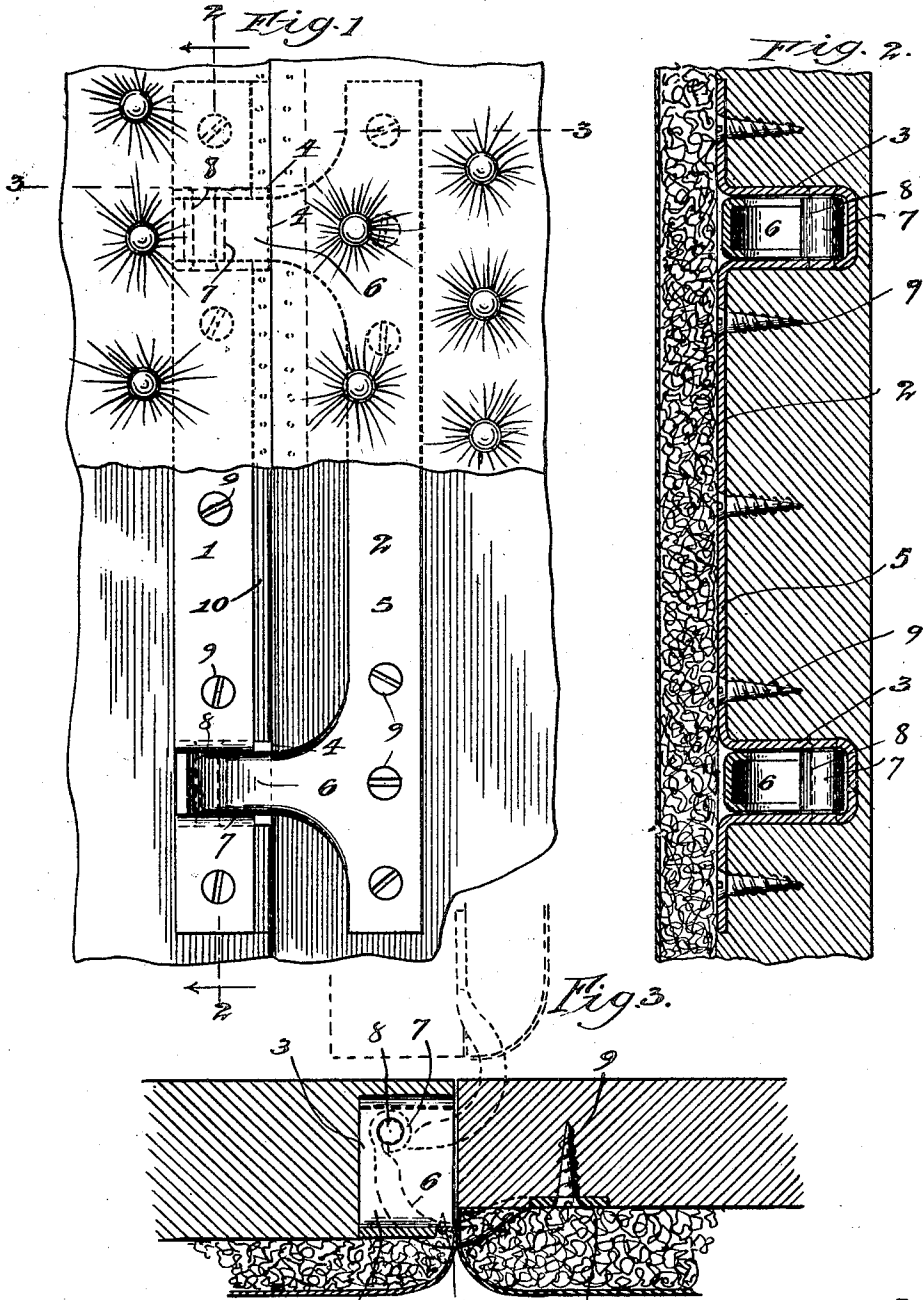


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DOOR HINGE.
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DOOR-HINGE.

