

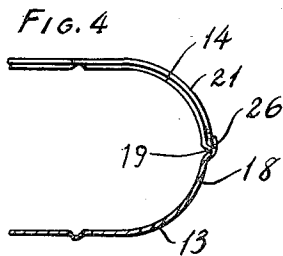
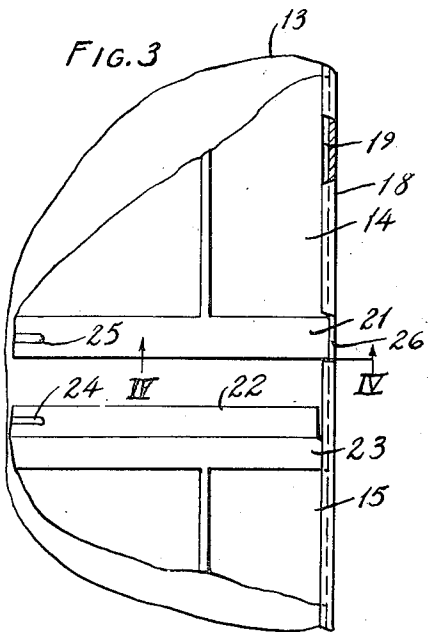
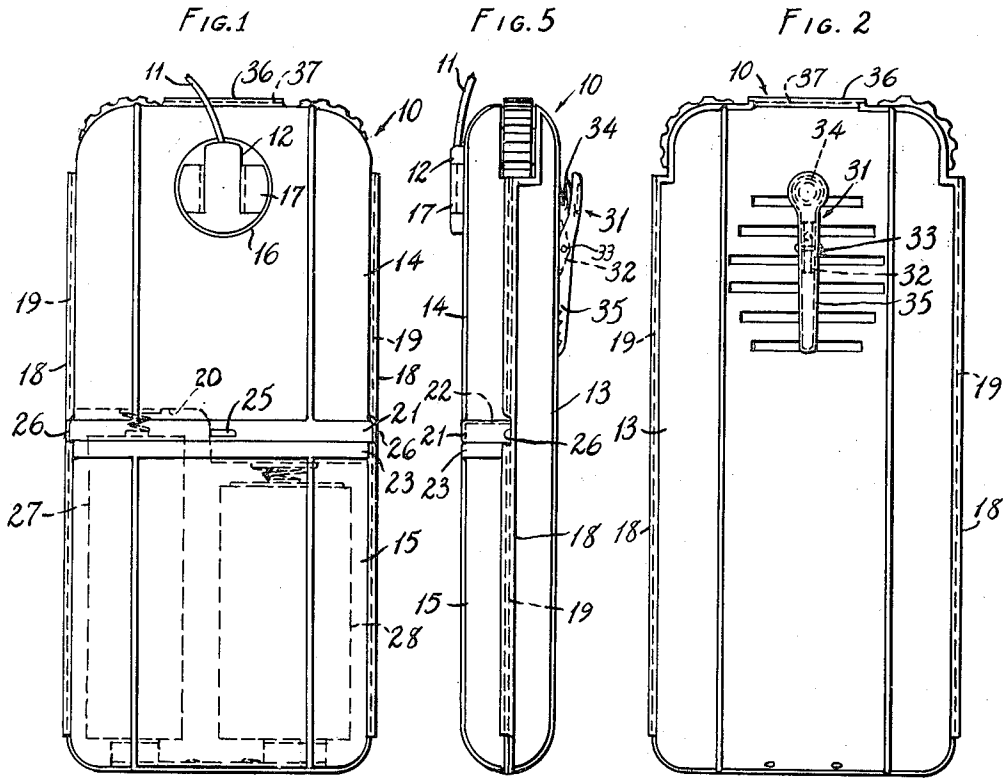
Feb. 12, 1952

