Oct. 29, 1940. M. J. ECONOMIDES 2,219,918

CONCEALED HINGE

Filed Nov. 2, 1938

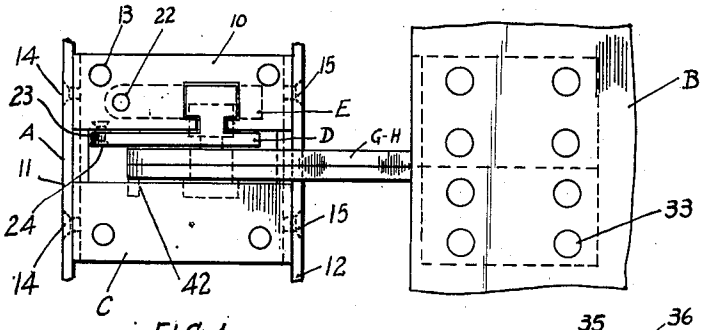


FIG. 1

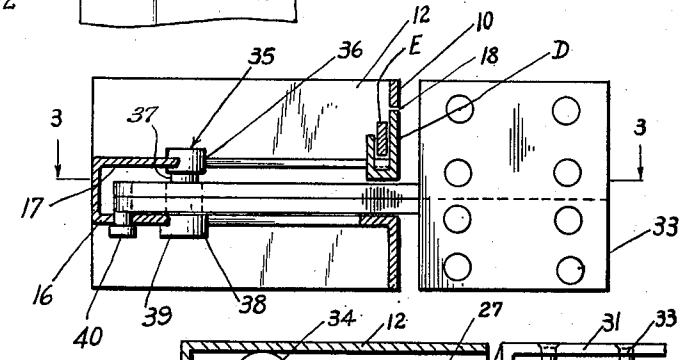


FIG. 2

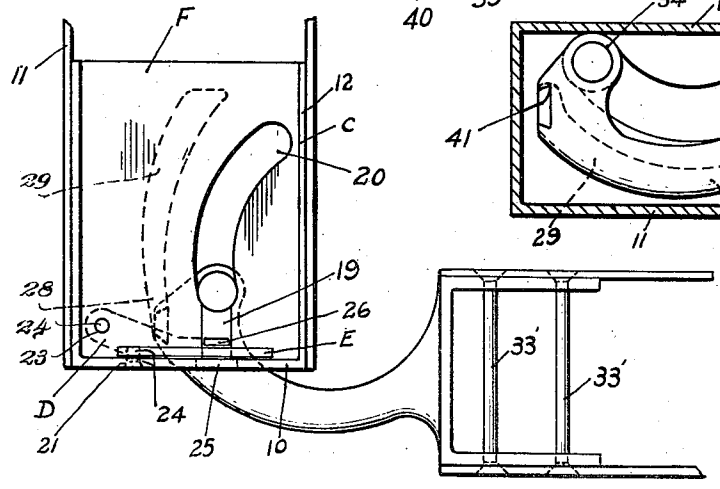


FIG. 4

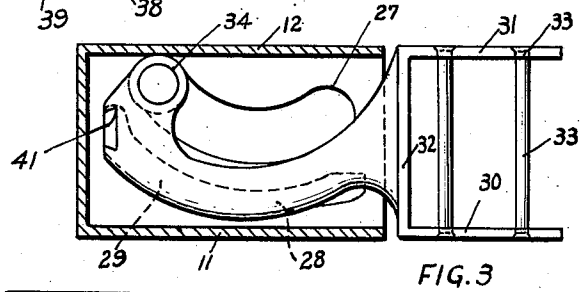


FIG. 3

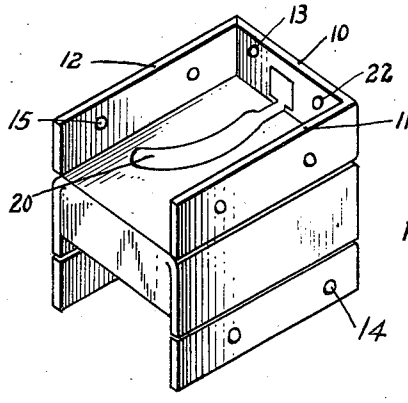


FIG. 5

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CONCEALED HINGE

Michael J. Economides, Brooklyn, N. Y.

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6 Claims. (Cl. 16—164)

This invention relates to concealed hinges. More particularly, it relates to an improved, concealed hinge for use in automobiles and like vehicles, said hinge being adapted to be concealed and attached in a door and car frame.

The present invention has for an object to provide a concealed hinge which is easily made but preferably from any suitable sheet metal and which is of superior mechanical features than any heretofore used.

Another object of the present invention is to provide a hinge wherein the sides thereof are readily attachable to a door and frame of a car.

One other object of the present invention is to provide a concealed hinge for use in automotive vehicles and the like, adapted to eliminate rattling of the doors in which said hinge is used.

