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Brown

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[54] **SHOCK ABSORBING RAIL ASSEMBLY**

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[51] **Int. Cl.** **E04f 19/02,** E04h 17/24

[58] **Field of Search** ..... 52/716–718, 52/709, 710, 711; 248/251; 256/59, 65, 24, 66–70; 114/219; 293/1, 71 R; 211/123

[56] **References Cited**

UNITED STATES PATENTS

1,172,664	2/1916	Banes	52/710
1,961,006	5/1934	Marty	52/730
2,512,203	6/1950	Fluharty	256/59
2,531,967	11/1950	Bishop	52/716
3,007,678	11/1961	Buehler	256/65
3,065,724	11/1962	Tritt	114/219
3,073,260	1/1963	Dunlap et al.	293/71 R
3,164,354	1/1965	Murdock	256/65
3,258,250	6/1966	McMullin	256/68
3,297,075	1/1967	Howell et al.	52/716
3,312,029	4/1967	Blum et al.	256/65
3,517,473	6/1970	Kistner et al.	248/473
3,572,799	3/1971	Truesdell	52/718

FOREIGN PATENTS OR APPLICATIONS

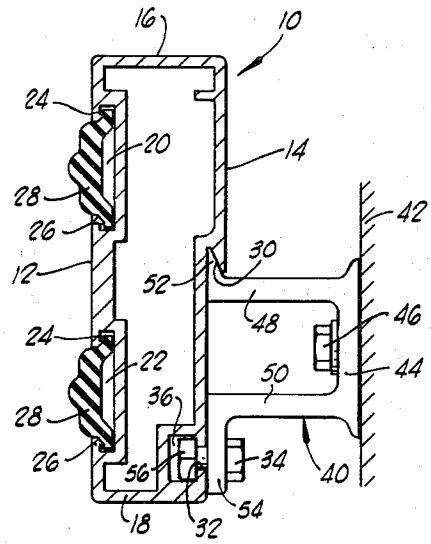
1,217,304	12/1959	France	293/71 R
163,326	5/1958	Sweden	293/71 R
1,054,320	4/1959	Germany	248/251

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[57] **ABSTRACT**

A rail assembly which includes an elongated, rigid supporting member having formed on one side thereof, at least one elongated, bumper strip receiving channel. Bumper strips are mounted in said channels to provide a cushion upon impact to one side of said bumper strips. The assembly further includes a plurality of mounting brackets having a base portion adapted for securement by fastening devices to a wall, and having web means extending between the base portion and a mounting portion which is adapted for securement to the elongated supporting member. The mounting portion includes a flange having a bolt aperture therein for receiving a bolt which is passed through a slot or groove formed in one side of the elongated, rigid supporting member. The slot communicates with a channel defined by the elongated supporting member, which channel accommodates a plurality of nuts positioned for engagement with bolts extended through the bolt apertures in the flanges. The mounting portion of the brackets further includes a surface which is geometrically configured to engage a second slot or groove formed in the elongated, rigid supporting member, and to cooperate with the bolts in mounting the supporting member in a desired location in spaced relation to a wall. The rail assembly may be employed either as a protective shock absorbing wall rail or as a hand rail.

