Sept. 11, 1962 R. P. ARTMAN 3,053,318

FOLDABLE PARTITION

Filed May 21, 1959

Fig. 1.

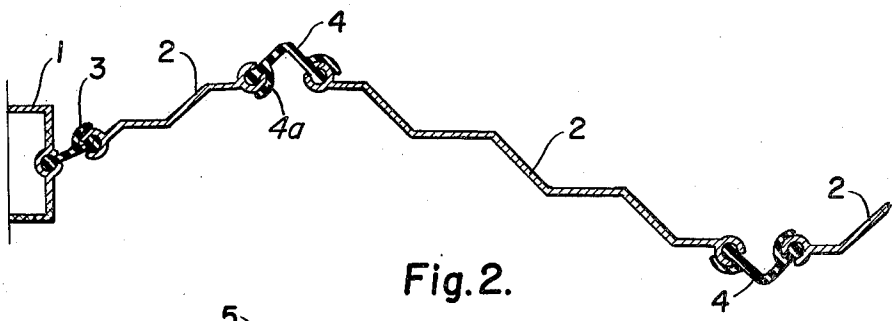
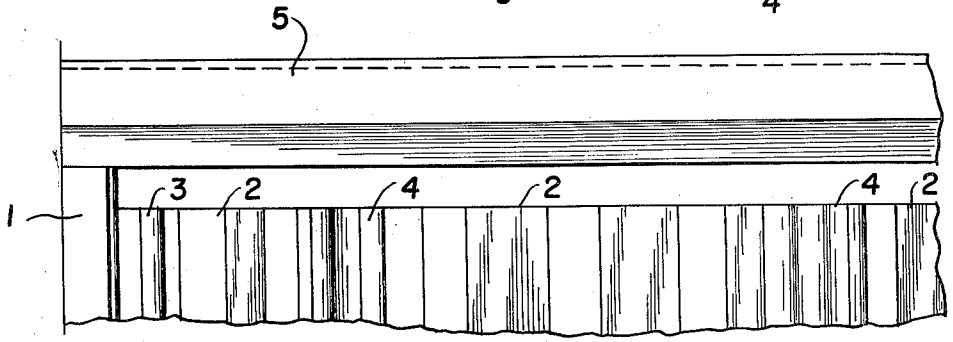


Fig. 2.



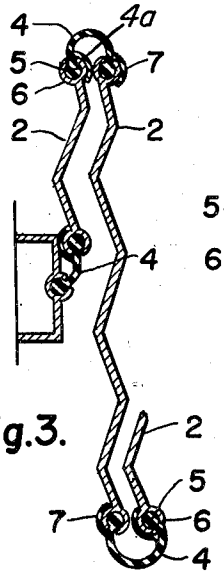


Fig. 3.

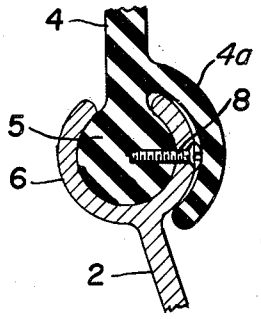


Fig. 4.

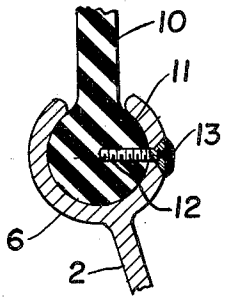


Fig. 5.

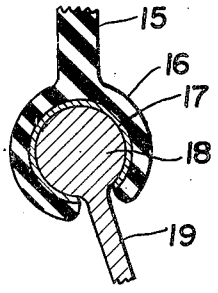


Fig. 6.

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FOLDABLE PARTITION

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2 Claims. (Cl. 160—231)

This invention relates to a folding door or closure and, more particularly, to a folding door having metal panels joined by flexible panels forming hinge portions and of the accordion type.

Accordion type folding doors with metal panels are known in the art, a typical one being shown in Hiatt Patent 2,770,298. However, one outstanding disadvantage of folding doors having metal panels is that the metal panels tend to clash or strike each other when the door is folded, therefore causing a very disturbing noise, as well as causing considerable wear on the edges of the side portions of the metal panels, which mars the finish and attractiveness of such metal panels.

Another outstanding disadvantage of metal panel foldable doors has been in the plastic hinge construction. Often times screws must be inserted through the top and bottom of the hinge which must be very accurately fitted and which tend to become loosened, and thereby causing the foldable plastic hinge to slide along the slot of the metal panel and fall out of place.

An object of my invention is to provide a foldable door of the metal panel type which is devoid of the above named disadvantages and which is of such construction as to completely eliminate any noise or clashing between the metal panels which would also result in wear of the end portions of the panels.

Another object of my invention is to provide a novel hinge connection for a foldable door of the metal panel type, which hinge connection is more secure and reliable in operation than those conventionally used and which has radial screws which are completely hidden from view and which will definitely prevent any possibility of sliding movement between the joined side edges of the plastic and metal panels.

