Jan. 12, 1965 D. CHAPMAN 3,165,165

SOUND INSULATING BUILDING STRUCTURE WITH MOVABLE PARTITION

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FIG. 1

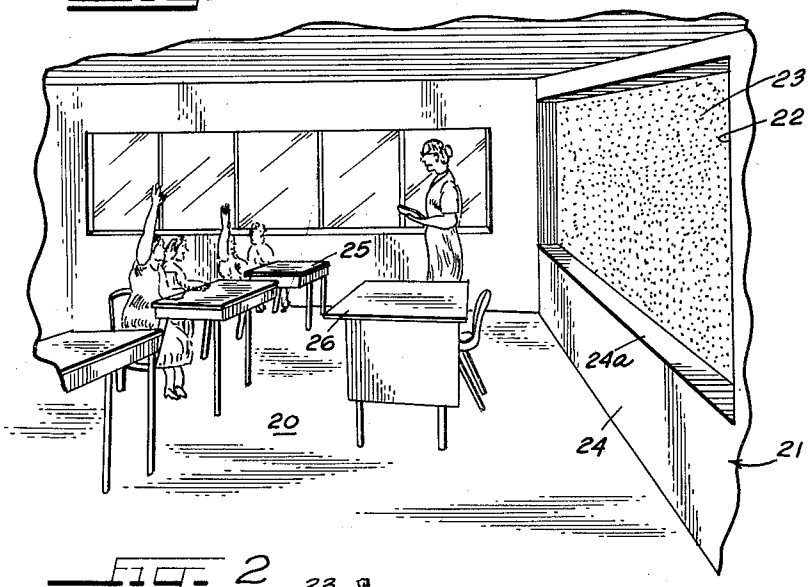


FIG. 2

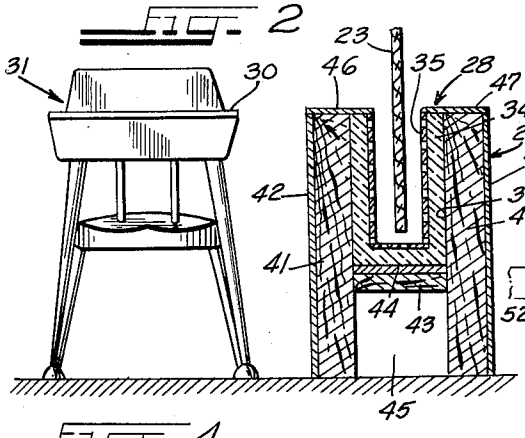


FIG. 3

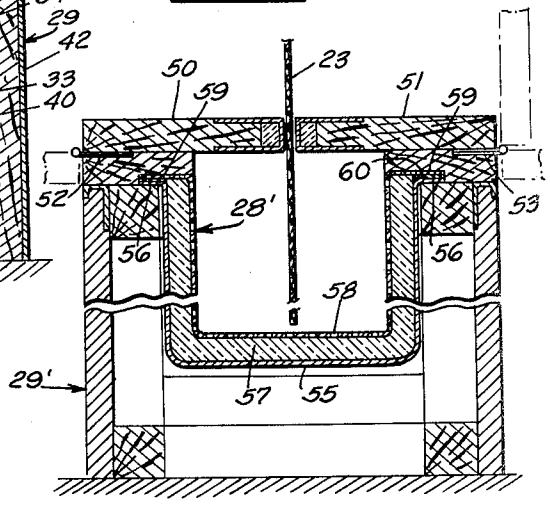
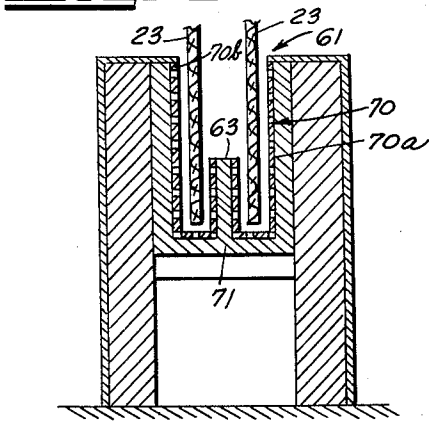


FIG. 4



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FIG. 7

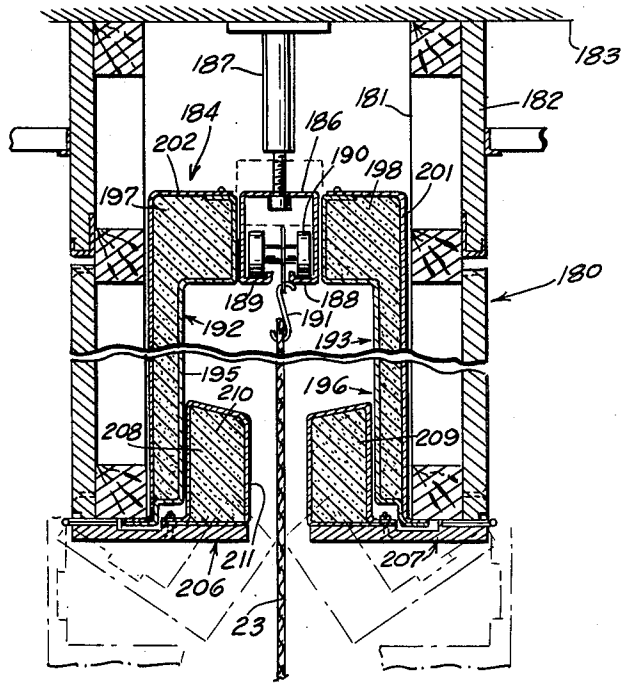


FIG. 5

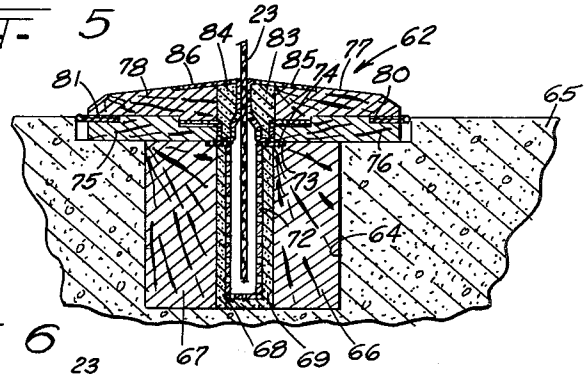
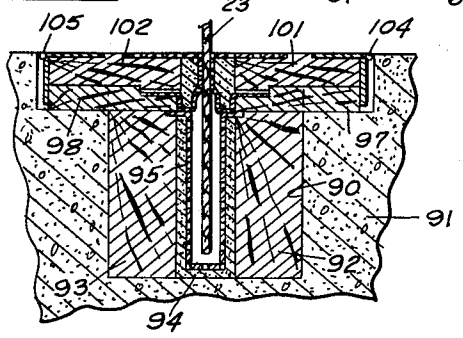


FIG. 6



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Fig. 8

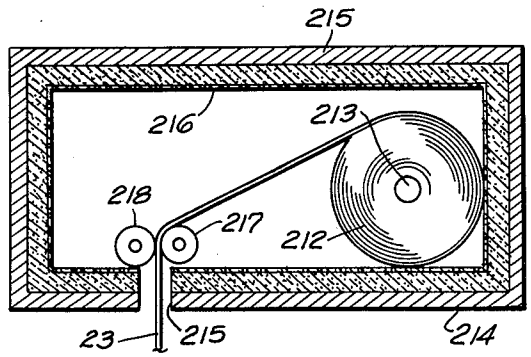


Fig. 18

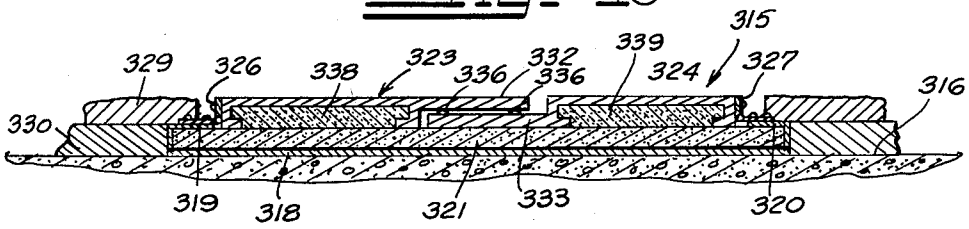
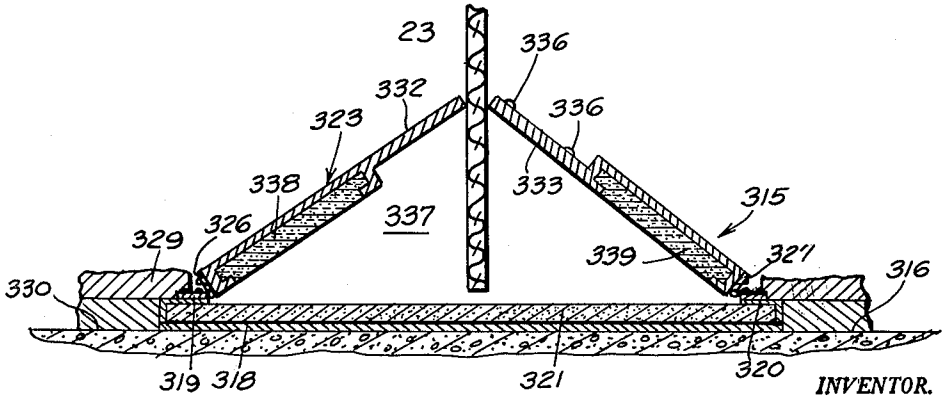


