

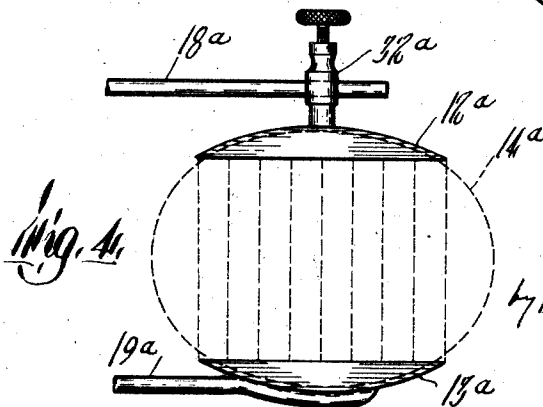
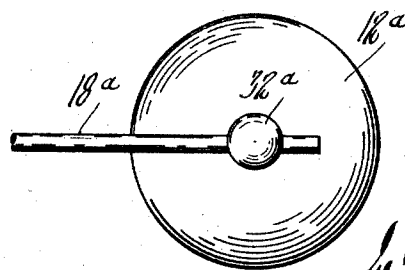
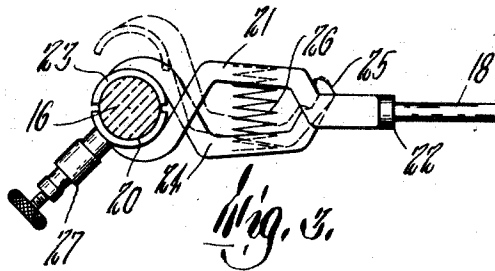
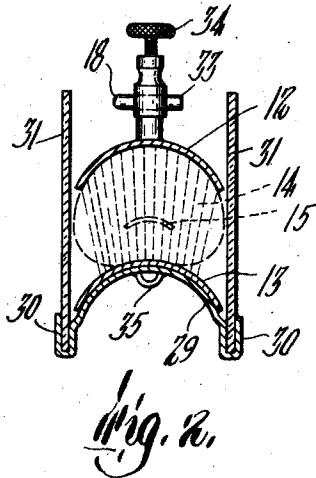
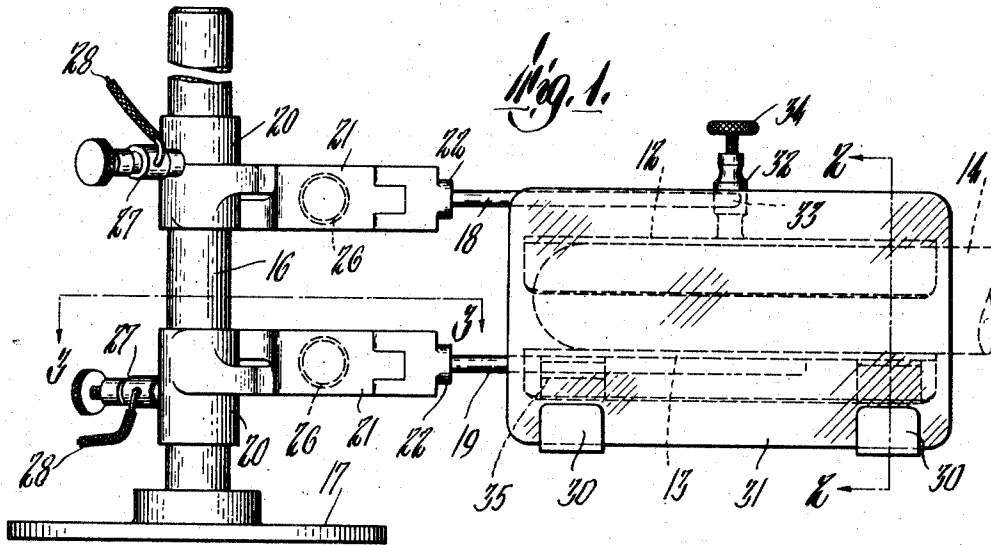
Aug. 6, 1929.

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1,723,602

DIATHERMIC APPARATUS FOR TREATING CERTAIN DISEASES

Original Filed Oct. 3, 1925



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UNITED STATES PATENT OFFICE.

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DIATHERMIC APPARATUS FOR TREATING CERTAIN DISEASES.

Application filed October 3, 1925, Serial No. 60,240. Renewed December 10, 1928.

The object of this invention is to provide an apparatus for treating diseased members or organs of the human body by generating high degrees of temperature within the tissues, for the purpose of relieving inflammation and congestion and killing germs of disease. Due to the high temperature a very large amount of blood is forced through the arteries, so that a localized fever is produced which is taken care of by the general circulation within a short time after treatment.

In attaining this object, I provide two opposed electrodes, and a clamping holder therefor, adapted to support the electrodes variably spaced apart. The electrodes may be formed to bear on an elongated body member having an urethral canal, and may be formed to bear on the testes.

The clamping holder includes means for adjustably maintaining the electrodes in clamping contact with a body member interposed therebetween, and means for causing heating current to pass from one electrode to the other through the interposed member.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a side elevation of an apparatus embodying the invention, the electrodes being formed to bear on an elongated body member shown by dotted lines.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 1, and a plan view of parts below said line.

Figure 4 is a fragmentary side elevation showing differently formed electrodes adapted to bear on the testes shown by dotted lines.

