J. MEYER.

VENTILATED REFLECTOR.

APPLICATION FILED JUNE 17, 1911.

1,030,910.

Patented July 2, 1912.

2 SHEETS—SHEET 1.

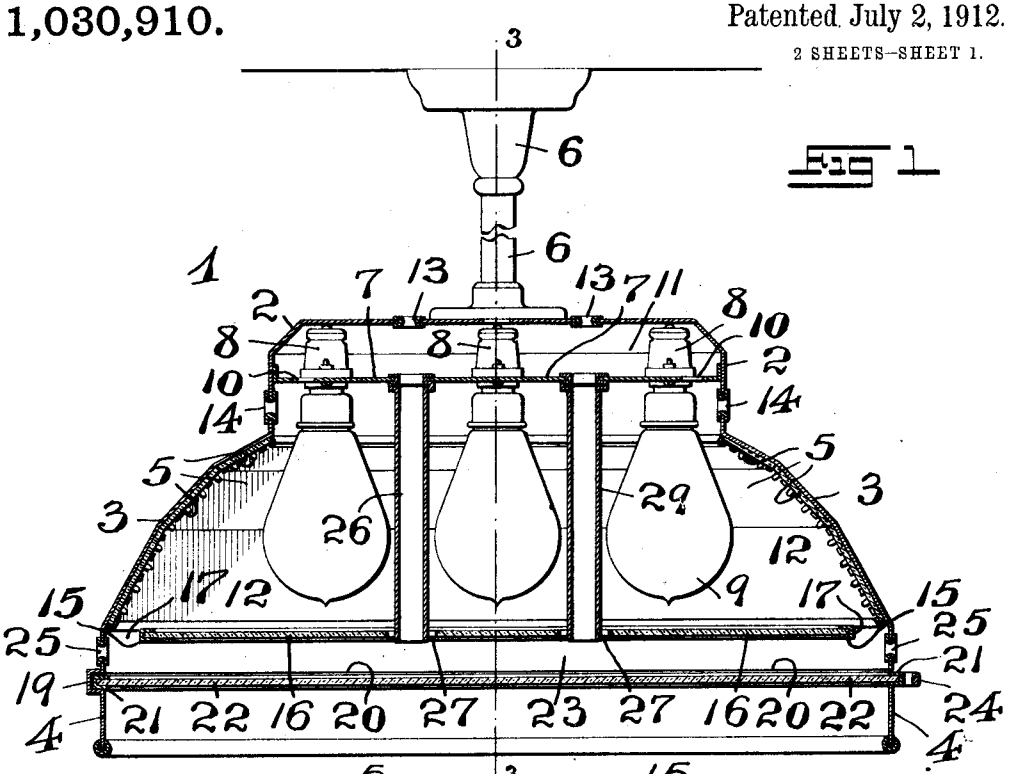

