

BI-FOLD DOOR SYSTEM AND ASSEMBLY

Technical Field

5 The present disclosure generally relates to a bi-fold door system and assembly. More particularly, the present disclosure describes various embodiments of a bi-fold door assembly, as well as a bi-fold door system comprising the bi-fold door assembly for assembling to a door frame assembly.

10 Background

Bi-fold doors are commonly used in households, especially for rooms and toilets. FIG. 1 illustrates an example of an existing bi-fold door system 20. The bi-fold door system 20 has a door frame assembly 22 and a bi-fold door assembly 24. The bi-fold
15 door assembly 24 is normally assembled to the door frame assembly 22 by fixed rotating couplers 26 that enable the bi-fold door assembly 24 to rotate for opening and closing. The fixed rotating couplers 26 make it difficult to remove the bi-fold door assembly 24 from the door frame assembly 22, such as if the bi-fold door assembly 24 is damaged and needs to be replaced. Tools are typically used to forcefully
20 dislodge the fixed rotating couplers 26 in order to remove the bi-fold door assembly 24 from the bi-fold door assembly 24. However, this process tends to damage the door frame assembly 22 and/or bi-fold door assembly 24.

Therefore, in order to address or alleviate at least one of the aforementioned
25 problems and/or disadvantages, there is a need to provide a bi-fold door system and assembly, in which there is at least one improvement and/or advantage over the prior art.

Summary

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According to a first aspect of the present disclosure, there is a bi-fold door assembly for assembling to a door frame assembly. The bi-fold door assembly comprises:

(a) a first door panel and a second door panel rotatably coupled together by a pivot mechanism;

(b) a first upper coupler for coupling the first door panel to the door frame assembly, the first upper coupler comprising:

5 (i) an upper component for coupling to the door frame assembly and comprising a receptacle; and

(ii) a lower component for coupling to the first door panel and arranged to swivel with the upper component, the lower component comprising a protrusion moveable between a retracted position and an extended position;

10 (c) a first lower coupler for coupling to and supporting the first door panel, the first lower coupler comprising:

(i) an upper component for coupling to the first door panel; and

(ii) a lower component arranged to swivel with the upper component; and

(d) a second upper coupler for coupling the second door panel to the door frame assembly, the second upper coupler arranged for moving the second door panel along the door frame assembly.

The first upper and lower couplers are arranged for cooperatively rotating the first door panel relative to the door frame assembly. In the extended position, the protrusion engages the receptacle to couple the bi-fold door assembly to the door frame assembly, thereby enabling the first door panel to rotate relative to the door frame assembly. In the retracted position, the protrusion disengages from the receptacle to decouple the bi-fold door assembly from the door frame assembly.

25 According to a second aspect of the present disclosure, there is a bi-fold door system comprising: (A) a door frame assembly comprising an upper horizontal frame; and (B) a bi-fold door assembly for assembling to the door frame assembly. The bi-fold door assembly comprises:

(a) a first door panel and a second door panel rotatably coupled together by a pivot mechanism;

30 (b) a first upper coupler coupled to the first door panel and the upper horizontal frame, the first upper coupler comprising:

(i) an upper component coupled to the upper horizontal frame and comprising a receptacle; and

(ii) a lower component coupled to the first door panel and arranged to swivel with the upper component, the lower component comprising a protrusion moveable between a retracted position and an extended position;

(c) a first lower coupler coupled to the first door panel for supporting the first door panel, the first lower coupler comprising:

(i) an upper component coupled to the first door panel; and

(ii) a lower component arranged to swivel with the upper component; and

(d) a second upper coupler for coupling the second door panel to the door frame assembly, the second upper coupler arranged for moving the second door panel along the door frame assembly.

The first upper and lower couplers are arranged for cooperatively rotating the first door panel relative to the door frame assembly. In the extended position, the protrusion engages the receptacle to couple the bi-fold door assembly to the door frame assembly, thereby enabling the first door panel to rotate relative to the door frame assembly. In the retracted position, the protrusion disengages from the receptacle to decouple the bi-fold door assembly from the door frame assembly.

