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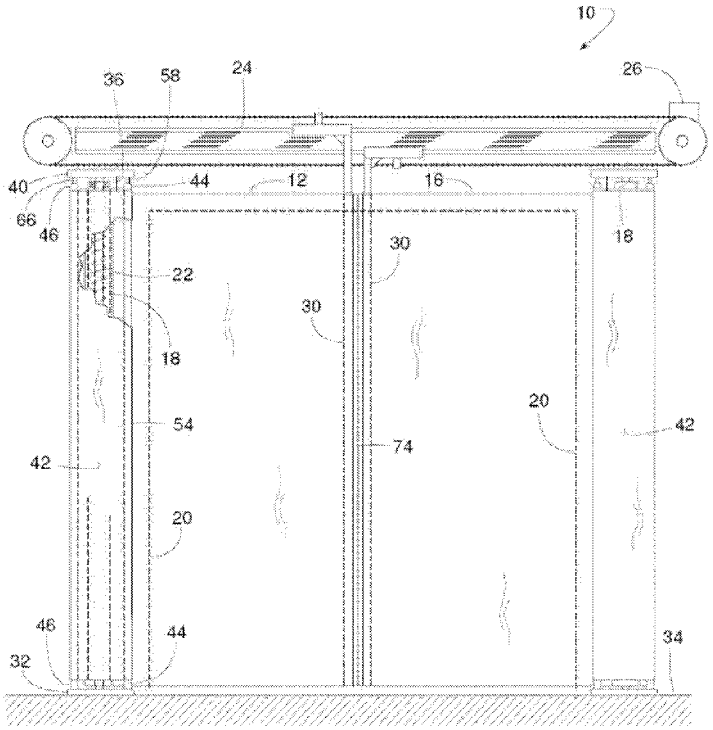
(54) Title: PLIABLE SHROUDS FOR HORIZONTAL SIDE -ROLLING DOOR

FIG. 1



(57) Abstract: A sideways rollup door (10) with a horizontal side-rolling curtain (12) includes a vertical roller (18) that is shielded by a pliable shroud (42). The shroud (42) is supported by a frame that includes a breakaway feature and/or readily replaceable frame elements (44, 46). To access the roller (18) for servicing, the frame elements allow the shroud (42) to be selectively moved between an installed position and a retracted position. In some cases, the breakaway feature enables the shroud (42) to break away in certain directions easier than others. Optionally, the shroud (42) includes a seal that engages the curtain when the shroud (42) is in the installed position.

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PLIABLE SHROUDS FOR A HORIZONTAL SIDE-ROLLING DOOR

Related Application

[0001] This Patent claims the benefit of U.S. Patent Application Serial No. 12/054,064, filed March 24, 2008, which is hereby incorporated herein by reference in its entirety.

Field of the Disclosure

[0002] The subject disclosure relates generally to a horizontal side-rolling fabric door and more specifically to a pliable frame cover for such a door.

Background

[0003] Horizontal side-rolling fabric doors, such as the one disclosed in U. S. Patent 4,096,902; includes one or two vertical rollers at either one or both lateral edges of the doorway. Some horizontal side-rolling doors have a single roller at one side of the doorway with a single curtain that extends and retracts across the full width of the doorway.

[0004] In some cases, the "single curtain" is actually comprised of two layers, each having its own vertical take-up roller. In such cases, the two rollers are right next to each other at one lateral edge of the doorway. As the door opens, the two layers of the curtain separate at the edge of the doorway and wrap upon their respective rollers.

[0005] Other horizontal side-rolling doors include two individual curtains, each supported by its own roller at opposite lateral edges of the doorway. For such doors, the two separate curtains meet at the center of the doorway as the door closes. To open the door, the two curtains move apart from each other and wrap upon their own roller (or set of rollers if each curtain has two layers).

[0006] The curtain rollers are typically housed within some type of enclosure. Such enclosures, however, can make it difficult to access the roller for repair or other service operations.

[0007] The enclosures are also susceptible to damage by way of direct impact from a vehicle passing through the doorway or by way of indirect impact if the vehicle strikes the curtain. The leading edge of the curtain typically is reinforced by a rigid structural member

that is used for closing the door and for holding the leading edge substantially straight and upright. When that structural member is struck in a certain direction, the curtain might forcibly push against the enclosure components, interfering with full curtain movement and potentially damaging the curtain components or enclosure.

Brief Description of the Drawings

[0008] FIG. 1 is a front view a horizontal side-rolling door shown in a closed position.

[0009] FIG. 2 is a front view of the door of FIG. 1 but showing the door open.

[0010] FIG. 3 is a cross-sectional view taken along line 3-3 of FIG. 2, wherein a shroud is in an installed position.

[0011] FIG. 4 is a cross-sectional view similar to FIG. 3 but showing the shroud in a retracted position.

[0012] FIG. 5 is a cross-sectional view similar to FIG. 4 but showing the shroud completely removed from its supporting frame.

[0013] FIG. 6 is a front view of the shroud and roller at the left side of FIG. 2.

