July 20, 1965 R. H. NEISEWANDER 3,195,192

SUSPENDED WALL PARTITION

Filed Nov. 16, 1962

Fig. 1.

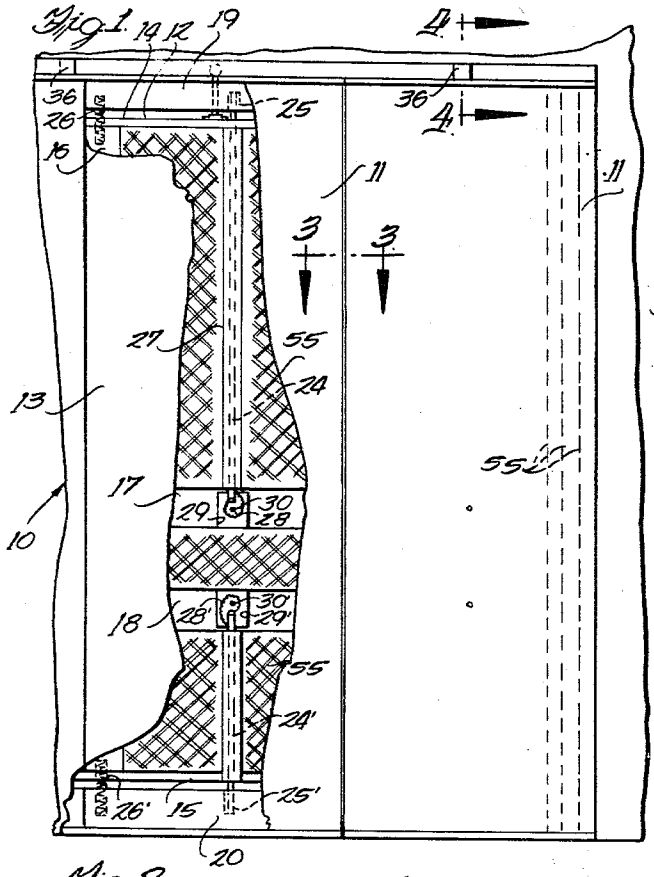


Fig. 2.

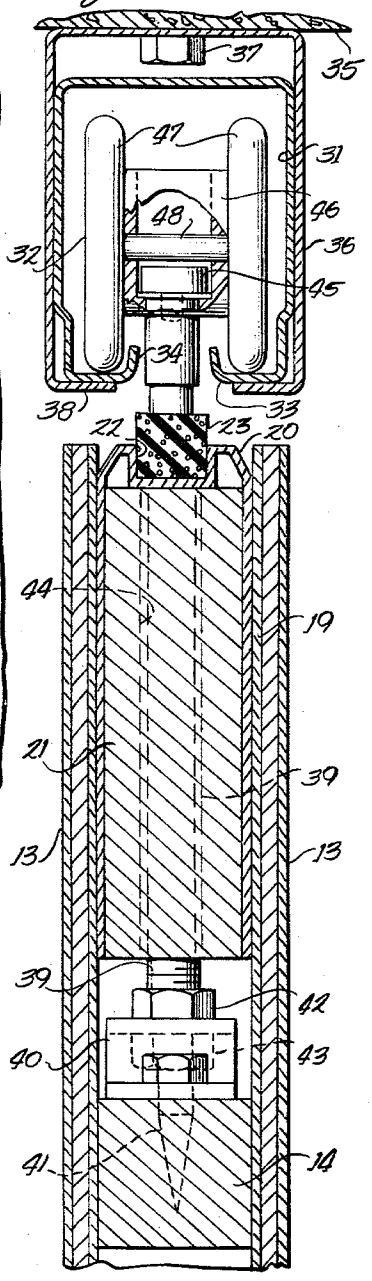


Fig. 3.

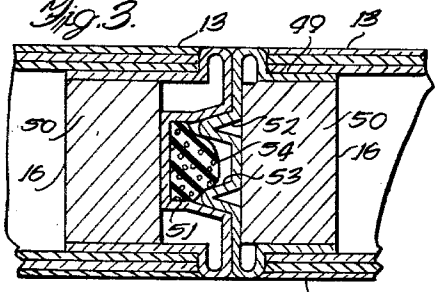
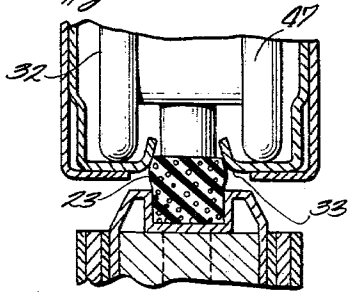


Fig. 4.



