

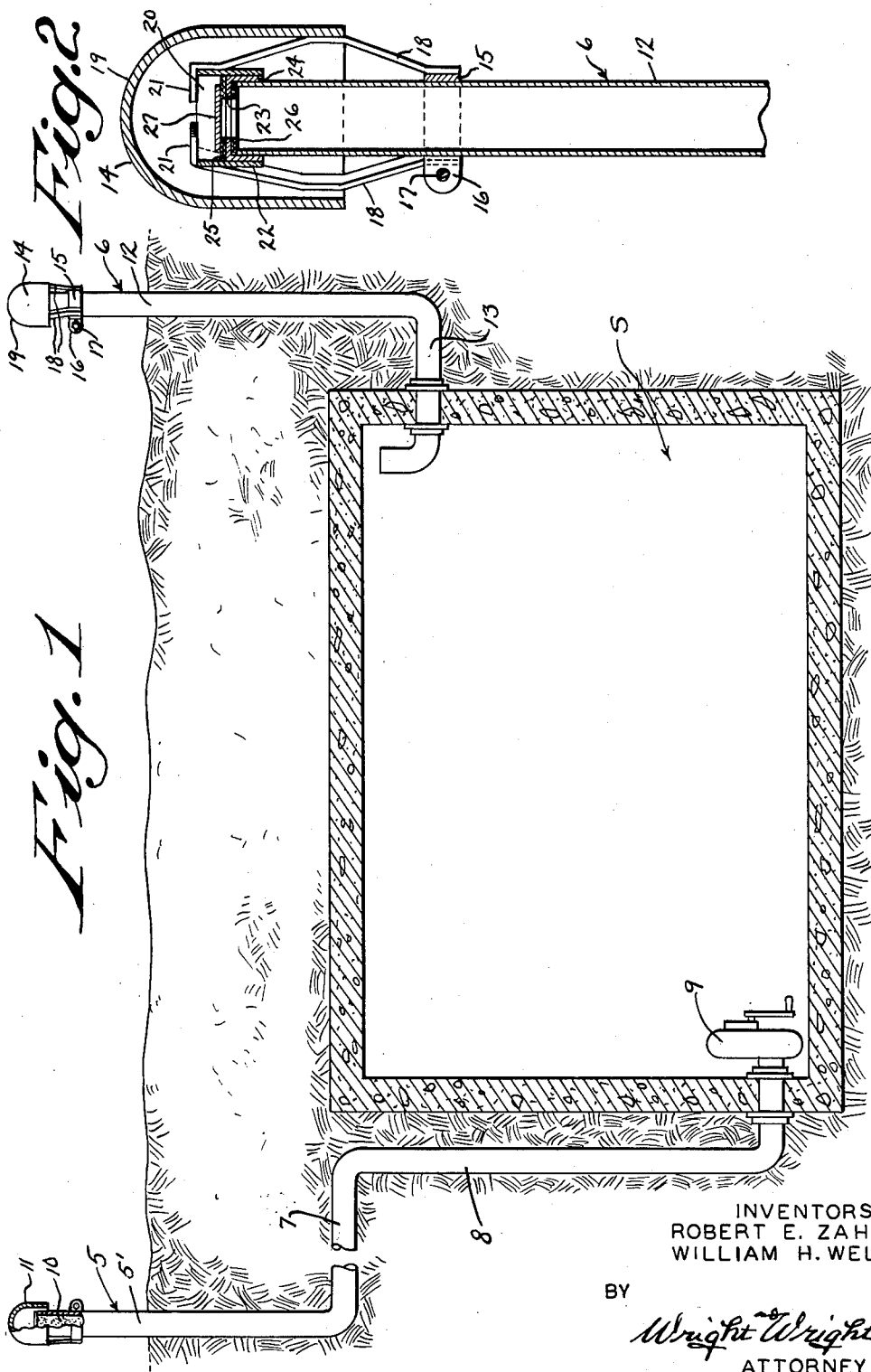
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FALLOUT SHELTER

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FALLOUT SHELTER

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This invention appertains to shelters for protection against descending radioactive particles incident to nuclear or atomic warfare and more particularly to the ventilation of fallout shelters of either the underground, bunker or basement type.