Fig. 19



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FIG. 9

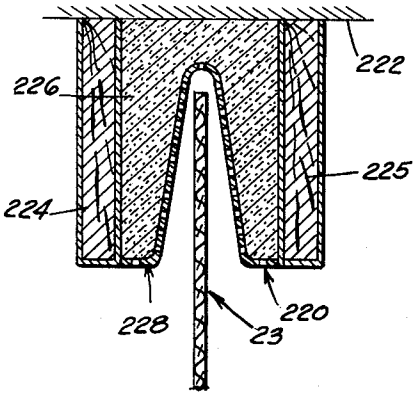


FIG. 10A

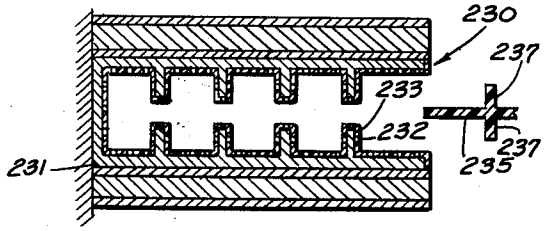


FIG. 10B

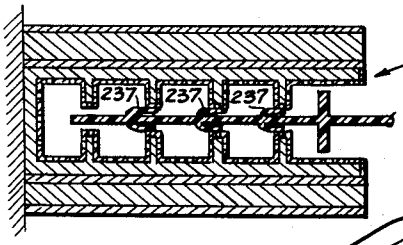


FIG. 10C

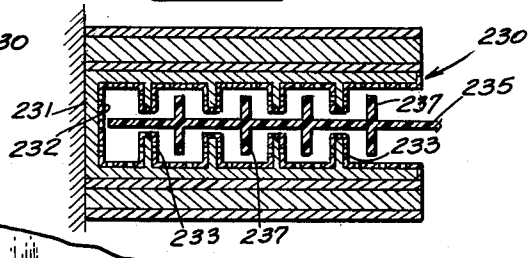
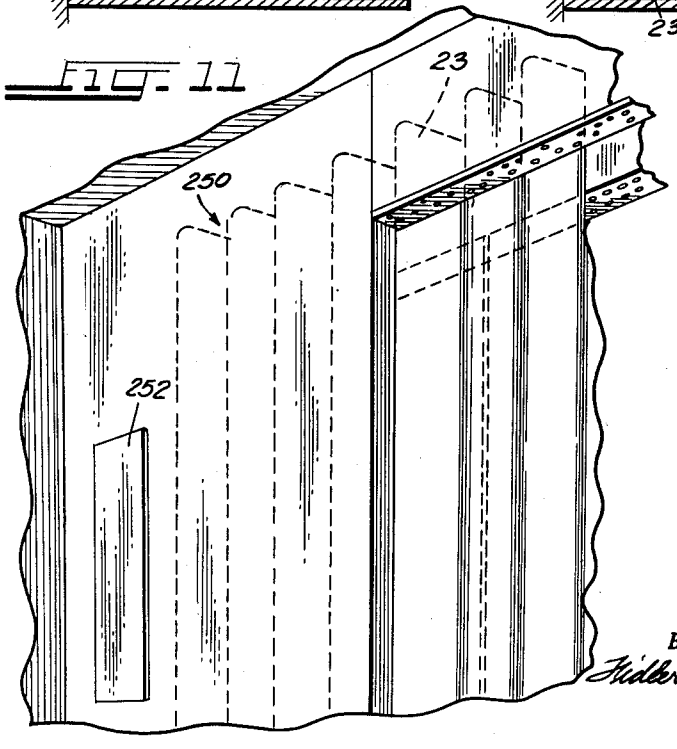


FIG. 11



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FIG. 12

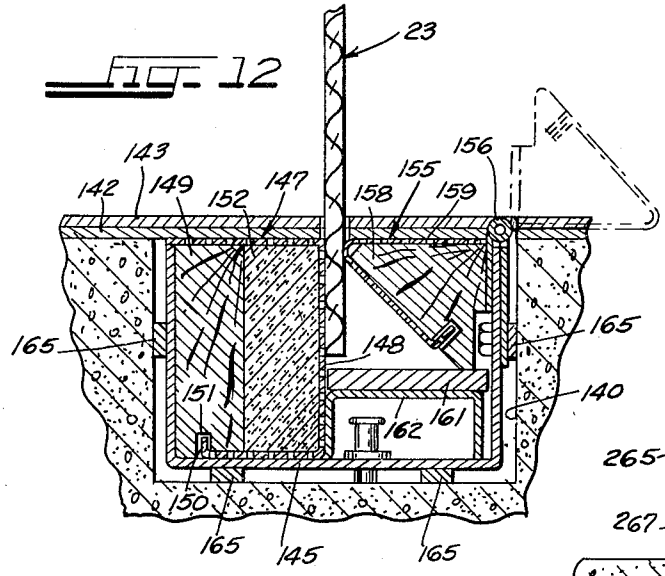


FIG. 14

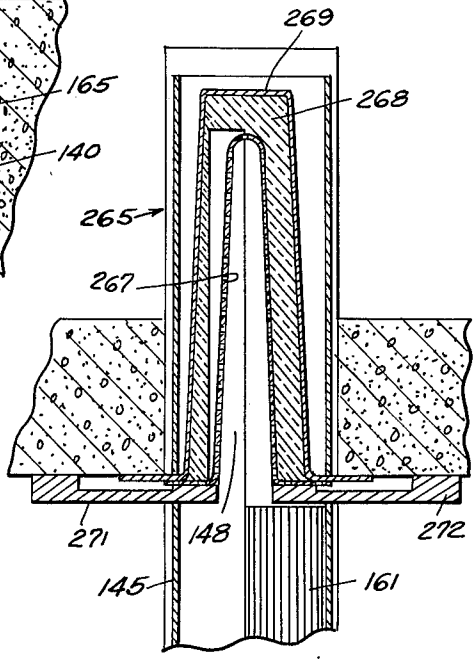
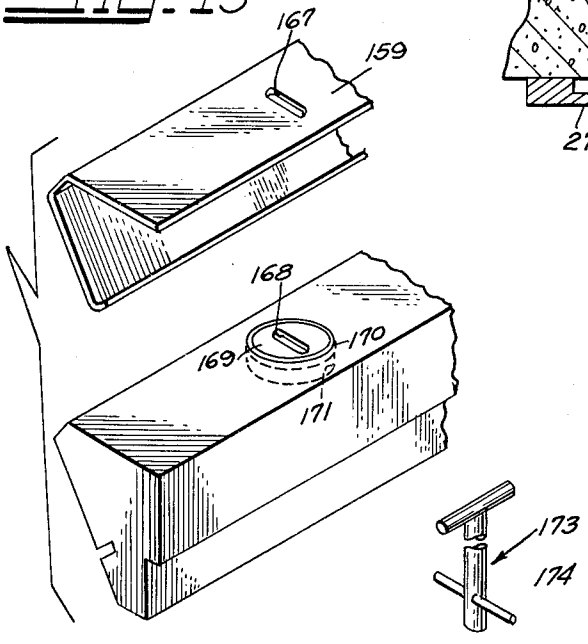