R. E. TRESISE ET AL

2,585,191

HEARING AID APPARATUS HAVING SECTIONAL CASING

Filed July 21, 1947



INVENTORS,
Raleigh E. Tresise
Paul D. Kendall
BY West & Aldham
ATTORNEYS

UNITED STATES PATENT OFFICE

2,585,191

HEARING AID APPARATUS HAVING SECTIONAL CASING

Raleigh E. Tresise, Cleveland Heights, and Paul
D. Kendall, Maple Heights, Ohio, assignors to
Paravox, Inc., Cleveland, Ohio, a corporation
of Ohio

Application July 21, 1947, Serial No. 762,278

9 Claims. (Cl. 179—179)

1

This invention relates to hearing aid apparatus, especially to a casing structure adapted for mounting the power supply and amplification means of hearing aid apparatus therein.

The general object of the present invention is to provide a novel, compact hearing aid apparatus which has a sectional casing positioned snugly therearound and which is characterized by its ability to expose, readily, only the portion of the hearing aid apparatus normally requiring replacement or service.

Another object of the invention is to provide a sectional casing for a hearing aid with the casing sections being secured together without the aid of external means.

A further object of the invention is to provide a thin walled, flexible casing member for hearing aid apparatus.

Another object of the invention is to provide an inexpensive, durable casing for hearing aid apparatus, which casing is adapted to be formed from a unitary front, and upper and lower rear casing sections, with one rear casing section being locked in engagement with the front section and with the other rear casing section being readily disengageable from the other sections.

Another object of the invention is to provide a sectional casing for hearing aid apparatus with one portion of the casing being fixedly engaged with a portion of the hearing aid apparatus and being slidably engaged with an associated casing section for axial movement with a portion of the hearing aid apparatus moving unitarily of the casing with the one casing member.

A further object of the invention is to provide a compact, sturdy clip for a hearing aid.

Another object of the invention is to render the removal of delicate hearing aid mechanism from a hearing aid casing more difficult than the removal of normally replaceable parts, such as the power supply batteries.

The foregoing and other objects and advantages of the invention will be manifest as the specification proceeds.

Reference now is made to the accompanying drawings wherein:

Fig. 1 is a rear elevation of hearing aid apparatus embodying the principles of our invention;

Fig. 2 is a front elevation of the hearing aid apparatus of Fig. 1;

Fig. 3 is a fragmentary enlarged rear elevation of the hearing aid apparatus with the cas-

2

ing partially opened and with a portion of the apparatus being shown in section;

Fig. 4 is a fragmentary section taken on line 4—4 of Fig. 3; and

Fig. 5 is a side elevation of the hearing aid apparatus.

Reference is now made to the details of the structure shown in the accompanying drawing wherein hearing aid apparatus 10 is provided. This hearing aid apparatus includes the normal power supply and amplification means of a hearing aid which also includes an element (not shown) to be attached to the ear of a person wearing the apparatus and that connects to the apparatus 10 by means of a lead 11 and a plug element 12. The apparatus 10 includes a light weight, rectangularly shaped casing which is formed from a unitary front casing section 13 having inwardly extending sides and ends, an upper rear section 14 having an inwardly extending upper end and sides, and a lower rear section 15 having an inwardly extending lower end and sides. Usually all of the casing sections are made from a light gauge sheet metal, but other conventional materials may be used where convenient, as long as the casing has sufficient resiliency as to function in the manner described hereinafter. Fig. 1 best shows that a hole 16 is formed in the upper rear casing section 14 and that a connector member or socket 17 extends outwardly of the apparatus 10 through the hole 16. This socket 17 is fixedly associated with the amplification and microphone means (not shown) for the hearing aid that are located within the casing and carried on a chassis 20.

In order to provide means for laterally engaging the casing sections and to avoid the use of conventional securing means, associated channels and rails are formed on the sides of the casing sections to secure them together in an easily releasable form. To this end, the opposite sides of the front section 13 are each usually provided with an integral guide channel 18 that extends substantially the length of the casing section whereas the opposed side edges of the rear sections 14 and 15 of the casing are each provided with an integral guide rail 19 on the opposed lateral edges thereof adapted to engage with and be received within the channels 18. Hence, the rear casing sections 14 and 15 can be slidably engaged with the front casing section 13.

