

Nov. 14, 1933.

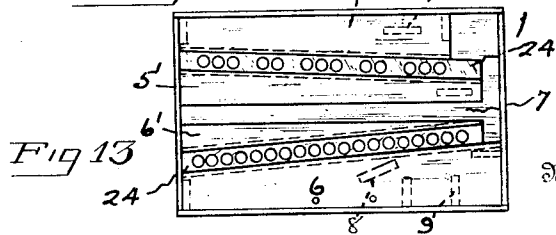
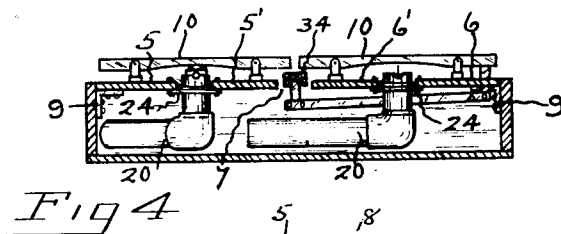
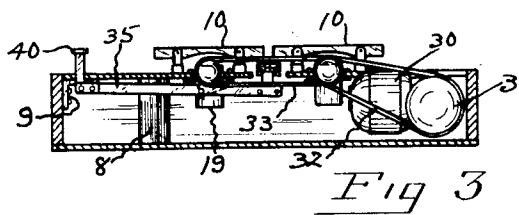
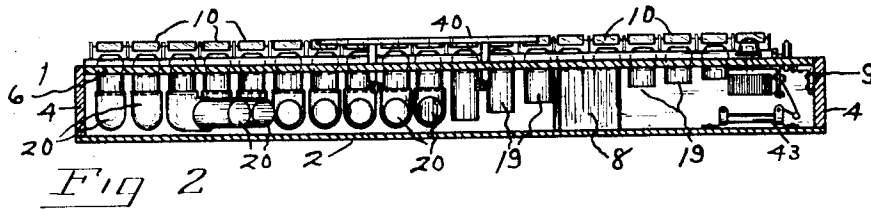
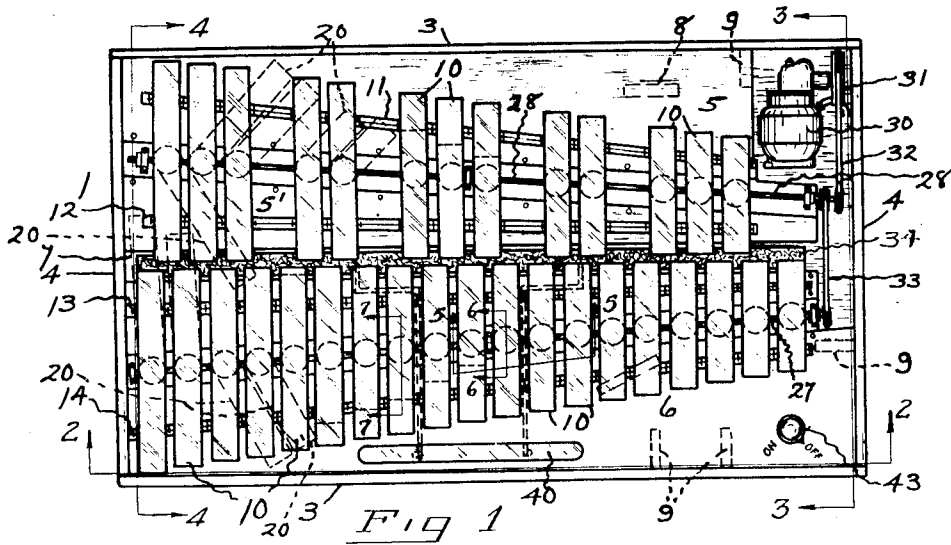
L. B. GREENLEAF

1,935,566

PERCUSSION MUSICAL INSTRUMENT

Filed June 23, 1932

3 Sheets-Sheet 1



Inventor

Leland B. Greenleaf

By Louis C. Vanderlip.

