No. 875,010. PATENTED DEC. 31, 1907.

F. W. SUTER.

LAMP FOR BURNING CARBURETED AIR.

APPLICATION FILED MAY 17, 1907. 2 SHEETS—SHEET 1.

FIG. 2.

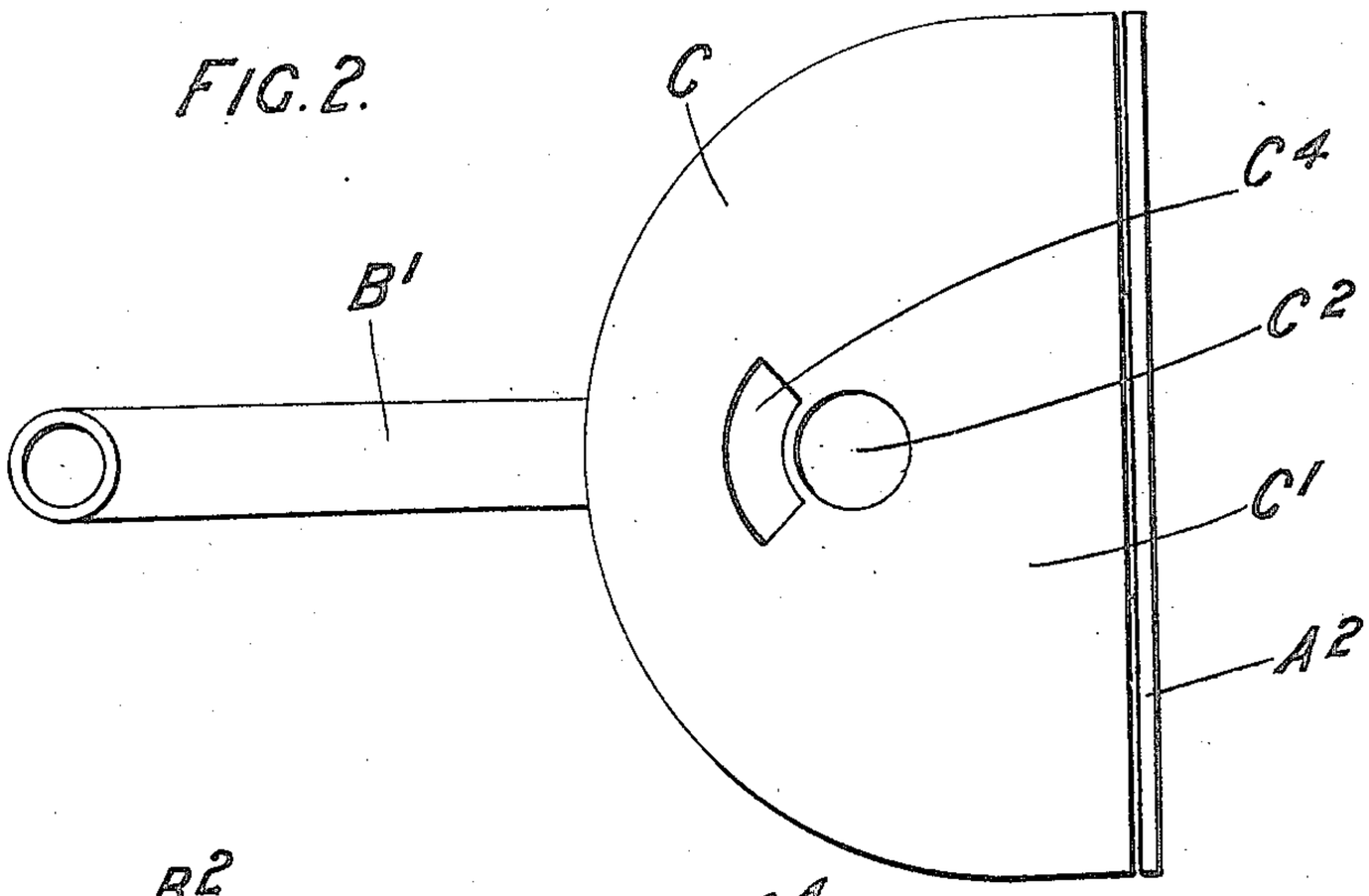


FIG. 3.

