

Oct. 3, 1939.

A. M. PRENTISS
GAS MASK CANISTER
Filed July 19, 1933

2,174,528

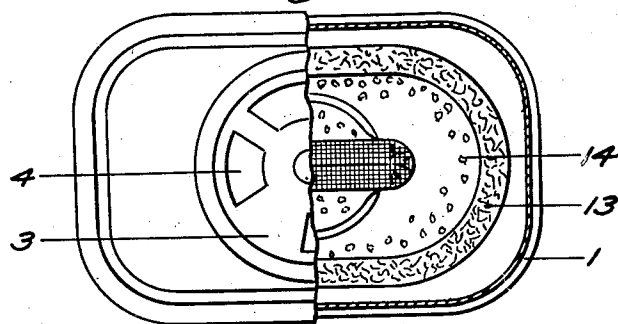
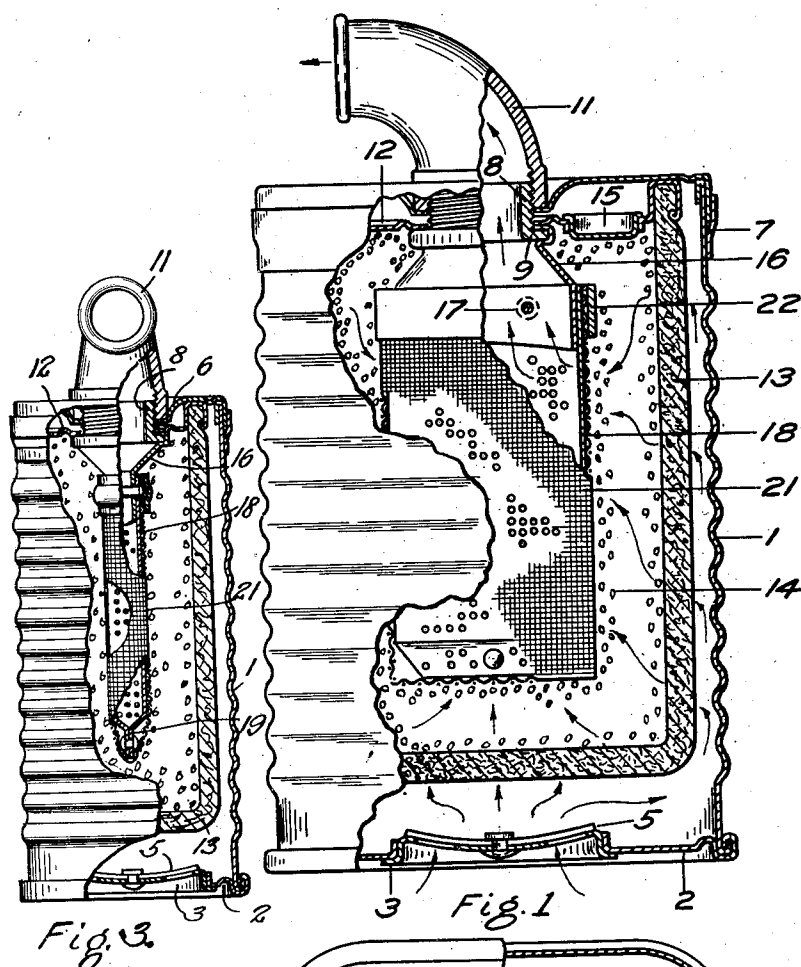


Fig. 2

INVENTOR.
AUGUSTIN M. PRENTISS
BY *Millard F. Peake, Jr.*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,174,528

GAS MASK CANISTER

Augustin M. Prentiss, Washington, D. C.

Application July 19, 1933, Serial No. 681,147

10 Claims. (Cl. 183—49)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

5 This invention relates to apparatus for filtering and purifying air containing noxious gases and smokes and more particularly to canister used in connection with gas masks.

10 In order to render air contaminated with gases and smokes fit for breathing, it has been the practice to use a gas mask having a canister associated therewith, whereby all inhaled air must first pass through the canister wherein it is filtered and purified. Such canister should 15 have a maximum efficiency in cleansing the air of gases and smokes; it should be light in weight and compact; and it should be as inexpensive to manufacture and assemble as possible.