Attorney

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PERCUSSION MUSICAL INSTRUMENT

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3 Sheets-Sheet 2

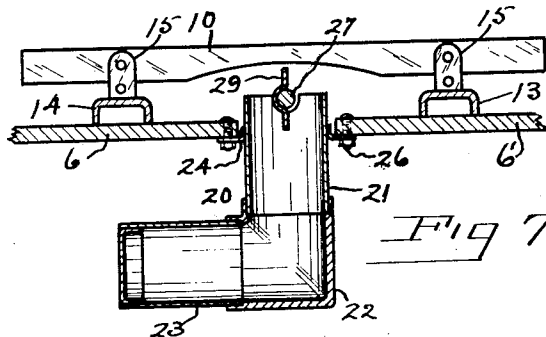
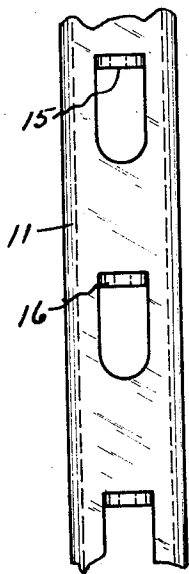
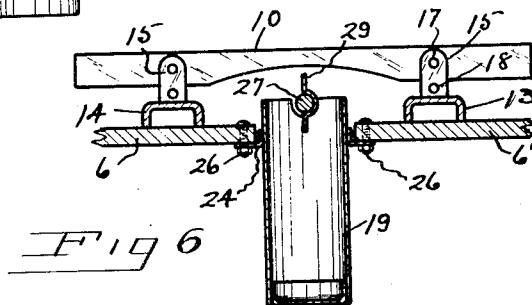
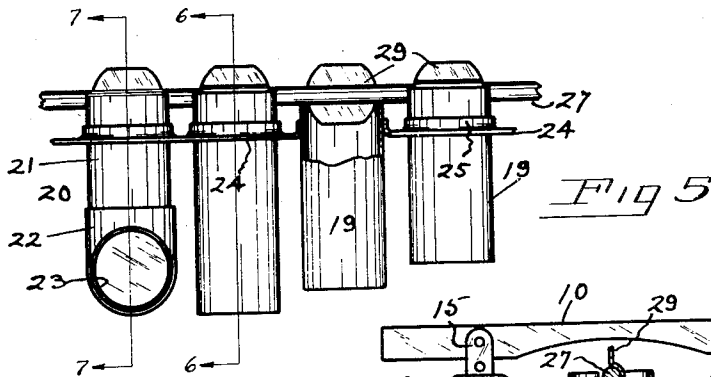


Fig 8

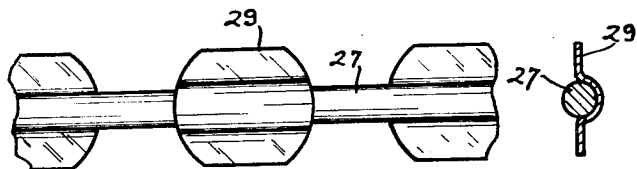


Fig 9

Fig 9a

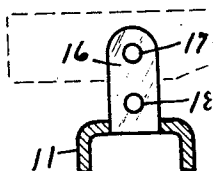


Fig 8a

Inventor

Leland B. Greenleaf

By

Louis C. Vanderlip.

Attorney

Nov. 14, 1933.

L. B. GREENLEAF

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PERCUSSION MUSICAL INSTRUMENT

