

1,084,178.

G. S. TUNE.
 MESSAGE VIBRATOR.
 APPLICATION FILED APR. 22, 1913.

Patented Jan. 13, 1914.

2 SHEETS—SHEET 2.

Fig. 3.

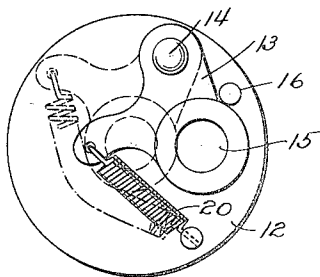


Fig. 4.

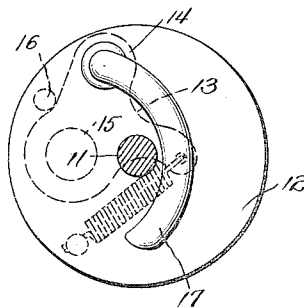


Fig. 5.

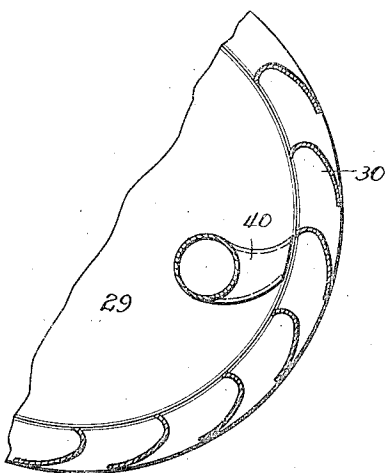
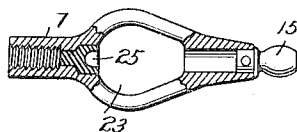


Fig. 6.



WITNESSES

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MASSAGE-VIBRATOR.

1,084,178.

Specification of Letters Patent.

Patented Jan. 13, 1914.

Application filed April 22, 1913. Serial No. 762,791.

To all whom it may concern:

Be it known that I, GUNNAR SV. TUNE, a subject of the King of Denmark, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Massage-Vibrator, of which the following is a full, clear, and exact description.

This invention relates to a massage vibrator of that type in which the oscillatory element is driven from a motor through a flexible shaft, the motor being of the water turbine type.

The invention has for one of its objects to improve and simplify the construction and operation of vibrators of the character referred to so as to be reliable and efficient in use, comparatively inexpensive to manufacture and readily controlled for obtaining different amplitudes of vibrations of the oscillatory element.

A specific object of the invention is to provide a novel, simple and effective connection between the oscillatory element and rotary shaft of the device, which connection is adjustable to obtain a light or heavy vibratory action.

Another object is the provision of an improved mounting for the oscillatory element, of substantial and durable design and insuring rapid movement of the vibrator.

Another object is to provide a form of motor of high efficiency and propelled by water taken from an ordinary city service pipe.

With these objects in view, and others as will appear as the description proceeds, the invention comprises various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, and wherein similar reference characters are employed to designate corresponding parts throughout the several views, Figure 1 is a view of the apparatus with portions in section to illustrate the details of construction; Fig. 2 is a transverse section on the line 2—2 of Fig. 1; Fig. 3 is a view of a crank disk and adjustable connection between the same and oscillator; Fig. 4 is a reverse view of Fig. 3; Fig. 5 is a fragmentary view showing the nozzle and pump arrangement of

the turbine; and Fig. 6 is a detail view of the stem of the oscillator.

Referring to the drawings, A designates the body of the vibrator, which is a chambered construction composed of two sections 1 and 2 divisible in a transverse plane and threaded at 3, one within the other. The section 1 has a boss 4, into which is screwed a handle 5 extending at right-angles to the axis of the body A. One end of the body has an opening 6 through which extends the stem 7 of the vibrator or oscillator 8, the latter being detachably connected with the stem so as to adapt the device for different uses. In the opposite end of the body A is an opening 9 having a bearing bushing 10 for the shaft 11, there being on the shaft 11 a crank disk 12 which serves to oscillate the vibrator 8.

