

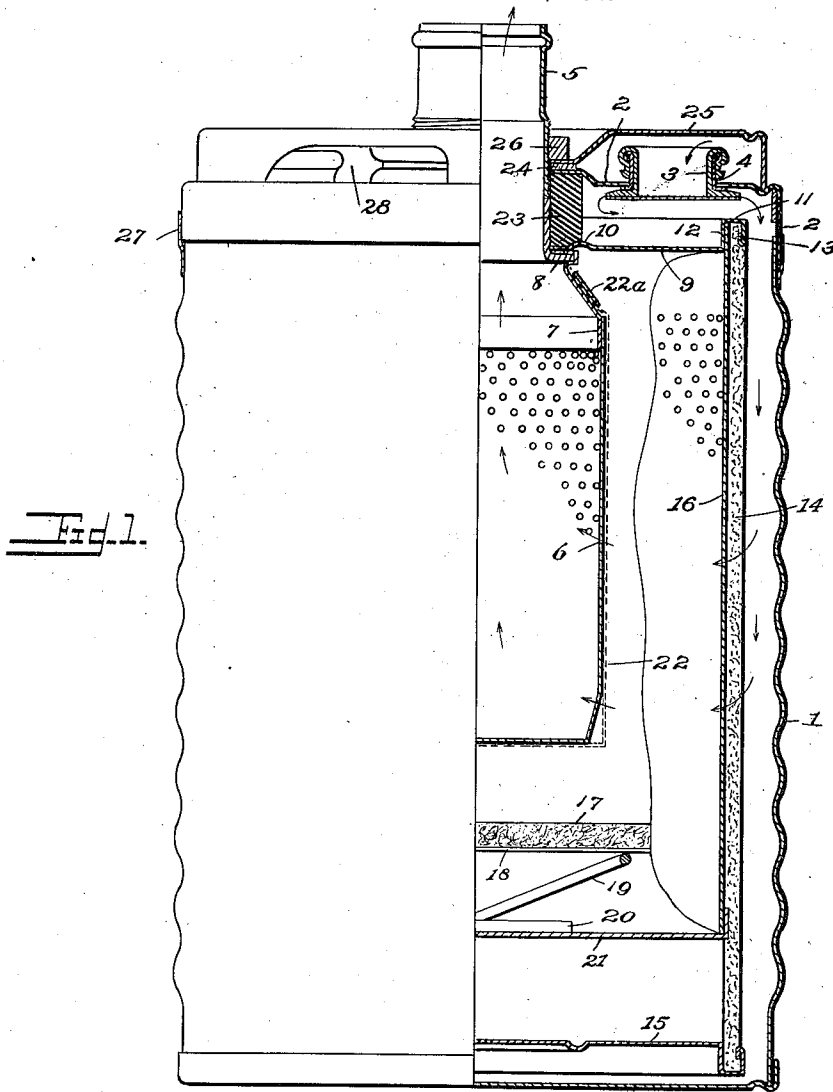
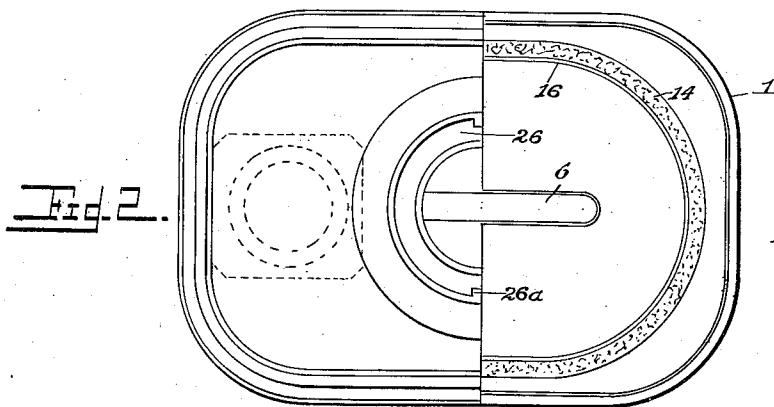
July 15, 1924.