Filed June 23, 1932

3 Sheets-Sheet 3

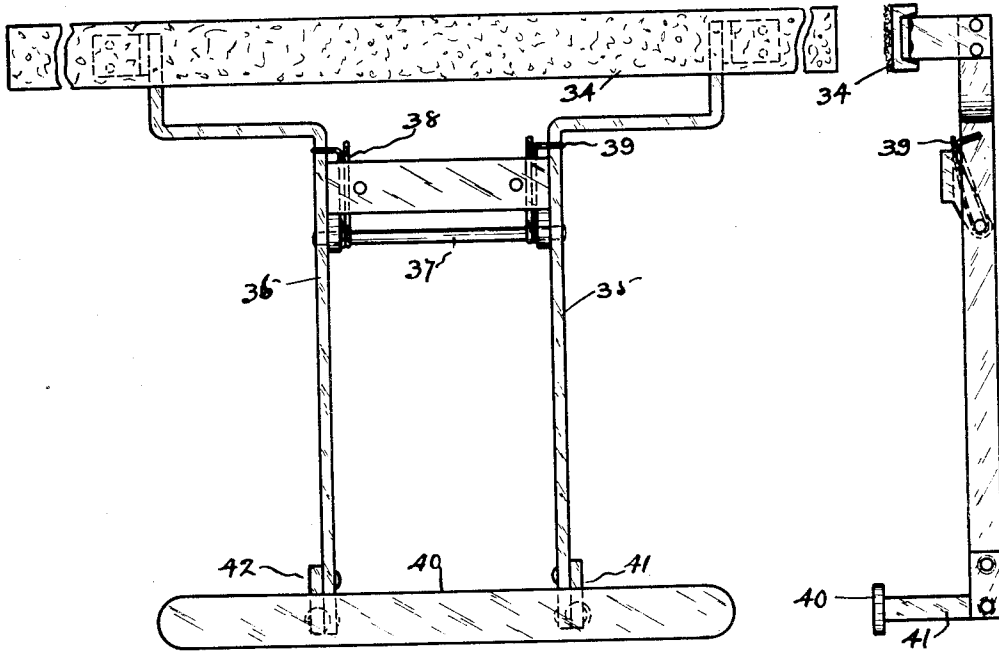


Fig. 10

Fig. 10a

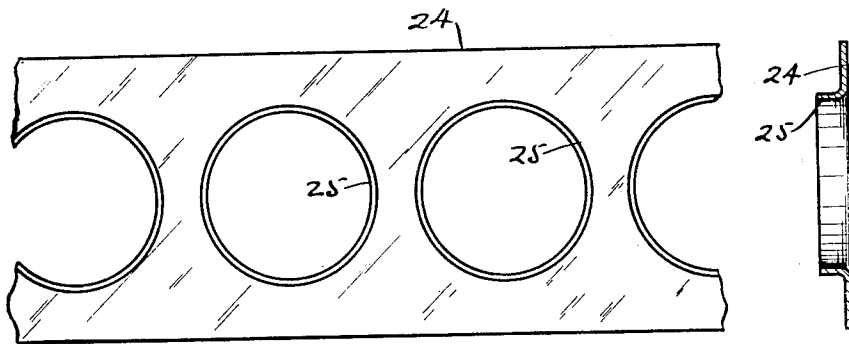


Fig. 11

Fig. 11a

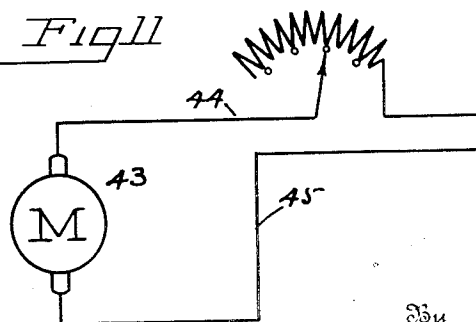


Fig. 12

Inventor

Leland B. Greenleaf

By

Louis C. Vanderlip,

Attorney

UNITED STATES PATENT OFFICE

1,935,566

PERCUSSION MUSICAL INSTRUMENT

Leland B. Greenleaf, Elkhart, Ind., assignor to
C. G. Conn, Ltd., Elkhart, Ind., a corporation
of Indiana

Application June 23, 1932. Serial No. 618,959

11 Claims. (Cl. 84—410)

This invention relates to musical instruments, and particularly to percussive musical instruments known to the trade as "Vibraphones".

The principal object of this invention is to provide a percussive musical instrument that is readily portable.

Another object is to provide a percussive musical instrument in which the speed of the baffle plate shafts is regulated electrically.

A third object of the invention is to provide a percussive musical instrument in which the baffle plate shafts are driven by an electric motor, and the speed of the latter regulated by a rheostat.

Still another object is to provide a percussive musical instrument in which the vibrant bars, or bells, are partitioned from the resonators, the latter being arranged below the partition.

Another object is to provide a portable percussive musical instrument of the character described which includes a relatively shallow case and resonators which are provided with elbow sections to reduce the depth of the case.

A further object is to provide a portable percussive musical instrument in which elbowed resonators are incorporated and supported in improved carrier means.

Other and more specific objects of the invention are mentioned and described herein.

