July 10, 1934. W. R. FOLTZ 1,966,288

SOUNDFROOF BOOTH

Filed June 16, 1932 3 Sheets-Sheet 1

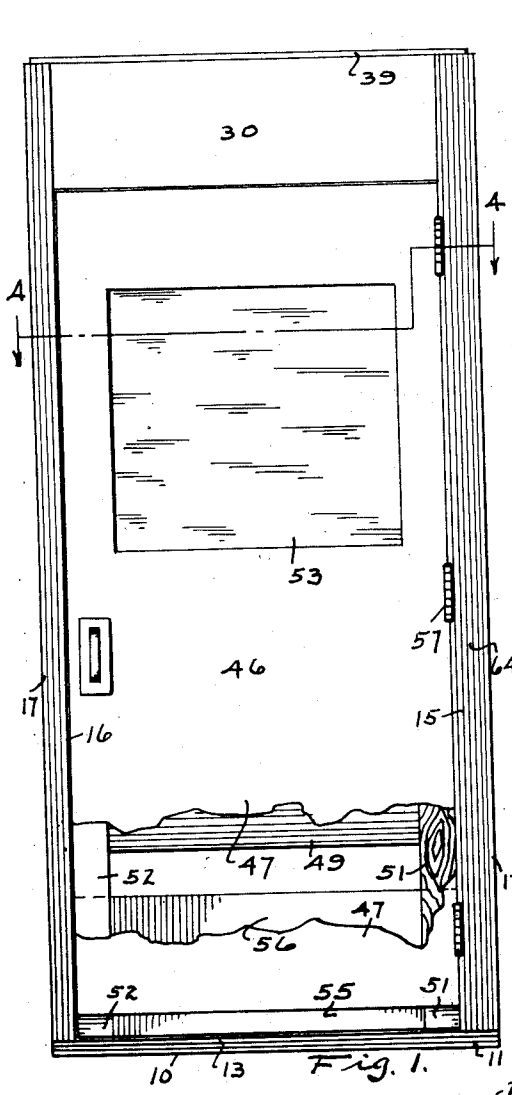


Fig. 1.

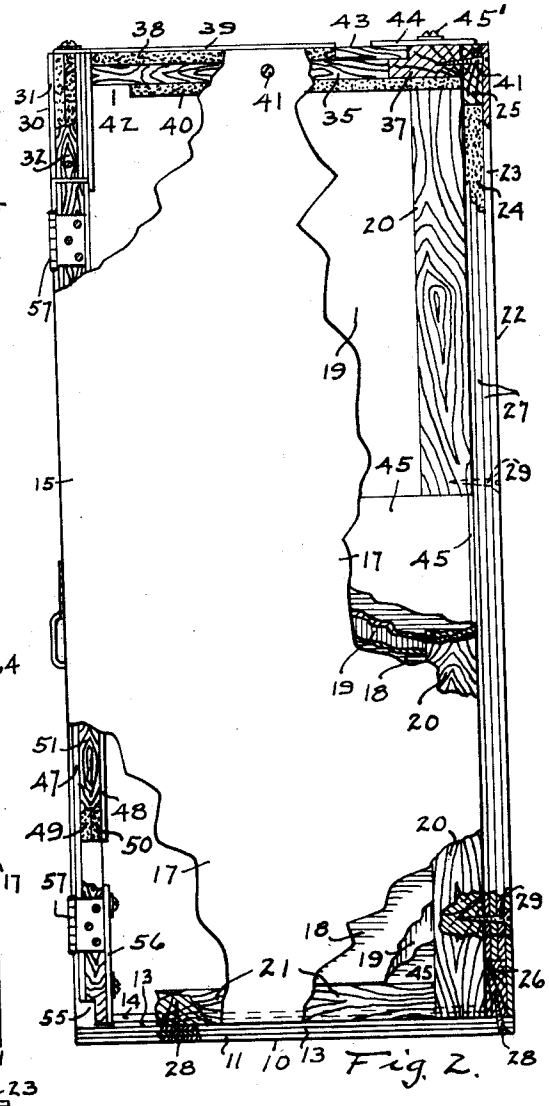


Fig. 2.

