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HINGE FOR OVERHEAD DOORS

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This invention relates particularly to hinges especially designed for connecting the sections of doors of the so-called overhead type, although the invention may be embodied in hinges for other types of swinging closures. Overhead doors usually include a plurality of panel sections hingedly connected at their edges on horizontal axes so that the panel sections may be arranged in a common plane in a door opening for closing the door and may pivotally relatively move to permit raising of the panel sections and movement thereof from the vertical plane into a horizontal plane for opening the door, the panel sections being mounted on rollers running in tracks.

Heretofore the adjacent panel sections of such doors have been connected at their ends by ordinary leaf hinges on the inside of the door, the leaves of which have been secured to the panel sections only by ordinary wood screws or by bolts which penetrate the panel sections and have their heads exposed on the outside thereof. When the panel sections are disposed horizontally overhead and suspended between the tracks, as well as during raising and lowering of the door, vibration and action of gravity on the intermediate portions of the panel sections places strains on the bolts or screws tending to loosen or pull them out of the panels and thereby impair the boniness of the hinges to the panel sections, as well as to splinter and disfigure the wood adjacent to the screws or bolts. Furthermore, the exposed heads of the bolts cause unsightly rust stains on the panels on the outside of the door.

One object of my invention is to provide a novel and improved hinge, especially designed for use on the ends of adjacent panel sections, whereby the strains incident to operation of the door and suspension of the panels overhead will be imposed directly on the hinges rather than to the hinges through the screws or bolts, so that tendency to pulling of the bolts or screws out of the panel sections and consequent splintering or cracking of the wood of the panels shall be reduced to the minimum.

Another object is to provide a novel and improved construction and combination of such a hinge with the panel sections, whereby the hinge shall be directly interlocked with the panel sections, and fastening members such as screws shall be required merely to prevent dislocation of the hinge from such interlocked relation to the panel sections.

Another object is to provide a novel and improved combination of panel sections and hinges which shall eliminate screw or bolt heads on the outside of the panel sections, and thereby insure a neat appearance on the front of the door.

In my Patent No. 2,134,397 dated October 25, 1938, I have described and claimed an overhead door that has a metal angle bar secured to one side of each panel near, parallel to and extending approximately throughout the length of each edge of said panel that adjoins the next adjacent panel, with one flange of each angle bar lying against the respective panel and the other flange abutting and extending approximately throughout the length of the edge of said panel that adjoins the next adjacent panel; and another object of my present invention is to provide a novel and improved construction, combination and arrangement of a hinge with such panels and angle bars, whereby the hinge is directly interlocked with the adjoining panels and is secured directly to said angle bars so that a portion of the strain and the weight of the panels is sustained directly by the hinge and the angle bars.

Other objects, advantages and results of the invention will appear from the following description in conjunction with the accompanying drawings in which

Figure 1 is a fragmentary rear elevational view of an overhead door having hinges embodying my invention, showing the door in closed position.

Figure 2 is a fragmentary elevational view, on an enlarged scale, of one of the hinges shown in Figure 1 and the adjoining portions of the door.

Figure 3 is a horizontal sectional view on the line 3—3 of Figure 2, and

Figure 4 is a transverse vertical sectional view on the line 4—4 of Figure 2 with portions broken away.

For the purpose of illustrating the invention, I have shown it in connection with an overhead door that comprises a plurality of panel sections A preferably formed of wood.

For reinforcing the panel sections A and attaching hinges and roller mountings to the panel sections, an angle bar 1, preferably of metal, is applied to each longitudinal edge of each panel section that adjoins the next adjacent panel section. Preferably one flange 2 of each angle bar lies against the side of the corresponding panel section and the other flange 3 lies along the edge of the panel section as shown in Figures 2 and 4, the bars being secured to the panel sections in any suitable manner as by screws 4.
diately their ends, the angle bars are hingedly connected by suitable hinges 8, for example such as shown and claimed in my aforesaid Patent No. 2,154,927.