In the designing of fallout shelters the problem of proper ventilation has been a serious one. With the intake of filtered air, it is necessary to provide an outlet. Such outlet obviously forms a hazard for the unintentional intake of unfiltered air.

One of the primary objects of our invention is to provide a fallout shelter having a filtered air intake and a spaced air outlet, with means normally closing the outlet for preventing the intake of air, said means being operable for the outlet of air only when the pressure of air in the shelter exceeds exterior atmospheric pressure.

Another salient object of our invention is to provide a fallout shelter having at least one inlet stack for air and at least one outlet stack for air, the inlet stack having air filtering means therein, the inlet stack also having communicating therewith an air suction fan for forcibly drawing air through the inlet stack and into the shelter, the outlet stack having therein a lightweight freely movable thin closure plate normally disposed in a closed position for preventing the entrance of air into the shelter, the plate being lifted to an open position by air pressure in the shelter for permitting flow of air out of the shelter.

A further important object of our invention is to provide an outlet stack for fallout shelters embodying an exhaust pipe of a desired diameter and a protecting hood covering the outlet end of the pipe with a cap seated on the pipe having a valve seat and a lightweight plate or valve normally resting on and sealing the seat, the valve plate being freely movable to an open position by an up-draft through the pipe.

A still further important object of our invention is to provide an anti-backdraft valve for the outlet stacks of fallout shelters embodying a removable assembly including an attaching collar for detachable connection with the stack and carrying brackets supporting the protecting hood and the cap with the valve plate, the brackets having means for limiting the upward movement and displacement of the valve plate from the cap.

Another still further important object of the invention is to provide an anti-backdraft assembly for the outlet stacks of fallout shelters, which can be quickly and easily applied to and removed from an exhaust stack, one which will be efficient in use, and one which can be placed upon the market at a reasonable price.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts as will be hereinafter more specifically described and claimed, and illustrated in the accompanying drawing, in which drawing,

FIGURE 1 is a vertical sectional view illustrating a typical fallout shelter provided with inlet and outlet stacks for air and means for drawing air to the shelter through the inlet stack, and

FIGURE 2 is a longitudinal sectional view through the outlet stack showing our novel anti-backdraft assembly connected therewith.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter S generally indicates a fall-

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out shelter provided with an inlet stack 5 and an outlet stack 6.

The shelter S per se forms no part of the present invention and can be of the underground type as shown in the drawing, or of the bunker or basement type. The shelter S can be built in varying sizes according to the number of people to be accommodated.

The air intake stack 5 protrudes into the atmosphere a desired and selected height and is preferably constructed from relatively heavy pipe of a desired and selected diameter. The stack preferably includes a vertical stretch 5', a horizontal stretch 7 and a depending vertical stretch 8, leading into the shelter S close to the floor thereof. The end of the stack protruding into the shelter can communicate with an air suction fan 9 preferably of the hand driven type. The horizontal stretch 7 of the stack can be considered as a manifold, and more than one vertical stretch 5' can be connected thereto, if such should be necessary or desirable. The vertical stretch 5' is provided with a preferred type of air filter 10. This filter forms the subject matter of a separate application for patent. The inlet end of the stack is protected by a sturdy removable protecting hood, 11.

The outlet stack 6 includes a vertical stretch 12 of cast iron or like pipe of a desired and selected diameter and a horizontal stretch 13 extending into the shelter S adjacent to the front end thereof. The horizontal stretch can be considered as a manifold and more than one vertical stretch 12 can be connected therewith. The vertical stretches 5' and 12 of the inlet and outlet stacks can be located at any desired distance from the shelter and in some instances it may be desirable to locate these vertical stretches 5' and 12 a considerable distance from the shelter so as to prevent the easy location thereof by enemy forces.

The vertical stretch 12 of the air outlet stack 6 has associated therewith our novel anti-backdraft assembly 14.

