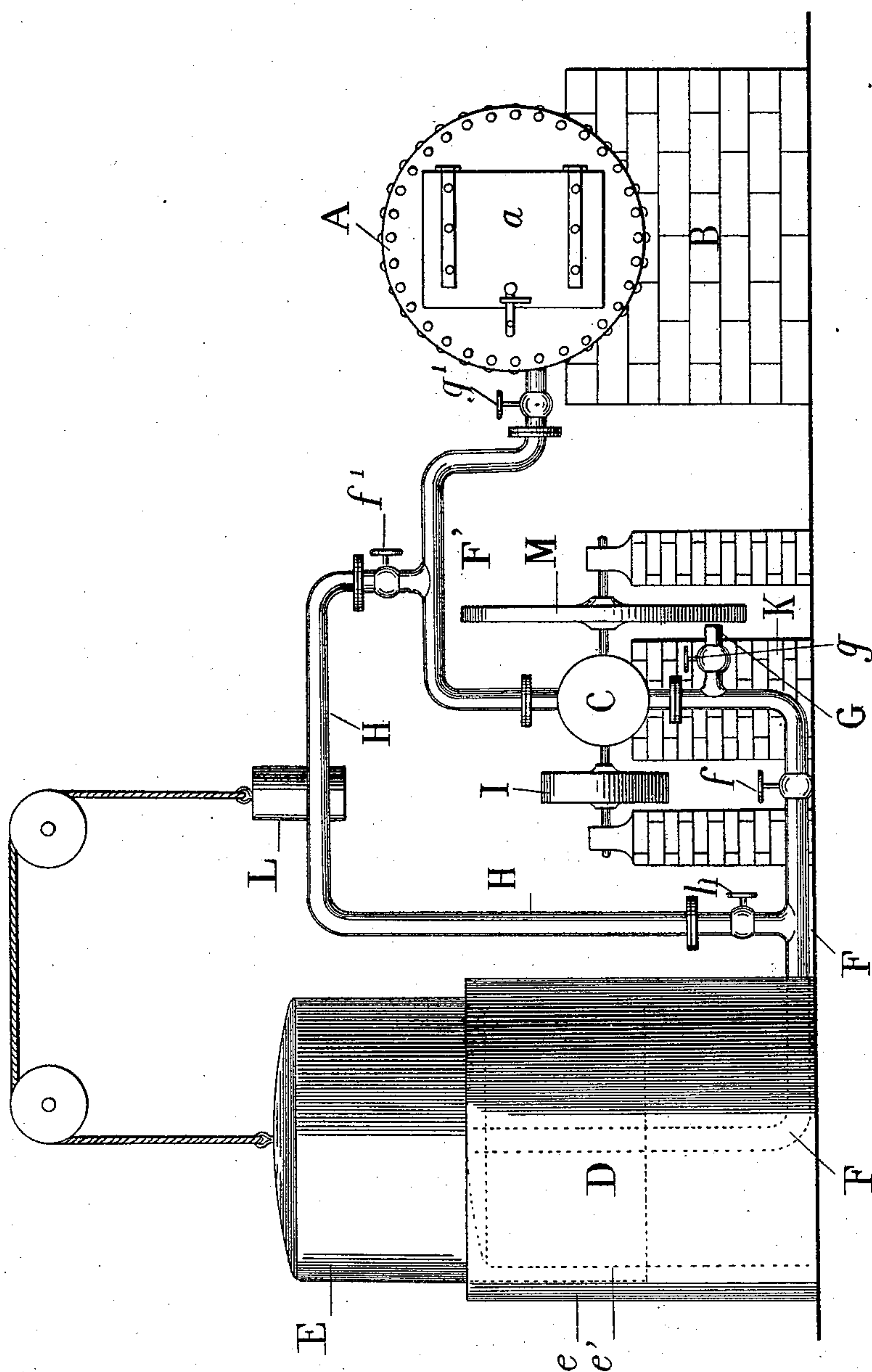


(No Model.)

R. P. PICTET.  
DISINFECTING APPARATUS.

No. 531,329.

Patented Dec. 25, 1894.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## DISINFECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 531,329, dated December 25, 1894.

Application filed August 8, 1894. Serial No. 519,733. (No model.)

*To all whom it may concern:*

Be it known that I, RAOUL PIERRE PICTET, a citizen of Switzerland, but now residing at Paris, in the Republic of France, have invented certain new and useful Improvements in Apparatus for Disinfecting, of which the following is a specification.

Hitherto three methods of disinfection have been employed by municipal councils, railway companies, doctors and surgeons for making aseptic the various organic substances vehicles of pathogenic microbes, and they are, first, the use of steam; second, the use of sprays of toxic solutions in particular corrosive sublimate; and third, the use of gaseous fumigation, chlorine, sulphurous acid, nitrous vapors and the like. The above three methods are quite inefficient, because they have no effect on a large number of substances and articles. Moreover, their use is often dangerous.

