

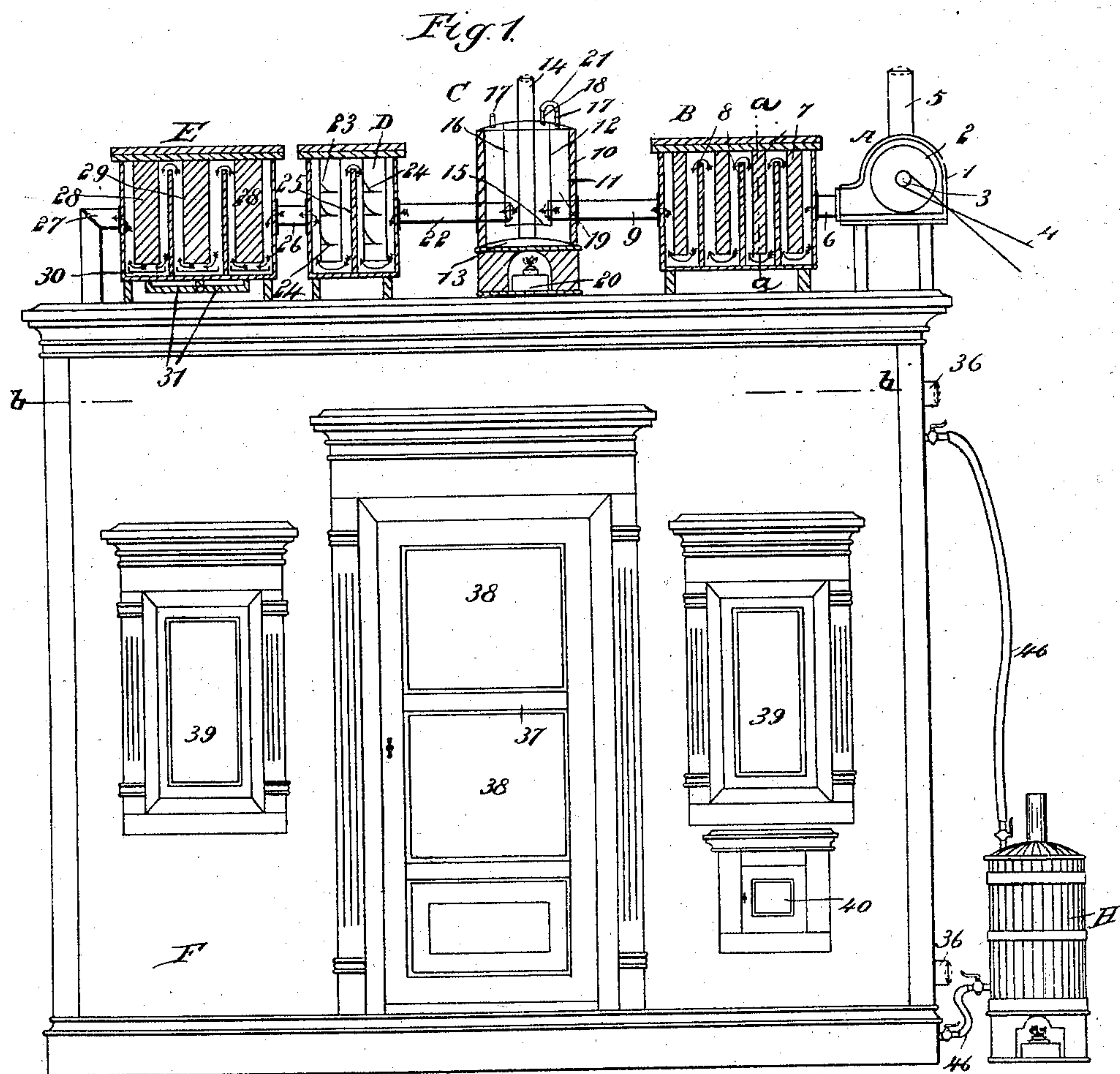
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3 Sheets—Sheet 1.

A. TRELLES BLANCO.
HYGIENIC CHAMBER.

No. 558,765.

Patented Apr. 21, 1896.



WITNESSES:
John L. Latta

INVENTOR
Amador Trelles Blanco
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ATTORNEYS.