20 One object of this invention is to generally improve the construction of canisters used with gas masks.

Another object of this invention is to simplify and cheapen the construction of gas mask canisters without lowering the efficiency thereof.

25 Another object of this invention is to lower the resistance to breathing of a gas mask canister without decreasing its efficiency.

These and other objects of this invention will be apparent from the following description and 30 claims, it being understood that the several necessary elements comprising the invention may be varied in construction, proportion and arrangement without departing from the spirit of the invention and the scope of the appended claims.

35 In order to make the invention more clearly understood, the accompanying drawing shows means for carrying the same into practical effect, without limiting the improvements in their useful applications to the particular constructions 40 which, for the purpose of explanation, have been made the subject of illustration.

In the drawing

Fig. 1 is a part sectional part elevational view of a preferred form of canister.

45 Fig. 2 is a bottom view thereof, partly in section and in elevation.

Fig. 3 is a view at right angles to Fig. 1 partly in section and partly in elevation.

Referring more particularly to the drawing 50 wherein like characters indicate like parts, the canister comprises an outer waterproof casing 1 preferably of corrugated metal and generally rectangular in cross section with rounded corners. Outer casing 1 is closed at the bottom by 55 a lower cover 2 crimped into tight engagement

with casing 1, and having a central opening in which is positioned the inlet valve structure. The inlet valve comprises a plate 3 having openings 4 therein. A rubber flap valve 5 is secured to plate 3 by a central rivet and normally closes 5 openings 4.

The casing 1 is adapted to contain the filtering and purifying agents for the air. A top cover 6 is adapted to telescope over the casing 1 and be sealed thereto by adhesive tape 7. Cover 6 10 has a central opening through which passes threaded sleeve 8 having an outwardly turned flange 9 on its inner end. An angled nipple 11 is threaded on sleeve 8, the opposite end of the nipple being adapted to receive a rubber or canvas hose leading to the gas mask. The inner 15 edges of cover 6 and an auxiliary inner cover 12 are clamped between flange 9 and nipple 11.

Inner cover 12 has its outer edge crimped over a cup-shaped filter 13. This filter is made up 20 of cotton linters sucked on a perforated form while in a plastic mass and then dried and removed from the form. Filter 13 is of the same configuration as and is spaced slightly from the casing 1 and bottom closure 2. The cup-shaped 25 filter 13 serves as a combined filter for gases and smokes and container for granular or powdered chemicals 14 which serve to purify air passing therethrough.

Inner cover 12 has an opening through which 30 the chemicals 14 may be introduced into filter 13. This opening is then closed by a tightly fitting cover 15.

Crimped over the flange 9 of sleeve 8 and supported thereby is a flared hollow member 16, 35 the lower portion thereof being oval in cross section. Secured to this oval portion as by rivets 17 is a perforated oval member 18 having its lower side walls 19 bent into engagement and secured together. In order to prevent the entrance of the granular chemicals into member 18, a thin cotton bag 21 is positioned over member 18 and is secured thereto as by adhesive tape 40 at 22.

The cup-shaped filter element 13 when made 45 as above described has sufficient inherent stability to withstand the necessary handling in the filling and assembly operations.

The parts of the canister are assembled by first securing the cup filter 13 to the inner cover 50 12, and securing the flange 9 of sleeve 8 to the inner cover 12 and flared member 16. The chemicals 14 are then inserted into filter 13 through the opening in cover 12 and this opening is then tightly closed by cap 15. Outer cover 55

6 is then positioned over sleeve 8 and outlet nipple 11 is threaded on sleeve 8, the threads being preferably coated with hot marine glue and heated before screwing into place. This assembly is then inserted into casing 1 which has the bottom 2 secured thereto.

When nipple 11 is connected to a gas mask hose, air may enter through flap valve 5 and then pass through the bottom or sides of filter 13. Filter 13 removes the smoke particles from the air and the chemicals 14, such as activated charcoal and soda lime, cleanse the air of injurious gases. The pure air then passes through the perforations in member 18 and into the outlet nipple 11.

