Nov. 25, 1930. H. HANSEN 1,782,819

CONSTRUCTION FOR DISPLAY CASES

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Fig. 1.

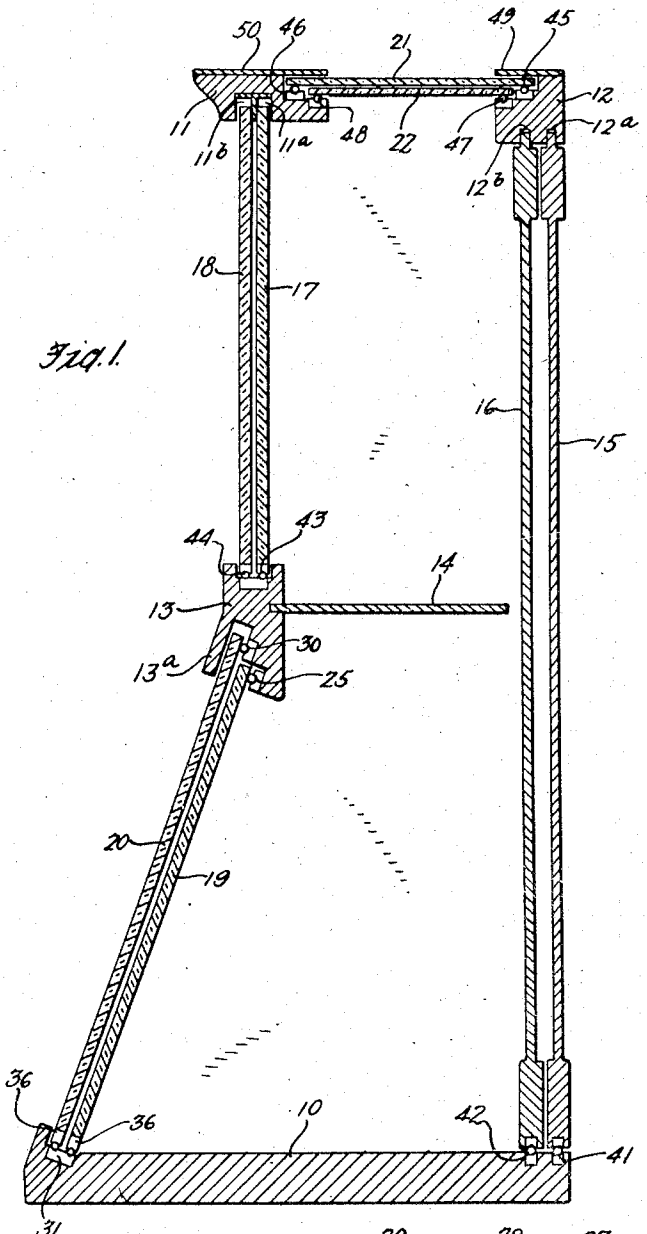


Fig. 2.

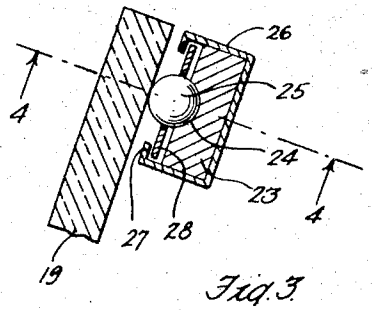
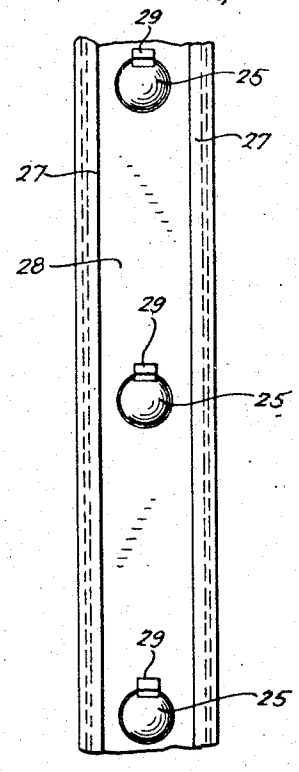


Fig. 3.