Still another object of the present invention is to provide a hinge having a movable portion disengageable from a main portion of said hinge to permit easy removal of a door from a frame when said hinge is used.

A further and more specific object of the present invention is to provide a hinge having a fixed portion provided with a guideway adapted to retain a guide connected with a movable portion of the hinge, said guide being also adapted to check the opening of a door to which it is connected.

Another object of the present invention is to provide a concealed hinge in connection with a door and frame adapted to be disengaged to permit removal of the door from the frame without the removal of screws and the like as used heretofore in hinges.

Other objects and features will become apparent upon reading the following detailed description of the embodiment of the present invention.

The invention generally consists in the features of novelty appearing in the construction, arrangement and cooperation of the several parts hereinafter fully described and is taken in connection with the accompanying drawing, in which

Fig. 1 is a vertical front view of a preferred embodiment as mounted in a frame and door fragmentally shown.

Fig. 2 is a vertical sectional view of my embodiment.

Fig. 3 is a plan view taken on line 3—3 looking in the direction of the arrows in Fig. 2, and

Fig. 4 is a plan view of Fig. 1.

Fig. 5 is a perspective view of the stationary part of my embodiment.

Referring now to the drawing, in which like reference characters designate like parts throughout, a frame section A of an automobile or other vehicle is recessed to accommodate the non-movable portion of the device as shown in Figs. 1 and 4. Said portion is made of any suitable material such as sheet metal blanks and is preferably of rectangular shape with a front and two opposed side walls as shown. The walls 10, 11 and 12 respectively, of said portion are provided with a plurality of openings 13, 14 and 15 respectively, into which fit screw members (not shown), for fixing the portion to frame section A. Said portion furthermore, is provided with a pair of spaced, parallel, horizontal plates 16 and 17, respectively, fixed to the vertical walls as shown in Fig. 2, being joined thereto and forming a part thereof, by any suitable means well known in the art. It is to be noted that the front wall 10 at its upper portion has an opening 18, continuing along a reduced slot 19 and a wider continuing curved slot 20 in the upper horizontal plate. Furthermore, the front wall is provided with an opening 21 into which fits a screw or rivet member 22 for pivotally holding a safety catch E, while the upper horizontal plate has an opening 23 for a rivet member 24 retaining a check D. Said check D can be swung outwardly of the vertical front wall 10 and around the rivet as an axis and has upwardly extending spaced lug ends 25 and 26, respectively adapted to fit into the corresponding opening 18 and be retained therein by means of said catch E, thus closing said opening.

Said lower horizontal plate 16 is provided with a curved slot 27 and a slightly reduced curved guide slot 28 and 29. It is to be noted that slot 27 is substantially of the same size as slot 20 and disposed directly beneath said latter slot for purposes hereinafter described in detail.

Adapted to coact with the non-movable section of the hinge above described and shown in the drawing, there is provided a movable hinge member G—H having a plurality of vertical side walls 30 and 31, respectively and a face wall 32 integral therewith as shown in the drawing. Said hinge member consists preferably of a pair of swaged sheet metal strips as shown, integral with the face wall 32. Said vertical side walls are provided with a plurality of openings 33 for accommodating rivet members, not shown, in order to retain the section in fixed position onto a movable, swingable door B of an automobile or other vehicle.

Said hinge member G—H has an outwardly extending curved arm of sufficient length for fitting into the space between the horizontal par-

allel plates 16 and 17 and has an opening 34 for accommodating a pintle 35. It is to be noted that said pintle has a plurality of sections of different diameters along its length as shown in Figs. 1 and 2. Section 36 is the top portion of the pintle adapted to fit in slot 20 and slide therein, while section 37 is reduced and fits in the space intermediate the horizontal plate members. Section 38 of the pintle on the other hand, is of substantially the same diameter as section 36 and is fitted or swaged into position in opening 34 of the hinge member G—H. The lowermost portion of the pintle has a relatively wider section 39 adapted to slide in slot 27 in the lower horizontal plate as shown in Fig. 3 of the drawing. It is to be noted from the above description of the pintle that it is fitted at right angles to the longitudinal axis of member G—H. Furthermore, each section of the pintle has a particular function in the operation of the hinge member.

In order to limit the outward and inward movement of said hinge member G—H, there is provided a guide member 40 adapted to fit in the recess 41 provided therefor, on the curved arm of member G—H. Said member has a recessed portion 42 adapted to travel in slot 28—29 in lower plate 16 as shown in Fig. 4. Furthermore, guide member 40 is fitted into slot 28 and 29 by initially placing same in the reduced portion 28 of said slot. It is to be noted that once the movable hinge member G—H is mounted, it can be slid in or out as desired without coming apart from the fixed non-movable portion mounted in section A, as shown in Figs. 1 and 4 of the drawing.