An advantage of one or more of the above aspects of the present disclosure is that the configuration of the first upper coupler allows the bi-fold door assembly to be easily disassembled and removed from the door frame assembly, such as for replacing the bi-fold door assembly and/or any of the couplers which may be damaged. To disassemble the bi-fold door assembly, the protrusion is moved to the retracted position to decouple the bi-fold door assembly from the door frame assembly. The bi-fold door assembly can be easily disassembled and removed from the door frame assembly without forcibly dislodging the bi-fold door assembly or forcibly decoupling any of the couplers. There would be minimal or even zero risk of damage to the bi-fold door assembly and the couplers.

A bi-fold door system and assembly according to the present disclosure are thus disclosed herein. Various features, aspects, and advantages of the present disclosure will become more apparent from the following detailed description of the embodiments of the present disclosure, by way of non-limiting examples only, along with the accompanying drawings.

Brief Description of the Drawings

FIG. 1 illustrates an existing bi-fold door system of the prior art.

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FIG. 2A to FIG. 2D illustrate various views of a bi-fold door system, in accordance with various embodiments of the present disclosure.

FIG. 3 illustrates a door frame assembly of the bi-fold door system, in accordance with various embodiments of the present disclosure.

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FIG. 4A to FIG. 4C illustrate various views of a first upper coupler of the bi-fold door system, in accordance with various embodiments of the present disclosure.

FIG. 5A to FIG. 5C illustrate various views of a first lower coupler of the bi-fold door system, in accordance with various embodiments of the present disclosure.

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FIG. 6A to FIG. 6D illustrate various views of a second upper coupler of the bi-fold door system, in accordance with various embodiments of the present disclosure.

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FIG. 7A to FIG. 7C illustrate various views of a second lower coupler of the bi-fold door system, in accordance with various embodiments of the present disclosure.

Detailed Description

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In the present disclosure, depiction of a given element or consideration or use of a particular element number in a particular figure or a reference thereto in corresponding descriptive material can encompass the same, an equivalent, or an analogous element or element number identified in another figure or descriptive material associated therewith. The use of "/" in a figure or associated text is understood to mean "and/or" unless otherwise indicated.

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For purposes of brevity and clarity, descriptions of embodiments of the present disclosure are directed to a bi-fold door system and assembly, in accordance with the drawings. While aspects of the present disclosure will be described in conjunction with the embodiments provided herein, it will be understood that they are not intended to limit the present disclosure to these embodiments. On the contrary, the present disclosure is intended to cover alternatives, modifications and equivalents to the embodiments described herein, which are included within the scope of the present disclosure as defined by the appended claims. Furthermore, in the following detailed description, specific details are set forth in order to provide a thorough understanding of the present disclosure. However, it will be recognized by an individual having ordinary skill in the art, i.e. a skilled person, that the present disclosure may be practiced without specific details, and/or with multiple details arising from combinations of aspects of particular embodiments. In a number of instances, well-known systems, methods, procedures, and components have not been described in detail so as to not unnecessarily obscure aspects of the embodiments of the present disclosure.

References to “an embodiment / example”, “another embodiment / example”, “some embodiments / examples”, “some other embodiments / examples”, and so on, indicate that the embodiment(s) / example(s) so described may include a particular feature, structure, characteristic, property, element, or limitation, but that not every embodiment / example necessarily includes that particular feature, structure, characteristic, property, element or limitation. Furthermore, repeated use of the phrase “in an embodiment / example” or “in another embodiment / example” does not necessarily refer to the same embodiment / example. The terms “comprising”, “including”, “having”, and the like do not exclude the presence of other features / elements / steps than those listed in an embodiment. Recitation of certain features / elements / steps in mutually different embodiments does not indicate that a combination of these features / elements / steps cannot be used in an embodiment.

In representative or exemplary embodiments of the present disclosure, there is a bi-fold door system 100 as illustrated in FIG. 2A to FIG. 2D. FIG. 2A illustrates a front view of the bi-fold door system 100 in a closed state. FIG. 2B illustrates a rear view

of the bi-fold door system 100 in the closed state. FIG. 2C illustrates a perspective view of the bi-fold door system 100 in a partially opened state. FIG. 2D illustrates another perspective view of the bi-fold door system 100 in the partially opened state.

