W. H. WOOLVERTON.

MEDICAL VIBRATOR.

APPLICATION FILED NOV. 20, 1917.

1,302,620.

Patented May 6, 1919.

3 SHEETS—SHEET 1.

Fig. 1.

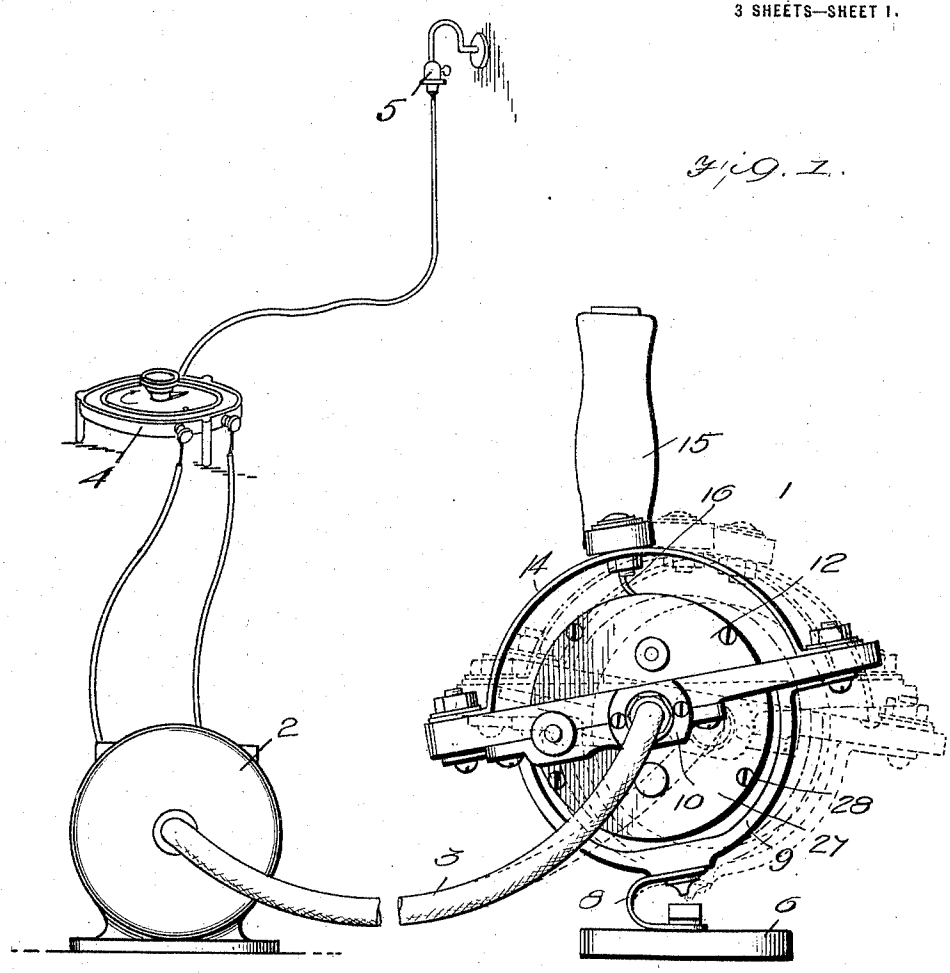
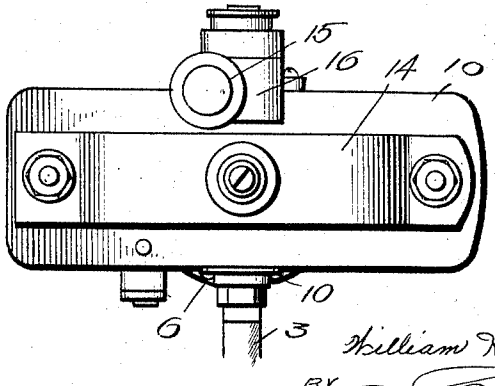


Fig. 2



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Fig. 3.