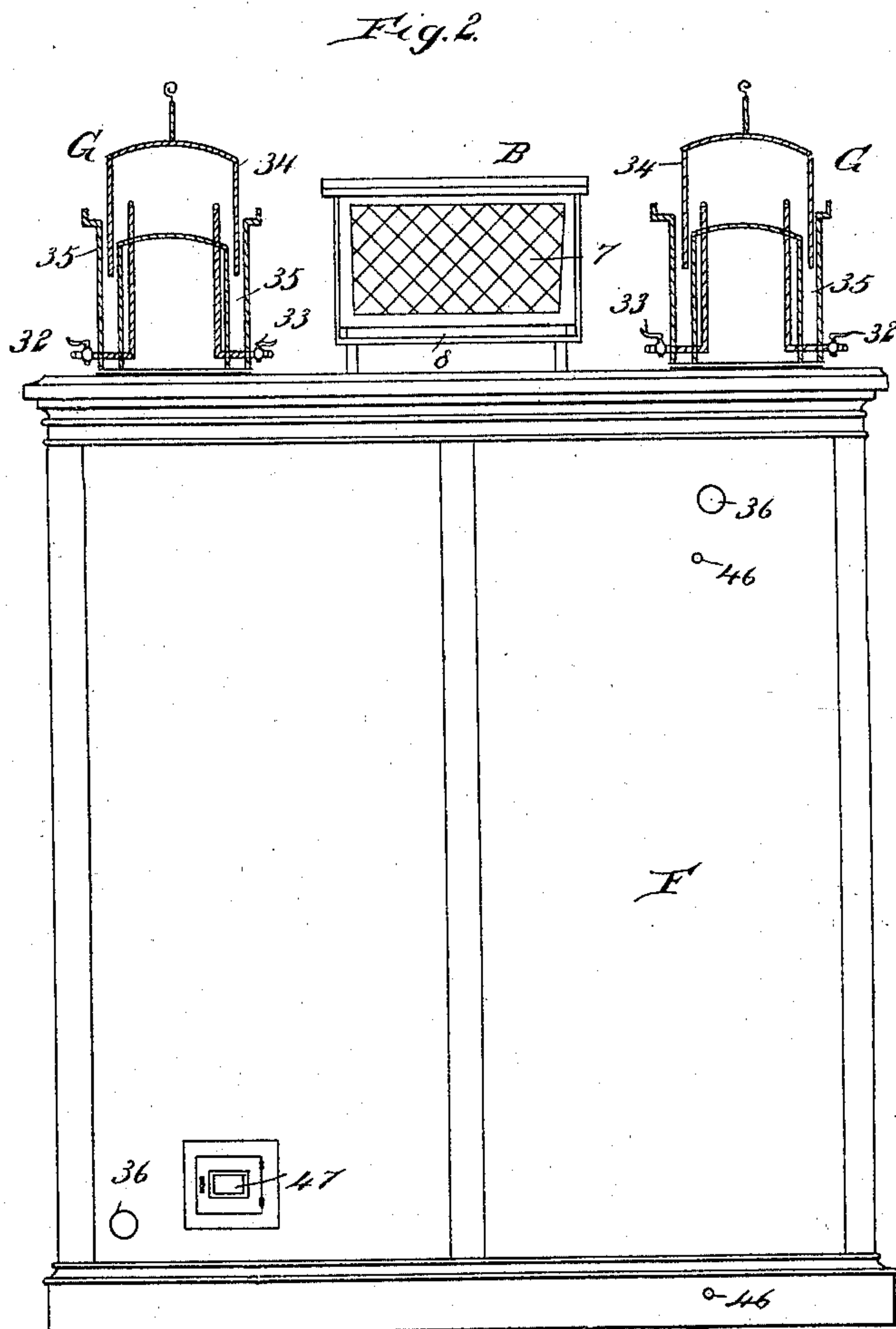
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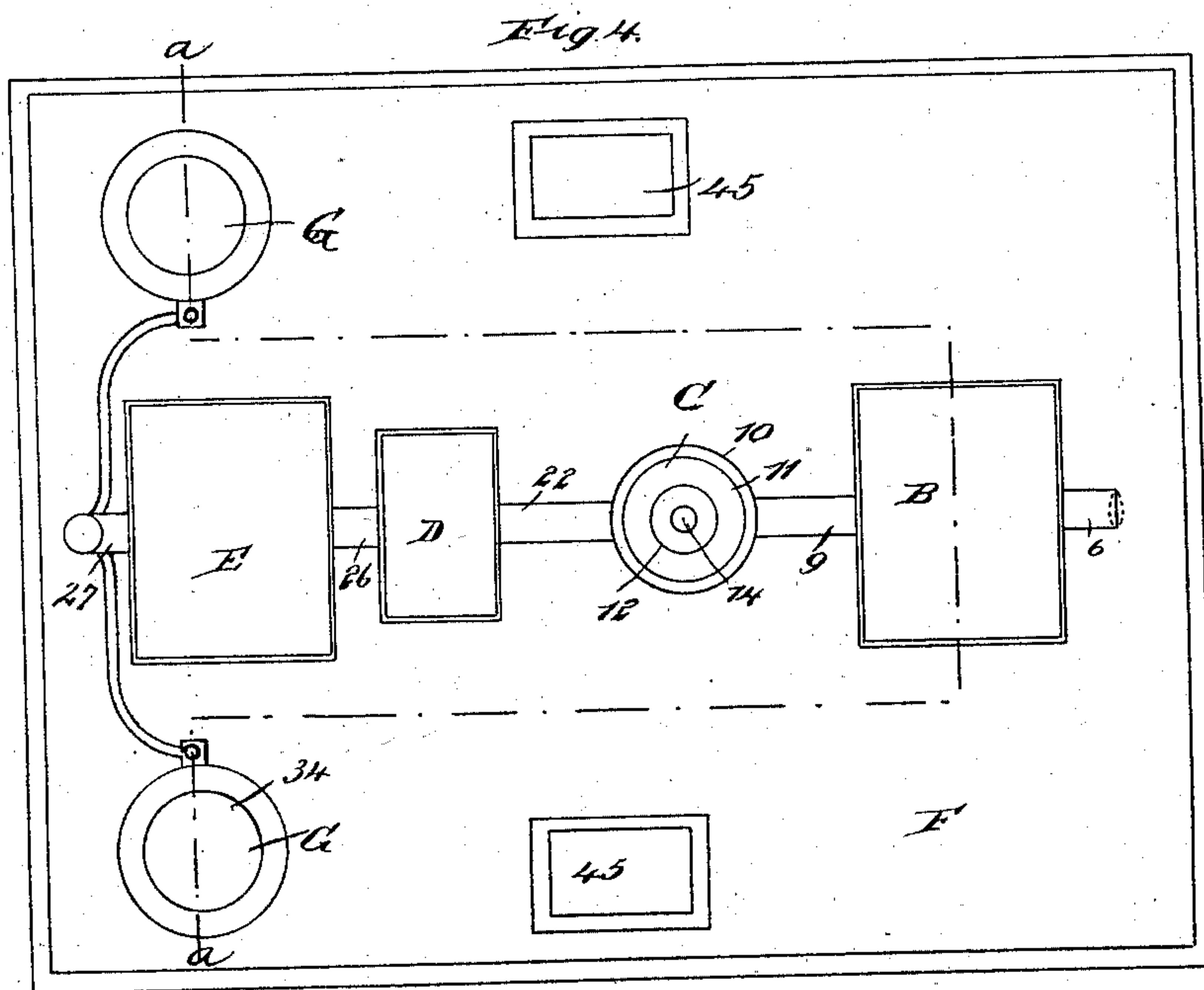