5 The bi-fold door system 100 may be installed and used in various spaces and entryways, but more commonly in households such as doors for rooms and toilets. It will be appreciated that the bi-fold door system 100 may be used in other instances beyond households, such as in industrial and commercial environments. The bi-fold door system 100 comprises a door frame assembly 200 and a bi-fold door assembly
10 300 for assembling to the door frame assembly 200. The bi-fold door assembly 300 is rotatable relative to the door frame assembly 200 for opening and closing the entryway whereat the bi-fold door system 100 is installed. Various parts / components of the bi-fold door system 100, including the door frame assembly 200 and/or the bi-fold door assembly 300, may be made from a suitable material as will
15 be readily known to the skilled person. For example, the material may be acrylic, aluminum, or any combination thereof.

Further with reference to FIG. 3, the door frame assembly 200 comprises an upper horizontal frame 202 that may be fixed to a ceiling, such as of the room / toilet
20 entryway. In some embodiments, the door frame assembly 200 comprises a first vertical frame 204 and a second vertical frame 206 coupled to the upper horizontal frame 202. The first vertical frame 204 and the second vertical frame 206 may be fixed to walls of the entryway. Optionally, the door frame assembly 200 comprises a lower horizontal frame 208 that cooperates with the upper horizontal frame 202 to
25 guide movement of the bi-fold door assembly 300 for opening and closing. In one embodiment, the lower horizontal frame 208 is fixed to a floor and the walls of the entryway. In another embodiment, the lower horizontal frame 208 is fixed to the floor of the entryway and to the first vertical frame 204 and the second vertical frame 206.

30 The bi-fold door assembly 300 comprises a first door panel 302 and a second door panel 304 rotatably coupled together by a pivot mechanism 306. When the bi-fold door assembly 300 is assembled to the door frame assembly 200, the first door panel 302 and the second door panel 304 are coupled to the upper horizontal frame

202. The first door panel 302 is positioned adjacent to the first vertical frame 204 and the second door panel 304 is positioned adjacent to the second vertical frame 206. Each of the first door panel 302 and the second door panel 304 may be made from various materials. For example, structural parts of the first door panel 302 and the
5 second door panel 304 may be made from acrylic or aluminum, while other parts such as the facing panels may be made from tempered glass for aesthetic effect.

Further with reference to FIG. 4A to FIG. 4C, the bi-fold door assembly 300 further comprises a first upper coupler 320 for coupling or coupled to the first door panel
10 302 and the upper horizontal frame 202. The first upper coupler 320 comprises an upper component 322 for coupling or coupled to the upper horizontal frame 202 and comprising a receptacle 324. The first upper coupler 320 further comprises a lower component 326 for coupling or coupled to the first door panel 302 and arranged to swivel with the upper component 322. The lower component 326 comprises a
15 protrusion 328 moveable between a retracted position and an extended position, wherein the protrusion 328 is engageable with the receptacle 324. Accordingly, the upper component 322 and the lower component 326 are coupleable to and decoupleable from each other by movement of the protrusion 328. The first upper coupler 320 may be made from a suitable material such as but not limited to acrylic,
20 nylon, or other type of plastic material.

In some embodiments, the protrusion 328 is biased towards the extended position. For example, the lower component 326 of the first upper coupler 320 comprises a biasing mechanism, such as a spring mechanism 330, for biasing the protrusion 328
25 towards the extended position. It will be appreciated that other forms of biasing mechanisms may be used instead of the spring mechanism 330. The spring mechanism 330 is retractable (against the biasing force) to move the protrusion 328 towards the retracted position. The first door panel 302 may comprise a hole 308 to access and thereby move the protrusion 328 towards the retracted position.
30 Specifically, the hole 308 provides an access for a tool to engage and actuate the spring mechanism 330, thereby moving the protrusion 328 towards the retracted position. Notably, the spring mechanism 330 is exposed so that it can be engaged by the tool for moving the protrusion 328.