[0014] FIG. 7 is a cross-sectional view taken along line 7-7 of FIG. 6.

[0015] FIG. 8 is a front view similar to FIG. 6 but showing the shroud moving from the installed position to the retracted position.

[0016] FIG. 9 is a cross-sectional view taken along line 9-9 of FIG. 8.

Detailed Description

[0017] Certain examples are shown in the above-identified figures and described in detail below. In describing these examples, like or identical reference numbers are used to identify common or similar elements. The figures are not necessarily to scale and certain features and certain views of the figures may be shown exaggerated in scale or in schematic for clarity and/or conciseness. Additionally, several examples have been described throughout this specification. Any features from any example may be included with, a replacement for, or otherwise combined with other features from other examples.

[0018] FIGS. 1 and 2 show a horizontal side-rolling door 10 with at least one curtain 12 that moves horizontally across a doorway 14 to open and close the door. In this particular example, door 10 includes two curtains 12 and 16 supported by spring-loaded rollers 18 installed in proximity with lateral edges 20 of doorway 14. A preloaded torsion spring 22

urges each roller 18 to rotate in a direction that tends to draw in and wrap the respective curtain 12 or 16 onto itself. An overhead track 24 and drive unit 26 coupled to rigid support members 30 at the leading edges of curtains 12 and 16 are used for opening and closing the door 10. FIG. 1 shows door 10 closed with the curtains' 16 leading edges abutting each other near the center of doorway 14, and FIG. 2 shows door 10 open with most of the curtains wrapped around rollers 12 and 16.

[0019] Referring further to FIGS. 3 – 5, roller 18 is supported by a frame comprising a base 32 on floor 34, a back frame member 36 attached to wall 38, and an upper bracket 40 (FIG. 1) extending from frame member 36. Both rollers 18 are supported in a similar manner.

[0020] To help shield roller 18, a shroud 42 made of pliable material extends from back frame member 36 over to an edge frame member 44. Edge frame member 44 is removably coupled to base 32 and upper bracket 40, as will be explained in more detail below. Since shroud 42 is made of a pliable material, it is preferably stretched taut when edge frame member 44 is coupled to base 32 and upper bracket 40 to give shroud 42 a flat and neat, unwrinkled appearance. The pliability of the shroud material also allows the shroud 42 to absorb direct minor impact by flexing. Shroud 42 can be made of any suitable material including, but not limited to, a natural material or a synthetic fabric material, a plastic sheeting, and various layers and/or combinations thereof. The shroud material can be optionally coated and/or impregnated with any suitable material such as, for example, various polymers, to give the shroud material desirable properties such as, for example, being anti-microbial. A corner frame member 46 coupled to base 32 and bracket 40 helps hold shroud 42 in a generally L-shaped configuration, as viewed in FIG. 3.

[0021] A touch-and-hold fastener 48 (e.g., VELCRO®) can be used for attaching a proximal end 50 of shroud 42 to back frame member 36; however, numerous other ways of affixing proximal end 50 can certainly be used.

[0022] To protect shroud 42, the curtain assembly, and edge frame member 44 from damage in the event that door 10 is accidentally struck in a direction 52 (FIGS. 3 and 9) generally coming from wall 38, a distal end 54 of shroud 42 is mounted preferably in a removable or breakaway manner, as shown in FIGS. 6 – 9. In some examples, edge frame member 44 is tubular (e.g., a steel pipe) and is installed within a looped section 56 of shroud 42. Frame member 44 may be loosely held within loop 56 to allow member 44 to be readily removed and replaced without damage. Edge frame member 44 is held in place between an upper pin 58, extending downward from bracket 40, and a lower anchor 60 in the shape of a

short pin protruding upward from base 32. Although edge frame member 44 is relatively stiff, its limited flexibility and axial clearance 62 under bracket 40 allows member 44, when impacted, to flex and move up and off of anchor 60, as shown in FIGS. 8 and 9. The ability of edge frame member 44 to break away in such a manner when a force exceeding a threshold magnitude is applied may be enhanced by providing anchor 60 with a tapered upper surface 64 (FIG. 7). Surface 64 could be conical, hemispherical, rounded, or any other suitable shape to promote breakaway action in any direction, or surface 64 could face just certain directions so that edge frame member 44 breaks away in some directions easier than others. In the preferred example, tapered surface 64 generally faces wall 38 to promote breakaway action from that direction.

[0023] Corner frame member 46 can be mounted in a similar manner. The breakaway feature may not be as important in this area, thus corner frame member 46 in a tubular form (e.g., a pipe) is held in place between an upper pin 66, extending downward from bracket 40, and a lower pin 68 protruding upward from base 32. Clearance 70 (FIG.7) under bracket 40 allows corner frame member 46 to be readily installed and replaced, for example, by simply lifting member 46 up and over lower pin 68.

[0024] To gain access to roller 18 for servicing, the relationship between edge frame member 44 and anchor 60 allows shroud 42 to be moved manually from an installed position of FIG. 3 to a retracted position of FIG. 4. In examples where proximal end 50 is removably attached, shroud 42 can be completely removed as shown in FIG. 5.