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To all whom it may concern:

Be it known that we, EDWARD ANDERSEN and HARRY M. MINK, citizens of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented certain new and useful Improvements in Door-Hinges, of which the following is a specification.

This invention relates to improvements in door hinges, and refers more specifically to an improved form of hinge of the so-called concealed type, especially suitable for automobile doors, refrigerators, etc.

Among the salient objects of the invention are to provide a construction in which the labor and cost of mounting are very materially reduced without sacrifice of accuracy or reliability; to provide a construction in which the difficulty, high degree of skill and consequent expense of so hanging two separate hinges that their axes will exactly coincide and therefore operate perfectly, are avoided; this being accomplished by so organizing the hinge that it is of duplex construction with the parts thereof rigidly connected and aligned; to provide a construction which not only has the advantages above outlined but at the same time lends itself to manufacture by means of die and press work, thereby securing at the same time great accuracy and minimum cost; to provide a construction which facilitates the proper mounting of the upholstery or padding on the inside of an automobile body in the vicinity of the hinge, and which padding is ordinarily applied so as to conceal the hinge; and in general, to provide an improved construction of the character referred to.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims.

In the accompanying drawing—Figure 1 is an inside face view showing our improved hinge applied to support an automobile door; parts of the hinge mechanism being indicated in dotted lines behind the upholstery and other parts in full lines, the upholstery being removed. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows; Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 1 and looking downwardly.

Describing the preferred embodiment of our invention, 1 and 2, respectively, designate

the two main hinge members. The member 1 consists of a strap-like strip of plate metal provided near its end with approximately rectangular U-bends 3, 3; these two beds having parallel sides and being also accurately parallel with each other, as best seen in Fig. 2. Those portions of the blank which are bent to form the U-bends are wider than the remainder thereof and this excess width is arranged at that side of the hinge member toward the member 2; as shown clearly at the points designated 4.

The member 2 comprises a main strap portion 5 and two integral hinge arms 6 extending from one edge thereof and arranged accurately parallel with each other. The member 3, like the member 2, is struck out of plate metal by means of suitable dies, and the hinge arms 6 are curved throughout the chief portions of their lengths, as best shown in Fig. 3; the terminal portions of said arms standing approximately at right angles to the plane of the body of the member 3. In order to very materially increase the rigidity and strength of these hinge arms without making them wide and unwieldy, the arms are formed of channel-shape in cross section, as seen clearly in Fig. 2, and they also widen out at their base ends where they merge into the main plate. The extreme end of each hinge arm is bent back upon itself to form a pintle eye 7; it being noted that the marginal or channel side portions of the arms terminate immediately adjacent to the eyes proper.

The U-bends of the member 1 constitute in effect hinge sockets to receive the arms 6 of the member 2, and these U-bent sockets are apertured to receive pintle pins 8 whereby the ends of the hinge arms are pivotally secured to the member 1. As shown, the pintle pins 8 are simply straight pins inserted through the socket bends from side to side and slightly riveted at their outer ends to keep them in place. Each hinge member is provided with a suitable set of screw apertures 9 whereby it may be secured to the door or the jamb, as the case may be.

In applying a hinge of this construction, as for example to an automobile body, the door jamb on the one hand and the door on the other are mortised out at some distance from their respective edges to receive the strap-like body portions of the respective members 1 and 2 of the hinge. In the case

of the member 1 also the jamb is provided with socket-like mortises to receive the socket portions 3, and the member 1 is so located with reference to the margin of the jamb that the edges 4 of the U-bend sockets lie practically flush with the edge of the jamb, and when so located a strip of wood 10 is exposed between the edge of the jamb and the edge of the strap 1 wide enough to permit the upholstery to be secured thereto by tacking. The peculiar construction of the parts in this respect is therefore important in that it allows the strap to be set far enough away from the edge of the jamb so that a mortise or channel can be formed to receive it, the edge of which channel to a very large extent reinforces the securing screws in holding the hinge member absolutely against movement; and, secondly, the construction provides for the securing of the upholstery as described. Moreover, ample width of socket is provided and the edge of the socket brought out flush with the jamb so as to act as a positive stop against the edge of which the hinge arm may contact when the door is opened to its limit without necessitating an excessively wide strap as to the main body portion of this member 1.