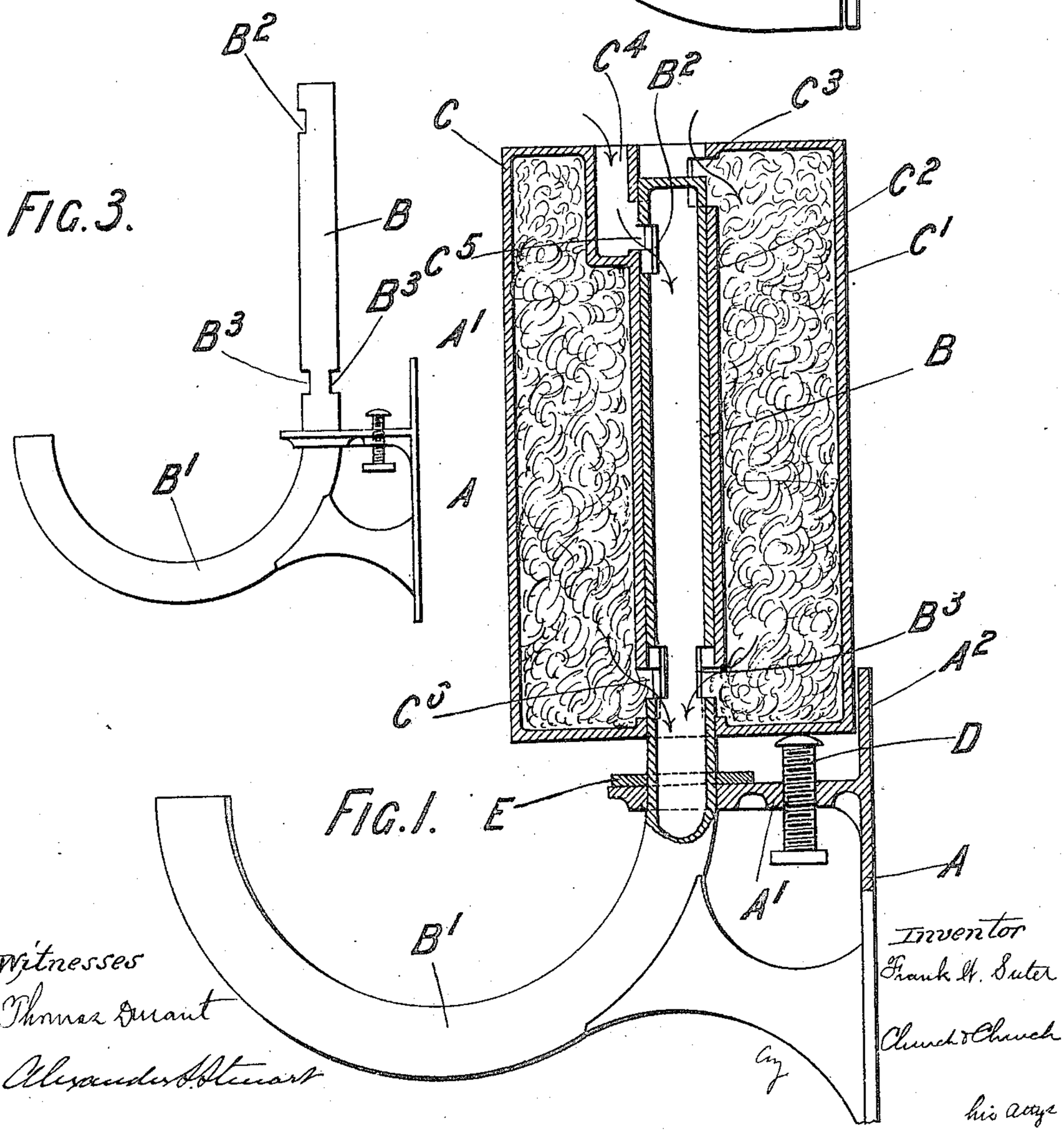


FIG. 1.

No. 875,010. PATENTED DEC. 31, 1907.

F. W. SUTER.

LAMP FOR BURNING CARBURETED AIR.

APPLICATION FILED MAY 17, 1907. 2 SHEETS—SHEET 2.

FIG. 5.