In some other embodiments, the first door panel 302 is mechanically connected to the lower component 326 of the first upper coupler 320 for moving the protrusion 328 between the retracted position and the extended position. Particularly, the first door panel 302 comprises a mechanism or mechanical connection configured for moving the protrusion 328 towards the retracted position. The mechanism or mechanical connection may include a latch accessible from the front of the first door panel 302 and without use of any tool, wherein movement of the latch directly causes movement of the protrusion 328.

Further with reference to FIG. 5A to FIG. 5C, the bi-fold door assembly 300 further comprises a first lower coupler 340 for coupling or coupled to the first door panel 302 and for supporting the first door panel 302 on the floor or on the lower horizontal frame 208. The first lower coupler 340 comprises an upper component 342 for coupling or coupled to the first door panel 302. The first lower coupler 340 further comprises a lower component 344 arranged to swivel with the upper component 342. The lower component 344 may be coupled to the floor or the lower horizontal frame 208. In one embodiment as shown in FIG. 5B, the upper component 342 comprises a protrusion 346 and the lower component 344 comprises a receptacle 348, wherein the protrusion 346 is engageable with the receptacle 348. In another embodiment as shown in FIG. 5C, the lower component 344 further comprises a supporting member 350 coupleable to the first vertical frame 204. In some other embodiments, the lower component 344 comprises the protrusion 346 and the upper component 342 comprises the receptacle 348, instead of the reverse. Accordingly, the upper component 342 and the lower component 344 are coupleable to and decoupleable from each other by engagement / disengagement of the protrusion 346 / receptacle 348. The first lower coupler 340 may be made from a suitable material such as but not limited to acrylic, nylon, or other type of plastic material.

The first upper coupler 320 and the first lower coupler 340 are arranged to collectively form a hinge mechanism for cooperatively rotating bi-fold door assembly 300, specifically the first door panel 302, relative to the door frame assembly 200. Notably, rotation of the first door panel 302 relative to the door frame assembly 200,

such as relative to the first vertical frame 204, would cause rotation of the second door panel 304 about the pivot mechanism 306. Said rotations consequently move the bi-fold door assembly 300 along the door frame assembly 200, specifically along the upper horizontal frame 202 and optionally the lower horizontal frame 208, for opening / closing of the bi-fold door assembly 300.

Further with reference to FIG. 6A to FIG. 6D, the bi-fold door assembly 300 further comprises a second upper coupler 360 for coupling the second door panel 304 to the door frame assembly 200. Specifically, the second upper coupler 360 is coupled to the second door panel 304 and the upper horizontal frame 202. The second upper coupler 360 is arranged for moving the second door panel 304 along the upper horizontal frame 202. The second upper coupler 360 comprises an upper component 362 for coupling or coupled to and for moving along the upper horizontal frame 202. The second upper coupler 360 further comprises a lower component 364 for coupling or coupled to the second door panel 304 and arranged to swivel with the upper component 362. The upper component 362 and the lower component 364 may be decoupleable from each other. The second upper coupler 360 may be made from a suitable material such as but not limited to acrylic, nylon, or other type of plastic material.

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In some embodiments as shown in FIG. 6B and FIG. 6C, the upper component 362 of the second upper coupler 360 comprises a plurality of rollers 366 cooperative to move the second door panel 304 along the upper horizontal frame 202. The rollers 366 may be made from a material with a low coefficient of friction to facilitate said moving of the second door panel 304. The material may include nylon, Teflon, or a combination thereof. In one embodiment as shown in FIG. 6B, the upper component 362 has a first roller 366a, a second roller 366b, a third roller 366c, and a fourth roller 366d. The first roller 366a and the second roller 366b are aligned or collinear with each other. The third roller 366c and the fourth roller 366d are aligned or collinear with each other. In another embodiment as shown in FIG. 6C, the upper component 362 has a first roller 366a and a second roller 366b. The first roller 366a has a first axis and the second roller 366b has a second axis, wherein the first axis is offset from the second axis. Offsetting of the first axis and the second axis maintains even

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distribution of the weight of the second door panel 304 on the upper horizontal frame 202, while reducing the number of rollers 366, thereby reducing the overall dimensions of the second upper coupler 360.

