This invention relates generally to therapeutic means and more particularly to means for providing therapeutic vapors for the treatment of respiratory ailments.

In the treatment of certain respiratory diseases and ailments, it is sometimes desirable to provide an atmosphere of medicinal vapor or steam about a patient's head so that the patient can inhale the vapor. It has previously been proposed to provide such an atmosphere of vapor about a patient either by filling an entire room with the vapor, or by placing a tent around the patient in which vapor can be confined. The prolonged use of a room filled with therapeutic vapor requires that the walls of the room be surfaced with special material to curb the destruction effects of the vapor. Similarly, the other furnishings in the room must be able to withstand the generally adverse effects of a very humid atmosphere. Of course, the availability of rooms of the above-described type is generally limited due to the expense involved, and such rooms are normally found only in hospitals and sanitariums having full facilities to treat respiratory ailments.

In the event that a tent is employed to confine an atmosphere of vapor about a patient, a substantial amount of expense is still involved and the tent results in additional inconveniences by rendering the patient somewhat inaccessible. Furthermore, confining tents often have a terrifying effect on children who frequently require this method of treatment. It may therefore be seen, that a need exists for a convenient and inexpensive means of providing and maintaining an atmosphere of vapor about a patient's head or other body member.

In general, the present invention comprises a pad or pillow formed of resiliently-deformable material, and having passages therein connected to function in conjunction with means for passing steam or other vapor into the passages whereby the steam is emitted to engulf a patient's head as it comfortably rests upon the pillow. Furthermore, means are provided within the pillow whereby the weight of the patient's head closes those passages lying directly under the head, thereby preventing steam from being confined in direct contact with the patient. Means are also provided to make the passages of the pillow, for removing condensed-vapor liquid from the passages in the pillow.

It is therefore a major object of this invention to provide a novel and improved means for providing therapeutic vapor.

Another object of this invention is to provide a pillow for dispensing therapeutic vapor to engulf a patient's body member.

An additional object of this invention is to provide a vapor-dispensing means for therapeutic purposes, which dispenses steam to engulf a patient's head; however, which does not allow vapor to be confined against the head.

A further object of the present invention is to provide a means for comfortably supporting a body member while simultaneously providing and maintaining an atmosphere of steam or vapor about the body member.

A still further object of the present invention is to provide a system for dispensing therapeutic steam from a pillow which includes means for removing condensed steam from the passages within the pillow.

One additional object of the present invention is to provide a pillow for comfortably supporting a patient's body member while dispensing therapeutic steam to engulf the body member, yet which does not dispense steam from the area lying directly under the body member.

These and other objects and advantages of the present invention will become apparent from the following description of the preferred form thereof and from the drawing illustrating that form in which:

Figure 1 is a perspective view of a vapor-dispensing system constructed in accordance with the present invention;

Figure 2 is a vertical sectional view taken along line 2—2 of Figure 1;

Figure 3 is a perspective view of the pillow portion of the system of Figure 1, illustrating one manner in which the pillow may be formed; and

Figure 4 is a sectional view taken along line 4—4 of Figure 3.

In general, the present invention is directed to a steam or vapor dispensing system which incorporates a steam generator $S$ that supplies steam to a pillow $P$ which dispenses the steam. The pillow $P$ also includes means to discharge fluid resulting from condensed steam, whereby such fluid is returned to the steam generator $S$.

Referring now in detail to the drawing, and particularly to Figure 1 thereof, the illustrated form of the steam-dispensing system is shown positioned for use by a patient reclining upon a bed $11$. The steam generator $S$ may comprise various forms of apparatus which will provide live steam or various other medicinal vapors from an outlet $12$. Such a steam generator will normally include a pump which holds fluid that is heated to produce the medicinal vapor employed in the system. One form of a steam generator satisfactory for use in a system embodying the present invention is shown and described in a United States Patent No. 2,590,026, issued March 18, 1952, to Zeppo Marx.

