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METHOD OF AND APPARATUS FOR DRIVING TUNING FORKS

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FIG. 1.

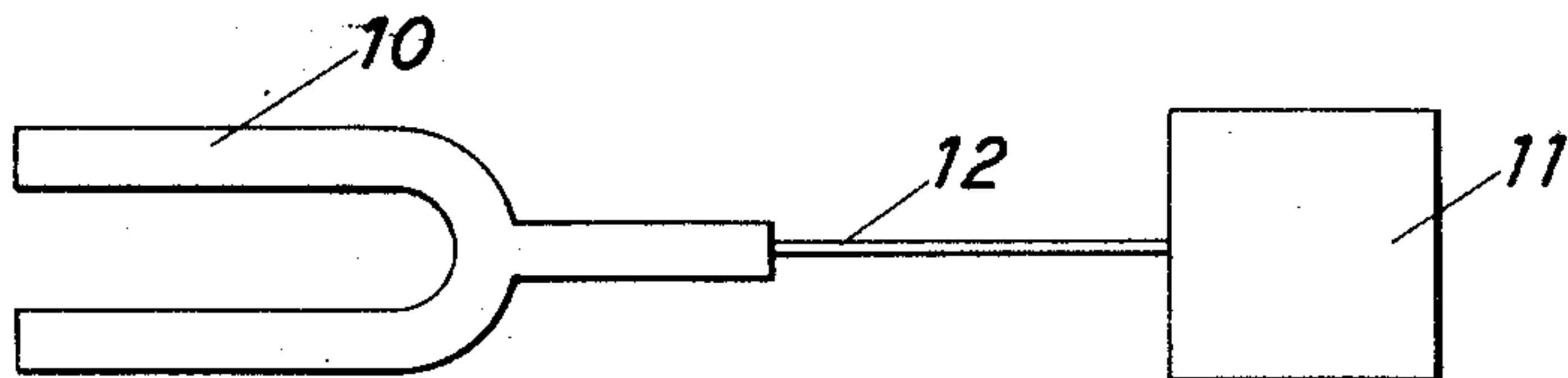


FIG. 2

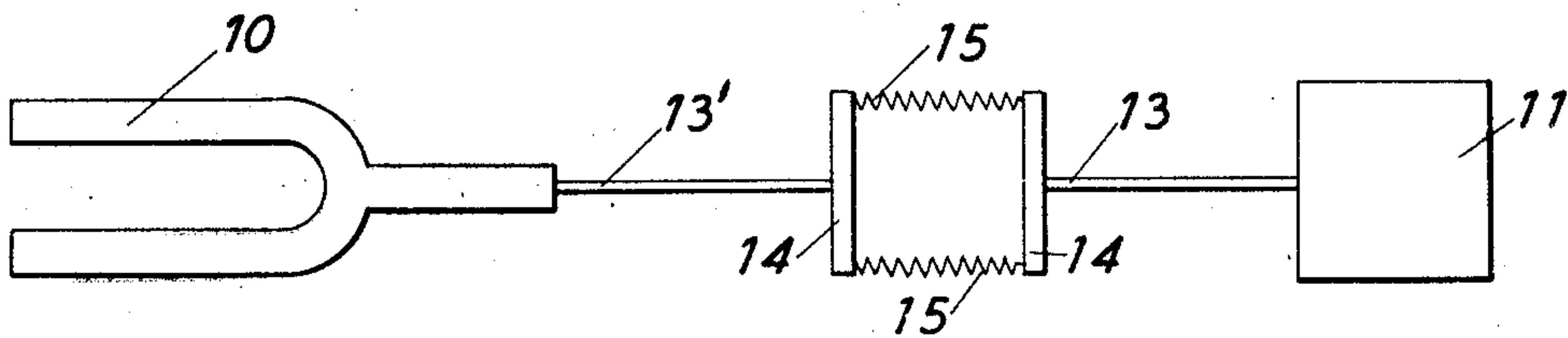
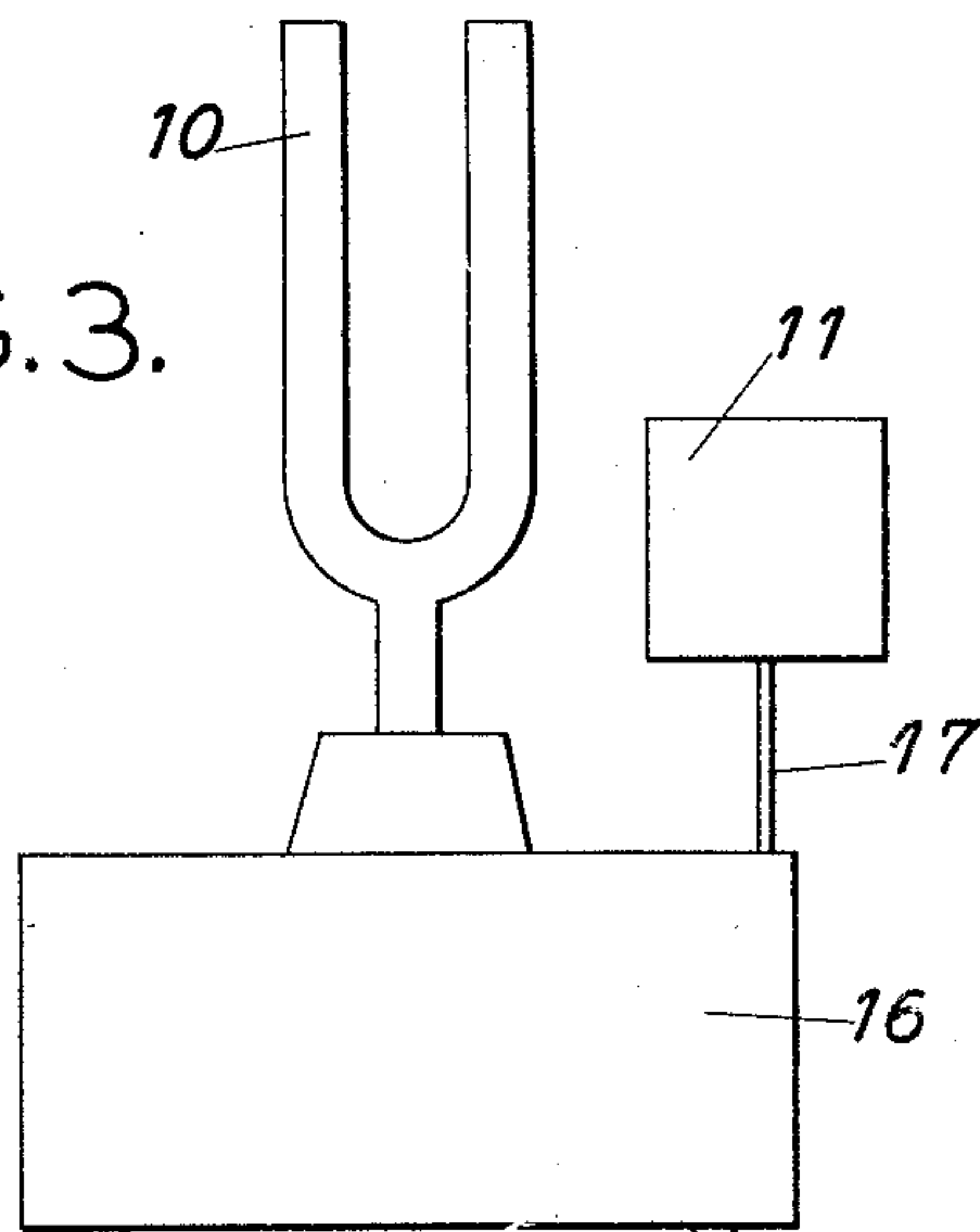


FIG. 3.



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METHOD OF AND APPARATUS FOR DRIVING TUNING FORKS

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This invention relates to tuning forks and the like and has special reference to a method and apparatus for maintaining a tuning fork vibrating reed or the like in constant vibration.

