June 23, 1970 K. E. ROSENQUIST 3,516,473

INTERLOCKING CAP FOR FOLDABLE DOOR

Filed Oct. 17, 1968 2 Sheets-Sheet 1

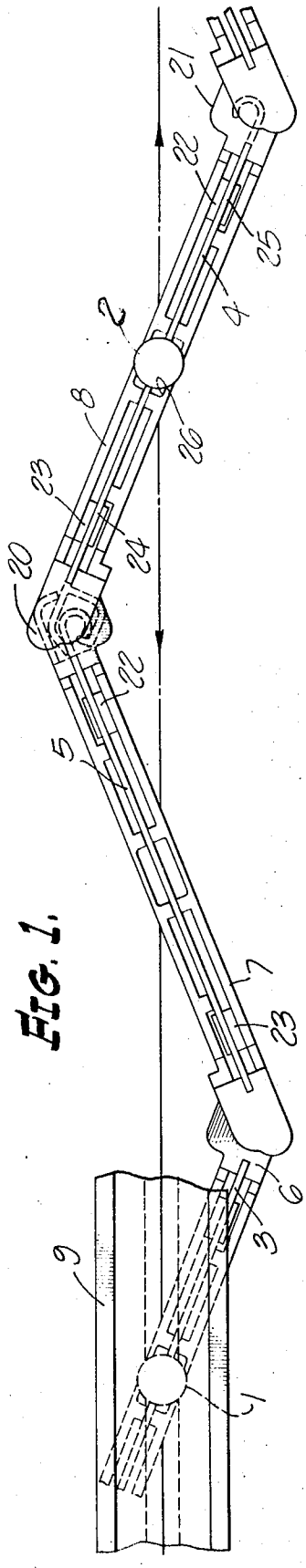


FIG. 1.

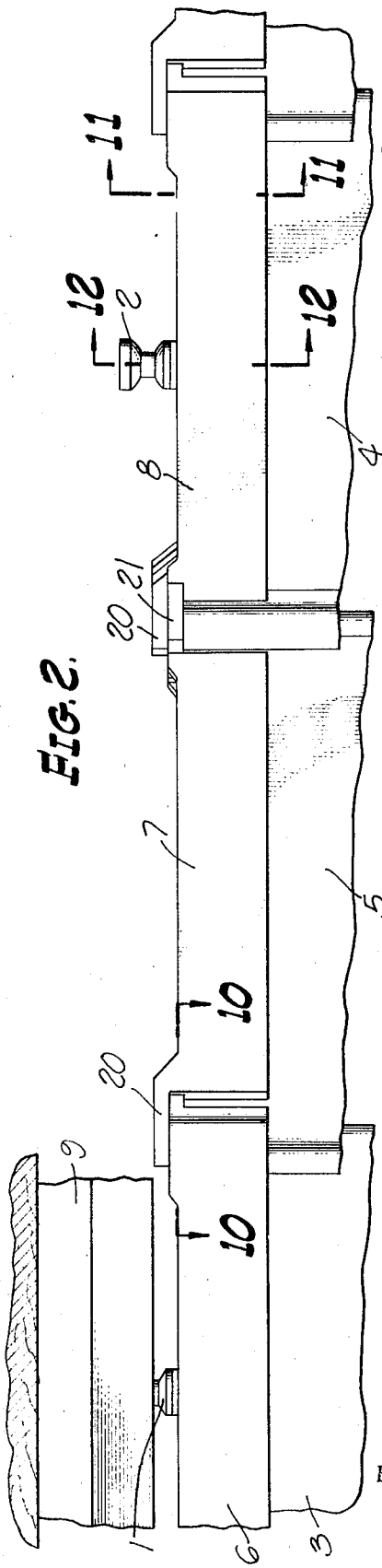


FIG. 2.

