Nov. 6, 1956 F. G. HEWITT 2,769,211

DOORLESS TELEPHONE BOOTH

Filed April 30, 1954

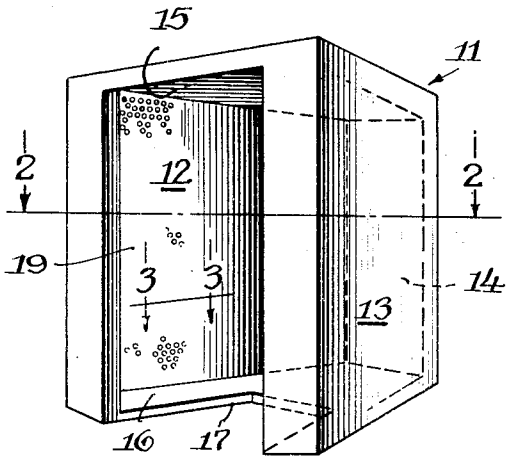

Fig. 1

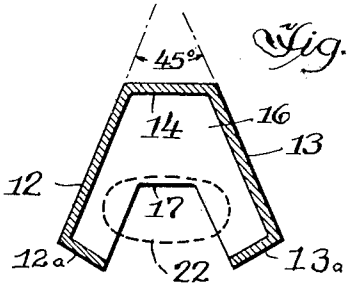

Fig. 2

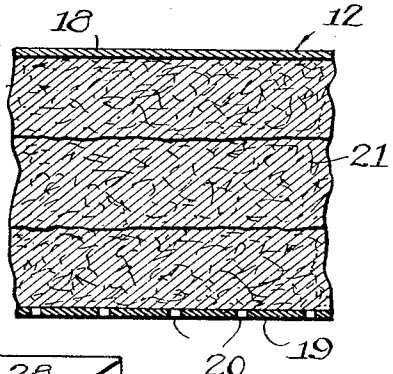

Fig. 3

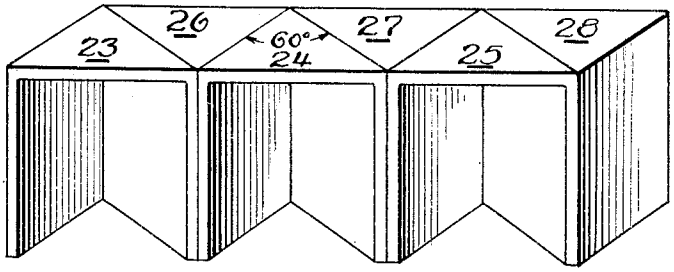

Fig. 4

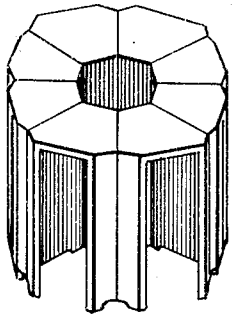

Fig. 5

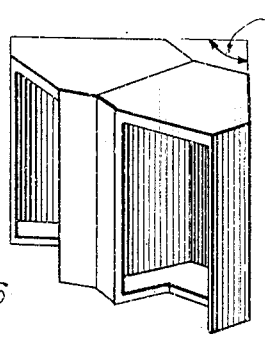

Fig. 6

Inventor

Frederick G. Hewitt

By: Jones, Tesch & Darbo, Attys.

United States Patent Office

2,769,211

Patented Nov. 6, 1956

2,769,211

DOORLESS TELEPHONE BOOTH

Frederick G. Hewitt, South Bend, Ind., assignor, by mesne assignments, to Burgess-Manning Company, Libertyville, Ill., a corporation of Illinois

Application April 30, 1954, Serial No. 426,817

6 Claims. (Cl. 20—3.5)

This invention relates to improvements in telephone booths of the acoustically treated, doorless type and to group assemblies thereof such as are commonly found in public places, for example, hotels, airports, railway stations, bus stations, factories, and the like.

The general objects of the invention are twofold: (1) To improve the acoustic efficiency of booths of this type whereby ambient noise is prevented from reaching the zone of quiet within the booth to an extent greater than heretofore attainable, and (2) to provide a booth of this type which, by reason of its configuration, contributes markedly to a more economical use of floor space.

