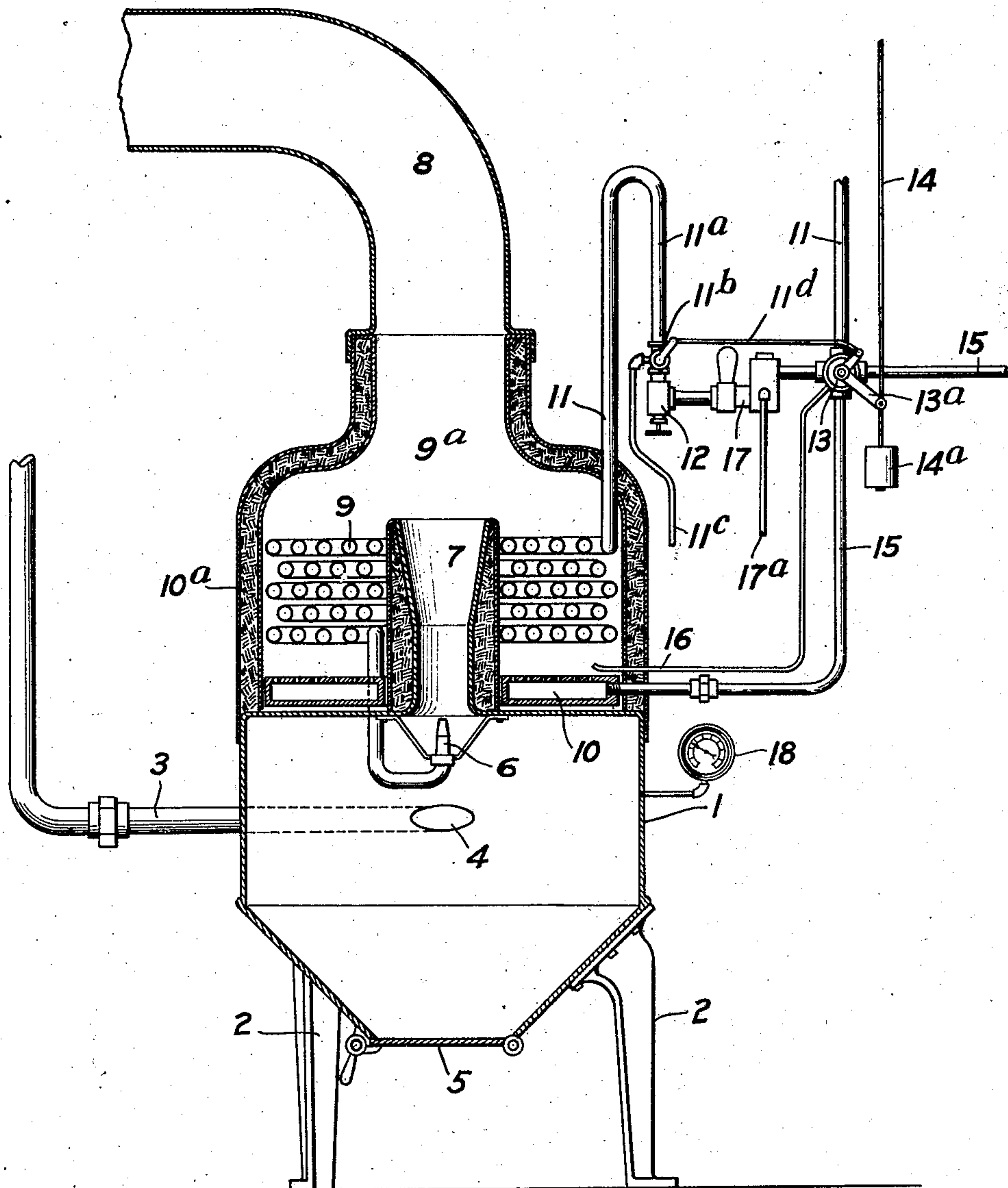


L. W. G. FLYNT.
VACUUM CLEANING APPARATUS.
APPLICATION FILED AUG. 9, 1909.

997,548.

Patented July 11, 1911.



WITNESSES:

Clarence W. Carroll
L. Thon

INVENTOR:

Louis W. G. Flynt
by Osmond W. Burt
his attorney

UNITED STATES PATENT OFFICE.

LOUIS W. G. FLYNT, OF ROCHESTER, NEW YORK, ASSIGNOR TO DOMESTIC APPLIANCES COMPANY, A CORPORATION OF NEW YORK.

VACUUM CLEANING APPARATUS.

997,548.

Specification of Letters Patent.

Patented July 11, 1911.

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To all whom it may concern:

Be it known that I, LOUIS W. G. FLYNT, a subject of the King of Great Britain, and resident of Rochester, in the county of Monroe and State of New York, United States of America, have invented certain new and useful Improvements in Vacuum Cleaning Apparatus, of which the following is a specification.

10 This invention has for its object a vacuum cleaning apparatus that will be adapted for many operations of cleaning in private houses, and other buildings, such, for example, as the collection of dust from floors, 15 walls, draperies, etc.

It also embodies means for separating the heavier matter collected from the light dust, and means for incinerating the dust and afterward expelling it.