[0025] In some examples, door 10 includes a seal 72 (FIGS. 3 and 4) that runs substantially the full height of curtain 12. Seal 72 may be a flexible loop that is sewn or otherwise attached to an inner surface of shroud 42. When shroud 42 is in the installed position of FIG. 3, a central portion of the seal's 72 loop sealingly engages a face of curtain 12, at least when curtain 12 is fully rolled up on roller 18. Other seal designs and configurations are well within the scope of the disclosure.

[0026] A flexible end seal 74 may be attached to each of the leading edges of curtains 12 and 16 so that seals 74 abut each other when door 10 is closed.

[0027] At least some of the aforementioned examples include one or more features and/or benefits including, but not limited to, the following:

[0028] In some examples, a horizontal side-rolling door includes a flexible shroud that shields the door curtain's take-up roller.

[0029] In some examples, the shroud both shields and seals a curtain extending from a roller.

[0030] In some examples, a door curtain roller is shielded by a shroud that is supported by a resiliently flexible breakaway frame.

[0031] In some examples, a door curtain roller is shielded by a shroud that is selectively movable between an installed position and a retracted position.

[0032] In some examples, a door curtain roller is shielded by a shroud that is supported by frame members that can be readily replaced without the use of tools.

[0033] In some examples, a door curtain roller is shielded by a shroud assembly that can break away without significant permanent damage.

[0034] In some example, the shroud assembly can break away in certain directions easier than others.

[0035] The foregoing examples provide a better enclosure for shielding a curtain roller of a horizontal side-rolling door. Furthermore, although certain example methods, apparatus and articles of manufacture have been described herein, the scope of coverage of this patent is not limited thereto. On the contrary, this patent covers all methods, apparatus and articles of manufacture fairly falling within the scope of the appended claims either literally or under the doctrine of equivalents.

What is Claimed:

1. A door for a wall defining a doorway with a lateral edge, the door comprising:

a roller extending vertically and mountable in proximity with the lateral edge of the doorway;

a curtain wrapped about the roller such that the roller upon rotating selectively takes in and pays out the curtain substantially horizontally to respectively open and close the door; and

a shroud comprised of a pliable material, wherein the shroud is selectively movable between an installed position and a retracted position, the roller is interposed between the wall and the shroud when the shroud is in the installed position, and the roller is exposed to allow access to the roller from a direction pointing toward the wall when the shroud is in the retracted position.

2. The door of claim 1, wherein the shroud has a generally L-shaped horizontal cross-section when the shroud is in the installed position.

3. The door of claim 1, further comprising a corner frame member that is vertically elongate and about which the shroud is bent when the shroud is in the installed position.

4. The door of claim 3, wherein the corner frame member is tubular.

5. The door of claim 1, further comprising a seal attached to the shroud such that when the shroud is in the installed position, the seal extends from the shroud toward the roller to engage the curtain.

6. The door of claim 5, wherein the seal is comprised of a fabric material.

7. The door of claim 1, wherein the shroud includes a proximal end and a distal end, the proximal end is mountable in proximity with the wall, the distal end includes an edge frame member that is vertically elongate and is less flexible than the shroud, the edge frame member moves with the distal end of the shroud as the shroud moves between the installed position and the retracted position.

8. The door of claim 7, further comprising a touch-and-hold fastener on the proximal end of the shroud.

9. The door of claim 7, wherein the edge frame member is tubular.

10. The door of claim 9, further comprising an anchor that is substantially stationary, the anchor selectively engages and releases the edge frame member to facilitate moving the shroud between the installed position and the retracted position.

11. The door of claim 1, further comprising an overhead track and drive unit from which the curtain is suspended, wherein the overhead track and drive unit powers the door open and closed.

12. The door of claim 11, wherein the roller is spring loaded to urge the curtain to wrap about the roller.

13. A door for a wall defining a doorway with a lateral edge, the door comprising:

a roller extending vertically and mountable in proximity with the lateral edge of the doorway;

a curtain wrapped about the roller such that the roller upon rotating selectively takes in and pays out the curtain substantially horizontally to respectively open and close the door;

a shroud comprised of a pliable material that includes a proximal end and a distal end, the proximal end is mountable in proximity with the wall, the distal end includes an edge frame member that is vertically elongate and is less flexible than the shroud, the shroud is selectively movable between an installed position and a retracted position, the roller is interposed between the wall and the shroud when the shroud is in the installed position, the roller is exposed out from between the shroud and the wall when the shroud is in the retracted position, and the edge frame member moves with the distal end of the shroud as the shroud moves between the installed position and the retracted position; and

an anchor that is substantially stationary, the anchor selectively engages and releases the edge frame member to allow the shroud to be moved between the installed position and the retracted position.

14. The door of claim 13, wherein the shroud has a generally L-shaped horizontal cross-section when the shroud is in the installed position.

