A. F. DIXON.

TUNING FORK.

APPLICATION FILED AUG. 30, 1916.

1,257,684. Patented Feb. 26, 1918.

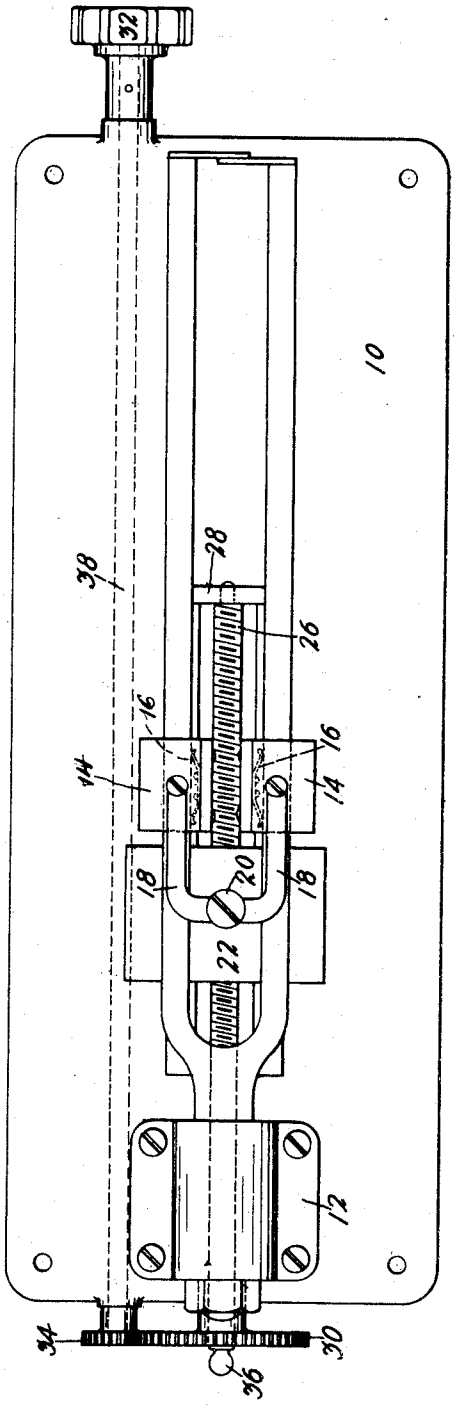


Fig. 1.

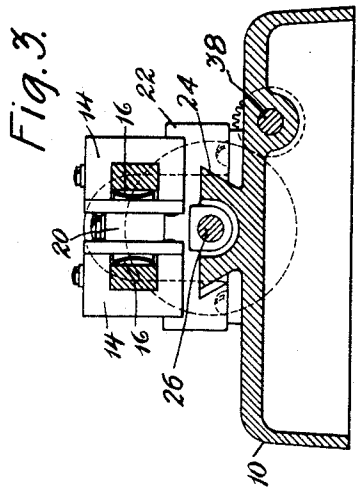


Fig. 3.

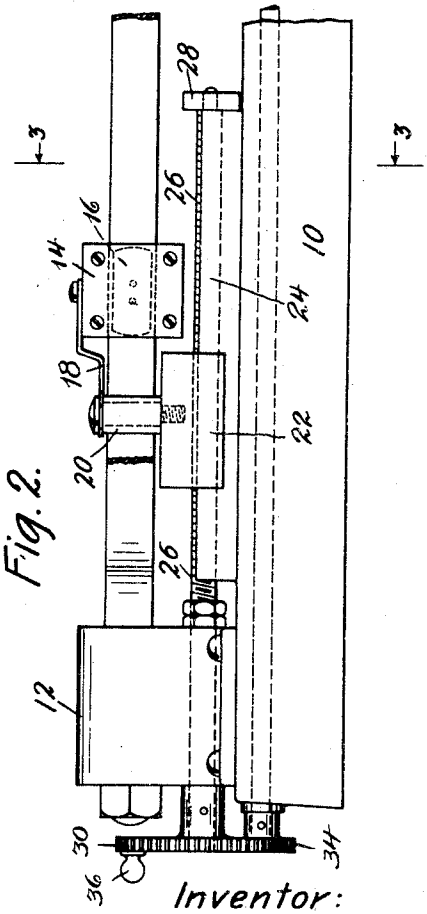


Fig. 2.

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UNITED STATES PATENT OFFICE.

AMOS F. DIXON, OF NEWARK, NEW JERSEY, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TUNING-FORK.

1,257,684. Specification of Letters Patent. Patented Feb. 26, 1918.

Application filed August 30, 1916. Serial No. 117,651.

To all whom it may concern:

Be it known that I, AMOS F. DIXON, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Tuning-Forks, of which the following is a full, clear, concise, and exact description.

This invention relates to electromechanical vibrators, and more particularly to means for readily and accurately altering or adjusting the rate of vibration of devices of this character.