1,501,286

F. A. LOGAN

GAS MASK CANISTER

Filed March 8, 1921



Inventor
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Patented July 15, 1924.

1,501,286

UNITED STATES PATENT OFFICE.

FRANK A. LOGAN, OF EDGEWOOD, MARYLAND.

GAS-MASK CANISTER.

Application filed March 8, 1921. Serial No. 450,710.

(FILED UNDER THE ACT OF MARCH 3, 1883, 22 STAT. L., 625.)

To all whom it may concern:

Be it known that I, FRANK A. LOGAN, a citizen of the United States of America, and resident of Edgewood, Maryland, have
5 invented certain new and useful Improvements in Gas-Mask Canisters, of which the following is a specification.

This application is made under the act of March 3, 1883, chapter 143 (22 Stat., 625) and the invention herein described and claimed may be used by the Government of the United States or any of its officers or employees in the prosecution of work for the Government, and any person in the
15 United States without the payment to me of any royalty thereon.

This invention relates to apparatus for treating gases and gaseous substances, including smokes, mists, etc.

20 Among the objects of this invention is to provide means for eliminating toxic and harmful materials such as poisonous gases, vapors and smokes which are injurious to animals, from air and gas mixtures.

25 A further object of this invention is to provide a canister with an efficient remover of toxic and harmful materials from air and gas mixtures; also, with means for delivering air which is passed thru the canister at low resistance to breathing.

A further object of this invention is to provide a canister which is highly efficient, durable and compact and which may be conveniently carried by the user.

35 Reference is to be had to the accompanying drawing which illustrates a preferred embodiment of my invention.

Fig. 1 is an elevation with part shown in section to illustrate the interior of the
40 canister.

Fig. 2 is a top plan view with a portion of the device shown in section.

The apparatus consists of a waterproof casing (1) (preferably made of sheet metal, but it is to be understood that other waterproof materials such as impregnated paper or fabric can be used under varying conditions) having a close fitting top (2), said top having perforations for receiving the
50 check valves (3). These check valves are preferably made of rubber. To insure a proper seating of the check valves, I provide the sleeves (4) upon the top (2), and in the construction shown, these sleeves are

mechanically joined by soldering with said top. The top (2) is also provided with a substantially central opening thru which projects the nozzle (5), said nozzle communicating with the interior of the canister and terminating at the top of the central
60 passage (6). This central passage, as will be seen, has an elongated section and is provided with perforated walls thruout its entire extent. It is preferably soldered at (7) to the bottom of the nozzle (5). 65

The main portion of the outlet nozzle (5) is cylindrical and substantially circular in section and terminates in a flanged portion (8). I provide a special fitting, the lower portion of which is flattened at (7) and over which the central passage (6) is soldered, and the upper portion is circular and mechanically seamed to the lower flanged portion (8) of the main part of the nozzle (5). 70 75

The body top (9), having a central opening, fits over the nozzle (5) and is beaded at (10) so as to fit snugly over the lower flanged portion (8), the central portion of the body top reaching to the outer surface of the nozzle (5) and soldered thereto in order to give a gas-tight joint. 80

The body top (9) is provided with an inverted channel consisting of the top (11) and the side walls (12) and (13). This channel receives a felt tube (14) which by pressing the walls (12) and (13) together is joined by a mechanical seam to the body top (9). This felt is preferably made of good grade of wool and is about $\frac{3}{8}$ inch thick. The chief function of this felt is to remove smokes from air, gases and gaseous mixtures. It is to be understood, however, that other suitable materials may be substituted to meet the particular needs and fancy of the user. In preparing the tube a flat piece of felt of suitable dimensions is sewed at the ends with a zig-zag seam and opened up to give a butt-joint, and the joint is rendered impervious by any suitable waterproof adhesive. I have found marine glue satisfactory for this purpose. The lower portion of the felt (14) is mechanically seamed to the bottom (15) of the body portion of the canister in a manner similar to that described for the body top (9). 85 90 95 100 105

An enveloping perforated wall (16) is provided as a support for the felt (14) and

is so constructed that it is at all points substantially equidistant from the central perforated body (6). The perforations in this wall (16) extend almost to the top and bottom portions thereof. This wall (16) is joined to the body top (9), preferably by soldering the top portion thereof to the wall (12) so as to give a mechanical joint.