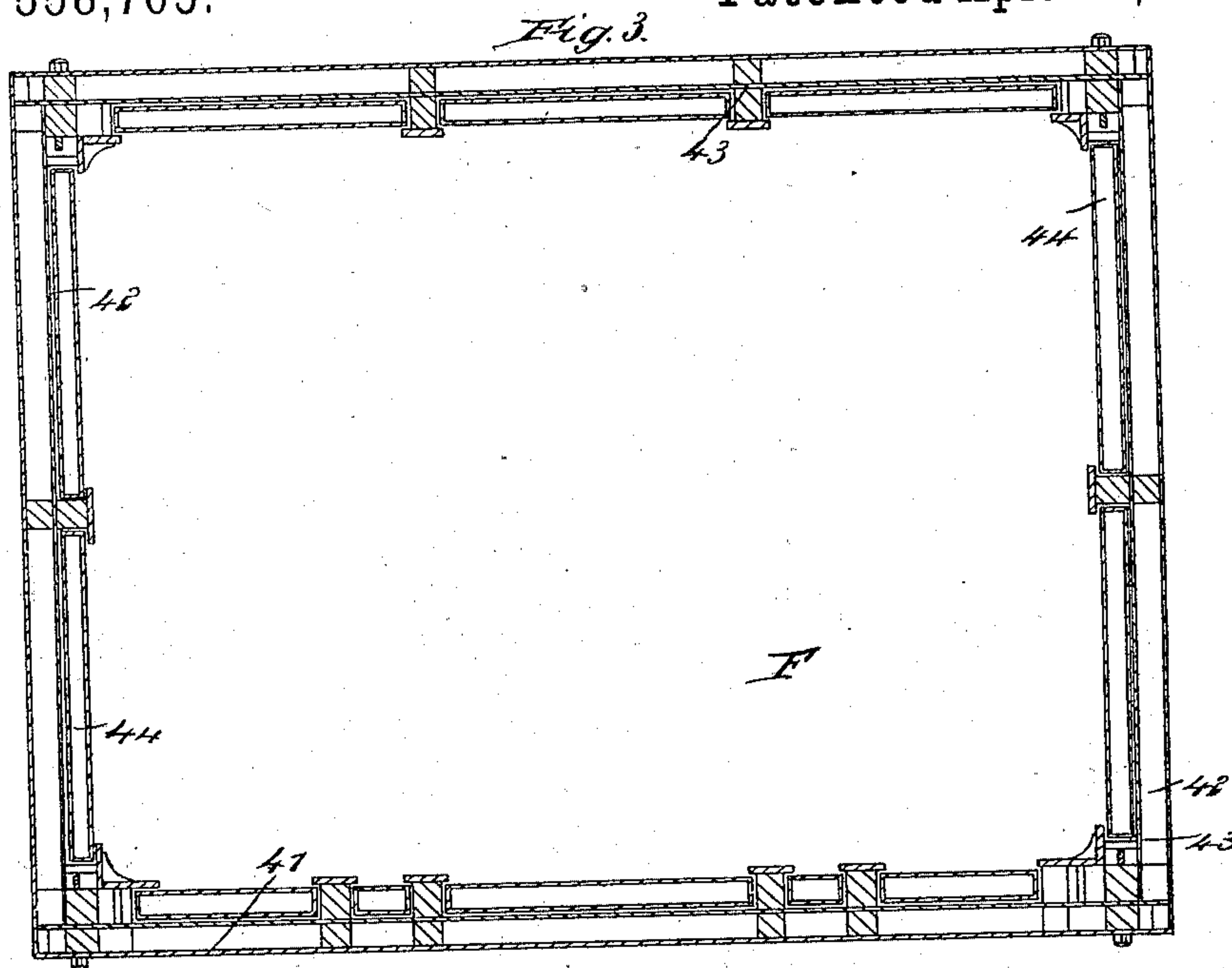
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WITNESSES:

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UNITED STATES PATENT OFFICE.

AMADOR TRELLES BLANCO, OF HAVANA, CUBA.

HYGIENIC CHAMBER.

SPECIFICATION forming part of Letters Patent No. 558,765, dated April 21, 1896.

Application filed April 26, 1895. Serial No. 547,259. (No model.) Patented in Spain February 6, 1893, No. 13,958.

To all whom it may concern:

Be it known that I, AMADOR TRELLES BLANCO, a subject of the King of Spain, residing in Havana, Cuba, have invented a new and Improved Hygienic Chamber, (for which I have obtained Letters Patent in Spain, dated February 6, 1893, No. 13,958,) of which the following is a full, clear, and exact description.

The object of this invention is to provide a chamber in which a sick person may be readily separated from other persons, and to provide means whereby the air within the said chamber may be constantly renewed and brought to any desired degree of temperature and humidity, and also moistened or mixed with antiseptic or aromatic substances, thus securing the best conditions possible for the efficacious treatment of various diseases, particularly infectious diseases.

To these ends my invention consists in the novel arrangement and combination of parts, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of my improved hygienic chamber with parts in section. Fig. 2 is a side elevation of the same with parts in section on the lines *a a* of Figs. 1 and 4. Fig. 3 is a sectional plan taken, essentially, on the line *b b* of Fig. 1; and Fig. 4 is a top view of the apparatus.

On the top of the chamber are supported a series of devices through which the air is passed before being admitted to the said chamber.

A is a blower, preferably of the centrifugal type, provided with a casing 1 and a fan 2 on the shaft 3, the driving-belt being indicated at 4. The air enters the casing 1 through a pipe 5, which may extend through the roof of the building, and is delivered through the pipe 6.

