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(54) **Operable wall deployment and storage system.**

(57) A system in which movable panels (15) are supported from overhead tracks (10,12,14) by carriers (32,34) engaged in the tracks so that the panels are movable between a storage area (19) and operable positions by moving the carriers along the tracks. The tracks are provided with an arrangement of bars (18) which are selectively positioned at the junction between angularly related track sections (10,12) and which, in cooperation with a preselected portion or portions (38,68) of the carriers, permit only certain panels to move from one track section into another and block the entry of others. In addition, an arrangement of diverters (16) are selectively positioned in the track sections (10) in the area of the junctions between track sections, these diverters, in cooperation with a preselected portion or portions (66) of the carriers, preventing certain panels from continuing along a given track section (10) and diverting these panels into an adjacent, angularly related track section (12).

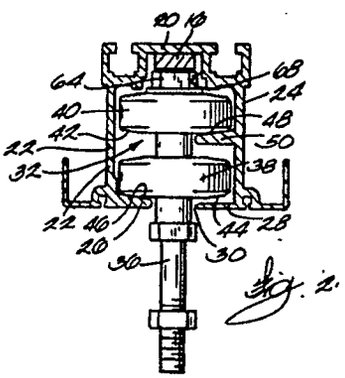

Fig. 2.

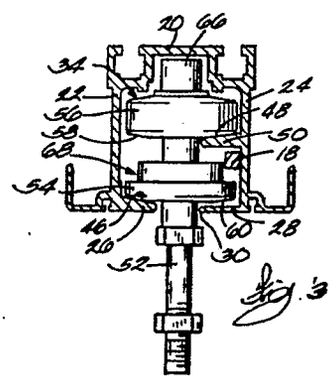

Fig. 3

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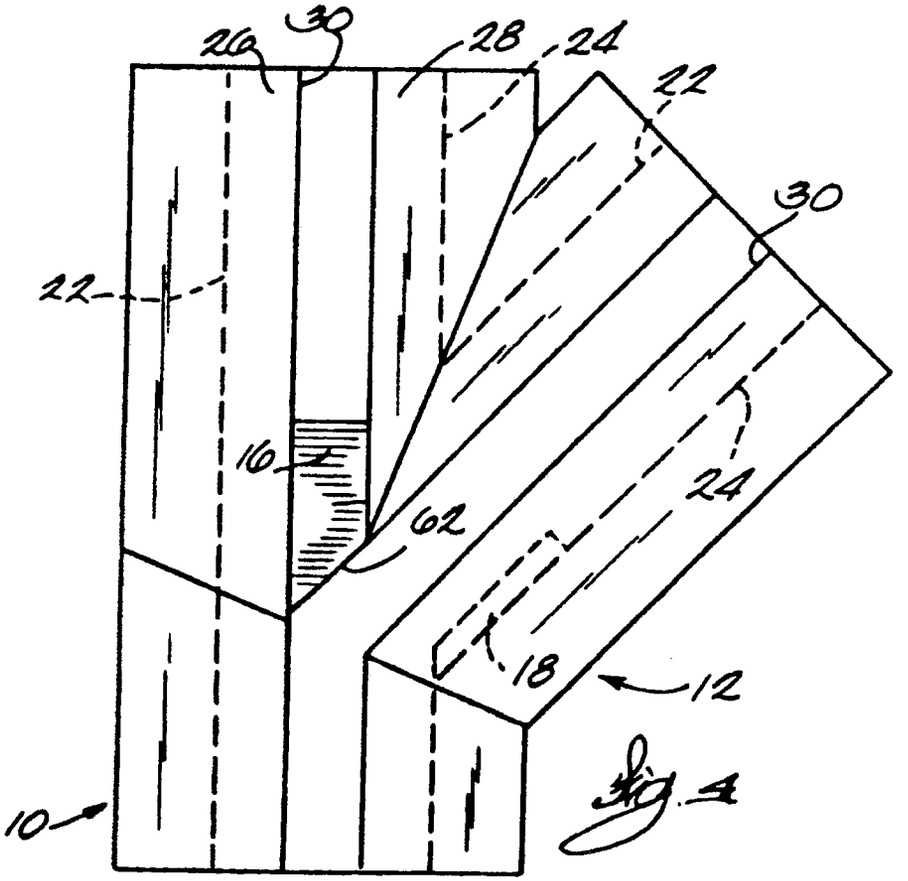

Fig. 4

OPERABLE WALL DEPLOYMENT AND STORAGE SYSTEM

This invention relates to multi-directional suspension systems for operable walls or partitions and, more particularly, to a suspension track arrangement for automatically orienting such operable walls for storage and/or deployment.

Where large spaces are intended to be temporarily subdivded into smaller rooms in, for example, hotels, clubs, convention halls, and the like, usually a partition suspension system is provided which permits movement of subdividing walls or panels between a storage area and the point of intended use, the storage area being removed from the space to be subdivided. These systems for deployment and storage involve an overhead track grid arrangement, commonly made up of straight sections of track and lateral track sections which form, with the straight sections, right angle turns, cross-overs, and T-intersections, these being interspersed along the straight track sections.