To aid in forming a smooth joint between the rear casing sections, the lower edge of the upper rear section 14 is provided with a transversely

extending outwardly projecting rib 21 while the top of the lower rear section 15 is usually provided with a depressed flange 22 adapted to be received beneath the rib 21 and form a smooth joint therebetween. The lower rear casing section 15 usually also is provided with a transversely extending rib 23 adapted to abut against the rib 21 when the rear casing sections are in completely assembled association with each other and the front casing section. An outwardly directed boss 24 may be formed on the flange 22 to engage with a complementarily shaped recess 25 formed on the inner surface of the rib 21 so that the casing sections can be retained in engagement and require a positive separation action for moving one section with relation to the other.

In order to lock the upper casing section in a given position at the top of the hearing aid apparatus, a slot 26 is formed in each of the channels 18 adapted to receive the ends of the rib 21 when the upper rear casing section is positioned in its desired position at the top rear portion of the front casing section 13.

In engaging the casing sections, in usual practice, the upper rear section, together with the chassis 20, may be first positioned below the top of the front section and the rails of the upper rear section can be interlocked with the side channels of the front section, as by inserting one of said rails into the corresponding side channel of the front section and thereafter pressing downwardly upon the other side of the upper rear section while pulling such side of the front casing outwardly of the apparatus, which will enable the second rail to snap into position within its guide channel due to the inherent resilience of the material forming the casing sections. This operation must necessarily be performed while the chassis and the upper rear section occupy a position approximately midway between the ends of the front section after which the chassis 20 and casing section 14 can be slid as a unit up to the top of the front casing section. The chassis 20 is positioned beneath the upper rear cover section and retained there by fitting the output socket 17 within the opening 16 provided therefor in the said section. The manner in which the output connector cooperates with the opening 16 in the upper rear section plus the engagement of rib 21 with slots 26 enables the chassis 20 and associated parts to be locked in position within the casing and be, in action, integral with the casing section 14 without recourse to any other securing means, thereby eliminating the necessity for the use of any tools in effecting such assembly. The lower rear casing section 15 can be merely slid into engagement with the lower portion of the front casing section until flange 22 engages rib 21. The casing sections are disassembled by a reversal of the above process.

Fig. 1 best shows that the power supply means for the hearing aid apparatus, such as dry batteries 27 and 28 are positioned within the lower portion of the hearing aid apparatus. Hence, the lower casing section 15 should be readily removable so that the batteries can be serviced in a convenient manner at any desired time and without the use of any special skill or care in treating or servicing the hearing aid apparatus. However, the delicate amplification and speaker circuit means for the apparatus are located within the casing in the upper portion thereof on the chassis 20. As one cannot easily remove this portion of the hearing aid apparatus, it is not

likely to ever be accidentally removed or broken. However, when desired, the lower rear casing section can be removed and then the upper rear casing section, or the front casing section can be sprung outwardly with relation to the lateral portions of the rib 21 so as to spring the casing sections out of engagement whereby the upper casing section and the amplification means can be slid as a unit downwardly of the front casing section. Next, as previously indicated, one side edge of the front casing section may be sprung outwardly a slight distance, or one edge of the rear casing section may be sprung inwardly a slight distance and the casing sections then can be disengaged by pivoting the rear casing section about the rail thereof still engaged with the channel on the front casing section.

As a further feature of the invention in order to provide a compact hearing aid of desirable properties and appearance, a clip element 31 is carried on the front casing section 13. The clip 31 is pivotally mounted on a substantially U-shaped bracket 32, that is in turn secured to the casing 13 in any conventional manner, by means of a pin 33. The clip 31 is resiliently urged against the surface of the casing by means of a coil spring 34 which is compressed between the upper end of the clip 31 and the adjacent portion of the casing. The lower portion of clip 31 as indicated at 35 provides a gripping jaw for the clip. Use of this special type of clip for the hearing aid provides an effective but quite shallow clip that has very desirable qualities for securing a hearing aid to the clothing of its wearer.