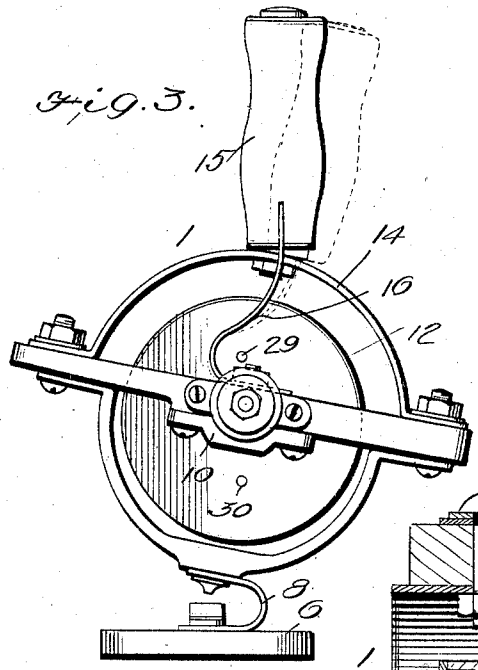


Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 5.

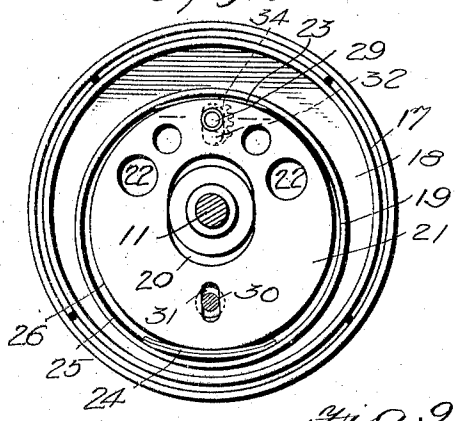


Fig. 9.

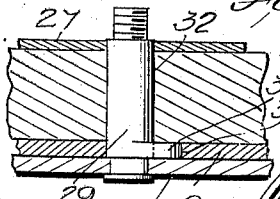


Fig. 6.

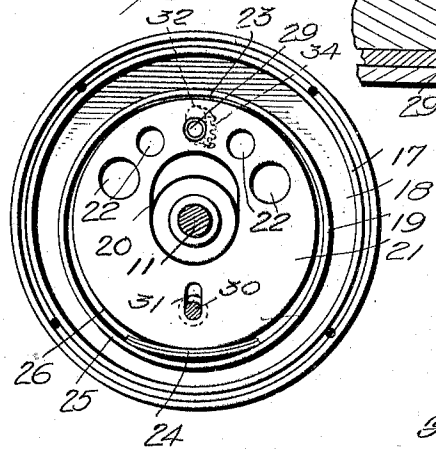


Fig. 7.

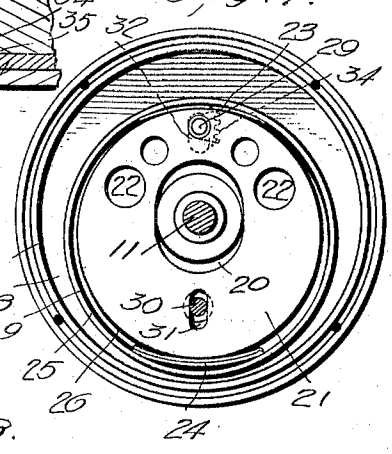
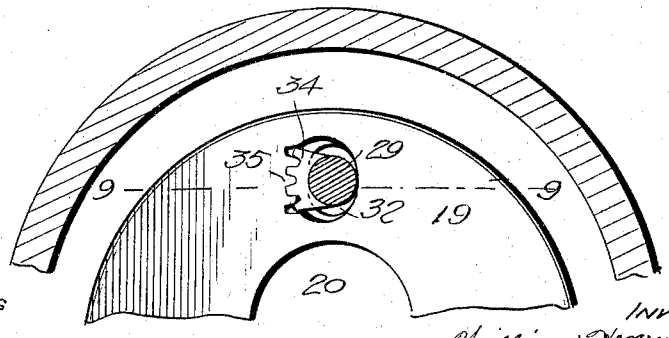


Fig. 8.



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UNITED STATES PATENT OFFICE.

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MEDICAL VIBRATOR.

