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E. KROMAYER.
THERAPEUTIC APPARATUS.
APPLICATION FILED JULY 15, 1905.

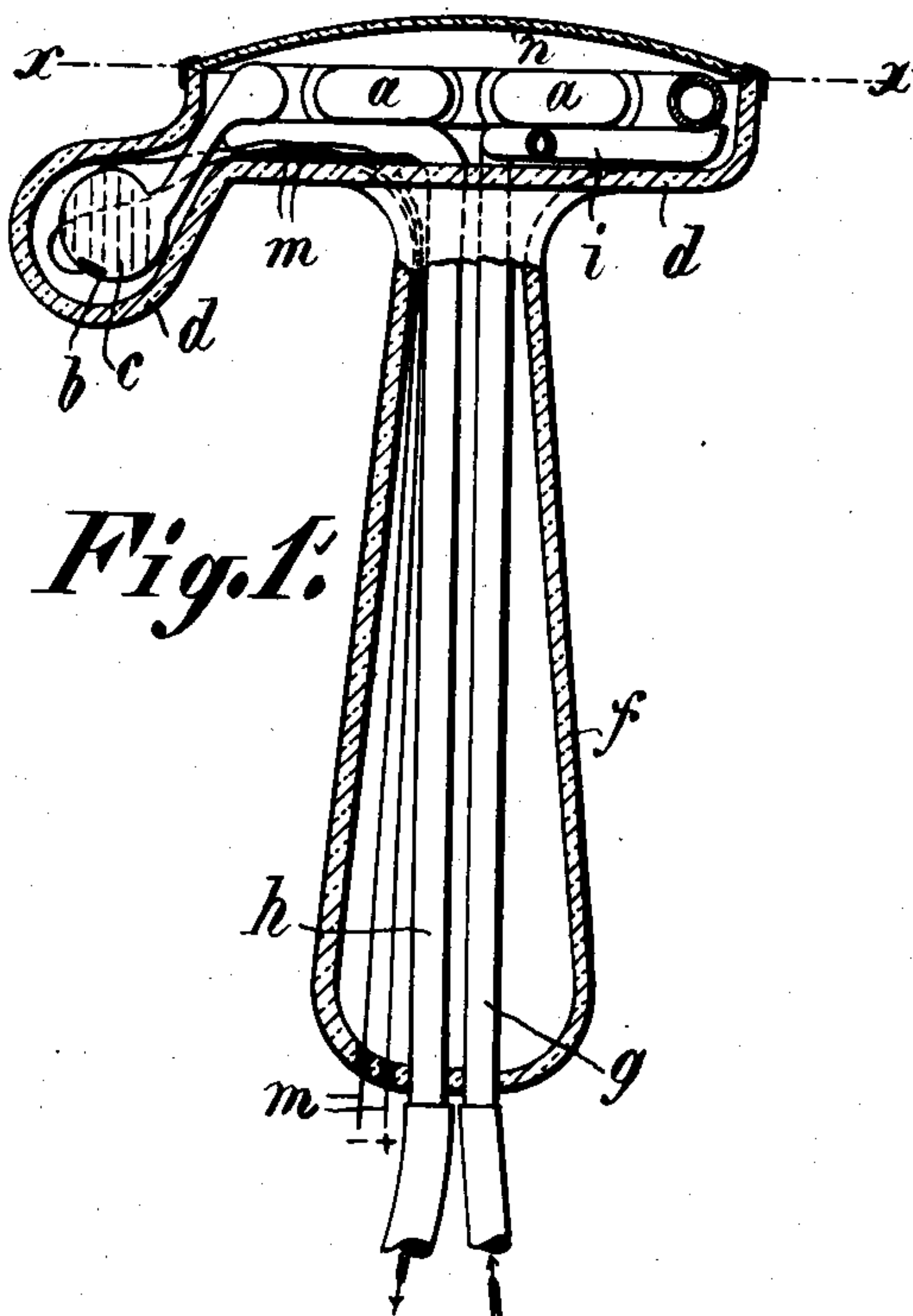


Fig. 1.