The outlet 12 of the steam generator $S$ is connected through a flexible tube 13 to a tube 15 by a coupling 14. The tube 15 passes through nearly the full length of the pillow $P$ in the upper section of the pillow. The pillow $P$ is formed of resiliently-deformable material, as foam plastic or other synthetic or natural material which will provide a comfortable head support and is capable of withstanding moist vapors having elevated temperatures. Normally the pillow will be formed of foam material in which the small cavities are not interconnected and which therefore will not absorb liquid as a sponge.

The tube 15 which is within the pillow $P$ contains uniformly spaced groups 17 of jets which discharge into passages 18 formed in the pillow $P$. The jets in each of the groups 17 serve to accelerate the motion of the steam as it moves into the passages 18. The passages 18 in the pillow $P$ are tapered and extend substantially the full width of the pillow. The pillow is formed to include small protuberances or dams 19 which extend into the passages 18 and which are spaced along the length of the passages. Each of the passages 18 branch into a number of steam-dispensing channels 21 which extend to the upper surface of the pillow $P$. It is through the channels 21 that vapor is dispensed.

Located near the small end of each of the passages 18 is a small diameter tube 22 which passes through the bottom of the pillow and has an open end that lies substantially flush with the bottom of the passage. The tubes 22 are passed along the bottom of the pillow in an elongated recess 20 in which the tubes are affixed.
small-diameter tubes 22 have a cross-sectional dimension to effect capillary action and provide a relatively high fluid rise in the tubes.

The small-diameter tubes 22 merge into a larger diameter flexible hose 23 which returns to the sump of the steam generator S.

Reference will now be had to Figure 3, which best illustrates the manner in which the pillow of the present invention may be formed. The resiliently-deformable material may be molded as a generally-rectangular pillow form member having a centrally-located transverse trough 25 which opens into passages 18 that are located in one half section of the rectangular member. The other half section of the pillow form member is formed to have rows 26 of perforations which comprise the channels 21. The dams 19 are molded to be spaced along each row 26. Perforations are also formed to receive the tubes 22.

After the resiliently-deformable material has been formed into the member, described above and shown in Figure 3, the tube 15 is placed in the trough 25 so that each of the groups 17 of jets is aligned with one of the passages 18. The small-diameter tubes 22 are then inserted in the slots created by each of the passages 18, and may be secured wherein by various liquid adhesive materials. Next, the upper surfaces of the pillow-form member, as shown in Figure 3, and the tube 15 are coated with liquid adhesive and the pillow form is folded together to produce the unitary pillow of Figure 1. It is to be noted that as the pillow form is folded together, the wedges 27 formed at the end of the trough 25 serve to close the tube 16.

In the use of the system embodying the present invention, as shown in Figure 1, the patient reclines upon the bed 11 and places his head, or other body member, upon the pillow P for support. The steam generator S is then activated to send steam to enter the tube 13 and be emitted from the groups 17 of small jets in the tube 15 into the passages 18. From the passages 18, steam passes through the small channels 21 to form an atmosphere which engulfs the patient's face. As a result, the patient may inhale the medicinal steam and therapeutic respiratory treatment is effected.

In the use of the system, the steam passages 18 which lie immediately under the patient's head are closed by the dams 19 being depressed into the passage. Therefore, the patient's head is not subjected to confined steam, which could result in skin irritation.

After prolonged use of the system of the present invention, steam or other vapor may be condensed in the passages 18 resulting in an accumulation of liquid. Of course, it is desirable to remove such liquid in order that the steam-dispensing system will continue to function properly. The hydrostatic head of the liquid accumulated in the passages, in cooperation with the capillary action which takes place in the small-diameter tubes 22 causes the liquid to rise in the tubes 22 to a level adequate to initiate a syphoning action which drains the fluid back into the sump of the steam generator S.

An important feature of this invention is that it enables therapeutic steam treatment without expensive and complex apparatus. Additionally, the system may be used while a patient comfortably reclines upon a bed. Furthermore, the present invention automatically controls the area over which steam is emitted so as to protect the patient from skin irritation or discomfort. Still further, the present invention provides a means for removing condensed steam in the form of liquid from the apparatus to thereby maintain the steam-dispensing system in proper operation.

