Sept. 10, 1968 R. H. NEISEWANDER 3,400,504

MOVABLE WALL PARTITION

Filed July 6, 1966

FIG. 1

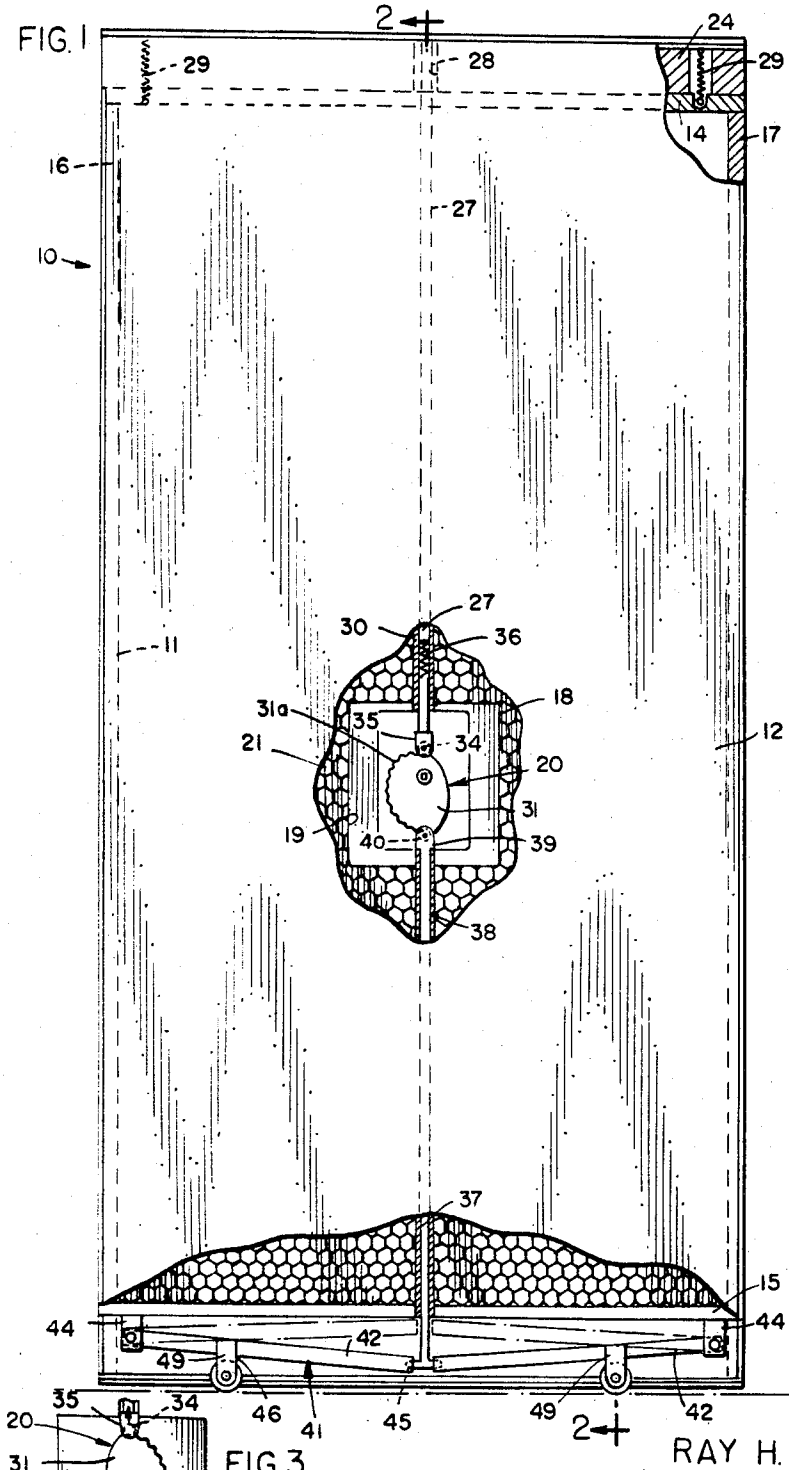


FIG. 2

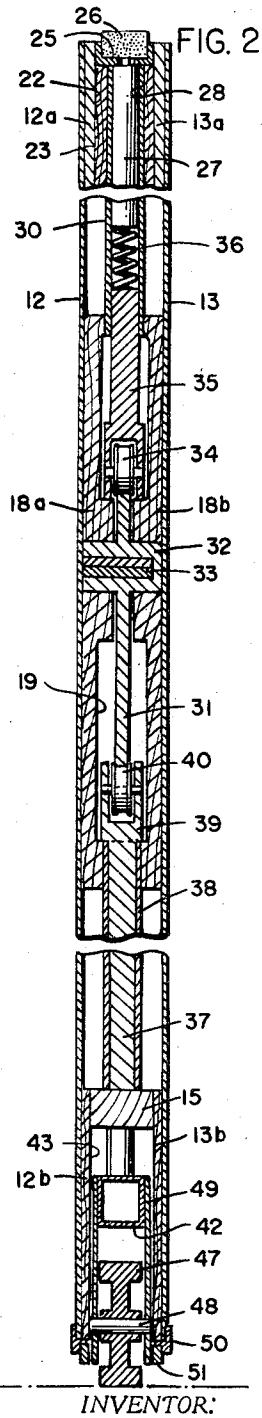
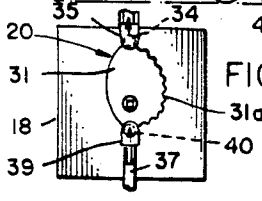


FIG. 3



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MOVABLE WALL PARTITION

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ABSTRACT OF THE DISCLOSURE

A temporary wall partition having a cavity in which a pair of inwardly extending support arms are mounted. The arms are pivotally connected to the frame of the partition adjacent the side edges of that partition and have their inner ends in opposing relation adjacent the vertical midline of the partition. Each arm is provided intermediate its ends with a downwardly extending caster assembly which is engageable with a floor surface when the inner end of the arm is urged downwardly. A vertical push rod disposed within the cavity of the partition has its lower end operatively connected to the inner ends of both arms and is associated with a cam which may be rotated to extend and retract the casters. A second push rod extends upwardly through the frame and a load equalization bar extends horizontally across the top of the frame and is engaged by the upper end of the second push rod. The second push rod engages the cam so that as the cam is rotated to retract the casters the load equalization bar will be simultaneously extended.

This invention relates to a movable wall partition, and more specifically, to a partition which may be easily and quickly shifted into or out of a position in which is serves as a temporary wall section in restaurants, hotels, hospitals, offices, and the like.

An important object of the present invention is to provide a rigid wall partition or section which, despite its size and weight, may be easily shifted into or out of a room-dividing position. In this connection, it is a specific object to provide a partition which may be secured in place, or may be released and shifted into a position of storage, by a single operator. A still further object is to provide a temporary wall partition which may be easily and quickly installed and removed and, in the process of such installation and removal, need not be lifted from the floor surface upon which it rests.

