Oct. 11, 1932. C. GESKE ET AL 1,881,473

CONCEALED PIN HINGE

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FIG. 1.

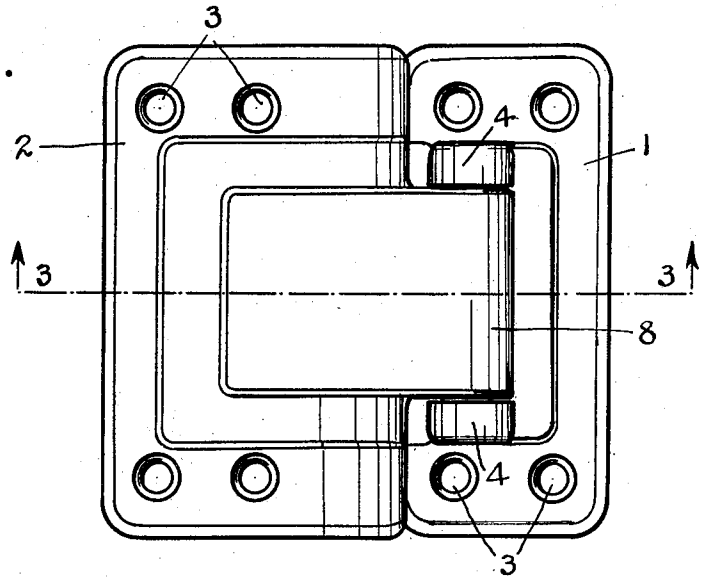


FIG. 2.

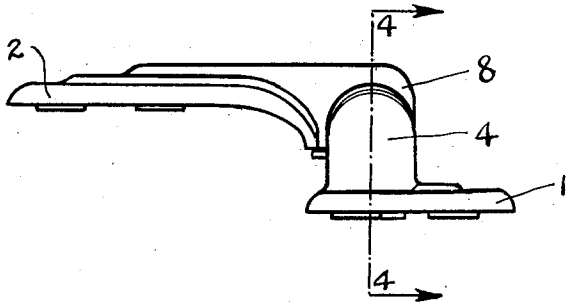
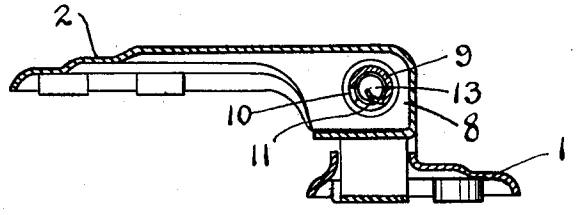


FIG. 3.



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FIG. 4.

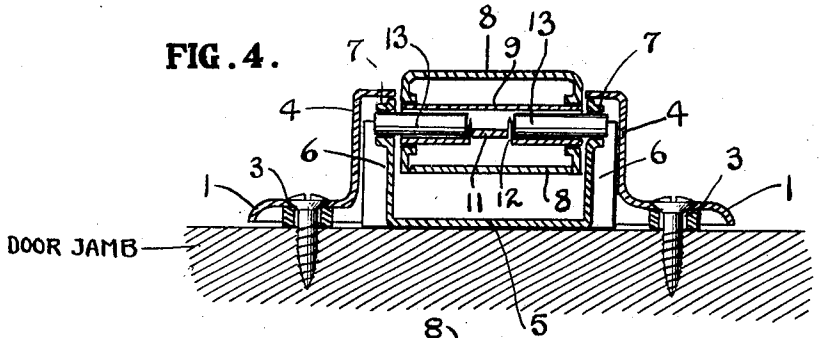


FIG. 5.

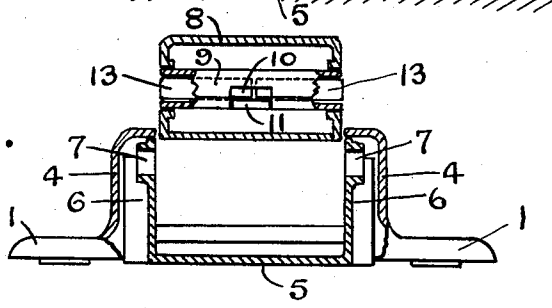
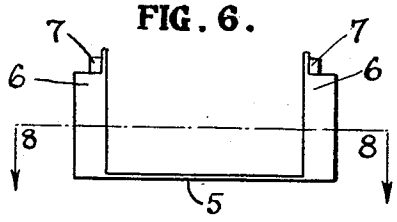


FIG. 6.