The operating connection between the stem 7 and disk 12 is such that the magnitude of oscillation of the element 8 can be adjusted for light or heavy vibrations, according to the treatment to be given. This operating connection consists of an arm 13 pivoted at 14 on the disk 12 near the periphery thereof, and on the front side, the said arm having an opening 15 which is located at such distance from the pivotal center 14, that when the arm is in one extreme position the center of the opening will coincide with the axis of rotation, in which position the oscillatory element or device 8 will have no vibration. The movement of the arm 13 to its extreme eccentric position is limited by a stop 16 on the disk, and when the arm is in engagement with the stop the vibrating device 8 has its maximum amplitude of vibration. The arm 13 is moved inwardly and outwardly by means of a finger or wiper 17, disposed at the side of the disk 12 opposite from the arm 13, and cooperating with the wiper or finger, which is rigidly connected with the arm 13, is a cone 18 shiftable back and forth on the bushing 9. The movement of the cone or abutment 18 in one direction is effected by a screw 19 threaded in the section 2 of the body A, and by turning this screw inwardly the cone or abutment 18 is shifted toward the disk 12, and by this movement the cone wiping on the finger or wiper 17 throws the arm 13 from the periphery of the disk 12 to a central or neutral position, so that the arm 14, as the disk rotates, will cause a reduced vibration

of the element 8. A spring 20 is connected with the disk 12 and with the arm 13, so as to operate through such arm to maintain the wiper or finger 17 in engagement with the cone or abutment 18. As the screw 19 is turned outwardly the cone is forced to the right by the action of the spring, and at the same time the arm 13 moves toward the edge of the disk. The inner end of the stem 7 is provided with an approximately spherical tip 21 which enters the opening 15 of the arm 13, so that the stem is oscillated as the disk 12 rotates.

The stem of the oscillatory element or vibrator 8 is mounted on a post 22 which extends upwardly into the stem 7, which has its central portion open at 23 for receiving the post 22, and in this post is carried a pivot element 24 with its axis coincident with the axis of the shaft 11, and the forward end of the pivot 24 engages in a cup bearing 25 arranged in the forward portion of the stem 7. There is sufficient clearance between the stem and the post 25 to allow the stem to have its required range of oscillation. A helical spring 26 is interposed between the rear of the post 22 and the rear portion of the stem 7, so as to urge the latter rearwardly and maintain the socket or bearing 25 in engagement with the fixed pivot 24 and also to maintain the rear end or tip 21 in the opening of the eccentric arm 13. The spring is maintained in engagement with the post 22 by the rear end of the pivot element 24 extending into the spring. By reason of mounting the stem in the manner referred to and by the employment of the simple and adjustable connection between the shaft 11 and stem, the oscillatory element can be driven at a high rate of speed with comparatively little friction and wear of the parts.

The motor B comprises an annular casing 27 having its bottom open, and mounted vertically in the casing is a shaft 28 which has secured to its lower end the rotary element 29 provided with peripheral tangentially-discharging buckets or blades 30. The shaft 28 passes through a bushing 31 threaded in a boss 32 on the casing 27, and the upper end of the shaft 31 is connected by a helical spring 33, which is also connected with the shaft 11 of the vibrator. This flexible spring 33 of the driving connection between the motor B and vibrator A is inclosed in a tubular protective casing 34 which is flexible by reason of its being in the form of a helical spring wound oppositely to the flexible portion 33 of the driving connection. The ends of the protecting tube 34 are rigidly secured to the motor casing by entering the boss 32, which has an undercut surface or shoulder 35, and extending into the end of the casing 34 is the

tapered end 36 of the bearing bushing 31, so that a wedging or clamping action can be obtained on the tubular casing 34. The tubular casing is connected with the vibrator by substantially the same kind of wedging action, this being accomplished by a tapering boss or nipple 38 which extends into the tubular casing 34, and by means of a clamping ring 39 the casing is clamped on the tapering boss 38. To discharge water against the buckets of the turbine wheel a nozzle 40 is mounted in the casing 27 of the turbine with its discharge end in proximity to the buckets 30. The receiving end of the nozzle has a flange 41 which is clamped against a shoulder or packed surface 42 by a nut 43. The nozzle communicates with an inlet opening 44, to which a service pipe 45 is connected by a coupling device 46. The water discharged from the nozzle 40 strikes the blades of the buckets 30, and after imparting power to the bucket wheel the water drops out of the casing to the open bottom.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the method of operation and of the apparatus shown will be readily understood by those skilled in the art to which the invention appertains, and while I have described the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A vibrator of the class described, comprising a vibratory element, a rotating member, an element pivoted on the member and engaged with the vibratory element for varying the amplitude of vibration thereof, a spring connected with the member and pivoted element for moving the point of connection between the two elements outwardly from the axis of rotation of the said member, and an axially movable cam engageable with the pivoted element for moving the same in opposition to the spring, whereby the point of connection between the elements can be shifted toward the axis of rotation of said member.