8 Claims, 4 Drawing Figures



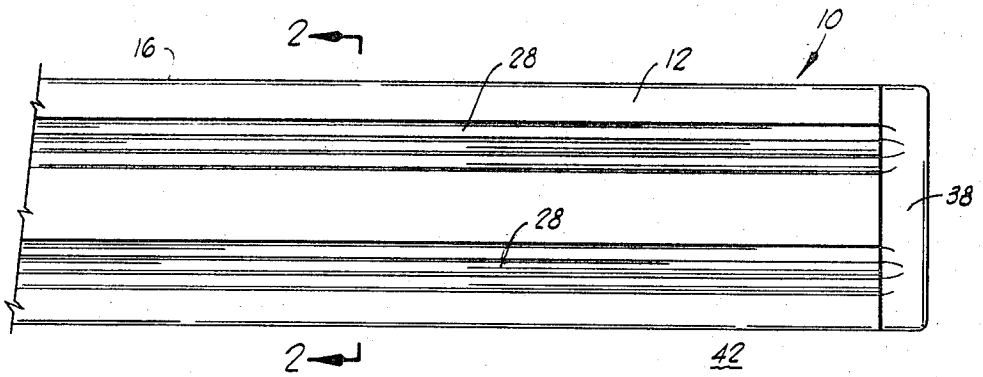


FIG. 1

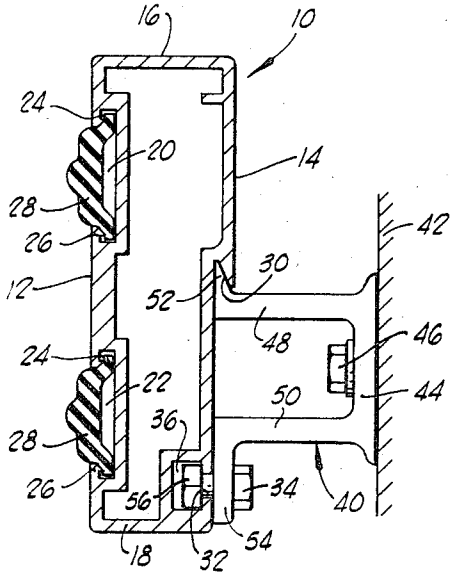


FIG. 2

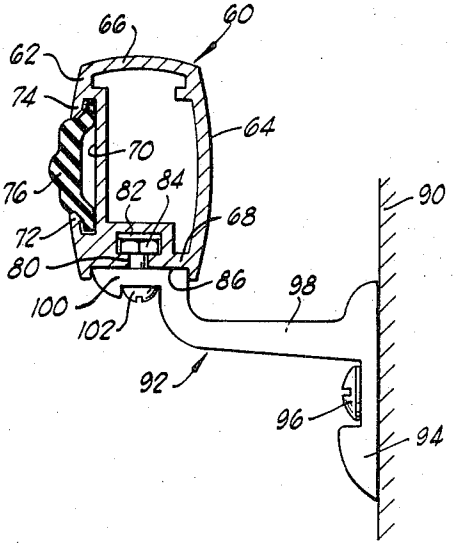


FIG. 4

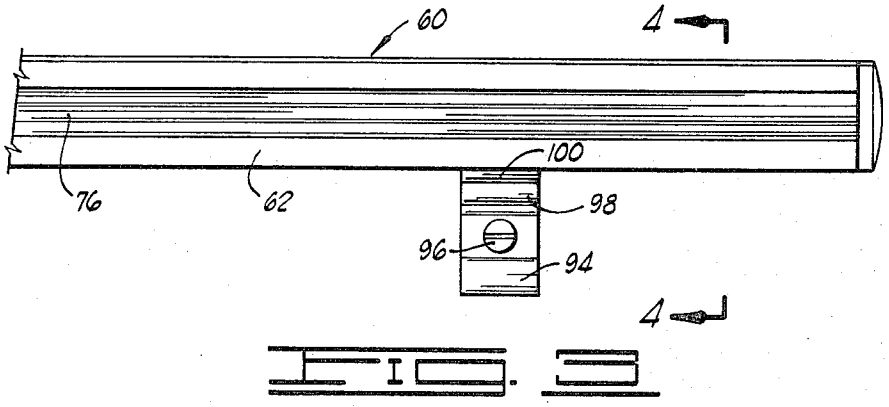


FIG. 3

SHOCK ABSORBING RAIL ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to protective rails and hand rails and more particularly, to rails adapted to extend horizontally in spaced relation to walls to be protected and including a flexible resilient material constituting a portion thereof and forming a contact surface to absorb the impact of articles inadvertently moved thereagainst.

2. Brief Description of the Prior Art

Various types of chair rails, hand rails, protective bumper elements and similar devices have heretofore been provided to protect walls and other surfaces from damage resulting from contact therewith of chairs, portable carts and other types of articles, and to provide a support which may be gripped with the hand for stability and aid in walking. Generally, such chair rail and protective bumper elements have been designed primarily to provide the protective function sought, and shield the wall from impact with articles of the type described. Secondarily, these devices have been designed to be aesthetic in appearance, since they are generally mounted in an exposed location within a room or hallway. Chair rail assemblies of the general type described are disclosed in my co-pending U.S. patent application Ser. No. 179,277, now U.S. Pat. No. 3,775,926 filed Sept. 10, 1971 and entitled "Shock Absorbing Chair Rail Assembly."

Various structures have been provided for mounting such chair rails, hand rails, or protective bumper elements to a wall, and in general, function to space the impact absorbing surface, and a rail upon which it is mounted, horizontally from the wall in a cantilevered fashion. With this type of mounting arrangement, it is important that the mounting structure be sturdy and retain the chair rail or other protective, impact absorbing structure in a stationary position where damage is not sustained by such structure as a result of heavy impact forces delivered to any portion thereof.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

The present invention proposes an improved combination shock absorbing chair rail assembly or hand rail assembly which can be quickly and easily mounted to a wall or other vertical surface by means of a plurality of brackets. The rail assembly, when mounted to a wall, is sturdy and able to withstand high impact forces without damage. Moreover, the manner in which the wall mounting brackets are attached to the elongated rail facilitates and expedites installation.