FIG. 13



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FIG. 15

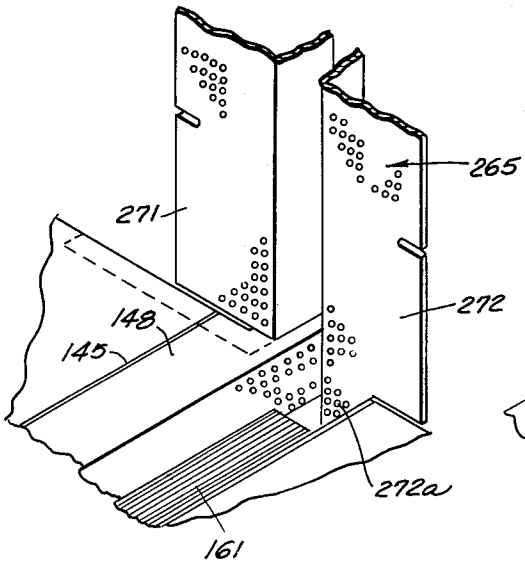


FIG. 17

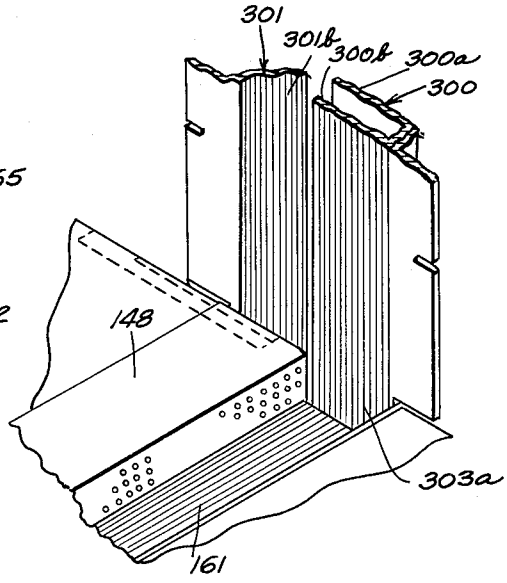
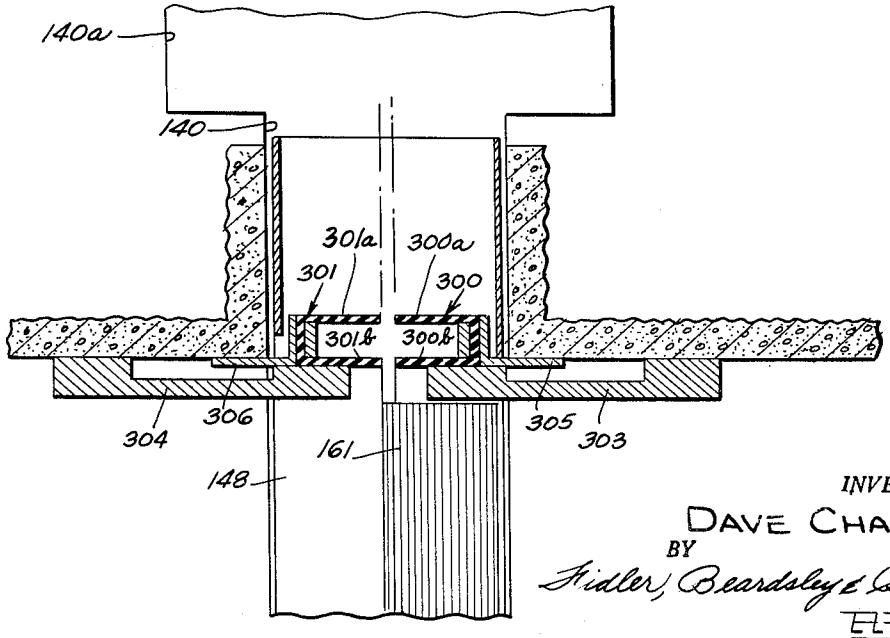


FIG. 16



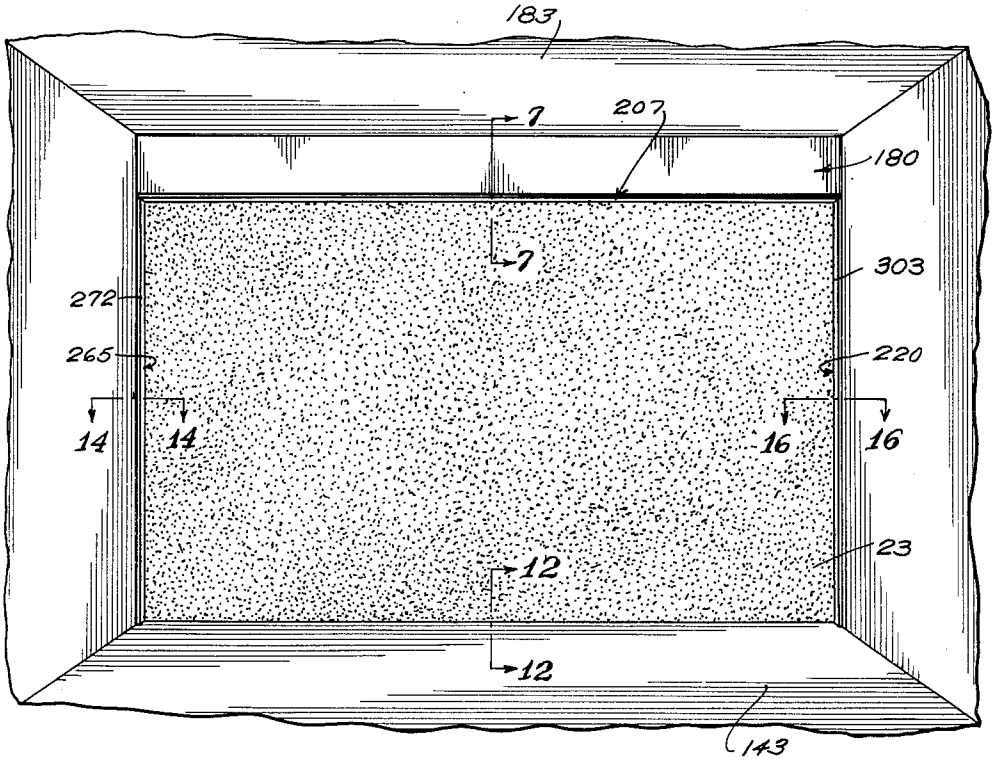
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Fig. 20



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United States Patent Office 3,165,165 Patented Jan. 12, 1965

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SOUND INSULATING BUILDING STRUCTURE WITH MOVABLE PARTITION

Dave Chapman, Chicago, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y., a corporation of New York

Filed Jan. 23, 1961, Ser. No. 84,045
21 Claims. (Cl. 181—33)

The present invention generally relates to apparatus for preventing sound waves in one area or enclosure from passing into an adjacent area or enclosure, and it more particularly relates to such apparatus as is suited for substantially attenuating sound waves passing around a relatively free edge of a sound insulating curtain, panel, or similar partition.

In order efficiently to use the available space in various types of building structures, including public buildings, such, for example, as schools, churches, and other institutions, it would be desirable to provide movable partitions which are opaque to both sound and light for temporarily dividing large areas or rooms into a number of smaller areas or rooms. For example, movable sound and light insulating partitions may be used in schools for the purpose of temporarily dividing one large lecture room, study hall or cafeteria into a number of smaller rooms suitable for use as classrooms or as individual discussion rooms. In this way, large portions of the building need not stand idle for much of the time merely to be available when infrequently required. In a similar manner, large dining rooms in restaurants and hotels can be temporarily separated into smaller private dining rooms by the use of movable partitions. Of course, the physical characteristics of such partitions should be such that the activities in one room do not interfere with the use of the adjoining rooms, and therefore, the partitions should be substantially opaque to both sound and light. Also, in order to facilitate the use of such partitions, it is preferable that they be readily movable between closed and open positions with a minimum of effort and as rapidly as possible.

In a copending application of Dave Chapman, Serial No. 124,275 filed June 28, 1961, there is described a movable sound and light insulating partition having the general nature and appearance of a curtain, but which, unlike the ordinary curtain, is sufficiently opaque to sound waves, i.e., it has a sufficiently high sound transmission loss to prevent sound waves having amplitudes normally encountered in present-day living from passing from one area into an adjacent area on the other side of the curtain at a sufficiently high amplitude to be bothersome. An average transmission loss of thirty-five (35) db between one hundred twenty-five (125) cycles per second and five thousand (5,000) cycles per second has been found to be sufficient for separating classrooms in a school. A somewhat higher transmission loss is desirable for separating dining rooms, where, for example, loud muic and the like is encountered. Accordingly, the sound insulating curtain or partition should be selected to have the desired transmission loss, but having thus selected the partition, an important factor to be considered is the transmission loss of the adjoining architecture since the over-all effective transmission loss of the system will be no better than its weakest link, and even though the curtain or partition may have a satisfactorily high transmission loss, if the adjoining walls, floors and ceilings of the building have a substantially lower transmission loss, then sound waves will pass around the curtain through these structures to greatly diminish, if not altogether nullify, the effect of the curtain. Therefore, there is little to be gained by selecting a curtain material which has a transmission loss in excess of the inherent transmission loss of the architecture.

Assuming that the curtain, panel or other movable partition which is selected has the desired transmission loss, and that the adjoining architecture also has the desired transmission loss, means must be provided for preventing sound waves from passing between the sound insulating partition and the adjoining architecture. Since sound is a physical disturbance which is transmitted by any gas, such, for example, as the atmosphere, by means of alterations or pulsations of pressure, sound can and will travel around corners and the like. Moreover, even minute passageways will enable surprisingly large amplitudes of sound waves to pass therethrough because of the nature of sound waves to focus themselves into areas of least resistance, and therefore, rather than moving uniformly against the partition or against the adjoining architecture sound waves converge into any open spaces, small or large, between the two members. Inasmuch as an important characteristic of the sound insulating installation with which the present invention is associated is that the partition be readily and easily movable, it becomes desirable to prevent sound waves from passing between the edges of the partitions and the associated structure with respect to which it must be easily moved.

In the past, movable sound insulating partitions have employed heavy panels mounted on tracks and the like, and rather elaborate sealing gaskets, both inflatable and otherwise, have been employed to provide physical barriers in the form of air tight seals along the junctures between the panels and the adjoining structures. Such sealing arrangements are in many cases effective sound barriers but they are relatively expensive and appreciably increase the time and effort required to move the panels into closing and non-closing positions.

Therefore, a principal object of the present invention is to provide new and improved means for preventing sound waves from passing between a movable sound insulating partition member and the adjoining structure with respect to which it is movable or at least to substantially attenuate any sound waves passing between such members.

Another object of the present invention is to provide new and improved means for mounting a sound insulating curtain or partition within an associated structure.

A further object of the present invention is to provide a new and improved sound trap for substantially attenuating sound waves passing around a sound insulating member extending into said trap.

A still further object of the present invention is to provide new and improved means for mounting one or more sound insulating curtains or partitions in an attractive manner.