Fig. 1

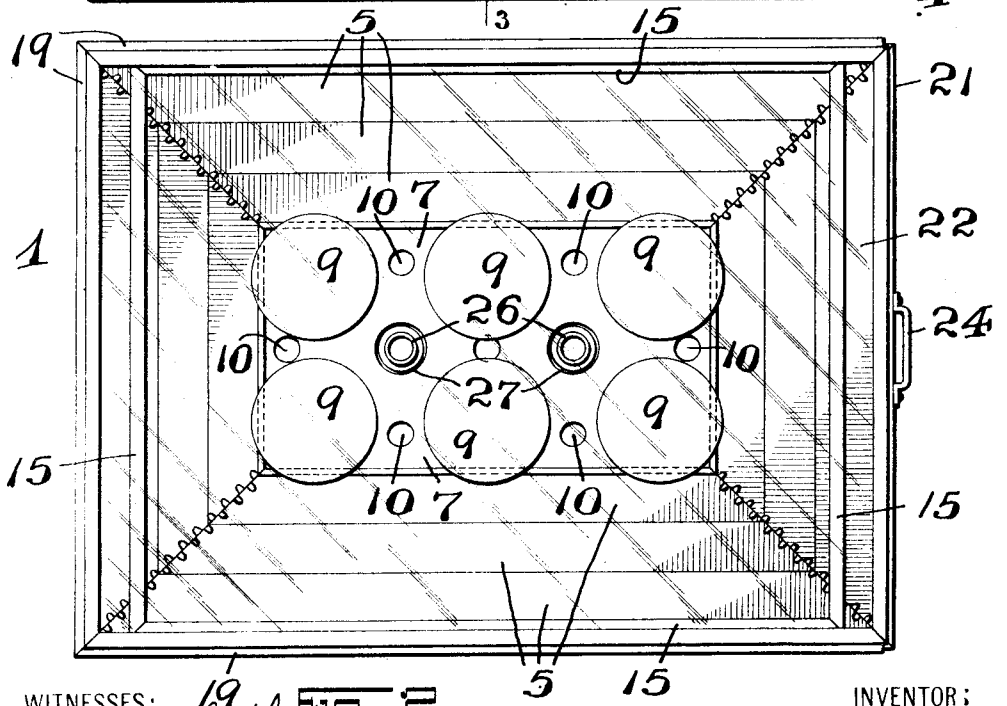

Fig. 2

WITNESSES:

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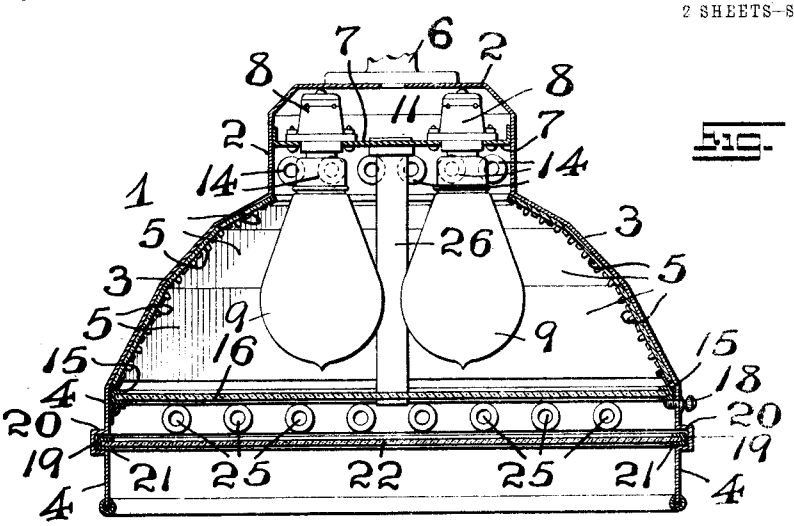

