May 27, 1930. W. T. PLUM, JR 1,760,085

REPRODUCING DEVICE

Filed Sept. 7, 1928

Fig. 1.

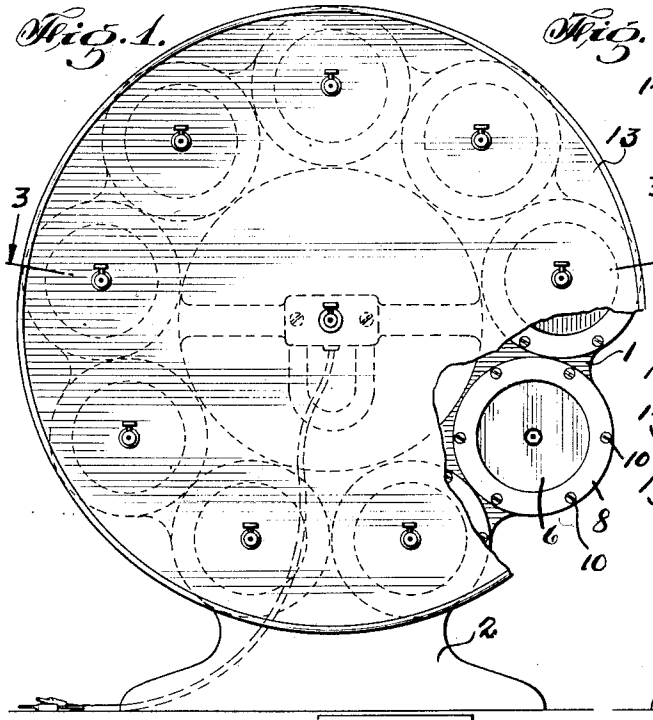


Fig. 2.

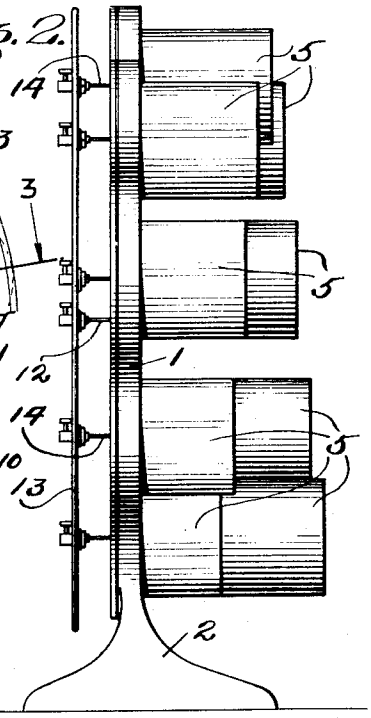


Fig. 3.

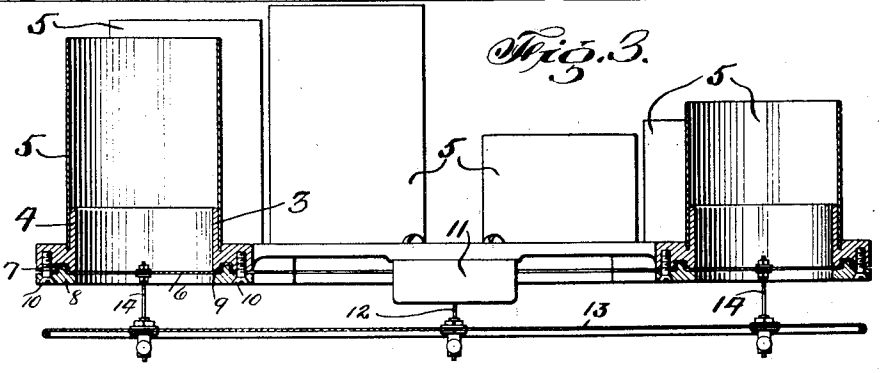
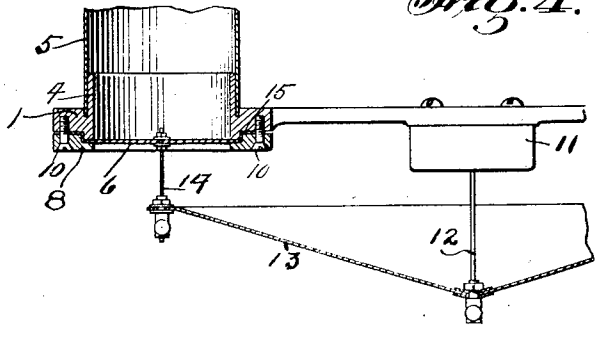


Fig. 4.



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Patented May 27, 1930 1,760,085

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REPRODUCING DEVICE

Application filed September 7, 1928. Serial No. 304,475.

My invention relates to an improvement in reproducers such for example as used in connection with radio receivers and has for one of its objects the provision of a reproducer of novel construction and which in operation is superior in fidelity of reproduction to reproducers as now made.

A further object of my invention is the provision of a reproducer employing timed resonators or resonating chambers each provided with or including a diaphragm, these resonators being vibrated by attaching the several diaphragms to a driving unit directly, or by attaching the several resonator diaphragms to a central diaphragm.

