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J. J. MEYER ET AL
HINGED STRUCTURE

2,297,629

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Fig. 1.

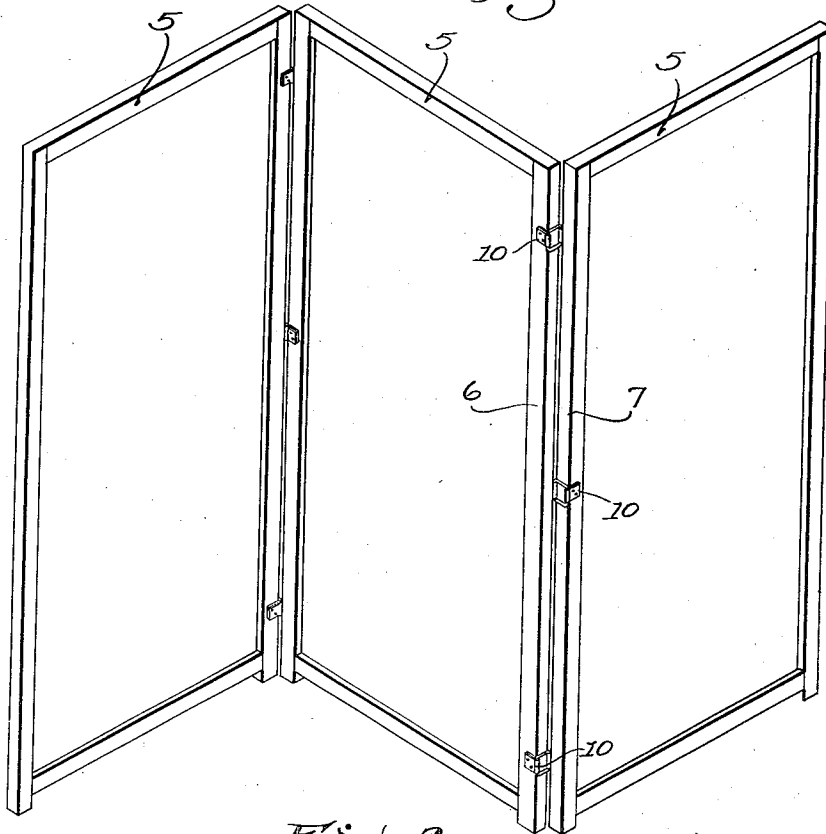


Fig. 2.

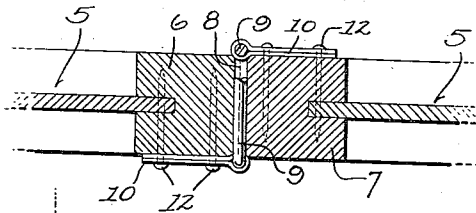


Fig. 3.

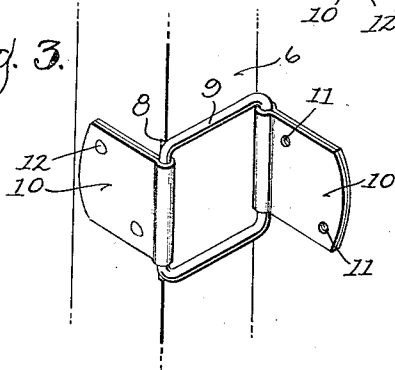
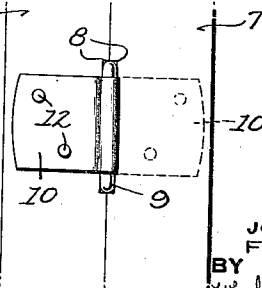


Fig. 4.



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HINGED STRUCTURE

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3 Claims. (Cl. 16—163)

This invention relates to improvements in hinged structures.

It is the object of the invention to provide a double-acting hinge in a more attractive, less expensive, more snugly fitted, and more smoothly acting form than any heretofore available.

The present invention relates to a type of double-acting hinge in which the elements connected by the hinge are an essential part of the structure contributing to the functioning thereof. This general type of hinge is old, as for example, in the patent to Morris 428,402 of May 20, 1890. But the present hinge structure has advantages, particularly from the standpoint of economy, which make it available at a small fraction of the cost of any other double-acting hinge structure on the market.

The invention is illustrated by the disclosure of its application to a folding screen.

In the drawing:

Figure 1 is a view in perspective showing the folding screen embodying the hinge structure of this invention.

Figure 2 is an enlarged detail view in cross section through the hingedly related parts showing, partially in plan, the component elements of one of our improved hinge units.

Figure 3 is a view showing one of the hinged units in perspective as applied to one of the structural members to be connected thereby.

Figure 4 is a view in front elevation of one of the hinge elements applied to the structural elements which it connects.

Like parts are identified by the same reference characters throughout the several views.