Other objects and advantages of my invention will become apparent from a study of the following description taken with the accompanying drawing wherein:

FIG. 1 is a transverse, cross-sectional view of a folding door of the metal panel type involving the principles of the present invention;

FIG. 2 is a fragmentary, elevational view showing the door in a suspended position;

FIG. 3 is a cross-sectional view of the folding door shown in FIG. 1 but in the collapsed or folded position;

FIG. 4 is an enlarged, cross-sectional view showing the connection between the plastic hinge panels and the side edge portions of the metal panels;

FIG. 5 is an enlarged, cross-sectional view similar to FIG. 4 but showing a modification; and

FIG. 6 is an enlarged, cross-sectional view similar to FIGS. 4 and 5 but showing a still further modification.

Referring more particularly to FIGS. 1, 2 and 3 of the drawing, numeral **1** denotes a jamb channel which is secured to a wall, partition or the like dividing one side of an opening, such as a door. Channel **1** has a grooved portion into which is fitted a bead portion at the side edge of panel **4** of flexible material, such as plastic material, preferably having elasticity.

The folding door comprises a series of panels **2** of rigid material, preferably metal, such as aluminum, or, if desired, of other stiff material, such as rigid plastic or wood. Metal panels **2** are joined together by the flexible panels **4** of easily foldable material, thus the flexible panels **4** serve as flexible hinges to permit the folding

or collapsing of the metal panels from the position shown in FIG. 1 to that shown in FIG. 3.

The folding door is suspended from an overhead trolley of any well known construction, such as that shown in the above mentioned Patent No. 2,770,298, which trolley suspension, per se, forms no part of the invention.

Each of the metal panels **2** has provided on both side edges thereof a channel shaped portion, such as **6**, into which is fitted a bead portion **5** integrally formed at the side edges of flexible panels **4**. In addition, there is also provided an integrally molded extension *4a*, shown more clearly in FIG. 4, which covers and snugly embraces most of the outside portion of one half of the channel to form a cushioning stop element, also so as to completely conceal the heads of radially extending screws **8** disposed along spaced portions of the length of bead **5**, which screws prevent relative longitudinal sliding movement between the bead **5** and the channel **6** of the metal panel. It will be noted that at the other end of flexible panel **4**, there is a corresponding extension **7**. Thus when the metal panels are moved to the collapsed position of the door, as shown in FIG. 3, the channel portions thereof will not be pushed into metal-to-metal contact which would create a disturbing noise and cause wear on the outside portion of the panel. Instead, the extension *4a* will contact one side of the channel and act as a resilient stop and silencer. As will be observed in FIG. 3, there is no metal-to-metal contact between the side edges of adjoining metal panels since there is always a rubber-like extension **6** therebetween.

FIG. 5 shows a modification wherein instead of extensions, such as *4a* and **7**, there is provided a rubber or plastic head **13** of substantially elastic material on screw **12** so that the rubber head **13** will serve as a stop for cushioning the side edge portions of adjoining metal panels when the door is collapsed.

FIG. 6 shows a further modification wherein the shapes of the metal panels and flexible panels are reversed, that is to say, the plastic panel **15** will have the channel shaped side edge portion **16** into which are fitted the circular beads **18** at the side edges of the metal panel **19**. There may be additionally provided, if desired, reinforcing arcuate pieces **17** either coated on the inner surface of channel **16** or embedded therein for stiffening the flexible channel so that it will not expand too readily upon spreading apart of the respective panels and thus effect removal of the bead **18** from the channel. Other reinforcing, of course, may be provided instead, such as a greatly thickened edge portion or perhaps embedded fibres.

It will be seen therefore, that there will never be the possibility of the end portions of the metal panels, striking each other because they are surrounded by rubber or other yieldable, resilient material, such as certain plastic materials.

Thus it will be seen that I have provided an efficient folding door having rigid panels made of metal or other similar rigid material interconnected or hinged by flexible plastic or other foldable materials, wherein stop means are provided for preventing striking together of the end portions of the metal panels therefore preventing noise as well as wear of the end portions of the metal panels; furthermore I have provided a secure way of fastening the metal or other rigid panels to the flexible panels by set screws which are so disposed as to be always reliable in operation for preventing relative longitudinal displacement between the end portions of the metal and flexible panels.

While I have illustrated and described several embodiments of my invention, it will be understood that these are by way of illustration only, and that various changes and modifications may be made within the contemplation

of my invention and within the scope of the following claims.

I claim:

1. An accordion type foldable closure comprising metal panels alternating with flexible panels of resilient material, the side edges of said metal panels having integral channels, the side edges of said flexible panels being in the form of enlarged beads snugly fitting in said channels, flexible extensions integrally formed adjacent the edge portions of said flexible panels and snugly covering the outer surface of a portion of the channel in which the adjoining bead is located so as to serve as a resilient stop against which the edge portion of the adjoining metal panel will strike when the closure is collapsed.

2. A closure as recited in claim 1 together with a plurality of longitudinally spaced fastening elements extending radially through said channels and enclosed bead portions for preventing longitudinal slippage between the bead and channel, said extensions covering and concealing the head portions of said fastening elements.

References Cited in the file of this patent

UNITED STATES PATENTS

1,990,871	Klocke	Feb. 12, 1935
2,388,297	Slaughter	Nov. 6, 1945
2,607,411	Van Vliet	Aug. 19, 1952
2,943,675	Ford	July 5, 1960

FOREIGN PATENTS

488,174	Great Britain	July 1, 1938