- 5 In some other embodiments as shown in FIG. 6D, the upper component 362 of the second upper coupler 360 comprises a sliding element 368 cooperative to move the second door panel 304 along the upper horizontal frame 202. Like the rollers 366, the sliding element 368 may be made from a material with a low coefficient of friction to facilitate said moving of the second door panel 304. The sliding element 368 may
10 comprise a groove track or a rib track for sliding the second door panel 304 along a corresponding track of the lower horizontal frame 208.

In some embodiments with reference to FIG. 7A and FIG. 7C, the bi-fold door assembly 300 comprises a second lower coupler 380 for coupling or coupled to the
15 second door panel 304. The second lower coupler 380 may be made from a suitable material such as but not limited to acrylic, nylon, or other type of plastic material. In one embodiment as shown in FIG. 7C, the second lower coupler 380 comprises a flat surface 382 that is positioned above the lower horizontal frame 208 or the floor when the second lower coupler 380 is coupled to the second door panel 304.

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In another embodiment as shown in FIG. 7A and FIG. 7B, the second lower coupler 380 is configured for supporting the second door panel 304 on the lower horizontal frame 208. The second lower coupler 380 comprises an upper component 384 for coupling or coupled to the second door panel 304, and further comprises a lower
25 component 386 arranged to swivel with the upper component 382. The upper component 384 and the lower component 386 may be decoupleable from each other. In one example, the lower horizontal frame 208 comprises a rib track 210 for guiding said moving of the second door panel 304 along the lower horizontal frame 208. The lower component 386 comprises a groove track 388 for said guiding along the rib
30 track 210. Specifically, the groove track 388 is configured to glide along the rib track 210 to facilitate movement of the second door panel 304 along the lower horizontal frame 208. Alternatively, the lower component 386 comprises a rib track and the lower horizontal frame comprises a groove track.

In some embodiments with reference to FIG. 2A and FIG. 2D, the bi-fold door system 100 further comprises a magnetic mechanism 102 disposed at the pivot mechanism 306 and the upper horizontal frame 202. The magnetic mechanism 102 is configured for magnetically attracting the bi-fold door assembly 300 to the door frame assembly 200. The magnetic mechanism 102 comprises a first magnetic component 104 disposed at the pivot mechanism 306 and a second magnetic component 106 disposed at the upper horizontal frame 202, wherein the first magnetic component 104 and the second magnetic component 106 are magnetically cooperable with each other. For example, one of the first magnetic component 104 and the second magnetic component 106 is a magnet and the other is made of a magnetic / ferrite material. The magnetic mechanism 102 helps to ensure that when the bi-fold door assembly 300 is closed, the first door panel 302 and the second door panel 304 are flush / aligned with each other and relative to the door frame assembly 200.

In some embodiments with reference to FIG. 2A and FIG. 2B, the bi-fold door system 100 may comprise a locking mechanism 108 that locks the bi-fold door assembly 300 to the door frame assembly 200. Use of the magnetic mechanism 102 for said alignment would mitigate problems with the locking mechanism 108 as the bi-fold door assembly 300 may not be properly locked if there is some misalignment. It will be appreciated that a similar magnetic mechanism may be disposed at other parts of the bi-fold door assembly 300 and other parts of the door frame assembly 200, such as at the lower horizontal frame 208.

When the bi-fold door assembly 300 is installed and assembled to the door frame assembly 200, the protrusion 328 of the first upper coupler 320 is in the extended position. The protrusion 328 engages the receptacle 324 to couple the bi-fold door assembly 300 to the door frame assembly 200, thereby enabling the first door panel 302 to rotate relative to the door frame assembly 200. Specifically, the first upper coupler 320 and the first lower coupler 340 are arranged for cooperatively rotating the first door panel 302 relative to the door frame assembly 200.