Another important feature of the present invention resides in the fact that the channels 21 are offset from the vertical, and are therefore selectively closed when a body member is positioned on the pillow. That is, the channels 21 are formed to be longer than the distance from the passages 18 to the surface of the pillow. As a result when the pillow is compressed, these passages are selectively closed to prevent steam from being confined by a skin surface.

It should be noted that although the particular embodiment of the invention herein shown and described is fully capable of providing the advantages and achieving the objects herein previously set forth, such embodiment is merely illustrative and this invention is not to be limited to the details of construction illustrated and described herein, except as defined by the appended claims.

1. A therapeutic means for providing vapors for inhalation by a patient comprising: a pad formed of resiliently-deformable material having a chamber therein and a plurality of passages connecting said chamber with the exterior of said pad; means for providing vapor to said chamber said pad, whereby said vapor will pass through said passages and be emitted from said pad; and tube means connected to said passages to remove condensed vapor therefrom.

2. A therapeutic means to receive a body member and provide vapor adjacent the member comprising: a pad of resiliently-deformable material having a plurality of interconnected passages therein extending to the exterior of said pad; a plurality of protuberances formed in said pad to project into said passages whereby certain of said passages will be closed under the weight of said member; and means for providing vapor to said passages in said pad.

3. A therapeutic means to receive a body member and provide vapor adjacent the member comprising: a pad of resiliently-deformable material having a plurality of interconnected passages therein extending to the exterior of said pad; a plurality of protuberances formed in said pad to project into said passages whereby certain of said passages will be closed under the weight of said member; means for providing vapor to said passages in said pad; and means connected to said passages to remove condensed vapor therefrom.

4. A therapeutic means to receive a body member and provide vapor adjacent the member comprising: a pad formed of resiliently-deformable material having a chamber therein and a plurality of passages connecting said chamber with the exterior of said pad; a plurality of protuberances formed in said pad to project into said passages whereby certain of said passages will be closed under the weight of said member; means for providing vapor to said chamber in said pad, whereby said vapor will pass through said passages and be emitted from said pad; and means connected to said passages to remove condensed vapor therefrom.

5. Apparatus according to claim 4 wherein said means connected to said passages to remove condensed vapor therefrom comprises: a plurality of small diameter tubes connected to said passages in which fluid will rise under capillary action.

6. Apparatus according to claim 4 wherein said resiliently-deformable material comprises foam plastic material.

7. A therapeutic means to operate in conjunction with a steam generator including a sump to receive a body member and provide vapor adjacent the member comprising: a pillow of resiliently-deformable foam plastic having a central chamber formed therein, and a plurality of passages connecting said central chamber to the exterior of said pillow, and said pillow further including projections into said passages for closing certain of said passages by the weight of said body member; an intake tube positioned in said central chamber having a plurality of groups of jets connecting the interior of said tube with said passages in said pillow; a steam generator means for providing steam to said intake tube, said steam generator means including a sump; and a plurality of discharge tubes interconnecting said passages and said sump, said discharge tubes for removing steam condensate from said passages.
8. A therapeutic means to operate in conjunction with a source of medicinal vapor, to support a body member and provide vapor adjacent the member comprising: a pad of resiliently-deformable material having a plurality of interconnected passages therein extending to the exterior of said pad; a plurality of protuberances formed in said pad to project into said passages whereby certain of said passages will be closed under the weight of said member; and means for connecting said source of medicinal vapor to said passages.

9. A therapeutic means to operate in conjunction with a source of medicinal vapor, to support a body member and provide vapor adjacent the member comprising: a pad of resiliently-deformable material having a plurality of interconnected passages therein extending to the exterior of said pad; a plurality of protuberances formed in said pad to project into said passages whereby certain of said passages will be closed under the weight of said member; means for connecting said source of medicinal vapor to said passages and means for removing the condensate of said medicinal vapors from said passages.

10. A therapeutic means to receive a body member and provide vapor adjacent the member comprising: a pad formed of resiliently-deformable material having a chamber therein adapted to be connected to a source of vapor, said pad having a plurality of channels interconnecting said chamber to the surface of said pad, said channels being longer than the wall of said pad through which the channels pass, and said pad further having a plurality of extensions protruding into said chamber whereby to cut off certain of said channels upon compression of said pad.

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