Briefly, the above and further objects are realized in accordance with the present invention by providing a sound absorbing pocket having a narrow passageway therein which permits free movement of a curtain, panel or other partition both into and along the pocket. The curtain, panel or other partition loosely extends a substantial distance into the pocket whereby sound waves, in order to pass around the free edge of the curtain, panel or other partition, must travel along an extended path through the pocket. The pocket is lined with a sound absorbing material which substantially attenuates the sound waves passing through the pocket by extracting kinetic energy therefrom. In accordance with one particular aspect of the present invention the sound insulating partition is selected to have sound absorbing characteristics as well as sound insulating characteristics, so as to aid in the absorbing of kinetic energy from the sound waves traveling through the pocket. In accordance with another aspect of the present invention, the sound insulating curtain, panel or other partition is so mounted with respect to sound attenuating pockets at the edges thereof that each sound attenuating pocket is at-

tractive in appearance or at least inconspicuous and moreover, does not in any way interfere with the use of the two adjoining rooms either as separate rooms when the partition is in place or as a single room when the curtain, panel or other partition is withdrawn.

Further objects and advantages of the present invention will become apparent by reference to the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a fragmentary, perspective view of a school room in which a sound insulating partition of the present invention is employed;

FIG. 2 is an elevational view, partly in section, illustrating a sound trap constructed in accordance with the present invention, and a plan view of a combination seat and desk;

FIG. 3 illustrates another embodiment of the invention and is a fragmentary cross-sectional view of a sound trap embodying the present invention;

FIG. 4 illustrates another embodiment of the present invention and is a vertical, sectional view of a wainscot type of sound trap for use in connection with a pair of curtains, panels or partitions;

FIG. 5 illustrates another embodiment of the present invention and is a vertical sectional view of a sound trap constructed in accordance with the present invention for preventing sound from passing around the bottom edge of a sound insulating curtain which depends into a channel in the floor;

FIG. 6 is a vertical, sectional view of another sound trap embodying the present invention for preventing sound from passing around the bottom edge of a sound insulating curtain;

FIG. 7 is a vertical, sectional view taken along the line 7—7 in FIG. 20, and illustrating the manner in which a sound insulating curtain is supported for movement relative to the surrounding portions of the building and which incorporates a sound trap embodying the present invention;

FIG. 8 is a vertical, sectional view illustrating another manner in which a sound insulating curtain is supported for movement relative to the surrounding portions of the building and which incorporates a sound trap embodying the present invention;

FIG. 9 is a horizontal, sectional view of a jamb seal type of sound trap embodying the present invention;

FIGS. 10A, 10B and 10C are horizontal, sectional views illustrating the operation of another jamb seal sound trap embodying the present invention;

FIG. 11 is a fragmentary, perspective view illustrating the manner in which the sound insulating curtain is mounted in accordance with the present invention;

FIG. 12 is a vertical section taken along the line 12—12 in FIG. 20 and illustrating a sound attenuating pocket mounted in the floor in accordance with the present invention;

FIG. 13 is a fragmentary, perspective view of a portion of the device of FIG. 12, useful in understanding the operation thereof;

FIG. 14 is a horizontal section taken along the line 14—14 in FIG. 20 and illustrating a sound attenuating pocket embodying the present invention and used for substantially preventing sound waves from passing around the floor corner at the jamb edge of a sound insulating partition;

FIG. 15 is a fragmentary, perspective view of the device of FIG. 14 and is useful in the understanding of the operation thereof;

FIG. 16 is a horizontal, sectional view taken along the line 16—16 in FIG. 20 and illustrating a sound attenuating device embodying the present invention and used in connection with a magazine in which a sound insulating curtain or other partition is adapted to be stored;

FIG. 17 is a fragmentary, perspective view of the device of FIG. 16, useful in understanding the operation thereof;

FIGS. 18 and 19 are vertical, sectional views of a sound attenuating pocket for use along the floor edge of a curtain in an installation where the floor cannot be channelled out for reception of the pocket, FIG. 18 showing the device in a non-operative position and FIG. 19 showing the same device in an operative position; and

FIG. 20 is a front, perspective view of a sound insulating partition installation in which the partition extends from a soffit to the floor.

Referring now to the drawings and particularly to FIG. 1 thereof, there is shown a school classroom 20, the right-hand wall 21 of which includes a frame 22 in which a movable curtain or other partition 23 is movably mounted. The partition 23 is illustrated in FIG. 1 as being in a closed position thereby separating the room 20 from the adjoining room on the right (not visible in the drawing). However, it will be understood that when the partition 23 is withdrawn from the frame 22, by moving it either horizontally or vertically, depending upon the manner in which it is mounted, the frame 22 effectively provides an opening which visually and acoustically joins the two adjacent rooms. For some purposes it is preferable that the movable curtain or partition 23 extend from a location in proximity to the ceiling all the way to the floor and where such is desired, an installation of that type can be provided. However, under other conditions it is desirable to provide a wainscot 24 which extends a substantial distance up from the floor. As is described in greater detail hereinafter in connection with FIGS. 2 and 3, the wainscot 24 houses a sound trap which substantially attenuates any sound waves passing around the bottom edge of the curtain of other partition 23. The wainscot 24 is an important and desirable part of the wall 21 when the curtain 23 is in the closed position as shown. However, when the curtain 23 is withdrawn from the frame 22 for the purpose of using the two adjacent rooms as a single large room, then the wainscot should not give the impression to persons in the two rooms that the frame 22 is merely a window. Rather, it is preferable that the persons in the adjoining rooms have the general feeling that in essence the two rooms are one. Accordingly, in accordance with an important feature of the present invention, the top 24*a* of the wainscot 24 is located well below the eye level of persons sitting in the room. Moreover, when there are objects in the room of more or less uniform height, such, for example, as desks 25 and 26, it has been found that persons sitting at the desks in the two rooms are not at all distracted by the wainscot 24 if the height of the wainscot 24 is substantially equal to the height of these objects, such as the desks 25 and 26. Moreover, persons in the two rooms do not have the feeling that they are merely watching and listening to what is going on in the adjacent area but, in contradistinction to such a feeling, the people using the two rooms have the impression of being, as in reality they are located in one and the same room. Of course, access between the two rooms by the persons using the rooms is desirable and, therefore, as is described in the above identified copending application, a doorway and an associated door is preferably provided in the wall 21 adjacent to the frame 22. It is necessary that the door and its associated frame be a sufficiently good sound insulator to prevent sound waves from one area from interfering with the use of the adjoining area. Accordingly, as discussed hereinbefore, any such door should have as good a transmission loss characteristic as does the curtain or partition 23 and the associated sound seals.

Referring now to FIG. 2, there is shown a sound attenuating pocket 28 located in a wainscot 29 having the height of the desk portion 30 of a combination student seat and desk 31. The sound trap or attenuating pocket 28 is mounted in a horizontally disposed, generally rec-

tangular channel 33, provided in the upper portion of the wainscot 29 and the trap 28 includes a layer 34 of a suitable sound absorbing material, such, for example, as mineral wool or glass fibre blanket which is generally U-shaped in cross-section and which is held in place by means of a perforated metal plate 35. The sound attenuating pocket 28 including the sound insulating liner 34 and the plate 35 is supported at an elevated position off the floor in the wainscot. As shown, the wainscot 29 includes a supporting frame comprising a plurality of vertical studs 40 and 41 which are suitably fastened together and to the floor. A suitable wall covering such as lathe and plaster or plasterboard 42 is mounted over the outer surfaces of the studs 40 and 41 to provide a satisfactory sound insulator having a transmission loss at least equal to that of the movable partition 23. A plurality of cross-braces 43 which inter-connect the studs 40 and 41 provide a support for a flat board or other suitable strip 44 on which the insulating material 34 rests. A hollow space 45 is thus provided beneath the cross-braces 43, and it serves to minimize the direct sound wave conductive paths connected between the two sides of the wainscot 29. Suitable cover members 46 and 47 are provided at the tops of the wainscot on opposite sides of the curtain 23 to improve the appearance of the over-all structure and, in some cases, to provide shelves on which material may be placed.

In order for sound waves to travel around the bottom edge of the curtain 23, they must necessarily pass through the sound pocket for an extended distance where, as a result of multiple reverberations, they pass into the sound absorbing material 34 wherein they are attenuated. Of course, where the curtain 23 is of the type disclosed in the above identified copending application, the curtain 23 has one or more sound absorbing surfaces which function to attenuate the sound waves passing through the pocket. Preferably, the bottom of the curtain 23 is disposed in close proximity to the bottom of the sound pocket for two principal reasons, one, to minimize the free space through which the sound waves may pass, and two, to increase the length of the path through the pocket which the sound waves must traverse in passing around the bottom edge of the curtain 23.

It has been found that improved transmission loss characteristics may be obtained with the sound attenuating pockets of the present invention if the space between the open end of the pocket and the associated curtain is minimized thereby minimizing the amount of energy which can be transferred via sound waves into the sound pocket. However, an important advantage of the partitions of the present invention is that they may be quickly and easily moved from a closed to an open position which fact militates against prior art types of hermetic seals since it presupposes freedom of movement between the curtain and the associated sound attenuating pockets.