The assembly 14 includes a split attaching collar 15 and this collar has formed on its terminals radially extending ears 16 connected together by an adjusting bolt 17. Thus, the collar 15 can be easily and quickly secured to the stack or pipe. The split collar 15 has welded or otherwise secured thereto at spaced points upwardly extending supporting brackets or arms 18. The arms 18 intermediate their ends are bowed outwardly and these bowed portions constitute means for supporting a protecting hood 19. The hood 19 is also preferably formed from rugged material of a desired gauge. The hood 19 can be welded or otherwise secured to the bowed portions of the bracket arms 18. The bracket arms 18 continue upward into the hood and have welded or otherwise secured thereto a cap 20. It is to be noted that the upper ends of the bracket arms 18 terminate in inwardly extending feet 21 which overlie the cap, for a purpose, which will later appear.

The cap 20 preferably includes a sleeve 22 which is welded or otherwise secured to the upper ends of the bracket arms 18. Welded or otherwise secured to the interior of the sleeve 22 is an annular plate 23 and this plate 23 may or may not be provided with a depending skirt 24 and this skirt can be welded to the sleeve 22. The annular plate 23 has glued or otherwise affixed thereto upper and lower felt washers 25 and 26. The lower washer 26 is adapted to fit on the upper edge of the stretch or pipe 12 and the upper washer 25 constitutes a seat for a lightweight valve 27. This valve 27 is formed from thin gauge metal and the metal is preferably aluminum. The valve plate 27 is of such a diameter so as to insure the proper seating of the same on the washer 25 even if the plate 27 should shift to one side or the other.

It is to be noted that the feet 21 are spaced from the valve plate 27 when the valve plate is seated, and that

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these feet constitute means for limiting the upward movement of the valve plate 27 and displacement thereof from the cap.

In operation, should any backdraft occur down the stack 6 the valve plate 27 will fit on its seat or washer 25 and prevent the intake of unfiltered air into the shelter. Due to the lightweight of the valve plate 27, the same will freely rise when air pressure in the shelter exceeds atmospheric pressure, and hence free flow of air out of the shelter is insured.

Obviously, the assembly 14 can be quickly and easily applied to or taken off of the stack and hence the same can be repaired or replaced when necessary or desirable.

Changes in details may be made without departing from the spirit or the scope of this invention, but what is claimed as new is:

1. In a fallout shelter having an outlet stack communicating with the upper end thereof and including a length of vertical pipe extending into the atmosphere, an assembly detachably connected with the outer end of said pipe including a collar for connection with the pipe, upwardly extending bracket arms secured to the collar, a protecting hood secured to the bracket arms and extending over the outlet end of the pipe in spaced relation thereto, a cap carried by said bracket arms including an annular plate detachably fitted on the extreme upper end of the pipe, a lightweight valve plate normally seated on the upper end of said annular plate for preventing flow of air into the pipe, said valve plate being freely movable off of the annular plate by pressure of air in said pipe, and means for limiting the movement of said valve plate in an upward direction.

2. In a fallout shelter as defined in claim 1, wherein said means for limiting the upward movement of said

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valve plate includes inwardly extending feet carried by the bracket arms and overlying said valve plate for limiting movement of said valve plate in an upward direction.

3. In a fallout shelter, an exhaust stack for air communicating with the shelter adjacent to its upper end and including a vertical length of pipe extending into the atmosphere, and an anti-backdraft assembly for said pipe including a collar for detachable connection with the pipe, upwardly extending bracket arms secured to the collar and including intermediate outwardly bowed portions, a protecting hood for the upper end of said pipe secured to said bowed portions and overlying the pipe in spaced relation thereto, a cap for snugly fitting on the upper end of said pipe and carried by said bracket arms and including an annular plate engaging the extreme upper edge of the pipe, a valve washer seat carried by the annular plate, a thin lightweight valve plate normally seatable on said washer and movable to a raised position off of said washer by pressure of air in said pipe, and means for limiting the upward movement of said valve plate.

4. In a fallout shelter as defined in claim 3 wherein said means for limiting the upward movement of said valve plate includes inwardly extending feet on said bracket arms extending over the valve plate in spaced relation thereto and limiting the upward movement and displacement of the valve plate.

References Cited in the file of this patent

UNITED STATES PATENTS

3,059,565 Mears _____ Oct. 23, 1962

FOREIGN PATENTS

304,751 Switzerland _____ Apr. 21, 1955