Aug. 23, 1932. C. CARROLL 1,872,674

PORTABLE DEVICE TO AID HEARING

Filed Dec. 29, 1930

FIG. 1

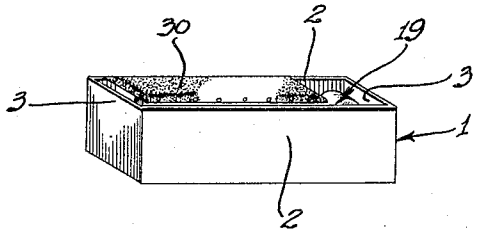
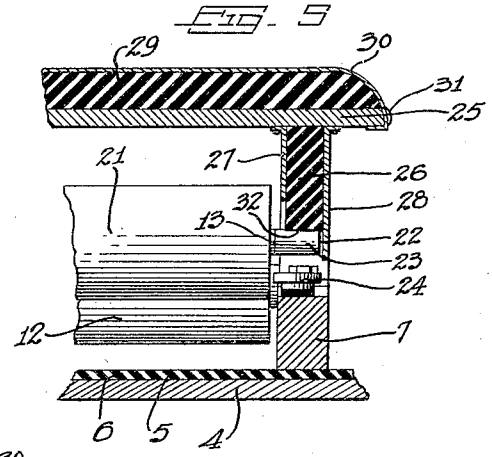


FIG. 5



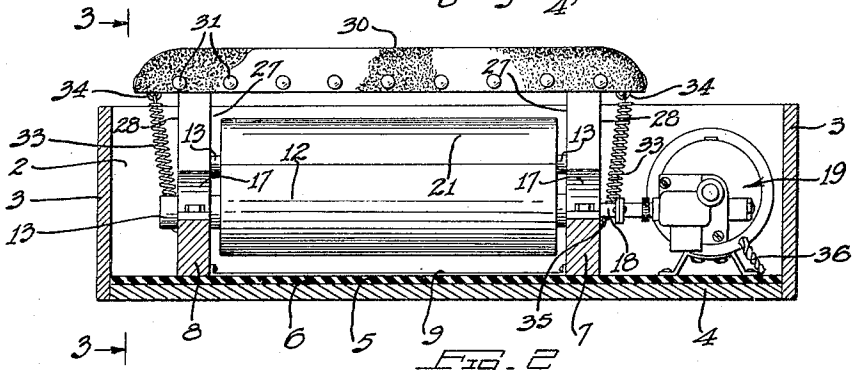


FIG. 2

FIG. 3

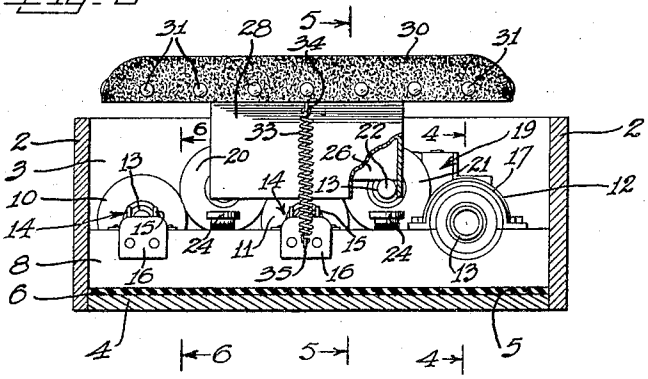
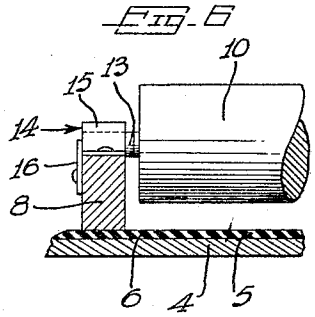


FIG. 6



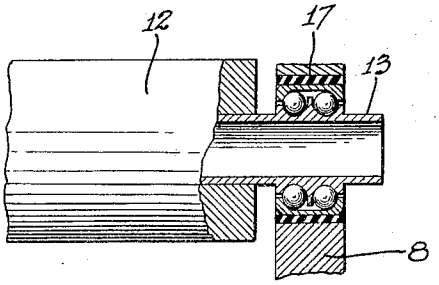


FIG. 4

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UNITED STATES PATENT OFFICE

CHARLES CARROLL, OF CHICAGO, ILLINOIS

PORTABLE DEVICE TO AID HEARING

Application filed December 29, 1930. Serial No. 505,445.

My invention relates to improvements in portable devices to aid hearing, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a device to aid hearing in which certain improvements are embodied over the device disclosed in my Patents No. 1,191,664 and No. 1,566,731.

A further object of my invention is to provide a portable device provided with means for treating a deaf person whereby the deaf person may be enabled to hear.