The adjacent panel sections A are hingedly connected together at their ends by hinges B in accordance with my invention, which also serve as mountings for rollers C that are arranged to roll in tracks D in known manner.

Each hinge B comprises two sections 6, each of which has at one end one or more eyes 7 disposed in axial alinement with the eyes of the other section and receiving a pin alike 8 which also serves as a journal bearing for one of the rollers C. Each section 6 comprises a plate 9 disposed in abutting relation to the face of the corresponding panel and secured to the flange 2 of the corresponding angle bar 1 by a machine screw 10. Preferably the plates 9 are also secured to the corresponding panels by wood screws 11.

The general plane of each plate 9 is parallel to the axis of the hinged connection 7, 8 and each plate 9 has a flange 12 at its edge that is angularly disposed to said axis, said flange lying in a plane perpendicular to said axis and the general plane of the plate 9 and extending around and abutting the end of the corresponding panel A and having an intertime lip 13 in spaced relation to the plate snugly fitted in a groove 14 in the end of the panel, so that a portion of the panel is embraced or gripped between the plate 9, flange 12 and lip 13. The hinges are held in this relation to the panels by the screws 10 and 11, but little or no strain is imposed on the screws.

With this construction, it will be observed that the hinge sections 8 are directly interlocked with the corresponding panels A so that strains incidental to gravitational action on the panels are largely directly imposed upon the hinges rather than through fastening elements such as bolts or screws, and the wood panels A are relieved substantially completely of all tearing or cracking strains that would be imposed by the transmission of forces from the panel sections to the hinges through screws or bolts. Furthermore, no screws or bolt heads are visible on the outside of the panels, which provides a neat appearance and eliminates the disfigurement incident to splintering of wood around bolt and screw heads and rust stains that are incident to presence of screw or bolt heads that are exposed to weather conditions.

Obviously many changes in the details of construction of the invention may be made by those skilled in the art without departing from the spirit or scope of the invention.

Having thus described my invention, what I claim is:

1. The combination of two rectangular panels each having angularly related edges, the planes of which are angularly related to the opposed sides of the panel and each panel having one edge parallel and juxtaposed to one edge of the other while each of the other of said edges of each panel has a longitudinal groove, and a plurality of hinges spaced longitudinally of the first-mentioned edges of said panel and each comprising two sections hingedly connected on an axis parallel to said edges, each section including a plate abutting one side of one panel and an integral flange abutting one of the second-mentioned edges of said panel and having an interlined lip snugly seated in the corresponding said groove.

2. The combination of two panels each having angularly related edges the planes of which are angularly related to the opposed sides of the panel, one edge of each section being in opposed parallel relation to the corresponding edge of the other section and the other of said edges of each panel having a longitudinal groove, a hinge comprising two sections each including a plate abutting one side of one panel and hingedly connected to the plate of the other section on an axis approximately parallel to the first-mentioned edges of said panels and the general plane of said plate, each plate having a flange along an edge thereof and lying in a plane perpendicular tosaid axis of the hinged connection and the plane of the corresponding plate and abutting the second-mentioned edge of the corresponding panel, each flange having an interlined lip extending longitudinally thereof in spaced opposed relation to the corresponding plate and seated in said groove of the corresponding panel whereby to embrace between itself and said plate a portion of said panel, and fastening means connecting the hinge sections to the respective panels.

3. A hinge for connecting adjacent panels comprising two sections each including a plate hingedly connected at one end to the other plate on an axis parallel to the general plane of the plate and having an integral flange along an edge that is angularly related to said axis, the plane of each said flange being common with the plane of the other flange and perpendicular to said axis and to the general plane of the corresponding plate, each flange having an interlined lip extending longitudinally thereof in spaced opposed relation to the corresponding plate to embrace a portion of a panel between itself and said plate.

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