The preferred embodiment of my invention is illustrated in the accompanying drawings, wherein

Figure 1 illustrates a top plan view of the assembled instrument, and showing the case cover removed;

Fig. 2 is a section taken on line 2—2 of Fig. 1;

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

Fig. 4 is a section taken on line 4—4 of Fig. 1;

Fig. 5 illustrates a fragmentary side elevational view of a plurality of resonators, baffle shaft and baffle plates, and resonator carrier strip;

Fig. 6 is a section taken on line 6—6 of Fig. 5 and including a bell, or vibrant bar, its carrier channels, and a fragment of the case partition;

Fig. 7 is a section taken on line 7—7 of Fig. 5 and including the members illustrated in Fig. 6;

Fig. 8 illustrates a fragment of one of the vibrant bar, or bell, carrier channels;

Fig. 8a is an end view thereof;

Fig. 9 illustrates a fragmentary plan view of one of the baffle plate shafts to which a plurality of baffle plates are secured;

Fig. 9a is an end view thereof;

Fig. 10 illustrates a plan view of the damper bar and its operating mechanism;

Fig. 10a is an end view thereof;

Fig. 11 illustrates a fragmentary plan view of one of the resonator supporting plates or strips;

Fig. 11a is a transverse section taken through one of the sockets of the plate shown in Fig. 11;

Fig. 12 is a diagrammatic plan view of the rheostat and its connections; and

Fig. 13 is a reduced top plan view of the instrument case with bells, or vibrant bars, and other members removed, and illustrating the arrangement of the case partition or panel and resonator carrier plates.

Similar numerals of reference indicate like parts throughout the several views on the drawing.

The instrument illustrated in the accompanying drawings is generally known as a xylophone type and is made readily portable, by an individual by the construction disclosed and described herein, being mounted within a relatively shallow open top case 1 which may be rectangular in formation. The instrument case 1 is rigidly built and may comprise the bottom wall 2, and the side and end walls 3 and 4, respectively. Any suitable handled cover—not shown—may be provided for the case to facilitate ready transportation of the instrument unit. The bottom wall 2 of the case effectually and completely closes the case bottom to exclude dirt and to provide a closed case when the cover—not shown—is mounted thereon.

To impart the necessary strength and rigidity to the instrument case 1 it is interiorly provided with partition means adjacent the upper edges of the side and end walls thereof, and such partition means may desirably comprise the four longitudinally arranged panel sections 5, 5', 6 and 6'. The panel sections 5 and 5' are preferably spaced from each other, and panel sections 6 and 6' are also spaced from each other, and there is a space or interval 7 provided between panel sections 5' and 6' to accommodate the damper bar, as hereinafter described. For rigidly securing the panel sections 5, 5', 6 and 6' to the case interior, suitable wood blocks 8, 8, located at desirable positions, and a plurality of metal angle plates 9, 9, are fastened to said panels and to the side, end, and bottom walls of the case by screws, or otherwise suitably.

The numerals 10 indicate a plurality of vibrant bars, or bells, which are preferably made of suitable metal, and which are usually arranged in two banks or substantially parallel rows, as

illustrated in Fig. 1, said bars being made of such proportions as to produce tones of the chromatic scale when placed under vibration, as is well known in the art.

5 The vibrant bars, or bells, 10 may be supported upon two pairs of metal channel bars 11 and 12, and 13 and 14, respectively, which may be rigidly fastened in suitable spaced relation to the upper side of the several panel sections
10 5, 5', 6 and 6', respectively, in any suitable manner, as by screws, for example, to render said panel sections readily removable from the case. Each of the bars 11, 12, 13 and 14 is provided with a series of pairs of upright integral bearing lugs 15 and 16, which are preferably
15 struck up from the bar web, and which are adapted to support one end of a vibrant bar 10, said lugs being formed at intervals corresponding with the spacing of the bars 10. As is well known in this art, the bars 10 are usually supported upon
20 cords—not shown—which in this structure may be threaded through suitable openings 17 and 18 formed in the lugs 15 and 16, said cords being secured in any suitable manner to prevent displacement thereof.
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The numeral 19 indicates a plurality of substantially upright resonating tubes which are substantially straight and disposed below the bars 10, said resonator tubes being associated with a plurality of elbowed resonator tubes 20,
30 the latter being also arranged below corresponding bells 10. Each of the resonators 20 may comprise the upright tube section 21, the elbow 22, and the substantially horizontal tubular section
35 23. Both types of resonators 19 and 20 are mounted in the metal carrier bars 24 which are provided with flanged openings 25 for that purpose, each resonator being arranged within one of said openings and rigidly gripped by the marginal flange thereof. As illustrated, this invention shows two banks or rows of the vibrant bars
40 or bells 10, although they may be otherwise arranged, and in each bank or row of said bells a plurality of each of the upright and elbowed horizontal resonators 19 and 20, respectively, are
45 incorporated.

