

F. BATTER.

APPARATUS FOR THERAPEUTIC TREATMENT OF AIR OF A SICK ROOM.

APPLICATION FILED JULY 7, 1908.

Patented Aug. 18, 1914.

2 SHEETS-SHEET 1.

1,107,744.

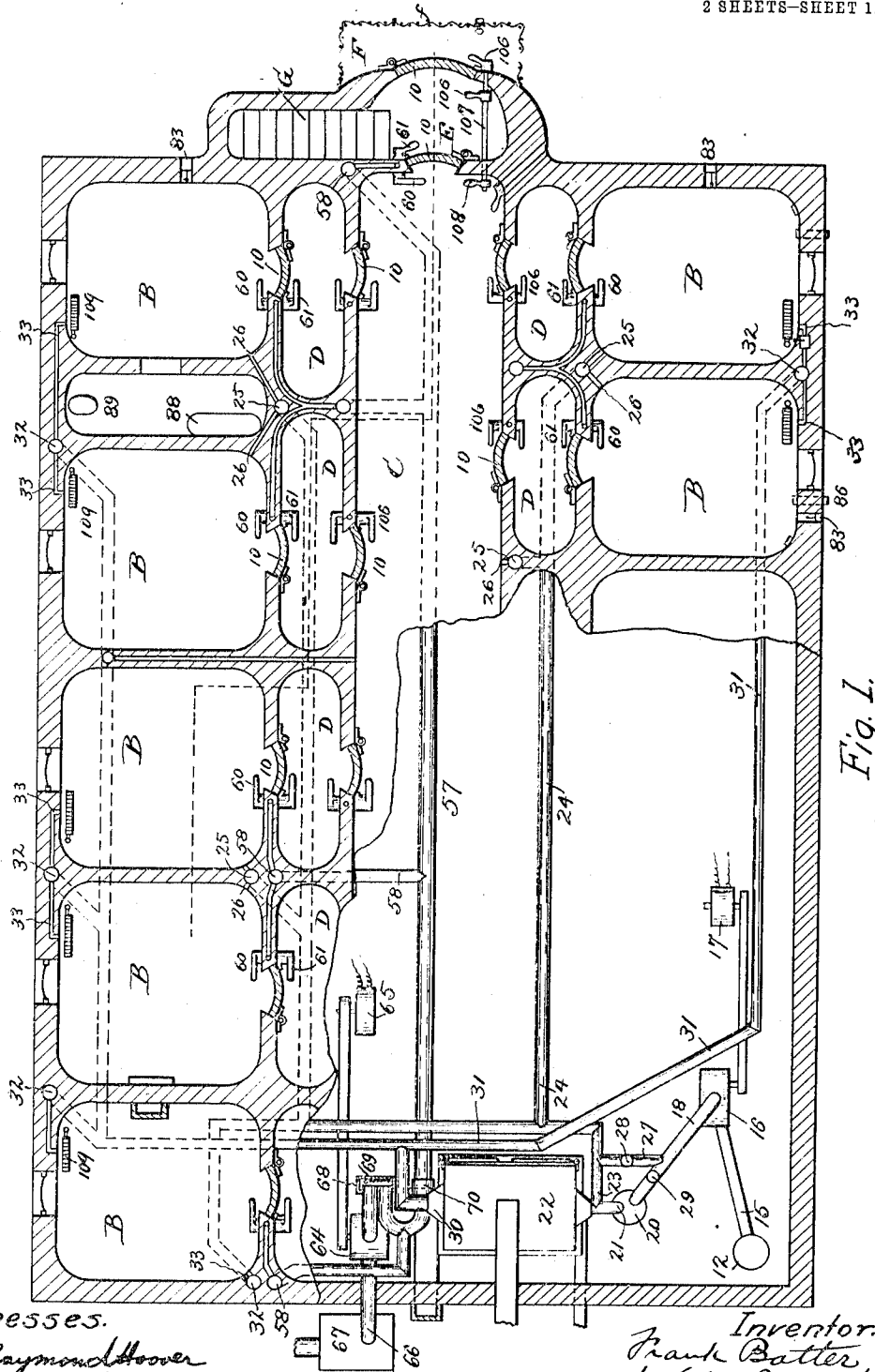


Fig. 1.

Witnesses.

