June 10, 1969 C. W. EDGERTON, JR 3,448,786

FOLDING PARTITIONS

Filed Nov. 1, 1966 Sheet 1 of 3

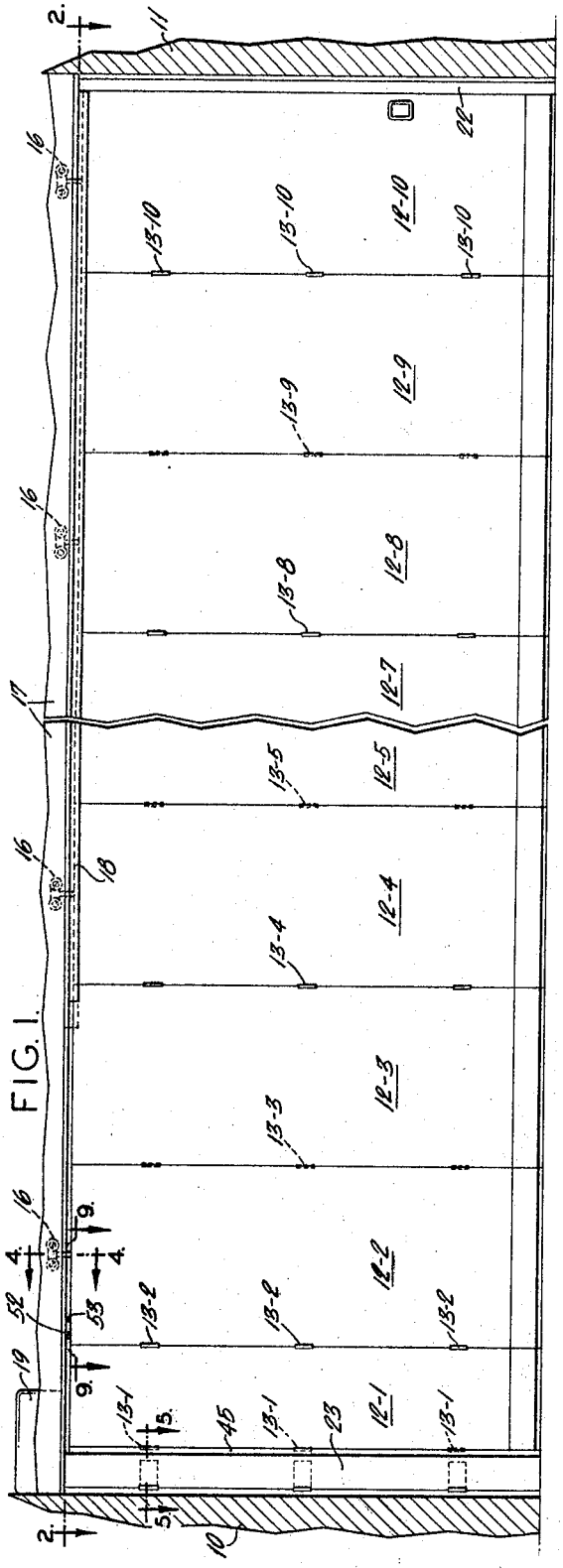


FIG. 1.

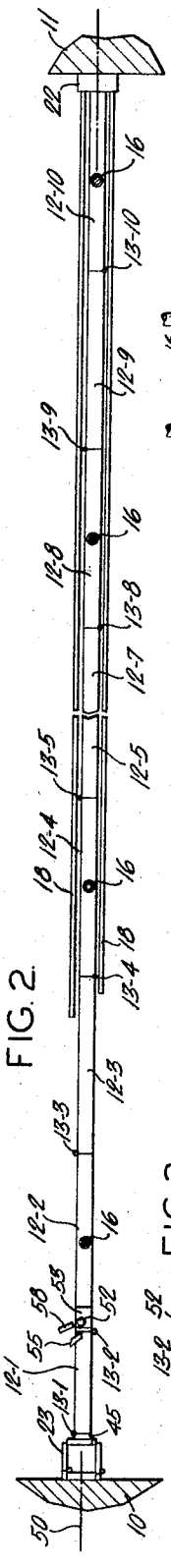


FIG. 2.