In some situations, the subdivided areas may require a particular type of panel. For example, a fire-rated panel may be required when forming a corridor or a sound-rated panel may be required in designated areas. Furthermore, it is often desirable to insure that the panels are stored with a particular orientation so that they can be moved directly from storage to their operable positions without first requiring manipulation for proper orientation. In some instances, this can require careful attention to positioning of the panels in storage as well as in use.

Among the general objects of this invention is to provide a track and carrier system which automatically positions the partitions for storage in a desired orientation.

Another general object of this invention is to provide a track grid system which will automatically sort panels to insure that only a particular type of panel can be moved into a given operable position.

A still further general object of this invention is to provide such attributes in a track grid system which is simple and cost effective.

For the achievement of these and other objects, this invention contemplates a combination overhead grid track system and partition carriers. That is, the panels are supported from carriers which are positioned in and roll along the grid track system.

The grid track system is made up of what will be termed main track runs and lateral track runs. The lateral track runs extend from the main tracks but open into the main tracks so that the carriers which are attached to operable wall can move selectively between the main and lateral track runs. To accomplish the selective movement between track runs, the combination of obstructions in the main and lateral track runs with preselected carrier configurations insures the proper orientation of the panels for storage and/or the acceptance of only a preselected type of panel for operative positioning in a given track section.

Preferably, this is accomplished by providing the operable wall carrier with a projection which travels in the track runs with the carrier. An obstruction is positioned in the main track run and in the path of travel of the projection on the carrier. The obstruction is positioned in the area where the lateral track run opens into the main track run, and when the carrier projection engages the obstruction, the carrier is diverted into the adjacent, lateral track run. The lateral track run into which that carrier is diverted, also includes an obstruction in the carrier path. The carrier diverted into the lateral run is further configured so that it clears the second obstruction and then can run freely into and through the lateral track run. The configuration which clears the obstruction in the lateral track run is provided on selective carriers which also include the diverter engaging projection. Others of the carriers are not so configured so that they will not clear the obstruction in the lateral track run and, thus, are prevented from entering the lateral track run.

A number of embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is plan view of a portion of a track grid system illustrating how the operable partitions or walls are stored;

Figure 2 is a view, partially in section, illustrating one of the operable wall carriers engaged in one of the track runs;

Figure 3 is view, partially in section, of another of the carriers engaged in another of the track runs;

Figure 4 is an enlarged plan view of the track runs at the point where the lateral track run opens into the main track run;

Figure 5 is a plan view of an alternative storage arrangement provided by a grid track system;

Figure 6 is a view of an alternative track and carrier arrangement used in an alternative embodiment, partially in section;

Figure 7 is a view, partially in section, of the alternative embodiment of Figure 6, but illustrating the other panel carrier;

Figure 8 is a plan view of the area where the lateral track run opens into the main track run usable with the alternative embodiments of Figures 6 and 7;

Figure 9 is a plan view of a portion of a track

grid system, illustrating the use of this invention in partition deployment;

Figure 10 is a plan view of a portion of a track grid illustrating another embodiment of this invention.

With reference to the drawing, particularly Fig. 1, a ceiling grid track pattern or system is shown as being made up of track runs 10, 12 and 14. A number of portable partitions or walls 15 are suspended from the grid track system. The track system is viewed from below with walls 16 superimposed on the tracks and highlighted by shading, but illustrated in various positions which they can occupy. Slots 30 are illustrated and will be described more completely hereinafter. It will be appreciated slots 30 extend the length of the tracks, but have not been shown where the walls are superimposed.

It is generally conventional to store the walls 15 in a stacked relation in a remote area 17. The walls are moved out of the storage area along lateral track runs 12 and 14 and then moved to their operative positions along track run 10. The operative positions are locations where room dividers are required. At those positions, the walls are suspended from track run 10 or from additional lateral track runs similar to track runs 12 and 14 but usually at right angles to the track runs 10. This deployment of the walls is illustrated in part in Figure 9 and will be described more completely hereinafter. The walls are returned to storage along the track run 10 and through lateral track runs 12 and 14.

The support carriers for the walls are illustrated in Figs. 2 and 3. Track runs 10, 12 and 14 have the same configuration with the exception of projections 16 and 18. Therefore, corresponding elements in Figs. 2 and 3 will be identified by the same numbers, track run 10 being illustrated in Fig. 2 and track run 12 being illustrated in Fig. 3.

The tracks include an upper wall 20 and depending side walls 22 and 24. The lower ends of the side walls carry opposed ledges 26 and 28 which terminate in spaced relationship to define slot 30. The upper wall and side walls define an interior space and carriers 32 and 34 are positioned in that space. The carriers have different constructions and those differences will be explained hereinafter.