Therefore, in accordance with another feature of the present invention as shown, for example, in FIG. 3, a wainscot 29′ which is similar in basic construction to the wainscot 29 of FIG. 2, includes a sound trapping pocket 28′ which, unlike the wainscot 29 of FIG. 2, is provided with a pair of sound barrier members 50 and 51 disposed on opposite sides of the curtain 23 and respectively attached to the upper portion of the wainscot 29′ by a pair of hinges 52 and 53. The barrier members 50 and 51 are thus pivotable from an operative position as shown in solid lines in FIG. 3 wherein the ends thereof are touching or in close proximity to the curtain 23 to an inoperative position as shown in phantom in FIG. 3 wherein the curtain 23 is completely free to move with respect to the sound pocket 28′. In operation, when the curtain 23 is to be moved into or out of the associated frame, the barrier members 50 and 51 are pivoted out of the illustrated position to provide an open channel which provides no frictional drag on the curtain. The curtain 23 is then moved into or out of position as the case may be. Thereafter the sound barrier members 50 and 51 are pivotally returned to the closed, curtain contacting position, thereby to provide an extremely effective sound attenuating pocket. Although the members 50 and 51 do not provide a hermetic seal with the curtain, they do greatly reduce the free space through which sound waves may travel and those waves which do penetrate these spaces are attenuated while passing through the pocket. The pocket 28′ includes a channel member 55 having outwardly extending longitudinal flanges 56 at the upper side edges thereof which support the channel 55 in place in the wainscot 29′. The channel 55 in turn supports a layer of sound absorbing material 57 which is held in place by a perforated metal channel 58. The channel 58 has a sufficiently large perforated area that it does not appreciably alter the sound absorbing characteristic of the layer 57. The channel 58 has a pair of outwardly directed longitudinal flanges 59 which secure it is place in the wainscot 29′. A sound absorbing strip 60 may be sandwiched between the flanges 56 and 59 in order to minimize the direct transfer of sound from the perforated metal channel 58 to the supporting channel 55.

Refrerring to FIG. 4 there is shown a sound insulating partition using a pair of curtains 23 which are mounted face to face a few inches apart and which depend a substantial distance into a sound attenuating pocket 61 provided in the top of a wainscot. The pocket 61 is similar to the pocket 28 illustrated in FIG. 2 but is somewhat wider to accommodate the two curtains 23 and includes a longitudinally extending sound absorbing partition 63 which extends upwardly from the bottom of the pocket into the space between the two curtains 23. A pair of spaced apart sound insulating curtains has a much greater average transmission loss than that which is provided by a single curtain. Consequently, the transmission loss of the attenuating pocket 61 should be proportionately higher to take full advantage of the improved quality of the curtain portion of the installation. The additional sound absorbing member 63 provided in the pocket serves to increase the over-all attenuating characteristics of the pocket 61 to cause it to compare favorably with the sound insulating characteristics of the two curtains 23. As shown, the partition 63 is formed by continuations of the perforated metal plates 70 which together form the channel for holding a layer of sound absorbing material 71 in place. The sound absorbing material 71 extends up into the partition 63 and separates the two portions 70*a* and 70*b* of the perforated metal plate from one another. In this way the metal plates 70*a* and 70*b* do not provide a direct path for transmitting sound waves from one side of the multiple curtain partition to the other.

The partition and sound attenuating pockets of the present invention may be used without the wainscot as, for example, where the bottom sound attenuating or trapping pocket is located in or on the floor directly beneath the curtain. Referring to FIG. 5, there is shown a sound attenuating pocket 62 embodying the present invention. The pocket 62 is mounted under the curtain 23 in a channel 64 provided in a floor 65 which may be formed of concrete. Mounted within the channel 64 and extending parallel to the plane of the curtain are a pair of wooden beams 66 and 67 which extend longitudinally from one end of the pocket to the other. The beams 66 and 67 are spaced apart and define a relatively narrow channel 68 lying in the plane of the curtain 23 and in which is supported a layer of sound insulating material 69 held in place by means of a generally U-shaped perforated metal channel 72. The channel 72 is suitably apertured so as not to inhibit the full effectiveness of the sound absorbing layer 69. The channel 72 has a pair of outwardly extending flanges 73 at the upper edge of the sides thereof and which are received in suitable rabbets 74 provided in the upper edges of the beams 66 and 67. The channel 64 is enlarged at the upper end, and a pair of lon-

gitudinally extending members 75 and 76 preferably formed of wood, are fixedly mounted therein and provide supporting members for a pair of pivotably mounted sound barrier members 77 and 78 which are attached by means of hinges 80 and 81 to the members 75 and 76. The sound barrier members 77 and 78 may include barrier layers 83 and 84 of sound absorbing material which are held in place by means of perforated metal members 85 and 86. The perforated members 85 and 86 are attached to the respective ends of the sound barrier members 77 and 78 for direct engagement with the curtain 23. Of course, the air-tight seal is not provided between the curtain 23 and the barrier members 77 and 78. However, the sound absorbing material in the pocket acting in conjunction with the imperfect seal provides an average transmission loss which is satisfactory for school room purposes. It will be apparent that with or without the curtain 23 being in place, the sound blocking members 85 and 86 are retained in a somewhat elevated position with respect to the surface of the floor. However, this installation would normally be used where a floor covering is provided which in itself has a thickness substantially the same as the outer edges of the sound barrier members 77 and 78.

Referring to FIG. 6 there is illustrated an alternative embodiment of the system shown in FIG. 5 which would normally be used in an installation where a floor covering is not employed and where, therefore, the sound barrier members are preferably mounted flush with the finished floor. In FIG. 6 a channel 90 is provided in a concrete floor 91 and houses a pair of beams 92 and 93 defining a channel in which a layer of insulating material 94 is held in place by means of a U-shaped perforated channel member 95. The channel 90 is at the upper end thereof. A pair of members 97 and 98, preferably formed of wood, are fixedly mounted in the enlarged upper portion of the channel 90 and are attached to the beams 92 and 93 by suitable means (not shown). A pair of sound barrier members 101 and 102 are pivotally attached to the respective members 97 and 98 by means of hinges 104 and 105 and otherwise are similar in construction to the sound barrier members 77 and 78 of FIG. 5. The depth of the enlarged portion of the channel 90 is such that the sound barrier members 101 and 102 lie flush with the surface of the floor both when the curtain 23 is in place and when the curtain 23 is not in place.

In using the sound attenuating pockets shown in FIGS. 5 and 6, the barrier members 77 and 78 or 101 and 102 are pivoted from the positions shown to respective positions out of engagement with the curtain 23 so that the curtain 23 may be readily moved to the desired position, the pivotal barrier members are returned to place in the channel wherein they fit relatively tight against the curtain both to inhibit the passage of sound around the bottom of the curtain and to physically hold the bottom of the curtain in place. In some circumstances, the curtain 23 may be mounted so that the bottom thereof hangs at a slight distance from the edge of one or the other of the sound blocking members, in which case that latter sound blocking member may be fixedly mounted and only the opposite one of the sound blocking members need be pivotable. In this way when the pivoted member is moved out of place the curtain will move under its own accord a slight distance away from the fixed barrier member out of engagement therewith whereby the curtain can be readily movable past the fixed member. Of course, where friction between the curtain and the fixed barrier member is not too great a problem, the curtain 23 may be mounted so that the bottom portion thereof is normally in engagement with the fixedly mounted barrier member.

Referring now to FIG. 7 where is shown one manner in which the sound attenuating pocket of the present invention may be adapted to the upper edge of the curtain 23 by which it is hung and movable in a horizontal direction. As there shown, a soffit 180 which comprises a plurality of framing studs 181 and a surface covering 182 formed of lathe, plaster or the like, is secured to and depends from the ceiling 183. A sound pocket, 184, is mounted within the soffit and comprises a channel-shaped track 186 which is adjustably supported from the ceiling by a plurality of spaced apart members 187 and which includes a pair of reentrant flanges 188 and 189 along which a plurality of sets of rollers 190 are movable in a horizontal direction. The hangers 187 permit alignment of the track 186 and adjustment of the vertical position of the curtain. Each of these sets of rollers 190 includes an S-shaped hanger hook 191 which may extend into suitable apertures at the top of the curtain 23 to support the curtain in place.

In order to attenuate sound waves passing around the upper edge of the curtain 23, a generally channel-shaped sound pocket is provided by means of a pair of L-shaped tubular members 192 and 193 which respectively include perforated metal plates 195 and 196 and which house sound absorbing material 197 and 198. Reversely bent angle pieces 201 and 202 are suitably secured to the respective plates 195 and 196 to provide the unitary tubular members 192 and 193 which when combined with the track 186 provide a complete channel which is lined substantially throughout by the sound absorbing material 197 and 198.

In order to improve the transmission loss characteristics of the sound pocket, a pair of barrier members 206 and 207 are hingedly connected to the pocket 180 and are movable from the positions shown in phantom wherein they are substantially displaced from the curtain 23 to the solid line positions wherein they are disposed in proximity to the curtain 23 thus limiting the size of the slots between the pocket and the curtain through which sound waves may travel into the pocket. In order further to improve the transmission loss characteristics of the pocket, the members 206 and 207, each comprise a quantity of sound absorbing material 210 enclosed within a perforated metal conduit 211. The conduits 211 and 212 are attached by suitable means to the barriers 206 and 207.

