M. NAKATA.

VIBRATOR.

APPLICATION FILED JAN. 11, 1915.

1,144,308. Patented June 22, 1915.

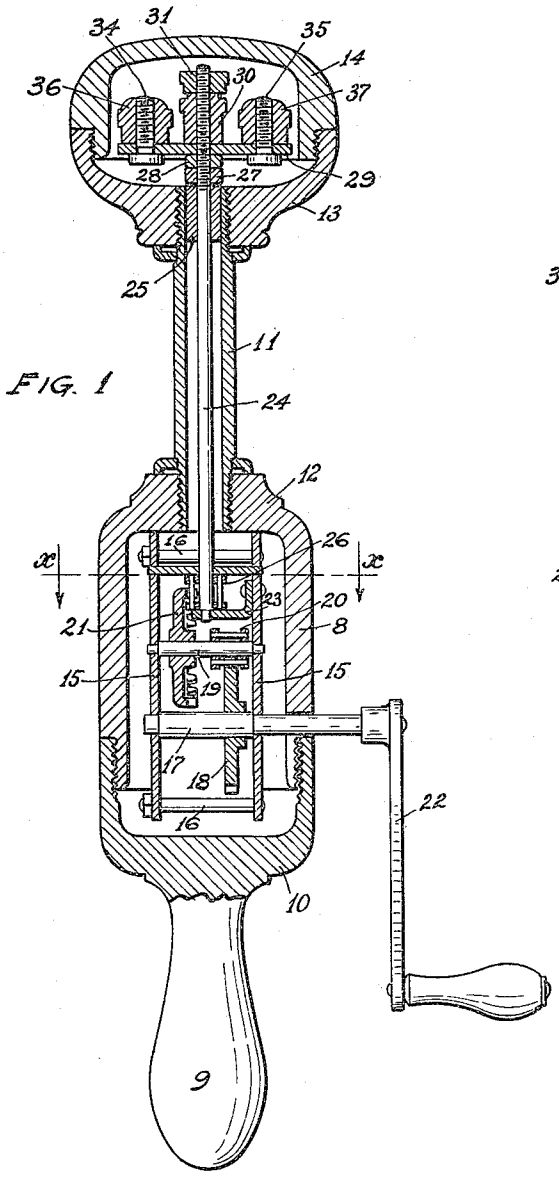


FIG. 1

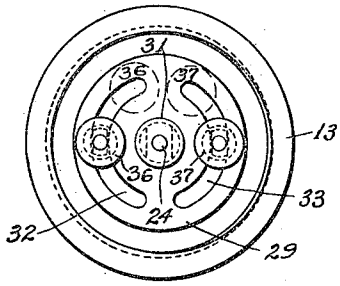


FIG. 2

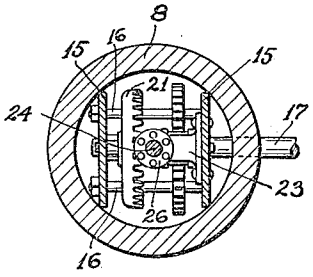


FIG. 3

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VIBRATOR.

1,144,308. Specification of Letters Patent. Patented June 22, 1915.

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To all whom it may concern:

Be it known that I, MASAHACHI NAKATA, a subject of the Emperor of Japan, residing at Crystal Springs, in the county of Kitsap and State of Washington, have invented a certain new and useful Improvement in Vibrators, of which the following is a specification.

My invention relates to improvements in combined vibrators and fans, and the object of my improvement is to provide a vibrator which is adapted to be actuated by the power of one's hand in the operation of massaging portions of one's body and which is further adapted by its plan of construction to actuate a rotary fan that may be removably attached to one of its rotatable parts. I accomplish this object by devices illustrated in the accompanying drawings wherein—

Figure 1 is a view in longitudinal mid-section of a structure embodying my invention; Fig. 2 is a view of the same in end elevation with its cover removed showing some of the internal parts; and Fig. 3 is a cross-sectional view of the same on line x, x of Fig. 1.

Referring to the drawings, throughout which like reference numerals indicate like parts, 8 indicates a casing of cylindrical form, preferably made of non-metallic material, as for instance, of wood or hard vulcanized rubber, which casing 8, as shown in Fig. 1, is provided with a handle 9 which is integral with the removable lower end wall 10.

A metal tube 11 is fixed in the collar of the upper end wall 12 of the casing 8 to project upwardly therefrom and is secured in its position by its screw-threaded lower end which extends through such end wall 12.

Upon the upper screw-threaded end of the tube 11 is concentrically disposed and secured an auxiliary casing 13 whose vertical mid-section is of oval-like form and the upper half portion of which constitutes a removable cap 14.

