Dec. 8, 1925. 1,564,552

T. R. N. GERDES

APPARATUS FOR THERAPEUTIC TREATMENT

Filed Oct. 17, 1921 2 Sheets-Sheet 1

Fig. 1.

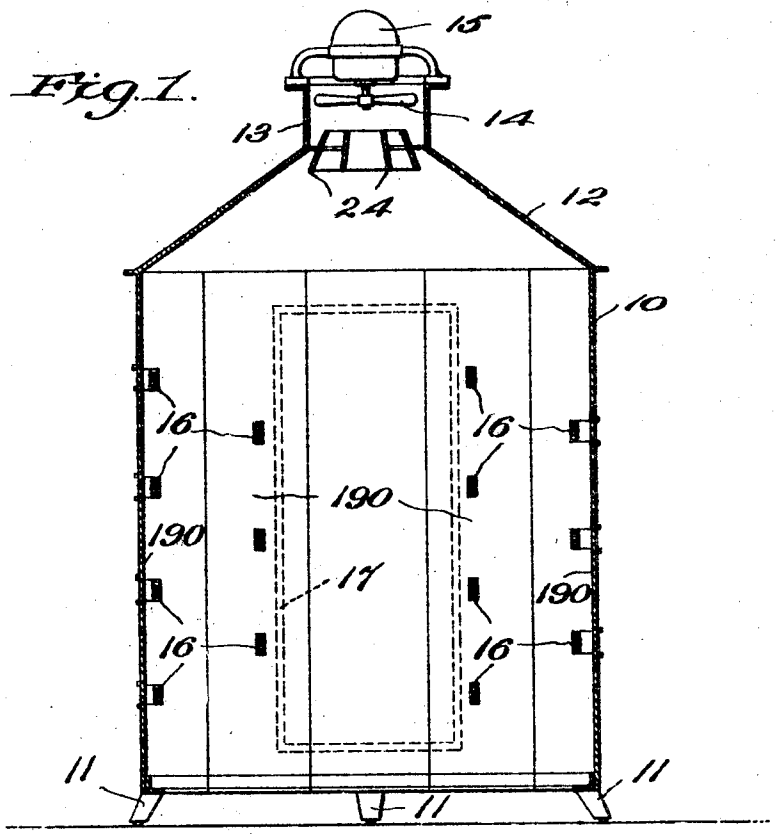

Fig. 2

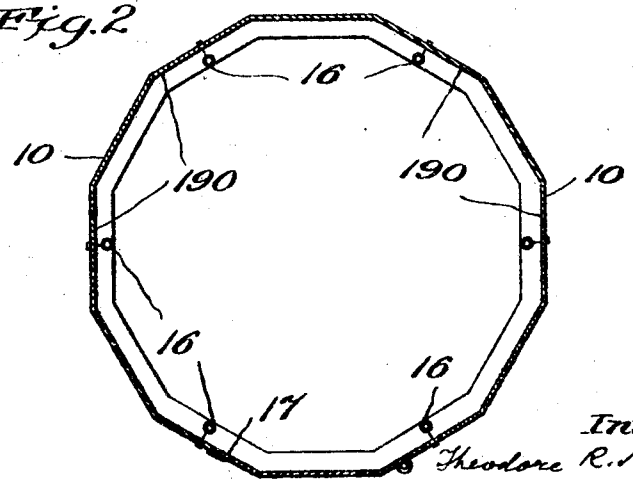

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Fig. 3.

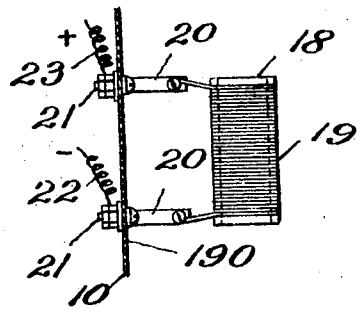


Fig. 4.

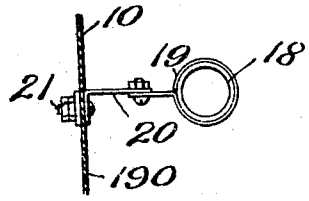


Fig. 6.