Each of the resonator carrier bars 24 is arranged longitudinally of and within the interstice between panel sections 5 and 5', or 6 and 6',
50 and each of said carrier bars may have its opposed marginal edges rigidly fastened to the under side of the marginal edges of said panel sections and adjacent said interstice in any suitable manner.

As illustrated in Figures 6 and 7, bolts 26 are utilized to secure the carrier bars 24 in juxtaposition, whereby the upright tubular portion of each of the resonators 19 and 20 projects somewhat above the adjacent panel sections. In
60 Fig. 6 there is illustrated a resonator 19 mounted in the carrier bar or plate 24 which is secured to panel sections 6 and 6', and at Fig. 7 there is similarly illustrated a resonator 20 which has its upright leg 21 mounted in the carrier bar 24
65 and the latter secured to panel sections 6 and 6'.

To reduce the width of the instrument case 1 the longer elbowed resonators 20 are so arranged and fastened in the carrier bars 24 that the horizontal leg 23 thereof is disposed at an acute
70 angle in relation to the longitudinal center line of said carrier bar, Fig. 1. Each of the two banks or rows of resonators 19 and 20 is associated with a rotatable horizontal baffle plate shaft, each of which shafts 27 and 28, is carried in
75 suitable bearings located in the case adjacent

the opposite ends of said shaft, each shaft carrying a plurality of baffle plates or disks 29 rigid therewith, said baffle disks being arranged for rotation adjacent the upper end of the resonators
80 19 and 20, as is well known in the art.

The baffle disk shafts 27 and 28 may be rotated by an electric motor 30 through the intermediation of the motor driving pulley 31, driving belt 32 which is connected with a pulley on shaft
85 28, and belt 33 which connects with suitable pulleys on shafts 28 and 27. The usual felt covered damper bar 34 is so pivotally mounted that it is arranged longitudinally of and in the panel interstice 7 and is adapted for contact with the adjacent ends of the two banks of bells 10 and
90 on the under side thereof; said damper bar being mounted upon the outer end of a tiltable frame composed of the bars 35 and 36 carried upon the shaft 37 which is suitably pivotally supported in the instrument case below the panel section 6.
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Numerals 38 and 39 indicate a pair of bent wire springs anchored about the shaft 37 and engaging the outer end of the frame bars 35 and 36 which normally retract the damper bar 34 and hold it disengaged from the bells 10. A presser
100 bar 40 is mounted upon the upper ends of the upright arms 41 and 42 which are connected with the frame bars 35 and 36, respectively, and which project through suitable openings (illustrated in Fig. 3) in the panel section 6, said presser bar
105 being arranged above the panel section 6 and adjacent the side wall 3 of the instrument case to afford ready and convenient access thereto by the player.

From the foregoing it will be evident that I
110 have provided a very compact, self contained and portable musical instrument of the character described, wherein the resonators are practically concealed by panel sections of the case, and wherein the rigidity of the instrument case is
115 materially enhanced by partition means composed of a plurality of panel sections.

For regulating the speed of the motor 30 a rheostat 43 is provided and mounted within the case 1, said rheostat being provided with suitable
120 conduits 44 and 45 for connecting it with a source of electricity and the electric motor 30.

I claim:

1. A percussion musical instrument of the character described comprising a case, a pair of
125 channeled vibrant bar carrier elements mounted in said case, each of said carrier elements being provided with a series of pairs of integral vibrant bar bearing lugs, a plurality of vibrant horizontal bars arranged within said case and supported
130 upon said carrier element lugs; each bar adapted when set into vibration to produce a tone of a musical scale differing from the tones produced by the others; and a tubular resonator for each of said vibrant bars, divers of said resonators
135 being provided with connected upright and horizontal sections, there being both upright and horizontal resonators arranged in any single bank or row of said resonators.