FIG. 3

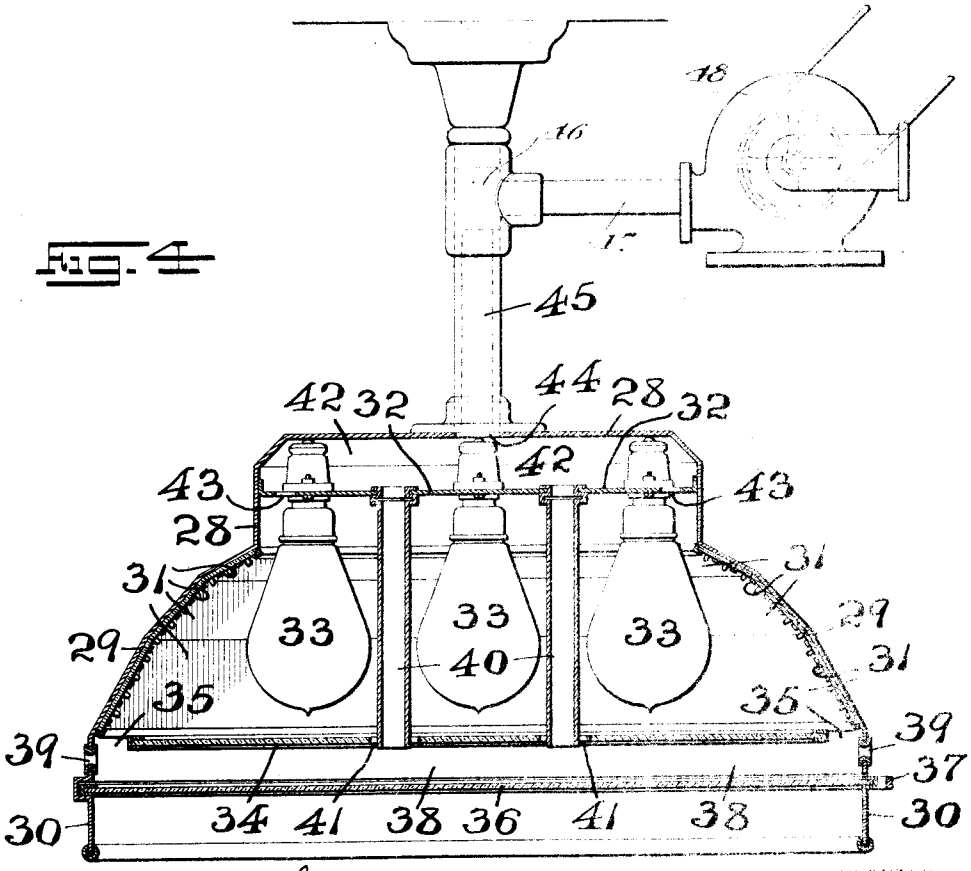

FIG. 4

WITNESSES:

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UNITED STATES PATENT OFFICE.

JULIUS MEYER, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE FRINK SPENCER, OF NEWARK, NEW JERSEY.

VENTILATED REFLECTOR.

1,030,910. Specification of Letters Patent. Patented July 2, 1912.

Application filed June 17, 1911. Serial No. 633,791.

To all whom it may concern:

Be it known that I, JULIUS MEYER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Ventilated Reflectors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention has reference, generally, to improvements in reflectors; and the invention relates, more particularly, to a novel construction of ventilated reflector-body.

The present invention has for its principal object to provide a simple and efficient construction of reflector body adapted to be used to illuminate operating tables, the said reflector body being provided with ventilating means whereby the heat generated by the illuminant is prevented from being concentrated upon the patient, the operating surgeon and attendants. Of course, it will be understood that the use of such a novel reflector body is not confined to operating tables, but that the same may be applied to many other uses.

The invention has for a further object to provide a means for carrying away from the interior of the reflector-body the heat generated by the illuminating units arranged therein, and at the same time providing a means for maintaining an insulating layer of cool air between the source of illumination and the locus to be illuminated.

Other objects of the present invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the present invention.

With the various objects of this invention in view, the same consists, primarily, in the novel ventilated reflector-body hereinafter set forth; and, furthermore, this invention consists in the novel arrangements and combinations of the various mechanisms and their parts, as well as in the details of the construction thereof, all of which will be hereinafter more fully described in the following specification, and then finally embodied in the clauses of the claim which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a longitudinal vertical cross-section of the novel construction of ventilated reflector-body made according to and embodying the principles of the present invention; Fig. 2 is a bottom view of the same; and, Fig. 3 is a transverse cross-section of the same taken on line 3—3 in said Fig. 1. Fig. 4 is a longitudinal vertical cross-section of a slightly modified construction of ventilated reflector body embodying, however, the principles of the present invention, there being illustrated in connection therewith, a means for creating a forced circulation of air therethrough.

Similar characters of reference are employed in all of the hereinabove described views to indicate corresponding parts.

Referring now to the said drawings the reference-character 1 indicates the complete reflector made according to and embodying the principles of the present invention, the same comprising a dome 2 from which depends a reflector-shell 3 terminating at its lower portion in a downwardly depending surrounding apron 4. Said reflector-shell 3 is preferably formed to provide angularly disposed faces. Supported, in any suitable manner, upon the inner faces of said reflector-shell 3 are a series of reflector-members 5, the same being made, preferably, of either plain or corrugated silvered glass. Secured, in any desirable manner, to said dome 2 is a suspending hanger 6, which may be made in various styles both as to construction and design, and one or more of which may be secured to said dome. The reference-character 7 indicates a horizontally extending partition member supported within the interior of said dome 2. Secured to said partition member are a series of lamp sockets 8 from which depend, downwardly beneath said partition-member and within said reflector-shell, a series of illuminating units 9. While the illuminating units shown in the drawings are of the incandescent electric lamp type, it must be understood that any desirable type of illuminating unit or units may be used with the novel reflector body, either of electric, gas, or other generating source.