1,302,620. Specification of Letters Patent. Patented May 6, 1919.

Application filed November 20, 1917. Serial No. 202,981.

To all whom it may concern:

Be it known that I, WILLIAM HENRY WOOLVERTON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Medical Vibrators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to vibrating machines to be used in the treatment of certain diseases and disorders, and has for its object to provide a vibrator which is preferably electrically driven, and which will produce rapid and effective vibrations, and which is so constructed and arranged that the extent of vibratory movement can be quickly and readily controlled.

With this object in view the invention consists in the novel construction and arrangement of the vibrating machine, all of which will be first fully described and afterward specifically pointed out in the appended claims.

Referring to the accompanying drawings:—

Figure 1 is an elevation illustrating the vibrator and its connections for driving and controlling the same,

Fig. 2 is a top plan view of the vibrator,

Fig. 3 is an elevation from the side opposite to that shown in Fig. 1,

Fig. 4 is an enlarged vertical sectional view through the vibrating machine,

Figs. 5, 6 and 7 are plan views of the rotor illustrating different positions of the central part for producing vibrations of varying intensity.

Fig. 8 is an enlarged fragmentary sectional view illustrating the construction for adjusting and positioning the central vibration controlling member, and

Fig. 9 is an enlarged fragmentary sectional view through the rotor taken on line 9—9 of Fig. 8.

Like numerals of reference indicate the same parts throughout the several figures, in which—

1 indicates the vibrating machine which is preferably connected to an electric motor 2 by means of a flexible shaft 3, the motor 2 in turn being connected with a rheostat 4 connected to a source of current, which as shown in the accompanying drawings may be an ordinary electric lighting fixture 5.

The vibrating machine consists of a preferably circular base 6 having in the effective face thereof a plurality of annular grooves 7, said base 6 being connected to the body portion of the machine 1 preferably by a resilient member 8. Upon this resilient member 8 the frame 9 is mounted, said frame being provided with two journal boxes or bearings 10 so as to receive the shaft 11 of the vibrating rotor 12, the said shaft 11 being preferably slotted at 13 to receive the end of the flexible driving shaft 3.

Arranged on the frame 9 and partially encompassing the rotor 12 is a guard 14. Connected centrally of the frame 9 and preferably above one of the journals 10 is a handle 15, connection being made with the frame 9 by means of a flexible member 16.

Referring particularly to the vibrating rotor 12 it will be seen from the several figures that the same includes an annular chambered shell 17 fast to and rotatable with the shaft 11. In the chamber 18 of the rotor shell 17 is disposed a similar but smaller or less diametered annular chambered shell 19 having therein an elongated opening 20 (Figs. 5, 6, 7 and 8) through which the shaft 11 passes, which elongated opening 20 provides for a shifting or an eccentrically positioning of the shell 19 within the outer or main shell 17. Disposed within the inner chambered shell 19 is a relatively heavy annular member 21, said member 21 being also provided with an elongated opening therethrough coinciding with the elongated opening 20 in the chambered shell 19, also having the shaft 11 passing therethrough.

Referring particularly to Figs. 5, 6 and 7, it will be seen that the central relatively heavy member 21 may be provided with one or more holes or perforations 22 on one side of the center of the annular member 21 so

as to unbalance the said relatively heavy annular member 21. It will also be seen from Figs. 5, 6 and 7 that oppositely disposed leaf springs 23 and 24 are positioned between the annular wall 25 of the inner chambered shell 19 and the periphery 26 of the relatively heavy annular member 21 so that the member 21 is resiliently mounted within the inner shell 19.

27 indicates the cover plate for the rotor (Fig. 4), said plate being secured to the annular wall of the outer shell 17 by means of screws 28. Entering the rotor from the cover plate 27 are two oppositely disposed pins 29 and 30, each of which passes through elongated openings 31 and 32 in the relatively heavy annular member 21 and opening in the inner retaining shell 19, said pin 30 being threaded into the outer shell 17 at 33, as shown in Fig. 4.

Referring now to the other pin 29 it will be seen that the same is provided on its inner end with a toothed segment 34 particularly as seen in Fig. 8 meshing with a toothed portion 35 of the inner shell 19.