15. The door of claim 13, further comprising a corner frame member that is vertically elongate and about which the shroud is bent when the shroud is in the installed position.

16. The door of claim 13, further comprising a seal attached to the shroud such that when the shroud is in the installed position, the seal extends from the shroud toward the roller to engage the curtain.

17. The door of claim 16, wherein the seal is comprised of a fabric material.

18. The door of claim 13, wherein the edge frame member is tubular.

19. The door of claim 13, wherein the anchor includes an upper surface that facilitates the edge frame member returnably breaking away from the anchor in reaction to the edge frame member experiencing an applied force that is above a predetermined magnitude, wherein the edge frame member breaking away allows the shroud to move from the installed position to the retracted position.

20. The door of claim 19, wherein the edge frame member breaks away in a first direction easier than in a second direction which is different than the first direction.

21. The door of claim 19, wherein the anchor resists the applied force substantially equally in all horizontal directions.

22. A door for a wall defining a doorway with a lateral edge, the door comprising:

a roller extending vertically and mountable in proximity with the lateral edge of the doorway;

a curtain wrapped about the roller such that the roller upon rotating selectively takes in and pays out the curtain substantially horizontally to respectively open and close the door, the roller is spring loaded to urge the curtain to wrap about the roller;

an overhead track and drive unit from which the curtain is suspended, wherein the overhead track and drive unit powers the door open and closed;

a shroud comprised of a pliable material that includes a proximal end and a distal end, the proximal end is mountable in proximity with the wall, the distal end includes an edge frame member that is tubular, vertically elongate, and less flexible than the shroud, the shroud is selectively movable between an installed position and a retracted position such that:

in the installed position, the shroud is held taut between the wall and a fixed position of the edge frame member, and the roller is interposed between the wall and the shroud,

in the retracted position, the roller is exposed to allow access to the roller from a direction pointing toward the wall, and

the edge frame member moves with the distal end of the shroud as the shroud moves between the installed position and the retracted position;

a corner frame member that is vertically elongate and about which the shroud is bent when the shroud is in the installed position, wherein the corner frame member is tubular; and

an anchor that is substantially stationary, the anchor selectively engages and releases the edge frame member to allow the shroud to be moved between the installed position and the retracted position.

23. The door of claim 22, wherein the shroud has a generally L-shaped horizontal cross-section when the shroud is in the installed position.

24. The door of claim 22, further comprising a seal attached to the shroud such that when the shroud is in the installed position, the seal extends from the shroud toward the roller to engage the curtain.

25. The door of claim 24, wherein the seal is comprised of a fabric material.

26. The door of claim 22, further comprising a touch-and-hold fastener on the proximal end of the shroud.

FIG. 1

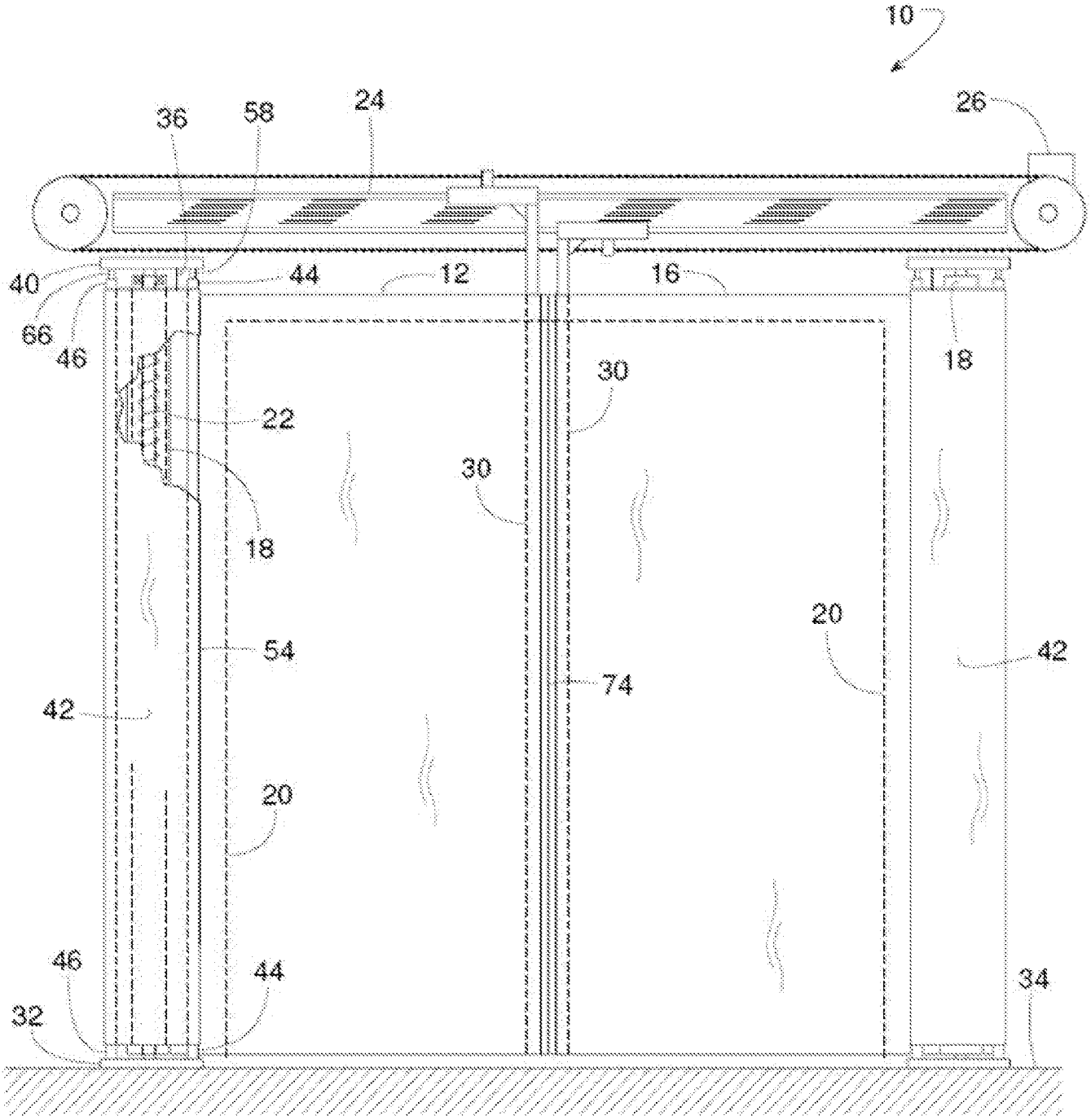
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FIG. 2