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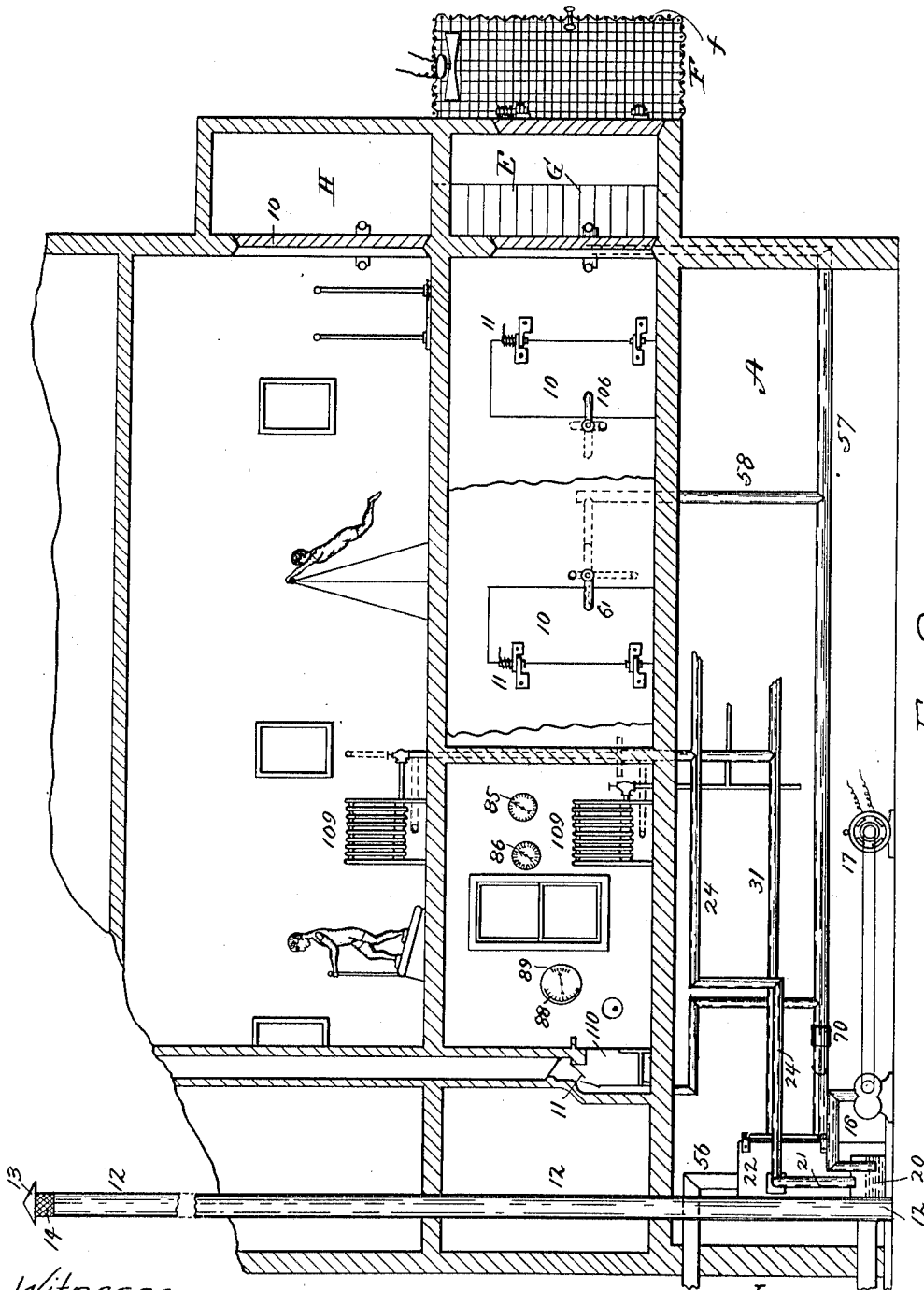
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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK BATTER, of St. Johns, in the county of Multnomah and in the State of Oregon, have invented a certain new and useful Improvement in Apparatus for Therapeutic Treatment of Air of a Sick-Room, and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a horizontal section of a building constructed in accordance with my invention, showing a portion of the basement and a part of the ground floor; Fig. 2 is a vertical section of said building.

The object of my invention is the provision of means for securing the comfort and health of human beings by the production and maintenance of those conditions of the air or atmosphere by which they are surrounded which are or may be necessary for comfort and the prevention and cure of diseases, and to this end my invention consists in the apparatus substantially as hereinafter specified and claimed.

By my invention the conditions obtaining in any climate or locality may be reproduced in respect to the quality, humidity, density, temperature and purity of the air, so that at his home or in a sanatorium or hospital, a patient may be afforded exactly those conditions of the atmosphere or air which his particular case requires, without the necessity of a journey to the particular locality where the desired conditions exist naturally, and with the advantage, which does not exist under natural conditions, of permanence of the desired conditions, of freedom from the variations which under natural conditions are unavoidable, and with the further advantage that the atmosphere in which the patient lives may be medicated.