Within the casing 8 is fixed a mechanism comprising frame plates 15, which are united by studs 16, a main driving shaft 17, a gearwheel 18 disposed on said driving shaft 17, a shaft 19 upon which is a pinion 20 and a crown gearwheel 21, the shafts 17 and 19 being so disposed in bearings within the frame plates 15 that the pinion 20 may mesh with the gearwheel 18.

The main driving shaft 17 is extended on one side of the mechanism to project through and outwardly from the side wall of the casing 8 and fixed on its outwardly extended end portion is a crank 22 which may be turned to communicate rotary motion to the crown gearwheel 21 in an obvious manner.

A bearing bracket 23, of the form of a right angle, is secured to the inner side of one of the frame plates 15 and within it is journaled the lower end of a shaft 24 in such position as will adapt it to extend upwardly and concentrically through the tube 11 and into the space within the auxiliary casing 13 to terminate at a point near the center of the inner surface of the cap 14, the upper portion of such shaft 24 being journaled in a bearing 25 which is fixed within the upper end portion of the tube 11.

A lantern pinion 26 is secured on the lower end portion of the shaft 24 adjacent to the bracket 23 in which position it is adapted to engage with the teeth of the crown gearwheel 21 whereby such shaft 24 will rotate at a very high rate of speed in response to revolutions of the crown gearwheel 21 due to turning the crank 22 at a low rate of speed.

That end portion of the shaft 24 in the space within the auxiliary casing 13 is provided with a screw-thread and disposed thereon are internally screw-threaded collars 27 and 28, the collar 28 acting as a check-nut to the collar 27.

Adjacent to the collar 28, on the shaft 24, is disposed a disk 29 which is secured in its position by an internally screw-threaded sleeve 30, there being provided a check-nut 31 disposed on the end of the shaft 24 to engage with the upper end of said sleeve 30.

The disk 29, as more clearly shown in Fig. 2, is provided with two oppositely and concentrically disposed slots 32 and 33 of the form of an arc of a circle, which slots 32 and 33 extend through said disk 29, and within such slots 32 and 33, respectively, are disposed screws 34 and 35, which extend upwardly through their respective slots to be secured independently in any desired circumferential position therein by internally screw-threaded weights 36 and 37, respectively, whereby said weights 36 and 37, carried by said disk 29 in its revolutions, when they are secured in positions exactly opposite each other may exactly balance each

other to prevent any vibration of the structure, but when such weights 36 and 37, or either of them, are secured in any other relative positions such balance will be disturbed during the rotation of the shaft 24 thus to cause a vibration of the structure, the amplitude of which vibration obviously will be determined by the relative circumferential positions of said weights 36 and 37 on the disk 29. For instance, if the maximum amplitude of vibration of the structure be desired, then the weights 36 and 37 would be disposed adjacent to each other at the adjacent ends of their respective slots 32 and 33, as indicated by the dotted circular lines in Fig. 2, and if a less amplitude of vibration of the structure be desired such weights 36 and 37, one or both of them, would be moved to a position or positions on the disk 29 whereby the weight carried by the shaft 24 would be more nearly balanced.

In using the structure for massaging the surface of a portion of one's body the handle 9 is grasped by one hand of the operator and the rounded exterior surface of the cap 14 is pressed against that portion of the surface of one's body to be massaged whereupon the crank 22 is turned by the operator's other hand to cause the disk 29 to revolve at a high rate of speed thus to cause the capped end of the structure to vibrate with an amplitude determined by the relative positions of the weights 36 and 37 on the disk 29.

Obviously changes may be made in the forms, dimensions and arrangement of the parts of my invention without departing from the spirit thereof.

What I claim is:

1. A vibrator embodying a shaft rotatably mounted in suitable bearings, a disk securely mounted on said shaft, said disk being provided with oppositely and concentrically disposed slots of the form of an arc of a circle; and two weights removably secured to said disks each by means of a screw extending through a different one of said slots whereby such weights may be secured at desired relative positions on said disk thus to change the position of the center of gravity of the weight carried by said shaft.

2. A vibrator embodying a shaft rotatably mounted in suitable bearings, a disk securely mounted on said shaft, said disk being provided with oppositely and concentrically disposed slots of the form of an arc of a circle; two weights removably secured to said disk each by means of a screw extending through a different one of said slots whereby such weights may be secured at desired relative positions on said disk thus to change the position of the center of gravity of the weight carried by said shaft; and hand operated mechanism for rotating said shaft.

In witness whereof, I hereunto subscribe my name this 29th day of December, A. D. 1914.

MASAHACHI NAKATA.

Witnesses:
O. JOHNSON,
A. HASKINS.

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