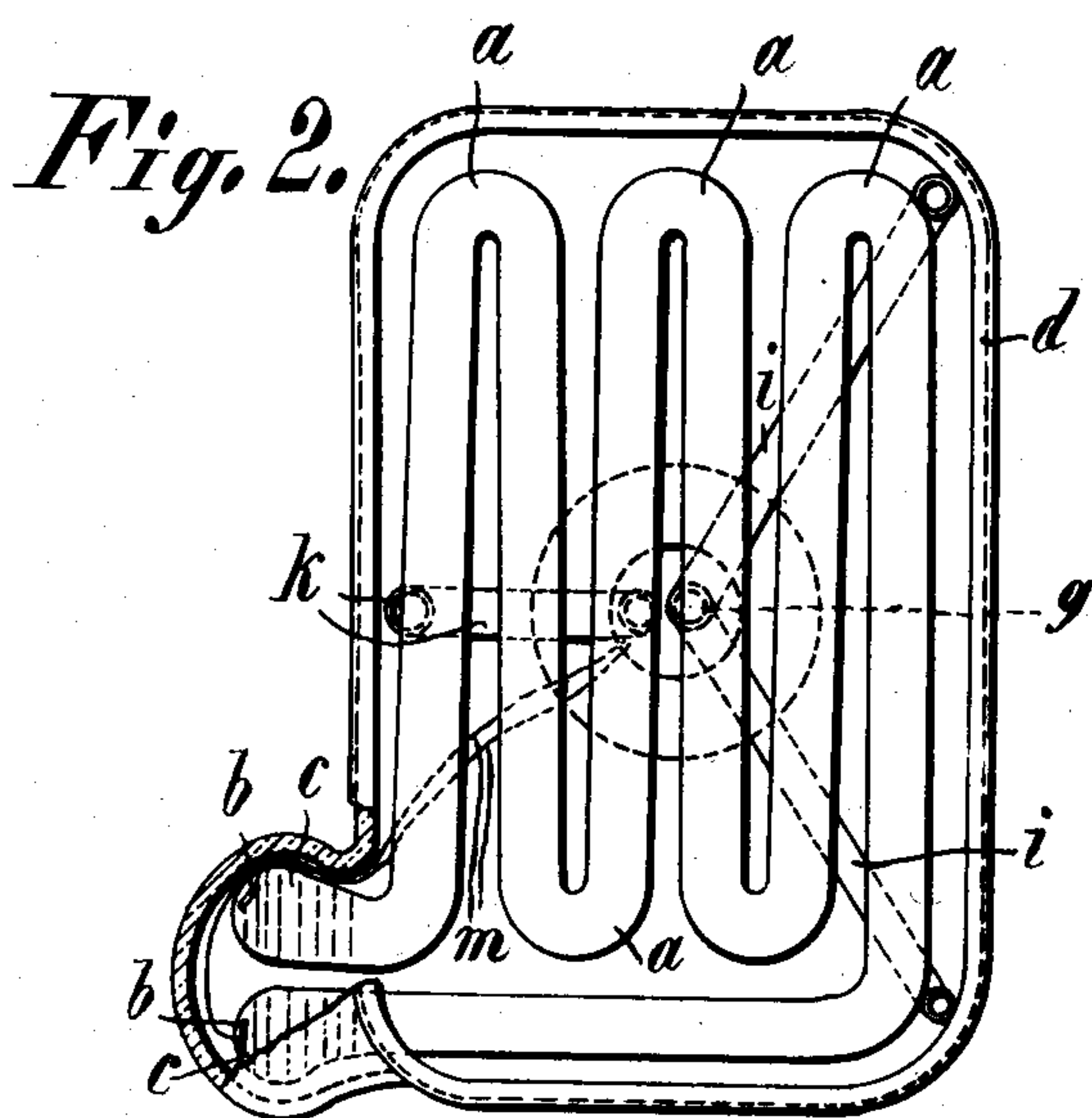


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

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THERAPEUTIC APPARATUS.

No. 834,209.

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To all whom it may concern:

Be it known that I, ERNST KROMAYER, professor of medicine, a citizen of the German Empire, residing at Berlin, Germany, have invented certain new and useful Improvements in Therapeutic Apparatus, of which the following is a specification.

The present invention relates to an apparatus for therapeutic purposes in order to treat diseases by means of radiation, and especially has for its object to cure diseases of the skin and of the mucous membranes.