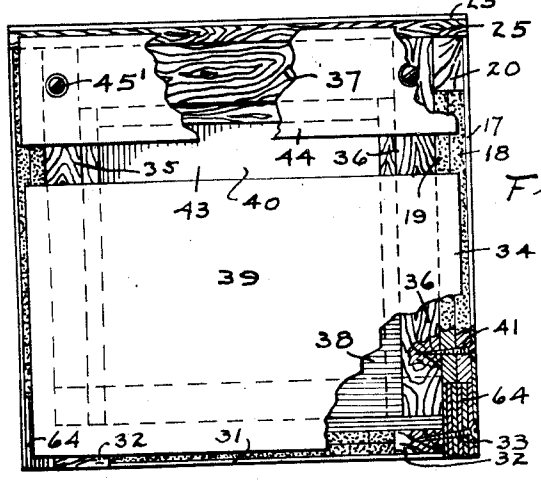


Fig. 3.

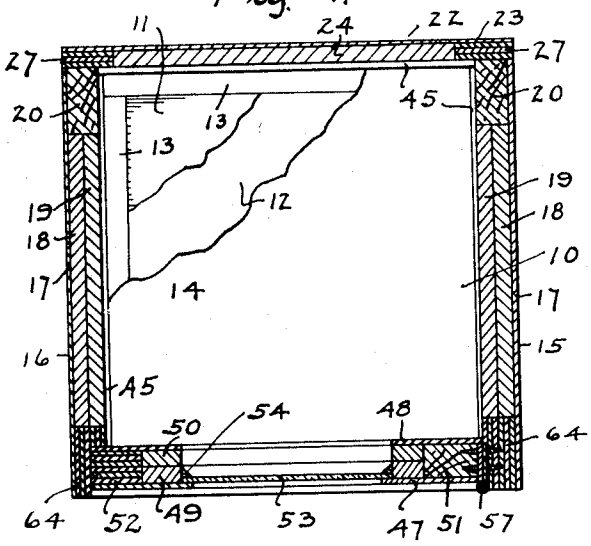
INVENTOR.
Walter R. Foltz.
By Minturn & Minturn,
Attorneys.

July 10, 1934. W. R. FOLTZ 1,966,288

SOUNDPROOF BOOTH

Filed June 16, 1932 3 Sheets-Sheet 2

Fig. 4.



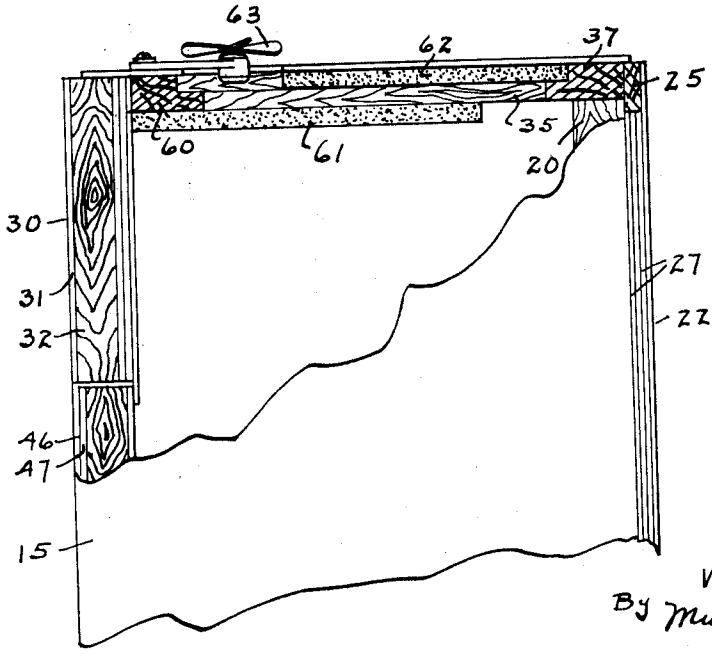


Fig. 5.

INVENTOR.
Walter R. Foltz,
By Minturn & Minturn,
Attorneys.

