P. H. CHERRY.

FUME PRODUCING DEVICE.

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978,561. Patented Dec. 13, 1910.

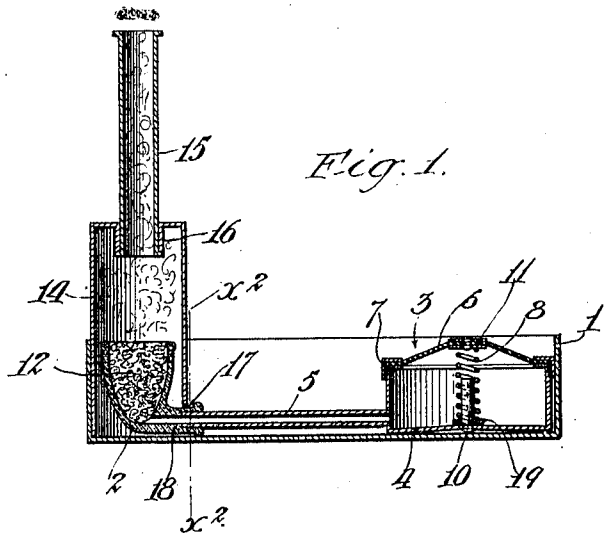

Fig. 1.

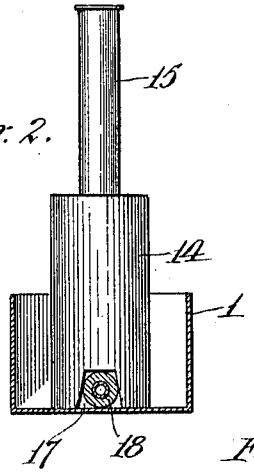

Fig. 2.

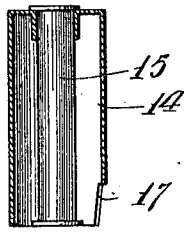

Fig. 3.

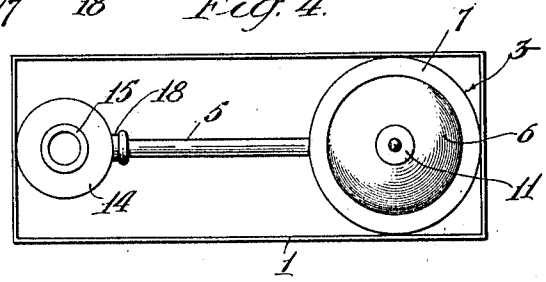

Fig. 4.

Witnesses:-
Louis W. Gratz.
P. H. Shilton.

Inventor
Peterson H. Cherry.
by Thurwell Gaux & Hadley
attys

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PETERSON H. CHERRY, OF LOS ANGELES, CALIFORNIA.

FUME-PRODUCING DEVICE.

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Application filed February 5, 1910. Serial No. 542,320.

To all whom it may concern:

Be it known that I, PETERSON H. CHERRY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Fume-Producing Device, of which the following is a specification.

This invention relates to a device for the production of fumes, and is particularly adapted for use as an inhaler.

It is also capable of other uses, for example, as a toy.

The main object of the present invention is to provide means for regulation of the draft and combustion in such manner as to produce fumes of the desired character and in the requisite quantity.

Another object of the invention is to provide means for maintaining a restricted supply of air to the burning material, whereby a continuous smoldering combustion is insured, and loss of medicinal properties of the fume producing material is avoided.

A further object of the invention is to provide in a device of this character, means whereby the fumes may be ejected or delivered continually in a steady stream or may be forcibly and intermittently ejected, for example, for the purpose of forming smoke rings.

Another object of the invention is to provide a device of this character which can be folded into compact shape.

The accompanying drawings illustrate the invention, and referring thereto:—Figure 1 is a vertical section of the device. Fig. 2, is a transverse section on line x^2—x^2, Fig. 1. Fig. 3, is a vertical section of the chimney for the combustion means, showing said chimney in telescoped position. Fig. 4, is a plan of the complete device.