Referring to FIG. 8, there is shown a sound attenuating pocket embodying the present invention and used in connection with a curtain 23, which is adapted to be supported in a roll 212 in the ceiling or in a soffit during periods of non-use. As shown, the roll 212 is rotatably mounted on an axle 213 and disposed within a sound attenuating pocket comprising an elongated chamber defining member 214 having a longitudinal slot 215 through which the curtain 23 extends. The attenuating chamber is provided with a sound absorbing liner formed of a sound absorbent material 216 held in place by means of a perforated metal member which is suitably fastened to the member 214 by means not shown. Preferably, the roll 212 is located at one side of the chamber, and the curtain 23 passes over an idler roller 217 mounted adjacent to the slot 215. Suitable means, not shown, is provided for rotating the roll 212 in a clockwise direction, as viewed in FIG. 8, in order to withdraw the curtain 23 from the opening to be covered and in a counterclockwise direction in order to close the opening by means of the curtain 23. If desired, a second idler roller 218 may be mounted at the other side of the slot 215 opposite the roller 217 to further limit the space through which sound waves must pass in order to enter the pocket.

In operation, sound waves passing around the upper edge of the curtain 23 may pass into the pocket via the portion of the slot located at the side of the curtain where the sound originates and thence through the pocket before passing out through the slot 215 on the other side of the curtain 23. Since the pocket contains a substantial quantity of sound absorbent material, which extracts kinetic energy from the sound waves, the sound waves

are greatly attenuated before leaving the pocket so that the energy content or the amplitude of the sound waves has been sufficiently reduced that the sound level for most circumstances is negligible.

Referring now to FIG. 9, there is shown a sound attenuating pocket 220 for use along the free edge of the curtain 23. Hereinafter, a pocket located at the edge of the curtain opposite to the magazine is referred to as a jamb pocket. The sound attenuating pocket 220 extends vertically along a wall 222 of the enclosure and the pocket structure is suitably attached to the wall so as to prevent sound waves from passing between the rear side of the pocket 220 and adjacent the wall 222. Conventional types of building materials such as lathe and plaster is satisfactory for this purpose.

The pocket 220 comprises a pair of supporting studs 224 and 225 which are attached to the floor (not shown) and to the ceiling (not shown) and which form in conjunction with the walls 222, a channel which is partially filled with sound absorbing material 226. A perforated plate 228, which is generally trough-shaped, is secured to the studs 224 and 225 and holds the sound absorbing material 226 in place within the pocket. The trough in the channel formed by the perforated plate 228 tapers inwardly towards the bottom so as to provide the advantages of a relatively wide mouth to facilitate feeding of the curtain 23 therein when the curtain is moved from an open to a closed position, while providing a substantially restricted passageway around the edge of the curtain between the wall of the pocket and the curtain when the curtain is fully in place as shown in FIG. 9. Preferably the curtain itself has a surface which is somewhat of a sound absorbing nature so that with the curtain in place within the pocket, sound is absorbed not only by the sound absorbing material 226 in the pocket but also by the curtain 23 itself.

Referring to FIGS. 10A, 10B and 10C there is shown another type of jamb sound attenuating pocket 230, which comprises a vertically disposed channel formed by suitable structure in which a layer of sound insulating material 231 is held in place by means of a generally channel shaped perforated plate 232. The plate 232 is formed with a plurality of reversely bent portions forming vertically disposed hollow ribs 233 which enclose portions of the sound insulating material 231 and which form spaced-apart baffles. The baffles function to cause multiple reverberations within the pocket 233 to enable the sound absorbing material 231 to more effectively extract the kinetic energy therefrom. Where extremly high sound attenuating characteristics are desired the associated curtain identified as 235 may include a plurality of flexible, vertically extending baffles 237 extending from the opposite surfaces of the curtain. As the curtain is moved into the pocket 230 as shown in FIG. 10B, the flexible baffles 237 are bent back upon the faces of the curtain to permit the passage of the curtain into the pocket 230. When the curtain is fully in place, as shown in FIG. 10C, the baffles 237 return to the normal conditions of orientation and are interspersed with the baffles 233 in the pocket. Accordingly, sound waves in traveling through the pocket must traverse a substantially extended path which is bounded on one side by the sound absorbing material 231 and on the other by the curtain 235.

Referring to FIG. 11, there is shown a manner in which the curtain 23 may be stacked in a magazine to one side of the frame during periods of non-use. As shown, a magazine 250 as more fully described hereinafter is provided at one side of the room opposite to the location of the jamb seal as described above in connection with FIGS. 9 and 10 and comprises a large pocket extending from a location near the ceiling to a location below the bottom of the curtain 23 which may be at the floor or which may be above the floor where a wainscot is employed. By necessity as described in connection with the above referred to copending application, the curtain 23 is necessarily relatively heavy and although it may be moved by conventional hand-operated cords and pulleys as draperies are cutomarily moved, motor means may be provided for moving the curtain 23 between open and closed positions. In any event, an access panel 252 is provided at one side of the magazine 250 and the ropes for operating the curtain 23 extend vertically through the magazine 250 at the location of the access door 252. Accordingly the door 252 may be opened and the ropes may be operated by hand or if a motor is used, the control switches for the motor are preferably located behind the panel 252. Of course, where a motor is used, the controls may, if desired, be located on the outside of the magazine.

The portion of the ceiling hanger shown in FIG. 7 is preferably used in the magazine portion of the ceiling pocket where the curtain 23 may be stacked in pleated form. Accordingly, when the curtain is to be drawn into the magazine and stacked, the blocking members 206 and 207 are dropped down into the position shown in phantom thereby leaving the pocket 180 wide open so as to accommodate the pleats in the curtain 23. Although the remaining portion of the hanger outside the magazine area may also be provided with the pivotably mounted barrier members 206 and 207, these members may be eliminated or fixedly positioned barrier members (not shown) may be used because the curtain is pleated only in the magazine, in all other areas it is held in essentially a planar condition.

Referring now to FIG. 12, there is shown a floor seal construction for use in an installation in which a relatively deep channel 140 may be provided in the floor directly beneath the curtain or panel 23. In this construction, the curtain 20 depends a substantial distance beneath the surface of the floor as contrasted to the embodiments of the invention illustrated in FIGS. 1–4, wherein the bottom edge of the curtain 23 is above the surface of the floor. In FIG. 12, the floor 141 may be constructed of any conventional material such, for example, as concrete or reinforced concrete and as shown is covered with a carpet pad 142 over which carpeting 143 is laid. The metallic channel member 145 is located in the channel 140 and contains the sealing mechanism which substantially attenuates any sound wave passing around the bottom edge of the curtain or panel 23.

In accordance with this aspect of the present invention, the entire sound attenuating unit including sound blocking and absorbing components is located within the channel member 140 so that it may be completely fabricated and assembled at the factory and delivered to the site for immediate installation and use. This type of construction avoids custom fitting of the various parts at the situs which in many instances results in a saving in time and expense.

The mechanism thus mounted within the channel 145 comprises a fixed sound absorbing member 147 which comprises a perforated metal generally channel-shaped member 148 housing a wooden block 149 which is suitably attached to the channel 148 by an up-turned lip 150 on the channel which is received within a groove 151 in the block 149. A fiberglass blanket 152 or other suitable sound absorbing material is mounted within the channel 148 between the block 149 and the portion of the channel 148 adjacent to the curtain or panel 20 thereby to absorb and thus substantially attenuate any sound waves passing between the curtain 20 and the fixed sound absorbing member 140.

The channel 145 further contains a pivotally mounted sound blocking member 155 which is attached to the channel 145 by means of a hinge 156 having a pivot point above the surface of the floor 151 but preferably well below the upper surface of the carpet 143 so as to be effectively flush with or beneath the floor surface thereby to minimize its interference with normal use of the floor when the curtain 20 is withdrawn. It will be

noted that a strip of the padding 142 and a similar strip of the carpeting 143 is provided on the upper surface of the pivotable member 155 thereby to improve the visual effects of the installation but, more importantly, to act as a sound absorber to minimize the passage of sound through the member 155.

The member 155 may comprise a wooden block 158 which is generally triangular in cross-section partially covered with an angular metallic member 159 which is suitably attached to the block 158 by any desired means such, for example, as wood screws. If desired, the member 155 may include a sound absorbing layer on the edge thereof facing towards the curtain 20 but it is desirable that the member 155 be constructed of a material having a specific gravity that the over-all weight of the unit 155 is sufficient that the pull of gravity thereon will insure a tight fit between the unit 155 and the curtain 20.

In order to absorb any sound passing through the unit 155 a padding 161 of a suitable sound absorbing material such, for example, as wool felt, is supported on an inverted channel 162 directly beneath the curtain 20 and beneath the pivotable member 155. As shown, the pivotable member 155 may rest on the pad 161 thereby to prevent a direct transmission of sound waves from the member 155 to the channel support 162.

Where the sound curtain or panel 23 is a flexible curtain of the type disclosed in the above identified copending application, flexible sealing gaskets need not be provided between the sound blocking members 147 and 155 of the curtain 23 for normal installations in schools and the like, but where an extremely high sound transmission loss is desired, flexible sealing gaskets may be employed.

In using the device of FIG. 12, the pivotable member 155 is pivoted clockwise to the position shown in phantom in FIG. 12 during movement of the curtain or panel 23 into or out of a closing position. The reason for this is that a tight fit between the members 147 and 155 and curtain or panel 20 is desired for best sound blocking and the force thus exerted on the curtain 20 would interfere with the movement of the curtain or panel 20 relative to the sound blocking members. However, with the blocking member 155 pivoted back out of the way, the curtain or panel 20 may be readily moved into and out of the space provided therefor. After the curtain or panel 20 has been withdrawn and is to be retained in the non-closing position so that the space previously separated can be used as a single enclosure, the member 155 is pivoted back into place. Accordingly, only a relatively narrow slot remains between the members 147 and 155 and this is ordinarily not objectionable.

