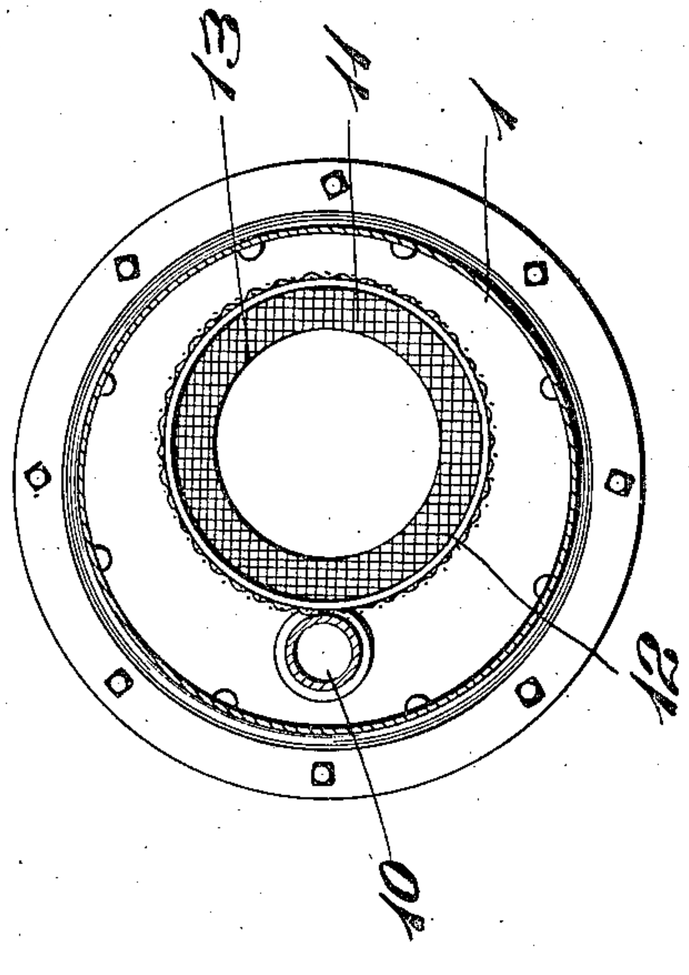
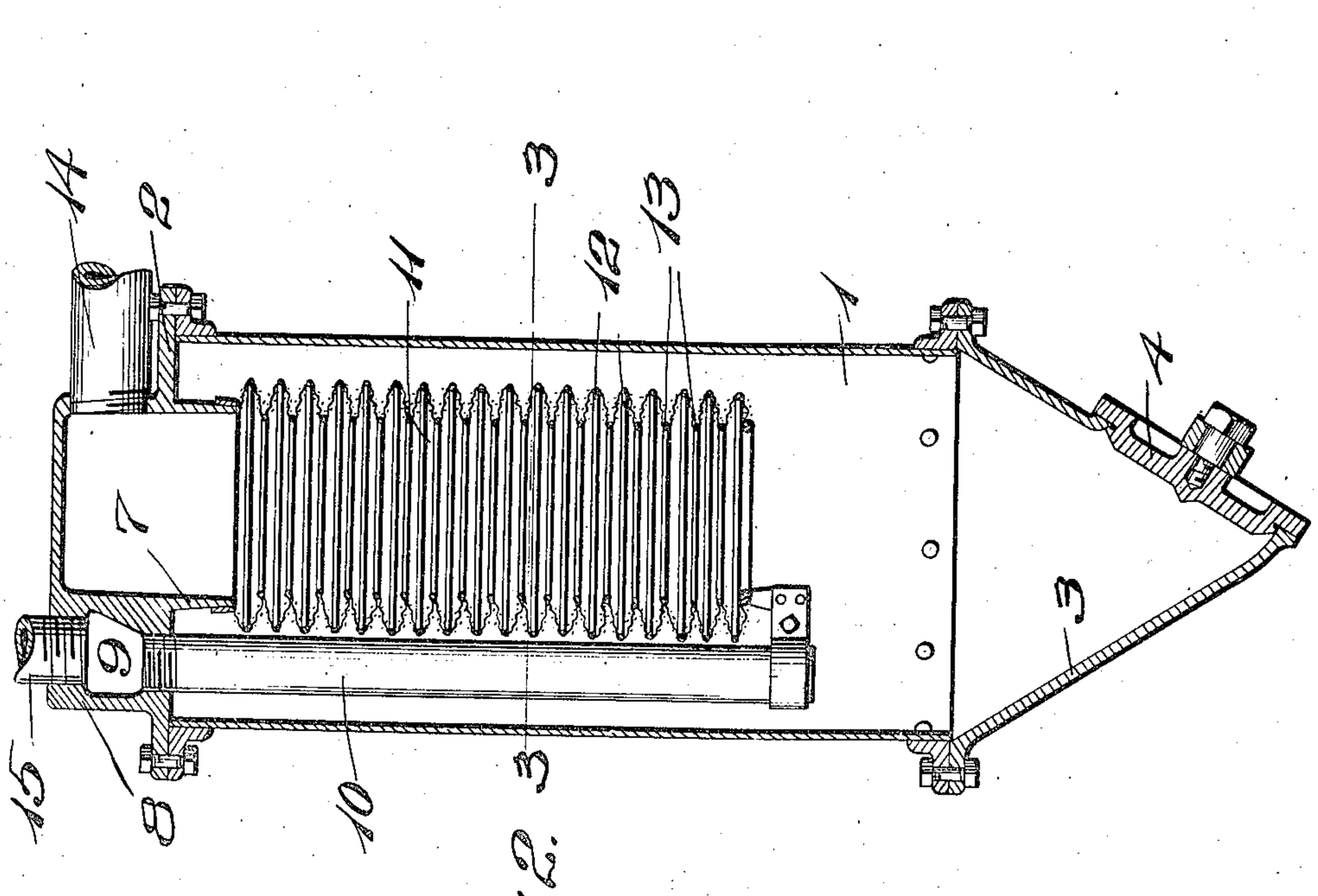