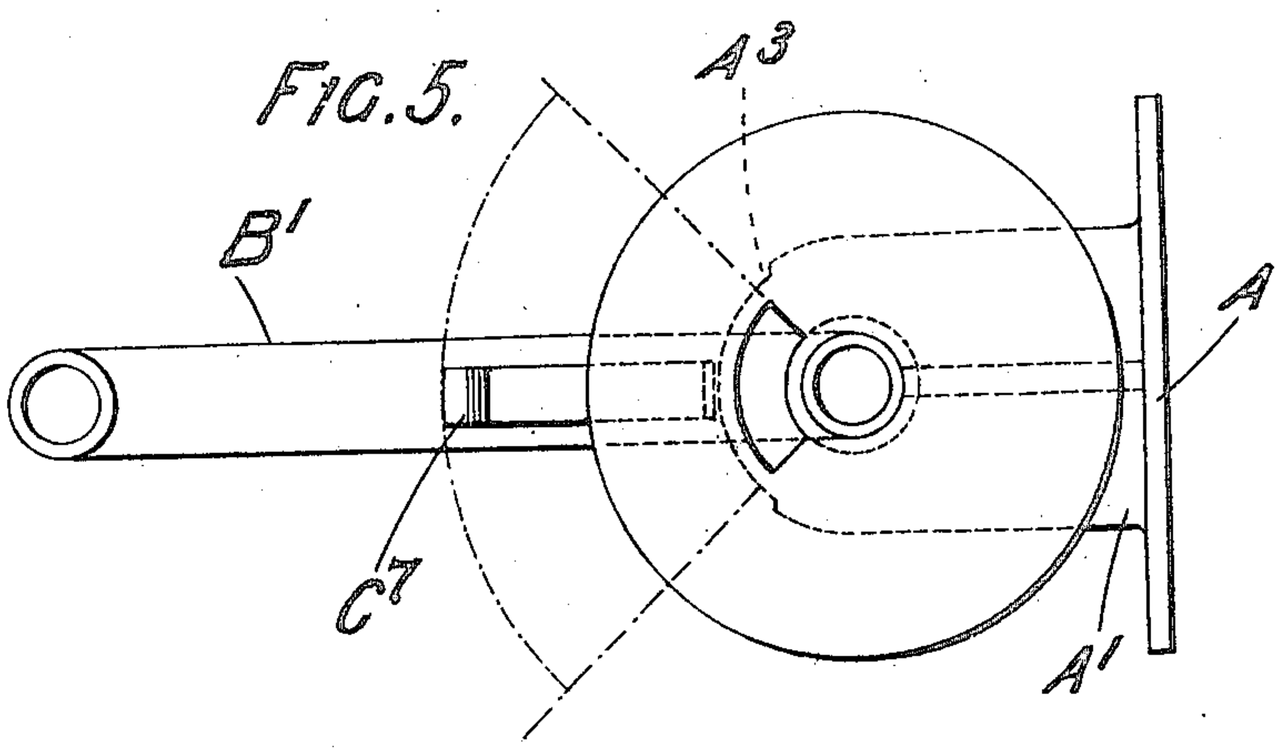
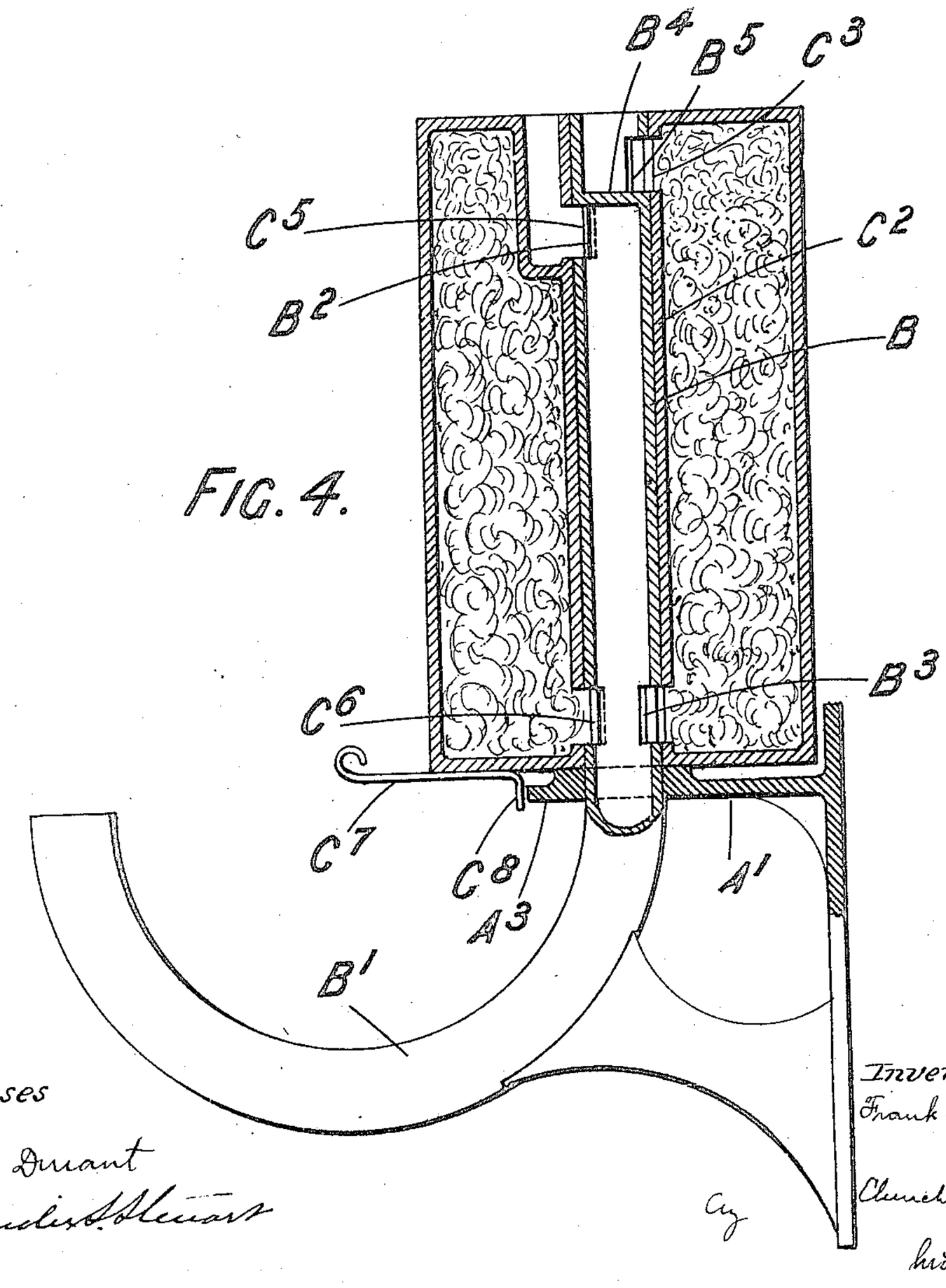