B is a purifier, which consists of a hermetically-closed casing connected to the pipe 6 and provided in its interior with a series of partitions 7, the shape of which will be seen best in Fig. 2, the said partitions consisting of two layers of wire-cloth inclosing between

them a cotton wad or some equivalent absorbent material. The cotton or like substance is impregnated with a disinfectant liquid or any other substance that is capable of retaining or destroying bacteria and impurities. Between these double walls of wire I arrange baffle-boards 8, which compel the air to travel in a sinuous path, as indicated by the arrows in Fig. 1, the air finally reaching the outlet-tube 9.

C is a heater which, as shown, is of cylindrical shape, and has an outer covering of wood 10 and two metallic shells 11 and 12 within the same. Said shells are spaced apart, and a bottom 13 is located in the lower part of the heater, and on the said bottom is supported a chimney 14. A horizontal partition 15 extends from the inner shell to the chimney, and thus forms an inner chamber 16 around the chimney, while a chamber 19 surrounds the chamber 16. Suitable filling-tubes 17 and 18 lead into the upper portions of the annular chambers 19 and 16, respectively, and in operation the chamber 19 is filled with water.

A burner 20 is located in the base of the heater, and it will be understood that the heat evolved from the said burner will heat the air which is discharged from the tube 9 into the chamber 16 and also the water which is contained in the chamber 19. Thus the air while passing through the heater will be brought to the proper temperature. It is to be understood that during this heating of the air the filling-tubes 17 and 18 are normally closed.

Should it be desired to impart to the air a greater degree of humidity than it has when it arrives at the heater, the water-chamber 19 is connected with the air-chamber 16, in the manner shown in Fig. 1, by placing a rubber tube 21 on one of the filling-tubes 17 and the filling-tube 18. In this case the steam evolved from the water will enter the chamber 16 and there be mixed with the air. The air being thus purified and heated, and also moistened, if required, passes out through the pipe 22 into the saturator D. This apparatus is constructed similarly to the purifier B and contains two or more vertical boxes or casings 23, and said casings support a series of boxes 24, in which are placed aromatic substances, either solid or liquid, so that the air,

which, by means of baffle-boards or partitions 25, is compelled to travel in a sinuous course, will become saturated with the said substances. The air then passes to the condenser E, provided with an inlet-tube 26 and an outlet-tube 27. The condenser consists of a series of tanks 28, each provided in its upper part with an opening, through which it may be filled with water or ice. Baffle-boards 29 are also employed in this apparatus for the same purpose as heretofore stated.

The air while traveling through this apparatus will be free of any excess of moisture, as the cool walls of the water-tanks 28 when coming in contact with the heated air will cause a condensation of the vapor contained therein.

It will be understood that the moistening arrangements described with reference to the heater C and the condenser E are not employed conjointly—that is, when the air delivered at the pipe 9 has not a sufficient degree of moisture the deficiency of moisture is supplied by the heater in the manner described, and the condenser remains inactive, no water or ice being filled into the tanks 28. On the other hand, if the air delivered at the pipe 9 is too moist the connection between the chambers 16 and 19 of the heater C is cut off and the condenser E is used to free the air of the excess of moisture. The water of condensation in the condenser E is collected in drip-pans 30, located at the bottom of the condenser, and said drip-pans are preferably connected to a tube 31, provided with a condensed-water trap. By testing the water of condensation with sulfuric acid the purity of the air can be readily ascertained.

The air from the pipe 27 passes into the chamber F. At the sides of the condenser E are located gasometers G for supplying oxygen to the air in case the delivery of oxygenated air to the chamber is desired. The gasometers, as illustrated in Fig. 2, are provided with cocks 32 and 33, leading into the dome 34, which, as usual, dips into the water contained in the jacket 35. The cock 32 is employed for admitting oxygen into the gasometer, while the cock 33 controls the communication of the gasometer with the pipe 27. In this manner oxygen will be supplied together with the purified air, and the amount supplied may be regulated either by opening the cock 33 more or less, or by regulating the pressure by using greater or less weight on the dome 34.

The chamber F is provided with outlets 36 for the air, and, if desired, tubes may be connected to said outlets, so as to conduct the air to any place where the germs of diseases that may be contained therein can be destroyed. The chamber is provided with a door 37, having glass panes 38, and also has windows 39, so as to admit light to the interior of the chamber. Under one of the windows is located a small door 40, adjacent to which is arranged a rotatable tray, which also

is located close to the bed of the sick person, so that articles may be passed into the chamber and out of the same without creating a draft and without affording the germs of diseases an opportunity of spreading to the outside of the chamber.