Said partition-member 7 is provided with a plurality of suitably disposed holes or openings 10 forming communicating air-passages between the air-chamber 11 formed in said dome 2 above said partition-member 7 and the interior space 12 of said reflector-shell 3. The upper or top wall of said dome 2 is also provided with a suitable number of conveniently disposed escape-holes or openings 13 through which the heated air may escape from the air-chamber 11 formed by said dome 2. The walls of said dome are provided furthermore with a plurality of air escape holes or openings 14 located beneath said partition-member 7, and adapted to permit the escape of a large portion of the heated air collecting in the interior space 12 of said reflector-shell 3. Extending transversely across the bottom portion or mouth of said reflector-shell 3 is a pivotally connected frame-member 15 adapted to support a glass partition member 16. Said partition member or screen 16 is constructed slightly shorter than the length of said reflector-shell, so as to provide air passages or open spaces 17 at each end thereof. The lock-screws 18 are adapted to support said partition member or screen 16 in its operative or normal position. The said downwardly depending apron 4 is provided with an outwardly extending head 19 adapted to provide a guide-way 20 in which is slidably arranged a frame-member 21 adapted to support a glass partition member or screen 22, which registers below said partition-member or screen 16 forming an intervening air space or chamber 23. One end of said apron 4 is provided with an opening admitting said partition member or screen 22 to its guide-way 20, the outer end of said frame-member 21 being provided with a handle-member 24 for manipulating said frame-member or screen 22, when it is so desired. Opposite portions of the walls of said apron 4 are provided with a plurality of holes or openings 25 forming air passages communicating with the said intervening air-space or chamber 23 located between said respective partition members or screens 16 and 22. Supported by said partition member 7 and extending downwardly through said interior space 12 of said reflector shell 12 are tubular members 26, the lower ends of which project through properly disposed openings 27 in said partition-member or screen 16 so as to communicate with said intervening air-space or chamber 23. Said tubular members 26 communicate at their upper ends with said air-chamber 11 formed in the upper portion of said dome 2.

The ventilation of the reflector constructed as above described is accomplished as follows: The cool air from the exterior of the reflector passes through the air passages 25 into the intervening air space 23, a portion of said cool air finding its way into the interior space 13 of said reflector shell 3 through the openings 17. As the air thus introduced in said air space 23 becomes heated by the reflected and direct heat generated by the illuminating units 9, the same is caused to rise through said tubular members 26 and pass into said air-chamber 11 whence it escapes through the air passages 13 in the upper wall of said dome 2, thus establishing a circulation which constantly sucks or draws fresh cool air through said openings 25 and into the space 23 between said partition members 16 and 22. In this manner a cool layer of air is interposed between the reflecting devices and illuminating units which acts as an insulation against the descent of heat waves to the space beneath the reflector, or in other words, to the locus to be illuminated. The heated air collecting within the interior space 12 of said reflector-shell 3, rises and passes out through the holes or openings 14, and also through the holes or openings 10 into the air-chamber 11 and thence escaping through the holes or openings 13, thereby establishing a circulation of cool air drawn through said holes or openings 25 and into said interior-space 12 by way of the passages or openings 17 at the ends of said partition member or screen 16. It will thus be apparent that the interior of said reflector-shell is kept relatively cool, which not only minimizes the strength of the descending heat waves, but by carrying away the heat from about the lighting units, tends to lengthen the life of the same, when the same are of the incandescent electric type.

