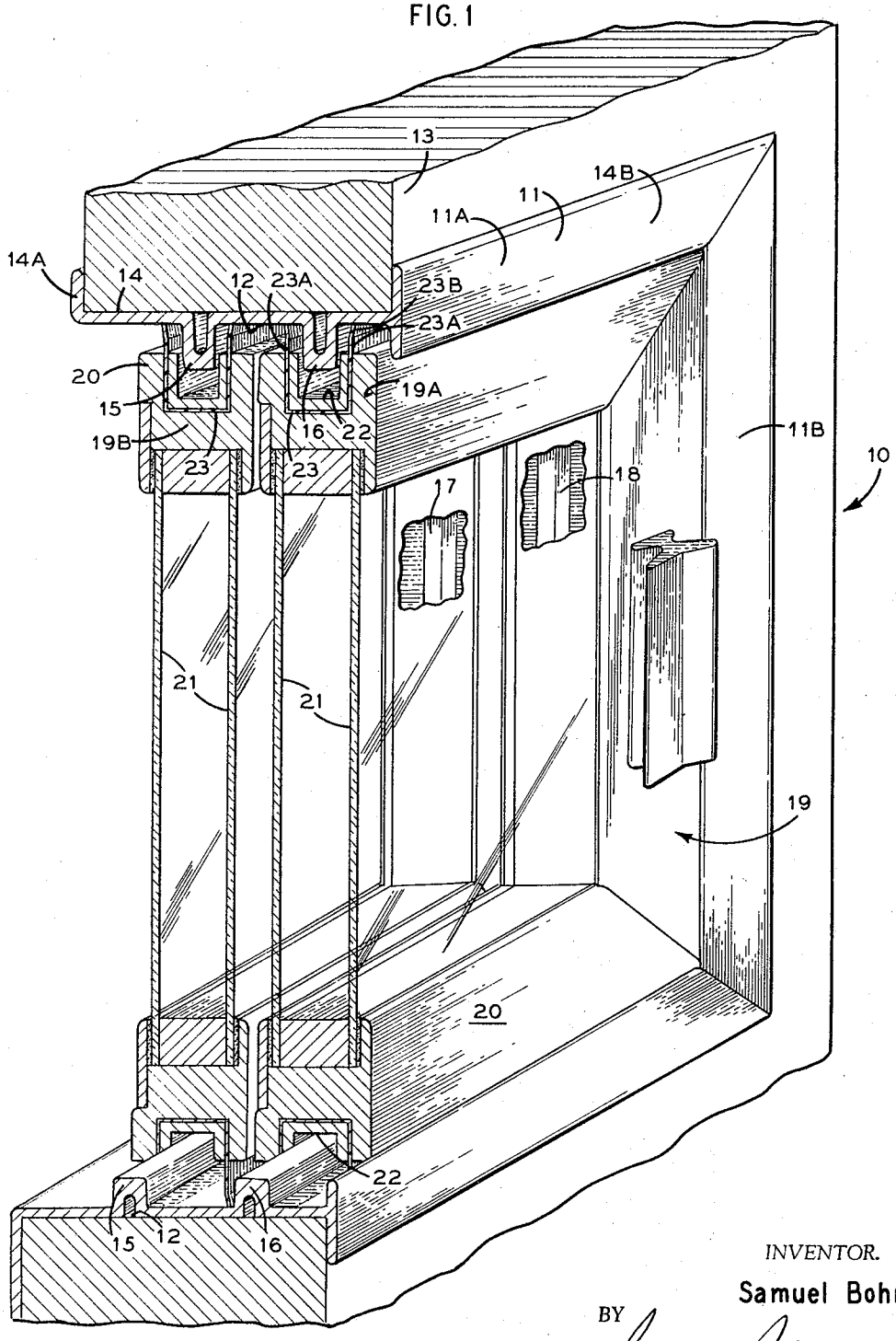
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SLIDING DOOR CONSTRUCTION AND SEAL THEREFOR