A locking member, such as a channel 36, may be provided on the upper edge of the casing section 13 and be adapted to engage with a rail 37 formed on the upper edge of the upper rear section 14 of the casing so as to define an upper limit for the sliding engagement of the casing section 14 with the front of the casing section. In this position, the rib 21 is adapted to engage with the slots 26 formed in the side channels 18.

From the foregoing, it will be seen that a compact, improved hearing aid apparatus is provided and that an improved casing for a hearing aid is disclosed.

This application is a division of our application Serial No. 636,459, filed December 21, 1945, now Patent No. 2,500,301, granted March 14, 1950, and a continuation in part of our application Serial No. 490,612, filed June 12, 1943, now Patent No. 2,424,422.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention as defined by the appended claims.

Having thus described our invention, what we claim is:

1. An apparatus of the character described comprising a casing having a front section and upper and lower rear sections, the front section and the rear sections being provided with side walls, the side walls of the front section extending substantially the full length thereof and projecting laterally outwardly from the side edges thereof and the side walls of the rear sections being provided each with an outwardly extending guide rail adapted to be received within the said channels, the bottom of the upper rear section and the top of the lower rear section having one an

5

outwardly projecting rib extending thereacross and the other having a flange adapted to be received beneath the said rib, and the guide channels on the front section being provided each with a slot adapted to be engaged by the corresponding end of the rib on the rear section when the upper end of the upper rear section is in register with the upper end of the front section and the lower rear section engages therewith.

2. An apparatus of the character described comprising a casing having a front section and upper and lower rear sections, the front section and the rear sections being provided with side walls, the side walls of one of the sections being provided each with a guide channel extending substantially the full length thereof and projecting outwardly from the side edges thereof and the side walls of another of the sections being provided with an outwardly extending guide rail adapted to be received within the said channels for securing such sections together, one of the bottom of the upper rear section and the top of the lower rear section having an outwardly projecting rib extending thereacross and the other having a flange adapted to be received beneath the said rib, the rib and the flange being provided the one with a projection and the other with a recess adapted to receive said projection thereby to lock the said rear sections detachably together, and the guide channels being provided each with a slot adapted to be engaged by the corresponding end of the rib on the rear section when the upper end of the upper rear section is in register with the upper end of the front section and the lower rear section is engaged with the upper section.

3. In hearing aid apparatus, a casing for receiving the components of the apparatus, said casing comprising an elongate receptacle formed from a front casing section and upper and lower rear casing sections, said front and rear casing sections being provided with side and end wall sections adapted to be slidably engaged to form a casing enclosure, said side walls of said front and rear casing sections having resiliently interengaged guide channels and rails formed on the edges thereof, one of said side walls also having a slot formed therein at one channelled portion thereof and the cooperating railed side wall of the associated section having a protruding member formed thereon to engage said slot to lock such sections in fixed relative positions, the one of said rear casing sections being adapted to be locked into engagement with said front casing section being provided with an aperture for positively engaging with hearing aid mechanism received within the casing, the other of said rear casing sections being slidably removably engaged with said front casing section.

4. In hearing aid apparatus, a casing for receiving the components of the apparatus, said casing comprising a front casing section and upper and lower rear casing sections, said side walls of said front and rear casing sections having resiliently interengaged guide channels and rails formed on the edges thereof, one of said side walls also having a slot formed thereon at one channelled portion thereof and the cooperating railed side wall of the associated section having a protruding member formed thereon to engage said slot to lock such sections in fixed relative positions, the one of said rear casing sections being adapted to be locked into engagement with said front casing section and also to be fixedly engaged with hearing aid mechanism received

6

within the casing, the other of said rear casing sections being quickly engaged with or disengaged from said front casing section.

5. A casing as in claim 1 wherein said casing sections are all formed of light gauge sheet metal and said lower rear casing section can readily be slid out of engagement with said front casing section and said front casing section can be sprung to release said upper casing section for slidable downward movement with relation thereto, said front casing section being adapted to be sprung outwardly of the casing to release said upper rear casing section therefrom when positioned downwardly slightly of its normal position at the top of said front casing section.