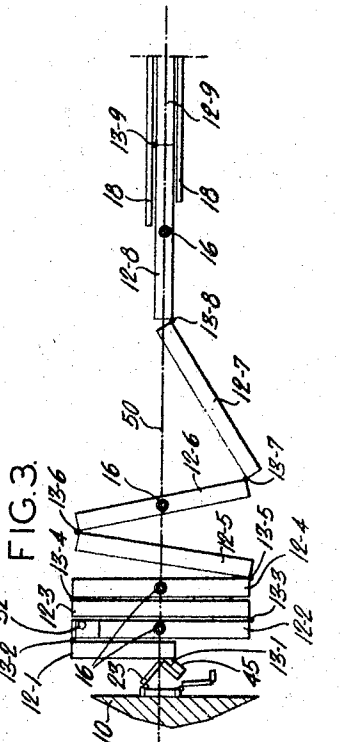


FIG. 3.

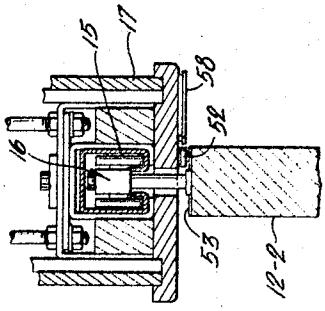


FIG. 4.

INVENTOR:
C. WILLIS EDGERTON, JR
BY Howson & Howson
ATTYS.

June 10, 1969 C. W. EDGERTON, JR 3,448,786

FOLDING PARTITIONS

Filed Nov. 1, 1966 Sheet 2 of 3

FIG. 5.

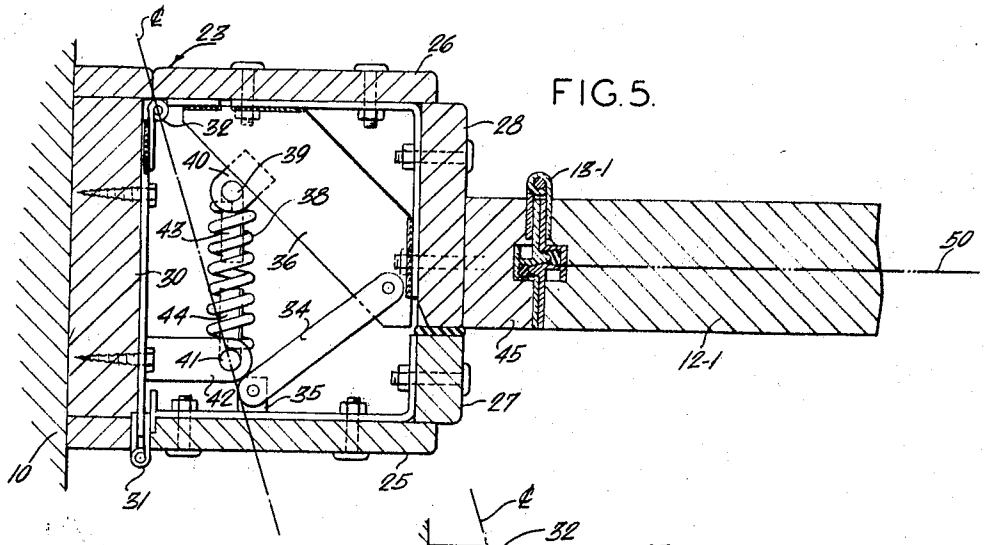


FIG. 6.

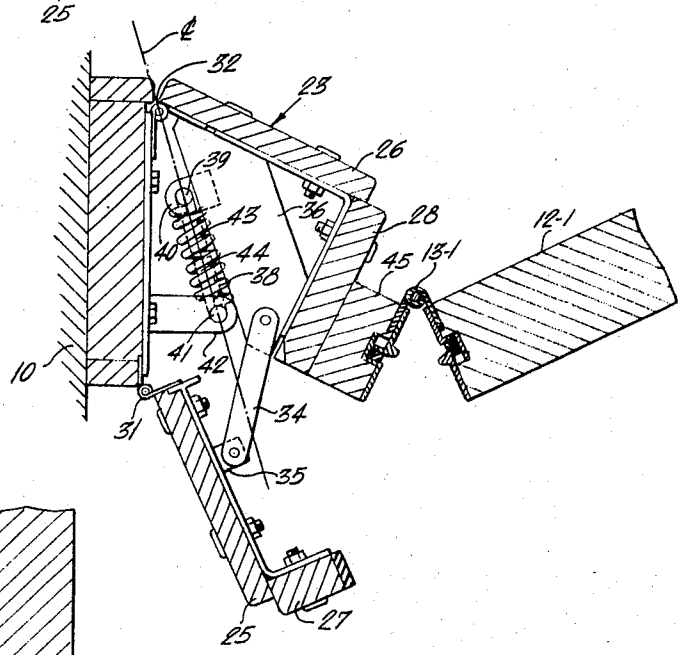
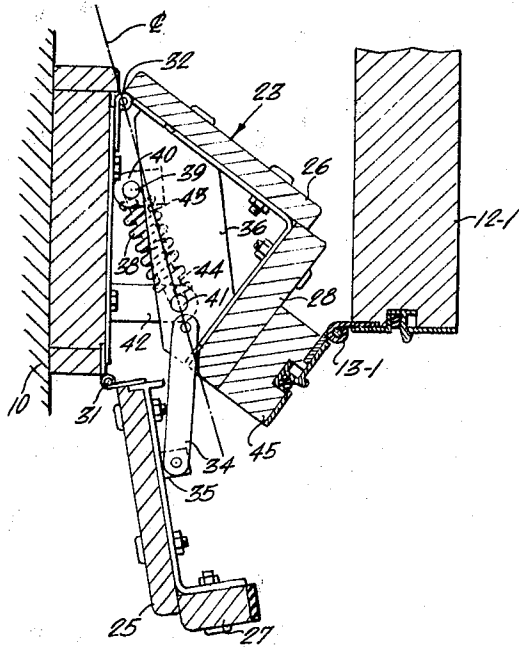