July 10, 1934. W. R. FOLTZ 1,966,288

SOUNDPROOF BOOTH

Filed June 16, 1932 3 Sheets-Sheet 3

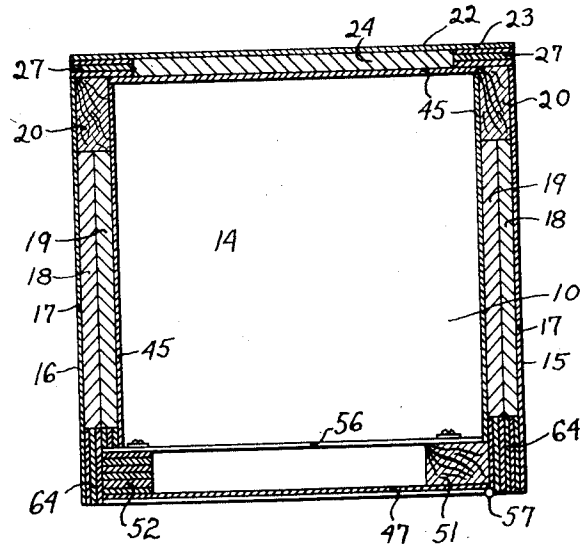


Fig. 6.

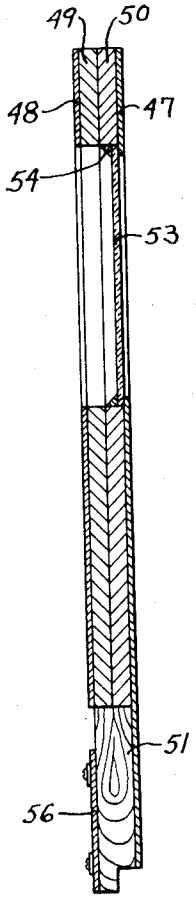


Fig. 7.

Inventor,
Walter R. Foltz,
By Minturn & Minturn
Attorneys.

Patented July 10, 1934

1,966,288

UNITED STATES PATENT OFFICE

1,966,288

SOUNDPROOF BOOTH

Walter R. Foltz, Indianapolis, Ind.

Application June 16, 1932, Serial No. 617,593

7 Claims. (Cl. 20—3.5)

This invention relates to the art of booths and particularly to a booth adapted for telephone use. A primary object of the invention is to provide a sound proof structure whereby the sound of the voices of the person talking over the telephone in the booth will not be audible from the outside. A primary object of the invention also is to achieve a sound proof construction by the use of a minimum amount of wood framing, and further to provide such a structure which may be preformed in wall units whereby the booth may be shipped in a knocked-down condition from a mill to some point of assembly.

A further important object of the invention is to employ superposed sheets of insulation wherein some of the sheets are less dense than the others, and to use the denser sheets for structural strength as well as for exterior wear.

An important object of the invention is to provide ventilating means whereby the air within the booth may be changed sufficiently rapid to prevent discomfort to the person therewithin.

A still further object of the invention is to provide means whereby the rate of change of the air within the booth may be varied as may be required by different locations of the booth.

These and other objects and advantages will become apparent to those versed in the art from the following description of the invention, with reference being made to the accompanying drawings, in which

Fig. 1 is a fragmentary front elevation of a booth embodying my invention;

Fig. 2, a fragmentary side elevation;

Fig. 3, a fragmentary top plan view;

Fig. 4, a horizontal transverse section on the line 4—4 in Fig. 1, and

Fig. 5, a detail in fragmentary side elevation of a modified form of the top construction.

Fig. 6 is a horizontal transverse section similar to Fig. 4 but taken through the lower portion of the booth at the level of the air space, and

Fig. 7 is a vertical section of the door through the middle of the door.

Like characters of reference indicate like parts throughout the several views in the drawings.

The invention is herein described in one of its simple embodiments. A rectangular floor generally indicated by the numeral 10 is built up to have an under sheet 11 of a dense and firmly compacted material having considerable structural strength. This material may be any one of the various forms of "wall board" now commercially produced, such as that made from shredded or ground wood fibers, cane residue, etc. This sheet 11 in one particular style of booth is one-eighth inch thick. On top of the sheet 11 is placed a pad 12 of a less dense material, preferably of the same nature as that of the under sheet 11 but considerably thicker, one particular thickness being seven-sixteenths of an inch. This pad 12 is rectangular in shape but has an area less than that of the sheet 11 so as to leave a margin of the sheet 11 extending from under the pad 12 entirely therearound. On this exposed margin of the sheet 11 is placed a plurality of strips 13 of the denser material, a sufficient number of these strips being employed, here shown as three in number, to fill in the marginal area to a height equal to the thickness of the pad 12. A top surface sheet 14 having the same area as that of the under sheet 11 is laid over the pad 12 and the marginal filler strips 13 and all of these various parts are glued one to the other so as to form a final integral floor with top and bottom dense surfaces and a marginal portion entirely therearound of a rigid and dense character. The floor thus built up has a central cushioning and insulating portion with considerable structural strength. The floor is rabbeted entirely around its upper outer edge through the top sheet 14 and the next adjacent strips 13 thereunder so as to receive the lower ends of the back and side walls within the rabbets.