FIG. 4.



Witnesses

Thomas Durant

Alexander S. Mercer

Inventor

Frank W. Suter

Church & Church

his Attys

UNITED STATES PATENT OFFICE.

FRANK WEST SUTER, OF LONDON, ENGLAND.

LAMP FOR BURNING CARBURETED AIR.

No. 875,010. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed May 17, 1907. Serial No. 374,202.

To all whom it may concern:

Be it known that I, FRANK WEST SUTER, a subject of the King of England, residing at London, in England, have invented certain new and useful Improvements in Lamps for Burning Carbureted Air, of which the following is a specification.

This invention relates to improvements in lamps and apparatus for burning carbureted air and more particularly relates to that type of lamp which comprises a vessel containing absorbent material charged with a hydrocarbon, a central tube communicating with a burner and suitable passages through which air enters the carbureting chamber and also the central tube where it mingles with the carbureted air. A draft is induced in the burner tube by applying a lighted match or taper to the burner and air is drawn through the passages and becoming carbureted can be ignited at the burner. Lamps of this type are also provided with means for enabling the flow of air through the carbureting chamber and to the burner tube to be simultaneously regulated.

According to this invention a suitable support which may conveniently be referred to as a bracket carries a gas tube the upper end of which is closed while the lower end is curved upwards and terminates in a burner. The carbureting chamber is loosely mounted on the bracket and around the gas tube and means are provided for moving the carbureting chamber relatively to the tube whereby the flow of inflammable mixture to the burner is controlled. To effect this ports are formed in the upper end of the carbureting chamber and the upper end of the tube through which air is admitted to the chamber and to the tube and other ports are formed in the lower ends of both the tube and chamber through which the carbureted air enters the tube. The ports are so arranged that if the chamber is moved relatively to the tube either by rotating it or by imparting vertical movement or by a combination of these two movements the flow of air through the carbureting chamber and also into the burner tube is regulated.