The therapeutic treatment of the diseases of the skin by exposure of the latter to the rays of light, as introduced by Finsen into the medicine, is based thereon that the rays emitted from an electric-arc lamp are directed against the skin in a most concentrated state by means of a system of lenses; but care must be taken that the blood circulating in the skin is pressed away from the capillary vessels of the part to be exposed by means of a compressing-lens, so that the rays are not absorbed by the blood, but may penetrate to the lower or deeper parts of the skin. For this purpose a compressing-lens consisting of glass or quartz is used, which is pressed against the part of the skin to be radiated. The compressing-lens at the same time is to protect the skin from being warmed too highly, and therefore is made hollow and cooled by water circulating therein. This method shows some disadvantages, by which its use in therapy is rendered difficult. The compressing-lens being separated from the source of light, a special collecting-lens had to be arranged, by means of which the rays were concentrated, and in consequence of such a collecting-lens only small parts of the skin (of a diameter of about three-fourths centimeter) could be treated. Mucous membranes to which access is difficult to be had could not be treated at all according to this method.

The treatment of diseases of the skin has further been carried out by means of the so-called "Dermo lamp," the source of light of which being arranged within a double-walled casing cooled by means of water. The cooling-jacket surrounds the source of light in a distance of several centimeters and only serves for protecting the person manipulating with the apparatus from the rays, a cooling of the source of light being neither intended nor obtained. In the cooling-jacket the casing of quartz is arranged, serving for

compressing and cooling the part of the skin under radiation, which casing of quartz, as is obvious, also cannot serve for directly cooling the source of light. The wires for the electric current and the pipes for circulating the cooling medium were arranged in the hollow handle fastened at the Dermo lamp in a suitable manner.

The disadvantages shown by the apparatus hitherto used are avoided by the present invention, the chief feature of which consists in the lamp emitting the light being directly embedded in the cooling-bath, and therefore being wholly surrounded by the cooling medium. If it be intended to expose to the rays deeper parts of the skin, the cooling-casing may be constructed in such a manner that the part adjacent to the skin to be radiated can be used at the same time as a cooling and compressing lens. The present apparatus essentially simplifies the therapeutic radiation process. The source of light being arranged within the cooling-bath, a higher intensity of the electric current may be made use of and the source of light may be brought nearest to the skin, the rays thus acting in a more immediate and intensive manner. As regards the source of light, the so-called "mercury-lamp" is most suited for my purpose, as it may be given every suitable form corresponding to the place and size of the part of the skin or the mucous membranes to be treated. Thus the mercury-lamp may consist of several glass pipes suitably bent in the form of a serpentine in order to radiate larger parts of the skin.

The invention is shown in the annexed drawings.

Figure 1 is a vertical sectional view of an apparatus for exposing larger parts of the skin to the radiation. Fig. 2 is a horizontal section according to line $x x$ of Fig. 1.

With the apparatus represented I use as source of light the so-called "mercury-lamp;" but I do not confine myself thereto, as any other suitable source may be made use of.

Corresponding to the size of the part of the skin to be treated, the mercury-lamp has the form of a glass tube a bent several times in form of a serpentine. The ends of the said tube are filled with mercury c and provided with the electrodes b . The wires m serve for the conduit of the electric current. The mercury-tube a is inclosed in a casing d , provided with a cover n , of glass, quartz, or the like, which latter serves as a compressing-

lens. The cooling-water is fed to the casing *d* by means of the pipe *g* and branch pipe *i* and discharged by means of the pipes *k* and *h*. The casing *d* is provided with a handle *f*,
5 of caoutchouc or the like, in which are arranged the pipes for circulating the cooling medium and the wires *m* for circulating the electric current.

In order to concentrate the rays to the
10 part to be radiated, it is advantageous to arrange a mirror-covering at the bottom of the casing *d* and on those parts of the glass tube which are opposite the part of the skin to be treated.

15 If only superficial parts are to be radiated, it is not necessary to bring the apparatus in contact therewith.

Having now particularly described and ascertained the nature of my said invention
20 and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus of the class described, a casing having a broad and substantially flat compressing-lens, a source of light supported
25 within the casing, and means for circulating a cooling medium through the casing.

2. In an apparatus of the class described, a casing having a broad and substantially flat compressing-lens, a transparent, serpentine member forming a chamber and arranged
30 within the casing containing a source of light, and means for circulating a cooling medium through the casing.

3. An apparatus of the class described, a casing having a broad and substantially flat
35 compressing-lens, a transparent serpentine member forming a chamber and arranged within the casing contiguous to the lens, electrodes within the member and communicating with a source of electrical supply, means
40 within the member and associating with the electrodes to constitute an illuminating source, and means for circulating a cooling medium through the casing.

In testimony whereof I have hereunto set
45 my hand in presence of two subscribing witnesses.

ERNST KROMAYER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.