

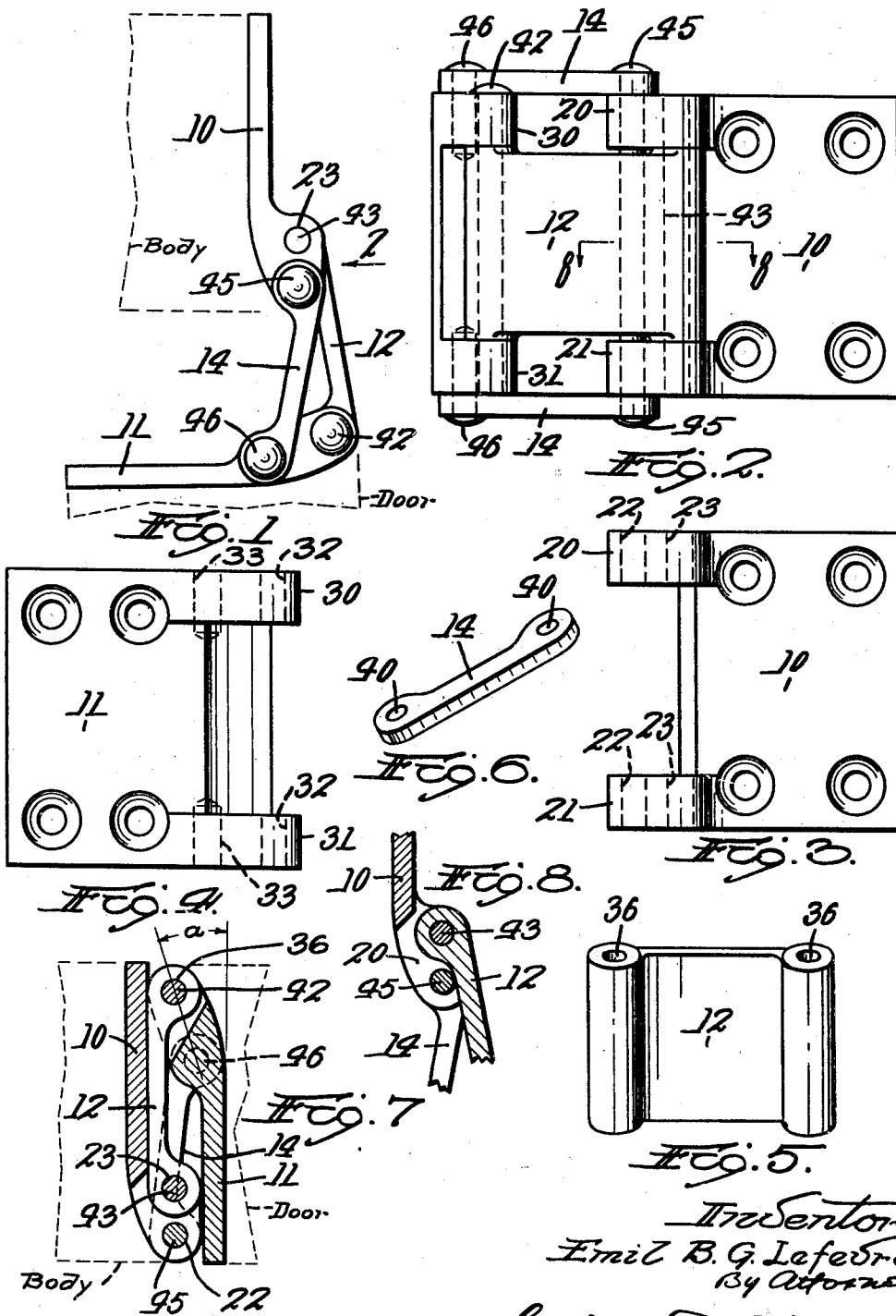
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E. B. G. LEFEVRE

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CONCEALED DOOR HINGE

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Inventor
Emil B. G. Lefevre
By Attorneys

Southgate Hays & Hawley

UNITED STATES PATENT OFFICE

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CONCEALED DOOR HINGE

Emil B. G. Lefevre, Detroit, Mich.

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1 Claim. (Cl. 16—164)

This invention relates to the general type of hinge shown in Anderson Patent No. 1,578,570, issued March 30, 1926. This type of hinge is particularly designed for use on automobile doors where an abrupt outward movement of the portion of the door adjacent the hinge is necessary for clearance.

It has been the usual but undesirable practice to attain this result by placing a fixed hinge pivot a substantial distance outward from the surface of the door and body. In this manner the necessary clearance could be obtained but the permanently projecting, rigid hinge members were unsightly and obstructive.