FIG. 7.



INVENTOR:
C. WILLIS EDGERTON, JR.
BY Howson & Howson
ATTYS.

June 10, 1969 C. W. EDGERTON, JR 3,448,786

FOLDING PARTITIONS

Filed Nov. 1, 1966 Sheet 3 of 3

FIG. 8.

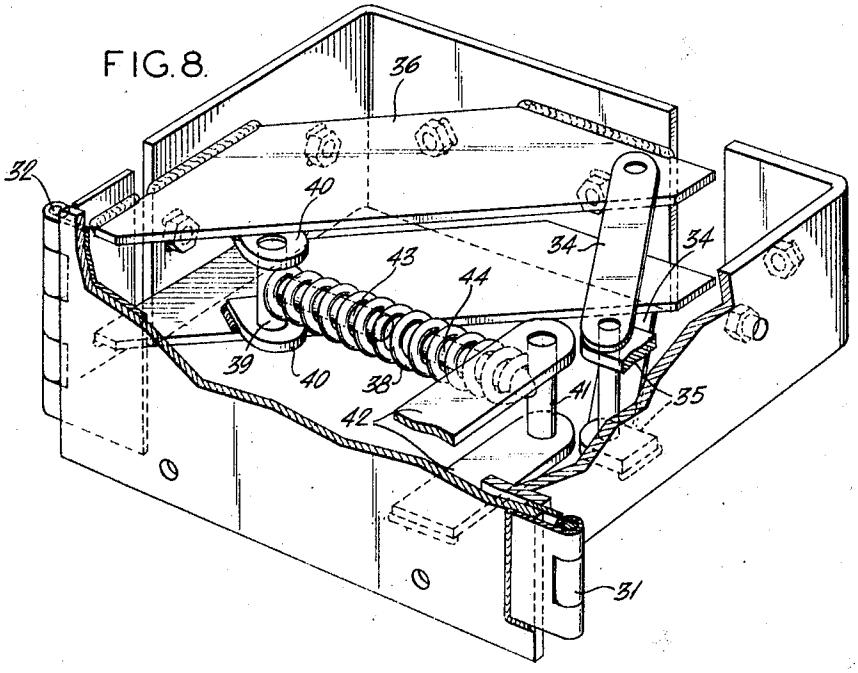
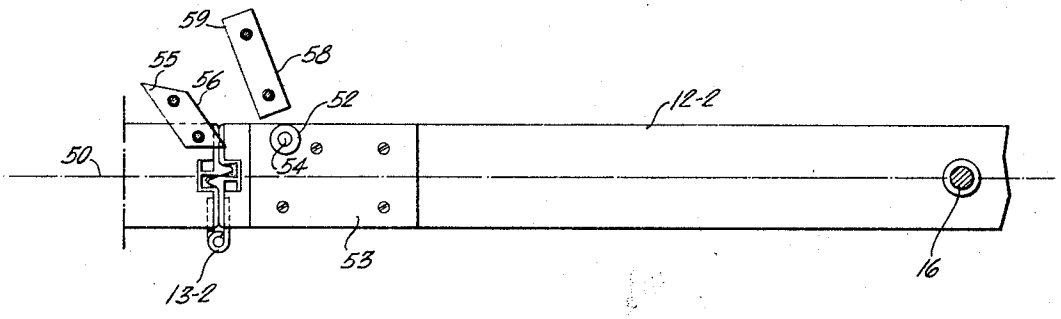


FIG. 9.