2. In a percussion musical instrument of the character described, a case provided with substantially horizontal partition means therein, a pair of channeled vibrant bar carrier elements mounted upon said partition means, each of said carrier elements being provided with a series of pairs
140 of integral vibrant bar bearing lugs, a plurality of vibrant bars arranged within said case and supported upon said carrier element lugs, each bar adapted when set into vibration to produce a tone of a musical scale differing from the tones
150

produced by the others; and a tubular resonator associated with each of said vibrant bars.

3. In a percussion musical instrument of the character described, a case, a plurality of vibrant horizontal bars within the case, each of said vibrant bars adapted when set into vibration to produce a tone of a musical scale differing from the tones produced by the others; a tubular resonator associated with each of said vibrant bars; and means for supporting a plurality of said resonators in operative relation to said vibrant bars, said means comprising an apertured horizontally arranged resonator carrier plate mounted within said case and provided with a flanged resonator bearing aperture for each of the plurality of resonators.

4. In a percussive musical instrument of the character described, a case provided with longitudinal interior partition means, a plurality of vibrant horizontal bars mounted upon said partition each of said bars adapted when set into vibration to produce a tone of a musical instrument scale differing from the tones produced by the others; a tubular resonator associated with each of said vibrant bars; and means for supporting a plurality of said resonators in operative relation to said vibrant bars, said means comprising a carrier plate mounted in said partition and provided with a plurality of apertures, each of which carrier apertures is engaged by a resonator.

5. In a percussive musical instrument of the character described, a case, a plurality of substantially horizontal spaced panel sections, constituting a partition, mounted in said case, a carrier element mounted in the space between said partition sections a plurality of vibrant substantially horizontal bars mounted above said panel sections and adapted when set into vibration to produce the tones of a musical scale, and a resonator for each of said vibrant bars, said resonators being mounted in said carrier element.

6. In a percussion musical instrument of the character described, a case, a plurality of substantially horizontal, spaced panel sections, constituting a partition, removably mounted in said case, a carrier element mounted in the space between said partition sections, a plurality of vibrant substantially horizontal bars mounted above said panel sections and adapted, when set into vibration, to produce the tones of a musical scale, and a resonator for each of said vibrant bars, divers of said resonators being elbowed.

7. In a percussion musical instrument of the character described, a case, a plurality of sub-

stantially horizontal panel or partition sections mounted therein, fastener members for removably securing said panel or partition sections in said case, a pair of vibrant bar carrier elements secured to one of said panel sections on the upper face thereof said vibrant bar carrier elements being provided with upstanding integral vibrant bar bearing means a plurality of vibrant bars mounted above said panel sections upon said vibrant bar carrier elements, and a resonator for each of said vibrant bars arranged below said panel sections.

8. In a percussion musical instrument, a case, a plurality of vibrant bars within said case, a tubular resonator associated with each vibrant bar, and means for supporting a plurality of said resonators in operative relation with said vibrant bars, said means comprising a horizontally arranged metal carrier plate provided with a plurality of flanged apertures, within which apertures the ends of the resonators are gripped.

9. In a percussion musical instrument, a case, a plurality of substantially horizontal panel sections arranged within said case and spaced from each other, said panel sections constituting a partition within said case, a plurality of vibrant bars mounted above said panel sections, a resonator supporting plate arranged within one of the spaces between two of said panel sections and supported by the latter, said supporting plate being provided with a plurality of apertures, and a resonator mounted in each of said supporting plate apertures.

10. In a percussion musical instrument, a case provided with side and bottom walls, a partition unit mounted in said case substantially parallel with the case bottom wall, said partition unit being provided with one or more openings, an apertured resonator carrier plate mounted in one partition unit opening, and a tubular resonator mounted in the carrier plate aperture.

11. In a percussion musical instrument, a case provided with side, end and bottom walls, a partition unit mounted in said case above the bottom wall thereof and substantially parallel with the latter, said partition unit being provided with one or more elongated openings, a resonator carrier plate mounted in one of said partition unit openings and provided with a plurality of resonator sockets extending longitudinally thereof, an elbowed resonator mounted in one or more of said resonator sockets, and a tubular resonator mounted in one or more of the remaining resonator sockets.

LELAND B. GREENLEAF. 130

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