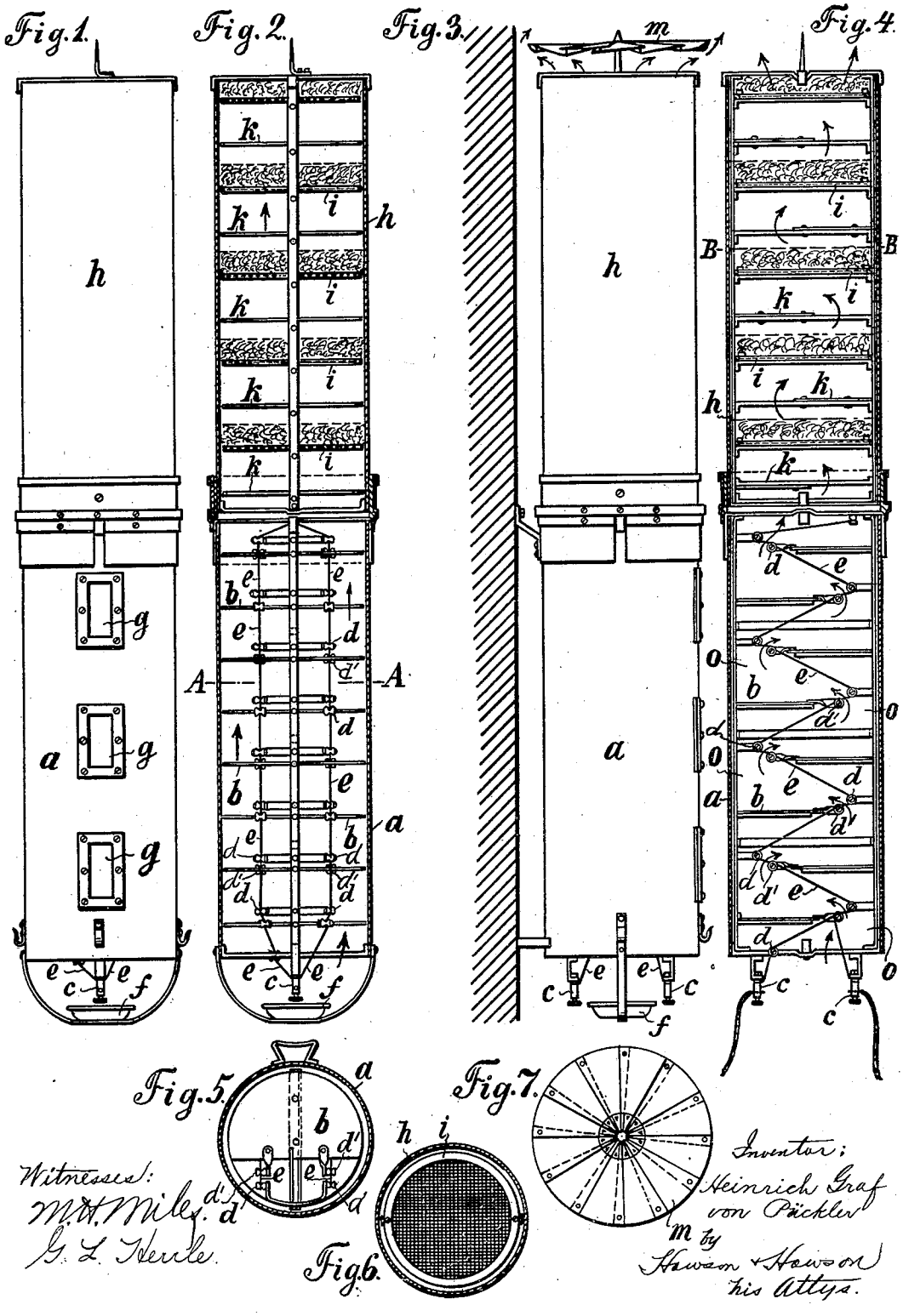
No. 705,865. Patented July 29, 1902.