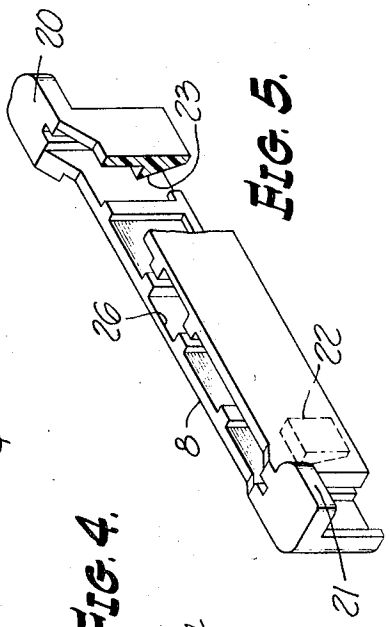


FIG. 5.

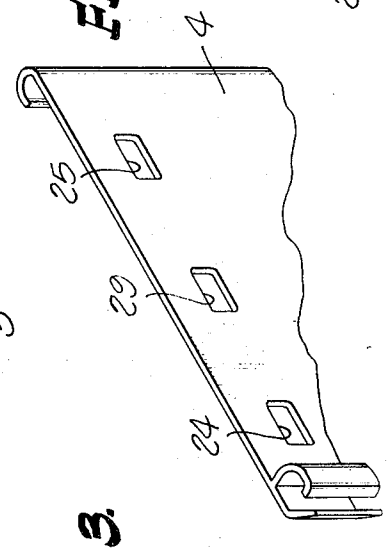


FIG. 4.

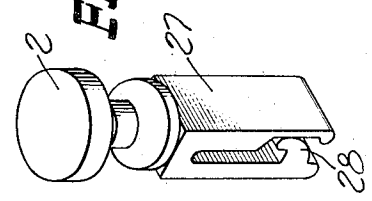


FIG. 3.

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FIG. 6.

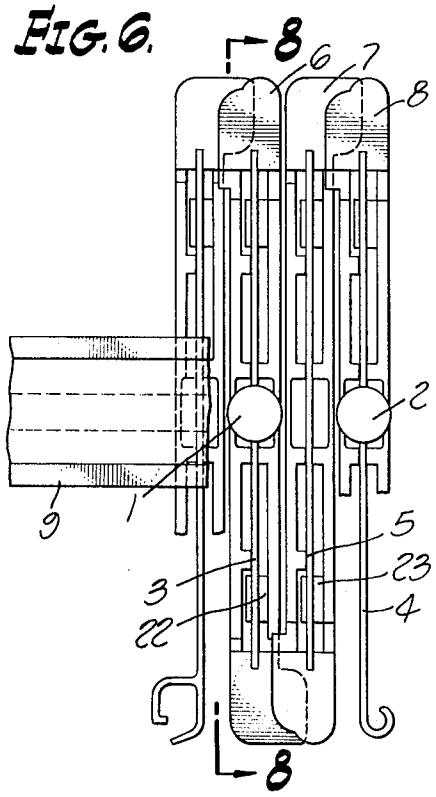


FIG. 7.

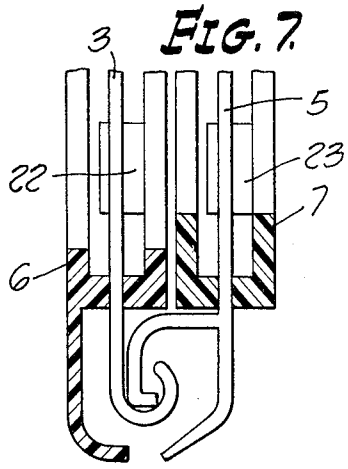


FIG. 9.

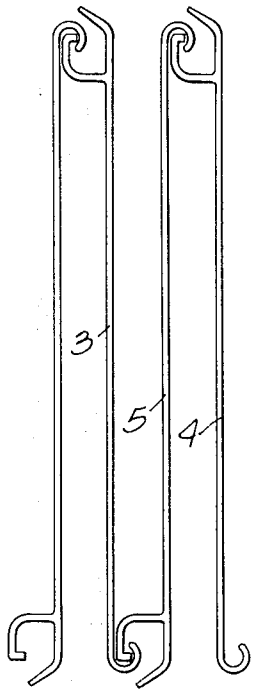


FIG. 8.

