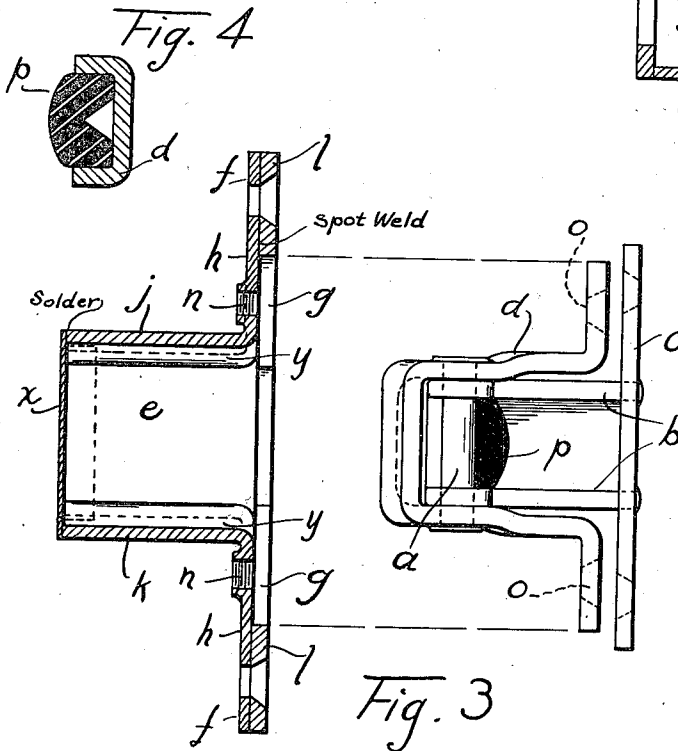
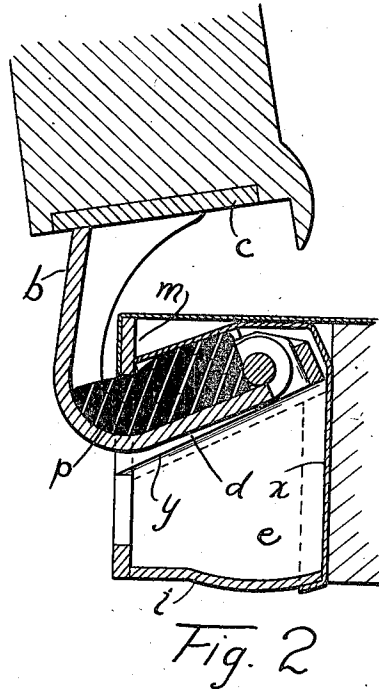
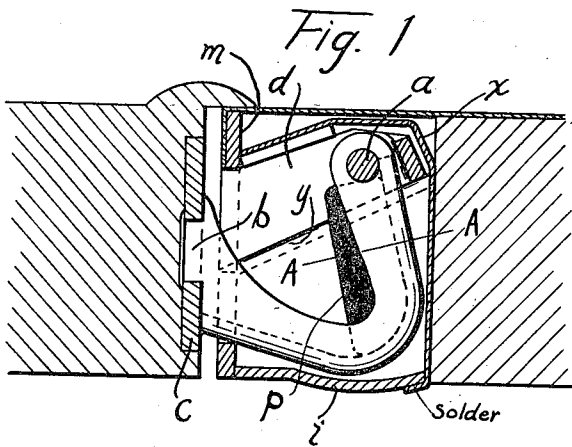


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 CONCEALED HINGE.
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CONCEALED HINGE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRED J. FISHER, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Concealed Hinges, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to concealed hinges and has in view a concealed hinge provided with a removable pintle-carrier that is so set into the hinge housing that it affords a wide metal post to act as a stop for the hinge arm; yet the pintle is so positioned in the housing as to allow the use of a long radius arm.

Another feature of the invention is the construction of the hinge arm out of a stamping in the form of a channel strip which adds strength to the hinge arm in proportion to its weight.

Still another feature is the use of a rubber bumper on the hinge arm to engage the abutment so as to lessen the shock of the impact between the hinge arm and the abutment and do away with the necessity of the usual leather check straps which are used in connection with concealed hinges. The channeled hinge arm makes a very convenient way of carrying this rubber bumper.

In the drawings,—Figure 1 is a horizontal section showing the hinge attached to an automobile door and body (the latter two being shown only fragmentarily.) Fig. 2 is a similar sectional view taken on a slightly lower plane and showing the door in open position and the hinge parts accordingly. Fig. 3 is a vertical section showing how the hinge parts are assembled. Fig. 4 is a cross section of the hinge arm taken on the line A—A of Fig. 1 and showing how the bumper is held in place.

The hinge arm is a stamping of heavy metal formed into channel shape and also into the customary elbow form used in concealed hinges. One end is perforated to receive the hinge pintle *a*. The other end is provided with a plurality of projections *b* which pass through slots left for that purpose in the plate *c* that is intended to be secured to the edge of the door. The outside edges of these perforations are upset as

shown in Fig. 1, thereby riveting the plate *c* securely to the hinge arm.

The hinge pintle is held in a pintle-carrier *d* which comprises a strip of metal bent into a U and having outwardly-extended portions or what might be termed perpendicular fastening lugs by which the U-like portion, when the U is tipped on its side and slipped into the housing as shown in Fig. 3, may be secured to the housing.