The two side walls 15 and 16 are exactly alike in structural formation and each is built up to have an outer sheet 17 of the dense material, two sheets 18 and 19 of the thicker and less dense material serving as insulating pads, a wood strip 20 along the rear vertical edge and a bottom wood strip 21 along the under horizontal edge, and a plurality of strips 64 of the denser material along the front vertical edges. The less dense sheets 18 and 19 are cut off on their rear and under edges so as to have the wood strips 20 and 21 come back under the outer sheet 17 to have the outer edges of the strips flush with the corresponding edges of the sheet. The various parts composing each of the walls are glued one to the other so as to be united into an integral panel for each wall. These inner sheets 18 and 19 may be from seven-sixteenths to seven-eighths of an inch in thickness and the thickness of the wood strips 20 and 21 is made to equal the combined thicknesses of these two sheets so that the inside of each wall 15 and 16 presents a smooth plane surface without any off-set or

depression between the inner sheet 19 and the wood strips.

The back wall 22 is formed to have an outer sheet 23 of the dense material and a sheet 24 of single thickness of the less dense material glued to the sheet 23 with top and bottom wood strips 25 and 26 respectively across the corresponding ends of the sheet 24 with the sheet 23 overlapping these wood strips. The transverse width of the sheet 24 is less than that of the out side sheet 23 and a plurality of strips 27 of the denser material, here shown as three in number, is placed on the sheet 23 to abut the vertical edges of the thicker sheet 24 and fill in the marginal spaces to the thickness of that sheet. All of these parts are glued together to form an integral back wall.

The two side walls 15 and 16 are placed on the respective sides of the floor 10 and are secured thereto by such means as screws 28 being passed up through the marginal strips 13 of the floor and into the wood strips 21 along the lower ends of the walls. The back wall 22 is likewise rested by its lower end on the rabbeted portion of the floor 10 and secured to the floor by similar screws 28, Fig. 2. The lengths of the walls 15 and 16 are less than that of the floor 10 by the thickness of the back wall 22 so that the wall 22 may overlap the rear edges of the side walls and permit the back to be secured to these walls by screws 29 passed through the strips 27 into the vertical wood strips 20 carried by the side walls. The wood strips in the side and back walls are inserted along the edges as above described as means to receive the wood screws. These wood strips are not employed for structural strength but are substituted for the less dense sheet edges 18 and 19 and also 24 since the material of these sheets is not sufficiently dense or of a character which will permit the threads of the screws to engage therewith without being easily pulled out. These sheets 18, 19 and 24 being of a less dense character than that of the out side sheets are somewhat fibrous in nature and are used primarily to secure sound insulation. The outer sheets 17 and 23 while possessing some sound insulating properties are of a sufficiently dense character to provide structural strength, resist buckling and take a pleasing finish as well. A wood veneer may be glued to the outer sides of these walls to give different finishes as desired, the veneer being employed for a finish rather than for any structural or insulating purposes.

The two side walls 15 and 16 are tied together across their upper forward ends by a vertically disposed header 30 which is built up to have an out side sheet 31 of the dense material, two thicknesses of the less dense material, three sheets of the denser material on the inside and a vertically disposed wood strip 32 at the ends of the central less dense material. Screws 33 are passed through the side walls into the vertical end wood strips 32 to hold the header in place and tie the two side walls together. The header 30 is preformed to have the various sheets of material glued one to the other as well as to the end wood strips so that the header is in reality a one piece unit for the purpose of final assembly.