It is well known that the period of vibration of tuning forks and reeds may be varied by changing the effective length or the distribution of the vibrating masses. The first of these methods has been readily accomplished by providing an adjustable stop such as disclosed in Figure 2 of Patent No. 1,185,712, dated June 6, 1916, and it has been the usual practice to provide for the other method of adjustment by placing a slidable weight upon each of the tines. It is highly desirable that the period of vibration be capable of adjustment while the fork is in action, and while the first of the hereinbefore-mentioned methods exhibits this advantageous feature, it has been found that the performance of the fork is not as dependable, or the possible changes in speed so minute, as when the shifting weight method is employed.

Heretofore the shifting weight method has been open to the objection that the fork must be stopped in order to make any change in adjustment. This causes delays in the operation of the mechanism or system under control, and consequently results in loss in time efficiency. When this device is used in connection with multiplex telegraph systems, this feature is especially serious and objectionable in cases of heavy line traffic on account of line loss, delays in the transmission of messages and waste of operator's time. Another objectionable feature is the difficulty encountered in adjusting the two weights individually to exactly corresponding positions on the tines.

The object of this invention is to provide a fork possessed of the most dependable, minute and accurate adjustment and at the same time free from the above-mentioned objectionable feature, and to this end the invention relates to the provision of means for allowing the distribution of the vibrating masses to be varied at will without arresting the vibratory action, thereby permitting continuous uninterrupted action of the mechanism or system controlled thereby. Means are also provided for imparting a uniform movement simultaneously to the two weights, thereby maintaining at all times a fixed relation between them.

The above and other objects of this invention will be fully set forth in the following description and claims, and will be readily understood by reference to the accompanying drawing, wherein Fig. 1 is a plan view of the preferred embodiment; Fig. 2 is a side elevation of a portion of the structure shown in Fig. 1; and Fig. 3 is a cross-sectional view on line 3—3 of Fig. 2.

It will be readily understood that the tines of the fork described herein may be struck to set them in vibration, and may be maintained in vibration by means of an electromagnet acting on each tine in a well-known manner. Since it is old in the art to employ electromagnetic means for maintaining the vibration of tuning forks, and since it forms no part of this invention, it is neither described herein nor shown in the drawing.

The tuning fork and auxiliary parts are mounted on a base 10 which may be of any suitable material for forming a rigid support. The tuning fork is carried by a bracket 12 which is securely fixed to the base 10. Carried by each tine of the fork is an adjustable weight 14, adapted to be easily slid backward or forward along the tine as desired for the purpose of controlling the frequency of vibration of the tines. A spring 16 is carried on the inside of each weight and is adapted to press against the tine to prevent the weight from rattling while the fork is in service. Each weight is pivotally connected by an arm or link 18 to a post 20, mounted on a movable member or block 22. The movable member or block 22 is adapted to rest on the upwardly extending portion 24 of the base 10 and to be slid along on this upwardly projecting portion by means of a threaded screw or rod 26 which is supported at one end by the bracket 12 and at the other end by a member 28. The member 28 is secured to one end of the upwardly extending portion 24. The links 18 are light and are pivotally connected to the weights 14 and also to the post 20 so as not to interfere with the vibration

of the tuning fork tines. The links 18 are, however, sufficient in strength to serve as a medium for sliding the weights along on the tines of the fork. At the outer end of the threaded rod 26 and rigidly secured thereto is a gear wheel 30. A shaft 38, extending lengthwise of the base, carries at one end a pinion 34 which meshes with the gear wheel 30. At the other end of the shaft 38 is a knurled knob 32 for rotating the shaft and imparting movement to the adjustable weights carried by the tines of the tuning fork. To the gear wheel 30 is attached a knob or handle 36 for manually rotating the rod 26 to place the weights in their approximate positions, while the knurled knob 32 may be used for the purpose of making more sensitive or accurate adjustment of the weights 14, and is mounted near the free end of the tines so that the speed of vibration thereof may be readily adjusted by the well-known stroboscopic method.

It will readily be seen that if while the fork is in service it becomes necessary or desirable to alter or change the frequency of vibration of the tines, this may be readily and easily accomplished by turning the knob 32, thereby rotating the shaft 38, pinion 34, gear wheel 30, and threaded rod 26, which causes the block 22 to be slid forward or backward, depending upon the direction of rotation of the knob 32, and imparts a corresponding movement to the two weights [illegible] simultaneously without stopping the oscillation of the fork.

[illegible]

[illegible]

of a weight carried by each tine, adapted to be moved longitudinally thereof, a movable member, means for moving said member longitudinally with respect to the tines, and pivoted connections between said movable member and said weights, permitting movement of the weights independently of the member in a direction transverse to the length of the tines.

2. The combination with a tuning fork, of a weight carried by each tine, adapted for movement longitudinally thereof, a movable member, pivoted connections between said movable member and said weights, and means for moving said member in a direction substantially parallel to the length of the tines.

3. In combination with a tuning fork, a weight carried by each tine of the fork, adapted to be moved longitudinally thereof, a movable block, pivoted connections between said weights and said block, and means for moving said block in a direction substantially parallel to the length of the tines.

4. In combination with a tuning fork, a base therefor, a weight carried by each tine of the fork, adapted to be moved longitudinally thereof, a block slidably mounted on the base, a post carried by said block, pivoted links connecting said weights to said post, and means for moving said block in a direction substantially parallel to the length of the tines.

In witness whereof, I have hereunto set my hand this [illegible] day of [illegible]

[illegible]