H. v. PÜCKLER.

AIR PURIFIER.

(Application filed Sept. 13, 1901.)

(No Model.)



Witnesses:
M. M. Miley.
G. L. Neale.

Inventor;
Heinrich Graf von Pückler
by
Howson & Howson
his Attys.

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UNITED STATES PATENT OFFICE.

HEINRICH v. PÜCKLER, OF SCHLOSS FRIEDLAND, SILESIA, GERMANY.

AIR-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 705,865, dated July 29, 1902.

Application filed September 13, 1901. Serial No. 75,304. (No model.)

To all whom it may concern:

Be it known that I, HEINRICH GRAF VON PÜCKLER, chamberlain of His Majesty the German Emperor and King of Prussia, a resident of Schloss Friedland, Oberschlesien, Germany, have invented an Improved Air-Purifier, of which the following is a specification.

Attempts have heretofore been made to purify and to improve air by means of glowing wires of platinum, which for that purpose have been arranged in a frame or the like and have been brought to glowing heat by means of an electric current. After using such devices it has been found that undesirable or noxious gases, especially carbonic-acid gas, are still retained in the air, particularly in more or less closed rooms, and that micro-organisms and germs have not been efficiently destroyed. The object of my invention is to avoid such disadvantages.

I employ the heat of glowing platinum wire in the present invention for the purpose of creating a circulation of the air of the rooms or the like, and thereby to consequently effect a filtration of the said air.

For the purpose of the present invention one or more platinum wires carrying an electric current are arranged in a chimney-like receptacle, upon which a second receptacle of a similar shape is placed. The air heated by the platinum wire in the lower receptacle rises through it and then through the upper receptacle. In the said upper receptacle means for absorbing and filtering purposes—*e. g.*, soda-lime, cotton-wadding, &c.—are suitably arranged in such a manner that the air rising by the action of the heat and passing through these materials is freed from all undesirable constituents, such as carbonic acid, micro-organisms, &c. Below the platinum wire I find it advantageous to arrange a receptacle or cup containing ethereal oil or the like in order to effect by the heat of the wire evaporation of such oil or ozonizing medium to further improve the air.

In the accompanying drawings, Figure 1 is a front elevation of my improved apparatus. Fig. 2 is a longitudinal section. Fig. 3 is a side elevation; Fig. 4, a longitudinal section at right angles to the section of Fig. 2. Fig. 5 is a cross-section on the line A A, Fig. 2; Fig. 6, a cross-section on line B B, Fig. 4; and Fig. 7 is a plan of the fan or vane of Fig. 3 in the upper view.

The chimney-like receptacle *a* is provided with horizontal partitions *b* not reaching entirely across the receptacle *a*, but leaving the openings *o*, which allow communication between the spaces on either side of such partitions. These partitions are arranged so that the openings *o* occur alternately on opposite sides of the receptacle. Near these openings insulating-buttons *d*, preferably of porcelain, are secured in two parallel zigzag lines to the inner surface of the receptacle *a*, (see Figs. 4 and 5,) while opposite each button *d* similar insulating-buttons *d'* are secured to the plates *b*. Terminals *c* are fixed at the lower end of the receptacle *a*. From one terminal a platinum wire *e* is led in zigzag direction by means of the insulating-buttons *d'* and *d* upward on one line of zigzag buttons through the interior of the receptacle *a* and downward on the parallel line of zigzag buttons *d d'* to the other terminal. To complete the insulation of the platinum wire *e*, I prefer to wind asbestos fibers around the wire where it comes in contact with the insulating-pieces *d d'*. Below the platinum wire *e* a cup or the like *f* is secured to contain an ethereal oil or an essence adapted to exercise an ozonizing action. This cup must be within the range of the heat of the platinum wire *e*, so that evaporation of the ozonizing liquid or ethereal oil contained in the cup will be caused by the heat. The receptacle *a* is provided with glasses (windows *g*) for the inspection of the interior. Upon the receptacle *a*, which is open at both ends, a receptacle *h* is superposed, both receptacles forming a single column open at both ends. The upper receptacle *h* is provided with horizontal partitions *k*, having openings alternately on opposite sides in a similar manner to the partitions *b*, so that an air-current passing through this receptacle must flow in a zigzag direction. Between each pair of these partitions and above the top partition *k* horizontal perforated partitions *i* are arranged, upon which porous absorbing materials—such as soda-lime, cotton-wadding, or the like—have been placed. At the top of the upper receptacle *h* is arranged a fan or