Looking first at Fig. 2, carrier 32 includes a pendant bolt 36 which extends downwardly through slot 30. The lower end of bolt is threaded for attachment to the actual movable partition or wall (not shown in Fig. 2). A pair of discs 38 and 40 are journaled on the bolt 36 for rotation about the bolt. The underside of each disc has an angled surface 42 and 44 extending completely around the discs 38 and 40. Those angled surfaces 42 and 44 engage upwardly facing, preferably similarly angled surfaces 46 and 48. One angled surface 46 is part of ledge 26. Angled surface 48 is part of ledge 50 projecting from wall 24, but is spaced horizontally and vertically from ledge 26. With this arrangement, there is clearance for bolt 36 and discs 38 and 40 roll on ledges 26 and 50 in moving along the track.

Turning now to Fig. 3, carrier 34 also includes a pendant bolt 52 extending through slot 30 for connection to an operable wall. Two discs 54 and 56 are journaled on bolt 52, with the undersides thereof having angled surfaces 58 and 60 engaged with the angle surfaces 46 and 48 in the track in the same manner and for the same reasons as set forth in connection with Fig. 2.

To this point, the carrier and track structure is generally along the lines of the arrangement disclosed and claimed in U.S. Patent 3,879,799 which is assigned to the assignee of this application.

Continuing with reference to Fig. 2, 3 and 4, the difference in construction between carriers 32 and 34 and the reasons for that difference will now be explained.

Fig. 4 illustrates a portion of track run 10 in the area where track run 12 extends laterally from track run 10, but opens into track run 10 so that there is open communication for passage of the carriers between track runs 10 and 12. Track run 14 also opens into track run 10 for transfer of carriers therebetween.

One of the objects of this invention is to provide a system which will automatically position the partitions for storage in a desired orientation. This is accomplished by preventing entry of the carriers into the lateral track runs for storage unless the partitions are properly oriented.

More specifically, bar 16 is attached to upper wall 20 of track run 10. As can be seen in Fig. 4, this bar is positioned in the area at which lateral track run 12 opens to the track run 10. The forward facing surface 62 is angled and positioned generally in alignment with slot 30 in track run 12. Carrier 32 extends upwardly but the head 64 of bolt 36 will ride under bar 16. In contrast, bolt 52 includes an upper extension, projection 66, which extends above the uppermost disc 56 into the recess 68 provided in wall 20. Projection 66 is preferably in the form of a roller journaled on the end bolt 52. Bar 16 is in the path of movement of projection 66 in track run 10. When projection 66 engages surface 62 of bar 16, carrier 34 is diverted into track run 12.

For convenience and clarity of illustration, carrier 34 is shown in track run 12 after it has been diverted and carrier 32 is illustrated in track run 10 as it clears bar 16.

It will also be noted that disc 54 of the carrier

has a dimensionally reduced portion in the axial direction or thickness of the disc, as compared to disc 56 and, more importantly, disc 38. This attributes a cut-out 68 to the upper side of disc 34 which, when the disc 34 is in track run 12, clears bar 18. Since recess 68 in track run 12 is open and free of bar 16 and with disc 34 clearing bar 18, the carrier 34 is free to enter and move along track run 12 until it reaches a storage position.

In contrast, disc 38 of carrier 32, which occupies the same relative position in carrier 32 as disc 54 in carrier 34, does not include a cut-out or relief portion 68. When carrier 32 is at the entrance to lateral run 12, there will be interference between disc 38 and bar 18 which prevents carrier 32 from entering the lateral track run 12. However, carrier 32, as can be seen in Fig. 2, is free to run in track run 10 until it reaches lateral track run 14. Lateral track run 14 is free of any projection such as 18 and carrier 32 can be moved into a storage position.

With this construction, a carrier 32 is positioned in the leading direction relative to partition movement along track run 10 toward a storage position. Carrier 34 is positioned in a trailing position. When moving into storage, carrier 32 passes lateral track run 12 and reaches lateral track run 14 at the time carrier 34 reaches lateral track run 12. Carrier 34 is diverted into lateral track run 12 and the partitions are then stored in what is commonly referred to as parallel stacked relationship, i.e., parallel to each other and to track run 10. The partitions are stored in a preselected orientation as determined by the leading and trailing carriers.

Fig. 5 illustrates what is commonly referred to as a side stack storage arrangement. Here only one lateral track run 12' is used and track run 10' extends all the way to the storage area 17'. The carriers 32' and 34' are illustrated schematically by the shaded circles as they were in Fig. 1. Carrier 32' passes under bar 16' and bar 18' prevents entry of carrier 32' into the lateral track run in the manner already described. When carrier 32' reaches its storage position, carrier 34' will be at the junction of track run 10' and lateral track run 12'. In the manner already described, bar 18' will divert the carrier into track run 12'. The carrier 34' will continue in track run 12' to its storage position, the partition pivoting about carrier 32' to accommodate this movement.

The embodiment of Figs. 6, 7 and 8 is to illustrate that the projection in the carriers which operates to divert the selected carriers into the lateral track runs can be a part of the disc itself.