Because architectural dimensions are not ordinarily maintained with any high degree of precision, it is desirable that the over-all supporting channel 145 be substantially smaller than the channel 140 in which it is mounted so that suitable shims 165 may be selected to properly align the sound blocking unit with the floor and with the curtain or panel 23.

Although the pivotable barrier member 155 has been described as a single member, it may constitute a plurality of such members arranged end to end. This latter construction is best suited for relatively long installations where it facilitates movement of the barrier member 155 between open and closed positions.

Referring to FIG. 13, there is shown a fragmentary exploded perspective view of a mechanism for conveniently opening either a single pivotable member 155 or a plurality of such members, but for convenience it is described in connection with a single member. As shown, the angle member 159 is provided with an elongated slot 167 which is aligned with a similar slot 168 in a metallic disk 169 which is fitted into and secured in place by any suitable means such, for example, as a split ring 170 in the upper end of a cylindrical hole 171 provided in the upper surface of the block 158. A key 173 is provided with a transversely mounted bar 174 which may be loosely fitted into the slots 167 and 168. After the rod 174 is beneath the surface of the disk 169 and the key 173 is turned through approximately 90 degrees and by thereafter lifting the key 173 the member 155 may be pivoted out of the supporting channel 145. If desired, additional keyways may be provided so that two or more keys 173 may be used to open the sound blocking unit for movement of the curtain or panel 20 into or out of the unit.

As thus far described, the present invention has been embodied in devices for sealing the four edges of a sound insulating curtain or other partition in order to prevent sound waves from passing around the free edges of the curtain or other partition. However, a further problem which must be solved in an installation of this type is to prevent sound waves from passing around the edges of the curtain or other partition at the corners where the vertical and horizontal sound attenuating pockets intersect. Where open pockets are employed along all four edges of the curtain the problem is readily solved by extending one of the intersecting pockets at each corner throughout the full depth of the adjoining pocket. However, where a floor pocket of the type illustrated in FIG. 12, for example, is employed the problem is not as readily solved.

Referring to FIG. 14 there is shown a horizontal section taken through a sound attenuating pocket 265 provided at the free or jamb edge of a horizontally movable curtain or other partition (not shown in FIG. 14). The pocket 265 intersects the floor pocket shown in FIG. 12. As shown in FIG. 14 the channel member 148 which is formed of perforated metal extends along the bottom of the jamb pocket 265 to a point beyond the bottom of the trough formed by a perforated metal channel 267 which maintains a quantity of sound absorbing material 268 in place within an imperforate channel 269. The channels 267 and 269 are each provided with outwardly directed flanges which are mounted on and secured to a pair of vertically disposed trim members 271 and 272. The members 271 and 272 may be formed of wood or other suitable material and extend from ceiling to the floor. They are fixedly positioned to the adjacent wall and provide tight seals which prevent sound waves from passing around the pocket through a path between the wall and channel 269. The sound absorbing sheet 161 terminates in proximity to the trim member 272, which as shown best in FIG. 15 has a portion 272*a* which extends into the floor channel beneath the felt sheet 161 and preferably continues to the bottom of the channel member 145. In FIG. 14 the pivotable barrier member 155 has been removed for purposes of clarity but it will be understood that in an actual installation the member 155 is included.

When the curtain (not shown) is in place within the pocket 265, and the member 155 (not shown) is pivoted in place to a closed position as shown in solid lines in FIG. 12, the curtain is held tightly between the member 155 and the channel 148 at the mouth of the pocket 265. Moreover, because the curtain is preferably somewhat rigid it is held against the channel 148 for a substantial distance into the pocket. Accordingly sound waves passing around the bottom of the portion of the curtain located in the pocket 265 must pass through an extended distance in which the sound absorbing material 268 is located. Therefore, the kinetic energy of the sound waves is absorbed and the sound waves are thereby attenuated.

At the magazine side of the floor pocket, a similar corner problem exists. Referring to FIGS. 16 and 17, in accordance with an important feature of the present invention, the channel 140, which is provided in the floor for receiving the metal channel member 145 together with its contents, is enlarged at the location 140*a* behind the open end of the magazine to provide a section in which the lower portion of the folded curtain may be re-

tained within the magazine. Although the edge of the curtain which remains in the magazine might be fixed to the wall of the magazine by a suitable sealing means to provide an absolute sound stop around which sound waves cannot pass, this necessitates utilizing a substantial portion of curtain which never extends outside of the magazine. Since the cost of a sound insulating curtain or other similar partition is substantial, it is preferable that the edge of the curtain not be fixedly positioned within the magazine and the curtain should be so mounted that when it is in an operative position, the magazine edge of the curtain extends only a relatively short distance into the magazine, which distance is comparable to the distance that the opposite edge of the curtain extends into the jamb pocket.

Since there is no problem of feeding a free edge of the curtain into and out of the magazine as is the case at the jamb side of the installation, a pair of flexible sealing members **300** and **301** are employed to provide a relatively tight seal along directly opposite faces of the curtain at the location where it enters the magazine. The seals **300** and **301** are each generally channel shaped being provided with respective flexible fingers **300***a* and **300***b* and **301***a* and **301***b*. The sealing gaskets **300** and **301** are attached to wood trim members **303** and **304** by means of suitable brackets **305** and **306**.

As shown in FIG. 17, the channel member **148** terminates at and abuts against the finger **301***b* of the gasket **301**. The trim strip **304** extends upwardly from the top of the perforated channel member **148**. The seal **300**, on the other hand, has a portion **303***a*, as best shown in FIG. 17, which extends down into the floor channel member **145** along side of the adjacent edge of the felt strip **161** and preferably abuts the bottom of the channel **145**. The trim strip **303** has a similar portion which depends into the floor channel into abutment with the felt strip **161**. When the curtain is in an operative position, the edge portion thereof which is shown in phantom in FIG. 16, extends between the seals **301** and **302** and terminates a short distance inside the magazine behind the seals **300** and **301**. The pivotable blocking member **155** (not shown) forces the curtain against the perforated plate **148** in the area immediately adjacent the finger **301***b* so as to prevent sound waves from passing under curtain at the end of the channel **148** without passing by the sound attenuating material **152** contained within the perforated channel **148**.

Referring now to FIGS. 18 and 19, there is shown apparatus for providing a sound attenuating pocket along the bottom edge of a curtain **23** for use in an installation where the floor cannot be provided with a channel. Accordingly, the mechanisms shown in FIGS. 5, 6, and 12, are not suitable for such an installation, since unless a channel is provided in the floor, such mechanisms must extend a substantial distance, at least a few inches, above the floor, which may interfere with the use of the single large area when the curtain is withdrawn.

In accordance with this feature of the present invention, there is provided a self-contained, sound attenuating unit **315** which is mounted on and suitably attached to a floor **316**, beneath the plane of the closed curtain. While the unit **315** necessarily has some height, it may be made extremely shallow so as to have a thickness equal to the overall thickness of the usual pad and carpet floor covering. As shown, the unit **315** comprises a metallic channel **318** having reentrant flanges **319** and **320** extending longitudinally along the upper edges thereof and housing a layer of wool felt or other sound absorbing material **321** mounted along the bottom of the channel **318**. A pair of sound barriers **323** and **324** are respectively attached by hinges **326** and **327** to the flanges **319** and **320**, whereby the barriers **323** and **324** may be pivoted from the positions shown in FIG. 18 to those shown in FIG. 19. In FIG. 18, the unit **315** is shown in a condition wherein the associated curtain **23** is in a non-closure position and is therefore not shown. Accordingly, the barriers **323** and **324** are in a non-operative position wherein the upper surfaces thereof lies approximately flush with the top surface of a carpet **329** located on a suitable pad **330**. The barriers **323** and **324** respectively provided with extending portions **332** and **333** which are offset from one another so as to be interfittingly associated when the barrier members **323** and **324** occupy the positions illustrated in FIG. 18. A plurality of resilient bumpers **336** may be introduced between the extensions **332** and **333**.

Referring to FIG. 19, when the unit **315** is to be used as a sound attenuator for substantially preventing sound waves from passing beneath the curtain **23**, the barriers **323** and **324** are first pivoted upwardly out of curtain engaging position and thereafter the curtain **23** is moved into place. The members **323** and **324** are then lowered against the opposite sides of the curtain **23** and are held in place by the force of gravity urging them downward. In this way, the barrier members **323** and **324** restrain the bottom portion of the curtain from horizontal movement. The barriers should lie in a plane making an angle of 45° or less with the horizontal so that a horizontal force exerted on the curtain **23** will not pivot the barriers upwardly out of engagement with the curtain. With the barriers **323** and **324** in the positions shown in FIG. 19, there is provided a pocket **337** of substantial size, the bottom of which is lined with the sound absorbent material **321**. Moreover, the barriers **323** and **324** are respectively provided with bottom pockets in which sound absorbent material **338** and **339** is housed. The sound absorbent material **338** and **339** may be full open to the pocket or it may be held in place by a metal plate having a sufficiently large overall perforated area to be ineffective in reducing the sound absorbent character of the material **338** and **339** to sound waves traveling within the pocket **337**.