The device comprises a box or case 1 which may be provided, if desired, with a suitable cover, not shown, said box or case being opened at the top and of suitable dimensions to contain a receptacle or bowl 2 wherein the combustion of the fume producing material is effected, and a pneumatic device 3 for causing alternate suction and outflow through the said bowl.

The pneumatic device 3 comprises a cylindrical case 4 communicating with the pipe bowl 2 by means of a tube or pipe stem 5, the case 4 having a cover 6 of flexible material detachably secured thereto by a frictional clamp ring 7, and spring means 8 being inclosed within said case between the cover and the bottom of the case to hold the cover in raised position, as shown in full lines in Fig. 1. A pin or stud 10 extends up from the bottom of the case 4 within the compression spring 8 so as to hold said spring in position and also serve as a stop in the downward movement of the cover by engaging with a center plate 11 on said cover, which also serves as an abutment for the spring 8. This stud or stop means also prevents undue strain on the cover 6 and spring 8. By pressing on this center plate, air is expelled from the case 4 through the tube 5 and bowl 2, and on releasing the pressure of said cover, the spring 8 returns the cover to normal position, drawing air in through the bowl and through the tube 5 in the case, thereby supplying the air for combustion of the material indicated at 12 in the bowl. Adjusting means may be provided for spring 8, consisting for example, of one or more washers 19 which may be inserted under the spring 8 in case it is too weak.

The material 12 which is placed in the bowl for combustion therein, may be of any suitable character according to the kind of fumes desired. Thus, in case the device is used as an inhaler, the material 12 will be of such nature as to produce fumes having a desired medicinal character.

To control the combustion so that it will proceed continuously and yet without danger of failure, the bowl 2 is inclosed within a chimney, said chimney being preferably formed with a lower portion 14 of sufficient diameter to surround the bowl with a space between the bowl and the said chimney portion to permit of the passage of air in said space sufficient for the purpose, and said chimney further providing an upper portion 15 sliding telescopically in a collar or cylindrical portion 16 of the lower chimney portion 14, this chimney portion 15 being of smaller diameter than the lower portion so as to restrict the outflow of the particles of combustion. The lower chimney portion 14 has a notch or slot 17 in its lower edge whereby it can be set over the stem 18 of the bowl 2, leaving a space between said

stem and the edges of the slot for the passage of air from the outside, so that there is always a supply of air through this space from the outer air to the interior of the chimney portion 14, this combustion, however, being restricted by the limited size of the slot 17.

The device is used as an inhaler as follows:—The bowl 2 is filled with suitable fume producing material indicated at 12, and ignited, and the chimney 14, 15 is then put in place, said chimney being in extended position, as shown in Fig. 1. Upon then pressing on the cover 11 air is expelled from the pneumatic device through the tube 5 and the bowl 2, and by then allowing the cover to rise air is drawn downwardly through the bowl and through the pipe 5 into the case 4, thus furnishing a supply of air which accelerates the combustion within the bowl. By repeated depression and release of the cover 11 air may be drawn down into the bowl in as great a quantity as may be required, it being understood that the air for combustion is drawn into the bowl on the upward movement of the cover of the pneumatic device, and the operator always has complete control of the rate of combustion as the air is only drawn into the bowl during such operation, and by performing such operation more or less rapidly the combustion is hastened or retarded as may be desired. Thus the combustion takes place only during suction, the expulsion stroke resulting only in expulsion of the products of combustion from the bowl. The combustion therefore is limited in time and intensity and a slow combustion is insured. I thus insure that there will be no loss of medicinal property of the material by reason of the destructive action of excessive heat. The effect of the chimney 14 is to partially smother the combustion so as to produce the maximum of fumes with a steady restricted draft, so that smoldering, instead of violent combustion, of the material is insured. Another advantage of the partial inclosure of the bowl by the chimney 14, 15 with the restricted inlet 17 and restricted outlet 15, is to enable the device to be used as an amusement device or toy for the production of vortex rings. Thus by pressing sharply on the cover 11 of the pneumatic device 3, a more or less violent expulsion of air through the bowl and the chimney is effected, and by reason of the restricted outlet at 15 this expulsion of smoky air results in the production of a vortex ring, and the result is that any number of such rings may be produced in rapid succession. The stop 10 insuring that just the proper amount of air will be expelled to produce the puff resulting in a vortex ring.