A still further object is to provide a temporary wall partition which, upon installation, gives the appearance of a permanent wall section. A still further object is to provide a partition which will frictionally and securely engage floor and ceiling surfaces to effect a rigid interconnection therewith, and yet which may be easily manipulated to release its frictional hold on such surfaces when withdrawal of the panel or partition is desired. Another object is to provide a panel having floor and ceiling engaging means which are simultaneously operated by a single operating mechanism to achieve a quick one-step connection (or disconnection) to such surfaces.

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

FIGURE 1 is a broken side elevational view taken partly in section showing a partition embodying the present invention;

FIGURE 2 is an enlarged broken sectional view of the partition taken along line 2—2 of FIGURE 1;

FIGURE 3 is a side elevational view of the partition's operating mechanism in a different position of adjustment than shown in FIGURE 1.

In the embodiment of the invention illustrated in the drawings, the numeral **10** generally designates a temporary partition having an inner frame **11** and outer

covering panels **12** and **13**. The frame consists essentially of upper and lower rails **14** and **15**, vertical stiles **16** and **17**, and internal cam housing **18**. As shown in FIGURE 2, the intermediate cam housing is composed of two sections **18***a* and **18***b* defining a cavity **19** therebetween in which a retracting and extending cam mechanism **20** is mounted. A suitable core structure **21**, formed of paper, wood, or any other suitable material, is secured to the inside surfaces of panels **12** and **13** within the confines of frame members **14**, **15**, **16** and **17**. Sections **18***a* and **18***b* of the cam housing are similarly secured to the inside surfaces of the panels.

Side panels **12** and **13** are formed from plywood or any other suitable sheet material such as, for example, metal sheeting, composition board, fiberglass sheeting, etc. It will be noted that the side panels project well above the top of upper rail **14** and define therebetween a channel **22** for slidably receiving a vertically extendable and retractable load equalization bar or member **23**. Preferably, the portions of the panels which project above rail **14** are reinforced along their inner surfaces by reinforcing members **12***a* and **13***a*.