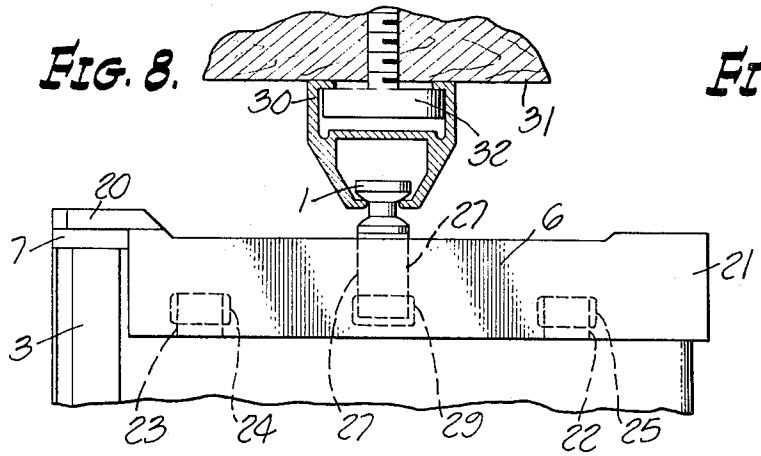
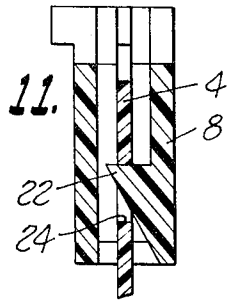


FIG. 11.



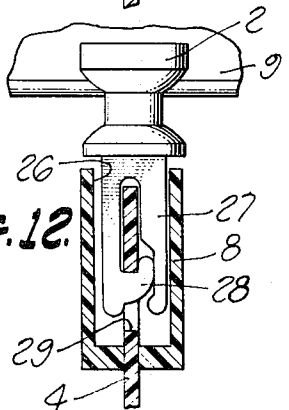


FIG. 12.

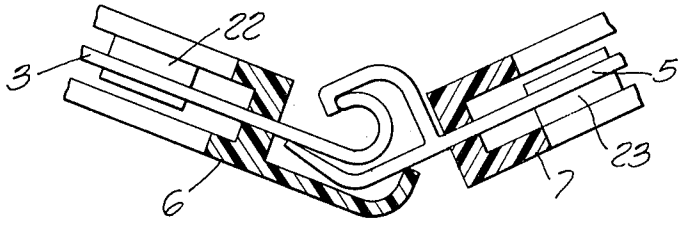


FIG. 10.

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INTERLOCKING CAP FOR FOLDABLE DOOR

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Int. Cl. E05d *15/26*
U.S. Cl. 160—183 6 Claims

ABSTRACT OF THE DISCLOSURE

This disclosure relates to a cap which is affixed to the upper portion of each panel in a vertical foldable panel door. This cap is useful with the type of foldable doors which are hinged by some means which permits vertical movement of one panel with respect to its adjacent panel. The cap permits a panel to be vertically supported by the panel next to it, while still permitting a freedom of rotation around a non-concentric axis at the hinge.

BACKGROUND OF THE INVENTION

The invention is in the field of foldable panels or doors made from a plurality of hinged vertical panels. The cap is particularly useful on the type of panel where the hinge permits some vertical motion of one panel with respect to its adjacent panels. Some of the caps are provided with a glide member which fits into an overhead channel or other holding means. This supported cap then is capable of providing vertical support to adjacent panels.

One type of foldable door with which this invention is particularly useful is disclosed in my co-pending application Ser. No. 701,910, filed Jan. 31, 1968. With this hinge one panel is free to move vertically with respect to its adjacent panels. This movement was prevented by providing each panel with a glide clip and each panel was therefore separately supported in the vertical direction. It was found that this method of support occasionally caused a binding when the doors were extended or compacted. It was believed that this binding or sticking could be prevented by placing a glide means only on alternate panels, but this required an alternate means of providing vertical support to the panels which did not have a glide member affixed to them. When each panel is not supported from above, support has been provided by prior art devices by a lower track upon which the unsupported panels may ride. This had several disadvantages in that it caused a substantial frictional drag, and also necessitated an unsightly and inconvenient track underneath the door.