INVENTOR:
C. WILLIS EDGERTON, JR.
BY Howson & Howson
ATTYS.

United States Patent Office 3,448,786
Patented June 10, 1969

3,448,786

FOLDING PARTITIONS

Charles Willis Edgerton, Jr., Bryn Mawr, Pa., assignor, by mesne assignments, to Brunswick Corporation, Chicago, Ill., a corporation of Delaware

Filed Nov. 1, 1966, Ser. No. 591,280
Int. Cl. E05d *15/26*
U.S. Cl. 160—199 12 Claims

ABSTRACT OF THE DISCLOSURE

A folding partition comprising a series of panels hingedly interconnected and connected at one end to a jamb. The jamb is displaceable between an extended and retracted position and the partition assembly includes means operable automatically upon displacement of the series of panels and displacement of the jamb toward its retracted position to automatically initiate pivotal movement of the panels in the series to permit stacking thereof into face-to-face relationship adjacent the jamb.

The present invention relates to folding partitions and has particular application to folding partitions consisting of a series of panels hingedly interconnected and adapted to be folded or retracted into a stacked arrangement by swinging into face-to-face stacked relationship adjacent a storage wall.

More particularly, the present invention relates to a jamb construction which assists the stacking movement of the partitions as they are displaced toward stacked position, and also insures a proper sealing of the panels when they are in extended position.

When moving the panels of a folding partition from the extended position in which all of the panels are aligned to the stacked position, it is necessary to initiate pivotal movement of the terminal panel in order to start the stacking movement as the panels are displaced along the plane of the partition. When the partitions are displaced manually, the operator normally starts the pivotal movement of the panels adjacent the storage wall, and after the first panel is pivoted, the remaining panels follow in pivotal movement by reason of the hinged connections between the adjacent panels.

When the partition is displaced to retracted position by a mechanical actuator, unless the panel adjacent the storage wall is started in its pivotal movement, the actuator may stall and fail to perform its desired function. In order to initiate the pivotal movement with prior folding partition structures, linkages or camming devices have been provided which were responsive to displacement of the series of panels in their plane to effect angular displacement of the terminal panel. In order to accommodate such planar displacement of the series of panels, the terminal panel was conventionally mounted for telescopic displacement into the storage wall jamb, or the jamb was extended on one side to overlap one surface of the terminal wall panel so as to permit the terminal panel to slide relative to the jamb. Although such an arrangement has proved effective to assist in the stacking operation of the folding partitions, this arrangement has created difficulties in providing a fully effective seal between the partition and the jamb, thereby decreasing the effectiveness of the partition as a sound and light barrier.

Not only was the seal between the terminal panel and the jamb adversely affected, but also the seal between the panels of the series was adversely affected. In order to be fully effective, the partition should fit tightly between the opposite jambs so that the successive panels in the series are abutted one against the other with sufficient force to effect proper engagement of the successive panels with the sealing strips therebetween. The freedom for

planar movement of the panels detracted from the sealing engagement between the successive panels in the series making up the partition and also detracted from the alignment of the panels when in their extended position, inasmuch as the panels were free to assume a slight angular position relative to one another rather than assuming a truly aligned position wherein all of the panels are strictly coplanar.

With the foregoing in mind, the present invention provides a folding partition structure wherein means is provided to initiate folding pivotal movement of the terminal panels as the partition assembly is displaced from the extended position toward the stacked or retracted position.

More particularly, the present invention provides a partition assembly including a series of panels including a terminal panel in which the panels are pivoted and guided in a track coplanar with the panels in their extended position and wherein the terminal panel is hingedly connected to the jamb structure at the storage wall against which the partition is folded.

More particularly, the present invention provides a folding jamb structure at the storage wall which is hingedly connected to the terminal panel of the partition and which may be folded to a retracted position to accommodate displacement of the panel assembly in the plane of the panels, the jamb being biased toward the unfolded position so as to bias the successive panels of the extended partition toward one another in the plane thereof to insure effective sealing intermediate the successive panels in the partition as well as between the jamb and the terminal panel.

The assembly according to the present invention also provides auxiliary means to automatically assist the folding movement of the terminal panel immediately upon operation of the panel assembly from the fully extended position toward the retracted position, so that when the panel assembly is initially displaced, the planar movement of the assembly initiates pivotal movement of the terminal partition panel into the storage position transverse to the plane of the extended partition.