In the accompanying drawings, Figure 1 is a side elevation of a lamp constructed in accordance with this invention showing the carbureting chamber, central tube and part of the bracket in section. Fig. 2 is a plan of the same. Fig. 3 is a side elevation of the bracket and gas tube with the carbureting chamber removed. Fig. 4 is a side elevation partly in section of a modification. Fig. 5 is a plan of the same.

Like letters indicate like parts throughout the drawings.

A suitable support A which may conveniently be referred to as a bracket and in the constructions illustrated in the accompanying drawings is adapted for fixing on a wall carries rigidly secured to it a gas tube, the upper portion B of which projects vertically from the upper side of a plate A′ forming part of the bracket A, while the lower part B′ is curved round and upward and terminates in a burner of some convenient kind which is not shown in the drawings. The upper end of the tube B is closed and near this end is cut one or more openings or ports B^2 similar openings B^3 being cut near the lower end. The carbureting chamber C is formed semi-cylindrical with a flat back C′ which rests against the upper portion A^2 of the back plate of the bracket A. A tube C^2 is inserted in an approximately central position in the chamber so as to form a passage which runs vertically through the chamber from end to end. This tube C^2 is of such dimensions as to easily fit around the gas tube B so that the chamber can readily be moved relatively to the tube.

In the upper end of the tube C^2 is cut one or more ports or openings C^3 through which air can enter the carbureting chamber. This port is so disposed as will be seen from Fig. 1 that it will be opened to a greater or less extent according as the chamber is raised or lowered, the end portion of the gas tube B serving to cover up the port C^3. A passage C^4 leads from the upper end of the chamber C to a port C^5 cut in the tube C conveniently on a level slightly below that of the port C^3. The port C^5 corresponds to the port B^2 in the gas tube and is so arranged that vertical movement of the chamber will cause this port to be opened or closed to a greater or less extent and thus the flow of air directly into the gas tube may be controlled. Two or more passages C^4 and ports C^5 may be provided to correspond with the number of ports B^2 that are formed in the gas tube. In some cases it is convenient to arrange two passages C^4 and two ports C^3 these ports and passages being disposed alternately around the central tube. Near the lower end of the

tube C^2 are cut ports C^6 corresponding to the ports B^3.

The ports C^6 B^3 C^5 B^2 and C^3 together with the position of the upper end of the tube B are all so relatively disposed that according as the carbureting chamber is raised or lowered so the flow of air to the carbureting chamber and direct into the gas tube will be adjusted. This adjustment will cause the flow of air into the carbureting chamber and the flow of inflammable mixture therefrom into the gas tube to be reduced as the supply of air direct to the gas tube is increased and vice versa.

A set screw D with rounded end and milled head passes through the plate A′ of the bracket A and bears against the underside of the carbureting chamber. By turning this screw the chamber can be raised or lowered so as to increase the richness of the inflammable mixture passing to the burner or to cut off the air flowing through the carbureting chamber until the chamber is lowered into position when the ports leading into and out of the chamber are closed in which position the flame is extinguished. A washer of rubber, leather or other suitable substance E is conveniently disposed on the plate A′ around the tube B so that the chamber when in its lowest position will rest therein and a tight joint be formed. It will be seen that rotary movement of the carbureting chamber in this construction is prevented by reason of the flat back C′ and the part of the bracket A^2 the guiding effect however being easy and thus allowing free movement of the chamber which is thus so loosely disposed on the bracket and around the gas tube that it can readily be removed for recharging with hydrocarbon and adjustment to regulate the flame can be effected with facility while at the same time a sufficiently tight joint is maintained between the tubes C^2 and B to prevent leakage of the inflammable mixture.