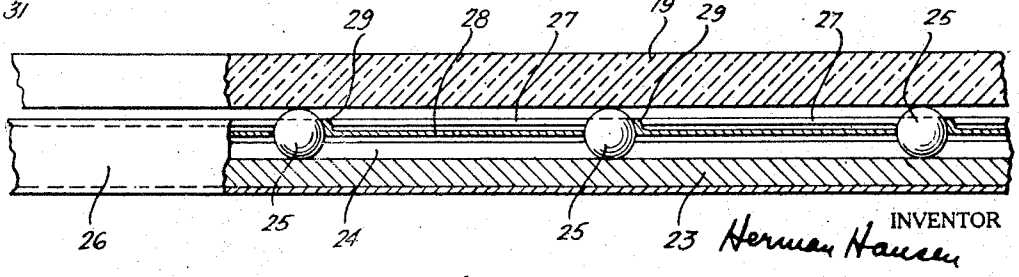


Fig. 4.

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Fig. 5

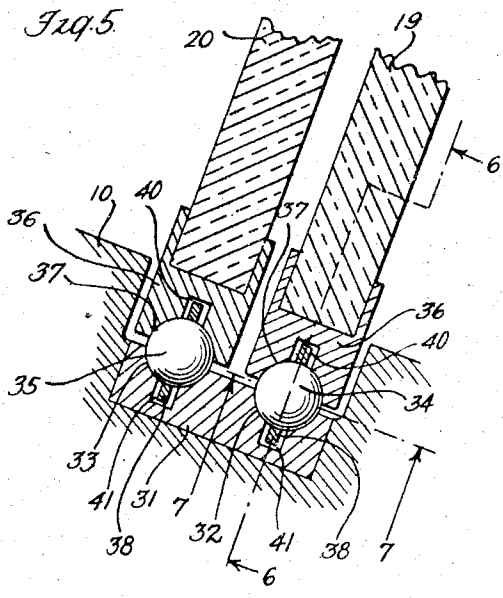


Fig. 6

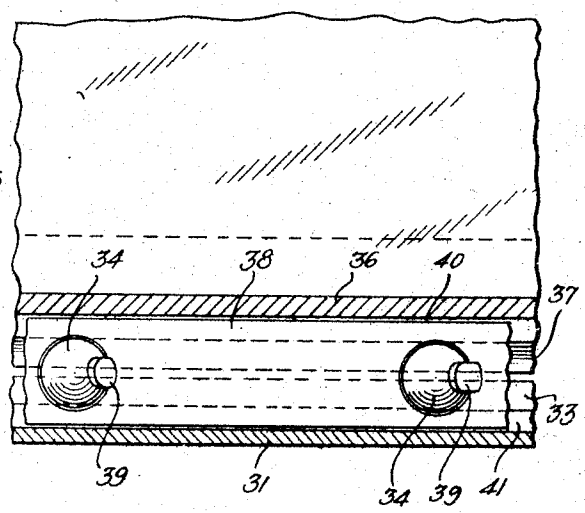


Fig. 7

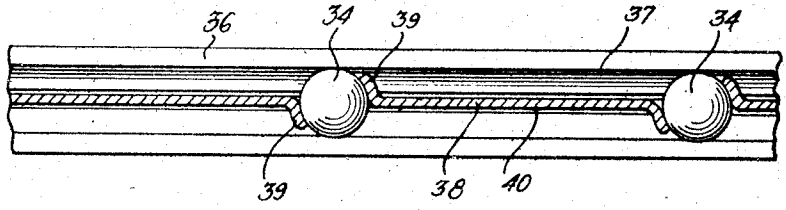
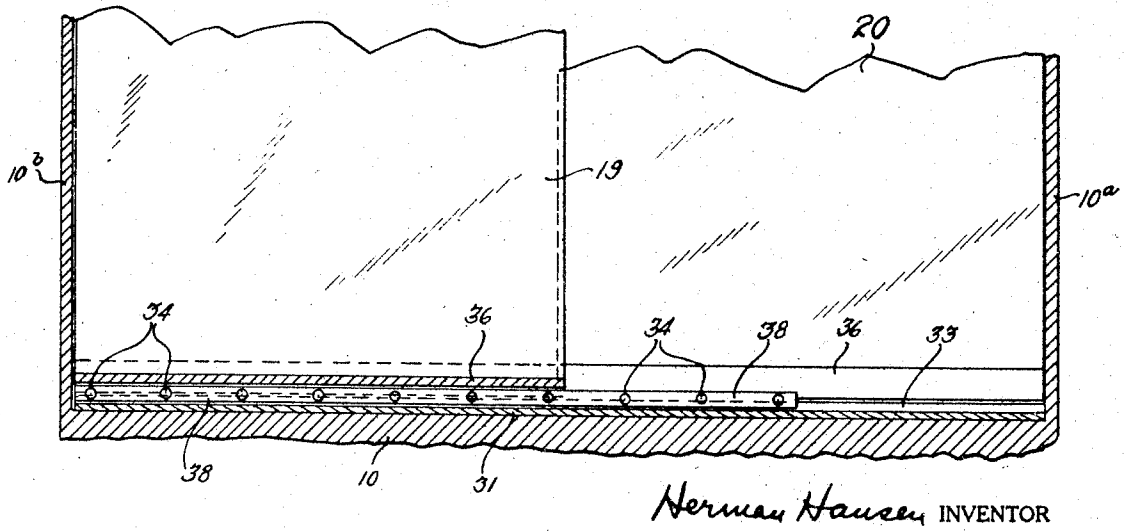