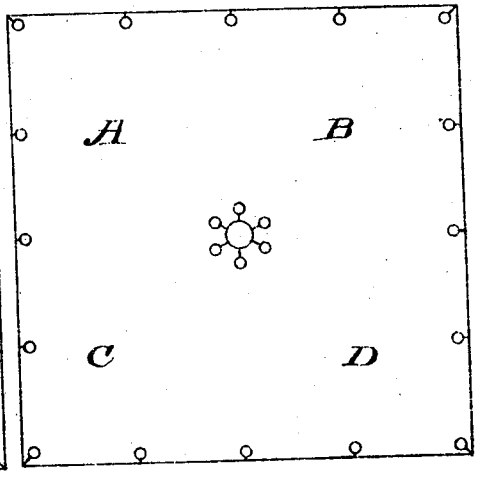
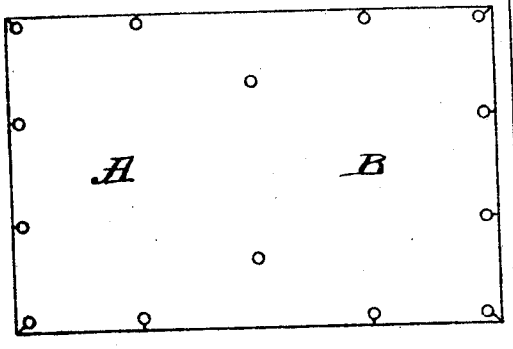


Fig. 5.



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Patented Dec. 8, 1925. 1,564,552

UNITED STATES PATENT OFFICE.

THEODORE R. N. GERDES, OF NEW YORK, N. Y.

APPARATUS FOR THERAPEUTIC TREATMENT.

Application filed October 17, 1921. Serial No. 508,349.

To all whom it may concern:

Be it known that I, THEODORE R. N. GERDES, a citizen of the United States, residing in New York, county and State of New York, have invented a certain Improvement in Apparatus for Therapeutic Treatment, of which the following is a specification.

The present invention relates to a form of apparatus adapted to carrying out an improved process of therapeutic treatment, which process is described and claimed in my divisional application Serial No. 46772, filed July 29, 1925.

Much study has been given to the effect of various forms of radiant energy upon physiological functions, and undoubtedly the radiations of the general order found in natural sunlight have been those most widely used heretofore. These rays include not only those producing light proper—from dark red at one end of the spectrum to dark violet at the other—but also the "infra-red" rays of greater amplitude than the red and the "ultra-violet" or "chemical" rays.

While there has been much difference of opinion as to the real or fancied therapeutic value of blue, violet and ultra-violet rays, the beneficial effect of the infra-red rays, whose radiant action is characterized by the phenomenon of sensible heat, is indisputable. One principal distinction between the physiological effects of these two classes of rays is that the former, or high frequency rays affect the surface of the body only, while the low frequency rays penetrate the deeper tissues.

The principal difficulty in obtaining intensive and efficient physiological results by the use of radiant energy, more particularly of low frequency, is found in the fact that when applied to a patient's body the discomfort increases very rapidly in proportion as the intensity of the radiant energy increases until, long before the limit of usefulness is reached, the process becomes too painful to be borne.

The process of treatment involved in the present invention makes it possible to apply radiant heat to a patient's body in much greater quantities than have been heretofore practicable, while preserving the patient from any material discomfort. The process may be said to involve the application of thermal rays without a material production of sensible heat in the patient. To state it in another way, the process involves a simultaneous radiant heating and convective cooling, although this is only a partial statement of the conditions that arise.

In carrying out this process, the patient's body, either standing, lying or sitting, is subjected to an application of heat rays, preferably not of greater frequency than dull red, while at the same time a current of constantly renewed or "fresh" air, of suitably comfortable temperature and hygroscopic condition, is caused to flow in a stream over the patient. This combined treatment may be applied either to the entire body or only to certain parts, within the judgment of the physician in charge.

The effect of this combination of operations is that a degree of radiant heat may be employed which would otherwise be too painful to be practicable; since the rapid stream of relatively cold air carries away the incipient sensible heat occurring at the area of impingement of the rays. This dissipation of heat is also doubtless assisted by evaporation from the pores of the skin, which promptly open under this treatment.