In order to assemble and operate the device as disclosed herein, the pivoted safety catch member E is swung about its pivot so that the free end thereof is raised to form contact with the upwardly extending spaced lugs or ends 25 and 26 of check D. Said check D is swung outwardly on its pivot to permit the insertion of the pintle 35 into slot 19—20 and the insertion of guide 40 into slot 28—29. This having been done the check D is closed and engaged with safety check member E, as shown in Figs. 1 and 2. It is to be noted that the space between the two horizontal plates is of sufficient depth to permit the slight raising of hinge member G—H for proper insertion into the slots above indicated without permitting any unnecessary rattling.

In the operation of the hinge above described, the movable section G—H being mounted onto a door may be moved in and out of the fixed section C. In such cases, the pintle 35 having parts 36, 37, 38 and 39 mounted on curved arm G—H moves in slots 20 and 27, while guide member 40 moves in slot 28, 29 and retains the movable section of the hinge in operable position without becoming separated from fixed section C. The device as described herein may be preferably made of sheet metal blanks of any desirable shape and then bent to form the embodiment as shown in the drawing herein.

The device as described is adapted for either straight line or curved doors of automobiles or other vehicles or even building doors. The device can be easily mounted and the width of the fixed portion can be varied to suit the particular type of application. Also, the device permits of a snug fit in the door frame, while the removable portion is fixed to the door by means of rivets or like means.

It is to be noted that the embodiment as disclosed herein in connection with the accompanying drawing, is an improvement on the inventions disclosed in my patents numbered 1,633,480 and 1,646,644 granted June 21, 1927, and Oct. 25, 1927, respectively.

While one preferred form of my invention has been described in connection with the accompanying drawing, it is understood that various modifications as to form, material, arrangement and use of materials may be made without departing from the spirit and scope of my invention.

I claim:

1. A concealable hinge comprising a box shaped section having a plurality of spaced superimposed horizontal plate members therein, one of said members having a continuously curved slot therein of two different widths and ending with a narrow section, and another wider curved slot, while the other member has a slot corresponding with the wider curved slot of the other member, a movable section having a curved arm intermediate the members with means adapted to be moved in and out of said first section along the slots thereof, and locking means preventing the curved arm from being separated from the first section.

2. A concealable hinge comprising a box shaped section having a pair of opposed vertical and a front wall, a pair of horizontal plates disposed in the section parallel to each other, said front wall having an opening intermediate the plates extending crosswise of the section and another reduced opening perpendicularly disposed to said first opening, the upper plate having a curved groove therein, while the lower plate has a corresponding groove and an adjacent curved groove, a movable section having a curved arm with a pintle adapted to fit in the corresponding grooves of the plates and a guide at the end of the arm for sliding in the adjacent groove, and actuable locking means for the perpendicular opening for retaining the arm in swingable connection with the first section.

3. A concealable hinge for use on swingable doors and the like, comprising a box like section having a pair of spaced horizontal plates therein, said section having an opening therein, pivotal means in connection with the section for closing said opening, one of said plates having a curved groove therein, while the other plate has a corresponding groove and another curved guide groove, and a removable section provided with a curved arm having a pintle adapted to fit and slide in the corresponding curved grooves of the plates, and a guide member adapted to fit and slide in the guide groove.

4. A concealable hinge for use on swingable doors and the like, comprising a box like section having a pair of opposed vertical walls adapted for attachment to a door frame, and a front exposed wall with an opening therein, a pair of spaced horizontal plates, the upper plate having a curved groove containing a restricted portion in connection with the opening in the front wall and an enlarged portion, while said lower plate has an enlarged groove portion corresponding with and parallel to that of the upper plate, and a curved groove in the lower plate disposed laterally of the enlarged portion, means pivoted to the front wall for covering the opening thereof, pivotal means inside the front wall for locking said first means, and a movable section having a curved arm adapted to fit intermediate the plates, said arm having a pintle adapted to move

in the grooved openings, and a guide member adapted to slide in the curved groove.

5. A hinge according to claim 4, in which the curved arm of the movable section is integral therewith and is adapted to be swung outwardly of the box section and has a vertically disposed pintle and guide member adjacent each other to fit in the respective grooves to prevent rattling of the section when in use, said section being removable from the box section.

6. A concealable hinge comprising a box-shaped section having a pair of spaced superimposed horizontal plate members therein, one of said members having a pair of grooves and the other having one groove disposed in relative alignment with one of the grooves of the first plate, a front wall in said section having an opening intermediate the members extending crosswise of the section and another reduced opening perpendicularly disposed to the first opening, a movable section having a curved arm with a pintle adapted to fit into the corresponding grooves of the members and a guide at one end of the arm for sliding in the other groove of one of the members and actuable locking means for the perpendicular opening to prevent the arm from being released from the first section.

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