All of the objects of the invention are more fully set forth hereinafter with reference to the accompanying drawings showing a folding partition of the type wherein alternate panels are suspended from an overhead track by a pivoted trolley located centrally of the panel, and the intermediate panels are supported by the alternate panels at each side thereof. In the drawings:

FIG. 1 is a view in elevation of a panel assembly in extended position to form the folding partition;

FIG. 2 is a sectional view taken on the line **2—2** of FIG. 1 showing the partition extended;

FIG. 3 is a view similar to FIG. 2 showing the partition partially stacked against the storage wall;

FIG. 4 is an enlarged fragmentary transverse sectional view taken on the line **4—4** of FIG. 3;

FIG. 5 is an enlarged sectional view taken on the line **5—5** of FIG. 1 showing the operating elements of the folding jamb of the partition;

FIG. 6 is a view similar to FIG. 5 showing the position of the elements after the start of the retraction of the folding partition;

FIG. 7 is a view similar to FIG. 5 showing the elements in stacked position;

FIG. 8 is a detached perspective view of the structural elements of the folding jamb; and

FIG. 9 is an enlarged sectional view taken on the line **9—9** of FIG. 1.

Referring now to the drawings and particularly to FIGS. 1 to 4, inclusive, a folding partition extends between walls **10** and **11** and may be retracted from the free wall **11** and folded against the storage wall **10**. The folding partition comprises a series of panels indicated in the draw-

ing by the reference characters **12–1, 12–2, 12–3 . . . 12–9**, and **12–10**. The panels are hinged together, for example as indicated at **13–2** through **13–10** so that the panels may be folded from the extended position shown in FIGS. 1 and 2 in which the panels are arranged in an aligned series coplanar along a centerline **50** into a stacked position as shown in FIG. 3 in which the panels are disposed in face-confronting relation transverse to the plane of the extended partition. To accommodate the folding of the panels, the even-numbered hinges are positioned on the near face of the panels whereas the odd-numbered hinges are positioned on the far face of the panels, as indicated in FIGS. 1 and 2. As shown in FIG. 4, the panels are suspended from an overhead track **15** extending along the centerline **50** and coextensive with the partition in the extended position. To afford freedom for folding into the stacked or retracted position, only the alternate panels, in the present instance the even-numbered panels, are supported in the track, for example by trolley assemblies **16** positioned centrally of the even-numbered panels and projecting upwardly into the track **15**. The panels are free to pivot on the trolley assembly from along the centerline **50** to a position transverse thereto. The intermediate panels, in the present instance the odd-numbered panels, are supported by the alternate (even-numbered) panels at opposite sides thereof. Thus, as indicated in FIG. 3, the panels remain aligned in coplanar relationship until they are retracted to a position adjacent the storage wall **10**.

The track **15** is enclosed in a housing **17** extending between the walls **10** and **11** and the housing is provided with guide runners **18** depending downwardly therefrom to overlap the tops of the panels and maintain them in alignment. As shown in FIGS. 1 and 2, the guide runners **18** terminate short of the storage wall **10** to allow for the pivotal movement of the panels as they approach the storage wall, the near guide runner terminating at a greater distance from the wall **10** than the far guide runner. A suitable power unit may be mounted in the housing **17** adjacent the storage wall **10** at **19** having connections (not shown) to the free panel **12–10** so as to exert a retracting and extending force upon the panel assembly along the centerline **50** for power operation of the folding partition.

To provide an effective sound and light barrier, suitable sealing strips are provided intermediate the panels **12** and the housing **17** at the top of the panels; between the panels **12** and the floor at the bottom of the panel; between the interconnected panels; between the leading panel, in the present instance panel **12–10** and a jamb **22** on the free wall **11**; and between the terminal panel **12–1** and a jamb **23** on the storage wall **10**. To be most effective, the seals between the panels in the series should be tight and it is therefore desirable to construct the panels so that they fit tightly when extended between the jambs **22** and **23**. The tight fit of the series of panels, while affording an effective seal throughout the partition, renders it difficult to initiate the retraction and folding of the partition inasmuch as it requires a positive lateral thrust on the terminal panel **12–1** to displace the panels **12–1** and **12–2** out of their aligned relationship.