In this embodiment, diverter bar 100 is fixed in track run 102, but at a lower level than was bar 16. Here, bar 100 is attached to the lowermost portion 104 of shaped top wall 106. Carrier 108 is shown in track run 110 after it had been diverted by bar 100. Carrier 108 has an upper disc 112, the outer wall 114 of which extends upwardly in cylindrical fashion to provide an enlarged upper portion as compared to the carrier discs already described and to be described. This enlarged upper portion provides a projection which will engage bar 100 and will be diverted thereby to direct carrier 108 into lateral track 110. Disc 116 retains the cut-out portion 120 to clear bar 118 in lateral track 110.

Carrier 122 is illustrated in track run 102. Upper disc 124 has a reduced axial dimension and head 126 of bolt 128 is recessed in disc 124 so that the disc and the bolt clear bar 100 allowing carrier 122 to continue along track run 102. Disc 130 has a full thickness in an axial direction, as did disc 38 so that it will engage bar 118, preventing carrier 122 from entering lateral track run 110.

The preferred embodiment has been described in connection with movement into and out of storage. The same system of diverters in main track runs and blocking bars in lateral track runs can also be used in applications where the lateral track runs are operable runs for hanging particular walls in a described location. This system can be used to insure that only desired walls, for example, fire-rated or acoustical, can be moved into certain operative positions.

Fig. 9 illustrates such an arrangement. In this figure, carriers 32 and 34 have been shown schematically by shaded circles superimposed on main track runs and lateral track runs. The track runs form two cross-overs 130, 132 and a T-section 134 for illustrative purposes. Carriers 32 and 34 will have the configurations of Figs. 2 and 3 and deflector bar 16 and obstructing bars 18 are placed in various positions for illustrative purposes. The lateral track runs 136, 138, 140, 142, and 144 are at right angles to main track runs 146, 148, 150 and 152.

By varying the types of carriers attached to the operable walls, automatic selection of operable walls for positioning is possible. In Fig. 9, only walls with carriers 34 can enter lateral runs 136, 138, bars 18 preventing entry of carrier 32. At cross-over 132, only panels with carriers 34 can enter lateral run 142, again bars 18 preventing entry of carriers 32. Only panels with carriers 32 will be capable of moving into lateral run 140 and continuing past cross-over 132 for entry to lateral run 144 or continued movement through track run 152.

Fig. 10 illustrates yet another embodiment. In this embodiment, a pivotal arm 160 extends through the track wall and is supported on ledge 162 by pin 164. The arm is free to pivot about pin 164 between the full line position A and the dotted line positions B and C. In position A, it will engage

the uppermost disc or bolt end and, by virtue of angled face 166, divert that carrier into track 168. The arm is moved by the carrier further into the track to position C and divert the carrier into track 168. Diverted carriers, or panels, may have been moved into storage by means of other track sections. When these diverted channels are moving from storage along track section 170, the arm 160 will be engaged by the upper disc and is free to be moved to position B, by the disc or bolt, allowing the carrier to pass. Tension springs 172 and 174 are mounted between arm 160 and supports 176 and 178 and cooperate to bias arm 160 into position A, which is its neutral or normal position. The opening through which the arm extends into track 170 is bounded by edges 184 and 186. Edge 186 functions as a stop for arm 160 to establish position C at which the carrier is diverted. Track sections 168 and 170 are provided with bars 180 and 182 to prevent unwanted carriers from entering track sections 168 and 170, respectively.

The possible combinations and operational setups are virtually without limit, but can be achieved in a simple and effective manner. Panels may be provided only with carriers 32 or 34, or as in a storage application with one carrier 32 and one carrier 34.

Claims

1. An operable wall system comprising, in combination, first track runs,
lateral track runs connected to and extending laterally of said first track runs, said lateral track runs opening into said first track runs,
a plurality of carriers each including at least one disc and including means for attachment to an operable wall,
means on said first and lateral track runs defining disc support surfaces,
said discs engaged on and movable relative to said track means on said support surfaces,
means on selected ones of said carriers defining a projection movable with said selected carriers in said tracks,
means on selected ones of discs defining cut-out portions as compared to others of said discs,
diverter means supported in said track runs adjacent selected areas at which said lateral track opens into said first track and positioned in the path of movement of said projection on said carriers for engaging said projection and diverting carriers with said projections into said lateral tracks and so that carriers without said projections move past said diverter and continue along said first track,
and obstruction means supported in said lateral track run adjacent selected areas at which said lateral track opens into said first track and positioned in the path of movement of said cut-out portions of said discs for preventing movement of discs without said cut-out portions into said lateral track while permitting discs with said cut-out portions to move into and along said lateral tracks.

2. The operable wall system of Claim 1 wherein
said carriers each include two vertically spaced discs,
said diverter means comprises an obstruction in said first track run located above the uppermost of said discs, and
said projection on said carrier extends above said uppermost disc.

3. The operable wall system of Claim 2 wherein
said lateral track runs include wall means defining the interior of said lateral track runs,
said obstruction means in said lateral tracks comprise an obstruction extending from said wall means into said lateral track runs,
selected ones of said discs include a dimensionally reduced portion relative to the remainder of said disc to provide said cut-out portions, and
said obstructions are positioned in the path of movement of said dimensionally reduced portion.