vane *m*, Fig. 3, which rests upon a point *p*, on which it rotates by the action of the rising current of air.

By connecting the terminals *c* with an electric source the platinum wire becomes glowing. The air near the same is thereby heated and rises, this air rising in a zigzag direction along the platinum wires occupying a position on the zigzag path. The air consequently flows near the platinum wire, whereby a decomposition and destruction of all combustible constituents of the air is effected in a complete manner. So, also, are the micro-organisms and the like and such bases as ammonia and monoxid of carbon completely burned and destroyed. The air-current rising mixes with gases or vapors developed from the ethereal or ozonizing liquid contained in the cup *f* and passes from the receptacle *a* in and through the upper receptacle *h*. The partitions *k* force the current of air to flow upward in a zigzag direction. In rising the air must pass through the perforated or permeable partitions *i* and through the absorbing materials—such as soda-lime, &c.—which have been placed upon the permeable partitions, and then through the filtering material—*e.g.*, cotton-wadding—placed upon the upper permeable partitions. The rising air-current will cause the rotation of the fan or wheel *m*, by which rotation the air-current is well distributed in the room. As illustrated in Fig. 3, the apparatus may be fixed on a vertical wall of a room.

The apparatus produces a positive circulation of the air, so that all the air contained in the room is eventually caused to pass through the apparatus and to come within the influence of the glowing platinum wire, so that a destruction and combustion of all destroyable and combustible constituents of the air is effected and the products of combustion—*i. e.*, carbonic acid—or undestroyed micro-organisms or the like are eliminated from the air-current, and therefore from the air. In this manner noxious gases and the like contained or produced by exhalation, &c., are destroyed and the products of combustion absorbed, and fresh air being admitted from without without any special devices for ventilation being needed. For rooms which are completely closed against the exterior air, such as submarine vessels, compressed air or compressed oxygen in tanks may be used for replacing the gases eliminated by absorption. In storing-rooms, in which noxious gases are developed, the latter can be eliminated by the present invention as fast as developed.

It is obvious that it is immaterial whether the two receptacles *a* and *h* be combined, as shown, or but one receptacle be used having all the elements of the two receptacles.

I claim as my invention—

1. An air-purifier comprising a receptacle open in both ends, partitions therein, openings in the partitions in zigzag line, a platinum wire in said zigzag line and a source of current-supply, substantially as described.

2. An air-purifier comprising a receptacle open in both ends, partitions therein, openings in the partitions in zigzag line, a platinum wire in said zigzag line, a source of current-supply and a cup-like vessel below the receptacle, substantially as described.

3. An air-purifier comprising a receptacle open in both ends, partitions therein, openings in the partitions in zigzag line, a platinum wire in said zigzag line, a source of current-supply, a cup-like vessel below the receptacle and a fan above it, substantially as described.

4. An air-purifier comprising a receptacle open at both ends, a platinum wire adapted to carry a current in the lower part and partitions in the upper part, openings in the partitions in zigzag line, and permeable partitions between said first partitions adapted to contain absorbent and filtering material, substantially as described.

5. An air-purifier comprising a receptacle open at both ends, partitions therein, each partition having an opening, said openings arranged in zigzag line, a platinum wire in the zigzag path of the lower portion of the receptacle, a source of current-supply therefor, and permeable partitions in the upper portion, adapted to contain absorbing and filtering materials, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HEINRICH v. PÜCKLER.

Witnesses:
HERMANN BARTSCH,
ALBERT SCHENK.