In accordance with the invention, a novel folding jamb is provided at **23** to maintain the tight fit of the aligned series of panels between the jambs **22** and **23** while affording automatic lateral displacement of the terminal panel **12–1** upon initiation of the retraction or folding of the partition into the stacked relationship. The jamb **23** comprises a hollow box-like structure having a near side wall **25**, a far side wall **26**, and an end wall composed of two parts **27** and **28** rigidly connected to the respective side walls **25** and **26**. Both side walls **25** and **26** are hinged to a support member **30** on the storage wall **10**, as indicated at **31** and **32**, respectively. The hinge **31** permits the near wall to swing outwardly from the jamb to the position shown in FIGS. 6 and 7. The hinge **32**, on the other side of the support strip **30** permits the wall **26** to pivot inwardly in the same direction as the wall **25**. The two side walls and their attached end wall portions, are interconnected by links **34** pivoted to the side wall **25** by ears **35** and pivoted to the side wall **26** through struts **36** (see FIG. 8). Thus, the side walls **25** and **26** are free to pivot concurrently clockwise from the extended position shown in FIGS. 5 and 8 to the folded or retracted position shown in FIG. 7.

Means is provided to bias the jamb structure to the extended position shown in FIG. 5, and preferably this bias is removed when the jamb is in the folded position of FIG. 7. To this end, a spring is provided to bias the jamb **23** to the extended position, the spring being mounted to pass over-center as the jamb is folded so that it also serves to bias the jamb into the folded or retracted position after the spring passes over its center. To accomplish this, as shown in FIGS. 5 through 8, inclusive, the spring **38** is seated at one end against a trunnion **39** in lugs **40** on the strut **36** and is seated at the other end against a trunnion **41** pivoted in a yoke **42**. To insure proper seating of the spring, retaining pins **43** and **44** respectively, are provided on the trunnions **39** and **41** as shown. With reference to FIGS. 5 and 8, it is apparent that the spring **38**, being under compression, biases the side wall **26** to its extended position shown. In order to fold the wall **26** clockwise on the hinge **32**, the folding movement must overcome the bias of the spring **38** until the trunnion **39** passes the centerline between the hinge **32** and the trunnion **41** at the center position of the spring assembly. After passing this center position (see FIG. 6), the compression of the spring operates to pivot the wall **26** to its folded or retracted limit position shown in FIG. 7.

In order for the folding jamb **23** to assist in the folding movement of the terminal panel **12–1**, the panel is hinged to the end wall **28** by means of a filler strip **45** and a hinge **13–1**. The filler strip **45** is positioned on the centerline **50** of the partition structure centrally of the jamb **23** adjacent the free edge of the end wall section **28**. Thus, when the jamb is displaced toward its folded position, the filler strip **45** is carried by the folding wall **26** inwardly from the centerline **50**. The swinging of the strip **45** about the pivot provided by the hinge **32** causes the hinge **13–1** to swing downwardly as shown in FIGS. 5 to 7, thereby displacing the terminal panel **12–1** out of alignment with the centerline **50**. With reference to FIG. 2, it will be apparent that the inward movement of the left hand end of the panel **12–1** will cause the panel to pivot counterclockwise on the hinge **13–2**, thereby initiating pivotal movement of the panel assembly.

In operation, the folding movement of the jamb **23** is effected by displacing the panel assembly along its centerline **50**, for example toward the left as shown in FIG. 2. The displacement of the panel assembly exerts a force on the filler strip **45** which is likewise along the centerline of the panel assembly and jamb. Since the hinge **32** is offset from the centerline, the force along the centerline provides a turning moment causing the side wall **26** and its associated parts to pivot clockwise of fold inwardly about the hinge **32**. The inward folding movement of the wall **23**, through the link **34**, folds the near wall **25** outwardly as shown in FIG. 6. As the folding jamb **23** passes overcenter, the spring **38** assists the further folding movement of the jamb **23** until the jamb reaches its folded limit position, as shown in FIG. 7.

Further longitudinal displacement of the panel assembly along its centerline **50** effects successive folding movement of the panels. With reference to FIG. 2, it is apparent that when the terminal panel **12–1** is initiated in its pivotal movement, and seats at its limit position offset downwardly from the centerline **50**, further displacement of the panel **12–2** to the left will cause the hinge **13–2** to swing upwardly about the pivot provided by the hinge **13–1**. The upward swinging movement of the hinge **13–2** pivots the panel **12–2** clockwise on its trolley assembly **16**.

Since the trolley assembly **16** limits the displacement of the panel **12–2** to pivotal movement on its center and longitudinal movement along the centerline **50**, pivotal movement of the panel **12–2** causes the hinge **13–3** to swing downwardly out of the plane of the centerline **50**, thereby initiating pivotal movement of the panel **12–3**. The panel **12–3** will then pivot on the hinge **13–4** which is displaced to the left along the centerline **50** as the panel assembly is retracted. When the panel **12–2** seats in face-to-face abutting relation with the panel **12–1**, as shown in FIG. 3, the panel **12–3** will continue its pivotal counterclockwise movement, displacing the hinge **13–4** upwardly out of the plane of the centerline **50**. When the hinge **13–4** is swung out of the plane of the centerline **50**, the panel **12–4** is initiated in its clockwise pivotal movement about its trolley assembly **16**. In this manner, the folding of the partition continues automatically as a retractive force is exerted on the panel assembly along the centerline **50**.