4. The operable wall system of Claim 2
including bolt means and means in each of said carriers for supporting said discs on said bolt means for rotation about said bolt means as said carrier is moved through said track runs,
wherein said projections extend upwardly as an extension of said bolt means in selected ones of said carriers, and
wherein in said selected ones of said carriers without said projection extending upwardly from said bolt means said discs have the same configuration.

5. The operable wall system of Claim 4 wherein
said lateral track runs include wall means defining the interior of said lateral track runs,
said obstruction means in said lateral track runs comprise an obstruction extending from said wall means into said lateral track runs,
the discs in said carrier with said upward projection are characterized in that one of said discs has a dimensionally reduced portion relative to the remainder of said discs, and
said obstruction is positioned in the path of movement of said dimensionally reduced por-

tion.

6. The operable wall system of Claim 5 wherein the other of said discs in said carriers with said upward projection are further characterized in that they have the same configuration as the discs in said selected ones of said carriers.

7. The operable wall system of Claim 1 wherein said diverter means includes
an arm having a first position extending into the path of movement of said projection on said carriers,
means mounting said arm for movement into and out of said position so that in a direction of movement of carriers with said projection said carriers are engaged thereby and diverted and in an opposite direction of movement said carriers with said projection engage said arm and move said arm out of the path of movement of said carrier,
and means biasing said arm into said first position.

8. An operable wall system comprising, in combination,
a track grid pattern including first track runs and lateral track runs arranged at an angle to and opening into said first track runs,
a plurality of carriers each including means for connection to and support of an operable wall panel,
means on said carriers and said track runs in interengagement for supporting said carriers for movement in and relative to said track runs along a preselected path of movement so that said carriers are movable along said first track runs and selectively into said lateral track runs,
means on selected ones of said carriers defining a first projection and on selected ones of others of said carriers defining a second projection, said first and second projections movable with their respective carriers along said path of movement and others of said carriers being free of said projections,
diverter means arranged in said track runs adjacent the areas at which selected ones of said lateral track runs open into said first track runs and being positioned in the path of movement of said first projections on said carriers for diverting carriers coming into engagement therewith into a lateral track run so that carriers with said first projections engage said diverter means and are diverted into a lateral track run and carriers without said projections continue in said first track run,
obstruction means in said lateral track runs adjacent the areas at which said lateral track runs open into said first track runs and positioned in the path of movement of said second projections on said carriers for preventing entry of carriers having said second projections into said lateral track runs so that carriers with said second projections engage said obstructions and are prevented from entering said lateral track runs and carriers without said second projections are movable into said lateral track runs.

9. The operable wall system of Claim 8 wherein each of said operable walls is supported by two carriers and wherein
said carriers each include two vertically spaced discs,
said first projection on said carrier extends above said uppermost disc,
said discs in each of said carriers are supported on bolt means and said carriers include means supporting said discs for rotation about said bolt means as said carrier is moved through said track runs,
said first projection extends upwardly as an extension of said bolt means in selected ones of said carriers and others of said carriers being without said first projection, and
in said selected ones of said carriers without said first projection said discs have the same configuration.

10. The operable wall system of Claim 9 wherein
said lateral track runs include wall means defining the interior of lateral track runs,
said obstruction means in said lateral track runs comprise an obstruction extending from said wall means into said lateral track run,
the discs in said carriers with said first projection are characterized in that one of said discs has a dimensionally reduced portion relative to the remainder of said discs, and
said obstruction is positioned in the path of movement of said dimensionally reduced portion.

11. The operable wall system of Claim 9 wherein the other of said discs in said carriers with said first projection are further characterized in that they have the same configuration as the disc in said carriers with said first projection.

12. The operable wall system of Claim 9 wherein
one of said carriers includes said first projection and the discs therein have the same configuration, and
the other carrier has one disc with the same configuration as the discs in said one carrier and the other disc, as compared to said one

disc, has a dimensionally reduced portion positioned so that said obstruction means is in the path of movement of said dimensionally reduced portion.

13. The operable wall system of Claim 8 wherein said diverter means includes
an arm having a first position extending into the path of movement of said projection on said carriers,
means mounting said arm for movement into and out of said position so that in a direction of movement of carriers with said projection said carriers are engaged thereby and diverted and in an opposite direction of movement said carriers with said projection engage said arm and move said arm out of the path of movement of said carrier,
and means biasing said arm into said first position.

14. An operable wall system comprising, in combination,
a track grid system including first track runs and second track runs extending laterally from said first track runs, said second track runs opening into said first track runs,
a plurality of wall carriers engaged in said grid system for movement in said track runs,
first interengaging means in said first track run and on selected ones of said carriers for diverting carriers traveling in said first track run into said second track means, and
second interengaging means in said second track runs and on additional selected ones of said carriers for obstructing movement of said additional selected ones of said carriers into said second track runs.

