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T. T. TUCKER

2,403,469

BOOTH

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FIG. 1.

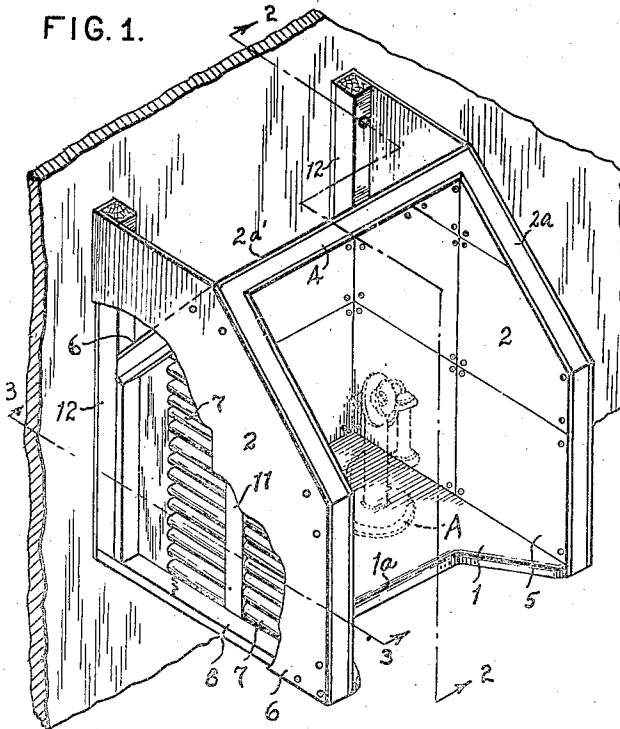


FIG. 2.

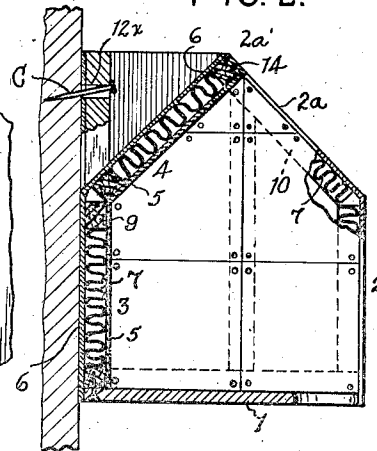


FIG. 3.

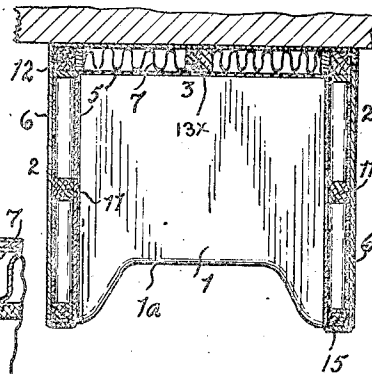


FIG. 5.

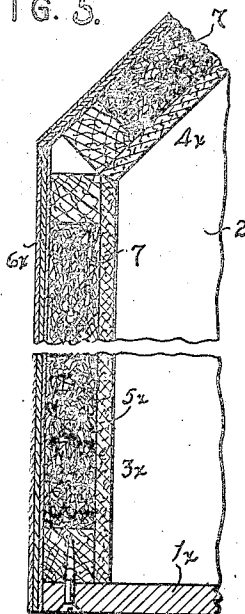


FIG. 4.

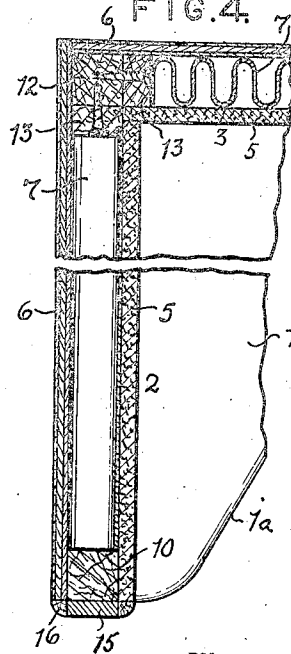
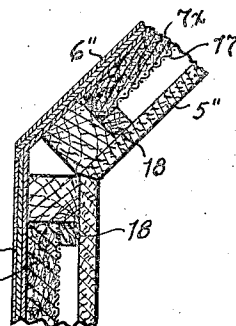


FIG. 6.



INVENTOR.
THOMAS T. TUCKER.