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FIG. 1



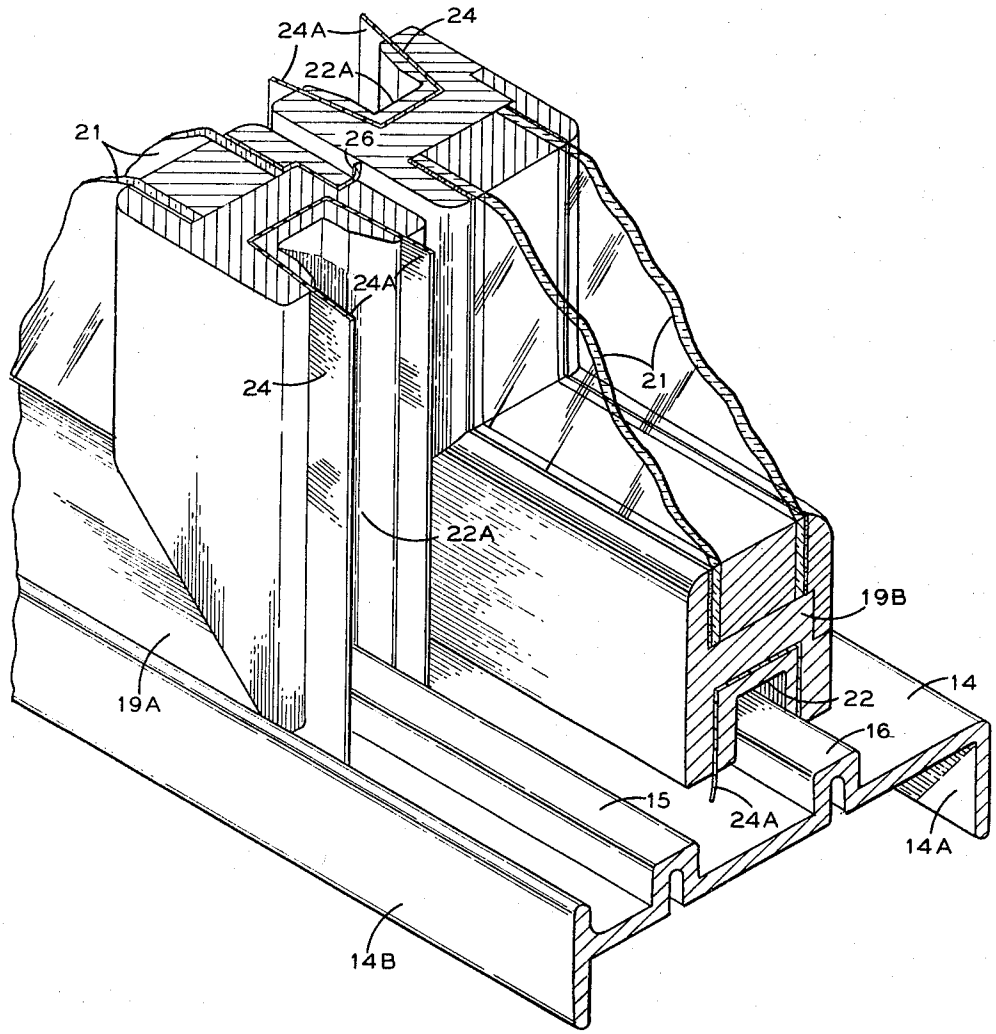
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FIG. 2



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SLIDING DOOR CONSTRUCTION AND SEAL THEREFOR

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This invention relates in general to a sliding closure construction and seal therefor, and more specifically to a sliding door construction and seal which is particularly adapted for use in cabinets, as for example, cold storage cabinets, refrigerators and the like.

Heretofore, in cold storage cabinets and the like, particularly the commercial type of cold storage cabinets commonly found in grocery store outlets, meat markets etc. it was usually customary to close the openings of such cabinets with sliding doors. Generally such door construction included an assembly comprising a frame outlining the access opening to the interior of the cabinet and a closure or door slidably mounted within the frame. Such frames outlining the access openings were provided with opposed guide rails and jamb rails extending substantially co-extensive with the sides and ends of the frame. Accordingly, the closure or door therefor were provided with complementary grooves formed in their peripheral edge portion to accommodate such rails. Such sliding door constructions or assemblies are well known.

However, when such door constructions are utilized in cold storage cabinets it was observed that the normal play or looseness required to render such doors either freely slidable along the respective guide rails or removable therefrom caused much of the cold air within the cabinet to escape to the outer atmosphere. Consequently, the temperature within such cold storage cabinets had a tendency to rise above the desired cold setting thereby causing excessive wear on the compressor, and generally a loss in the overall efficiency of the cabinet. Fitting the sliding doors to a closer tolerance with respect to the guide rails in an effort to minimize the escape of cold air around the door does not prove feasible for the reason that too snug a fit will result in binding of the door on the guide rails.

An object of this invention is to provide a sliding door with an improved seal construction which is capable of effectively forming the positive seal between it and the door frame, and yet render the door freely slidable relative thereto.