15. An operable wall system having a track grid system including first track runs and second track runs extending laterally from said first track runs, said second track runs opening into said first track runs, and having a plurality of operable walls, each said wall being supported by two carriers and with respect to one such operable wall:
each of said carriers including bolt means and first and second discs spaced vertically on said bolt means, and means for supporting said discs for rotation relative to said bolt means,
each of said track runs including wall means defining an upper wall, depending side walls, and lower flange means defining a slot,
said bolt means extending through said slot for attachment to and support of said operable walls,
a diverter in said first track run adjacent said upper wall, said diverter positioned in the area at which said second track run opens into said first track run and having an angled surface facing into the direction of movement of said carriers and angling toward said second track run,
an upwardly extending projection on one of said carriers,
said diverter being positioned in the path of movement of said projection so that when said projection engages said angled diverter surface said carrier is diverted into said second track run,
an obstruction attached to one of said side walls and extending inwardly into said second track run in the area at which said second track run opens into said first track run,
the one of the discs in the carrier having said diverter engaging projection having a cut-out portion and said obstruction in said second track run being in the path of travel of said cut-out portion of said one disc so that said carrier is movable past said obstruction without interference therefrom,
the other of said carriers attached to said operable wall terminating below the level of said diverter, and
a disc in said other carrier in a position corresponding to the position of said one disc in said first mentioned carrier with said cut-out portion and having a portion thereof positioned to engage said obstruction in said second track run so that said other carrier is prevented from entering said second track.

16. The operable wall system of Claim 15 wherein in said carrier without said upwardly extending projection said discs have the same configuration, and
wherein in said other carrier, one of said discs has the same configuration as the disc in said first-mentioned carrier and the other disc has said cut-out portion.

17. An operable wall system comprising, in combination,
a track system including first and second track runs, one of said track sections extending from and at an angle to the other,
a plurality of wall carriers engaged in and movable along said track runs,
bar means supported in said track systems in the area of the juncture of said first and second track sections and located in the path of movement of said carriers for selective engagement with preselected ones of said carriers to prevent movement of said preselected

carriers along said track sections, and
selected ones of said bar means positioned to divert preselected ones of said carriers into and for movement along one of said track sections while preventing movement of said diverted carriers in said other track section.

18. The operable wall system of Claim 17 wherein
said preselected divertable carriers include means for engagement wih said diverting bar means and for clearing said other of said bar means, and
said carriers other than said preselected carriers include means for engaging said bar means other than said diverting bar means and means for clearing said diverting bar means.