Broadly described, the present invention comprises an elongated, rigid supporting member or rail having at least one bumper strip receiving channel extending over the length thereof. A flexible and resilient bumper strip is mounted in the channel. The rigid supporting member is mounted to a wall in spaced relation thereto by a plurality of mounting brackets. Each of the mounting brackets includes a base portion adapted for securement to the wall by suitable fasteners, a mounting portion secured to the elongated supporting member or rail, and a web portion interconnecting the base portion and the mounting portion.

The mounting portion of each mounting bracket is secured to the elongated, rigid supporting member or rail by means of bolts extended through a flange forming part of the mounting portion, and through a slot formed in one side of the rail and communicating with a channel defined by the rail. A nut slidably mounted in the channel threadedly engages the bolt. Engagement of the mounting bracket with the supporting member or rail is also effected by means of registering or interlocking tongue-and-groove type surfaces.

An important object of the invention is to provide a shock absorbing rail assembly which functions effectively to protect a wall from damage resulting from chairs, mobile carts or other objects striking the wall.

Another object of the invention is to provide a hand rail or shock absorbing rail assembly which can be quickly and easily mounted to a wall in cantilevered fashion without the use of complicated tools.

A further object of the invention is to provide a protective rail structure which can be mounted to substantially any wall in an expeditious fashion, and can be quickly and easily demounted from the wall.

Yet another object of the invention is to provide a mechanically strong shock absorbing rail assembly which, in use, is cantilevered from the wall, yet is stable and able to withstand severe impacts without damage.

Additional objects and advantages of the invention will become apparent as the following detailed description of preferred embodiments of the invention is read in conjunction with the accompanying drawings which illustrate the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a view in elevation of a portion of a shock absorbing rail assembly constructed in accordance with the present invention.

FIG. **2** is a sectional view taken along line **2—2** of FIG. **1.**

FIG. **3** is a view in elevation of a portion of a modified embodiment of the invention.

FIG. **4** is a sectional view taken along line **4—4** of FIG. **3.**

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Referring initially to FIG. **1** of the drawings, shown therein is a rail assembly constructed in accordance with the present invention. The assembly includes an elongated, rigid supporting member or rail **10** which, in the illustrated embodiment, is a metal extrusion. As depicted in FIG. **2,** the elongated rigid supporting member **10** includes a front wall **12,** a back wall **14,** a top wall **16** and a bottom wall **18.** The front wall **12** is configured to define a pair of elongated channels **20** and **22.** Each of the channels **20** and **22** has undercut lips **24** and **26,** and each of the channels receives an elongated bumper strip **28** which is constructed of a flexible, resilient material, such as rubber or synthetic resin. Each of the bumper strips **28** defines a space between the bumper strip and the portion of the front wall **12** which defines the bumper strip channel **20** or **22.** This void or air space functions in conjunction with the bumper strip **28** to absorb impact forces delivered to the shock absorbing rail assembly upon impact there-

with by a chair or other object moved against the rail assembly.

The back wall **14** of the elongated, rigid supporting member or rail **10** is slotted or grooved about midway of its transverse dimension, as indicated by reference numeral **30**, to provide an elongated groove of V-shaped cross section which extends over the length of the elongated rigid supporting member. At the intersection of the back wall **14** with the lower wall **18** of the elongated supporting member **10**, a slot **32** is formed along the length of the rigid supporting member **10** and functions to receive the shank of fastening bolts **34** for a purpose hereinafter described. The slot **32** opens into an elongated channel **36** which extends the entire length of the rigid supporting member **10** and is completely enclosed except for the opening thereinto of the slot **32.** A pair of terminal caps **38** are secured to the elongated, rigid supporting member **10** at its opposite ends.