Another object is to provide a cabinet, a sliding door construction having a flexible seal that is relatively simple in construction, positive in operation and relatively inexpensive to manufacture.

Still another object is to provide a sliding door construction with an improved double seal construction about the periphery thereof.

Still another object is to provide a sliding door construction with an improved seal wherein the seal comprises a substantially co-extensive feathery lip or strip extending along the entire periphery of the door to slidably engage with the adjacent opening frame.

Other features and advantages will become more readily apparent when considered in view of the drawings and description in which:

FIG. 1 illustrates a perspective view of the sliding door and seal construction in accordance with this invention, as applied to a cold storage cabinet and the like,

FIG. 2 is a fragmentary perspective view of the door construction of the instant invention illustrating the sealing arrangement along the opposed ends of the door construction.

Referring to the drawings there is shown in FIG. 1 the closure assembly **10** of the instant invention. As

shown, the closure assembly **10** comprises a frame **11** which is readily adapted to circumscribe the access opening **12** formed in a wall portion **13** of a cabinet, as for example a cold storage cabinet and the like. The frame **11** comprises essentially a pair of opposed frame members **11A** and a pair of opposed end jamb members **11B** (only one of which is shown) which are rectangularly disposed. Preferably, the respective frame members **11A**, **11B** are substantially identical in cross section. For this reason the respective frame members **11A**, **11B** can be readily fabricated from a continuous elongated structural member as for example, one formed by extrusion or molding. The structural frame member thus formed is then being cut to desired length and assembled to fit a desired opening. Consequently, the frame members **11A**, **11B** may be formed of any suitable metallic or plastic material that can be either extruded or molded.

In the illustrated arrangement each of the respective side and end jamb members **11A** and **11B** respectively is formed of a structural member having a relatively wide web portion **14** which has an outwardly extending flange portion **14A** connected along one edge portion. Connected to the other longitudinal edging of the web portion **14** is a front facing flange **14B** that extends laterally to either side of the web portion **14**. Thus, the front facing **14B** and the opposed laterally extending flange **14A** are constructed and arranged so as to receive therebetween the wall thickness **13** of the cabinet.

The respective side members **11A** in the illustrated form of the invention are each provided with a pair of spaced apart guide rails **15**, **16** which project inwardly of their respective frame members, and which extend substantially co-extensive the length thereof. The respective jamb end members **11B** of the frame **11** likewise provided with a pair of parallel jamb guide rails **17**, **18**, the arrangement being such that the complementary guide rails **15**, **16** and jamb rails **17**, **18**, respectively, are coplanarly disposed so that each defines an endless track circumscribing the internal periphery of the opening frame.

In accordance with this invention a closure **19** is slidably disposed within the frame of the opening. As best seen in FIGS. 1 and 2, two closures **19A**, **19B** are provided, each being arranged to form a closure for a portion of the cabinet opening. In the illustrated embodiment the arrangement is such that the respective closures **19A**, **19B** are dimensioned so that each will form a closure for substantially one-half of the access opening **12**. The illustrated closures **19A**, **19B** each include a circumscribing frame **20** constructed and arranged to accommodate a double walled, thermosealed glass panel **21** so as to provide visibility to the contents within the cabinet.

In accordance with this invention, each of the respective door frames **20** is provided with a groove **22** extending substantially the length of each opposed edge portion for accommodating the complementary guide rails **15** or **16** of the side members **11A** so that the respective closures **19A**, **19B** are slidably supported therebetween. To assure positive sealing with minimum binding between the respective closure members **19A**, **19B** and the frame defining the opening, an improved sealing means is provided.

As shown in the drawings, the sealing means **23** comprise a substantially U shaped sealing member which may be integrally molded or formed as an insert with respect to the frame portion of the door closures. The sealing member **23** has opposed leg portions **23A** which extend substantially co-extensive the length of the respective sides of the closure frame **11**. The arrangement is such that the free end of the respective leg portions **23A** of the U shaped seal **23** extends beyond the adjacent edge portion of the door frame so as to engage in sliding rela-

tionship to the web portion **14** of the door frame. In this manner it will be noted that the respective free end portions **23B** of the U shaped sealing member **23** straddle the respective guide rails **15** or **16** of the opposed frame members **11A** and thereby define a positive double seal to insure against the escape of any cold air from the interior of the cabinet in the closed position of the closures.

The end members of the closures are likewise provided with grooves **22A** for accommodating jamb rails **17** or **18** and a similar U shaped seal **24** so that the ends **24A** of the closure may be disposed in sealing relationship with the end jamb members **11B** of the frame opening whenever the door is moved into engagement with either end of the cabinet opening.