A further object of my invention is to provide a portable device adapted for treating a patient normally deaf whereby mucous material in the auditory passageways may be dislodged thereby enabling the patient to hear.

A further object is to provide a portable device having means for rapidly vibrating a patient's head.

A further object of my invention is to provide a device of the type described which is compact, light, and easily carried from place to place.

A further object of my invention is to provide a device of the type described which is simple in construction, durable, and efficient for the purpose intended.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawing, forming part of this application, in which

Figure 1 is a persective view of my device showing a container and the device as disposed in the container,

Figure 2 is a longitudinal sectional view of the container showing the device disposed therein,

Figure 3 is a section taken along the line 3—3 of Figure 2,

Figure 4 is a section taken along the line 4—4 of Figure 3 showing the structure for supporting one of the rollers,

Figure 5 is a section taken along the line 5—5 of Figure 3 showing the construction of the table and the means by which it is mounted on the rollers, and

Figure 6 is a section taken along the line 6—6 of Figure 3 showing the structure by means of which the ends of certain rollers are supported.

In carrying out my invention I provide a container or box 1 having sides 2, ends 3, and a bottom 4. The side 5 of the bottom 4 is provided with a pad or insulation covering 6. A pair of parallel and spaced-apart supporting members 7 and 8 are removably disposed within the box 1 on the pad 6 and are held in their spaced-apart relation by means of spacing members 9. Equally spaced-apart rollers or cylinders 10, 11, and 12 are transversely disposed in parallelism between the supporting members 7 and 8 and are mounted on shafts 13.

The end portions of the shafts 13 on which the cylinders 10 and 11 are mounted are removably and rotatably disposed in bearings 14 carried by the supporting members 7 and 8. The bearings 14 are provided with upright portions 15 connected with the supporting members 7 and 8 between which the end portions of the shafts 13 are disposed. Plate members 16 are fixedly mounted on the supporting members 7 and 8 and abut the ends of the shafts 13 for preventing an end thrust or longitudinal movement of the cylinders 10 and 11 with respect to the supporting members. The shaft 13 on which the cylinder 12 is mounted is rotatably mounted in bearing members 17 which are fixedly mounted on the supporting members 7 and 8. One end 18 of the shaft 13 on which the cylinder 12 is mounted extends through its respective bearing member 17 and is operatively connected with a motor 19 disposed in the box 1. A cylinder 20 is disposed between the cylinders 10 and 11 and is supported thereby, the cylinder 20 being in frictional engagement with the cylinders 10 and 11. A cylinder 21 similar to the cylinder 20 is disposed between the cylinders 11 and 12 in the same manner as the cylinder 20 is disposed between the cylinders 10 and 11. The cylinders 20 and 21 are provided with axial shafts 22 having end portions 23 extending beyond their

respective end portions. Rollers 24 are rotatably mounted on the supporting members 7 and 8 and are positioned in close proximity to the ends of the cylinders 20 and 21 for limiting a longitudinal movement or end thrust of the cylinders.

A table 25 is provided having spaced-apart and oppositely disposed supporting members 26 which may be constructed of a resilient material such as rubber. The supporting members 26 are disposed between flange members 27 and 28 and are held in frictional engagement therewith, the flange members 27 and 28 being fixedly connected with the table member 25. Flange members 28 extend over the ends of the shafts 22 for preventing an end movement of the table 25 with respect to the cylinders 20 and 21. A resilient member or cushioning pad 29 is disposed on the table 25. The pad 29 may be made of rubber or other suitable material in the same manner as the table supporting members 26 and the pad 6. A covering 30 which may be of any suitable material such as leather or cloth is disposed over the cushioning pad 29 and is connected with the table 25 by means of tacks 31. The bottoms 32 of the table supporting members 26 rest on the end portions 23 of the shafts 22. Opposite ends of the table 25 are provided with resilient means such as springs 33 having one end connected with the table as at 34 and the other end connected with an end plate 16 as at 35. The spring members 33 are provided for holding the table supporting members 26 in engagement with the end portions 23 of the shafts 22. The motor 19 is provided with wires 36 which may be connected with an electric plug, not shown, for being connected with a source of current.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

When it is desired that the device be operated the wires 36 are connected with a source of current whereby the motor is energized for rapidly rotating the cylinder 12. The remainder of the cylinders are also rapidly rotated by reason of being in operative engagement with the cylinders 12. All of the cylinders are made of wood or other suitable material so that when they are revolving at a high rate of speed they will transmit a vibratory effect to the table 25. The pads 6 and 29, together with the supporting member 26, are made of a suitable cushioning material for the purpose of softening the vibrations of the rapidly rotating cylinders. When the cylinders are rotating, a side of the patient's head may be positioned in engagement with the upholstering 30 of the table 25 whereby the vibratory motions of the table may be communicated to the patients's head for dislodging mucous substances in the auditory passageways for permitting sound waves to penetrate to the eardrum whereby the patient may be enabled to hear.