Having thus fully described the several parts of this invention, its operation is as follows:—

The parts being assembled in the manner as illustrated in the accompanying drawings, the amplitude of the vibratory motion of the machine is controlled by the position of the inner shell 19 and its relatively heavy annular member 21. As will appear from Figs. 5, 6 and 7, this inner shell 19 and its annular member 21 are capable of being variously positioned within the outer or main shell 17 so as to unbalance the rotor to a greater or less degree. This adjusting or positioning of the the inner shell 19 and its annular member 21 is effected by first loosening the threaded pin 30 and then rotating the pin 29 having thereon the toothed segment 34. By a rotatory movement of the pin 29, its segment 34 meshing in the shell 19 moves the inner shell 19 toward or away from the center of the rotor as may be desired in order to diminish or increase the amplitude or vibrations of the machine.

In operation when the extent of vibratory motion has been first determined and the inner shell 19 and its relatively heavy member 21 is set in desired position by means of the threaded pin 30, the vibrator is placed on that part of the human anatomy which is to receive vibratory motion. The machine is grasped by the operator or patient at the handle 15 and the base 6 is caused to lightly rest upon the part of the body to receive the vibratory motion. Current is then delivered to the motor 2 and the rotary movement thereof is imparted to the shaft 11 and its rotor through the medium of the flexible shaft 3. It is preferable, though not essential, to employ a rheostat or resistance 4 in order to control the revolutions of the motor 2 so that the rotor can be caused to rotate at high or low speed as the occasion may require. The rotating rotor being of the internal construction as heretofore described, produces very rapid vibrations throughout the whole machine, the amplitude of which is controlled in the manner as heretofore described. This vibratory motion imparted to the machine is illustrated in dotted lines in Fig. 1, and by reason of the flexible connection 8 between the frame 9 and the base 6 a vibratory movement is delivered to the machine in a most efficient manner and at the same time without shock or jar or discomfort to the patient. At the same time the flexible connection between the machine and the handle 15 provides for the efficient vibration of the machine while being grasped by the hand of the operator or patient so that the vibrations of the machine are in no way altered or lessened, the flexible character of the connection 16 being illustrated by dotted lines in Fig. 3. From the foregoing it will be understood that when these flexible connections 8 and 16 are employed the vibrating machine is free to vibrate unhampered and is capable of producing very rapid and efficient vibrations.

I claim—

1. A machine of the type described, including a rotor comprising a shaft, an annular chambered shell rigidly secured to said shaft, a less diametered or intermediary shell within the aforesaid shell, said less diametered shell being provided with a shaft receiving elongated opening, a relatively heavy and resiliently mounted member positioned within the aforesaid intermediary shell, means for variably and eccentrically positioning said intermediary shell, said shaft being adapted to have imparted thereto rotary movement.

2. A machine of the type described, including a rotor, comprising a shaft, an annular chambered shell rigidly secured to said shaft, a less diametered intermediary shell, said intermediary shell being provided with a shaft receiving elongated opening, a relatively heavy and resiliently mounted member positioned within said intermediary shell, an element positioned in the outermost shell of said rotor, said element and said intermediary shell being provided with intermeshing means for varying the positioning of the latter with respect to the center of the rotor, said shaft being adapted to have imparted thereto rotary movement.

3. A machine of the type described including a rotor comprising a shaft, an annular chambered shell rigidly secured to said shaft, a less diametered intermediary

shell, said intermediary shell being provided with a shaft-receiving elongated opening, a relatively heavy and resiliently mounted member positioned within said intermediary shell, an element positioned in the outermost shell of said rotor, said element and said intermediary shell being provided with intermeshing means for varying the positioning of the latter with respect to the center of the rotor, a handled-element positioned in one wall of the outermost shell of said rotor for setting said intermediary shell, said shaft being adapted to have imparted thereto rotary movement.

In testimony whereof, I affix my signature, in presence of two witnesses.

WILLIAM HENRY WOOLVERTON.

Witnesses:
C. HUGH DUFFY,
M. H. BERGMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."