A second major subassembly of the rail assembly **10** is a mounting bracket designated generally by reference numeral **40.** In general usage, a plurality of the mounting brackets **40** will be employed for supporting the elongated, rigid supporting member **10** in spaced relation to a wall **42** in the manner depicted in FIG. **2.** The mounting bracket **40** in the embodiment of the invention illustrated in FIGS. **1** and **2** is a generally U-shaped member which includes a base portion **44** having a bolt hole or bolt aperture formed therethrough for the purpose of receiving the shank of a bolt **46** or other suitable fastening member. Extending from the base portion **44** in parallel relation to each other are a pair of legs or webs **48** and **50.** The upper leg **48** is provided at its free outer end with a generally triangularly shaped tongue portion **52** which is configured to register with and engage the groove **30** formed in the back wall **14** of the elongated, rigid supporting member **10.** The mounting bracket **40** further includes a flange **54** which projects downwardly from the leg or web **50** and is apertured to accommodate the shank of the bolt **32.** The threaded end of the bolt shank engages a hexagonally shaped nut **56** which is slidably received in the channel **36.** The channel **36** is dimensioned to slidably receive a plurality of the nuts **56,** but the hexagonally shaped nuts cannot rotate in the channel. The open ends of the channel **36** are closed by the terminal caps **38** when these caps are secured to opposite ends of the rail **10.**

In mounting the shock absorbing or hand rail assembly to a wall, a plurality of the mounting brackets **40** are first bolted to the wall by means of bolts **46** which are extended through the base portions **44** of the mounting brackets and into the wall upon which the assembly is to be supported. The elongated rigid supporting member **10** is then fitted to the several mounting brackets by engaging the tongue portion **52** with the groove **30.** When such engagement has been effected, the lower portion of the back wall **14** of the rigid supporting member **10** rests flatly against the flange **54,** and the bolts **34** may be extended through the bolt openings or apertures which are provided through these flanges. Prior to the extension of the bolts through the openings in the flanges **54** of the mounting brackets **40,** however, the requisite number of nuts **56** are slid longitudinally within the channel **36** until alignment of the nuts with the apertures through the flanges **54** is achieved. In this way, the threaded portion of the shanks of the bolts **34** may be threaded into the nuts **56,** and the lower portion of the elongated rigid supporting member **10** can be drawin tightly against the flanges **54** of the brackets **40.**

With the described mounting arrangement, the elongated rigid supporting member **10** is held securely in position in horizontally spaced relation to the wall **42.** The protective bumper strips **28** are exposed and project outwardly in a position to receive and absorb impact forces delivered by chairs or other objects which may be inadvertently moved against the shock absorbing rail assembly. The interlocking fit between the mounting brackets **40** and the elongated rigid supporting member or rail **10** is such that the supporting member can be quickly and easily detached from the brackets if it should be desired to remove the shock absorbing rail assembly from the wall. Moreover, the provision of the channel **36** and slot **32** in the lower portion of the elongated rigid supporting member **10** makes the shock absorbing rail assembly quickly and easily mountable in substantially any location, ragardless of where it is necessary to place the mounting brackets **40** on the wall.

A second or alternate embodiment of the invention is depicted in FIG. **4** of the drawings. In this embodiment of the invention, an elongated, rigid supporting member or rail is designated generally by reference numeral **60.** The rigid supporting member **60** is a hollow structure which includes a front wall **62,** a back wall **64,** a top wall **66** and a bottom wall **68.** Formed in the front wall **62** is a bumper strip channel **70** configured similarly to the bumper strip channels **20** and **22** of the embodiment of the invention hereinbefore described. The bumper strip channel **70** is defined in part by a pair of undercut toe portions **72** and **74** formed integrally with the front wall **62.** A flexible and resilient bumper strip **76** formed of a flexible or resilient material is mounted in the bumper strip channel **70** in the manner illustrated, and performs a shock absorbing function as hereinbefore described.

Formed through the bottom wall **68** of the elongated, rigid supporting member **60** is an elongated, longitudinally extending slot **80** which extends over the length of the rigid supporting member **60** and opens into a channel **82** formed above the bottom wall **68.** The channel **82** is completely enclosed except for the opening thereinto of the slot **80** and slidably receives a plurality of threaded nuts **84.** A groove **86** is formed in the bottom surface of the bottom wall **68** for the accommodation of a tongue portion of a mounting bracket as hereinafter described.