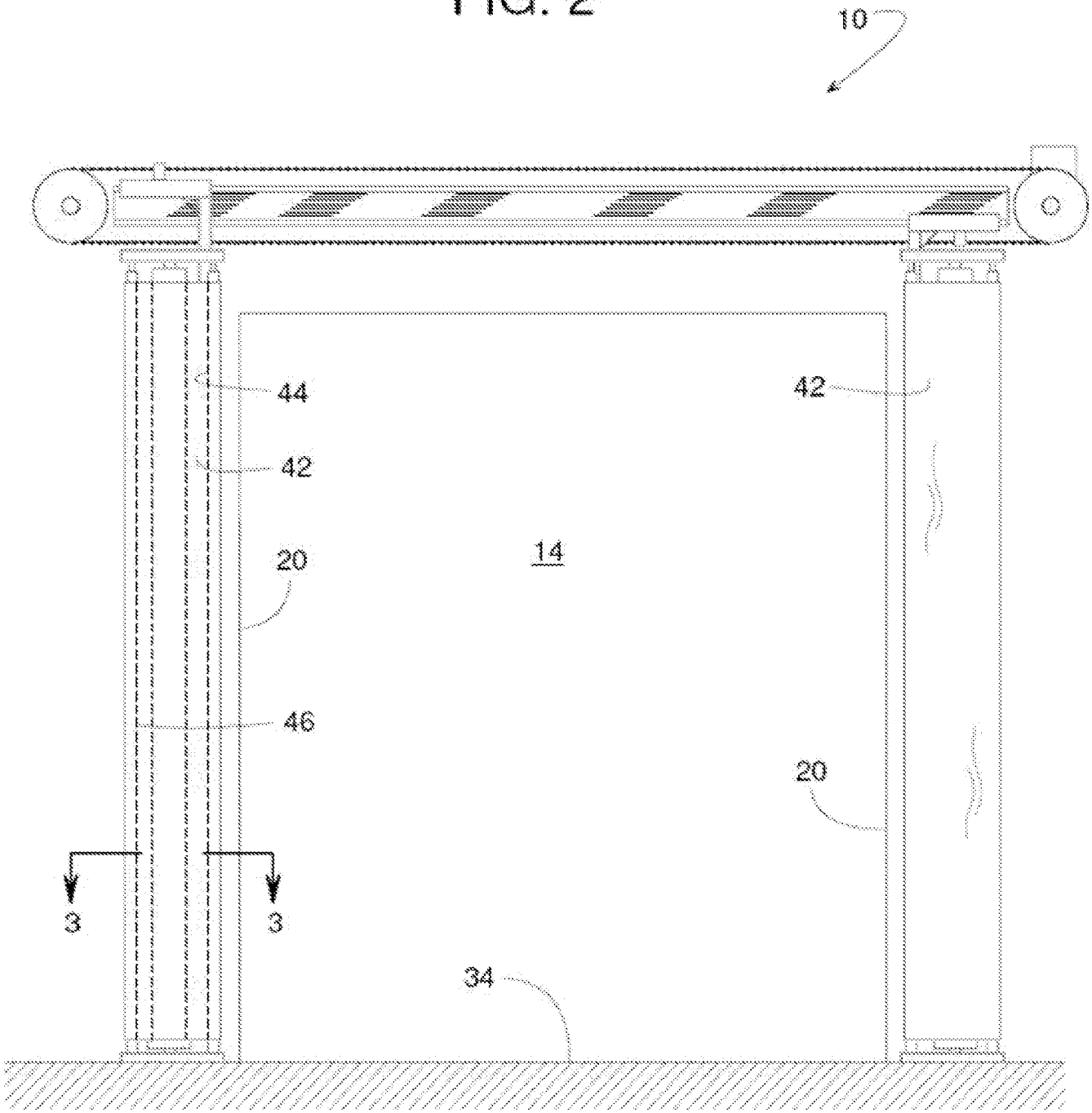

FIG. 3

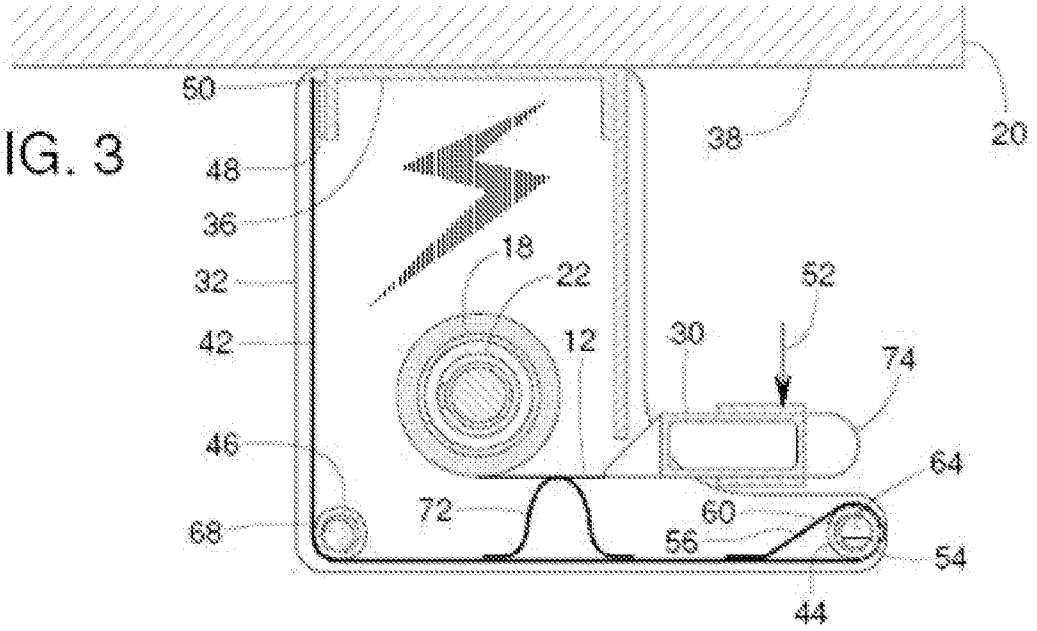
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