To insure sealing between respective sliding closing members **19A**, **19B**, one of the closing members **19A** is provided with a sealing strip **26** which extends laterally to one side of the door frame. In the closed position of the respective closures, the sealing strip **26** forms the seal against the adjacent edge portion of the other closure. See FIG. 2. Thus, when the respective closures or sliding doors **19A**, **19B** are oppositely disposed, as best seen in FIG. 2, to seal the entire opening, the sealing means **23** of the respective doors provide a positive seal about three sides of the door, the sum of which is equal to the circumference of the access opening, and the sealing strip **26** defines the seal between the sliding doors. In this manner leakage of of cold air through the space formed between adjacent closure members is positively prohibited. With the construction described it will be readily apparent that an improved and more positive sealing effect is afforded in that the specific sealing means **23** is constructed and arranged so as to provide a double seal for the respective sliding door members **19A**, **19B**, Also the arrangement is such that the projection of the respective seal ends **23A**, **24A** beyond the periphery of the door insures a positive engagement with the adjacent portion of the frame that defines the opening. The respective free ends **23A**, **24A** of the seals may be sufficiently long and sufficiently resilient so as to exert a biasing force against the adjacent portion of the frame defining the opening. It has been noted that rubber or a vinyl plastic provides a suitable material from which the flexible sealing member **23** and sealing strip **26** may be formed.

The arrangement is such that a positive seal is effected in a manner which still permits the looseness required for effective sliding ease. While the illustrated seal **23** is formed as a U shaped member, it will be understood that the same may be formed of two parts, namely the leg portions inserted in appropriate slots or formed integral with the door frame.

While the instant invention has been described with reference to a particular embodiment thereof, it will be readily understood and appreciated that variations and modifications thereof may be made without departing from the spirit or scope of the invention.

What is claimed is:

1. A closure assembly for a cabinet construction comprising:

(a) a frame for outlining an access opening to a cabinlet,

(b) said frame including rectangularly disposed opposed end jamb members and opposed side members,

(c) each of said side members having a guide rail extending longitudinally and substantially co-extensive therealong, and

(d) each of said end jamb members having a jamb rail,

(e) said opposed guide rails and opposed jamb rails being co-planarly disposed,

(f) a closure for said opening slidably disposed along said guide rails,

(g) said closure including a closure frame comprising rectangularly disposed side and end portions, each of said side portions being formed with a groove for loosely receiving said guide rails whereby said rail and complementary groove allows for limited movement of said closure relative to said frame sufficient to effect disengagement of the closure therefrom,

(h) and means defining a flexible seal disposed adjacent said grooves, said seals extending outwardly of said closure for straddling said guide rails to define a sliding fluid tight seal therewith,

(i) said seal comprising a U shaped member having opposed leg portions extending to either side of said groove and projecting beyond the edge of said closure,

(j) the ends of said leg portions being disposed in sliding engagement with the side member of said frame and defining the bearing edge for said closure sliding between the opposed side members whereby said seal is sufficiently flexible to permit limited displacement of said closure relative to said frame and whereby said seal defines the bearing for said closure between the opposed side members of said frame and functions to center the closure between said side members.

2. A closure assembly comprising

(a) a frame outlining an access opening,

(b) said frame including opposed track members and end jamb members rectangularly disposed,

(c) each of said track members and jamb members having respectively a pair of spaced longitudinally extending guide rails and complementary jamb rails extending substantially co-extensive the length thereof,

(d) said complementary guide rails and complementary jamb rails being co-planarly disposed,

(e) a plurality of closure members slidably mounted between each of said pair of opposed guide rails,

(f) each of said closure members closing a portion of said access opening,

(g) each of said closure members having a groove formed in the opposed edges thereof for receiving the guide rails on which said closure is slidably mounted, said opposed guide rails and complementary grooves in the edge of said closure being arranged to permit a relative looseness between said closure relative to said frame sufficient to permit the removal thereof and

(h) flexible lip seals connected to said closure on either side of the respective grooves formed therein,

(i) said lip seals extending beyond the edge of said closure to slidably engage the frame on either side of the guide rails whereby said seals define the bearing for said closure between said opposed guide rails and which function to center said closure between the opposed guide rails.

3. The invention as defined in claim **2**

(a) wherein the outer edge of each closure members is provided with a groove for accommodating the jamb rail of the end jamb members,

(b) and a sealing strip extending along said outer edge of said closure to define a fluid tight end seal.

4. The invention as defined in claim **2** and including a sealing means between adjacent closures.

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