These desirable functional and convenience improvements are achieved by providing a booth construction which is non-rectangular in cross-section, as most booths have been made heretofore, but is, rather triangular in cross-section with the side walls converging from the open front of the booth toward its rear.

The invention will be understood by reference to the following detailed description, taken together with the accompanying drawings, showing illustrative forms and group assemblies embodying the present invention, in which drawings:

Fig. 1 is a perspective view of a half-size or wall type booth embodying the invention;

Fig. 2 is a cross-sectional view taken at the line 2—2 of Fig. 1;

Fig. 3 is an enlarged detail section of a side wall of the booth of Fig. 1 taken at the line 3—3 of Fig. 1;

Fig. 4 is a somewhat diagrammatical view showing a group of booths arranged side-by-side in a row;

Fig. 5 illustrates a group of full length booths in a circular arrangement, and

Fig. 6 is a further illustration of a group assembly showing, in this instance, a pair of wall type booths arranged in a corner.

Referring in detail to the drawings and turning first to the booth construction illustrated in Figs. 1–3, inclusive, the booth **11** comprises side walls **12** and **13**, rear wall **14**, top wall **15**, and a bottom wall or shelf **16**. The bottom wall **16** is recessed as at **17**.

The side and top walls are of sound-absorbing construction as shown in detail in Fig. 3. The outer sheathing **18** and inner facing sheet **19** may be formed from any suitable material, such as sheet metal, plywood, pressed broad, plastic, or the like. Facing **19** is perforated, as indicated at **20**, and the space between exterior sheathing and interior facing **19** is filled with a suitable sound-absorbing material **21**, such as rock wool, glass or cellulose fibers, or other suitable similar material.

Rear wall **14**, upon which a telephone instrument is usually mounted, may be of the same sound-absorbing construction as the side walls of the booth, or it may consist of a single solid panel. As will be explained in greater detail hereinafter, side walls **12** and **13** may be extended until they meet at the apex of the triangular configuration of the cross-section of the booth, but the extremely narrow area adjacent such apex is neither useful nor necessary and it has therefore been found to be convenient to discontinue the side walls and insert rear wall **14** at a point at which its width is that which is conveniently used as a mounting for the telephone apparatus.

The bottom wall or shelf **16** need not be of the acoustic construction of Fig. 3, but may be a solid member, as shown. Side wall inturned extensions **12***a* and **13***a* form barriers to the direct passage of sound past the person of the user and may, but need not be, of sound-absorbing construction.

The telephone booth thus described, has been shown by actual test to be substantially more efficient, acoustically, than a conventional booth of rectangular cross-section, such as that described in Weiss Patent No. 2,141,117, December 20, 1938. Improvement is particularly noted in the attenuation of low frequency noises, especially sounds having frequencies of less than 300 cycles. Since the rectangular booth tends to actually amplify such low frequency sounds, due, probably, to a standing pattern involving reflection from the rear wall of the booth, in a manner somewhat similar to the operation of an organ pipe, it may be more correct to state that the booth of triangular configuration herein described exhibits substantial acoustic improvement by reason of the angular reflection of sound waves from the converging side walls with consequent reduction of the standing pattern amplification of low frequency sounds. Whatever the explanation may be, the demonstrated fact is that the booth of the invention is substantially superior to acoustically treated doorless booths heretofore known and used.

The booth illustrated in Figs. 1–3 and above described is of the half-size or wall type adapted to accommodate no more than the torso of the user. The booth is mounted at such a height that the bottom wall or shelf **16** is approximately at the level of the waist of the average adult. Recess **17** in bottom wall **16** is of sufficient depth to permit entry of the person using the booth to such an extent that his or her torso almost or substantially closes the front opening of the booth. The position of the user, including shoulders and arms is indicated by the dotted oval **22** in Fig. 2. Obstruction of the opening into the booth by the reason of the user further increases its acoustical efficiency for the reason that less noise enters directly to the zone of hearing. The converging side walls of the booth tend to provide some degree of automatic adjustment for persons of different sizes, maximum closure by the person of the user being thus made possible.

Since sound waves, either from outside of the booth or originating with the voice of the person using the telephone, impinging upon the perforated inner surfaces of the booth are largely absorbed and only slightly reflected from these surfaces, a quiet zone at the inner part of the booth is provided for use of the telephone. These acoustic phenomena and the specifications of the acoustic elements involved in this sound absorption are known and need not be further detailed here.

