

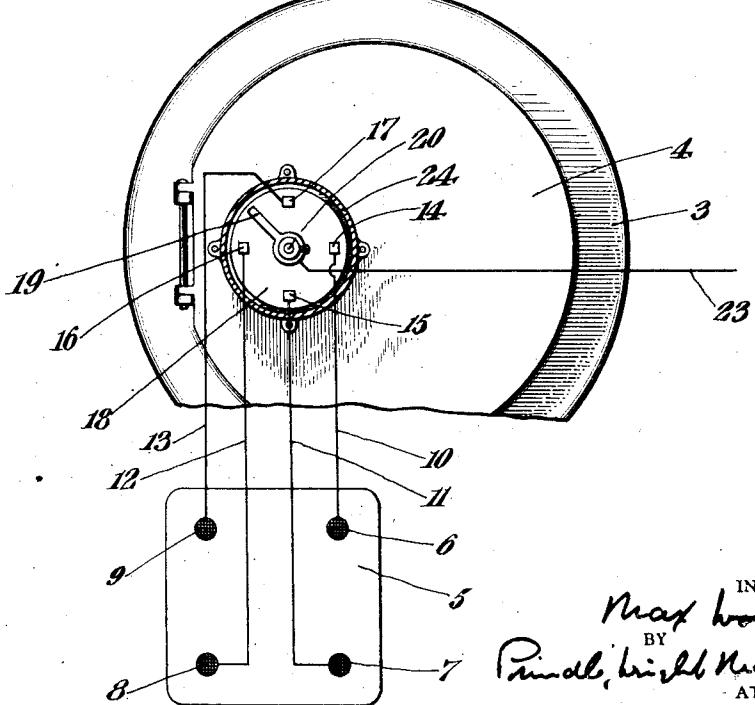
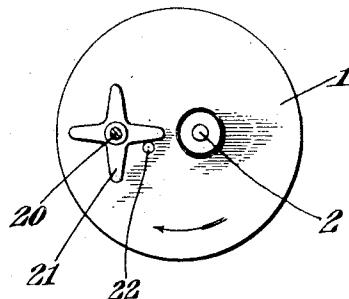
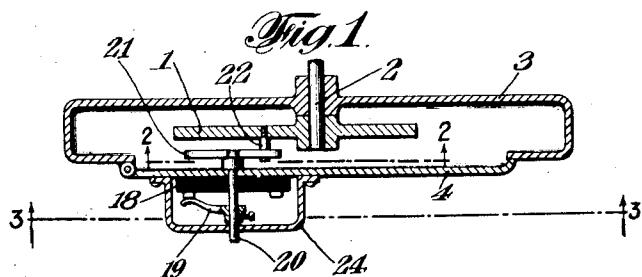
Aug. 20, 1929.

M: WOLF

1,725,555

ELECTROTHERAPEUTIC APPARATUS

Filed April 22, 1927



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ELECTROTHERAPEUTIC APPARATUS.

Application filed April 22, 1927. Serial No. 185,745.

The invention relates to a therapeutic apparatus involving an electrical generator and a plurality of electrodes, usually carried by a pad which is adapted to be applied to the body of a patient in subjecting him to the electrical treatment.

One object of the invention is to provide an apparatus of the above nature wherein the electrical energy will be applied selectively or successively to the several electrodes, which I have found to be of marked advantage in certain treatments, for example, when a pad as above described is applied to the abdomen of a patient, the successive energization of the electrodes serving to stimulate successively different sections of the intestines.

When used in conjunction with an apparatus producing sinusoidal waves in current, the invention also aims to change circuit from one electrode to another when the current wave is substantially at a minimum in order to avoid pain or discomfort to the patient.

The invention also includes a circuit changing device by the use of which electro-therapeutic apparatus of now existing construction may be readily and simply modified to operate in accordance with the invention.

Further objects and advantages of the invention will be in part obvious and in part specifically pointed out in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses a preferred embodiment thereof. Such embodiment, however, should be considered as merely illustrative of its principles. In the drawings—

Fig. 1 is a central horizontal section through the housing of one part of an electrical generator of a now existing type, but modified in construction to operate in accordance with the present invention.

Fig. 2 is a detailed section taken on line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a section on line 3—3 of Fig. 1, looking in the direction of the arrows, and also showing a form of pad in connection with which the invention is adapted to be used.

The invention is disclosed as applied to an electrical generator of a known type shown, for example, in a patent to Chapman No. 1,525,268, dated February 3, 1925, and therefore the construction of the generator as a

whole will not be described in detail herein. I have shown in the annexed drawings only so much of an apparatus of the above type as includes a cam 1 (corresponding to member 49 of the patent) supported upon a spindle 2 (corresponding to member 47 of the patent), it being understood that the cam rotates constantly during the operation of the generator and in synchronism with the sinusoidal waves. Substantially the same construction is shown in an earlier patent to Chapman, #1,268,545. Therefore, where in the specification or claims I use the expression "sinusoidal" as applied to a current or wave, I mean a surging or cyclically varying current or wave, as described in said last mentioned patent.