A still further object of my invention is the provision of a reproducer in which a plurality of resonators are employed, each resonator being tuned and best responsive to its own set of frequencies, there preferably being not less than seven resonance chambers covering in range of frequencies one octave. In actual practice I may provide less than or more than seven resonance chambers to take care of varying conditions.

Other objects will appear hereinafter.

In the drawings Fig. 1 shows my device in front elevation;

Fig. 2 is a side elevation of the same;

Fig. 3 is a section on the line 3—3 of Fig. 1; and

Fig. 4 is a fragmentary sectional view of a modification.

Referring first of all to Figs. 1, 2 and 3: My improved reproducer comprises a frame 1 of aluminum, or other suitable material, and supported on a base 2.

This frame adjacent its periphery is provided with a series of openings 3 symmetrically arranged, each opening or rather the wall thereof projecting rearwardly of the frame out of the plane thereof as shown at 4, so as to provide a tubular extension or projection for receiving a resonator 5.

I preferably employ nine resonators as this enables me to cover a range of one octave, and as these resonators vary uniformly in length it will be apparent that by properly dimensioning the same resonators may be made to respond to frequencies covering an octave each resonator responding best to its own set of frequencies.

The resonators 5 may be composed of metal, parchment, paper, cloth or other suitable material and be held in place frictionally as illustrated or be pinned or otherwise rigidly secured to the projections 4.

Each resonator has a diaphragm across one end thereof, which diaphragms may be integral with the resonators or a separate part thereof as illustrated. In the drawings each diaphragm 6, of paper, cloth, metal, etc., is held in place independently of the others, and to this end the frame 1 may be provided with a groove 7 concentric with each opening 3. The diaphragm is placed across the opening and extends beyond the groove. A clamping ring 8 is then placed in position thereover.

Each clamping ring is provided with an annular flange 9 cooperating with the concentric groove 7 above mentioned, so as to stretch or tension the diaphragm as the screws 10 holding the ring in place are set up. In this way, i. e., by proper adjustment of each resonator diaphragm the resonators may be properly tuned. Of course, where diaphragms integral with the resonators are employed the tuning is done in designing the resonator.

Centrally disposed in the frame 1 and supported thereby is a driving unit 11 which may be any of the many types available in the open market. In the present instance this unit is provided with a driving pin 12 to operatively connect the unit to a central diaphragm 13.

The diaphragm 13 is shown in Figs. 2 and 3 as of the flat disc type although it may be of the conical type shown in Fig. 4.

Adjacent its periphery the central diaphragm 13 is shown as attached to each resonator diaphragm 6 by a pin 14 or other suitable connection.

If desired, however, the central diaphragm may have its periphery attached directly to the resonators, thereby dispensing with the pins 14 above referred to.

It will be obvious from the foregoing that my reproducer broadly considered embodies

a plurality of tuned resonators, these resonators more specifically being adapted for simultaneous operation from a single unit through the central or driving diaphragm 13.

In Fig. 4 in addition to providing a conical central diaphragm as distinguished from the flat diaphragm of Fig. 3, I have slightly modified the mode of holding the resonator diaphragms in place, in that the rings 8 are stepped with corresponding steps on the frame 1 as indicated at 15.

It is obvious that changes may be made in the construction above described within the spirit of my invention. For example the conical central diaphragm of Fig. 4 may be inverted, if desired.

What I claim is:

1. A reproducer comprising in combination a plurality of resonators, a diaphragm for each resonator extending transversely thereof, means for adjusting the several diaphragms independently to tune the resonators, and a single actuating unit for said diaphragms.

2. A reproducer comprising in combination a plurality of cylindrical resonators, a diaphragm for each resonator, and a single diaphragm common to all the first mentioned diaphragms for effecting vibration of the latter.

3. A reproducer comprising in combination a master diaphragm, a plurality of resonators disposed about the master diaphragm, and a diaphragm for each resonator driven from the edge of the master diaphragm.

4. A reproducer comprising in combination a frame, a plurality of resonators mounted therein, a diaphragm across each of said resonators, securing means for the independent attachment of each diaphragm to its respective resonator member, a driving unit supported by the frame and a driving connection between said unit and each of said diaphragms.

5. A reproducer comprising in combination a frame provided with a plurality of openings therethrough, a resonator at each opening, a diaphragm across each opening cooperating with the resonators, means for individually adjusting said diaphragms, and a single driving unit disposed centrally of said frame and having a driving connection to each of said resonator diaphragms for driving the same simultaneously.

6. A reproducer comprising in combination a frame, a plurality of resonators secured thereto, a diaphragm for each resonator, a driving unit carried by the frame, a diaphragm secured thereto to be actuated thereby, and a connection between said last mentioned diaphragm and the resonator diaphragms whereby operation of the driving unit will effect a drive of the resonator diaphragms through the last mentioned diaphragm.

7. A reproducer comprising in combination a central diaphragm, a series of cylindrical resonators symmetrically disposed about said central diaphragm, and a diaphragm for each resonator secured to the central diaphragm.

This specification signed this 5 day of Sept. 1928.

WILLIAM T. PLUM, JR.