Referring now more particularly to Fig. 4 of the accompanying drawings, there is illustrated therein a slightly modified construction of reflector embodying, however, the general principles of the present invention. In this construction the reference character 28 indicates a dome, 29 the reflector shell, and 30 the downwardly depending apron. The reflector shell is provided with the reflector-members 31. Arranged within the dome 28 is the horizontal partition-member 32 from which depend the illuminating units 33. Arranged transversely beneath said reflector-shell is the transparent partition member or screen 34, which, being shorter than the length of said reflector shell, provides an air passage 35 at each end thereof. The reference-character 36 indicates a slidably disposed transparent partition member or screen, adapted to be registered beneath said partition member or screen 34 to provide the intervening air-space 38. The reference character 37 indicates the handle-member of said partition member or screen 36. The opposite end walls of said apron 30 are provided with suitably disposed series of holes or openings 39 com-

municating with said intervening air space 38. Secured to said partition-member 32 are the downwardly extending tubular members 40, the lower ends of which pass through suitably disposed openings 41, with which said partition-member or screen 34 is provided so that the passages of said tubular members may be brought in communication with said intervening air space 38, while the upper ends of the same communicate with an air-chamber 42 formed in the upper portion of said dome 28 by said partition member 32. Said partition-member 32 is furthermore provided with suitably located holes or openings 43 providing air passages leading from the interior of said reflector shell into said air chamber 42 in said dome 28. The upper wall of said dome 28 is provided with an outlet passage or opening 44. A hollow tubular hanger 45 is secured to said dome, and serves not only as a means for suspending the reflector, but, also, as a means for carrying away the heated air from the interior thereof. Said hollow hanger 45 being provided with a T-fitting, or other suitable device, 46 for connecting with said hollow tubular hanger 45 a pipe or duct 47 for conveying away the heated air. It will be understood that said tubular hanger 45 may be connected with a flue or chimney of the building in which the reflector is used whereby the circulation or draft is secured; or, a suction fan or pump 48 may be connected therewith for drawing off the heated air and establishing a forced draft through said reflector. It will be apparent that the circulation of the air within this modified construction of reflector will take place as follows:—The outside cool air will flow through said holes or openings 39 into said intervening air-space 38 and will be drawn upwardly through said tubular-members 40 into said air chamber 42 and thence through said tubular hanger 45. A portion of the cool air passing through said holes or openings 39 will find its way through said passages 35 into the interior of said reflector-shell 29, thence passing through said holes or openings 43 of said partition member 32 into said air chamber 42, and will pass thence through said tubular hanger 45, thus establishing a circulation of cool air within said reflector-shell 29.

It will be clearly evident from the above description of the present invention that the same provides a novel ventilated reflector which will permit the desired character and quality of illumination without the accompaniment of undesirable heat at the locus to be illuminated. For this reason, it will be apparent, that the said reflector is particularly adapted for the purpose of illuminating operating tables in hospitals, and for the illumination of laboratory and other work benches, thereby preventing the heat from descending upon the persons working at such places, and eliminating considerable discomfort, and providing better working environment and conditions.

I am fully aware that some changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction thereof, without departing from the scope of the present invention as set forth in the foregoing specification, and as defined in the clauses of the claim which are appended to the same. Hence, I do not limit the present invention to the exact arrangements and combinations of the devices and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said devices and parts as illustrated in the accompanying drawings.

I claim:—

1. A reflector provided with illuminating units, means for providing an inclosed air space in the mouth of said reflector and beneath said illuminating units, and means admitting cool air into said inclosed air space.

2. A reflector provided with illuminating units, a pair of transparent partition members arranged in the mouth of said reflector to provide an intervening air space beneath said illuminating units, means admitting cool air into said air-space, and means permitting the escape of air from said air space.

3. A reflector provided with illuminating units, a pair of transparent partition members arranged in the mouth of said reflector to provide an intervening air-space beneath said illuminating units, and means permitting cool air to enter said intervening air space comprising the provision of openings in the walls of said reflector communicating with said intervening air space, tubular members communicating with said intervening air space to provide air passages for conducting the air to the upper portion of said reflector, and means for permitting the escape of the air from the upper portion of said reflector.