For convenience in packing, the upper or outlet portion 15 of the chimney may be telescoped into the lower portion, as shown in Fig. 3, and may then be placed in the case or box 1.

What I claim is:—

1. A fume producing device comprising a receptacle for the fume producing material, a pneumatic device consisting of a case communicating with said receptacle, said casing being provided with a portion which is movable inwardly and outwardly to cause outflow or inflow of air through the receptacle and thereby cause combustion of the material during the inflow and expulsion of the products of combustion during the outflow and said case being provided with a spring tending to move said movable portion outwardly, means in said case for limiting the inward movement of the movable portion of said case, and chimney means extending over and around the receptacle and having an air-inlet below the receptacle, said air inlet being of small area relatively to the cross section of the chimney to provide for restricted air admission and said chimney having an outlet portion at its top, said outlet portion being of relatively small area compared to the cross section of the chimney and providing for restricted outflow of air and fumes from the chimney.

2. A fume producing device comprising a receptacle for the fume producing material, a pneumatic device consisting of a closed case communicating with said receptacle, said case having a movable portion whereby the contained volume of the receptacle may be increased or diminished to cause in or out draft through the receptacle into the pneumatic device, means in said case for limiting the inward movement of the movable portion of said case, and a chimney extending over and around the receptacle and having an inlet below the top of the receptacle and an outlet above the top of the receptacle, said inlet and outlet being of relatively small diameter compared to the portion of the chimney surrounding the receptacle, whereby a restricted admission of air and obstructed outflow of air are provided for.

3. A fume producing device comprising a receptacle for containing the fume producing material and a pneumatic device connected thereto to draw air into or expel it from the receptacle, said pneumatic device comprising a closed case communicating with said receptacle and having a portion movable inwardly and outwardly to vary the volume within the case, a coil spring within the case, and a stud extending within said spring and serving as a guide therefor and as a stop for the movable portion of the case.

4. A fume producing device comprising a receptacle for the fume producing material, a pneumatic device consisting of a case

communicating with said receptacle, said casing being provided with a portion which is movable inwardly and outwardly to cause outflow or inflow of air through the receptacle and thereby cause combustion of the material during the inflow and expulsion of the products of combustion during the outflow and said case being provided with a spring tending to move said movable portion outwardly, and chimney means extending over and around the receptacle and having an air inlet below the receptacle, said air inlet being of small area relatively to the cross section of the chimney to provide for restricted air admission and said chimney having an outlet portion at its top, said outlet portion being of relatively small area compared to the cross section of the chimney and providing for restricted outflow of air and fumes from the chimney, and said inlet portion being vertically slidable in the lower portion of the chimney for the purpose set forth.

5. A fume producing device comprising an open topped receptacle for the fume producing material, means for inclosing said receptacle and having a contracted inlet below said receptacle and a contracted outlet above said receptacle, and a pneumatic suction and compression device connected to said receptacle for producing suction of air from said inclosing means into said receptacle for the combustion of the material, and subsequently expelling the products of combustion from the receptacle and from the inclosure, through the contracted outlet thereof, said outlet portion being vertically slidable in the lower portion of the chimney for the purpose set forth.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 29th day of January, 1910.

PETERSON H. CHERRY.

In presence of—

ARTHUR P. KNIGHT,

FRANK L. A. GRAHAM.