Inventor

Ray H. Neisewander

Dawson, Dilton, Fallon

Lungmus & Alexander

Attorneys

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SUSPENDED WALL PARTITION

Ray H. Neisewander, 1010 E. Edwards St., Springfield, Ill.

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This invention relates to a suspended wall partition which may be moved and locked in place to provide a temporary wall structure and, as such, is particularly suitable for use in restaurants, hotels, hospitals and the like. The present application is a continuation-in-part of my copending application, Serial No. 172,204, filed February 9, 1962.

In the aforementioned copending application, I disclose a temporary wall partition having a vertically-movable load equalization bar extending along the top thereof. Means are provided within the partition for urging the bar upwardly into snug frictional engagement with a ceiling surface. Briefly, such means comprises a rotatable cam disposed within the partition, the cam having a surface of progressively increasing radius which engages a vertical push rod and which urges the rod upwardly as the cam is rotated. The upper end of the rod engages the horizontal load equalization bar and, therefore, the bar may be locked tightly against the ceiling surface upon rotation of the cam.

Detachment of such partitions is readily accomplished by reversing the rotation of the cam to relieve the force exerted by the load equalization bar against the ceiling. However, the size and weight of the partitions makes movement difficult. This is particularly true because their vertical dimensions, even with the load equalization bars retracted, are only slightly smaller than the height of the room in which such partitions are adapted to be mounted. Thus, where the usage of the room space requires frequent erecting and removal of the partitions, it is possible that some inconvenience may be encountered in mounting and removing such structures.

An object of the present invention is to provide a movable wall partition which is suspended from a ceiling and which may be moved into closely fitting side-by-side relation with other similar partitions against a wall surface when the partitions are not in use. Another object is to provide such a partition in which the suspending means does not interfere with precise alignment of the side edges of one partition with the edges of adjacent partitions. Specifically, it is an object to provide a partition which is suspended for movement between operative and folded positions and which is mounted for adjustment into parallel flush relation with adjacent partitions regardless of sloping or non-parallel ceiling and floor surfaces. A still further object is to provide a suspended partition which is capable of self-adjustment into alignment with adjacent partitions as it is anchored in place between ceiling and floor surfaces.

Other objects will appear from the specification and drawings in which:

FIGURE 1 is a broken side elevational view, shown partly in section, illustrating a series of partitions positioned in wall-forming relation;

FIGURE 2 is an enlarged vertical sectional view of a partition illustrating the relative positions of the parts thereof when the partition is in a wall-forming position as shown in FIGURE 1 but has not been anchored in place;

FIGURE 3 is an enlarged horizontal sectional view taken along line 3—3 of FIGURE 1;

FIGURE 4 is a broken enlarged vertical section similar to FIGURE 2 but taken along line 4—4 of FIGURE 1 and showing the partition in anchored position.

In the embodiment of the invention illustrated in the drawings, the numeral 10 generally designates a temporary wall formed of a series of partitions 11. Each partition has an inner frame 12 and outer side panels 13, the panels being formed from plywood or any other suitable covering material such as composition board, fiber glass sheeting, metal sheeting, or plastic sheet materials. The inner frame consists essentially of upper and lower rails 14 and 15, vertical stiles 16, and internal horizontal rails 17 and 18.

Referring to FIGURES 1 and 2, it will be observed that the side panels 13 project well above and below the upper and lower rails 14 and 15 respectively and define channels for receiving upper and lower load equalization bars 19 and 20. Since the upper and lower equalization bars are substantially identical except for differences in location, only the upper bar will be described in detail, it being understood that the lower bar is of similar construction.

Load equalization bar 19 is of substantially the same length as the rail 14 adjacent thereto and, except for its upper longitudinal edge portion, is almost entirely concealed within the channel defined by the upstanding side panels 13. In the illustration given, the bar 19 has a metal shell 20 and a wooden core 21, the shell extending over the side and top surfaces of the core to reinforce the same as well as to provide smooth side surfaces for slidably engaging the inner surfaces of the side panels 13. Along the top of the bar, shell 20 is formed to provide a longitudinally-extending recess 22 which snugly receives a cushioning strip 23. The strip or element 23 may be formed of sponge rubber or any other resilient material.