Fig. 8.



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UNITED STATES PATENT OFFICE

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CONSTRUCTION FOR DISPLAY CASES

Application filed December 29, 1925. Serial No. 78,079.

This invention relates to construction for display cases and the like. One of the objects thereof is to provide a display case which is thoroughly practical and efficient. Another object is to provide such a construction in which the entire interior of the show case is conveniently accessible from a plurality of points. Another object is to provide a construction of the above nature equipped with sliding glass panels which are so mounted and supported as to be opened or closed with the greatest convenience and ease. Another object is to provide such a construction which is strong and rugged. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of the various possible embodiments of this invention,

Figure 1 is a vertical, transverse section through an intermediate portion of the show case;

Figure 2 is a section showing in enlarged detail the supporting means at one edge of one of the sliding glass panels;

Figure 3 is a plan view of certain parts shown in Figure 2;

Figure 4 is a section substantially along the line 4—4 of Figure 2;

Figure 5 is a sectional view showing the mounting at the bottom edge of a pair of the sliding glass panels;

Figure 6 is a section taken substantially along the line 6—6 of Figure 5;

Figure 7 is a section taken substantially along the line 7—7 of Figure 5, and

Figure 8 is a view similar to Figure 6 upon a smaller scale and showing more in full the parts illustrated in Figure 6.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now to Figure 1 of the drawing in detail, there are shown parts of the framework of the show case comprising a base 10, longitudinally extending upper members 11 and 12 and an intermediate longitudinally extending member 13. These frame parts may be of wood or, in some instances, they will preferably be constructed of metal. Secured in the member 13 is shown a shelf 14 which, it will be understood, may be additionally supported at the two ends of the display case.

The back of the case is closed preferably by a pair of vertical glass panels 15 and 16 which are relatively slidable in the framework longitudinally thereof. Each of these glass panels 15 and 16 is preferably of a length a little more than half the length of the display case so that they overlap slightly and together close the rear side of the case.

The front of the display case is closed by an upper pair of sliding glass panels 17 and 18 and by a lower pair of sliding glass panels 19 and 20. The upper panels 17 and 18 are slidably supported upon the member 13 and are preferably substantially vertical. The lower panels 19 and 20, extending between the member 13 and the base 10 are inclined and slope outwardly at the bottom, the show case being of considerably greater width at the bottom than at the top. The sloping glass panels 19 and 20 are distinctly advantageous in affording an excellent view of the goods displayed in the lower portion of the case. The glass panels 17 and 18 are of a length a little more than half that of the case so that when moved to closed position they overlap slightly and together close the upper portion of the display case at the front. The inclined panels 19 and 20 are likewise each of a length slightly greater than half the length of the case so that together they are adapted to close the lower portion of the display case at the front.

The top of the display case is closed by a pair of slidable glass panels 21 and 22. These two panels are supported adjacent their side edges in the frame parts 11 and 12 so that the panel 22 is enabled to slide beneath the panel 21. Thus, this show case is closed by glass

panels at the front, the rear and the top, affording a clear view of the contents of the case from all angles. Moreover, any portion of the interior of the show case is most conveniently accessible.

These sliding glass panels employed in display cases are generally of heavy plate glass and are therefore of very appreciable weight. It is important that they slide freely and easily in the frame-work without binding in order that any portion of the interior of the case be conveniently accessible at all times. Because of the great weight of the glass panels, it is highly desirable that they be supported by antifriction means, particularly sloping panels such as 19 and 20 which have a distinct tendency to bind and are oftentimes operated only with the greatest inconvenience.