In practice, beneficial results of great value have been achieved; and many cases can be cured which will not yield to ordinary thermal treatment.

It is one of the advantages of this invention that a patient's entire body may be subjected to treatment without disturbing the "heat balance" and without discomfort in breathing, since no hot air enters the lungs.

The principle of the invention can obviously be applied in a great variety of ways and by the use of many kinds of apparatus. There is shown and claimed herein a preferred form of cabinet for this purpose, adapted to be used in treating the entire body, and in the accompanying illustrations Figure 1 is a vertical sectional view of the same for a single patient, Figure 2 is a horizontal sectional view of the same, Figure 3 is an elevation of a preferred radiant element, Figure 4 is a plan view of the same, and Figures 5 and 6 are diagrammatic views of modified arrangements for a plurality of patients.

The treating chamber shown in Figures 1 and 2, has a side wall or walls 10 more or less circular in cross section, so arranged as to have an open space near the bottom, as by the use of legs 11 which lift the entire wall a short distance off the ground.

The top 12 of the cabinet is preferably conical, as shown, and is surmounted by a turret 13, containing a fan 14, driven by any suitable means, as, for instance, the electric motor 15.

Supported within the wall 10 are sources of radiant heat of low periodicity which are preferably arranged in vertical rows, as shown, the radiant elements in each row being arranged on a level about half way between the levels of the elements in the next row. This "staggered" arrangement provides a substantially uniform projection of radiant heat upon the patient, who should stand or sit at the center of the cabinet. A door 17 is provided whereby the patient may enter the cabinet.

Any appropriate source of the radiant energy described may be used, but I prefer electric heaters, and have found the form shown in detail in Figures 3 and 4 to be practical and convenient. These elements comprise a tube of refractory insulating material 18 surrounded by resistance wire 19 coiled around them. They are preferably heaters as distinguished from lamps, although the latter would be within the broad invention.

The whole is supported by the ends of the coils which are brought out and clamped in a well known manner to metal brackets 20. These brackets are held on the wall 10 by suitably insulated connections 21, whereby they are electrically connected with leads 22, 23, which supply the heating current.

I prefer to place suitable reflectors behind the radiant elements, whereby all the heat is directed toward the center of the cabinet. These preferably take the form of long upright sheet metal reflectors 190, which extend along the cabinet wall behind each vertical row of radiant elements.

In operation, the patient is placed at the center of the cabinet, and, current having been applied to as many of the radiant elements as suit the case, the fan 14 is started so as to drive a current of cool air downward into the cabinet and out at the bottom. In order that this current may be suitably diffused, over and around the patient's body, baffle plates 24 are preferably supplied immediately under the fan. These break up and distribute the current of air in a well known manner.

It is obvious that the construction described lends itself very readily to immediate and convenient control of both the amount and distribution of heat, by switching on or off any elements desired. The well known methods used for raising and lowering electric lights can also be used to raise and lower the temperature as a whole.

In Figures 5 and 6 (which are diagrams as seen from above) are shown the arrangements of radiant elements within rectangular chambers in a manner to supply substantially uniform effects over the bodies of a plurality of patients, placed at A, B, C and D respectively. In Figure 5 the arrangement of the vertical rows is that adapted for two patients, while the arrangement indicated in Figure 6 is appropriate to the treatment of four people.

Various changes may be made in the device described without departing from the scope of my invention, and I do not limit myself to the details herein set forth and illustrated.

What I claim is—

1. A therapeutic apparatus comprising a chamber for holding a patient, means for directing radiant heat against the patient's body while within said chamber and means for directing a stream of cooling air over the parts of the patient's body so heated.

2. In apparatus of the character described, a treating chamber having a conical roof with a turret at its apex forming an inlet passage, a fan in said passage, baffles below said fan adapted to spread the air currents, and high temperature radiant heat elements arranged on the wall of the chamber, whereby a body enclosed within said chamber will be simultaneously subjected to radiant heat and convecting cooling.

In testimony whereof I have hereto set my hand on this 15th day of October 1921.

THEO. R. N. GERDES.