My invention is applicable to a single room in an ordinary dwelling house, or a hospital or sanatorium may be specially constructed, and to illustrate my invention, I have selected an embodiment of it in a sanatorium or hospital, the building shown in Figs. 1 and 2 of the drawings being such a sanatorium and having a basement A in which is located certain working parts of the apparatus I employ, and a ground floor divided into numerous rooms B arranged on opposite sides of a central corridor C. From the corridor a doorway opens into a vestibule D for each room, which doorway

is closed by an air-tight door 10, and from the vestibule a doorway opens into its room, which is closed by a similar door 10, and ingress to and egress from the building is had by a vestibule E having an outer doorway closed by an air-tight door 10 and an inner doorway that communicates with the corridor closed by an air-tight door 10. Around the outer door is a screened inclosure F, to exclude insects, and said screened inclosure has a door *f*. Said door *f* carries one member of an electric switch *f* which controls current to an electric fan supported in the top of the screened inclosure above the outer door 10, the circuit being closed when the screen door *f* is open so as to cause the operation of the fan to drive away any insects finding their way into the inclosure, and open or broken when the screen door *f* is closed. A second story of the building is utilized as a gymnasium, being supplied with suitable apparatus, and such story may be reached by a stairway G that leads from the vestibule E to a vestibule H for the gymnasium, the doorway leading from the vestibule H to the gymnasium being closed by an air-tight door 10.

The doors 10 have spring hinges 11 which act to swing them normally to a closed position, and to make an air-tight joint, a packing strip is interposed between the edge of the door and the door jamb or frame. The doors and other openings are made air-tight in order to maintain the desired conditions in the rooms uninfluenced by external or outdoor conditions, both from the entrance of air from out of doors and the outward passage of the aeriform contents of the room.

Situated at some convenient point that may communicate with the interior of the building, is a vertical air shaft 12 which as shown in the drawings rises from the floor of the basement through the building and emerges through the roof and is carried to a height to reach air as free as possible from insects, dust, smoke, noxious gases, or other impurities, and below the top of said shaft which is covered by a cap 13 is provided a perforated section 14 forming a screen for air entering the shaft, said shaft being the means for the introduction of air to the building. From the bottom of the stack a pipe 15 runs to a blower 16 driven by an electric motor 17. From the blower an outlet pipe 18 runs to a washer 20 having an eduction pipe 21, from which a portion of

the washed air is delivered to a drier 22, and another portion by a branch pipe 23 that leads from the pipe 21 to a main 24 for the supply of air to the various rooms or compartments, branch pipes 25 running from the main 24 and leading to outlets 26 to the various rooms and the corridor. A by-pass 27 runs from the blower outlet 18 to the branch 23, and said by-pass is provided with a valve 28, while the outlet pipe 18 is provided with a valve 29 between the by-pass 27 and the washer 20, so that if desired air may be delivered directly from the blower outlet 18 to the main 24 either wholly or in part. A portion of the air passing from the washer 20 when the latter is in use passes directly to the room-supplying main 24, and a portion to the drier 22, and the portion which passes to the drier is delivered therefrom to an eduction pipe 30 that leads to another supply main 31, from which likewise branches 32 run to the rooms or compartments and the corridor and deliver the air thereto through outlets 33.

To take the aeriform contents of the rooms or compartments therefrom, I provide a main 57 having branches 58 which lead to the various rooms, the communication between a room and a branch being preferably controlled by a hand-operated valve which is attached to the handles 60 and 61, respectively, of the bolt or fastener of the door 10 that controls communication between a room and its vestibule, said handles being respectively inside and outside the room. The exhaust main 57 has connected with it in the basement an exhaust fan 64 driven by an electric motor 65, and from the exhaust fan 64 an eduction pipe 66 runs to a tank or pit 67. Contiguous to the exhaust fan 64, the exhaust main 57 is bent and enters a box 68 lined with felt 69 or filled with porous material to deaden sound and to form a support or holder for a disinfectant or germicide in some form that will saturate such material, and also for the purpose of deadening or preventing the admission of sound, the exhaust main 57 has contiguous to the box 68 a short section of non-metallic pipe 70. The tank or pit 67 may contain a disinfectant or germicide.

I medicate or charge the air with some curative or treating agent before it is delivered to a room by supplying such agent in each outlet 26 in a form which will give off fumes or vapors so that the air passing through the outlet will be charged therewith.