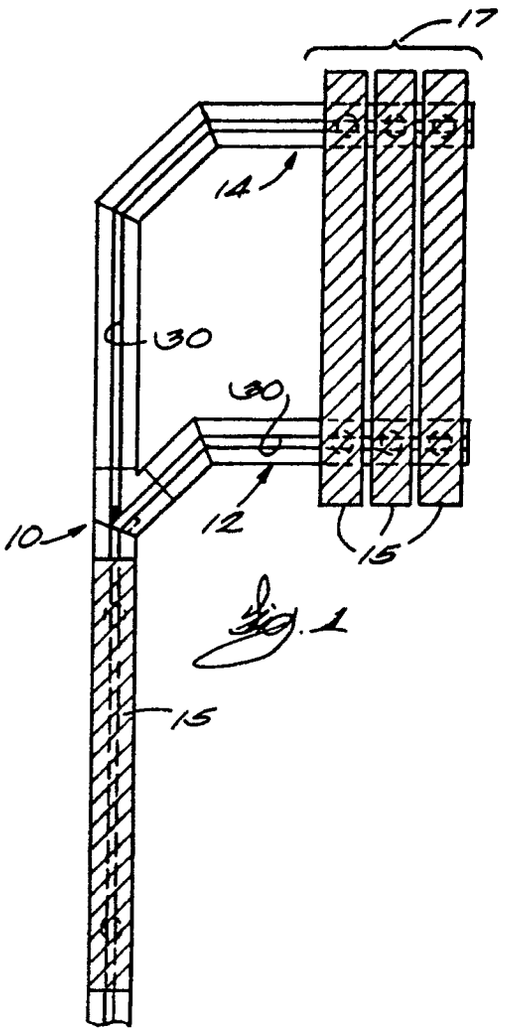

Fig. 1

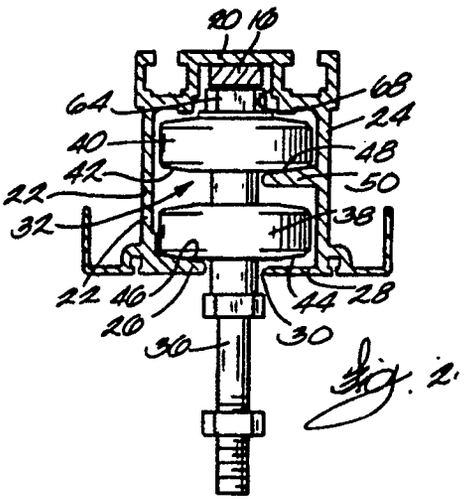

Fig. 2

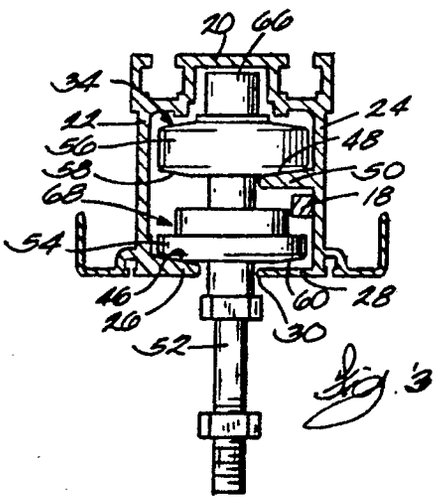

Fig. 3

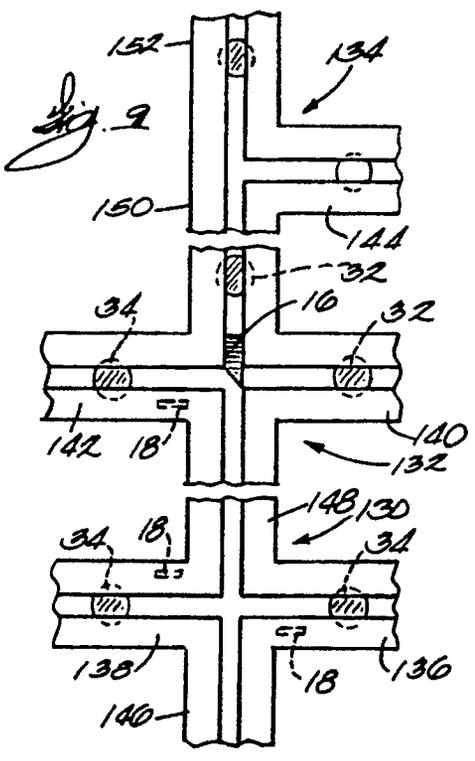

Fig. 9

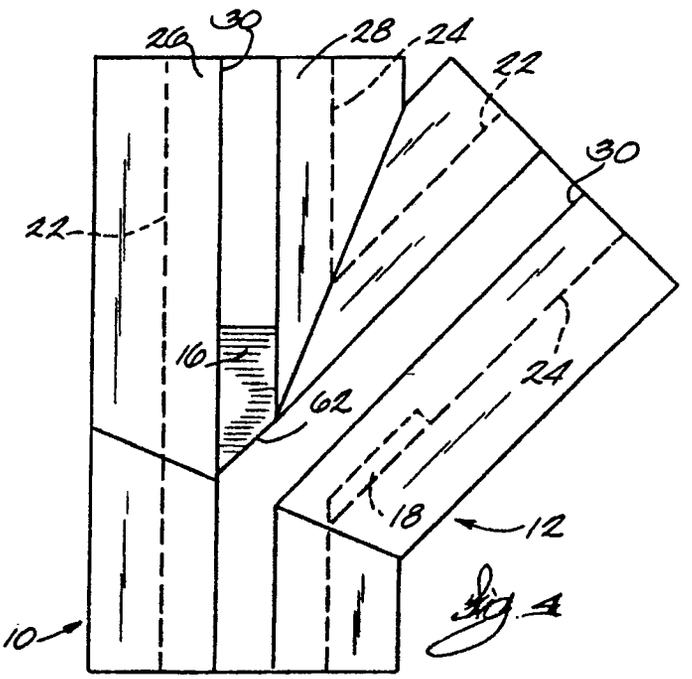

Fig. 4

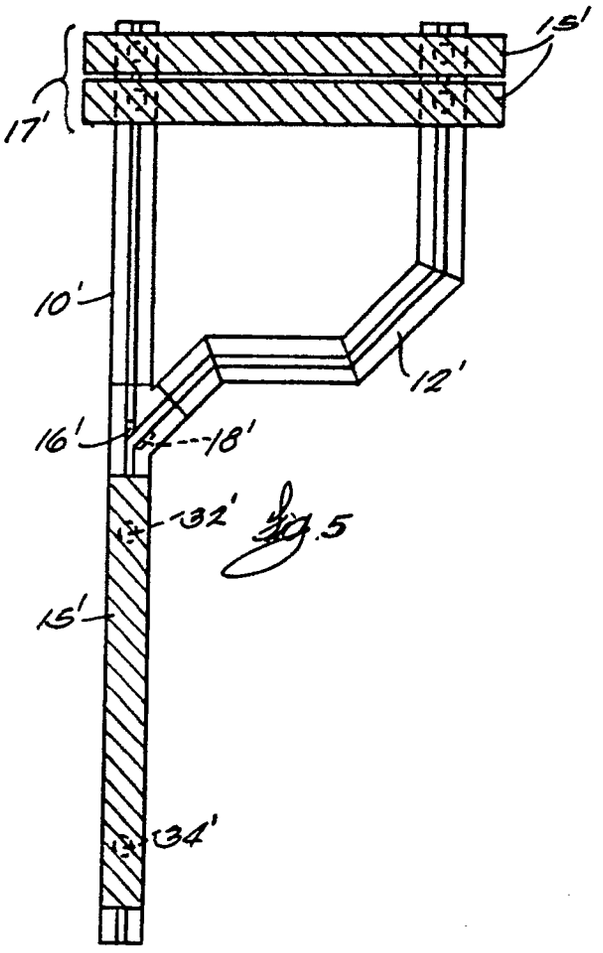

Fig. 5

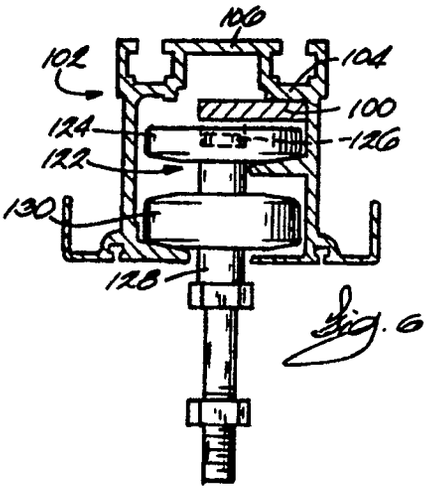

Fig. 6

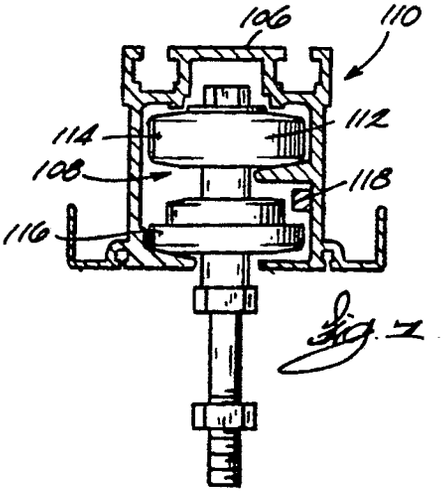

Fig. 7

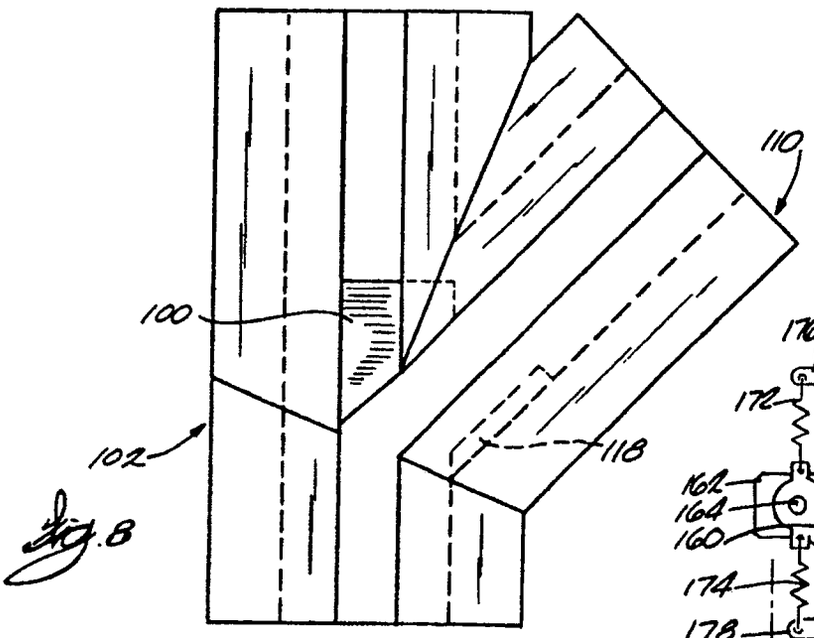

Fig. 8

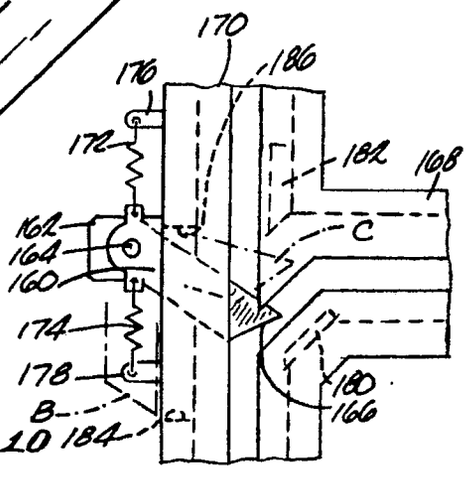

Fig. 10

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 31 2240

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 569 164 (DICKSON) * Figure 3 *	1,8,14,17	E 05 D 15/06 E 06 B 3/92
X	FR-A-1 470 504 (GOGERTY) * Figures 12-14 *	1,8,14,17	
D,A	US-A-3 879 799 (WILLIAMS) * Abstract *	1	
A	GB-A-2 102 867 (ITOKI KOSAKUSHO) * Abstract *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E 05 D
E 06 B
B 65 G

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	26 March 91	NEYS B.G.

CATEGORY OF CITED DOCUMENTS

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