In the modification illustrated in Figs. 4 and 5 the adjustment necessary to control the flow of air through the carbureting chamber and fill the gas tube direct is effected by imparting rotary movement to the carbureting chamber around the gas tube. The general arrangement of the bracket, gas tube and carbureting chamber is the same the latter however being conveniently formed cylindrical and provided with a projecting arm C^7 by which it can be turned. A downwardly directed portion C^8 of this arm lies adjacent to a portion A^3 of the plate A′, this part A^3 being cut away so that by limiting the rotary movement that can be given to the carbureting chamber an indication is provided to show that the ports are fully opened or closed. In place of cutting away the plate A′ as at A^3 stops in the form of projecting pins or otherwise may obviously be arranged on the plate or in some other convenient position or the plate may be slotted in such a way that the operating arm C^7 or a portion thereof will pass through this slot. In this construction instead of the upper end of the gas tube B being closed this upper end is left open and a short distance below it is inserted a disk or diaphragm B^4, this diaphragm being situated just above the port or ports B^2 and just below a port B^5 which is cut in the tube B to correspond to the port C^3 in the tube C^2. The relative disposition of the ports B^5 C^3, B^2 C^5, and B^3 C^6 is in this case of course slightly different from that in the construction previously described in order to allow of the ports being opened and closed by the rotary movement instead of by the vertical movement of the carbureting chamber.

The lamp has been described above in a form more particularly adapted for mounting upon a wall but it will be understood that it may be arranged in various other forms as for example two semi-cylindrical chambers may be disposed on a support which can be suspended after the manner of a chandelier. Similarly several carbureting chambers either in cylindrical or other form may be disposed on a suspended bracket or support. In such an arrangement the carbureting chambers may conveniently be shaped so as to fit together and when combined give an appearance of a single chamber of ornamental appearance. Preferably each chamber is provided with separate means of adjustment but if desired a common adjusting screw or lever may be employed.

As will be seen the main portion of the carbureting chamber in each case is disposed above the level of the burner which latter is arranged sufficiently near to the chamber to cause the chamber to be under the influence of the heat radiated from the burner this being of material assistance in obtaining satisfactory carbureting of the air such a disposition being known. To assist the chamber in absorbing this heat its outside walls may be provided with projecting ribs or be otherwise formed to this end. The arrangement is preferably also with a view to ornamental appearance.

As the lamp constructed in accordance with this invention is intended to stand rough use it is desirable that the absorbent material within the carbureting chamber be of such a nature that it will not readily be broken or pulverized. After it has been inserted in the chamber the latter is permanently closed and thus the lamp is provided with a carbureting chamber which cannot get out of order from improper handling. When the absorbent powers of the block become lessened owing to clogging due to impurities in the hydrocarbon the whole chamber is renewed.

It is obvious that if preferred the lamp

may be provided with a carbureting chamber which may be opened to allow of the absorbent material being removed.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a lamp for burning carbureted air, the combination of a support, a tube part of which projects upwardly from the support while part passes therefrom and is constructed to terminate in a burner, a carbureting chamber surrounding but movable in relation to the upwardly directed portion of the tube, absorbent material within the carbureting chamber, an air inlet to the carbureting chamber, an air inlet to the tube, a port in the tube, a corresponding port in the carbureting chamber and means for regulating the flow of air and vapor by moving the carbureting chamber with relation to the tube as set forth.

2. In a lamp for burning carbureted air the combination of a support, a tube part of which projects upwardly from the support while part passes therefrom and is constructed to terminate in a burner, a carbureting chamber, a tube running through and forming an inner wall to the carbureting chamber this tube fitting closely around the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, means for moving the carbureting chamber in relation to the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube and a corresponding port in the tube within the carbureting chamber as set forth.

3. In a lamp for burning carbureted air the combination of a support, a tube part of which projects upwardly from the support while part passes therefrom and is constructed to terminate in a burner, a carbureting chamber, a tube running through and forming an inner wall to the carbureting chamber, this tube fitting closely around the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, means for moving the carbureting chamber in relation to the support tube, an air inlet to the carbureting chamber controlled by the upper end of the support tube, an air inlet to the support tube controlled by a port and passage through the carbureting chamber, a port in the support tube and a corresponding port in the tube within the carbureting chamber as set forth.

4. In a lamp for burning carbureted air the combination of a support, a straight tube projecting upwardly from the support, a continuation of this tube passing out from the support and constructed to terminate in a burner, a separable carbureting chamber surrounding the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, means for moving the carbureting chamber in relation to the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube and a corresponding port in the tube within the carbureting chamber as set forth.