It should be noted that the folding jamb **23** permits the stacked panels to be positioned with less clearance between the stack of folded panels and the storage wall than the clearance between the first hinge and the storage wall when the panels and the jamb are extended. If the clearance is critical, the far aside wall **26** may be recessed into the storage wall and the near side wall may be omitted or modified to obtain a substantial reduction in the clearance space, the near side wall serving primarily as a cover strip to provide the desired aesthetic characteristics to the jamb.

In order to assist the initial pivotal movement of the panel **12–2** upon its trolley assembly **16**, auxiliary turning means is provided on the underside of the housing **17** at the end of the panel which is connected to the terminal panel **12–1**. To this end, a follower roller **52** is mounted on the upper edge of the panel **12–2**, for example by means of a mounting plate **53** having an upstanding pintle **54** thereon. As shown in FIG. 8, the roller is mounted adjacent and offset from the track **15** on the far side of the panel when viewed as in FIG. 1. A stacking cam **55** depends downwardly from the housing **17** to intercept the roller **52** as it is retracted along the track **15**. When the roller **52** engages the cam **55**, the operating surface **56** thereof causes the roller **52** to be deflected to the right as shown in FIG. 8, assisting in the clockwise pivotal movement of the panel **12–2** as the panel assembly is retracted. Thus, the stacking cam **55** assists in the displacement of the hinge **13–2** towards the far side of the panel assembly as the assembly is initially retracted.

An extension cam **58** is provided adjacent the cam **55** to assist in aligning the panel **12–2** with the centerline **50** when the panel assembly is extended to form the foldable partition. Upon extension of the panel assembly, the hinged connections at **13–1**, **13–2**, and **13–3**, direct the follower roller **52** into the space between the cams **55** and **58** so that the roller engages the operating face **59** of the extension cam **58** which displaces the roller **52** toward the position shown in FIG. 8 intermediate the track **15** and the extension cam **58**. Thus, the auxiliary turning means, comprising the cams **55** and **58** and the roller **52**, serves to assist in the proper orientation of the panel **12–2** during both its retraction and its extension. In this way, the partition is assured of being properly folded against the storage wall when the power unit **19** is actuated to retract the partition. In like manner, the auxiliary turning means also assist in aligning the panel **12–2** with the centerline **50** when the partition is extended by the power means into the extended or closed position.

By means of the folding jamb of the present invention, the panel assembly is assured of a tight fit between the jambs **22** and **23**. Inasmuch as the spring action of the spring **38** during extension biases the folding jamb to its extended position, the jamb assures that the successive panels bear against one another through the sealing strips therebetween to thereby insure a proper seal between the adjacent panels as well as between the free panel **12–10** and the jamb **22**, and the terminal panel **12–1** and the jamb **23**. Suitable seals are also provided in the jamb **23** between the sections **27** and **28** of the end wall, and at the hinges **31** and **32**.

While a particular embodiment of the present invention has been herein illustrated and described, it is not intended to limit the invention to such disclosure, but changes and modifications may be made therein and thereto within the scope of the following claims.

I claim:

1. In a folding partition comprising a track, a series of panels mounted on said track and hingedly interconnected for folding movement between an extended position wherein said panels are in aligned relationship coplanar with the centerline of said track and a stacked position wherein said panels are disposed in face-to-face stacked relationship transverse to said track at the storage end of said track, the improvement wherein said partition includes a folding jamb at said storage end, said jamb including foldable means hingedly interconnected to the terminal panel of said series and foldable between an extended position and a folded position, said means in said extended position disposing said terminal panel coplanar with said track and in the folded position disposing said terminal panel out of the plane of said track whereby, upon folding movement of said means from extended position to folded position, said means displaces said terminal panel out of the plane of said track to thereby initiate folding movement of said panel assembly, and upon folding movement of said means from said folded position to said extended position, said means displaces said terminal panel into coplanar relationship with said track.