The bar is connected intermediate its ends to a vertical push rod 24, the upper end of the rod being received within a socket 25 in the undersurface of the bar. This socket is disposed intermediate the ends of the bar but slightly to one side of the bar's longitudinal mid point, for reasons which will appear shortly. The bar fits loosely upon the upper end of the push rod and is capable of limited tipping or rocking movement upon the rod's upper end. Retention springs 26 extend vertically between the bar and the top rail 14 at opposite ends of the respective parts and perform the dual functions of retaining the bar within the channel and of maintaining the bar in horizontal position (spaced uniformly above rail 14) in the absence of tipping forces.

The push rod 24 is slidably sheathed in a guide tube 27 which extends downwardly toward inner rail 17. Upward force exerted upon the push rod is controlled by a cam 28 disposed within a recess 29 in the inner rail 17, the cam being mounted for rotational movement in a vertical plane upon a horizontal spindle 30. The spindle is journaled in side panels 13 and its externally-exposed ends are shaped so that it may be rotated by a suitable tool, such as, for example, a hexagonal wrench.

The surface of cam 28 is of progressively increasing radius and has a series of indentations adapted to engage the lower end of the push rod. Thus, as the cam is rotated in a clockwise direction from the position illustrated in FIGURE 1, an upward force is transmitted to the push rod 24 and to the load equalization bar 19.

The lower load equalization bar 20 is similarly provided with an off-center socket 25' which loosely receives the lower end of a push rod 24' actuated by a cam 28' which is rotatably supported within a recess 29' in the lower inner rail 18. Retaining springs 26' extend between the ends of the lower bar and the portions of the frame 12 directly thereabove to retain the load equalization bar in place and to maintain that bar in generally horizontal position in the absence of tipping forces.

Each partition is suspended from an overhead track 31 by carrier means 32 secured to the partition in vertical alignment with the center of gravity thereof. Referring to FIGURES 1, 2 and 4, the track 31 is of inverted U-shaped cross section wtih inwardly and upwardly turned bottom flanges 33 defining a longitudinal opening 34 therebetween. The track is in turn supported from a ceiling 35 by a plurality of inverted U-shaped brackets 36 affixed to the ceiling by screws 37 or by any other suitable connecting means. As shown in FIGURE 2, the bracket is provided with inwardly-turned arms 38 which extend beneath and support the track by the flanges 33 thereof.

Carrier means 32 comprises a roller assembly connected by vertical shaft 39 and mounting bracket 40 to top rail 14. In the illustration given, bracket 40 is secured by screws 41 to rail 14 and is centrally apertured to receive the lower threaded end of shaft 39, the shaft and bracket being locked together by clamping nuts 42 and 43.

The shaft 39 extends vertically through an opening 44 in the upper load equalization bar 19, the diameter of the opening or bore 44 being sufficiently greater than the diameter of the shaft to permit limited tipping movement of the bar relative to the shaft and to the remainder of the partition. A its upper end, the shaft is provided with an enlarged head 45 which is rotatably received within the body 46 of the roller assembly, thereby permitting rotation of the partition about the axis of shaft 39 when the partition is in the released position illustrated in FIGURE 2. The roller assembly also includes a pair of wheels or rollers 47 connected to opposite ends of an axle 48 extending through body 46.

Referring to FIGURES 2 and 4, it will be observed that the upwardly turned portions of flanges 33 of the track slope slightly inwardly and that the smallest distance between the upturned portions of the opposing flanges is narrower than the width of cushioning strip 23. As a result, when the upper load equalization bar is urged upwardly into raised position as shown in FIGURE 4, the cushioning strip seats snugly between the upstanding portions of the opposing flanges 33.

The stiles 16 are provided with metal shells 49 and wooden cores 50 as shown in FIGURE 3, the stiles of adjacent partitions are provided with vertical channels 51 and vertical insert elements 52 respectively. Preferably, the insert elements are arranged in parallel pairs with a vertical space 53 extending therebetween, such space being adapted to accommodate a cushioning and sealing strip 54 mounted within the channel of the female member or stile.

When the partitions are locked in wall-forming positions, the cushioning strip of the lower load equalization bar is in tight engagement with a floor surface while the cushioning strips 23 and 54 of the upper load equalization bar and the stiles are snugly received within their respective openings and spaces 34 and 53, respectively. In addition, the insert members 52 of the stiles are tightly seated within the channels of the adjacent partitions. As a result, each partition is anchored solidly in place and, taken in series, provide a secure wall as well as an effective sound insulating barrier between the two portions of a divided room.

