

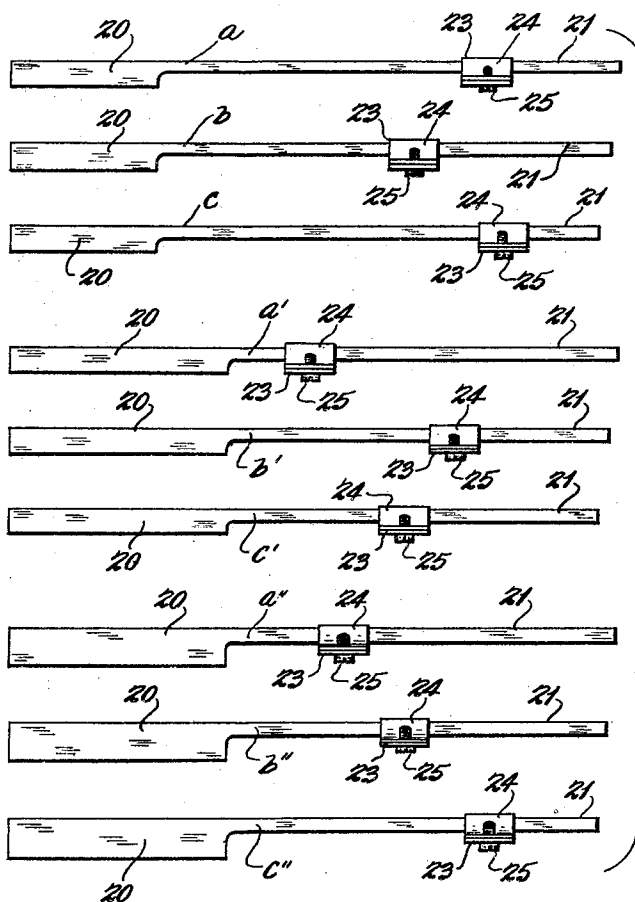
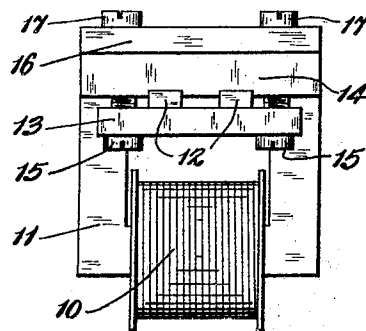
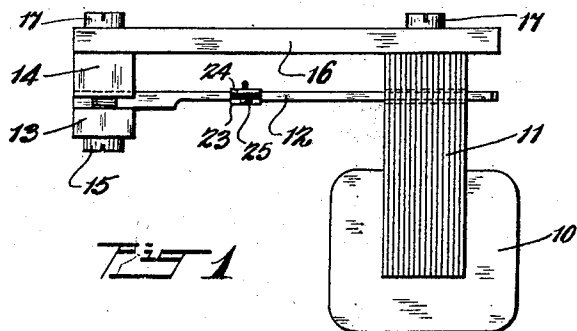
Aug. 2, 1932.

W. KOENIG

1,869,565

RESONANT MECHANISM

Filed March 5, 1931



INVENTOR
Werner Koenig.
BY John Morgan
ATTORNEY

UNITED STATES PATENT OFFICE

WERNER KOENIG, OF ZUG, SWITZERLAND, ASSIGNOR TO LANDIS & GYR, A-G., OF ZUG, SWITZERLAND, A CORPORATION OF SWITZERLAND

RESONANT MECHANISM

Application filed March 5, 1931, Serial No. 520,318, and in Switzerland March 12, 1930.

The present invention relates to resonant mechanism and more particularly to mechanism employing a resonant reed which is vibrated at its resonant frequency by means of a driving mechanism, such as an electromagnet.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawing:—

Figure 1 is a side elevation of a resonant mechanism in accordance with the present invention;

Figure 2 is an end elevation of the mechanism shown in Figure 1;

Figure 3 is a side elevation of a series of resonant reeds in accordance with the present invention.

The present invention has for its object the provision of a series of resonant reeds which are interchangeable with each other and cover a wide range of frequencies, thereby permitting any one of the reeds to be substituted for another without necessitating a change in the resonant mechanism as a whole. A further object is the provision of a series of resonant reeds which cover a wide range of frequencies and differ from each other only very slightly in their several dimensions. Still another object of the invention is the reduction of the cost of manufacturing resonant mechanisms responsive to a wide range of frequencies.