The horizontally elongated load equalization bar **23** is of substantially the same length as rail **14** and when in the lowered position illustrated in the drawings is almost entirely concealed by the upper extensions of side panels **12** and **13**. As shown in FIGURE 2, bar **23** is composed of a horizontal beam **24** upon which is secured an upwardly facing channel member **25** which in turn carries an elongated cushion element **26**. The cushion element may be formed from rubber or any other resilient and elastic material and, as shown in FIGURE 2, projects above the top of the channel to make contact with a ceiling surface when the bar is raised.

The bar **23** is supported intermediate its ends upon a vertical push rod **27**. The upper end of the push rod is received within a centrally disposed socket **28** along the underside of the load equalization bar and the horizontal dimensions of the socket (in a direction extending longitudinally of the bar) are slightly greater than the cross sectional dimensions of the rod. In other words, the bar **23** fits loosely upon the upper end of rod **27** and is capable of limited tipping or rocking movement upon the rod's upper end. Retention springs **29** extend vertically between the bar **23** and the top rail **14** at opposite ends of the respective parts and perform the dual functions of retaining the bar within channel **22** and of maintaining the bar in horizontal position, spaced uniformly from rail **14**, in the absence of tipping forces.

The push rod **27** is slidably sheathed in a guide tube **30** which extends through rail **14** and into inner housing **18**. The upward force exerted upon the push rod **27** is controlled by a cam **31**, the two parts constituting cooperating elements of the extension and retraction mechanism **20**. As shown in the drawings, the cam is disposed within recess **19** and is provided with a horizontal spindle **32** journaled in housing **18** for rotational movement of the cam in a vertical plane within the recess. The spindle is journaled in rail **18** and side panels **12** and **13** and its externally exposed ends are shaped so that it may be rotated by a suitable tool. In the illustration given, the spindle is provided with a recess **33** of square cross section to permit the insertion of a suitable wrench.

The cam surface **31***a* is noncircular and eccentrically disposed with respect to spindle **32**. As shown in FIGURES 2 and 3 the surface **31***a* of gradually increasing radius is provided with a series of indentations adapted to receive the roller **34** of cam rider **35**. The rider **35** is provided with an upstanding portion slidably received within the guide tube **30** and a compression spring

36 extends between the upper end of the rider and the lower end of push rod 27. Thus, the strength of the spring and the resiliency of the cushion 26 control the maximum force which may be exerted by the upper load equalization bar 23 against a ceiling upon rotation of cam 31. It is to be understood that the strength of the spring may be selected to prevent ceiling damage even under maximum compressive force. Spring 36 also performs the important function of urging the rider downwardly into the recesses of the cam to produce a spring detent effect for holding the cam in a selected position of adjustment.

A second push rod 37 extends downwardly from cam 31 and, as shown in FIGURE 1, is vertically aligned with upper push rod 27. Like the upper push rod, lower rod 37 is slidably retained in a sheath 38, the sheath extending downwardly through lower rail 15, and upwardly into the cavity 19 of intermediate housing 18. A cam rider portion 39 having a roller 40 bears against the surface of the cam in direct opposition to upper cam rider 35.

At its bottom end, the lower push rod is operatively connected to a retractable undercarriage assembly 41. The undercarriage assembly comprises a pair of hollow arms 42 of rectangular tubular construction each extending outwardly within the space or cavity 43 defined by side panels 12 and 13 beneath the bottom rail. At their outer ends, adjacent to stiles 16 and 17, arms 42 are pivotally carried by mounting brackets 44 affixed to the underside of bottom rail 15. The inner ends of the arms loosely receive outwardly projecting ear portions 45 of push rod 37 for limited relative pivotal movement of the parts. Thus, as the push rod 37 is raised and lowered by rotation of cam 31, arms 42 swing upwardly and downwardly to retract and extend caster assemblies 46.

Each caster assembly 46 comprises a caster wheel 47 carried by a shaft or axle 48 which is in turn secured to plates 49. The plates are arranged in pairs and extend downwardly in parallel spaced relation from opposite sides of an arm 42 at a point intermediate the ends of such arms. The precise location of the caster assemblies along the length of arms 42 depends in part upon the size and weight of partition 10. For a heavier partition, it may be desirable to obtain a greater mechanical advantage by positioning the caster assemblies nearer to brackets 44, whereas in the case of a lighter partition the caster assemblies might be secured to the arms at points closer to push rod 37. Preferably, however, the caster assemblies should be spaced apart a distance equal to at least one half the width of the partition in order to achieve proper stability when the undercarriage assembly is extended.