Corn, all kinds of cereals and valuable fabrics cannot be placed in stores without deterioration. Hospital stores are greatly injured when placed in steam at 113°.

The main object of my invention is to overcome the above mentioned objectionable features attending the employment of the hitherto practiced methods of disinfection.

My invention stated in general terms consists of apparatus for disinfecting hereinafter described and claimed.

My invention is carried into effect by such apparatus as is illustrated in side elevation in the accompanying drawing and in the following manner:

First. The articles to be disinfected are placed in a hermetically closed vessel capable of resisting atmospheric pressure.

Second. A vacuum is created in the vessel by means of an air pump, an exhaustor or the like.

Third. The vapors of a toxic body, sulphurous acid or a mixture of sulphurous and carbonic acids, or chlorine, or the vapors of any known antiseptics, are introduced into the exhausted vessel.

Fourth. These vapors are left to react for a certain time on the bodies or articles to be disinfected.

Fifth. The vapors are again exhausted from the vessel and led to a gasometer of a capacity equal to or substantially so of that of the vessel and are kept in the gasometer until a fresh operation. When sulphurous acid or a mixture of sulphurous and carbonic acids is used, a gasometer may be used for storing the vapors, or they may be liquefied in a worm or condenser under a pressure of some atmospheres. It suffices to submerge the worm or condenser in a reservoir full of water at the surrounding temperature.

Sixth. Air is allowed to re-enter the vessel in which a vacuum has just been formed.

Seventh. The articles or substances are then taken out completely disinfected.

My invention is of quite general application and may be applied to all substances even to those refractory to disinfection, such as cereals, linens and silks.

Referring now particularly to the drawing A, is a chamber or vessel of any suitable dimensions formed of riveted or soldered sheet iron, which may be of sufficient size to contain mattresses, linen, bales of rags, sacks of cereals, hospital-linen, and other articles and if necessary even a complete carriage. The said chamber is of cylindrical form with a movable end or door *a*, which is hermetically closed and capable of resisting atmospheric pressure. It is supported on masonry B, or in any other preferred manner.

The internal capacity of the chamber may vary between a fraction of a cubic meter to two hundred and fifty cubic meters corresponding to stoves susceptible of holding complete carriages.

C, is an air pump capable of producing a very perfect vacuum. The more perfect the working of this pump both as to delivery and vacuum the better the operation of disinfection succeeds.

D, is a gasometer of any type and material provided its capacity be equal to or greater than that of the vessel A.

It is preferable to use an oil gasometer such as shown in the drawing.

The bell E, is immersed in an oil bath contained between two concentric cylinders *e* and *e'*, which are separated from each other by a



thin layer of oil. The central cylinder  $e'$ , shown in dots is closed at the top by an air-tight cover which supports the pipe F, through which the gas of the gasometer enters and leaves. This gasometer may according to its size be of any shape. The oil forming the bath may be mineral or organic and should resist as much as possible the action of acids.

$F'$ , is a pipe connecting the chamber A, with the pump C.

G, is an outlet from the pneumatic pump.

H, is a pipe connecting the pipe F, with the pipe  $F'$ .

$h, f, f', g$  and  $g'$ , are valves in the various pipes.

I, is the driving pulley of the pump C.

K, is a masonry for the pump.

L, is a counterweight for controlling the gasometer bell.

M, is a fly-wheel.

The operation of the apparatus hereinbefore described is as follows: The articles to be disinfected are placed in the chamber A, which is thereupon closed. The valves  $g'$  and  $g$  are opened and the other valves  $h, f$  and  $f'$  closed. The pump is put into action, until there is only a very small quantity of air in the vessel A, and after stopping the same, the valve  $g$ , is closed and the valves  $f'$  and  $h$ , are opened. The gases pass from the gasometer through the pipes F, H and  $F'$ , and enter the vessel or chamber A, where they attain atmospheric pressure. At the end of one, two or more hours, as required the pump C, is again put into action after having opened the valve  $f$  and closed the valves  $f'$  and  $h$ . The valve  $g$ , which already is closed is allowed to

remain so and the valve  $g'$ , is permitted to remain open. The gases exhausted by the pump are conducted from the chamber A, and are forced back into the gasometer D. When the vacuum has become as perfect as before, the pump is stopped and atmospheric air allowed to again enter the vessel A, after having closed the valve  $g'$ . The vessel A, is then opened and the articles will be found to be aseptic and perfectly disinfected and are removed. By leaving the valves closed, the gas contained in the gasometer is always ready for use for a fresh operation.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, in an apparatus for disinfecting, of a cylindrical vessel provided with a door in one end arranged to resist atmospheric pressure, an air pump or exhauster connected with said vessel for creating a vacuum and to permit of antiseptics being introduced therein to re-act on articles or bodies to be disinfected in said vessel, means for actuating said pump or exhauster, a gasometer having an oil seal, pipes having stop-cocks connecting said vessel with said gasometer and pump and an outlet pipe from said pump having a stop-cock, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

RAOUL PIERRE PICTET.

Witnesses:

EDWARD P. MACLEAN,  
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