My invention also contemplates the provision of means whereby the temperature within the chamber may be regulated. This device is shown at the right-hand portion of Fig. 1, and the particular construction of the walls of the chamber will be seen best in Fig. 3. The said chamber has an outer wall 41, of wood, and within the same a layer of cork 42. Then comes another wooden wall 43, and on the inside thereof is arranged a series of metallic tanks 44, which preferably all communicate with each other. 45 (see Fig. 4) indicates two apertures for filling the said tanks 44 with water.

If it is desired to maintain a cool temperature within the chamber, the tanks 44 are filled with cool water or ice or some refrigerating mixture, and I have found by experiments that the particular construction of the chamber prevents the equalization of the exterior and interior temperature during a comparatively considerable length of time, and in one case I found that while there was an initial difference of 15° centigrade between the outside and inside temperature there still was a difference of 6° after twenty-four hours.

When it is desired to heat the air within the chamber, I employ the stove H, (shown in Fig. 1,) said stove being substantially of the usual construction, containing a water heater or boiler, which may be covered with wood, as shown, and is connected to the tanks 44 through the medium of pipes 46. When the water has been heated to the desired temperature, a very moderate heat will be sufficient to preserve this temperature.

It is understood that with the exception of the openings 36 the chamber is closed as hermetically as possible, so that the sick person is perfectly isolated. The vitiated air escaping through the tubes may, as above mentioned, be conducted to the outside of the building, and in the case of infectious diseases may be disinfected.

At the side of the chamber is located a small door 47, which gives access to a privy located in the chamber, so that the said privy may readily be disinfected from the outside of the chamber. The patient may be seen from outside the chamber and conversation may be carried on by means of speaking-tubes.

It will be observed that my invention provides means for keeping the chamber permanently heated or cooled to any temperature that may be required, and, furthermore, the air which is constantly delivered into the chamber, so as to be constantly renewed therein, is of such a condition as to not only facilitate the recovery of the patient, but diminish

the risk of contagion and the unpleasantness of breathing the air of a sick-room by all persons, such as physicians and nurses, that may be compelled to remain with the patient for a greater or less length of time. The air delivered into the chamber, as described, is entirely pure, having been freed in the purifier B from dust, bacteria, and other injurious bodies generally suspended therein. Furthermore, the air, by means of the heater C or the condenser E, has been given the right degree of humidity to make it readily respirable, and, finally, by the use of the saturator D the air may be laden with various substances that may be of assistance in curing the disease under treatment, or in the case of diseases in which a disagreeable odor is exhaled from the patient the air may be saturated with disinfecting or other substances that will partly or entirely destroy the said odor. The addition of oxygen to the air will also have a curative effect in certain cases.

It will be seen that I am enabled by the use of my improved hygienic chamber to place the patient under the most favorable conditions for his speedy recovery and to maintain such conditions for any desired length of time; further, that the patient may be perfectly isolated from his surroundings, and, lastly, that the persons whose duty it is to stay with the patient will have this duty made as little unpleasant as possible, and in the case of contagious diseases will be protected to a large extent from infection.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A device for heating and moistening air, comprising an inner shell 12, forming an air-chamber 16, and provided with inlet and outlet pipes 9, and 22, respectively, for the air,

and outer shell 11, surrounding the inner shell, to form an annular water-chamber 19, a heating device 20, below the shells, and a connection 21, from the water-chamber to the air-chamber, whereby the steam or vapors evolved in the water-chamber may be admixed with the air in the air-chamber, substantially as described.

2. A device for heating and moistening air, comprising an air-chamber 16, provided with inlet and outlet pipes 9, and 22, respectively, a water-chamber 10, arranged contiguous to the air-chamber and having one wall 12, in common therewith, a heating device 20, located in operative relation both to the air-chamber and to the water-chamber, and a connection 21, from the water-chamber to the air-chamber, whereby the steam or vapors evolved in the water-chamber may be admixed with the air in the air-chamber, substantially as described.

3. A device for heating and moistening air comprising a base adapted to contain a heating device 20, a chimney 14, extending upwardly from the base, an inner shell 12, surrounding the chimney above the base and forming an air-chamber 16, inlet and outlet pipes 9 and 22, respectively connected with said chamber, an outer shell 11, surrounding the inner shell, to form therewith an annular water-chamber 19, and means for connecting the top of the water-chamber to the air-chamber, whereby the steam or vapors evolved in the water-chamber may be admixed with the air in the air-chamber, substantially as described.

AMADOR TRELLES BLANCO.

Witnesses:

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ADOLFO SANCHEZ DOLZ.