In accordance with the present invention, a plurality of groups, each composed of a plurality of resonant reeds, are provided, all substantially similar to each other, but with

the individual reeds within a group varying slightly from each other, while the groups vary from each other in another characteristic. As embodied, a plurality of groups of reeds are provided, each group differing from the others in the thickness and length of the thickened portion of the reeds, while the individual reeds within any group are of different lengths. Further, the reeds are so constructed that the differences in the lengths of the reeds cause a difference of about 50 vibrations per second, while differences in the thickness and length of the thickened portion of the reeds, cause a difference of 150 vibrations per second between reeds of the same length. In addition, where finer variations are required, small variably positionable clips are provided on the reeds so that they may be accurately tuned to the exact frequency desired.

It will be understood that the foregoing general description and the following detailed description as well, are exemplary and explanatory of the invention, but are not restrictive thereof.

Referring now in detail to the present preferred and illustrative embodiment of the invention, the resonant mechanism comprises an electromagnetic driving system including a coil 10, supplied with the controlling alternating or pulsating electric current, which energizes the magnetic core 11, between the pole pieces of which are supported the free, or vibratory, ends of one or more resonant reeds 12. As embodied, the resonant reeds 12 are supported at one of their ends by means of the bar 13 which tightly clamps the reeds 12 against the base 14 by screws 15 and are supported in proper relation to the electromagnet by means of the permanent magnet 16, which is attached to the electromagnetic core 11 by means of screws 17. Bar 13 has a sufficient range of movement to accommodate different thicknesses of reed.

As illustrated in Figure 3 of the drawing, three groups, each of three resonant reeds, are provided for frequencies from 300 and 700 vibrations per second. However, any desired number of reeds may compose each group and any desired number of

- groups may be provided to cover the required range of frequencies. For reference, these reeds are designated as *a*, *b*, *c*, *a'*, *b'*, *c'*, *a''*, *b''*, and *c''*. As will be noted, the difference in frequency between the reeds having an "a" in their designation is 150 vibrations, while those designated with a "b" vary by 50 vibrations from the "a" reed of the corresponding group.
- 10 The reeds *a*, *b* and *c* are each provided with a relatively short and thin end portion 20, which is received between the clamping members 13 and 14 while in operative position. The reeds *a'*, *b'* and *c'* are provided with a vibratory portion 21, which is slightly greater in length than that of the first group, while the reeds *a''*, *b''* and *c''* are provided with end portions 20 which are both thicker and longer than those of the first group, but are of the same length as the end portions of the second group.
- 15 As will also be seen from the drawing, the corresponding members of each group are of the same length, and as embodied, the reeds *a*, *a'* and *a''* are of equal length and slightly longer than the reeds *b*, *b'* and *b''*. Similarly, the reeds *b*, *b'* and *b''* are slightly longer than the reeds *c*, *c'* and *c''*.
- 20 For tuning the reeds to the exact frequency required, a small, variably positionable rider 23 is provided, comprising a bent piece of metal 24 conforming to the shape of the vibratory portion of the reed and clamped in position by tightening screw 25. Preferably, the rider 23 has such a mass related to that of the reed, that movement of the rider along the vibratory portion of the reed 21 will vary the frequency slightly more than 50 per second.
- 25 The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.
- 30 What I claim is:—
1. A series of interchangeable resonant reeds of uniform length, each comprising a vibratory portion and a thickened portion, to cover a wide range of frequencies, the several reeds varying in the dimensions of the vibratory portion to influence the frequency of vibration, those of each group differing from the remaining members of the group by variation in a particular dimension, while the groups differ from each other by variations in another dimension.
- 35 2. A series of interchangeable resonant reeds, each comprising a vibratory portion and a thickened end portion, the series being divided into a plurality of groups, each group differing from the other groups in the size of the thickened portion, while the individual members of each group differ from the other members of the group in the length of the vibratory portion, whereby a wide range of frequencies is covered by a minimum number of variations.
- In testimony whereof, I have signed my name to this specification.
- WERNER KOENIG.