A top generally designated by the numeral 34 is formed to have a U-shaped wood frame comprising the forwardly extending side rails 35 and 36 and the rear cross rail 37, the outer dimensions of this frame being such that it will snugly fit down within and between the upper ends of the side walls 15 and 16, the header 30 and the back wall 22. No strip is placed between the forward ends of the side rails. The top inner corners of these members of the frame are rabbeted and a piece 38 of the less dense material is cut and fitted between the side rails 35 and 36 to rest in the rabbeted portions thereof. The piece 38 has its forward edge aligned with the ends of the side rails while its rear edge is spaced forwardly from the front edge of the cross rail 37 so as to leave an opening therebetween and entirely across between the two side rails. A piece 39 of the denser material is glued to the piece 38 to have its rear edge coincide with that of the piece 38 and to have its sides extend over the strips 35 and 36 to a distance therebeyond on each side at least greater than the thickness of one of the sheets 18 or 19 as employed in the side walls. The piece 39 also extends forwardly from the front edge of the piece 38 at least a like distance. The piece 38 is preferably made out of the seven-eighth inch material. To the under sides of the rails 35 and 36 and the cross piece 37 is secured a piece 40 of the thicker less dense material, this piece 40 having its rear and side edges terminating with the respective outer edges of the side rails and back piece but has its forward transverse edge terminating at a distance back of the front ends of the rails 35 and 36 so as to leave an opening entirely thereacross between the two side rails to within the space between the under piece 40 and the top piece 38. The top 34 thus built up is placed between the side walls 15 and 16 and the header 30 and back wall 22 to have the top piece 38 rest on the top ends of the side walls and of the header and thus support the top. The top is secured in place by screws 41 passed through the side walls and back, into the side rails 35, 36 and the cross piece 37. The top thus positioned and secured presents a double wall member having an air space defined therewithin with an opening 42 into this space from the under side and an outlet opening 43 from the top side. The area of the top opening 43 may be changed to meet conditions by a strip 44 of the denser material being placed across the back strip 37 to overhang the opening 43 by its forward edge as desired. This strip 44 may be secured in the desired position by screws 45' passed therethrough and engaged within the wood thereunder. As above described the booth is now formed with an opening left between the two side walls and under the header from the front side. As a means of protecting the softer, less dense exposed sheets 19 and 24 within the booth, I cover over the lower portions of these sheets by lengths 45 of the denser material, Figs. 2 and 4, the upper ends of these lengths terminating at a height to protect the lower parts of the sheets but to leave the upper parts exposed with their natural somewhat roughened surfaces.

A door generally designated by the numeral 46 is built up by employing sheets of the dense and less dense materials. A sheet 47 of the denser material forms the outside surface of the door while a similar sheet 48 forms the inside surface. Between these two sheets 47 and 48 are two sheets 49 and 50 of the thicker, less dense material. A wood strip 51 is inserted between the sheets 47 and 48 along the right hand vertical edge to abut the vertical edges of the inner sheets 49 and 50 while a plurality of strips 52 of the dense material having a combined thickness equal to that of the two thicknesses of the sheets 49 and 50 is inserted between the sheets 47 and 48 along the left hand

side to abut the two inner sheets. These superposed strips 52 when glued one to the other and other various contacting sheets form a very rigid, solid and compact edge exceeding the structural strength as well as density of the wood strip 51 on the other side of the door. An opening is cut through all of the sheets to receive a glass 53 therein from the inner side, the outer sheet 47 being cut to leave a projecting flange around the margin of the opening against which the glass may rest to have corner strips 54 brought against the glass from the inside to retain it in place.

Both of the inner sheets 49 and 50 are cut off to have their lower edges terminate in a common horizontal plane at a distance above the lower ends of the wood strip 51 and the strips 52. The inner surface sheet 48 likewise terminates in this plane. The outer sheet 47 however is carried on down below this plane well toward the bottom of the strips 51 and 52 but terminating a slight distance thereabove so as to leave an opening 55 thereacross. For the sake of appearance, the lower ends of the strips 51 and 52 are here shown as being notched to have the forward portions of these strips removed below the under edge of the sheet 47. On the inside of the door, a strip 56 of the dense material is secured across on the back sides of the strips 51 and 52, and this strip 56, while having its lower edge even across the lower ends of the strips 51 and 52 has its top edge spaced downwardly somewhat below the under edge of the sheet 48 whereby a transverse opening is left therebetween to within the space defined between the strips 51 and 52 and the front sheet 47 and the inner strip 56. By varying the height of this strip 56, the amount of opening between it and the sheet 47 may be varied accordingly. This strip 56 is detachably secured in position and not only serves as the inner wall for the air space within the door and as a means for varying the size of the inner opening of the space, but also serves as a replaceable kick board. In opening the door, one's foot will ordinarily be used to push the door so that some wear is occasioned and this wear comes on this particular strip 56.