The elongated, rigid supporting member **60** is supported in horizontally spaced relation to a wall **90** by means of a plurality of mounting brackets designated generally by reference numeral **92.** Each of the mounting brackets **92** includes a base portion **94** having formed therethrough, a screw receiving aperture or opening to permit a screw **96** or other suitable fastening member to be extended through the base portion **94** into the wall **90.** Projecting outwardly from the base portion **94** in a direction substantially normal thereto is a web portion **98.** At its outer end, the web portion **98** carries a flange **100** which has a bolt opening or aperture formed therethrough to accommodate the shank of a bolt **102.** The threaded end of the shank or bolt **102** is engaged with one of the nuts **84.** It will be noted in referring to FIG. **4** that the flange **100** of the mount-

ing bracket **92** is configured and dimensioned so as to mate with, and engage, the groove **86** formed in the lower surface of the bottom wall **68** of the elongated rigid supporting member **60.**

In the use of the shock absorbing rail assembly embodiment of the invention which is depicted in FIGS. **3** and **4,** the mounting brackets **92** are first secured to the wall by means of the screws **96** or other fastening means. The elongated, rigid supporting member **60** is then secured in position on the mounting brackets with the groove **86** engaging the complimentary shaped flange **100** forming a portion of each of the mounting brackets. The nuts **84** are slid longitudinally in the channel **82** until they are aligned with the bolt apertures formed through the flanges **100** in the several mounting brackets **92** which are utilized. Bolts **102** may then be engaged with the nuts **84** in the manner depicted in FIG. **4** to firmly secure the elongated, rigid supporting member **60** in position on the mounting brackets.

From the foregoing description of the invention, it will be perceived that the present invention provides a mechanically sturdy, easily installed rail assembly which functions equally well for both shock absorption and hand rail purposes. Although certain preferred embodiments of the invention have been herein illustrated in order to explain and define the basic principles upon which the invention is based, it will be understood that various changes and innovations can be effected in the illustrated and described structure without departure from such basic principles. Changes and innovations of this type are therefore deemed to be circumscribed by the spirit and scope of the invention except as the same may be limited by the appended claims or reasonable equivalents thereof.

What is claimed is:

1. A rail assembly comprising:

a hollow, elongated, rigid supporting member having at least one bumper strip receiving channel on one side thereof, having an elongated groove in another side thereof and extending substantially parallel to the bumper strip receiving channel, and having formed therein, a nut-receiving channel for slidably receiving nuts, said nut-receiving channel having a slot opening thereinto through said rigid supporting member and extending over the length of said nut-receiving channel, said supporting member completely enclosing said nut-receiving channel except for said slot opening thereinto;

a plurality of polygonally shaped nuts slidably positioned in said nut-receiving channel in a position preventing rotation of said nuts in said channel;

a resilient bumper strip mounted in and protruding from each of said bumper strip receiving channels;

a plurality of mounting brackets for positioning said supporting member in spaced relation to a wall, said mounting brackets each including:

a base portion adapted for securement to a wall;

a mounting portion adapted for securement to said rigid supporting member; and

web means extending between and interconnecting said base portion and said mounting portion;

said mounting portion being further characterized in including:

a flange having a bolt aperture therethrough for receiving a bolt extending through said slot into said nut-receiving channel; and

a surface complementary in configuration to said elongated groove for mating with and detachably engaging said groove; and

bolts extending through said bolt receiving apertures in the mounting portions of said mounting brackets and engaging said polygonally shaped nuts, said bolts cooperating with said engaged groove and complementary surface for retaining said rigid supporting member in a selected position on said mounting brackets.

2. A rail assembly as defined in claim **1** wherein said elongated groove is substantially V-shaped in cross section, and said surface of said mounting portion is substantially V-shaped in cross section.

3. A rail assembly as defined in claim **1** wherein said bumper strip receiving channel is substantially rectangular in configuration and open at one side thereof;

and wherein said bumper strip is a flexible, resilient strip having opposite side edges positioned in said bumper strip receiving channel, and a central portion protruding from said bumper strip receiving channel through the open side thereof, said central portion of said bumper strip defining an air space with said elongated, rigid supporting member, and within said bumper strip receiving channel.

4. A rail assembly as defined in claim **1** wherein said slot is dimensioned to prevent passage of nuts therethrough from said nut-receiving channel.

5. A rail assembly as defined in claim **1** wherein said web means includes a pair of legs, one of said legs having said flange of the mounting portion projecting therefrom, and the other of said legs having said groove-engaging surface of said mounting portion projecting therefrom.

6. A rail assembly as defined in claim **1** wherein said elongated groove in said rigid supporting member is spaced vertically upward on said rigid supporting member from said nut receiving channel, and engages said surface of said mounting portion to prevent movement of said rigid supporting member toward and away from a wall to which said rigid supporting member is mounted by means of said mounting brackets.

7. A rail assembly as defined in claim **1** wherein each of said mounting brackets is substantially U-shaped in configuration.

8. A rail assembly as defined in claim **1** wherein said nut-receiving channel is open at its opposite ends to facilitate the placement of nuts therein.

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