Referring now again to the drawings, it will be seen that all of the sliding panels of the display case shown herein are mounted upon ball bearings. Considering first the mounting of the inclined panels 19 and 20, these panels are supported by ball bearings at their bottom edges and also by ball bearings adjacent their top edges. In Figures 2, 3 and 4 there is shown in detail the support of the inclined glass panel 19 adjacent its upper edge. Mounted in the frame member 13 is a metal strip 23 having therein an outwardly facing rounded groove 24 forming a race for a plurality of ball bearings 25. This strip 23 extends throughout the full length of the frame member 13. The strip 23 is encased on three sides by a sheet metal casing 26 having flanges 27 which over-hang the outer surface of the member 23. The ball bearings 25 are held in spaced relation by a sheet metal strip 28 which is provided with openings in which the ball bearings rest. These openings are of a diameter slightly smaller than that of the ball bearings so that the latter cannot pass therethrough. Lugs 29 struck up from the sheet metal strip 28 cooperate with the openings to retain the ball bearings in place therein. The over-hanging flanges 27 serve to hold the strip 28 in place while permitting free longitudinal sliding thereof as the ball bearings roll back and forth in the groove 24.

The inner or lower face of the panel 19 adjacent the upper edge thereof rests flatwise against the ball bearings 25. As the panel is slid back and forth, it will roll upon the balls 25, the balls rolling in the groove 24 and the spacing member 28 moving therewith. The upper portion of the inclined panel 20 is supported in like manner by ball bearings 30, as is shown in Figure 1. A lip 13^a of the frame member 13 loosely overhangs the upper edge portion of the panel 20 and thus prevents the two panels from tilting outwardly. The ball bearings 30 for the panel 20 are displaced upwardly and outwardly from the ball bearings 25 for the panel 19, as shown in Figure 1. It will be noted that this construction just described provides a highly advantageous frictionless support at the upper portions of the inclined glass panels and, moreover, that the two panels by this arrangement may be positioned as close together as is desired.

Considering now the support of the two inclined sliding panels 19 and 20 at their bottom edges, this mounting is shown in detail in Figures 5, 6 and 7. In the base 10 is mounted a metal strip 31 which extends the full length of the display case and is provided with two parallel longitudinal rounded grooves 32 and 33. These grooves form races respectively for ball bearings 34 and 35 which respectively support the glass panels 19 and 20. Considering the mounting of the panel 19, there is secured along the bottom edge thereof a longitudinal metal strip 36 which has therein a longitudinal downwardly facing rounded groove 37 complementary to the groove 32. The weight of the glass panel 19 is carried from the member 36 through the ball bearings 34 to the member 31. The ball bearings 34 are held in predetermined spaced relation by means of a metal strip 38 which is provided with openings in which the ball bearings rest. Lugs 39 struck up from either side of the metal strip 38 retain the balls in place in the openings. The metal strip 38 is accommodated in longitudinal recesses 40 and 41 formed therefor in the members 36 and 31 at the bases of the rounded grooves 37 and 32. The parts associated with the mounting of the panel 20 upon the ball bearings 35 are substantially the same as those just described in connection with the panel 19, and like reference numerals are applied thereto in Figure 5.

It will be seen that this mounting at the lower edges of the panels 19 and 20 is capable of providing a frictionless support for the panels whether they be inclined as are the panels 19 and 20 or vertical as are the panels 15, 16, 17 and 18. The frictionless mounting provided by the ball bearings 32 and 35 transmits without friction to the base 10 both the vertical component and the horizontal component of the thrust occasioned by the weight of the inclined panels. The inclined panels are thus supported so that they will slide freely and easily at all times.

Referring again to Figure 1, the rear panels 15 and 16 are supported by ball bearings 41 and 42. The upper vertical front panels 17 and 18 are supported by ball bearings 43 and 44. The construction employed to accommodate these sets of ball bearings 41, 42, 43 and 44 is preferably substantially identical with that described in connection with the support at the bottom edges of the inclined panels 19 and 20. At their upper edges the panels 15 and 16 are guided in grooves 12^a and 12^b in the frame part 12, and

the panels 17 and 18 are guided in grooves 11[a] and 11[b] in the frame part 11. The top glass panel 21 is supported adjacent its two side edges by ball bearings 45 and 46. The panel 22 is supported adjacent its two side edges by ball bearings 47 and 48. The construction employed in connection with these sets of ball bearings 45, 46, 47 and 48 is preferably substantially identical with that described in connection with the upper edge portion of the inclined panel 19, and shown in detail in Figures 2, 3 and 4. Suitable top plates 49 and 50 secured respectively to the frame parts 12 and 11 hold the panels 21 and 22 in place and prevent lifting thereof. Thus each of the sliding glass panels of this display case is dependably supported by anti-friction ball bearings which insure convenience and ease of operation under all conditions.