When the presence of the wall is no longer desired, spindles 30 and 30' of each partition are rotated to retract the pusher rods 24 and 24', thereby permitting withdrawal of load equalization bars 19 and 20 under the influence of tension springs 26 and 26'. The partitions, supported only by their unitary roller assemblies 32, may then be rotated about the vertical axes of shafts 39 and stacked against a wall at one end of track 31, as indicated by broken lines 55 in FIGURE 1. When so arranged in contiguous planar relation, the series of partitions require little storage space and, for all practical purposes, all obstruction between the previously-divided portions of the room is eliminated.

An important aspect of the present invention lies in the fact that since each partition is suspended by a roller assembly disposed in vertical alignment with the partition's center of gravity, and since the upper and lower load equalization bars are capable of limited tipping movement, proper alignment of a plurality of partitions may be readily accomplished even though the floor and ceiling surfaces of the room are not precisely parallel. Thus, should there be a slight pitch or incline in the floor surface, the lower load equalization bar may readily assume an inclined position to conform with the slope of the floor without misaligning the partition with reference to adjacent partitions or to the ceiling. Similarly, should a side wall of the room be slightly out of plumb, the partitions may tip slightly to provide a tight fit of an end partition against the wall without at the same time preventing a secure contact between the load equalization bars and the floor and ceiling of the room.

The central location of the roller assembly is effective with partitions of a wide range of sizes; however, where the partitions are extremely large and heavy, it may be desirable to provide more than one roller assembly for each partition. In the case of two or more roller assemblies for a single partition, the relationship between such assemblies and the partition's upper load equalization bar would be identical to the relationship already described.

In the illustration given, I provide a lattice structure 55 within each of the cavities of the hollow door, the lattice structures being formed from interlocking strips of wood which are adhesively secured to the side panels 13 of the partition. It is to be understood, however, that other core constructions may be provided, or that the core structure may be eliminated entirely, without affecting the movable mounting of the partitions.

While in the foregoing, I have disclosed an embodiment of the present invention in considerable detail for purposes of illustration, it will be understood by those skilled in the art that many of these details may be varied without departing from the spirit and scope of the invention.

I claim:

1. A wall partition structure comprising an overhead track adapted to be mounted along a ceiling, said track having an inverted U-shaped cross section and provided with inwardly-turned side flanges defining a space therebetween, a roller assembly movably supported upon said side flanges, a vertical wall partition, means connecting said roller assembly to said wall partition at a point in vertical alignment with the center of gravity thereof, said partition including horizontal load equalization bars extending along the upper and lower edges thereof and being movable vertically for respectively engaging said track and a floor surface to anchor said partition in a selected position, and a cushion element provided by said upper load equalization bar along the upper longitudinal surface thereof and being snugly receivable in a space between said flanges of said track for securing said partition in place when said upper bar is moved vertically upwardly.

2. A wall partition structure comprising an overhead track adapted to be mounted along a ceiling, at least one roller assembly carried by said track for movement therealong, a vertical wall partition, and means connecting said roller assembly to said partition for the suspension of said partition from said ceiling track, said partition including horizontal load equalization bars extending along the upper and lower edges thereof, means mounting said horizontal load equalization bars for vertical movement towards and away from said partition, said bars when moved away from said partition being engageable with said track and a floor surface respectively to anchor said partition in a selected position, said connecting means comprising a vertical shaft affixed to said roller assembly and to said partition beneath said upper load equalization bar, said upper load equalization bar being provided with a vertical bore therethrough loosely receiving said shaft

for permitting limited tipping movement of said upper load equalization bar with respect to said shaft.

3. A wall partition structure comprising an overhead track to be mounted along a ceiling, said track being of inverted U-shaped cross section and provided with inwardly-turned side flanges defining a space therebetween, a roller assembly movably supported upon said side flanges, a vertical wall partition, means connecting said roller assembly to said wall partition, said partition including horizontal load equalization bars extending along the upper and lower edges thereof, said equalization bars being mounted for limited pivotal movement about points intermediate their ends and in the plane of said partition, said means connecting said roller assembly to said partition comprising a vertical shaft affixed to said roller assembly and to said partition beneath said upper load

equalization bar, said upper load equalization bar being provided with a vertical bore therethrough loosely receiving said shaft for permitting limited tipping movement of said upper load equalization bar with respect to said shaft, said equalization bars also being movable vertically, and a cushion element provided by said upper load equalization bar along the upper longitudinal surface thereof and being snugly receivable in the space between said flanges of said track for securing said partition in place when said upper bar is moved vertically upwardly.

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HARRISON R. MOSELEY, *Primary Examiner.*