Figure 5 is a plan view showing one of the electrodes shown by Figure 4.

The same reference characters indicate the same parts in all of the figures.

Referring first to Figures 1 to 3, inclusive, 12 and 13 designate two opposed electrodes, one above the other. The electrodes in this instance are oblong and formed to bear on opposite sides of an elongated body member 14, having an urethral canal 15 (Figure 2). The electrodes are supported by a clamping holder including means for adjustably maintaining the electrodes in clamping contact with the member 14, and means for causing current to pass from one electrode to the other through the clamped member.

The holder preferably includes a supporting standard 16, having a base 17, adapted to

bear on a horizontal support (not shown), an upper conducting arm 18, fixed at its outer end to the upper electrode 12, and engaged at its inner end with the standard, and a lower conducting arm 19, fixed at its outer end to the lower electrode 13, and engaged at its inner end with the standard.

I provide means for maintaining the arms 18 and 19 variably spaced apart on the standard, said means being preferably embodied in spring-closed clamps normally engaged by friction with the standard and adapted to be quickly disengaged therefrom to permit adjustment of the arms and electrodes. The clamps may be identical in construction, each preferably including a jaw 20, fixed to an angular arm 21, which in turn is fixed at 22 to a conducting arm, and an opposed jaw 23, fixed to an angular arm 24, which has a jointed connection at 25 with the arm 21.

A spring 26 interposed between the arms 21 and 24, normally holds the jaws in frictional engagement with the standard 16. The portions of the arms shown by Figure 3 at opposite ends of the spring, and spaced apart thereby, constitute rests for a finger and thumb, the arrangement being such that inward pressure on said rests causes a quick separation of the jaws preparatory to their adjustment on the standard. The jaw 20 of each clamp is provided with a binding post 27, with which a conducting wire 28 may be engaged.

The conducting arms and their clamps are insulated from each other, preferably by the standard 16, which is composed of insulating material, such as hard rubber or bakelite.

The electrodes are formed to oppose lateral displacement of a member clamped therebetween. In this instance, the upper electrode 12 has an inner face which is concave in cross section, and conforms to the upper side of the member 14, as shown by Figure 2. The lower electrode 13 preferably has an upper face, which is convex in cross section, and bears on a limited portion of the under side of the member 14. The arrangement is such that current conducted through the member converges from the concave to the convex face, as indicated by dotted lines in Figure 2. The electrodes bear on the member at opposite sides of the canal 15, and the arrangement is such that the greatest degree of temperature is found at the portion of the member 14 nearest the lower electrode 13, which has a smaller area of surface contact-

ing with the member than the upper electrode 12.

To further oppose lateral displacement of the member 14, I secure the lower electrode 13 to a backing plate 29, which is provided with longitudinal channelled holders 30, in which are inserted the lower edges of plates 31 of insulating material, preferably glass, formed to bridge the space between the electrodes as shown by Figure 2. These plates may be removed for sterilization, and, being of insulating material, will not cause a short circuiting between the electrodes.

The upper electrode 12 is connected with the upper arm 18, preferably by means including a binding post 32, fixed to the electrode, and a trunnion 33, formed on the outer end of the arm 18, and entering a socket formed for its reception in the binding post. The electrode 12 is thus adapted to be longitudinally tilted or inclined, and secured in any desired position by a screw 34 engaged with the binding post, the electrode 12 being separable from the arm 18, when the screw is loosened.

The electrode 13 is preferably provided with a longitudinal socket 35, which receives the lower conducting arm 19, provision being thus made for detachably securing the electrode 13 to the arm 19.

Figures 4 and 5 show the preferred form of electrode adapted for use in treatment of the testes 14^a, these electrodes being preferably circular and concavo-convex. The upper electrode 12^a is provided with a binding post 32^a, engaged with the upper conducting arm, here designated by 18^a.

The lower conducting arm 19^a may be rigidly secured to the lower electrode 13^a. The upper electrode is rendered adjustable by the described construction, so that it may be readily conformed to one side of the member 14^a. The concavo-convex form of the electrodes reduces the possibility of slipping to a minimum.

The electrode in this instance, having contacting areas of equal size, so that the temperature is the greatest in the center of the testes, although the entire member is subjected to a high degree of temperature.

The standard and its base are adapted to maintain the conducting arms in substantially horizontal positions, with the lower electrode under and supporting the body member. The independent adjustability of the arms on the standard enables the lower electrode to be adjusted at a suitable height, to bear on the lower side of the body member and properly support the latter, and the upper electrode to be subsequently adjusted to conform to the upper side of the body member.

I claim:

Apparatus for treating by diathermy a body member having an urethral canal; comprising a lower conducting arm having conductor-engaging means, a trough-shaped lower electrode in conducting contact with the lower arm and having a transversely convex top face formed to bear on the lower side of the body member and support the latter, an upper conducting arm insulated from the lower arm and having conductor-engaging means, a trough-shaped upper electrode in conducting contact with the upper arm, and having a transversely concave bottom face formed to bear on the upper side of the body member, holders attached to the lower electrode at the longitudinal edges thereof and insulating plates detachably held by said holders at opposite sides of the body member-receiving space between the electrodes, said plates preventing lateral displacement of the body member and short circuiting contact between the electrodes, and being removable for sterilization.

In testimony whereof I have affixed my signature.

DE FOREST B. CATLIN.