The configuration of the first upper coupler 320, i.e. having the extended and retracted positions, advantageously allows the bi-fold door assembly 300 to be easily disassembled and removed from the door frame assembly 200, such as for replacing the bi-fold door assembly 300 and/or any of the couplers 320 / 340 / 360 / 380 which
5 may be damaged. To disassemble the bi-fold door assembly 300, the protrusion 328 is moved to the retracted position. In the retracted position, the protrusion 328 disengages from the receptacle 324 to decouple the bi-fold door assembly 300 from the door frame assembly 200. The corner portion of the bi-fold door assembly 300 around the first upper coupler 320 can thus be dislodged from the door frame
10 assembly 200. The other portions of the bi-fold door assembly 300 around the other couplers 340, 360, and 380 can be subsequently dislodged from the door frame assembly 200 to thereby remove the bi-fold door assembly 300. The bi-fold door assembly 300 can be easily disassembled and removed from the door frame assembly 200 without forcibly dislodging the bi-fold door assembly 300 or forcibly
15 decoupling any of the couplers 320, 340, 360, and 380. The bi-fold door assembly 300 can thus be easily removed and replaced with minimal or even zero risk of damage to the bi-fold door assembly 300, door frame assembly 200, and/or any of the couplers 320 / 340 / 360 / 380.

20 Furthermore, with easier disassembling of the bi-fold door system 100, various parts of the bi-fold door assembly 300, especially the couplers 320 / 340 / 360 / 380, can be replaced with spare parts. For example, the second upper coupler 360 may be more prone to damage due to constant movement along the upper horizontal frame 202 and may need to be replaced more frequently. Replacement of the couplers
25 second upper coupler 360 is easier since the bi-fold door assembly 300 can be easily disassembled by the user. The time and effort to replace the parts are reduced and the parts can be easily replaced by the user on the spot. Ease of replacement with spare parts can prolong the lifespan of the bi-fold door system 100, and the user does not need to replace the entire -fold door system 100 or even the bi-fold door
30 assembly 300 if only one or a few parts are damaged.

In the foregoing detailed description, embodiments of the present disclosure in relation to a bi-fold door system and assembly are described with reference to the

provided figures. The description of the various embodiments herein is not intended to call out or be limited only to specific or particular representations of the present disclosure, but merely to illustrate non-limiting examples of the present disclosure. The present disclosure serves to address at least one of the mentioned problems and issues associated with the prior art. Although only some embodiments of the present disclosure are disclosed herein, it will be apparent to a person having ordinary skill in the art in view of this disclosure that a variety of changes and/or modifications can be made to the disclosed embodiments without departing from the scope of the present disclosure. Therefore, the scope of the disclosure as well as the scope of the following claims is not limited to embodiments described herein.

Claims

1. A bi-fold door assembly for assembling to a door frame assembly, the bi-fold door assembly comprising:

5 (a) a first door panel and a second door panel rotatably coupled together by a pivot mechanism;

(b) a first upper coupler for coupling the first door panel to the door frame assembly, the first upper coupler comprising:

10 (i) an upper component for coupling to the door frame assembly and comprising a receptacle; and

(ii) a lower component for coupling to the first door panel and arranged to swivel with the upper component, the lower component comprising a protrusion moveable between a retracted position and an extended position;

15 (c) a first lower coupler for coupling to and supporting the first door panel, the first lower coupler comprising:

(i) an upper component for coupling to the first door panel; and

(ii) a lower component arranged to swivel with the upper component; and

20 (d) a second upper coupler for coupling the second door panel to the door frame assembly, the second upper coupler arranged for moving the second door panel along the door frame assembly,

wherein the first upper and lower couplers are arranged for cooperatively rotating the first door panel relative to the door frame assembly;

25 wherein in the extended position, the protrusion engages the receptacle to couple the bi-fold door assembly to the door frame assembly, thereby enabling the first door panel to rotate relative to the door frame assembly; and

30 wherein in the retracted position, the protrusion disengages from the receptacle to decouple the bi-fold door assembly from the door frame assembly.

2. The bi-fold door assembly according to claim 1, wherein the lower component of the first upper coupler further comprises a biasing mechanism for biasing the protrusion towards the extended position.

5 3. The bi-fold door assembly according to claim 2, wherein the first door panel comprises a hole to access and thereby move the protrusion.

4. The bi-fold door assembly according to claim 2 or 3, wherein the first door panel comprises a mechanism configured for moving the protrusion towards the
10 retracted position.

5. The bi-fold door assembly according to any one of claims 1 to 4, further comprising a second lower coupler for coupling to and supporting the second door panel, the second lower coupler arranged for guiding said moving of the second door
15 panel along the door frame assembly.

