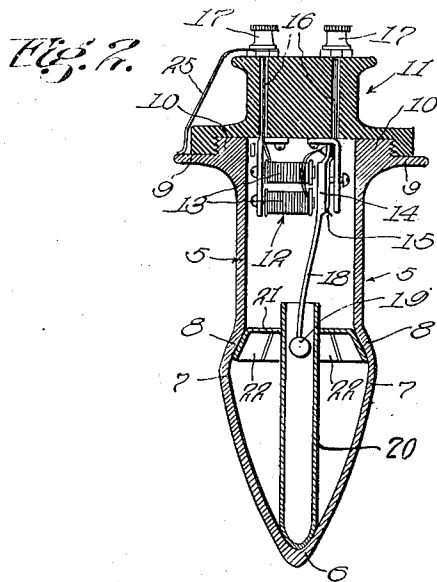
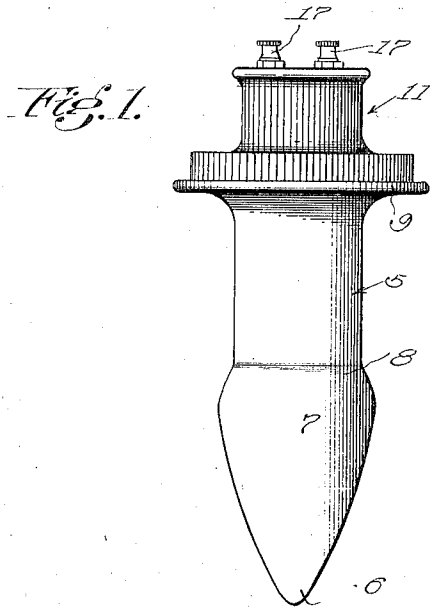


J. T. KEOUGH.
 VIBRATORY DILATOR.
 APPLICATION FILED JAN. 23, 1911.

1,032,840.

Patented July 16, 1912.



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UNITED STATES PATENT OFFICE.

JOHN T. KEOUGH, OF LOS ANGELES, CALIFORNIA.

VIBRATORY DILATOR.

1,032,840.

Specification of Letters Patent. Patented July 16, 1912.

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To all whom it may concern:

Be it known that I, JOHN T. KEOUGH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Vibratory Dilators, of which the following is a specification.

This invention relates broadly to the combination of a vibrating mechanism with a dilator. Heretofore the advantages of mechanical dilation and of mechanical vibration have both been appreciated and applied to different parts of the body; but, so far as I am aware there has not been a combination whereby the advantages of vibration may be employed to assist the dilatory action and to render it more effectual and complete.

According to my invention, a dilator of ordinary outline and configuration is provided with a vibratory mechanism, preferably electrically actuated. The vibratory mechanism is arranged so as to deliver the vibratory movements to the entering point and dilating portions proper of the dilator, these being the portions where the vibrations are most efficiently communicated to the muscles and overlying tissues to induce their expansion and to thereby cause complete and effectual dilation. The body of the dilator may be made of any material, but is preferably of metal, and is hollowed out to receive the vibrator mechanism. The mechanism is mounted on a cap which may be removed from the dilator body for inspection or repairs. An electrical connection may also be made between one side of the vibrator circuit and the metallic body so that the self induced current from the vibrator magnets will pass to the body of the person and give a direct electrical effect as well as the mechanical vibration.

I have shown a preferred form of my invention in the accompanying drawings, in which:

Figure 1 is an elevation of my improved device. Fig. 2 is a longitudinal section of the same.

In the drawings 5 designates the body portion of my device which may be of any desired size and configuration, being illustrated in the form typical to dilators now in use. The body is preferably made of

metal and is hollow as shown in Fig. 2, having an entering point 6 and a swelled portion 7 immediately following the point. Above the swelled portion a contraction takes place in an upward direction as at 8, the body above the contraction being cylindrical and having a flange 9 on its upper end. Above the flange a screw threaded portion 10 is provided for engagement with cap 11.

Cap 11 is preferably of the configuration illustrated and of hard rubber or some similar substance. An electro-magnetic vibrator 12 is secured to the underside of the cap where it is within the interior of body 5 when the cap is placed on the body. This vibrator has magnets 13, a vibrating armature 14, and a make and break contact 15, the wiring connections being of the usual character. Wires 16 pass through cap 11 to binding posts 17 where connection is made to any suitable source of electrical current, say one dry cell. Armature 14 has an arm 18 which carries hammer 19 in the form of a ball. Hammer 19 is movably inclosed in a tube 20 which presses with its lower end against the lower inner end of the body 5 and is supported at its upper end by a disk 21 having spring flanges 22 which engage with the inner surface of the reduced portion 8 of the body 5 and keep tube 20 pressed downwardly into position. This construction affords a light and easily manufactured means of transmitting the vibrations to the outer portions of body 5.

The whole mechanism is so arranged, that, when current is supplied to binding posts 17, the hammer 19 will be vibrated so as to strike the tube 20 on opposite sides. From tube 20 the vibrations are communicated directly to the lower portions of the body where they are most efficiently transmitted to the parts which it is desired to dilate. In addition to the mechanical vibration an electric current may be transmitted to the body of the dilator and thence to the tissues and muscles by a connection 25 between one of binding posts 17 and flange 9 of the metallic dilator body, the current then returning to the battery through the body, the return path from the body being completed by the use of an ordinary hand electrode not shown. Through this connection

the high potential generated by self induction in the vibrator magnets is transmitted to the parts desired to be dilated, the electrical and mechanical effect being combined to relapse and otherwise affect the tissues.

Having described my invention, I claim:

1. A device of the class described, comprising a hollow dilator body portion of an electrical conductor and having an entering point and a dilating portion immediately behind said point, a cap for the body portion and removably mounted thereon, an electro-magnetic vibrator mounted on the inner face of the cap and within the hollow interior of the body, a hammer adapted to be vibrated by the vibrator, abutments connected with the dilating portion of the body and adapted to be struck by the hammer, an electrical circuit for the vibrator, and means for supplying electric current to said vibrator and means for connecting dilator

body portion to one side of said electric supplying means.

2. In a device of the character described the combination with a rigid, pointed dilator body, a vibratory mechanism located within said body portion comprising an armature movable transversely with relation to the dilator body and an abutment supported within the dilator body in position to be struck by said armature, said abutment extending to the pointed end of the dilator body and being in contact therewith at said pointed end.

In witness that I claim the foregoing I have hereunto subscribed my name this day of December, 1910.

JOHN T. KEOUGH.

Witnesses:

JAMES T. BARKELEW,
ELWOOD H. BARKELEW.