BY

Geo. B. Pitts

UNITED STATES PATENT OFFICE

2,403,469

BOOTH

Thomas T. Tucker, Atlanta, Ga., assignor to Belle Weather Incorporated, Atlanta, Ga., a corporation of Georgia

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5 Claims. (Cl. 20—3.5)

1

This invention relates to a booth of the semi-enclosed type, more particularly a booth adapted to be positioned on a wall or mounted on a support, such as a desk or table. The booth is adapted for use to lower the level of sound being transmitted away from a machine; also where audible speech or signals are to be received or transmitted. Accordingly, the booth may be advantageously employed by telegraphers, although I have employed it for the transmission and reception of conversation or speech by means of a telephone.

One object of the invention is to provide an improved booth of this character having walls consisting of exterior sound proof or resisting members, interior porous or foraminous members and sound-absorbing material intermediate the exterior and interior members.

Another object of the invention is to provide an improved booth of this character comprising few parts, readily assembled and having incorporated in its walls sound absorbing material.

Another object of the invention is to provide an improved booth of this character the walls of which are constructed to retard or prevent sound transmission therethrough.

Another object of the invention is to provide an improved booth of this character having hollow walls which enclose sound absorbing material spaced from the inner wall member to insure impact of sound waves over a large area of the sound absorbing material.

A further object of the invention is to provide an improved booth of this character having hollow side and top walls and sound absorbing material within the walls shaped to increase its area as compared to the area of the walls.

Another object of the invention is to provide an improved booth comprising outer walls of substantially soundproof material, inner walls spaced from said outer walls and formed of a material which is porous and incapable of vibration due to sound energy and a relatively light fibrous material within the space between the inner and outer walls.

A still further object of the invention is to provide an improved booth of this character comprising few parts formed of light materials adapted to be economically fabricated into a unitary, rigid structure which may be readily moved from place to place or attached to and hung from a wall without undue strain thereon.

Other objects of the invention will be apparent to those skilled in the art to which my invention relates from the following description taken in

2

connection with the accompanying drawing, wherein

Figure 1 is an isometric view of a booth embodying my invention, parts being broken away.

Figures 2 and 3 are sections on the lines 2—2 and 3—3, respectively, of Figure 1.

Figure 4 is a fragmentary section (a portion of Figure 3), enlarged.

Figure 5 is a fragmentary section similar to Figure 2, but showing a modified form of construction.

Figure 6 is a fragmentary section showing another modified form of construction.

In the drawing, 1 indicates a base formed of suitable material, preferably wood. 2, 2, indicate side walls mounted on the base 1 adjacent its opposite side edges. 3 indicates a rear wall mounted on the base 1 adjacent its rear edge. The upper portion of each side wall 2 is shaped to provide front and rear inclined ends 2a extending from its front and rear side edges upwardly, the apex 2a' of these ends 2a being disposed in an imaginary vertical plane substantially midway the front and rear side edges of the side walls.

4 indicates a top wall mounted on the rear inclined ends 2a of the side walls 2, and extending from the upper end of the rear wall 3 to the apices 2a' of the side walls 2. As will be observed, the base 1, and walls 2, 3, 4, form a semi-enclosed booth adapted to substantially enclose but permit ready access to a telephone A. The telephone A shown for illustrative purposes rests on the base 1, but such an instrument may be suitably mounted on one of the walls of the booth. In either arrangement the base may be utilized as a suitable surface for paper where the person using the booth has occasion to refer to or make written notes. By reason of the inclined arrangement of the top wall 4 and termination thereof inwardly of the front edges of the side walls 2, ample head room is provided for the person using the booth. By preference the base 1, along its front portion between the side walls 2, is formed with a bay or cut away, as shown at 1a, which enables a person, at least his head and bust, to conveniently project within the area enclosed by the side walls 2 and top 4. In the preferred arrangement the space between the side walls approximates the width of the average person's body (twenty-three inches), so that when a person stands in front of the booth and against the walls of the bay 1a, his body overlaps the front portions of the side walls 2 and closes a large portion of the opening therebetween. As a result, the person's conversation may be largely confined within the booth. How-

ever, the side walls 2, rear wall 3 and top wall 4 are constructed to exclude conduction therethrough of sounds and noise originating exteriorly of the booth, as well as to prevent heat conduction therethrough, and to absorb sounds originating within the booth or entering through its opening, so that conversation transmitted over the phone is facilitated both for the person in the booth as well as the person at the remote end of the telephone line. For this purpose, each wall 2, 3 and 4 consists of inner and outer members 5, 6, having along their marginal edges spacing elements, which are preferably formed of wood. Intermediate the members 5, 6, of each wall throughout the area between the adjacent spacing elements, I provide suitable sound absorbing material 7, later referred to.