The hinge member 2 is very similarly mounted in the inner face of the door; the strap-like body of said member being mortised into the face of the door at a suitable distance back from the edge of the latter, and the mortise recess suitably shaped to receive the widened base portions of the hinge arms. In the case of this member provision is made for tacking the upholstery in place, as indicated at 9.

From the foregoing description it will be seen that the construction described carried into effect fully the stated objects of the invention. In this connection, the importance of forming the two hinge arms on a single securing plate of one member, and forming the two arm-receiving sockets as a part of the same strap or plate constituting the other member, is not to be underestimated. By this expedient only such skill is required of the hinge-setter as will enable him to make mortises which will take the hinge members, and since they are already assembled in fixed relation to each other, he can hardly go wrong in laying out the position of his mortises and need pay no attention whatever to the matter of alinement of the two hinge members, because if they can be secured in place at all they will of necessity be properly alined. The expedient of having the lower edges of the hinge-receiving sockets act as stops for the hinge-arms, of course, avoids the necessity of providing for such stops otherwise, and at the same time insures that the blows incident to arresting the swinging movement of the door will come upon the entire hinge structure itself

rather than upon a localized portion of the automobile body.

The structure possesses other advantages which need not be detailed.

We claim as our invention:

1. A door hinge comprising a generally flat facing member provided with a plurality of relatively deep hinge-arm-receiving sockets offset from the plane of the facing member and spaced remote from each other, each socket being open as to its facing side and as to one of its lateral sides, a second facing member provided with a plurality of hinge arms rigid with its main body and suitably spaced to register with the sockets of said first member, and suitable pintle connections whereby the ends of said arms are pivotally secured in said sockets to hinge about a common axis.

2. A door hinge comprising a sheet-metal strap-like member provided intermediate its ends with a plurality of spaced apart U-bends having parallel sides and constituting hinge-arm-receiving sockets, a second hinge member consisting of a strap-like plate provided with a plurality of integral arms extending from one edge of the strap-body and curved to bring the ends of said arms into alinement with an axis laterally offset from the plane of said strap body and remote from the proximate edge of the latter, and suitable pintle connections whereby the ends of said arms are pivotally secured in the respective sockets with their pivotal axes in alinement.

3. In combination with a vehicle-body and the door thereof, a door-hinge comprising one strap-like member provided with a plurality of hinge-arm-receiving sockets spaced apart from each other, another strap-like member provided with a plurality of arms integral with the main strap-body projecting therefrom and suitably spaced to register with the sockets of said first member, and suitable pintle connections whereby the ends of said arms are pivotally secured in said sockets with their axes alined, said strap members being secured to the adjacent inner sides of said door and body and spaced from said edges a sufficient distance to permit the application of upholstery to said edges to conceal said strap members.

4. The combination of a door frame having mortises therein open at the edge and inner side thereof, a plate secured to the inner side of said frame and provided with sockets projecting into said mortises, a door for said frame, and curved arms pivoted in the inner portions of said mortises at the outer portion of said frame, the other ends of said arms carrying a plate secured to the inner side of said door, substantially as described.

5. A duplex door-hinge construction adapted to provide in a single structure the

equivalent hinge support and to perform the functions of two spaced-apart relatively distant and distinct alined hinges, said construction comprising a strap-like facing plate member adapted to be secured to the frame of a door and provided at widely separated points with hinge-arm-receiving sockets, the entrances to which lead through said facing plate, transverse separate pintles within the respective sockets in axial aline-

ment with each other, and arms secured to said door spaced to register with the sockets of said first member, curved to enter the respective sockets, and connected with said pintles therein.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."