Fig. 2.



Attest.

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UNITED STATES PATENT OFFICE.

JOHN STROTHER THURMAN, OF ST. LOUIS, MISSOURI.

SINGLE-TANK VACUUM CLEANING APPARATUS.

956,231. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed March 2, 1908. Serial No. 418,812.

To all whom it may concern:

Be it known that I, JOHN STROTHER THURMAN, citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Single-Tank Vacuum Cleaning Apparatus, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a cleaning apparatus to be located in buildings, and utilizing vacuum as a medium for creating a suction of air through tubes for carrying away the dust and other foreign matter, and which system requires but a single tank, which performs the function of a dust chamber and a vacuum tank.

In vacuum cleaning systems to which my invention relates, what is generally known as the "wet and dry tank system" is employed; and in this latter system, it is necessary to use two tanks and to connect one tank with a suitable source of water supply and to the sewer, or other outlet, which connections are not always available; and it is the principal object of my invention to do away with the necessity or employment of the two tanks, and to utilize but a single tank, in which is located a suitable device which thoroughly filters all the dust from the air passing through the cleaning apparatus, thus preventing the escape of any of the dust into the suction pipe, or other exhausting appliance used in connection with the system.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is an elevation of my improved apparatus installed in a building, and showing the suction line leading from the rooms of the building to the single tank, and also showing a motor driven suction pump for creating the vacuum in the apparatus; Fig. 2 is a vertical section taken through the center of the combined vacuum tank and dust chamber; Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2.

Referring by numerals to the accompanying drawings:—1 designates the combined vacuum tank and dust chamber, which is preferably constructed of sheet metal, cylindrical in form, closed at its upper end by a plate 2, and closed at its lower end by a spout or hopper 3, which latter is provided with a door 4, which, when closed, is perfectly air tight. This tank is supported on suitable legs 5, and is ordinarily located in the basement, or on the lower floor of a building, adjacent a suction pump 6, or similar device.

Formed integral with the center of the plate 2 is a vertically disposed ring 7, the top of which is closed; and formed integral with the top of the plate, to the rear of this ring, is a housing 8, in which is formed a chamber 9. Seated in the plate 2, and leading downward from the chamber 9, within the tank 1, is a tube 10, open at both ends.