4. A reflector provided with illuminating units, a pair of transparent partition members arranged in the mouth of said reflector to provide an intervening air space beneath said illuminating units, said partition-members being arranged to move from their normal inclosing position so as to permit access to the interior of said reflector, means permitting air to enter said air space, and means permitting the escape of air from said air space.

5. A reflector provided with illuminating units, a pair of transparent partition members arranged in the mouth of said reflector to provide an intervening air space beneath said illuminating units, said partition

members being arranged to move from their normal inclosing position so as to permit access to the interior of said reflector, means permitting air to enter said air-space, comprising the provision of openings in the walls of said reflector communicating with said intervening air space, tubular members communicating with said intervening air space to provide air passages for conducting the air to the upper portion of said reflector, and means for permitting the escape of the air from the upper portion of said reflector.

6. A reflector comprising a reflector-shell, a dome at the upper portion of said reflector shell and a surrounding apron at the mouth of said reflector-shell, illuminating units, means within said dome for supporting said illuminating units within said reflector shell, means for providing an air space in the mouth of said reflector-shell and beneath said illuminating units, means permitting air to enter said air space, and means permitting the escape of air from said air-space.

7. A reflector comprising a reflector-shell, a dome at the upper portion of said reflector shell and a surrounding apron at the mouth of said reflector-shell, illuminating units, means within said dome for supporting said illuminating units within said reflector-shell, a pair of transparent partition-members arranged in the mouth of said reflector-shell to provide an intervening air space beneath said illuminating units, means permitting air to enter said intervening air space, and means permitting the escape of air from said air space.

8. A reflector comprising a reflector shell, a dome at the upper portion of said reflector shell and a surrounding apron at the mouth of said reflector-shell, illuminating units, means within said dome for supporting said illuminating units within said reflector-shell, a pair of transparent partition-members arranged in the mouth of said reflector-shell to provide an intervening air space beneath said illuminating units, means permitting air to enter said intervening air space comprising the provision of openings in said apron communicating with said intervening air space, tubular members supported within said reflector-shell, the lower ends of said tubular members communicating with said intervening air space and the upper ends communicating with the interior of said dome, and means for permitting the escape of the air from the interior of said dome.

9. A reflector comprising a reflector-shell, a dome at the upper portion of said reflector-shell, and a surrounding apron at the mouth of said reflector-shell, a horizontal partition-member within said dome provided with suitably disposed openings forming air-passages connecting the interior of said reflector-shell with the upper space of said dome, illuminating units supported within said reflector-shell by said partition-member, a pair of transparent partition-members arranged in the mouth of said reflector-shell to provide an intervening air-space beneath said illuminating units, the upper of said partition-members being of less length than the length of said reflector-shell so as to provide air-passages communicating with the interior of said reflector-shell, means permitting air to enter said intervening air-space, means permitting the escape of air from said intervening air-space, and means permitting air to enter said reflector-shell.

10. A reflector provided with illuminating units, means for providing an inclosed air space in the mouth of said reflector and beneath said illuminating units, and means adapted to force air to flow through said inclosed air space.

11. A reflector provided with illuminating units, a pair of transparent partition members arranged in the mouth of said reflector to provide an intervening air-space beneath said illuminating units, means permitting the passage of air through said intervening air-space, and means connected with said reflector for compelling air to flow through said intervening air space.

12. A reflector provided with illuminating units, a pair of transparent partition members arranged in the mouth of said reflector to provide an intervening air space beneath said illuminating units, means permitting cool air to enter said intervening air space, means for conducting the air from said intervening air space to the upper portion of said reflector, and means providing an air passage communicating with the upper portion of said reflector, and means connected with said air passage for compelling a circulation of air through said reflector and said intervening air space.

13. A reflector provided with illuminating units, means for providing an inclosed air space in the mouth of said reflector and beneath said illuminating units, an air pump, and means connecting said reflector and said intervening air space with said air pump whereby a forced circulation of air through said intervening air space is obtained.

In testimony that I claim the invention set forth above I have hereunto set my hand this first day of June, 1911.

JULIUS MEYER.

Witnesses:
W. J. Morgan,
Melvin Spencer.