In order to achieve the acoustical objectives of the invention, it is preferable that the convergence of the side walls of the booth should be such as to form an angle of not less than about 45 degrees, as indicated in Fig. 2, nor more than about 60 degrees, as indicated in Fig. 4. Within these limits, for space-economizing purposes, this angle should be either 45 degrees or 60 degrees, integral sectors of a circle or straight angle, as indicated in the examples hereinafter described.

In accordance with the present invention, compact group assemblies may be formed with minimum floor space requirements for each booth. Examples of such arrangements are shown in Figs. 4, 5 and 6. In the group assembly of Fig. 4, the booths are constructed with side walls arranged at an angle of 60 degrees to each other. The booths are arranged in a row, booths **23**,

24 and 25 opening in one direction in the row, while booths 26, 27 and 28 face in the opposite direction. It will be seen that a substantially larger number of the triangularly shaped booths of the invention may be placed upon the floor space required for standard rectangular booths.

Floor space requirements sometimes indicate the desirability of a cluster of booths arranged in a circle, possibly around a column. Such an arrangement of full length booths is illustrated in Fig. 5. In this particular instance, the booths are constructed with side walls forming an angle of 45 degrees so that a total of eight booths are included in the cluster. This radial arrangement of booths somewhat enhances the privacy of each user. This is also true in the arrangement of two wall type booths in a corner as illustrated in Fig. 6.

Other convenient group assemblies may be employed and will be suggested by the examples herein illustrated and described. For example, three 60-degree or four 45-degree booths could be grouped along a straight wall, six 45-degree booths could be grouped around an outside (270°) corner, etc. The invention is not intended to be limited to the particular arrangements shown nor to details of construction illustrated and described for purposes of exemplification, and such changes may be made as fall within the scope of the appended claims without departing therefrom.

Invention is claimed as follows:

1. A doorless telephone booth having a pair of vertical side walls converging from front to rear of said booth at an angle of not less than about 45 degrees and not more than about 60 degrees, said walls comprising sound-absorbing construction whereby sound waves incident to the inner surfaces thereof are largely absorbed, the forward extremities of said side walls being spaced apart a sufficient distance to receive at least the vertical torso of a person therebetween, and a top wall for said booth.

2. A half-size doorless telephone booth comprising a pair of side walls extending from front to rear of said booth at an angle of not less than about 45 degrees and not more than about 60 degrees, the forward extremities of said walls being spaced apart a sufficient distance to receive the upper portion of a person using the booth therebetween, a top wall extending between said side walls and over substantially all of the space therebetween, the said side and top walls being of acoustic construction whereby sound waves incident to the interior surfaces thereof are largely absorbed, and a bottom wall extending between said side walls and having a recess therein at the front of said booth adapted to receive the person using the booth.

3. The structure of claim 2 and including a vertical rear wall having a width approximately sufficient for the mounting of a telephone instrument thereon and intersecting the two side walls and the top and bottom walls.

4. The structure of claim 2 and including vertical wall elements extending inwardly from the forward extremities of the side walls to form a partial front closure leaving a central opening of sufficient width to permit the torso of a person using the booth to pass therethrough.

5. A doorless telephone booth having a pair of vertical side walls converging from front to rear of said booth at an angle of about 45 degrees, said walls comprising sound-absorbing construction whereby sound waves incident to the inner surfaces thereof are largely absorbed, the forward extremities of said side walls being spaced apart a sufficient distance to receive at least the vertical torso of a person therebetween, and a top wall for said booth.

6. A doorless telephone booth having a pair of vertical side walls converging from front to rear of said booth at an angle of about 60 degrees, said walls comprising sound-absorbing construction whereby sound waves incident to the inner surfaces thereof are largely absorbed, the forward extremities of said side walls being spaced apart a sufficient distance to receive at least the vertical torso of a person therebetween, and a top wall for said booth.

References Cited in the file of this patent

UNITED STATES PATENTS

438,624	Hasselman	Oct. 21, 1890
502,778	Shrague	Aug. 8, 1893
1,779,482	Martin	Oct. 28, 1930
2,403,469	Tucker	July 9, 1946
2,581,251	Glazer et al.	July 1, 1952