When this canister is to be used for gas treatment, the space between the inner perforating passage (6) and the enveloping perforated wall (16) is filled with a suitable gas-removing material. This material may vary according to the particular gas against which protection is desired. For ordinary uses, granules of activated charcoal and soda-lime, preferably sprayed with permanganate, have been found to give satisfactory results. The particular gas-treating material forms no part of this invention. The space between the perforated bodies is entirely filled with gas-treating material which also reaches a substantial distance beyond the lower portion of the inner perforated body (6), and in order to keep the gas-treating materials in position, I provide a cotton pad (17) and a bottom follower (18), preferably of sheet metal, and these are kept pressed against the gas-treating material by means of a spring (19), the upper portion of which bears against the follower (18) and the lower portion rests in suitable seats (20) at the bottom of the wall (16). In order to keep the spring (19) in position, add rigidity, and improve the appearance of the structure, a bottom cover (21) may be used and this may be soldered to the bottom of the wall (16).

It will be seen that the felt (14) prevents any of the granular material which might work its way through the perforations in the wall from leaving the body portion of the canister, and in order to secure the same kind of protection at the inner perforated passage (6), a bag (22) of suitable material, such as cotton, is placed over the perforated passage (6) and by taping same at (22^a) this bag is kept in place.

In assembling this canister, the nozzle (5) is fixed to the perforated body (6) and the body top (9) as previously described. The bag (22) is placed over the perforated passage (6) and is taped at (22^a). The perforated wall (16) is then joined to the body top and the space between the perforated bodies (6) and (16) is filled with gas-treating material and the cotton pad (17), bottom follower (18) and spring (19) placed in position. The bottom cover (21) is then fixed to the wall (16). The felt tube (14) is now mechanically seamed to the body top (19) and the bottom (15) of the body and the butt-joint sealed and then taped.

The structure is then placed into the casing (1) and a nozzle spacer (23), preferably

of rubber, is placed over the body top (9) and around said nozzle. The top (2) containing the check valves (3) is then positioned over the casing (1), the nozzle (5) projecting thru the top (2). In order to have a tight joint around the nozzle I provide a gasket (24) of suitable material such as rubber, and as a protection to the valves (3), I use a rain shield (25) which is placed over the top of the canister, and fits closely around the nozzle and over the valves (3). This shield (25) has a contour similar to that of the top (2). A nozzle nut (26) provided with recesses (26^a) for receiving a tightening tool is now screwed against the shield (25), this nut being threaded and engaging the threads on the outer portion of the nozzle (5). By means of this nut, the top (2) and shield (25) are held tightly in position. As additional protection, I prefer to render waterproof the connection between the top (2) and casing (1) and I therefore provide a tape (27) for this purpose. Ordinary adhesive tape has been found suitable for this purpose and in order to give same the proper finish it may be shellacked.

The path of air or gases entering and leaving the canister is indicated by arrows. The air or gas mixture enters by way of the opening (28) in the shield (25) thru the valves (3) and passes thru the smoke filter and gas-treating material and out thru the central perforated passage to the outlet nozzle (5). When this canister is used in connection with a gas respiring apparatus, a suitable connection leads from the nozzle (5) to the respirator and the air or gas mixture which is drawn thru the nozzle (5) will have been subjected to the purification heretofore described.

It will be seen that air or gas under treatment will always pass thru a uniform layer of gas-treating material. This results in the elimination of channeling, thereby lessening the danger of untreated or partly treated gas or air passing out thru the nozzle (5).