Referring now to Figure 8, there is shown the bottom portion of the panel 19 with its ball bearing support and the entire length of the display case, a portion of the base 10 being shown and the ends of the case being indicated at 10[a] and 10[b]. As shown in this figure, the panel 19 is of a length slightly greater than half the length of the case so that it will overlap the panel 20 a slight distance when the panel 19 is moved to the left-hand end of the case and the panel 20 is moved to the right-hand end of the case or vice versa. This figure shows the metal strip 31 extending the full length of the case and providing lower races for the ball bearings 34 and 35. The sheet metal spacing strip 38 holding the ball bearings 34 is substantially one and one-half times the length of the panel 19. When the panel 19 is slid to the right until it strikes the end 10[a] of the casing, the strip 38, moving to the right therewith, will just approach the end 10[a]. Thus the panel 19 is continually supported throughout its length by the balls 34 regardless of the position of the panel in the case. It will be understood that this applies as well to the other panels, the ball bearing spacer being in length in each instance substantially one and one-half times the length of the glass panel.

As many possible embodiments may be made of the above invention, and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawing, is to be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. In construction for display cases and the like, in combination, a frame-work, a panel adapted to slide in said frame-work, a grooved raceway supported in said frame-work, the groove therein facing toward said panel adjacent an edge thereof, ball bearings in said raceway supporting said panel and spacing means for said ball bearings comprising a sheet metal strip having therein openings in which said ball bearings rest, said raceway having flanges overhanging the surface thereof on either side of said groove therein and loosely holding said sheet metal strip in place.

2. In construction for display cases and the like, in combination, a frame, and an inclined panel adapted to slide in said frame, means associated with said frame for guiding said panel during sliding movement of the latter, said means including an elongated member having a rounded groove extending in the direction of sliding movement of said panel and positioned so that said groove faces the under side of said inclined panel, a series of balls in said groove and interposed between said member and the under face of said panel, a metal strip having openings therein in which said balls rest for holding said balls in spaced relation, the plane of said strip extending substantially parallel to the plane of said inclined panel, and side flanges extending along said elongated member for holding said strip substantially so that the plane thereof is maintained substantially parallel to the plane of said inclined panel.

3. In construction for display cases and the like, in combination, a frame, and an inclined panel adapted to slide in said frame, means associated with said frame for guiding said panel during sliding movement of the latter, said means including an elongated member having a rounded groove extending in the direction of sliding movement of said panel and positioned so that said groove faces the under side of said inclined panel, a series of balls in said groove and interposed between said member and the under face of said panel, a metal strip having openings therein in which said balls rest for holding said balls in spaced relation, the plane of said strip extending substantially parallel to the plane of said inclined panel, and sheet metal side flanges on said elongated member for confining said strip against movement in a direction toward said panel.

4. In construction for display cases and the like, in combination, a case having an opening therein adapted to be closed by at least two inclined panels adapted to slide into overlapping relation, the uppermost of said panels having an upper edge portion extending beyond the upper edge portion of the lower of said panels, an elongated member carried by said case adjacent the upper edge of the lower panel and arranged in substantial alinement with the latter, said member having a longitudinally extending groove for guiding a plurality of balls, a plurality of balls in said groove and interposed between said member and the lower face of the upper edge portion of said upper panel, means comprising an elongated strip for holding said balls in spaced relation, means associated with said groove member for holding said

strip so that its plane extends substantially parallel to the plane of the upper panel, and anti-friction means for engagement with an upper portion of said lower panel.

5. In construction for display cases and the like, in combination, a frame, a panel adapted to slide in said frame, and means for anti-frictionally supporting said panel for sliding movement relative to said frame, said means including a member providing a raceway, a plurality of balls coacting with said raceway, and spacing means for said balls, said spacing means including a sheet metal member having therein openings in which said balls rest, one of said members being provided with means for holding said spacing member against movement in a direction substantially transversely of its plane.

In testimony whereof, I have signed my name to this specification this 23 day of December, 1925.

HERMAN HANSEN.