Referring to FIGURE 2, it will be seen that the side panels 12 and 13 on opposite sides of the undercarriage assembly are provided along their inner surfaces with reinforcing panels 12*b* and 13*b*. Furthermore, along their lower edges, the side panels and reinforcing panels are equipped with horizontal channel members 50 which are secured to the side panels and which retain depending cushioning strips 51. The cushioning strips, formed of rubber or other resilient material, frictionally engage a floor surface when the undercarriage assembly 41 is retracted.

Retraction of the undercarriage assembly is achieved simply by rotating cam 31 in the manner already described. As the cam is rotated in a clockwise direction from the position illustrated in FIGURE 1, rider 35 travels along the serrated periphery of the cam, its travel carrying it to positions of gradually increasing radius and, as a result, the upper load equalization bar is urged upwardly from the retracted position illustrated in FIGURES 1 and 2. At the same time, rider portion 39 travels along the smooth periphery of cam 31 into positions of gradually decreasing radius with respect to the cam's

rotational axis. Therefore, the undercarriage assembly 41 is permitted to retract under the force exerted by the weight of the partition. It is important to note that the retraction of the undercarriage occurs simultaneously with the extension of the load equalization bar and, conversely, that reverse rotation of the cam will cause retraction of the load equalization bar and simultaneous extension of the undercarriage. FIGURES 1 and 2 illustrate the structure when the load equalization bar is fully retracted and the undercarriage is fully extended, whereas FIGURE 3 illustrates the structure when the bar is fully extended and the undercarriage is fully retracted.

From the foregoing it is believed apparent that the partition structure of the present invention is highly portable and yet, when in place, gives the appearance of a permanent wall unit. With the undercarriage assembly extended as illustrated in FIGURES 1 and 2, a single operator may easily roll the partition into or out of position. Once the partition has been located in a desired position, the operator simply inserts a wrench into socket 33 and rotates the cam 31 to retract the undercarriage and simultaneously extend the load equalization bar. The dimensions of the partition are such that when the undercarriage is extended, the floor clearance of the partition is less than the ceiling clearance thereof. Therefore, upon retraction of the undercarriage, the cushioning elements 51 along the bottom of the panel or partition first engage the floor surface and, thereafter, upon continued rotation of the cam, the load equalization bar frictionally contacts the ceiling surface.

While in the foregoing specification, the invention has been disclosed 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 temporary wall partition having a frame and having a pair of side panels secured thereto, said side panels extending downwardly beneath the lower end of said frame and being spaced apart to define a cavity therebetween, a pair of inwardly extending support arms each being pivotally mounted at its outer end to said frame within said cavity, said arms having their inner ends in adjacent opposing relation, a vertical push rod slidably carried by said frame and having its lower end operatively connected to the inner ends of said arms, each of said arms being provided intermediate the ends thereof with a downwardly extending caster assembly, each of said caster assemblies being engageable with a floor surface when said push rod and arms are urged downwardly and being retractable into said cavity between said panels when said arms and push rod are pivoted upwardly, said paired support arms and said push rod tending to be urged upwardly within said cavity when said casters engage a floor surface, and means within said cavity for urging said push rod downwardly and for permitting upward movement of the same into any of a variety of selected positions of adjustment.

2. The structure of claim 1 in which a second vertical push rod extends upwardly through said frame above said first-mentioned push rod, a load equalization bar extending horizontally along the top of said frame and being engaged by the upper end of said second-mentioned push rod for movement between raised and lowered positions as said second-mentioned push rod is urged upwardly and downwardly, said means for urging said first-mentioned push rod downwardly and for permitting upward movement of the same also simultaneously urging said second-mentioned push rod between lowered and raised positions.

3. The structure of claim 1 in which said paired arms are of substantially equal length and said caster assemblies are disposed at substantially equal distances from the outer ends of the respective arms.

4. The structure of claim 3 in which each caster assembly is disposed closer to the outer end of its respective arm than to the inner end thereof.

5. The structure of claim 1 in which said last-mentioned means comprises an eccentric cam rotatably mounted within said partition a substantial distance above the lower end of said frame for rotation in a vertical plane, said cam having its peripheral surface engaged by the upper end of said push rod.

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