In operation, sound waves traveling around the bottom edge of the curtain **23** must pass between one side of the curtain and one of the barriers thence through the pocket, which is lined with sound absorbent material, around the bottom of the curtain **23**, which is preferably in close proximity to the bottom of the pocket, and thence through the portion of the pocket on the other side of the curtain which is also lined with sound absorbent material and finally out through the narrow opening between the curtain and the other barrier.

The offset extensions **332** and **333** are provided so that when the barriers **323** and **324** are in operative position against the curtain **23** the pocket **337** has a substantial depth through which the sound waves passing around the curtain must travel. If desired, the bottom surface of the extension **333** and the bottom surface of the extension **332** may be covered with a sound absorbent material to further improve the efficiency of the pocket. Unless, however, the extensions are of substantial width relative to the width of the sound absorbent layers **338** and **339**, this is unnecessary.

While the present invention has been described in connection with particular embodiments thereof it will be understood that those skilled in the art may make many changes and improvements without departing from the true spirit and scope of the invention. Therefore, by the appended claims, it is intended to cover all such changes and modifications which come within the true spirit and scope of the invention.

I claim:

1. A movable sound insulating partition for attenuating transfer of sound between at least two areas of occupancy comprising a generally planar sound insulating member, a frame, means operatively connected to said member for moving said member in the plane thereof in said frame whereby said member has at least one free edge movable with respect to an adjacent portion of said frame, said adjacent portion including an elongated channel into

which said member freely extends, and sound absorbing material lining a substantial portion of said channel thereby to attenuate sound waves passing around said free edge of said member, said channel being provided with a pivotable cover which engages said member when in an operative position and is pivotable out of engagement with said member when in an inoperative position.

2. A sound attenuating pocket for sealing the edge of a sound insulating member to sound waves, comprising a channel member adapted to receive a free edge of said member, a sound absorbing liner in said channel, a first sound blocking member partially covering the top of said channel along one longitudinal portion thereof, a second sound blocking member partially covering the remaining uncovered portion of said channel along the opposite longitudinal portion thereof, said blocking members defining a narrow slot in the top of said channel for reception of said insulating member.

3. A pocket as set forth in claim 2 wherein at least one of said blocking members is pivotably mounted for movement between a first position covering a portion of said channel wherein said slot has a width substantially equal to or less than the width of said insulating member and a second position wherein a substantial portion of said channel is uncovered.

4. A pocket as set forth in claim 3 wherein only one of said blocking members is pivotable and the other of said blocking members is fixedly mounted in said position over said channel.

5. A sound insulating partition comprising an enclosure having a floor, a ceiling, and a plurality of walls, a movable partition mounted in said enclosure for temporarily separating said enclosure into two parts, said partition comprising a flexible, high mass, low Q, sound insulating curtain, means for supporting said curtain from said ceiling, a sound attenuating pocket enclosing said supporting means, said curtain extending into said pocket, a sound attenuating pocket mounted by said floor directly beneath said supporting means for loosely receiving the lower portion of said curtain, a vertically disposed sound attenuating pocket mounted on one of said walls in alignment with said curtain for loosely receiving a vertical edge of said curtain, and means mounted on the opposite one of said walls for substantially preventing sound waves from passing around the adjacent edge of said curtain.

6. A partition as set forth in claim 5 wherein said supporting means comprises a horizontal track and said curtain is hung on hangers movable along said track.

7. A sound insulating partition for attenuating transfer of sound between at least two areas of occupancy comprising a plurality of spaced apart, generally planar sound insulating members mounted in parallel relationship, a sound pocket disposed along adjacent edges of said members with said members extending into said pocket with said edges in proximity to the bottom of said pocket, and a sound absorbing liner on the inner wall of said pocket, a sound insulating baffle extending from the bottom of said pocket a substantial distance between said members, said baffle being at least partially covered with a sound absorbing material.

8. A movable partition comprising a sound insulating, flexible curtain being generally rectangular in shape, a magazine mounted along one edge of said curtain, said edge being free with respect to the walls of said magazine, sound pockets adapted loosely to receive the other three edges of said curtain, and means for moving said curtain from a retracted position wherein it is entirely located within said magazine to an extended position wherein said other three edges are respectively received in said sound pockets.

9. In apparatus of the type described, the combination of a channel member, a sound absorbing member fixedly mounted in said channel along one side thereof, a sound barrier pivotally mounted in said channel along the opposite side thereof, said barrier member being undercut towards the bottom of said channel to define with said channel and said sound absorbing member a cavity in said channel which increases in volume towards the bottom thereof and a resilient sound absorbent pad mounted in said channel beneath said barrier member to provide a resilient stop for said barrier, said stop and said sound absorbing member being mounted whereby the upper surface of said sound absorbing member and the upper surface of said barrier member, when said barrier member is disposed against said resilient sound absorbing pad are located in a common plane.

10. In apparatus of the type described, the combination of a first sound attenuating pocket formed of a channel lined with a sound absorbing material, a second sound attenuating pocket meeting said first pocket to form a corner, said second pocket including a fixed member and a pivotable member adapted to compress a sound insulating partition member therebetween said fixed member extending a substantial distance beneath said first pocket, and said pivotable member terminating at the mouth of said second pocket.

11. In apparatus of the type described, the combination of a first sound attenuating pocket formed of a channel lined with a sound absorbing material, a second sound attenuating pocket meeting said first pocket to form a corner, said second pocket including a fixed member and a pivotable member adapted to compress a sound insulating partition member therebetween, said pivotable member terminating at the mouth of said second pocket, and a pair of imperforate resilient gaskets mounted at the mouth of said first pocket in opposing relationship for engaging opposite sides of said sound insulating partition.

12. The combination set forth in claim 11 wherein means is provided for storing said partition in said first pocket.

13. Sound insulating apparatus comprising a flexible, imperforate sound insulating member of generally planar construction an open frame in which said insulating member is movably mounted, and means for preventing sound waves from passing around the side edges of said curtain between said curtain and said frame, said means comprising pockets into which said insulating member extends, and flexible sealing means at the mouth of said pockets engaging said insulating member on opposite sides thereof to hold said curtain within said pocket and to minimize the space between said insulating member and the mouth of said pocket whereby sound waves passing around said edges of said insulating member must pass between said member and said seals and traverse a path of substantial length through said pocket.

14. Sound insulating apparatus comprising a rectangular frame having a top, a bottom, and two vertical side portions, a flexible sound insulating member movably mounted within said frame and supported from the top, a soffit extending along the top of said frame and having a narrow downwardly opening slot therein into which said insulating member loosely extends, support means mounted within said soffit and attached to said sound insulating member for supporting the same in said frame, and flexible means mounted along the said vertical sides of said frame for providing a tight seal between the vertical sides of said frame and said sound insulating member, and flexible means disposed between the bottom of said insulating member and the bottom of said frame providing a tight seal between said sound insulating member and the bottom of said frame.

15. The apparatus set forth in claim 14 wherein said supporting means comprises a horizontally extending rod rotatably mounted in said soffit and on which said curtain is adapted to be rolled up for storage in said soffit.

16. The apparatus set forth in claim 15 wherein said horizontal support rod is offset from said slot and a rotatable guide member is mounted in proximity to said slot such that a vertical tangent of said guide member passes

substantially through the center of said slot, and said sound insulating member is supported on said rotatable guide member.

17. A sound insulating partition for attenuating transfer of sound between at least two areas of occupancy comprising a substantially planar sound insulating member, a sound attenuating pocket mounted separate from said member and movable relative thereto, said pocket being disposed along one edge of said member, said edge being positioned a substantial distance within said pocket whereby sound waves traveling around said edge must traverse an extended path through said pocket, a pair of resilient means disposed at the mouth of said pocket on opposite sides of said insulating member, said resilient means respectively engaging opposite sides of said insulating member to support said member relative to said pocket and to inhibit the passage of sound waves around said edge.

18. A sound insulating partition, comprising a substantially planar sound insulating member, a frame, means connected between said frame and said member for moving said member in the plane thereof into and out of said frame, and means defining a sound attenuating pocket disposed along one edge of said member, said edge being disposed a substantial distance within said pocket whereby sound waves traveling around said edge must traverse an extended path through said pocket, and a plurality of baffles disposed in said pocket for increasing the effective length of said extended path.

19. A sound insulating partition, comprising a substantially planar sound insulating member, a frame, means connected between said frame and said member for moving said member in the plane thereof into and out of said frame, and means defining a sound attenuating pocket disposed along one edge of said member, said edge being disposed a substantial distance within said pocket whereby sound waves traveling around said edge must traverse an extended path through said pocket, said pocket being provided with a narrow slot through which said member extends, the width of said slot being substantially less than the width of said pocket, said pocket including a sound blocking member movable to vary the width of said slot.

20. In a sound insulating building structure defining an enclosed space therein, sound insulating apparatus extending across said structure fully to the walls thereof, said apparatus comprising

a frame of sound insulating construction extending to to the walls and defining an opening therein,

a sound blocking member which is substantially impervious to sound waves mounted in said frame entirely across said opening,

sound attenuating means positioned between the edges of said member and said frame to substantially prevent the passage of sound waves between said frame and the edges of said member,

said sound attenuating means comprising an open pocket formed in said frame along at least one edge of said member into which said member extends for a substantial distance in spaced relationship to the sides of said pocket to attenuate the passage of sound waves around said edge of said sound blocking member.

21. The invention defined by claim 20 further comprising another pocket in said frame opposite to said open pocket and means for moving said blocking member into said another pocket out of said opening.

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