2. A folding partition according to claim **1** including separate hinge means mounting said foldable means of the jamb, said hinge means being parallel to the hinged connection between said foldable means and said terminal panel and offset from the centerline of said track, whereby upon longitudinal displacement of said terminal panel in said track toward said storage end, said terminal panel imparts a turning moment to said foldable means to fold the same on said separate hinge means and effect displacement of said terminal panel out of the plane of said track.

3. A folding partition according to claim **2** including spring means to bias said foldable means toward said extended position.

4. A folding partition according to claim **3** wherein said spring means has a center position and is constructed and arranged to pass overcenter as said means is folded, said foldable means operating against the bias of the spring means from said extended position to said center position and operating with the bias of said spring means from said center position to said folded position whereby said spring means also biases said foldable means toward said folded position after passage of said foldable means overcenter of said spring.

5. A folding partition according to claim **1** including auxiliary turning means cooperable with the succeeding panel of the series which is hingedly connected to said terminal panel, said turning means operable to displace said succeeding panel out of the plane of said track upon longitudinal displacement of said panel series in said track from extended position toward said storage end.

6. A folding partition according to claim **5** wherein said succeeding panel includes follower means projecting therefrom adjacent said track, said auxiliary turning means including cam surface engageable with said follower means upon longitudinal displacement of said panel out of said extended position toward said storage end to deflect said succeeding panel out of the plane of said track.

7. A folding partition according to claim **6** including a second cam surface engageable with said follower means upon longitudinal displacement of said panel into its extended position away from said storage end to guide

said succeeding panel into aligned relationship coplanar with the centerline of the track.

8. A partition according to claim **1** wherein said jamb comprises near and far side walls normally disposed substantially parallel to said track and spaced laterally therefrom, one of said side walls constituting said foldable means and adapted to fold inwardly of said jamb to effect said displacement of the terminal panel, the other of said side walls adapted to fold outwardly of said jamb out of the path of movement of said one side wall.

9. A partition according to claim **8** including link means interconnecting said side walls for concurrent folding movement.

10. A partition according to claim **1** wherein said track is an overhead track, selected panels of said series including a central trolley assembly projecting upwardly into engagement with said track to support said series of panels for movement longitudinally of said track, each trolley assembly affording pivotal movement of its associated panel about its center as well as longitudinal movement in said track, and including a jamb at the other end of said track to abut against the series of panels in the extended position, and spring means biasing said foldable means to the extended position to thereby confine the series of extended panels between said jambs.

11. A folding partition comprising an overhead track, a series of panels mounted on said track and hingedly interconnected for folding movement between an extended position wherein said panels are in aligned relationship coplanar with the center line of said track, and a stacked position wherein said panels are disposed in face-to-face stacked relationship transverse to said track at the storage end of said track; said hinged connections between successive panels being disposed alternately on opposite sides of the centerline of the track; selected panels of said series including a central trolley assembly projecting upwardly into engagement with said track to support said series of panels for movement longitudinally of said track, each trolley assembly affording pivotal movement of its associated panel about its center as well as longitudinal movement in said track; a jamb at said storage end, said jamb including an end wall interconnected to the terminal panel of said series and displaceable between an extended position and a retracted position; an abutment jamb at the other end of said track

to abut against the series of panels in the extended position; means operable upon movement of said series of panels from the extended position toward the folded position and upon displacement of said end wall from its extended position to its retracted position to initiate folding movement of said panel assembly by pivotal movement of the panels on said trolley assembly; and spring means on said end wall to bias said end wall toward its extended position to thereby confine the series of extended panels between said jambs, said spring means having a center position intermediate the extended and retracted positions of said end wall, and being constructed and arranged to pass overcenter as said end wall is displaced; said end wall operating against the bias of said spring means in its displacement from said extended position to said center position, and operating with the bias of said spring means from said center position to said retracted position whereby said spring means also biases said end wall toward said retracted position after passage of said element over-center of said spring.

12. A folding position according to claim **11** wherein said means to effect pivoting of said panels includes a cam surface mounted adjacent said track and follower means projecting upwardly from one of said panels and adapted to engage said cam surface upon longitudinal displacement of said series of panels whereby said cam surface displaces said panel out of the plane of said track.

References Cited

UNITED STATES PATENTS

2,042,084	5/1936	Winn	160—199
2,151,033	3/1939	Jones.	
2,408,525	10/1946	Miller et al.	160—199 X
2,579,910	12/1951	Dixon	160—206
2,929,445	3/1960	Haws	160—199 X
2,952,312	9/1960	Young et al.	160—199 X

FOREIGN PATENTS

750,762	6/1933	France.

DENNIS L. TAYLOR, *Primary Examiner.*

U.S. Cl. X.R.

160—206