The housing comprises a box *e* open at its front and provided with upward and downward extensions *f* by which the box may be secured to the door post and provided with a pair of sockets *g* in the faces of these extensions, in which are adapted to fit the fastening lugs on the pintle-carrier.

The composite housing is constructed in the following manner: A piece of sheet metal is cut into a blank so that it can be folded to form the plate portions *h* and *h* of the extensions *f*, the one side *i* shown in Figs. 1 and 2, and the top *j* and bottom *k* of the box shown in Fig. 3. This would leave the rear and the one side of the box yet to be covered, and this cover is afforded by soldering a thin metal strip *x* over the edges of the side wall, top and bottom of the box. A finishing plate *l* of fairly heavy metal is then spot-welded to the plate portions *h*. The center of the plate is cut out to coincide with the opening in the front of the box, but it will be noted that at the sides the opening in the finishing plate is not as wide as the opening in the box and this affords the strong posts at the side of the opening through the finishing plate, and this is of special importance in the post designated *m* for this forms a stop for the hinge arm and must needs be strong. Offset at the top and bottom of the central opening through the finishing plate are a pair of approximately semi-circular openings which are cut out of the plate to form in connection with the plate portions *h*, which are exposed, sockets *g* already alluded to, which receive the fastening lugs of the pintle-carrier. It will be noted that the plate portions *h* at these sockets are provided with threaded apertures *n* to receive screws which pass through openings *o* in the lugs of the pintle-carrier. Consequently the pintle-carrier and the hinge arm can be assembled in the composite housing and disassembled therefrom simply by threading the screws

into their sockets or taking out the screws. So the door may be easily disconnected from the door post by simply taking out these two screws that run into the screw sockets *n*.

5 This arrangement of pintle-carrier and housing is at the present time old, but I believe that the arrangement of the pintle-carrier and housing now to be described is new.

The top *j* and bottom *k* of the box are
10 stamped outwardly to form ways *y* which extend from the open side of the box rearwardly and obliquely. The sides of these ways converge together. The U-shaped pintle-carrier has complementary and con-
15 verging edges so that when it is slid into the ways and screwed to the composite housing, these converging walls of the ways and converging edges of the pintle-carrier wedge together in non-rattling relation.
20 The oblique direction of these ways from front to rear has an important object in making possible the use of a wide post *m* (see Fig. 1), yet at the same time locating the pintle as far toward the side of the
25 box as is practical so a large hinge arm will be afforded. The wide hinge post is an important factor for the reason it acts as an abutment to stop the hinge arm when no straps are used. In the construction here
30 described, not only is this hinge post wide but it presents a widthwise resistance to the striking force so as to give great strength.

Within the channeled hinge arm and between the elbow proper and the pintle is
35 set a thick rubber bumper *p*. The back of this rubber bumper has a V cut out of it so that it may be constricted in inserting it in the channeled arm, and after it has been fitted in the arm the portions to the
40 opposite sides of the V channel would tend to spread, thereby holding the bumper in the channel. From a comparison of Figs. 1 and 2 the action of the bumper will be understood, and it will be seen that it con-
45 tacts the wide post *m* and that by reason of the distortible character of the rubber the impact of one member with the other will be deadened. Consequently not only is the very heavy strain to the hinge arm
50 and pintle due to metal to metal contact obviated, but also any objectionable noise due to the striking of the metal upon metal.

The cushioning of the thrust of the hinge arm upon the post is an important thing
55 on account of the very great leverage upon

the hinge arm when the width of the door is considered. Heretofore it has been customary to use leather door check straps. These were intended to stop the door just before the arm strikes the abutment or post, 60 but these are objectionable for the reason that they are quite liable to pull the screws out of the sockets or tear away from the screws by which they are secured to the door.

What I claim is:

1. In a concealed hinge, the combination of a pintle, means for supporting the same, and a hinge arm journaled by the pintle, and comprising a channeled strip formed 70 into elbow shape.

2. In a concealed hinge, the combination of a pintle, means for supporting the same, an elbow-like channeled hinge arm journaled by the pintle, an abutment, and a cushioning element secured in the channel of the hinge arm for striking the abutment.

3. A concealed hinge, having in combination, a housing provided with a way leading from the opening in the housing along one of the horizontal walls rearwardly and obliquely to one side and a wide post to act as a stop made possible by the said obliquely disposed way, a pintle-carrier removably securable to said housing and adapted to fit into said way, a pintle supported by the carrier, and a hinge arm supported by the pintle.

4. A concealed hinge, having in combination, a housing provided with a finishing plate having a portion forming a comparatively wide post or abutment, the said housing being provided with a box portion having one or more ways extending obliquely rearward from the opening at the side of said post, and a pintle-carrier, pintle and hinge arm removably securable in said housing by sliding the pintle-carrier in said obliquely-extending way.

5. In a concealed hinge, the combination of a pintle, means for supporting the same, a hinge arm, an abutment, a cushioning element, and means on the hinge arm for engaging opposite sides of the cushioning element to hold the same in place and in position to strike the abutment.

In testimony whereof, I sign this specification.

FRED J. FISHER.