SUMMARY OF THE INVENTION

My invention permits the use of glide means on only a portion of vertical panels which are hinged in a way which permits freedom of vertical movement. At one end of the cap there is an upper finger and at the other end of the cap is a lower finger. When these caps are affixed to adjacent hinged panels, the upper finger rests above the lower finger of the adjacent cap. This lower finger thereby gives vertical support to the adjacent cap which in turn holds the adjacent panel. These upper and lower fingers are not hinged together, so that they permit a rotation at the hinge which is not concentric. The horizontal movement of the door is not restricted by the cap, but only by the panels themselves. The caps are provided to accept a glide member which may be used on alternate caps to result in a foldable door which will not bind. As a result of my invention, it is possible to utilize the advantages of the type of hinge which permits vertical movement and yet need not be vertically supported by a glide member on each panel.

It is an object of my invention to provide a cap for a

vertical foldable door comprising a plurality of slat members which are hinged in a way to permit vertical movement.

It is another object of my invention to provide an interlocking cap which may be affixed to a folding door panel and which will provide vertical support to an adjacent folding door panel.

It is another object of my invention to provide an interlocking cap which is inexpensive to fabricate and which readily is affixed to folding door panels.

It is yet another object of my invention to provide an interlocking cap which may be fabricated from inexpensive plastic and which can be utilized with a glide member fabricated from a plastic with excellent lubricity characteristics.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view partly broken away showing a folding door in the extended position.

FIG. 2 is a side elevation partly broken away of the upper portion of the door shown in FIG. 1.

FIG. 3 is a perspective view of the glide means shown in FIGS. 1 and 2.

FIG. 4 is a perspective view partly broken away of the upper portion of the folding door panels shown in FIGS. 1 and 2.

FIG. 5 is a perspective view partly broken away of the interlocking cap shown in FIGS. 1 and 2.

FIG. 6 is a top plan view showing the folding door in a compacted position.

FIG. 7 is an enlarged top plan view showing the hinged area of two adjacent panels of FIG. 6 with the upper portion of the cap broken away.

FIG. 8 is a view along line **8—8** of FIG. 6.

FIG. 9 is a top plan view of the panels of FIG. 6 with the interlocking cap broken away.

FIG. 10 is a top plan view of the hinge of FIG. 7 in its extended position.

FIG. 11 is a view taken along line **11—11** of FIG. 2.

FIG. 12 is a view taken along line **12—12** of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now to FIGS. 1 and 2, glide members **1** and **2** are placed on alternate panels **3** and **4**, leaving panel **5** with no vertical support from any glide member. Interlocking caps numbers **6**, **7** and **8** are affixed to folding door panels **3**, **5** and **4**. Glide members **1** and **2** are supported by suspending track **9**.

As shown in FIG. 5, each interlocking cap is provided with an upper finger **20** and a lower finger **21**. The upper finger **20** will ride on top of the lower finger of its adjacent interlocking cap, and the lower finger **21** will provide vertical support for the upper finger of its adjacent interlocking cap. The interlocking caps are provided with extensions **22** and **23** which permit the cap to be clipped into the openings **24** and **25** of the door panel shown in FIG. 4. The interlocking cap is also provided with an opening **26** which permits the entry of the glide member **27**, which is shown in FIG. 3. The extended portion **28** on the lower part of glide member **27** fits into opening **29** of the folding door panel shown in FIG. 4. This glide member is inserted after the interlocking cap has ben clipped onto the folding door panel.

As can be seen in FIG. 6, interlocking cap number **7** is not provided with a glide member. Vertical support is provided for this interlocking cap and the folding door panel which it supports by the adjacent glide members **1** and **2**. These glide members hold interlocking caps **6** and **8** as shown in FIG. 2. This vertical support is provided to interlocking cap **7** on one side through its upper finger **20**, which rests upon interlocking cap **6** and on

its other side by its lower finger **21** which rests on adjacent panel **4**.

FIGS. 7 and 10 illustrate one type of hinge which is particularly useful with my invention. This type of hinge permits vertical movement of adjacent panels but provides horizontal support. The function of this hinge is described in detail in my co-pending application Ser. No. 701,910 filed Jan. 31, 1968.

FIG. 8 shows the details of suspending track **30** which is affixed to a suspending surface **31** through support **32**.