This invention is not limited to the specific details set forth in the foregoing examples which should be construed as illustrative and not by way of limitation, and in view of the numerous modifications which may be affected therein without departing from the spirit and scope of this invention, it is desired that only such limitations be imposed as are indicated in the appended claims.

I claim as my invention:

1. A gas mask canister comprising a central, perforated body, means possessing low resistance to breathing and enveloping said perforated body for removing toxic smoke from air or gas mixtures, said canister being sealed against passage of air or gas

mixtures to be treated into the interior of the canister without first passing thru said smoke-remover, and means disposed between said perforated body and said enveloping means for removing toxic gases from said air or gas mixture.

2. A gas mask canister comprising a central, perforated body, felt possessing low resistance to breathing and enveloping said perforated body for removing smoke from air or gas mixtures, said canister being sealed against passage of air or gas mixtures to be treated into the interior of the canister without first passing thru said felt, and means disposed between said perforated body and felt for removing toxic gases from said air or gas mixture.

3. A gas mask canister of flattened cross-section comprising a central, perforated body, felt possessing low resistance to breathing and enveloping said perforated body for removing smoke from air or gas mixtures, said canister being sealed against passage of air or gas mixtures to be treated into the interior of the canister without first passing thru said felt, and means of substantially uniform depth disposed between said perforated body and felt for removing toxic gases from said air or gas mixtures.

4. A gas mask canister comprising a central, perforated body, and an enveloping, perforated body substantially equidistant from said central body and smoke-removing felt possessing low resistance to breathing and surrounding said enveloping, perforated body, said canister being sealed against passage of air or gas mixtures to be treated into the interior of the canister without first passing through said felt.

5. A gas mask canister of flattened cross-section comprising a central, perforated body and an enveloping, perforated body substantially equidistant from said central body, means disposed between said perforated bodies for removing toxic gases from air or gas mixtures and smoke-removing felt possessing low resistance to breathing and surrounding said enveloping, perforated body, said canister being sealed against passage of air or gas mixtures to be treated into the interior of the canister without first passing thru said felt.

6. A gas mask canister comprising a flattened, central, perforated body and an enveloping, perforated body substantially equidistant from said central body, means

disposed between said perforated bodies for removing toxic gases from air or gas mixtures, smoke-removing felt possessing low resistance to breathing and surrounding said enveloping, perforated body, said canister being sealed against passage of air or gas mixtures to be treated into the interior of the canister without first passing thru said felt, an outlet passage communicating with said central, perforated body and adapted to be connected to a respirator and means for effecting the passage of air or gas mixture to be purified first thru said toxic-smoke-removing felt, then thru said central perforated body to said outlet passage.

7. A gas mask canister comprising a flattened, central, perforated body and an enveloping, perforated body substantially equidistant from said central body, smoke-removing felt possessing low resistance to breathing and surrounding said enveloping body, said canister being sealed against passage of air or gas mixtures to be treated into the interior of the canister without first passing thru said felt, a waterproof casing surrounding said felt, an outlet passage projecting thru said waterproof casing and communicating with said central perforated body, said casing being provided with means for allowing the entrance into the canister of air or gas mixture to be purified.

8. A gas mask canister comprising a flattened, central, perforated body and an enveloping, perforated body substantially equidistant from said central body, means disposed between said perforated bodies for removing toxic gases from air or gas mixtures, smoke-removing felt possessing low resistance to breathing and surrounding said enveloping, perforated body, said canister being sealed against passage of air or gas mixtures to be treated into the interior of the canister without first passing thru said felt, a waterproof casing surrounding said felt, an outlet passage projecting thru said waterproof casing and communicating with said central perforated body, inlet valves in said casing and means for effecting the passage of air or gas mixture to be purified first thru said toxic-smoke-removing felt, then thru said central perforated body to said outlet passage.

FRANK A. LOGAN.