The screen shown in Fig. 1 comprises three substantially identical panels 5 which are connected with double-hinge action in accordance with the present invention. The adjacent frame members 6 and 7 of contiguous panels are connected by at least three of the hinge elements best shown in Fig. 3. A greater number may be used. A lesser number will be inadequate. It is our practice to apply one of these hinge elements near the tops of the frame members 6 and 7, another one near the center, and a third near the bottom.

Each of the frame members is provided with a shallow channel at 8 (see Fig. 4), the two channels together being the thickness of a piece of wire or bar stock 9 bent to substantially rectangular form to provide two horizontal lengths and two vertical lengths. Each of the vertical lengths comprises a pintle. A hinge leaf 10 is made by folding a thin piece of sheet or strip

stock upon itself about the pintle portion of the rectangular bar 9. The flat stock used is preliminarily, of subsequently, punched to provide registering openings at 11 for screws or nails. An identical leaf 10 is made by folding a similar piece of thin strap of sheet metal about the other pintle portion of the rectangularly shaped central bar 9.

With the two panels set together in alignment as shown in Fig. 2, and the frame members 6 and 7 thereof pressed into lateral engagement, the intermediate rectangularly formed bar portion 9 of the hinge will lie in the complementary channels 8. The respective leaves 10 will be folded in opposite directions over the adjacent faces of the respective frame members 6 and 7 and will there be held by nails or screws 12 which serve the double function of mounting the hinge element on the frame members and also of permanently fastening together the two overlying plies of each of the leaves 10.

Assuming that the leaf 10 of the uppermost hinge element overlies one face of the frame member 6, the corresponding leaf of the lowest hinge element should overlie the same face, and the corresponding leaf of the intermediate hinge element should overlie the opposite face of frame member 6. Regardless of how many of the hinge elements may be employed, it is preferable though not necessary, that the direction in which their corresponding leaves project should alternate so that if a leaf of one overlies a given face of frame member 6, the corresponding leaf of the next should overlie the adjacent face of frame member 7, and vice versa.

When the two panels are swung in one direction from a position of alignment, the rectangular bars of the upper and lower hinge elements will engage frame member 6 and the rectangular bar of the center hinge element will engage frame member 7, all pivotal movement taking place on the pintle portions of the respective bars which are aligned at the side of the screen where the angle is acute.

It will, of course, be understood that our improved hinge structure is applicable to many devices other than screens, but the screen represents a typical installation. In any installation the frame members connected by the hinge elements constitute an essential part of the hinge structure inasmuch as a single hinge element will not provide a double-acting hinged movement as required for the purposes of the invention. That is to say, while it would provide hinged movement on two different axes and in either direc-

tion from the central position of alignment, it would also permit the hingedly related parts to pull free of each other with a space between. The disclosed arrangement is such that the hingedly related frame members are held as close together in all positions of hinged adjustment as if they were connected by single acting hinges.

We claim:

1. In a hinged structure, the combination with members requiring double-acting hinge connection, said members having abutting end faces and corresponding opposite side faces, of a plurality of like hinge elements connecting said members at several differing levels, each such element including a pintle frame having pintle bar portions spaced substantially by the distance between the opposite faces of said members, and straps each folded upon itself intermediate its ends to provide an eye in pivotal engagement about one of the pintle bars, the ends of the straps being superposed and provided with means connecting said ends with opposing faces of the respective members, the pintle bars at each side of the said members being respectively connected with different members, and the straps connected with pintle bars at a given face of one of said members being in each instance connected with the opposite face of the other member.

2. In a hinged structure, the combination of a plurality of like hinge devices each of which comprises a pintle frame provided with spaced and substantially parallel pintle bars and thin straps having eye portions projecting therefrom, and a pair of members connected by said devices and having adjacent end faces and corresponding opposite side faces, said frames lying between said end faces and the straps connected with the pintle bars of respective frames being extended in opposite directions along opposite side faces of

the respective members in substantially flat contact therewith, and means connecting said straps with the opposite side faces of the respective members, whereby said frames provide a tension connection between the opposite straps and such straps are reinforced by said members against lateral distortion, the several straps connected with the pintle bars at one side of said members being connected respectively with differing members.

3. In a hinged structure, the combination of a plurality of like hinge devices each of which comprises a pintle frame provided with spaced and substantially parallel pintle bars and thin straps having eye portions projecting therefrom, and a pair of members connected by said devices and having adjacent end faces and corresponding opposite side faces, said frames lying between said end faces and the straps connected with the pintle bars of respective frames being extended in opposite directions along opposite side faces of the respective members in substantially flat contact therewith, and means connecting said straps with the opposite side faces of the respective members, whereby said frames provide a tension connection between the opposite straps and such straps are reinforced by said members against lateral distortion, the several straps connected with the pintle bars at one side of said members being connected respectively with differing members, the end faces of the respective members being provided with corresponding channels at the several levels of said hinge devices in which the respective frames of said devices are fitted as to length and thickness.

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