I claim:

1. A device to aid hearing comprising a supporting frame, a plurality of spaced-apart cylinders rotatably carried by said supporting frame, secondary cylinders disposed between the spaced-apart cylinders and in frictional engagement therewith, said secondary cylinders being supported by the spaced-apart cylinders, said spaced-apart and secondary cylinders being mounted on shafts the end portions of said shafts extending beyond the ends of said cylinders, the end portions of said spaced-apart cylinder shafts being rotatably mounted in bearing members carried by said supporting frame, a table provided with cushioning supporting members, said supporting members being mounted on the end portions of said secondary cylinder shafts, a power unit, means operatively connecting the power unit with the cylinders whereby the same may be rapidly rotated, and means for preventing a longitudinal movement of said spaced-apart cylinders, said means comprising plate members mounted on the supporting frame and abutting the ends of said spaced-apart cylinder shafts.

2. A device to aid hearing comprising a supporting frame, a plurality of spaced-apart cylinders rotatably carried by said supporting frame, secondary cylinders disposed between the spaced-apart cylinders and in frictional engagement therewith, said secondary cylinders being supported by the spaced-apart cylinders, said spaced-apart and secondary cylinders being mounted on shafts, the end portions of said shafts extending beyond the ends of said cylinders, the end portions of said spaced-apart cylinder shafts being rotatably mounted in bearing members carried by said supporting frame, a table provided with cushioning supporting members, said supporting members being mounted on the end portions of said secondary cylinder shafts, a power unit, means operatively connecting the power unit with the cylinders whereby the same may be rapidly rotated, means for preventing a longitudinal movement of said spaced-apart cylinders, said means comprising plate members mounted on the supporting frame and abutting the ends of said spaced-apart cylinder shafts, and roller means mounted on said supporting frame, said roller means being positioned in close proximity to the ends of said secondary cylinders, said rollers being adapted for engaging the ends of said secondary cylinders for limiting a longitudinal movement of said cylinders.

3. A device to aid hearing comprising a supporting frame, a plurality of spaced-apart cylinders rotatably carried by said supporting frame, secondary cylinders disposed be-

tween the spaced-apart cylinders and in frictional engagement therewith, said secondary cylinders being supported by the spaced-apart cylinders, said spaced-apart and secondary cylinders being mounted on shafts, the end portions of said shafts extending beyond the ends of said cylinders, the end portions of said spaced-apart cylinder shafts being rotatably mounted in bearing members carried by said supporting frame, a table provided with cushioning supporting members, said supporting members being mounted on the end portions of said secondary cylinder shafts, a power unit, means operatively connecting the power unit with the cylinders whereby the same may be rapidly rotated, means for preventing a longitudinal movement of said spaced-apart cylinders, said means comprising plate members mounted on the supporting frame and abutting the ends of said spaced-apart cylinder shafts, roller means mounted on said supporting frame, said roller means being positioned in close proximity to the ends of said secondary cylinders, said rollers being adapted for engaging the ends of said secondary cylinders for limiting a longitudinal movement of said cylinders, and plate means mounted on said table and positioned in close proximity to the ends of said secondary cylinder shafts whereby said table may be properly positioned with respect to said secondary cylinders.

4. A device to aid hearing comprising a supporting frame, a plurality of spaced-apart cylinders rotatably carried by said supporting frame, secondary cylinders disposed between the spaced-apart cylinders and in frictional engagement therewith, said secondary cylinders being supported by the spaced-apart cylinders, said spaced-apart and secondary cylinders being mounted on shafts, the end portions of said shafts extending beyond the ends of said cylinders, the end portions of said spaced-apart cylinder shafts being rotatably mounted in bearing members carried by said supporting frame, a table provided with cushioning supporting members, said supporting members being mounted on the end portions of said secondary cylinder shafts, a power unit, means operatively connecting the power unit with the cylinders whereby the same may be rapidly rotated, means for preventing a longitudinal movement of said spaced-apart cylinders, said means comprising plate members mounted on the supporting frame and abutting the ends of said spaced-apart cylinder shafts, roller means mounted on said supporting frame, said roller means being positioned in close proximity to the ends of said secondary cylinders, said rollers being adapted for engaging the ends of said secondary cylinders for limiting a longitudinal movement of said cylinders, plate means mounted on said table and positioned in close proximity to the ends of said secondary cylinder shafts whereby said table may be properly positioned with respect to said secondary cylinders, and spring means connected with said table and the supporting frame for holding the table cushioning supporting members in positive engagement with the end portions of said secondary cylinder shafts.

CHARLES CARROLL.