The exterior member 6 of each wall 2, 3, 4, is formed of non-porous material having a low coefficient of sound conductivity. By preference this member consists of one or more sections of ply-wood or ply-board, which being formed of face-to-face plies, provides a substantially non-porous wall member and being a relatively poor conductor of sound waves, serves to exclude undesirable noises originating exteriorly of the booth. Ply-board is also advantageous by reason of its lightness and rigidity; also, because danger of warping is reduced to a minimum and it may be readily secured to the spacing elements by suitable screws or nails 5a. Plyboard also provides a surface which may be painted or otherwise finished, as well as fire-proofed by well known methods.

The inner member 5 of each wall, 2, 3, 4, is formed of a rigid, porous or foraminous material, preferably a material which is capable of limiting the sound transmission therethrough. For this purpose I have advantageously used one or more sections of sheet material composed of wood fibers compressed and cemented with magnesite plaster, the fibers forming a labyrinth of interstices through which the sound waves pass. This material lends itself advantageously for the further reason that it is obtainable in sections having the desired thickness and density and may be readily cut to predetermined dimensions, is sufficiently ponderous in weight to eliminate any vibration thereof due to generated sound waves and the impact of the waves thereon, and it may be readily secured to the spacing elements by suitable screws or nails 6a. The sheet material, as employed by me, has a thickness of one-half inch, but this thickness may vary dependent upon the kind of material used.

The spacing elements between the exterior and interior wall members 6, 5, are related and connected together to form a skeleton frame so that when the latter are secured to the spacing elements a rigid structure results. For example, I provide along and adjacent the lower end edges of the members 5, 6, for each wall 2 and the lower end edges of the rear wall 3, spacing elements 8, 8, respectively, which are secured to the base 1 by a plurality of screws 8a (two only being shown); and along and adjacent the upper edges of these members of the wall 2 an element 9 to which the adjacent members 5, 6, are secured; also, along and adjacent the front side and front inclined edges of the members 5, 6, of each side wall 2, I provide elements 10, 10, respectively, to which the members are secured; also, intermediate the front and rear edges of the members 5, 6, of each side wall 2 I provide a vertical element 11, to which the members are secured, extending from the element 8 to the apex 2a'.

At the corner formed by the rear wall 3 and each side wall, within the adjacent outer members 5, I provide an upright or post 12 to the inner side of which I secure, by means of suitable screws or nails 12a, spacing elements 13, 13, the adjacent walls 5, 6, being secured to these elements by suitable screws or nails. Intermediate the spacing elements 13, between the members 5, 6, of the rear wall 4, I provide a vertical spacing element 13x extending from the element 8 to the element 9.

Along the upper and lower end edges of the members 5, 6, of the top wall 4 I provide spacing elements 14, 14, to which these members are secured as already set forth.

The sound absorbing medium 7, as shown in Figs. 1 to 4, inclusive, of each wall, consists of relatively light fibrous material such as mineral or glass wool, preferably in sheet form and corrugated from end to end, the opposite outer walls of which engage the inner or opposed surfaces of the members 5, 6. The corrugations are of a size to engage these surfaces under slight compression, between the adjacent spacing elements, whereby the sheet is supported throughout the area of the chambers formed by the wall members 5, 6, and spacing elements therebetween. By this corrugated formation of the sound absorbing material the total area thereof as compared to the area of each inner wall member 5 is materially increased, so that greater efficiency in sound absorption results. The sheet of material may be mounted in the chambers so that the corrugations extend horizontally or vertically.

It will be noted that the booth may be supported on a desk, table, window seat, or the like or on the ledge of an alcove, but where it is to be mounted on a wall B (see Fig. 1) the posts 12 are preferably extended upwardly beyond the top wall 4 and provided with means for securing them to the wall, for example, openings 12x adapted to receive nails C or other devices mounted on or fixed to the wall.

The exposed surfaces of the spacing elements 10, 10, may be faced with strips 15 and bead elements 16.

Figure 5 illustrates a modified form of construction wherein the spaces or chambers within the walls of the booth are entirely filled with fibrous sound absorbing material 7, such as fibrous glass, having any desired density. Referring to Figure 5, 1x indicates the base for the booth, 3x indicates the rear wall and 4x indicates the top wall, each of these walls and the remaining walls of the booth comprising an outer non-porous member, 6x, an inner foraminous member 5x, and a filling of fibrous glass 7.