The door 46 thus built up, the various parts above mentioned with the exception of the glass 53 and the strip 56 being glued one to the other, is hung by its right vertical edge to the wall 15 by means of hinges 57, here shown as three in number which have their leaves respectively secured by screws to the wood strip 51 in the door and to the strips of the dense material along the forward edge of the wall 15. The leaves in each hinge are folded one against the other when the door is in the closed position so that they are entirely concealed from view.

In the form of the invention as above described, when the door 46 is closed a circulation of air through the booth may be had by air entering through the opening 55 at the bottom of the door, passing upwardly within the door and discharging to within the booth between the strip 56 and the sheet 47, and discharging from the booth through the opening 42 to pass horizontally through the double walled top and escapes through the opening 43. Where the booth is placed in a room having an appreciable circulation of air, the openings 43 and the one in the door may be less than where the booth is placed back in a corner or in some poorly ventilated room. The back wall 22 is here shown as having but a single thickness of the less dense material 24 since the booth is usually placed with its back against a building wall so that sound will be further intercepted by that building wall and advantage is taken of this fact in order to save material as well as weight. Likewise the floor 10 is provided with but a single thickness of the less dense material since the floor itself is taken advantage of as a further sound insulating medium. The top floor sheet 14 is provided to take the wear as well as to stiffen the floor. The front vertical edge of the wall 16 is rabbeted to provide a stop for the door 46 and the interior strip of dense material on the back side of the header 30 is allowed to extend downwardly to serve as a stop or closure across the top side of the door.

Referring to Fig. 5, the structure of the booth with the exception of the top is identically the same as above described. In the form shown in Fig. 5, the top is provided with a hollow air space as above indicated and shown in Fig. 2 but the openings into this space are reversed in position. In this modified form I employ the wood side rails and back cross piece as before but preferably add a front wood cross piece 60. A piece 61 of the less dense material is secured to the under sides of this wood frame to have its front transverse edge abut the inside of the header 30 and the rear transverse edge to be spaced forwardly of the edge of the cross piece 37. A piece 62 of the less dense material is placed across the frame to rest within the rabbeted portion therearound and to be carried backwardly to abut the piece 37 so as to leave an opening between its forward edge and the cross piece 60. Thus in this form, air may pass out of the booth around the back edge of the piece 61, forwardly between the pieces 61 and 62 and thence outwardly around the forward edge of the piece 62. This form may be employed in place of that shown in Fig. 2, to increase the circulation of air where it is found that there is a tendency of the air to travel up along the inside of the door and out the opening 42 rather than to move back into the booth. As a further aid to the circulation of air, an electrically driven fan 63 may be placed over the outlet opening to exhaust the air from within the booth. This fan may be of any suitable form and may be mounted on the cross piece 60. The various insulating members connecting therewith serve to prevent noise of the fan and its driving motor from being communicated to within the booth.

By employing the above structure as described in minute detail, I am able to secure a serviceable and very satisfactory telephone booth that is not only well ventilated but that is structurally strong and made from sheets of fabricated or processed waste materials. As above indicated, the denser sheets of these materials serve to carry the structure loads while the less dense sheets thereof aiding somewhat in this capacity are employed for sound insulating purposes as well as to give thickness and to prevent buckling or warping of the less dense material. The outer surfacing by the dense materials is employed not in the sense of the ordinary wood veneering although such materials may be selected to take excellent finishes.

While I have herein described my invention in its simplest form, it is obvious that structural changes may be made therefrom, such as the addition of sheets of material to provide thicker walls, without departing from the spirit of the invention and I, therefore, do not desire to be limited to that precise form beyond the limita-

tions as may be imposed by the following claims.