5. In a lamp for burning carbureted air the combination of a support, a tube part of which projects upwardly from the support while part passes therefrom and is constructed to terminate in a burner, a carbureting chamber, a tube running through and forming an inner wall to the carbureting chamber this tube fitting closely around the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, means for preventing rotary movement of the carbureting chamber in relation to the support, means carried by the support for imparting longitudinal movement to the carbureting chamber on the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube and a corresponding port in the tube within the carbureting chamber as set forth.

6. In a lamp for burning carbureted air the combination of a support, a tube part of which projects upwardly from the support while part passes therefrom and is constructed to terminate in a burner, a closure towards the upper end of the upwardly projecting part of this tube, a separable carbureting chamber, a tube running through and forming an inner wall to the carbureting chamber this tube fitting closely around the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, means for moving the carbureting chamber in relation to the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube and a corresponding port in the tube within the carbureting chamber as set forth.

7. In a lamp for burning carbureted air the combination of a support, a straight tube projecting upwardly from the support, a continuation of this tube passing out from the support and constructed to terminate in a burner, a separable carbureting chamber surrounding the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, a projection carried by the support and so engaging the carbureting chamber as to prevent rotary motion of the latter, screw means carried by the support for imparting longitudinal movement to the carbureting chamber on the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube, a

corresponding port in the carbureting chamber, the air inlets and ports being so positioned with relation to each other that movement of the carbureting chamber simultaneously regulates the passage of air and vapor to the burner as set forth.

8. In a lamp for burning carbureted air the combination of a support, a straight tube projecting upwardly from the support, a continuation of this tube passing downwardly and outwardly and finally up from the support and constructed to terminate in a burner the end of this tube which carries the burner being situated approximately opposite to the carbureting chamber so that the latter is within range of the heat radiated from the flame at the burner, a separable carbureting chamber surrounding the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, means for moving the carbureting chamber in relation to the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube, a corresponding port in the carbureting chamber, the air inlets and ports being so positioned with relation to each other that movement of the carbureting chamber simultaneously regulates the passage of air and vapor to the burner as set forth.

9. In a lamp for burning carbureted air the combination of a support, a straight tube projecting upwardly from the support, a continuation of this tube passing downwardly and outwardly and finally up from the support and constructed to terminate in a burner the end of this tube which carries the burner being situated approximately opposite to the carbureting chamber so that the latter is within range of the heat radiated from the flame at the burner, a separable carbureting chamber surrounding the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, a projection carried by the support and so engaging the carbureting chamber as to prevent rotary motion of the latter, screw means carried by the support for imparting longitudinal movement to the carbureting chamber on the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube, a corresponding port in the carbureting chamber, the air inlets and ports being so positioned with relation to each other that movement of the carbureting chamber simultaneously regulates the passage of air and vapor to the burner as set forth.

10. In a lamp for burning carbureted air the combination of a support a straight tube projecting outwardly from the support, a continuation of this tube passing out from the support and constructed to terminate in a burner a separable carbureting chamber, a tube running through and forming an inner wall to the carbureting chamber this tube fitting closely around the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, means for moving the carbureting chamber in relation to the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube, a corresponding port in the carbureting chamber, the air inlets and ports being so positioned with relation to each other that movement of the carbureting chamber simultaneously regulates the passage of air and vapor to the burner as set forth.

11. In a lamp for burning carbureted air the combination of a support, a straight tube projecting outwardly from the support, a continuation of this tube passing out from the support and constructed to terminate in a burner a separable carbureting chamber, a tube running through and forming an inner wall to the carbureting chamber this tube fitting closely around the upwardly directed portion of the support tube, absorbent material within the carbureting chamber, a projection carried by the support and so engaging the carbureting chamber as to prevent rotary motion of the latter, screw means carried by the support for imparting longitudinal movement to the carbureting chamber on the support tube, an air inlet to the carbureting chamber, an air inlet to the support tube, a port in the support tube, a corresponding port in the carbureting chamber, the air inlets and ports being so positioned with relation to each other that movement of the carbureting chamber simultaneously regulates the passage of air and vapor to the burner as set forth.

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

FRANK WEST SUTER.

Witnesses:

H. E. DUNBAR KILBURN,

MAURICE STRODE.