2. A vibrator of the class described comprising a vibratory element, a rotating member, an element pivotally connected with and carried by the rotating member and adjustable to and from the axis of rotation for varying the amplitude of vibration of the vibratory element, the pivotal axis on which the element is adjustable being parallel with and eccentric to the axis of rotation of the said member, a wiper

connected with the member, and a cam engaging the wiper to adjust the position of the member.

3. A vibrator of the class described comprising a vibratory element, a rotating member, an element carried by the rotating member and adjustable to and from the axis of rotation for varying the amplitude of vibration of the vibratory element, a wiper connected with the member, and a cone-shaped cam movable along the axis of rotation of said member and engaged with the wiper for adjusting the position of said member.

4. A vibrator of the class described, comprising a vibratory element, a rotating member, an element pivoted on the member and engaged with the vibratory element for varying the amplitude of vibration thereof, a spring connected with the member and pivoted element for moving the point of connection between the two elements outwardly from the axis of rotation of the said member, an axially movable cam engageable with the pivoted element for moving the same in opposition to the spring, whereby the point of connection between the elements can be shifted toward the axis of rotation of said member, and a screw for adjusting the cam in one direction, said spring being arranged to act through the pivoted element to move the cam in the opposite direction.

5. A vibrator of the class described comprising a vibratory element, a rotating disk, a device pivoted on the disk at a point eccentric thereto and connected with the element for vibrating the same, and a cam movable along the axis of rotation for shifting the said device to and from such axis.

6. A vibrator of the class described comprising a vibratory element, a rotating disk, an arm pivotally mounted on the disk and connected with said element, a finger connected with the arm and disposed at the side of the disk opposite from the arm, and means engaged with the finger for shifting the point of engagement of the element and arm to and from the axis of rotation of the disk.

7. A vibrator of the class described comprising a vibratory element, a rotating disk, an arm pivotally mounted on the disk and connected with said element, a finger connected with the arm and disposed at the side of the disk opposite from the arm, and

an axially movable cone-shaped cam engaged with the finger for shifting the point of engagement of the element and arm to and from the axis of rotation of the disk.

8. A vibrator of the class described comprising a vibratory element, a rotating carrier, an arm pivoted on the carrier at a point eccentric thereto and engaged with said rotatable element, a finger connected with the arm, a cam device engageable with the finger for adjusting the position of the arm, a spring for maintaining the finger in engagement with the cam device, and an adjusting screw for changing the position of the cam.

9. A vibrator of the class described comprising a vibratory element provided with a stem, a post on which the stem is mounted, actuating means for the vibratory element, and a device for holding the stem in engagement with the actuating means and also in engagement with the device.

10. A vibrator of the class described comprising a vibratory element provided with a stem, a post on which the stem is mounted, actuating means for the vibratory element, and a spring for holding the stem in engagement with the actuating means and also in engagement with the device.

11. A vibrator of the class described comprising a vibratory element having a stem provided with an opening, a bearing post extending into the opening, a pivot carried by the post and on which the element has oscillatory movement, and a spring operating between the post and said stem for maintaining the latter in engagement with the said pivot.

12. A vibrator of the class described comprising a vibratory element having a stem provided with an opening, a bearing post extending into the opening, a pivot carried by the post and on which the element has oscillatory movement, a spring operating between the post and said stem for maintaining the latter in engagement with the said pivot, and an operating means with which the stem is maintained in engagement by the said spring.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GUNNAR SVENDSEN TUNE.

Witnesses:

N. C. KOORSTRO,
F. PODRACKI.