In the operation of my invention in the case of the apparatus illustrated in the drawings, the procedure is as follows: By the operation of the blower 16, air is drawn from a safe altitude through the air stack or shaft 12, and either all, or a portion of the air drawn in, is passed through the washer 20, dependent upon the position of the valves or

dampers 28 and 29 in the pipes 18 and 27, and all, or a part of it may be passed first through the drier 22 and thence by main 31 to the rooms or directly to the latter by the main 24. The proportions of air delivered to a particular room without first passing through the drier, to that delivered thereto after passing through the drier, is regulated by dampers and is according to the degree of humidity desired in that room. Thus if the hygrometer in the room reads 70% and the physician desires to reproduce for the patient a certain climate where the humidity is 30%, the damper controlling the main 24 is closed to cut off the supply of air not first dried and the damper of the main 31 is opened to increase the supply of drier air. The blower 16 is used to produce a pressure only sufficient to overcome the friction of the air through the shaft 12 to force it through the washer, and not to produce a pressure in the supply mains 24 and 31. It will thus be seen that the air is taken from a distance above the surface sufficient to insure its purity and coolness, is washed and dried, carried to the rooms without possibility of contamination, rarefied to any desired degree and because of the consequent expansion the temperature is reduced in a natural way to correspond with that of a high altitude and the consequent benefit to certain diseases is attained. The air is impregnated with any desired curative agents, any desired degree of ventilation is attained and the vitiated air is removed without the possibility of communicating with and contaminating other rooms and the exhausted air is disinfected before liberation. Protection is secured against exhausting heat of summer and the detrimental accompaniment of any climate due to storms and the consequent changes of humidity, barometric pressure and temperature. A patient, instead of traveling long distances and encountering many risks may remain at home where he may receive the best of attendance and yet appropriate all the benefits that would accompany any climate.

In view of the fact that the influx and efflux of air from a room is absolutely under control, it is an easy matter to produce and maintain a rarefied condition of the air in a particular room, the aeriform contents of such room being drawn off more rapidly than they enter it, and it is possible to graduate the degree of rarefaction so that a patient may gradually become accustomed to that degree of rarefied atmosphere which his particular case requires. As is well known, it is a distinct benefit to a patient whose blood has lost some of its vitality or is impoverished, to live or be in a rarefied atmosphere, because under such conditions there is an accumulation of a larger proportion of oxygen by the blood, so that the blood

in such a case will contain a larger proportion of hemoglobin and of oxygen than is the case where a patient lives under normal pressure.

5 By my system of vestibules and doors, and the valve-controlled air passages in the doors, ingress and egress to the building and to the rooms is possible under conditions which reduce the danger of contamination or infection from the outside and from room to room to a minimum, and the operation of the inner doors is easy notwithstanding the existence of pressures inside them which otherwise might subject them to unbalanced pressure.
15 Having thus described my invention, what I claim is—

1. The combination of an inclosed structure, a pipe or flue leading from the outside thereof to the inside, means for causing the
20 passage of air through such pipe or flue into the structure, a washer to which the air is led, a drier, and means for causing a portion of the air to pass through the drier to a particular room in the structure and for delivering another portion of the air directly
25 from the washer to such room.

2. The combination of an inclosed structure, a pipe or flue leading from the outside thereof to the inside, means for causing the
30 passage of air through such pipe or flue into the structure, a washer to which the air is led, a drier, means for causing a portion of the air to pass through the drier to a particular room in the structure and for delivering

another portion of the air directly
35 from the washer to such room, and means for withdrawing the aeriform contents of such room.

3. The combination of an inclosed structure, a pipe or flue leading from the outside
40 thereof to the inside, means for causing the passage of air through such pipe or flue into the structure, a washer to which the air is led, a drier, means for causing a portion of the air to pass through the drier to a particular room in the structure and for delivering another portion of the air directly
45 from the washer to such room, and means for withdrawing the aeriform contents of such room and disinfecting the same. 50

4. The combination of an inclosed structure, a pipe or flue leading from the outside thereof to the inside, means for causing the
55 passage of air through such pipe or flue into the structure, a washer to which the air is led, a drier, means for causing a portion of the air to pass through the drier to a particular room in the structure and for delivering another portion of the air directly
60 from the washer to such room, and means for charging the air with a medicinal agent on its way to the room.

In testimony that I claim the foregoing I have hereunto set my hand.

FRANK BATTER.

Witnesses:

M. BILLINGS,
F. M. MILES.