Feb. 10, 1942. J. A. BOHNSACK 2,272,829

PARTITION

Filed Sept. 26, 1938

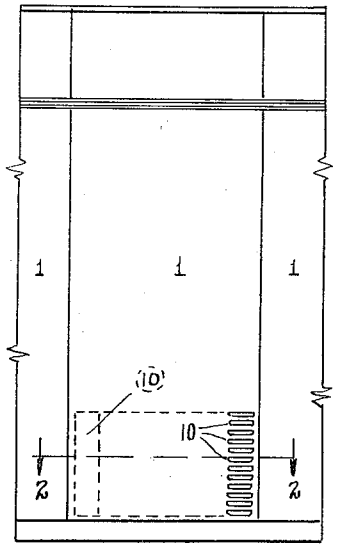

Fig. 1

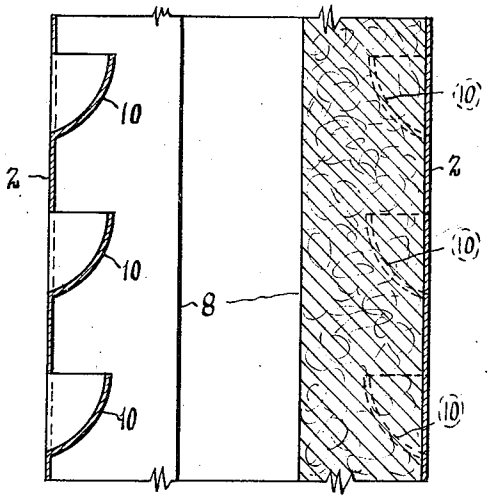

Fig. 3

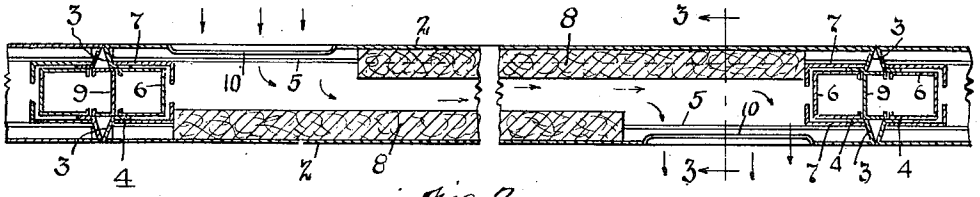

Fig. 2

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PARTITION

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3 Claims. (Cl. 189—34)

This invention relates, as indicated, to sound proof partitions, but has reference more particularly to partitions of this character which are adapted for ventilating purposes.

A primary object of the invention is the provision of a partition which, while highly effective to prevent the transmission of sound therethrough is so designed as to permit the passage of air therethrough for ventilating purposes.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a fragmentary elevation of a partition embodying the novel features of the invention;

Fig. 2 is a horizontal cross-sectional view, taken on the line 2—2 of Fig. 1; and

Fig. 3 is a fragmentary vertical cross-sectional view, on an enlarged scale, taken on the line 3—3 of Fig. 2.

The partition comprises a plurality of panels 1, arranged in side by side relation, each panel comprising a pair of spaced plates 2 having inturned flanges 3, terminating in rebent portions 4. Secured to the rear surface of each plate, as by welding, is a plurality of vertically spaced reinforcing members 5, such members extending to the flanges 3. Each panel is further provided with end uprights 6, which are secured to the portions 4 of the flanges 3, thus spacing the plates 2 from each other the desired distance. Angle verticals 7 are secured to the reinforcing members 5, one leg of each of such verticals engaging the portion 4 of the adjacent flange 3, and the other leg constituting a stop for positioning pads 8 of sound-insulating material, which are cemented or otherwise secured to the rear surfaces of the plates 2.

The panels are supported in upright position by means of channel studs 9, which extend from the floor to the ceiling or cornice of the partitioned space.

It will be noted that sound waves striking one of the plates 2 will be largely absorbed by the sound proofing material 8, and that the direct transmission of sound through the metal of the panel is further minimized by virtue of the fact that there is a minimum of metal to metal contact between the front and rear plates of each panel.