20 The drawing shows a central, vertical section of an apparatus embodying the inventions, which consists of a casing 10^a that is lined with suitable refractory material, and contains a "flash" steam generator, the 25 latter consisting of a series of spiral coils 9 of tubing, one end of which is connected to the water supply, and the other terminating in the steam jet nozzle 6. Below the coils 9, and also within the casing 10^a, is a gas or 30 oil burner 10 of annular form which surrounds an air ejector draft pipe 7, the outside of which is protected from the heat of the burner by a covering of fire-clay or like substance. The contracted entrance of 35 this draft pipe perforates the upper cover of a centrifugal dust separator 1, of a form in common use, and which is furnished at the bottom with a suitably hinged door through which refuse may be taken from it. 40 The discharge end of the ejector draft pipe is arranged in such relation to the flue formed at the outlet of the casing 10^a, where it joins the stack 8, that the dust laden air is compelled to mingle with hot products 45 of combustion from the burner 10. In this way the dust is sterilized and is partially or completely incinerated. A further advantage of this relative location of draft pipe and flue is that it increases the flue 50 draft materially, and this, besides contributing to the efficiency of the burner, helps to disperse the ashes of the dust consumed.

There is a main vacuum service pipe represented by 3, that discharges tangentially 55 into the centrifugal dust separator. This

service pipe by various branches leads to convenient points in the building where suitable terminals may be provided for the attachment of a hose pipe that carries the suction nozzle through which the dust is gathered up. 60

The water fed to the generator 9 is regulated by a needle valve 12, and is turned on and shut off by means of a cock 13, that can be operated from a distance by a rod or cord 14. 65 The cock 13 is also connected with the gas pipe 15, so that it also controls the gas supply to the burner 10. In this way the water and gas can be turned on and off simultaneously, for a pilot light at the end of a tube 70 16 burns continuously. Accordingly, when the water is turned on by pulling the cord 14, and begins to flow into the generator, the burner 10 is at the same time lighted 75 and almost instantly steam issues from the nozzle 6. But the pressure of the steam in the generator can only equal that of the water in the feed pipe 11, and if this pressure proves in any case too low to create the 80 desired vacuum, a suitable pressure intensifying device 17, such as a hydraulic feed pump, may be used to increase the water pressure.

A drain cock 11^b for an inverted U pipe 11^a in the water connection, the function of 85 which will presently be described, discharges from a pipe 11^c, and may be connected to the controlling means of the cock 13 in the manner shown, as by a rod 11^d.

A needle valve 12 affords means for regulating the quantity of water that is supplied to the steam generator coils. 90

The U pipe 11^a, together with the drain cock 11^b provide means for postponing the arrival of the feed water at the generator 95 coils 9, until enough time shall have elapsed after the lighting of the burner 10 to raise the temperature of the coils sufficiently to evaporate the water during its passage through the heater to the nozzle 6. 100

A small fuel pipe 16 serves as a pilot light for igniting the large burner, and is kept constantly burning.

The operation of the device is as follows: The cock 13 is first opened by the rod 14, 105 which at the same time closes the drain cock 11^b. This admits both a supply of fuel to the burner 10, and water to pass the needle valve 12, whence it enters the inverted U pipe 11^a. Before the water has time to 110

arrive in the coils 9 of the generator, they will have become heated to a degree sufficient to evaporate it, as before described. When the steam issues from the nozzle 6, the air in the centrifugal separator 1 and in the service pipe 3 becomes rarefied, and a current of air sets in toward the ejector draft pipe 7, which it enters and from which it is discharged into the incinerating compartment 9^a, together with whatever dust may be suspended in it. In the compartment 9^a, dust and air mingle at the throat of the stack 8 with the hot gases that rise from the burner 10. The current of air issuing from the ejector draft pipe also causes an increased draft in the stack, which greatly aids the dispersion of the now incinerated dust.

The degree of vacuum existing in the service pipe 3 may be ascertained by means of a vacuum gage 18 of any suitable form, having a connection with the inside of the centrifugal separator. By observing the vacuum gage and adjusting the needle valve 12, and the quantity of fuel supplied to the burner 10, the apparatus can be regulated to the work required of it. Having once secured the adjustments, they need no further change for work of the same kind, and the starting and stopping of the apparatus is accomplished by raising or lowering the rod or chain 14.

It is obvious that the apparatus is not limited to the exact form of construction shown, and that other arrangement of the elements can be made without departing from the spirit of the invention.

What I claim is:—

1. In combination, a dust-separating and incinerating receptacle comprising a dust-separating compartment, provided with an inlet, for separating the heavier noninflammable particles from the lighter inflammable par-

ticles, and an incinerating compartment in said receptacle having means therein for incinerating said inflammable particles, and means for inducing dust laden air into said dust separating compartment and for conveying inflammable particles from said dust-separating compartment to said dust-incinerating compartment.

2. In combination, a dust-separating and incinerating receptacle comprising a dust-separating compartment, provided with an inlet, for separating the heavier noninflammable particles from the lighter inflammable particles, and an incinerating compartment in said receptacle having means therein for incinerating said inflammable particles, and means for inducing dust laden air into said dust separating compartment and for exhausting air from the separating compartment and discharging it, together with the lighter particles of dust thereby collected within said separating compartment, into said incinerating compartment.

3. In combination, a dust-separating and incinerating receptacle comprising a dust-separating compartment, provided with an inlet, for separating the heavier noninflammable particles from the lighter inflammable particles, and an incinerating compartment in said receptacle having means therein for incinerating said inflammable particles, that is connected by a passage with said separating compartment, and an air ejector arranged to discharge through said passage and thereby withdraw the lighter particles of dust from said separating compartment and discharge them into said incinerating compartment.

LOUIS W. G. FLYNT.

Witnesses:

L. THON,
C. W. CARROLL.