Figure 6 illustrates a modified form a construction wherein the sound absorbing material in the spaces or chambers within the walls of the booth consists of a layer of fibrous material (preferably fibrous glass) 7x extending throughout the area of the outer non-porous members 6'' in spaced relation to the porous members 5''. Each layer 7x is preferably supported on the outer member 6'' by wire netting 17, which is secured to strips 18 and which in turn are suitably secured to the adjacent spacing elements. This arrangement of the sound absorbing material permits impact of the sound waves, after passing through the inner wall members 5'', over the entire area of the sound absorbing material 7x.

From the foregoing description it will be observed that I provide a booth wherein the outer walls which are non-porous and of greater density than the inner foraminous walls, substantially

5

exclude sound originating externally thereof and thus sounds which may pass through the latter walls are deadened by the sound absorbing material within the walled structures of the booth. It will also be observed that I provide an inner porous wall which has greater density than the sound absorbing material and which is preferably rigid and of ponderous character capable of preventing any vibration thereof due to the impact of generated sound waves thereon and also to prevent a greater portion of the sound from passing therethrough to the sound absorbing material. The sound absorbing material being of fibrous character, is relatively light in weight and therefore capable of absorbing those sounds which penetrate through the inner walls.

It will thus be seen that the sound waves originating in the booth cannot set up a vibration in the inner walls and that these walls operate as a stoppage or reducing agent to the passage of the sound waves therethrough, so that by providing on the remote side of these walls a light fibrous material, highly efficient results are attained.

In this construction and arrangement of walled structure, tests show that a large proportion of sounds originating within the booth is absorbed, so that convenience in telephoning or receiving signals is greatly facilitated.

While I have shown by way of example a telephone within the booth, the latter may be used to accommodate a machine or device which in operation creates noise and it is desirable to reduce the transmission of such noise outside the booth.

To those skilled in the art to which my invention relates many changes in construction and widely differing embodiments and applications of the invention will be apparent without departing from the spirit and scope thereof. My disclosures and the description herein are purely illustrative and not intended to be in any sense limiting.

What is claimed is:

1. A portable booth of the class described comprising a base, parallelly related, vertically disposed side walls on said base, a rear wall mounted on said base in connected relation to the rear ends of said base and side walls, a top wall mounted on the upper ends of said rear wall and said side walls in connected relation thereto, the front end of said top wall terminating at a point inwardly of the front ends of said side walls, said side and top walls forming an opening at the front end of said base, each of said walls consisting of a rigid non-porous outer member, a relatively thick, porous, non-vibratory inner member for limiting the passage of sound waves therethrough, spaced supporting elements between said members, means for securing said members to said elements and sound absorbing material intermediate said members throughout the spaces between said elements.

2. A portable booth of the class described com-

6

prising a base, parallelly related, vertically disposed side walls co-extensive in length to and mounted on said base, a rear wall mounted on said base in connected relation to the rear ends of said side walls, the upper end of each of said side walls terminating in front and rear upwardly and inwardly inclined edges, a top wall mounted on the rear upwardly and inwardly inclined edges of said side walls in connected relation to the upper end of said rear wall, each of said walls consisting of an outer non-porous member, an inner non-vibratory foraminous member, spacing elements between and along marginal portions of said members, means for securing said members to said elements, and a corrugated sheet of sound absorbing material between and engaging said members throughout the areas between said spacing elements.

3. A semi-enclosed booth comprising a base, parallelly related, vertically disposed side walls mounted on said base, a rear wall mounted on said base in connected relation to the rear ends of said base and side walls, a top wall mounted on the upper ends of said rear wall and said side walls and in connected relation to said walls, the front end of said top wall terminating at a point inwardly of the front ends of said side walls, said side and top walls forming an opening at the front end of said base, each of said walls consisting of an outer rigid non-porous member, an inner relatively thick, non-vibratory porous member spaced parallelly from said outer member and forming a stoppage for sound waves originating in the booth and fibrous sound absorbing material within the space between said members for absorbing sound waves passing through said inner member.

4. A portable booth of the class described comprising a base, parallelly related vertically disposed side walls on said base, a rear wall on said base, a top wall mounted on the rear portions of said side walls, said side and top walls forming an opening at the front side of said base, each of said side walls consisting of a non-porous outer member, a relatively thick, porous, non-vibratory inner member for limiting the passage of sound waves therethrough, spaced supporting elements between said members, means for securing said members to said elements, and sound absorbing material intermediate said members throughout the spaces between said elements, the spaced supporting elements at the rearward margins of said side walls being extended above said top wall and adapted to be connected to a wall or other support.

5. A booth as claimed in claim 1 wherein the sound absorbing material in each of said walls consists of a layer of fibrous material spaced throughout its area from the inner member of the wall.

THOMAS T. TUCKER.