An apparatus of the above nature is frequently used in connection with one or more pads 5 (Fig. 3) adapted to be applied to the abdomen of the patient and having a plurality of electrodes 6, 7, 8 and 9, which heretofore have been simultaneously energized during treatment. I have found, however, as above stated, that particularly in abdominal treatments, a markedly superior effect is obtained if the electrodes be selectively or successively energized. As shown, the cam 1 is supported within a housing 3 having a door 4, and the electrodes are respectively connected by conductors 10, 11, 12 and 13, to a series of contacts 14, 15, 16 and 17 which latter are carried by an insulating base block 18 mounted on door 4. A switch arm 19 is rotatably carried by an insulating spindle 20 which projects through the door 4 and has mounted on its inner end, a star-wheel or other intermittent motion device 21, which latter is periodically engaged by a pin 22 or cam 1. Thus as the cam rotates during the operation of the generator the switch arm 19 is periodically moved around to engage successively the contacts 14, 15, 16 and 17, thereby successively energizing electrodes 6 to 9 which will constitute what are termed the active electrodes in the treatment of a patient.

Furthermore, since the rotation of cam 1 is synchronous with the sinusoidal waves produced by an electrical generator of the type above referred to, the circuit from one electrode to another may be shifted at a time when the electric wave is at or near its minimum, thereby avoiding pain to the patient which would be caused by changing the cir-

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cuit connections to electrodes at higher potentials. In the illustrated form of apparatus, for example, to shift circuit when the wave is at a minimum, it is only necessary that 5 the pin 22 be so positioned on cam 1 as to engage the arms of star-wheel 21 when the magnets and coils of the generator are spaced apart substantially the maximum distance. The switch arm 19 will be connected by conductor 23 to one of the terminals of the generator.

The illustrated type of switching mechanism may be very easily connected to apparatus of existing types, since all of the parts 15 (with the exception of pin 22) necessary to enable the apparatus to operate in accordance with the invention, may be mounted upon the door 4 of housing 3. As shown the switching mechanism is enclosed by a suitable 20 shell 24.

While a specific apparatus has been described above, it will be obvious that many changes may be made therein without departing from the essentials of the invention as 25 set forth in the appended claims.

I claim:

1. An electro-therapeutic apparatus comprising a dynamo-electric generator, one or more pads carrying a plurality of electrodes 30 and adapted to be applied to the body of a patient, a switching mechanism adapted to make circuit selectively from the generator to said electrodes and automatic means mechanically connected with the generator for intermittently actuating said switching mechanism step by step.

2. An electro-therapeutic apparatus comprising a generator of the sinusoidal wave type, a plurality of electrodes adapted to be 40 applied to the body of a patient, and means operating synchronously with the generator for selectively changing the circuit to said electrodes from the generator at times when

the said sinusoidal wave is substantially at a minimum.

3. An electro-therapeutic apparatus comprising a generator having a cam associated therewith for producing sinusoidal waves, a plurality of electrodes adapted to be applied to the body of a patient, and a switching mechanism actuated by the motion of said cam for making circuit from the generator selectively to said electrodes at definite points in the sinusoidal wave.

4. An electro-therapeutic apparatus comprising a generator having a cam associated therewith for producing sinusoidal waves, a housing for said cam, a plurality of electrodes adapted to be applied to the body of a patient and a switching mechanism mounted on said 60 housing and actuated from said cam for making circuit selectively from the generator to said electrodes at definite points in the sinusoidal wave.

5. An electro-therapeutic apparatus comprising a generator having a moving parts associated therewith adapted to cooperate in the production of sinusoidal waves, a plurality of electrodes adapted to be applied to the body of a patient, and a switching mechanism actuated intermittently from said moving part for shifting circuit selectively from the generator to the several electrodes when the electrical wave is near a minimum.

6. An electro-therapeutic apparatus comprising a generator of the sinusoidal wave type, a plurality of electrodes adapted to be applied to the body of a patient, and switching means driven by said generator for selectively connecting said electrodes with the 80 generator at certain definite points in said sinusoidal wave.

In testimony that I claim the foregoing, I have hereunto set my hand this 11th day of April, 1927.

MAX WOLF.

CERTIFICATE OF CORRECTION.

Patent No. 1,725,555.

Granted August 20, 1929, to

MAX WOLF.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 89, strike out the reference character before the word "mounted" and insert instead "18", and line 94, for the word "or" read "on"; and the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of October, A. D. 1929.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.

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Acting Commissioner of Patents.**