The dust filter 11, which is located in the tank 1, is in the form of a sack, the lower end of which is closed, and which sack is preferably formed of woven fabric, such as heavy sheeting or bagging, and the open upper end of said sack is secured in any suitable manner to the open lower end of the ring 7.

Located within the sack is a series of light wire rings 12, and alternately arranged between these rings and on the outside of the sack is a series of smaller rings 13, thus giving the circular wall of the sack a ribbed or corrugated form and creating and maintaining a maximum amount of area of filtering surface in the comparatively short space between the lower end of the ring 7 and the lower end of the tube 10, to which tube the lower portion of the dust filter is fixed.

Leading from the upper portion of the ring 7 to the suction pump, or other air exhausting appliance, is a pipe 14.

Leading from the chamber 9 upward into the building is a combined suction and dust conveying pipe 15, provided with a dust display glass 15ª; and connected to said pipe 15, at various points throughout the building are inlet valves 16, to which may be attached suction hose, which latter carry cleaning tools.

The operation of the cleaning apparatus is as follows: The suction pump 6 being operated withdraws the air from the pipe 14, tank 1, and pipe 15, thereby creating a partial vacuum in said parts, the degree of which vacuum can be readily ascertained by means of a vacuum gage A, connected at any convenient point on the tank 1; and when a flexible tube carrying a cleaning tool is connected to one of said valves 16 and said valve is opened, air is sucked through

the flexible tube, through the pipe 15, into the chamber 9, through the tube 10, to the tank 1, and from thence said air passes through the dust filter 11, and through the pipe 14, to the pump or exhauster 6. The dust carried by the air passing through the tank 1 lodges upon the surface of the sack 11 as the air is drawn through the minute interstices in the wall of the sack, and thus said dust is thoroughly filtered from the air, and which dust finally gravitates to the bottom of the tank, from whence it is removed by opening the door 4 while the system is not in operation, and the air freed of the dust passes through the pipe 14 into the suction pump, or exhauster 6.

By providing a dust filter in the vacuum tank, and constructing said dust filter of proper material, all of the dust drawn into the tank is filtered from the air drawn through the apparatus, and thus the necessity of employing two tanks, or a wet and dry tank system, and the water connections thereto, is done away with; and the cleaning operation is very quickly and efficiently performed with a minimum expenditure of power required to create the necessary vacuum.

I claim:—

1. In a vacuum cleaning apparatus, a receptacle, a removable cover for said receptacle, a chamber formed in said cover, said chamber being surrounded by a downwardly projecting wall, a filter mounted on and depending from and outside of said wall and terminating a suitable distance above the bottom of said receptacle, a pipe leading from said chamber to a suitable exhauster, a pipe, one end of which is secured to said removable cover and in suitable connection with a suction hose, and the other end projecting below the filter, said pipe forming a distinct passage-way for the dust-laden air from the time it enters the receptacle until it reaches a position below the closed bottom of said filter.

2. In a vacuum cleaning apparatus, a receptacle, a chamber formed in the upper portion of said receptacle, said chamber being surrounded by a downwardly projecting wall, a filter mounted on and depending from and outside of said wall and terminating a suitable distance above the bottom of said receptacle, a pipe in direct communication with and leading from said chamber to a suitable exhauster, a pipe mounted within said casing, one end of which is in suitable connection with a suction hose and the other end thereof projecting below the filter, said pipe forming a distinct passage-way for conducting the dust-laden air in a definite direction from the time it enters the receptacle until it reaches a position below the bottom of the filter.

3. In a vacuum cleaning apparatus, a receptacle having an inlet and outlet, the said inlet being in suitable communication with the suction hose and the outlet in suitable communication with an exhauster, a filter positioned within the receptacle and projecting a suitable distance from the bottom thereof, a pipe, one end of which is in communication with the inlet and the other end thereof extending below the filter, said pipe forming a distinct passage-way for the dust-laden air as it enters the receptacle and confining and conducting the same in a definite direction to a point below the filter and diagonally opposite the outlet.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

JOHN STROTHER THURMAN.

Witnesses:

M. P. Smith,

E. L. Wallace.