6. A casing as in claim 3 wherein said front casing section is formed of light gauge sheet metal and said lower rear casing section can readily be slid out of engagement with said front casing section, said front casing section being adapted to be sprung to release said upper casing section for slidable downward movement with relation thereto, said front casing section being adapted to be sprung laterally outwardly of the casing to release said upper rear casing section from engagement therewith when same is positioned downwardly slightly of its normal position at the top of said front casing section, said upper rear casing section being provided with a hole therein for engaging with hearing aid means to move same with such section.

7. An apparatus of the character described comprising a casing having a front section and upper and lower rear sections, the front section and the rear sections being provided with side walls, the side walls of one of the sections being provided with opposed guide channels extending substantially the full length thereof and projecting outwardly from the side edges thereof and the side walls of another of the sections being provided with a pair of outwardly extending guide rails adapted to be slidably received within the said channels for securing such sections together in a releasable manner, and resilient means for releasably locking the slidably associated sections in engaged association, said upper rear casing section being provided with a rail section at its upper margin and the upper end of said front casing section being provided with a locking member whereby said rear upper casing section can be engaged with said locking member for limiting relative upward movement between the upper rear casing section and the front rear casing section, said upper rear casing section being provided with a rib extending transversely thereof at its lower edge and said channels being carried on said front section and being provided with slotted sections therein for receipt of said rib when the upper rear casing section is positioned in its normal relationship to said front casing section whereby said rear casing section is positively locked in engagement in a fixed position with said front casing section.

8. An apparatus of the character described comprising a casing having a front section and upper and lower rear sections, the front sections and the rear sections being provided with side walls, the side walls of one of the sections being provided with opposed guide channels extending substantially the full length thereof and projecting outwardly from the side edges thereof and the side walls of another of the sections being provided with a pair of outwardly extending guide rails adapted to be slidably received within the said channels for securing such sec-

7

tions together in a releasable manner, and means for locking one rear section in a given position with relation to the front section, which means includes a slot formed in at least one of said guide channels and extending thereinto from the inner edges thereof, and an outwardly protruding member formed on at least one of the side walls of the section to be locked to such channelled section and adapted to seat in said slot.

9. In hearing aid apparatus, a casing for receiving therein hearing aid means havin a protuberance thereon, said casing comprising an elongate receptacle formed from a front casing section and upper and lower rear casing sections, said front and rear casing sections being provided with side and end wall sections adapted to be slidably engaged to form a casing enclosure, said side walls of said front and rear casing sections having resiliently interengaged guide channels and rails formed on the edges thereof, said casing sections having flat portions in the center thereof, one of said rear casing sections having an aperture therein in the flat center portion thereof for positive engagement with a protuberance on hearing aid means received within the casing for moving said means with such rear casing section upon relative sliding movement of said one rear casing section and said front casing section, the other of said rear

8

casing sections being removably engaged with said front casing section normally having the power supply means of a hearing aid means in the casing positioned thereadjacent for exposure on removal of such casing section.

RALEIGH E. TRESISE.
PAUL D. KENDALL.

REFERENCES CITED

10 The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
15 646,283	Heatly et al.	Mar. 27, 1900
844,061	Van Valkenburg	Feb. 12, 1907
1,061,820	Colbert	May 13, 1913
1,085,174	Sheaffer	Jan. 27, 1914
2,083,356	Batdorf	June 8, 1937
20 2,086,534	Bryne	July 13, 1937
2,089,812	Seidel	Aug. 10, 1937
2,133,651	Baker	Oct. 18, 1938
2,182,865	Franzblau	Dec. 12, 1939
2,336,828	Zarth	Dec. 14, 1943
25 2,406,583	Blauvelt	Aug. 27, 1946
2,424,422	Tresise	July 22, 1947

FOREIGN PATENTS

Number	Country	Date
30 272,310	Italy	Mar. 6, 1930