Constantly vibrating tuning forks have a wide application in certain arts and particularly in electro-magnetic systems wherein the well known characteristic of a tuning fork and its constant rate of vibration, adapts it for use in maintaining electrical impulses at a constant rate.

Certain methods of maintaining the fork in constant vibration have been to utilize one or both tines of the fork as armature means for one or more electro-magnets arranged to impart impulses to the tines in synchronism with their natural rates of vibration. Such methods, however, acting directly upon the magnetically susceptible tines have detrimental effects upon the stability of frequency and the operating characteristics of the fork.

Another method has been to vibrate the fork by direct mechanical action directly on its stem. This method also is inefficient because of the lack of means for regulating the coupling between the driving device and the fork and also because of the danger of causing the fork to produce overtones and thus causing fluctuations in the amplitude of vibration of such fork or reed.

The principal objects of the present invention are to provide a mechanical drive for a tuning fork so coupled to the fork as to cause the latter to vibrate at its normal frequency without the production of any damping effects; to provide a coupling regulating device between the driving means and the fork; and to provide a coupling regulating and filtering device between the driving means and the fork.

Certain embodiments of the invention will now be described in detail and then specifically claimed, reference being had to the accompanying drawings, wherein:—

Figure 1 is a diagrammatic view showing one form of mechanical drive for a tuning fork.

Figure 2 is a diagrammatic view showing a form of coupling employing spring means in the coupling.

Figure 3 is a diagrammatic view showing a form of coupling employing a resonator in the coupling.

In the forms of the device shown in the several figures there is disclosed a tuning fork 10 and it is to be understood that this fork is typical of a number of vibratory devices, such as reeds and others, and that the invention is not confined to a tuning fork alone. Wherever, therefore, the term "tuning fork" is herein used it is to be understood in its broad sense as a mechanical element having a normal frequency of vibration under impact. There is also shown driving means or motor 11. This driving means is to be understood as any suitable vibratory device which, when supplied with power, will effect on one of its parts vibrations of sufficient amplitude and correct frequency. It may take the form of an electro-magnetic, an electro-static, pneumatic or other type of motor.

In the form of the invention shown in Figure 1 the motor 11 is connected to the stem or shank of the fork 10 by a single link 12 so that, as the motor operates, corresponding longitudinal vibrations will be set up in the link and transmitted to the stem of the fork.

In the form shown in Figure 2 there is provided a regulator for the coupling here disclosed as a pair of links 13, 13', one being connected to the fork and the other to the motor at one end. Bars 14 are connected to the remaining ends of these links and springs 15 connect the ends of these bars. Any suitable means of well known character may be used to adjust the tension of these springs and thus regulate the coupling by yieldable means which may regulate the amplitude of the longitudinal vibrations set up in the link 13' connected to the fork by the action of the longitudinal vibrations in the link 13 through this yieldable regulator.

In the form of the invention shown in Figure 3 the fork 10 is shown mounted directly on a resonator 16 consisting of a box having

a vibratory top and the motor 11 is connected to this top by a link 17. In this form the resonator not only acts as a regulator but also as a filter to eliminate any undesirable frequency components produced by the motor.

Thus the tuning fork receives vibratory impulses through a regulated coupling and unwanted overtones and other undesirable frequency components are eliminated.

We claim:

1. The method of driving a tuning fork or reed which consists in transmitting vibrations from a vibratory source to the base of the fork and modulating the characteristics of the vibrations during the transmission.

2. The method of driving a tuning fork or reed which consists in transmitting vibrations from a vibratory source to the base of the fork and filtering out the undesirable frequency components of the vibrations during the transmission.

3. The combination with a tuning fork, of a vibration producing motor, and a coupling adapted to transmit vibrations between said motor and said fork, said coupling having a vibration regulator interposed therein.

4. The combination with a tuning fork, of a vibration producing motor, and a coupling for transmitting the vibrations between said motor and said fork, said coupling having a filter therein adapted to remove undesirable vibrations.

5. The combination with a tuning fork, of a vibration filtering element supporting said fork, and a vibratory motor connected to the filtering element to maintain the same in vibration.

In testimony whereof we affix our signatures.

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