FIG. 11 shows an interlocking cap **8** supporting a panel **4** by an extension **22** which extends through an opening **24** in the panel **4**.

FIG. 12 shows a glide member **2** extending into an interlocking cap **8** and holding a folding door panel **4**.

It is preferable that the glide members be made from a plastic which has good lubricity and relatively high strength. I have found that nylon is particularly useful in this application. The interlocking cap may be made from a less expensive plastic such as polyvinylchloride. It is also possible to make the glide member an integral part of some of the interlocking caps. In this instance it would be desirable to mold the part from a plastic which had sufficient lubricity.

It is also within the scope of my invention to use methods such as riveting or gluing to affix the glide member either to an interlocking cap or to the folding door panel. It is also not necessary that the glide members be placed on alternate panels, but could be spaced further apart such as on every third panel.

It is also not necessary that the interlocking cap of my invention be used only with the hinge shown in the drawings. It is equally useful with any type of hinge which permits some substantial vertical motion, such as a fabric hinge. The hinge utilized with my invention need not pivot around a concentric axis. A substantial non-concentric motion is possible since the interlocking caps of my invention are free to move over one another without being constricted by any pin.

It is apparent that the interlocking caps at either end of the folding door should be modified to fit any half panels that are frequently used in folding doors. Such end interlocking caps need only have one extending finger.

The interlocking cap need not be snapped onto the folding door panel in the method shown, but may be riveted or glued to the panel. The panels need not be used for folding doors, but may be utilized for any purpose where an extending panel is desired.

The foregoing examples are not to be taken as limiting the scope of my invention, but are merely illustrative of various embodiments. The scope of this invention is therefore limited only by the lawful scope of the claims which follow.

I claim:

1. In folding doors of the type which are made from a plurality of hinged vertical panels, the hinges between said vertical panels permitting vertical movement of one panel with respect to an adjacent panel, but restricting horizontal movement, an interlocking cap permitting non-concentric rotation of said hinges comprising:

a vertical surface;

means for attaching said vertical surface to a vertical panel;

an upper horizontal finger extending from one end of the vertical surface, and positioned so that said upper horizontal finger is vertically supported by the lower horizontal finger of an adjacent interlocking cap; and

a lower horizontal finger extending from the other end of the vertical surface and positioned so that the lower horizontal finger rests on an upper part of an adjacent vertical panel.

2. In folding doors of the type which are made from a plurality of hinged vertical panels, the hinges between said vertical panels permitting vertical movement of one panel with respect to an adjacent panel, but restricting horizontal movement, an interlocking cap permitting non-concentric of said hinges comprising:

a vertical surface;

means for attaching said vertical surface to a vertical panel;

a lower horizontal finger extending from one end of the vertical surface and positioned so that it will provide vertical support to an upper horizontal finger of an adjacent interlocking cap;

an upper horizontal finger extending from the other end of the vertical surface and positioned so that it will prevent an upward vertical movement of the lower horizontal finger of an adjacent interlocking cap; and

means for supporting a glide member whereby said interlocking cap may be vertically supported by a suspending track.

3. The structure of claim **2** wherein said means for supporting a glide member comprises an opening through which a glide member may be inserted and affixed to said vertical panel.

4. The structure of claim **2** wherein said means for supporting a glide member comprises an integral molding of the glide member with the interlocking cap.

5. A foldable panel door comprising:

a plurality of vertical panels, said vertical panels being hinged in a manner to permit vertical movement of one panel with respect to an adjacent panel;

an interlocking cap affixed to the top of each vertical panel, said interlocking caps each having an upper horizontal finger at one end and a lower horizontal finger at its other end, said lower horizontal finger being positioned so as to provide vertical support to an adjacent upper horizontal finger, and further positioned to be supported by an adjacent vertical panel, and said upper horizontal finger being positioned so that it may be supported vertically by an adjacent lower horizontal finger said caps permitting non-concentric rotation of the hinges of said vertical panels; and

means for affixing glide means to at least one of said interlocking caps.

6. The door of claim **5** wherein said glide means are placed on alternate interlocking caps.

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U.S. Cl. X.R.

160—199, 235