By the use of the cup-shaped filter 13, the outer perforated metal sleeve is eliminated and the resistance to air flow is lowered by affording a larger area through which the inspired air may pass.

Although an important feature of this invention is the provision of substantially cup-shaped filter which is inherently self-supporting and contains the chemicals, it will be clear that the invention is not limited to a filter having a bottom of sucked-on cotton linters. The bottom may be of sheet metal, plain or perforated, and secured to the sides of filter 13 by crimping similar to the securing of inner cover 12 thereto, or any other securing means. Furthermore, the cup-shaped filter may be made of other materials than the sucked-on cotton linters herein described, such as wool, fur, hair, fiber, or a mixture of these.

While I have shown and described one preferred embodiment of the invention it will be understood that the invention is not limited thereto, since many variations will occur to those skilled in the art within the scope of the appended claims.

I claim:

1. A canister for gas masks comprising an outer container having an air inlet and an air outlet, a fibrous, substantially cup-shaped filter element containing air cleansing means, and means to support said filter element out of contact with the side walls and bottom of said container, said filter element being inherently self-sustaining and having unitary bottom and side walls.

2. A canister for gas masks comprising an outer container having an air inlet and an air outlet, a fibrous, substantially cup-shaped filter element having unitary bottom and side walls and supported by its rim out of contact with the walls and bottom of said container, and filtering material in said filter element.

3. A canister for gas masks comprising an outer container, a fibrous, substantially cup-shaped filter element having unitary bottom and side walls therein, a cover for closing the top of said filter element and secured to the rim thereof, said filter element supported by said cover out of contact with the walls and bottom of said container, a hollow perforated tubular member projecting into said filter element and communicating with an air outlet, filtering material within

said filter element, and an air inlet for said container.

4. A canister for gas masks comprising an outer container having an air inlet and an air outlet, an inner cover and an outer cover connected together, a cup-shaped filter element having its rim secured to said inner cover and supported solely by said cover, said outer cover being secured to said container, granular filtering material in said filter element, said filter element being formed with integral bottom and side walls of fibrous material which is self-supporting.

5. A canister for purifying air comprising an outer container, a cup-shaped filter element therein formed of fibrous material spaced from the wall of said container, air purifying means within said filter element, and an inlet and an outlet for said casing so arranged that entering air must pass through said filter element and the air purifying means therein prior to its passage out of said outlet, characterized in that the filter element is self-sustaining and is unsupported by a perforated screen.

6. A canister for purifying air comprising an outer container having an air inlet and an air outlet, a cup-shaped filter element therein spaced from the wall and bottom of said container, air purifying material in said filter element, characterized in that the filter element is entirely formed of fibrous material and is self-sustaining.

7. A canister for purifying air comprising an outer container having an air inlet and an air outlet, a cup-shaped filter element therein spaced from the bottom and side walls of said container, air-purifying material in said filter element, characterized in that the filter element is formed of cotton linters and being sufficiently stiff to retain its shape when partially filled with chemicals and suspended from its open rim.

8. As a new article of manufacture, a filter element for use in gas mask canisters and having a low resistance to passage of air therethrough comprising a substantially cup-shaped member formed of fibrous material and being sufficiently stiff to retain its shape when partially filled with chemicals and suspended from its open rim.

9. As a new article of manufacture, a filter element for use in gas mask canisters and having a low resistance to passage of air therethrough comprising a substantially cup-shaped member formed of cotton linters and being sufficiently stiff to retain its shape when partially filled with chemicals and suspended from its open rim.

10. A canister for gas masks comprising an outer container having an air inlet and an air outlet, a substantially cup-shaped filter element having its bottom and side walls formed entirely of fibrous material, air purifying means within said filter element, and means to support said filter element with its side walls and bottom out of contact with the outer container, whereby the superficial area of the filter element is increased with a corresponding decrease in breathing resistance with no increase in the size of the outer container.

AUGUSTIN M. PRENTISS.