Aug. 27, 1935. M. IWASA 2,012,877

HEARING APPLIANCE

Filed Oct. 9, 1933

Fig. 1.

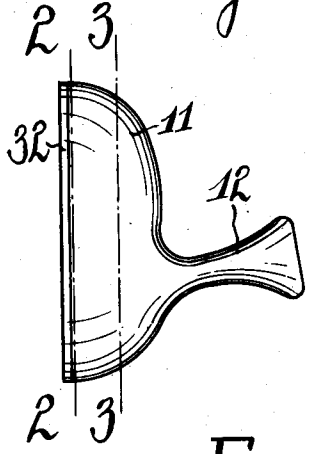


Fig. 2.

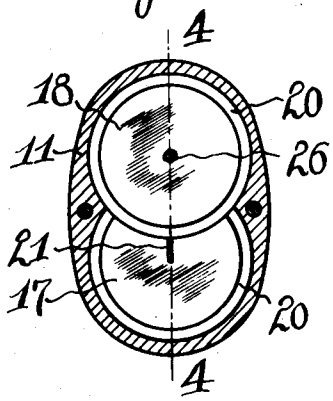


Fig. 4.

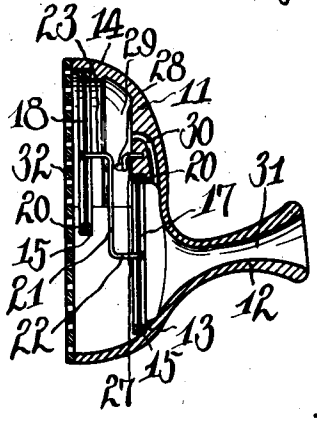


Fig. 3.

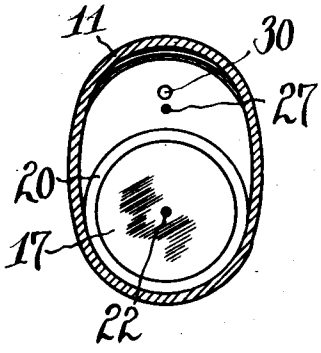
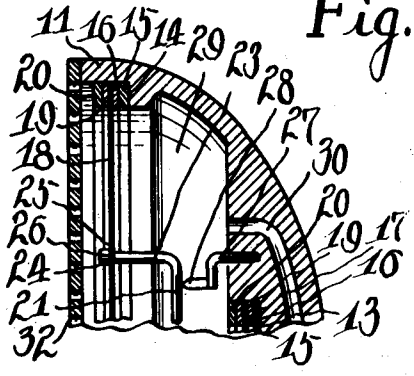


Fig. 5.



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Patented Aug. 27, 1935 2,012,877

UNITED STATES PATENT OFFICE

2,012,877

HEARING APPLIANCE

Morizo Iwasa, Nishiku, Osaka, Japan

Application October 9, 1933, Serial No. 692,843
In Japan November 3, 1932

9 Claims. (Cl. 181—23)

My present invention relates to a construction by which I have planned to make the human auditory nerve effectively sensitive by putting the instrument in the inlet of ear, through which the sound-wave is considerably magnified.

For this object, on one side of a bowl-shaped vessel a funnel-form insertion is properly arranged to put in the human outer auditory canal. In the interior of the vessel, a pair of vibrating discs, inner and outer, are eccentrically mounted and the centers are connected by means of a lever. A fulcrum is specially made near the center of the outer vibrating disc, so that the effect, when the sound-wave touches the outer vibrating disc, is enlarged by means of the lever, and it vibrates the inner vibrating disc. This enlarged sound is planned to communicate distinctly with the inner passage of the ear.

I have illustrated an embodiment of my invention in the drawing, in which:—

Fig. 1 is an elevation view of my invented hearing appliance.

Fig. 2 is a sectional view along the line 2—2 of Fig. 1.

Fig. 3 is a sectional view along the line 3—3 of Fig. 1.

Fig. 4 is a sectional view along the line 4—4 of Fig. 2.

Fig. 5 is an enlarged view of a part of Fig. 4.

In the drawing 11 is a vessel having a bowl-shape, and on one side of it a funnel-shaped insertion 12 is provided, which is made to insert in the human auditory inlet. A circular projection 13 is formed in the interior of the vessel on the lower wall near at the bottom, and also a semi-circular projection 14, opening downward, is formed on the upper inlet. A ring frame 15 and a packing ring 16 are firmly put on these projections respectively, on which the thin membranous vibrating discs 17 and 18, made of mica or glass or any other material are pressed, and the packing ring 19 and the ring frame 20 are closely fastened on the discs respectively. Thus a pair of vibrating discs, front and rear, are fixed eccentrically in the vessel.

21 is a lever having a bended part 22 and 23 on both ends, at which threaded smaller portions 24 are made. They are put in the small holes 25 bored in each center of the vibrating discs respectively, and fixed by nuts 26, and they are made air-tight by means of rosin or wax. The lever is supported, near the center point of the outer vibrating disc, by a knife edge 28 of the supporter 27 which is fixed to the vessel.

As explained in above, the sound-wave which vibrates the outer vibrating disc is magnified proportionally to the distances between the fulcrum and each center of both outer and inner vibrating discs, and it is conveyed to the inner vibrating disc.

Between each vibrating disc there forms a magnifying chamber 29 which is, through a funnel 30 bored in the vessel, connected with the interior of the inner vibrating disc, communicated with the passage 31 excavated in the inside of the insertion 12. Accordingly, the air in the magnifying chamber expands and contracts affected by the vibrations made through each inner and outer vibrating disc, and it flows inward of the inner vibrating disc through the said passage combining with the magnified sound generated at the back of the inner vibrating disc.

On the entry of the vessel 11 there is fixed a perforated disc or any other protective metal disc 32, and it protects the interior arrangement from damage.

As above explained, the sound-wave is remarkably magnified, and it feels the human auditory nerve very sensitive, so that those who have damaged their ear-drums or those who are hard of hearing will find efficacy by using this hearing appliance.

Having described my invention as above, what is claimed is:

1. A hearing appliance comprising inner and outer vibrating discs mounted eccentrically in the inside of a vessel, each center of which is connected with a lever, having a fulcrum near the center of the outer vibrating disc.

2. A hearing appliance, according to claim 1, comprising a circular projection, formed in the interior of the vessel, on the lower wall near the bottom, and also a semi-circular projection, opening downward, formed on the upper inlet, and having the vibrating discs on these projections respectively.

3. A hearing appliance, according to claim 1, comprising the vibrating discs fixed to each projection with ring frames and packing rings on both sides.

4. A hearing appliance, according to claim 1, comprising the vibrating discs made of mica or glass or any other thin membranous material.

5. A hearing appliance, according to claim 1, comprising threaded smaller portions, formed at the bended parts of the lever, inserted in the small central holes of the vibrating discs, making it air-tight by means of rosin or wax.

6. A hearing appliance, according to claim 1,

comprising the lever supported by a knife edge near the center of the outer vibrating disc.

7. A hearing appliance, according to claim 1, comprising a magnifying chamber between inner and outer vibrating discs, connected with the interior of the inner vibrating disc through a funnel.

8. A hearing appliance, according to claim 1, comprising a suitable insertion to put in the human inlet, furnished on one side of the vessel, a passage excavated in the said insertion, connected with the interior of the inner disc.

9. A hearing appliance, according to claim 1, comprising a perforated disc fixed on the entry of the vessel.

MORIZO IWASA.