FIG. 4

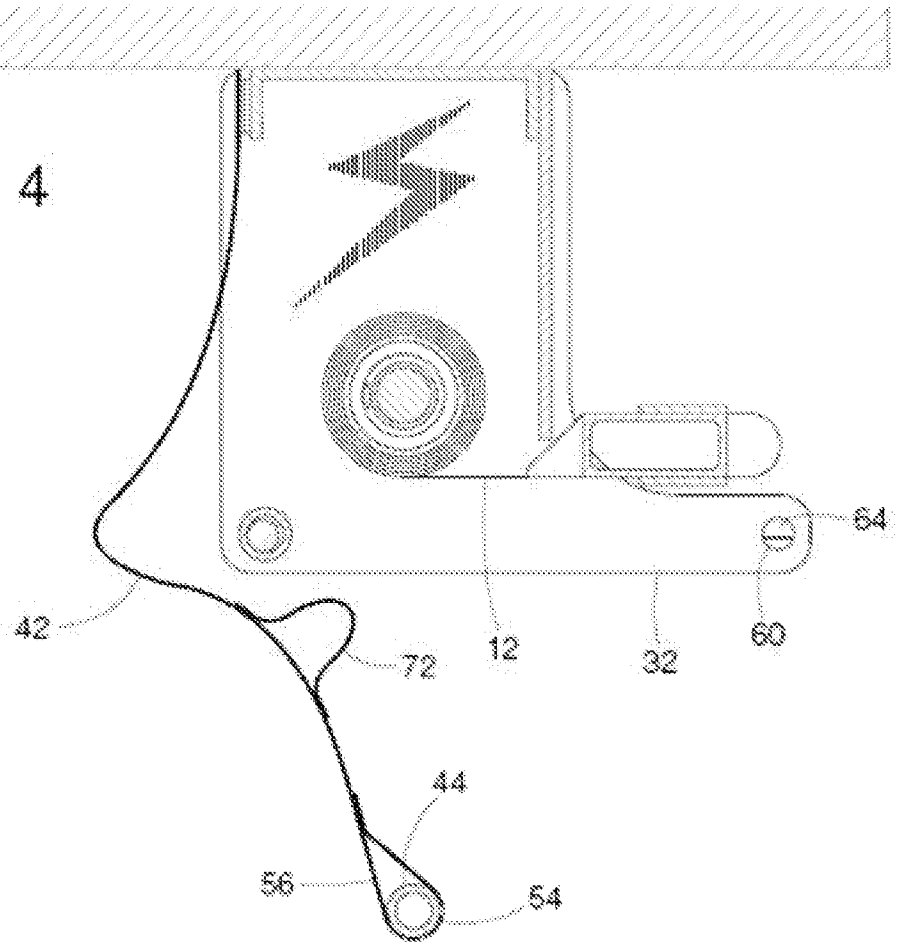
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FIG. 5