It is the general object of my invention to provide an improved concealed hinge so designed that it will be simple in construction and economical in manufacture and that its over-all thickness will be substantially reduced. This latter feature is of particular importance in automobile construction where space is strictly limited.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention is shown in the drawing, in which

Fig. 1 is a plan view of my improved hinge in open position;

Fig. 2 is a side elevation thereof, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a side elevation of the hinge plate to be attached to the body or fixed member;

Fig. 4 is a side elevation of the hinge plate to be attached to the door or swinging member;

Fig. 5 is a perspective view of the hinge link;

Fig. 6 is a perspective view of one of the guide links;

Fig. 7 is a sectional plan view of the hinge in closed position, and

Fig. 8 is a detail sectional view, taken along the line 8—8 in Fig. 2.

Referring to the drawing, I have shown a hinge comprising hinge plates 10 and 11, a hinge link 12, and upper and lower guide links 14. The hinge plate 10 is provided with upper and lower bearing portions 20 and 21 at one edge thereof, and each provided with openings 22 and 23. These openings 22 and 23 are preferably disposed in a plane parallel to the hinge plate 10, as shown in Fig. 7.

The hinge plate 11 is provided with upper and lower bearing portions 30 and 31 at one edge thereof and each having openings 32 and 33 formed therein. These openings 32 and 33 are

spaced apart at a distance somewhat greater than the openings 22 and 23 in the plate 10, and are also disposed in a plane at a substantial acute angle to the plate 11, as indicated at *a* in Fig. 7.

The hinge link 12 is arched in cross section, as shown in Fig. 7 and is provided with bearing openings 36 at its opposite ends. The connecting links 14 are preferably formed as flat plates having bearing openings 40 at their opposite ends, said openings being spaced a less distance apart than the openings 36 in the hinge link 12.

The parts are assembled as indicated in Figs. 1, 2 and 7, with the hinge link 12 positioned between the bearing portions 20 and 21 of the plate 10 and the bearing portions 30 and 31 of the plate 11.

Hinge pins 42 and 43 pivotally connect the hinge link 12 to the hinge plates 10 and 11. The hinge pin 43 is preferably headless, being a force fit in the bearing openings 23. Clearance is thus provided for the links 14 when the hinge is closed.

The links 14 are connected to the hinge plate 10 by a cross-pin 45 and may be connected to the hinge plate 11 by studs 46 driven into the openings 33 in the hinge plate 11.

When the parts are thus assembled, the initial opening movement of a door mounted on the hinge plate 11 will be substantially a pure swinging movement about the hinge pin 22 in the hinge plate 10. As soon, however, as the door is slightly opened and clears the door jamb, the offset action of the links and the spacing and angular relation of the bearings cause that portion of the door adjacent the hinge to be projected abruptly outward while swinging to full open position, as indicated in Fig. 1, thus providing substantial clearance outside of the automobile body or other supporting structure. The door will thus clear a molding on the body or an outwardly curved portion of the body intermediate the hinges.

By placing the guide links 14 above and below the hinge plates 10 and 11, while the hinge link 12 is placed between the bearing portions of the hinge plates, the guide links may be caused to overlie or underlie the hinge link when in closed position, as shown in Fig. 7, thus permitting a substantial reduction in the over-all thickness of the hinge when closed, which is an important consideration in automobile manufacture.

By cutting away one side of each link 14, additional clearance for the edge of the body or pillar is provided. When the door is fully open, the pin 45 (Fig. 8) acts as a firm stop for

the hinge link 12, thus defining the open position of the door.

It will be seen that the major part of the load is carried by the heavy and rigid hinge link 12, while the guide links 14 are of relatively light construction and merely direct the offset or throw-out movement of the door but do not carry a substantial load.

While I have shown two guide links 14 in the drawing, my invention is not limited to this construction but includes also the use of a single link which under usual conditions has been found entirely satisfactory.

My improved hinge comprises few parts, which may be easily and economically manufactured, and possesses marked advantages over any concealed hinge heretofore designed or with which I am familiar.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what I claim is:—

A concealed door hinge comprising a single hinge plate having upper and lower bearing portions at the top and bottom of said plate and adjacent one side edge thereof, each of said bearing portions being provided with a pair of bear-

ing openings spaced longitudinally of said plate and positioned in a plane offset but parallel to said plate, a second single hinge plate having upper and lower bearing portions at the top and bottom of said plate and adjacent one side edge thereof, each of said bearing portions being provided with a pair of bearing openings spaced longitudinally of said second plate and substantially further apart than said first pair of openings and positioned in a plane disposed at a substantial acute angle to the plane of said second hinge plate, a single load-supporting hinge link pivotally mounted between said top and bottom bearing portions of said two hinge plates and filling the space between said portions, and a guide link pivotally mounted on said hinge plates outside of one set of said bearing portions but closely adjacent thereto, the effective length of said hinge link being greater than the effective length of said guide link and said hinge link being of heavy and rigid construction and supporting substantially the entire load on said hinge, while said guide link is of light construction and slight thickness and is substantially directional only in function, said two plates and hinge and guide links forming a complete unitary hinge structure.

EMIL B. G. LEFEVRE.