In order to permit the passage of ventilating air from one side of the panel to the other, each of the plates 2 is provided at the lower portion thereof (and adjacent its side edge) with a plurality of vertically spaced inwardly extending louvers 10, which are pressed inwardly from the metal of the plate. The louvers in one of the plates are disposed at a diagonally opposite side of the partition from the louvers in the other plate, so that air which enters the panel at one side must traverse the panel before leaving the panel through the louvers in the opposite side. This movement of the air is indicated by the arrows in Fig. 2.

The air which enters the louvers at one side of the panel strikes the material 8, which is disposed directly opposite the louvers, so that any sound or noise caused by the air in thus passing into and through the panel, is largely absorbed by such material. In order to increase the sound absorptivity of the pads in the area of the panels between the louvers, the pads 8, in these areas, may have spaced recesses in their inner faces, which recesses extend to predetermined depths. In other parts of the panel, the pads 8 may be of any insulating board, preferably of a more or less fibrous nature.

Due to the length and cross-section of the air ducts, very little air-borne sound can pass therethrough. Sound impinging upon the partition in the area of the duct is, of course, partially transmitted, but the major portion of this sound energy is trapped between the steel sheets, and due to the sound absorptivity of the pads 8 especially when recessed, as described, is absorbed to at least as great an extent as if the duct were solidly packed. The sound waves which pass directly through the louvers and impinge on the inner surface of the opposite side of the partition are negligible, and are not transmitted therethrough, by reason of the deflection and possible interference pattern of the louvers, the back reflection from the inner and outer surface of the pad, and the back reflection from both surfaces of the steel. In fact and by test, the wall appears to be equally as efficient in reducing sound transmission at this point as at other points.

The panel which has been described is particularly adapted for use in a partition, of the flush type single line construction. It is to be understood, however, that the invention may also be embodied in other types of panels for use in

semi-flush and other types of partitions, the only desideratum being that the panel itself be of sufficient thickness to permit of interior circulation of air. If desired, the panel may be insulated in any desired manner, such as by filling the same at all points, except where the ventilating duct occurs, with insulating material, either in the form of laminations or in the form of a solid filling.

The form of the invention which has been illustrated provides for horizontal flow of air which is suitable for the return circulation of air-conditioned buildings, which have pressure supply. The louvers may, however, be so disposed as to provide for vertical circulation of air through the panel. Furthermore, instead of louvers, grills, punchings or assembled slats may be used.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a partition construction, a wall panel comprising spaced-apart, substantially parallel plates, each of said plates being provided with a group of ventilating openings located adjacent opposite edges of said plates, respectively, and imperforate portions of said plates extending between such groups of openings; and sound-insulating material covering the inner faces of said plates except at such openings, whereby a layer of such material faces each group of such openings and the passageway connecting the two groups of openings is likewise lined with such material, such passageway being open and unrestricted thus permitting free travel of the air but insuring absorption of sound.

2. In a partition construction, a wall panel comprising spaced-apart, substantially parallel plates, each of said plates being provided with a group of louvers located adjacent opposite lateral edges of said plates, respectively, and imperforate portions of said plates extending between such groups of louvers; and sound-insulating material covering the inner faces of said plates except at such louvers, whereby a layer of such material faces each group of such louvers and the passageway connecting the two groups of louvers is likewise lined with such material, such passageway being open and unrestricted thus permitting free travel of the air but insuring absorption of sound.

3. In a partition construction, a wall panel comprising spaced-apart, substantially parallel plates, each of said plates being provided with a group of inwardly directed louvers located adjacent opposite lateral edges of said plates, respectively, and imperforate portions of said plates extending between such groups of louvers; and sound-insulating material covering the inner faces of said plates except at such louvers, whereby a layer of such material faces each group of such louvers and the passageway connecting the two groups of louvers is likewise lined with such material, such passageway being open and unrestricted thus permitting free travel of the air but insuring absorption of sound.

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