I claim:

1. In a sound proof booth, side and back walls and a floor formed of superposed layers of sheets of processed material adhesively united one to the other, inner layers of said sheets being of a looser and less dense character than outer layers for sound proofing, said outer layers being of a compacted character and thickness for structural strength, said less dense layers having cut back edges to receive inserted wood strips under said outer layers, and other of said edges being cut back to receive a plurality of strips of the compacted material, whereby said edges terminating with the plurality of strips may overlap said edges terminating with the wood strips, and screw means passing through the strip edges and engaging said wood strips.

2. In a sound proof booth, a wall comprising an outer sheet of processed material having a density exceeding that of soft woods, at least one sheet of less dense processed material adhesively united to the outer sheet, said less dense sheet having sound deadening properties and being of less area than that of the outer sheet, and a plurality of superposed relatively narrow strips of the denser material adhesively united one to the other filling in the marginal space between an edge of the united sheet and a corresponding edge of the outer sheet.

3. In a sound proof booth, a wall comprising an outer sheet of processed material having a density exceeding that of soft woods, at least one sheet of less dense processed material adhesively united to the outer sheet, said less dense sheet having sound deadening properties and being of less area than that of the outer sheet, and a plurality of superposed relatively narrow strips of the denser material adhesively united one to the other filling in the marginal space between an edge of the united sheet and a corresponding edge of the outer sheet, and a wood strip filling in the marginal space between another edge of the united sheet and the corresponding edge of the outer edge, whereby, in forming a corner between two of said walls, one of the strip formed ends may be lapped over a wood strip end to have screws passed through the harder strip end and screw-threadedly engaged in said wood strip.

4. A sound proof booth having a plurality of walls, each individually formed to comprise an outer relative hard and dense load carrying sheet of processed material, an inner thicker sheet of less dense material adhesively united to the outer sheet and having sound deadening properties, a wood strip inserted in an edge to replace a like amount of the less dense material, and an insertion in another edge of a harder material to overlap a wood strip in an adjacent wall.

5. A sound proof booth having a plurality of walls, each individually formed to comprise an outer relative hard and dense load carrying sheet of processed material, an inner thicker sheet of less dense material adhesively united to the outer sheet and having sound deadening properties, a wood strip inserted in an edge to replace a like amount of the less dense material, and an insertion in another edge of a harder material to overlap a wood strip in an adjacent wall, a door having inner and outer sheets of said dense material, a wooden strip separating said inner and outer door sheets along the hinge side, a plurality of strips of the dense material separating said strips on the other side, at least one sheet of said less dense material between said inner and outer sheets, said door having a hollow air chamber in its lower part, said chamber having an outside opening at its lower end and an inside opening near its top end.

6. A sound proof booth having a plurality of walls, each individually formed to comprise an outer relative hard and dense load carrying sheet of processed material, an inner thicker sheet of less dense material adhesively united to the outer sheet and having sound deadening properties, a wood strip inserted in an edge to replace a like amount of the less dense material, and an insertion in another edge of a harder material to overlap a wood strip in an adjacent wall, a door having inner and outer sheets of said dense material, a wooden strip separating said inner and outer door sheets along the hinge side, a plurality of strips of the dense material separating said strips on the other side, at least one sheet of said less dense material between said inner and outer sheets, said door having a hollow air chamber in its lower part, said chamber having an outside opening at its lower end and an inside opening near its top end, said door inner sheet terminating at the top of said chamber, and a separate replaceable strip below said inner sheet forming the inner wall of the chamber.

7. A sound proof booth having tight side walls and a top formed by spaced apart walls with staggered openings therein, one of said side walls having an upper portion built up from at least two layers of material, the outer layer of which terminates at a slight distance above the floor line of the booth to provide an air intake opening, and the inner layer of which material is spaced inwardly from the outer layer and terminates at a distance above the lower edge thereof, and a kick-board on the inner side of said side-wall spaced inwardly from said outer layer opposite said intake opening and extending upwardly in spaced relation from the outer layer to terminate below the lower edge of said inner layer to leave an opening therebetween into the booth, whereby a ventilating current of air may pass through the booth by entering the opening in the side wall under said outer layer, travelling upwardly within the side wall back of the kick-board and out into the booth over the top edge of the kick-board, and thence upwardly within the booth to escape through the opening in the lower top wall, pass between the two top walls, and then out the opening in the upper top wall.

WALTER R. FOLTZ.