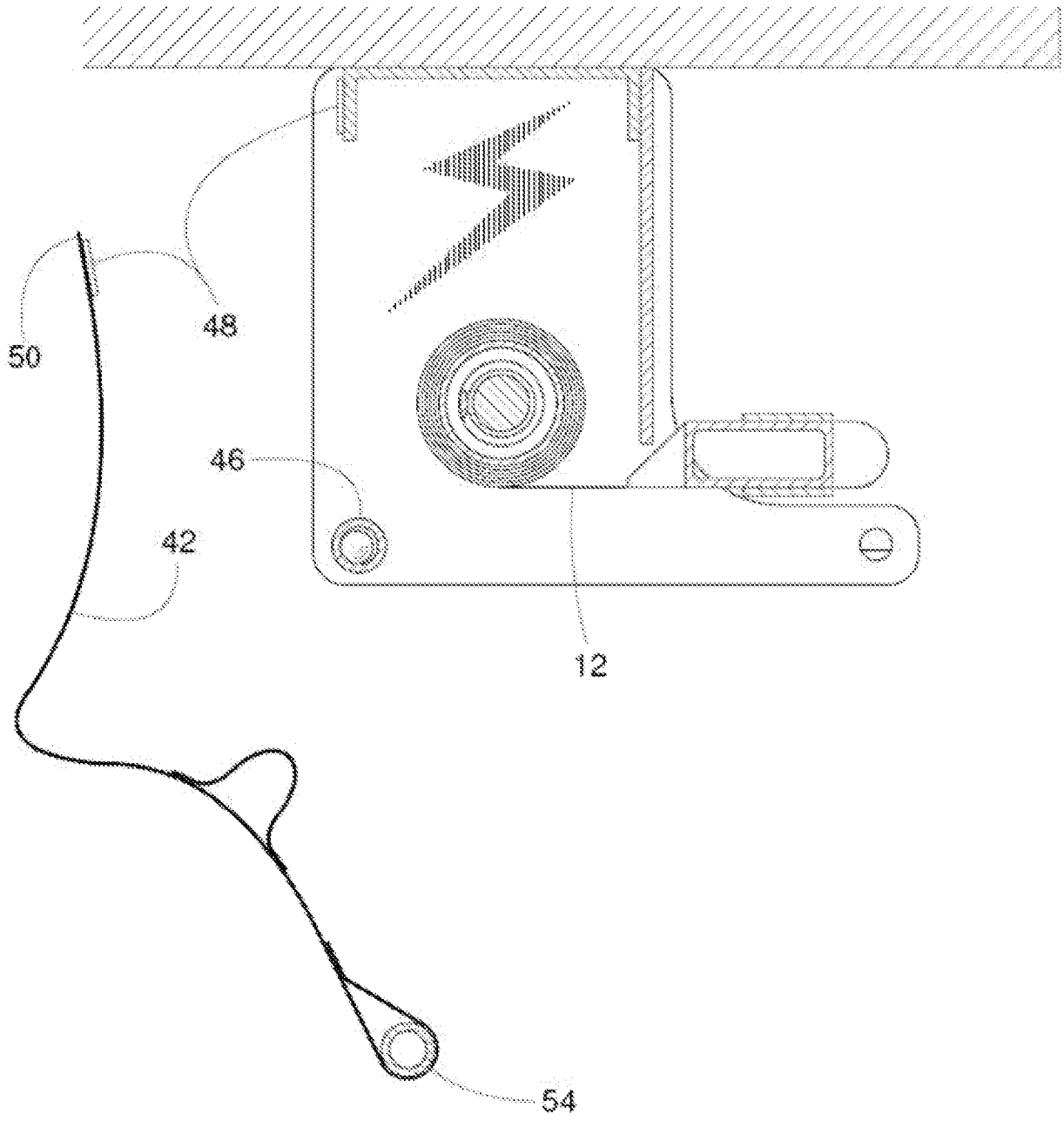


FIG. 6

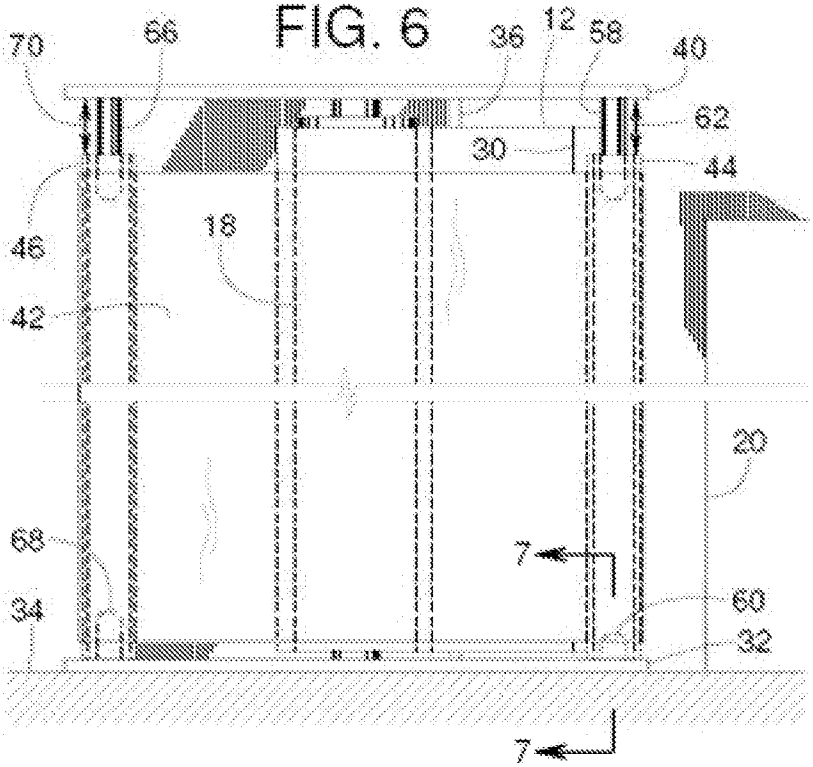


FIG. 7

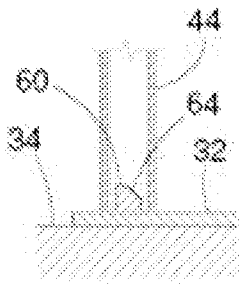


FIG. 8

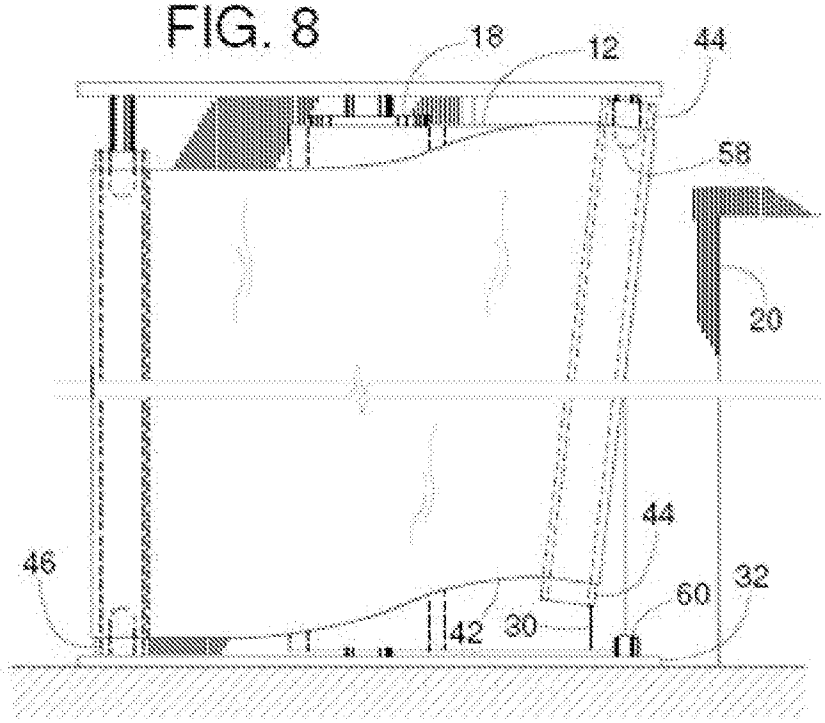
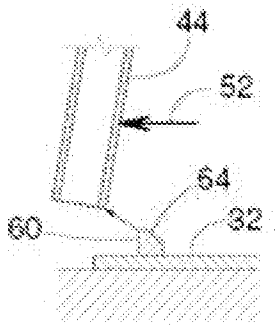


FIG. 9



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/035147

A. CLASSIFICATION OF SUBJECT MATTER
INV. E06B9/11

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 096 902 A (JUNOD LOUIS) 27 June 1978 (1978-06-27) cited in the application abstract; figures 1a,1b,4	1,7, 12-13,22
A	WO 87/04485 A1 (NOMAFA AB [SE]) 30 July 1987 (1987-07-30) abstract; claim 1; figures 1-3	1,13,22
A	WO 01/94735 A1 (RITE HITE HOLDING CORP [US]) 13 December 2001 (2001-12-13) abstract; figures 1-4	1,13,22
A	DE 41 05 964 A1 (SIGERIST AG CARL [CH]) 16 July 1992 (1992-07-16) abstract; claim 1; figure 1	1,13,22

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
3 July 2009	10/07/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Fernandez, Eva

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2009/035147

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