6. The bi-fold door assembly according to claim 5, wherein the second lower comprises:

an upper component for coupling to the second door panel; and
20 a lower component arranged to swivel with the upper component, the lower component comprising a groove track for said guiding.

7. The bi-fold door assembly according to any one of claims 1 to 6, wherein the lower component of the first lower coupler is arranged to support the first door panel
25 on the door frame assembly or on a floor.

8. The bi-fold door assembly according to any one of claims 1 to 7, wherein the second upper coupler comprises a first roller and a second roller cooperative to move the second door panel along the door frame assembly, wherein the first roller
30 has a first axis and the second roller having a second axis, and wherein the first axis is offset from the second axis.

9. The bi-fold door assembly according to any one of claims 1 to 8, further comprising a magnetic part disposed at the pivot mechanism for magnetically attracting the door assembly to the door frame assembly.

5 10. A bi-fold door system comprising:

(A) a door frame assembly comprising an upper horizontal frame; and

(B) a bi-fold door assembly for assembling to the door frame assembly,
the bi-fold door assembly comprising:

10 (a) a first door panel and a second door panel rotatably coupled
together by a pivot mechanism;

(b) a first upper coupler coupled to the first door panel and the
upper horizontal frame, the first upper coupler comprising:

(i) an upper component coupled to the upper horizontal
frame and comprising a receptacle; and

15 (ii) a lower component coupled to the first door panel and
arranged to swivel with the upper component, the lower
component comprising a protrusion moveable between a
retracted position and an extended position;

20 (c) a first lower coupler coupled to the first door panel for
supporting the first door panel, the first lower coupler comprising:

(i) an upper component coupled to the first door panel; and

(ii) a lower component arranged to swivel with the upper
component; and

25 (d) a second upper coupler for coupling the second door panel
to the door frame assembly, the second upper coupler arranged for
moving the second door panel along the door frame assembly,

wherein the first upper and lower couplers are arranged for
cooperatively rotating the first door panel relative to the door frame assembly;

30 wherein in the extended position, the protrusion engages the
receptacle to couple the bi-fold door assembly to the door frame assembly,
thereby enabling the first door panel to rotate relative to the door frame
assembly; and

wherein in the retracted position, the protrusion disengages from the receptacle to decouple the bi-fold door assembly from the door frame assembly.

5 11. The bi-fold door system according to claim 10, wherein the lower component of the first upper coupler further comprises a biasing mechanism for biasing the protrusion towards the extended position.

10 12. The bi-fold door system according to claim 11, wherein the first door panel comprises a hole to access and thereby move the protrusion towards the retracted position.

13. The bi-fold door system according to claim 11 or 12, wherein the first door panel comprises a mechanism configured for moving the protrusion towards the
15 retracted position.

14. The bi-fold door system according to any one of claims 10 to 13, wherein the door frame assembly further comprises a lower horizontal frame.

20 15. The bi-fold door system according to claim 14, wherein the bi-fold door assembly further comprises a second lower coupler coupled to and supporting the second door panel on the lower horizontal frame, the second lower coupler arranged for guiding said moving of the second door panel along the lower horizontal frame.

25 16. The bi-fold door system according to claim 15, wherein the lower horizontal frame comprises a rib track for said guiding.

17. The bi-fold door system according to claim 16, wherein the second lower comprises:

30 an upper component coupled to the second door panel; and
a lower component arranged to swivel with the upper component, the lower component comprising a groove track for said guiding along the rib track.

18. The bi-fold door system according to any one of claims 14 to 17, wherein the lower component of the first lower coupler is arranged to support the first door panel on the lower horizontal frame or on a floor.

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19. The bi-fold door system according to any one of claims 10 to 18, wherein the second upper coupler comprises a first roller and a second roller cooperative to move the second door panel along the upper horizontal frame, wherein the first roller has a first axis and the second roller having a second axis, and wherein the first axis is offset from the second axis.

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20. The bi-fold door system according to any one of claims 10 to 19, further comprising a magnetic mechanism disposed at the pivot mechanism and the upper horizontal frame, the magnetic mechanism configured for magnetically attracting the bi-fold door assembly to the door frame assembly.

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