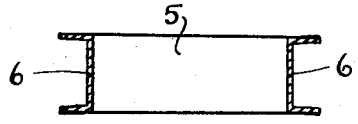


FIG. 7.

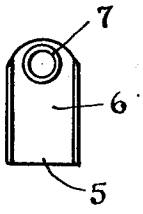
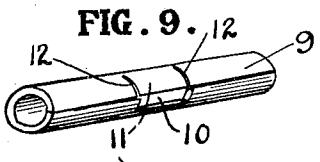


FIG. 8.

FIG. 9.



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UNITED STATES PATENT OFFICE

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CONCEALED PIN HINGE

Application filed July 21, 1930. Serial No. 469,602.

This invention relates to improvements in hinges and more particularly to hinges of the type in which the hinge pin is entirely concealed when the hinge is assembled. The hinge is particularly adapted for use on refrigerator doors although, obviously, hinges embodying the essentials of this invention have various uses.

A particular object of the invention is to provide a hinge which may be readily formed from sheet metal by the so-called stamping process and which will have a hinge pin arranged so that it will be entirely concealed when the hinge is assembled and yet held firmly in operative position but which may be removed if desired to disassemble the hinge. A specific feature of the invention resides in the particular sheet metal construction of the hinge by means of which the concealed pin construction is effected. Although the drawings and following description discloses a hinge of sheet metal construction the essentials of the invention pertaining to the concealed hinge are applicable to other hinge structures. The invention provides various new and useful features of construction and arrangement as hereinafter more fully described and pointed out in the claims, reference being had to the accompanying drawings in which,

Fig. 1 is a plan view of the hinge embodying this invention.

Fig. 2 is a side view of the hinge shown in Fig. 1.

Fig. 3 is a cross sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a transverse sectional elevation on the line 4—4 of Fig. 2.

Fig. 5 is a transverse sectional elevation, with parts broken away, substantially on the line 4—4 of Fig. 2, showing the parts in partially assembled position.

Fig. 6 is an elevation of the hinge pin holding member.

Fig. 7 is an end elevation of the same.

Fig. 8 is a sectional plan of the hinge pin holding member on the line 8—8 of Fig. 6, and

Fig. 9 is a perspective view of the pin carrying sleeve and retainer.

Like reference characters refer to like parts in the different figures of the drawings.

The hinge comprises what may be termed a fixed plate 1 and a swinging plate 2, each of which may be readily stamped from sheet metal and each being provided with the customary screw holes 3 to receive screws by which it may be attached to the jamb and door respectively. The fixed plate 1 is provided with outwardly extending ears 4 formed integrally of the sheet metal of the plate, which ears are closed on their outer sides and open on their inner faces. The ears and the underside of the base form receptacles to receive the hinge pin holding member 5, which is substantially a U-shaped member having upwardly extending legs 6 at its respective ends, said legs being of channel shape and having open bosses 7 provided at each upper end. The legs 6 of the member 5 are inserted from the underside of the hinge member and extend into the ears 4, preferably being made to fit tightly therein. The lower portion of the member 5 is arranged substantially flush with the lower portion of the hinge member 1 so that when this hinge member is attached to the door jamb the member 5 is retained in operative position in the member 1 and the abutting of the member 5 also strengthens the hinge mounting structure.

The swinging hinge member 2, also readily stamped from sheet metal, has an extension 8 arranged to extend between the ears 4 and this extension 8 is provided with a hinge pin holding sleeve 9 which is rigidly mounted therein. The sleeve 9 is provided with a centrally located longitudinal slot 10 and opposite the slot 10 is a segmental tongue 11 formed by severing the sleeve at spaced

apart points 12 through a position of its circumference.

The hinge pin is formed of two members 13 which are located within the sleeve 9 and their combined length is no greater than the total length of the sleeve. These hinge pin members 13 are mounted for longitudinal movement in the sleeve and may be moved by inserting an instrument through the slot 10 in the sleeve, the said slot 10 being accessible through the open inner and underside of the hinge member 2.

In assembling the hinge, it being understood that the hinge pin holding member 5 has been arranged in place in the fixed hinge member 1, the hinge pin members 13 are retracted into the sleeve 9 as shown in Fig. 5 and the extension 8 is placed into position between the ears 4 and the legs 6 of the member 5 which are located within the ears and are provided with the open bosses 7. When the extension 8 is in its proper position a small instrument is inserted into the slot 10 of the sleeve 9 and by engaging the inner ends of the pin members 13 they may be moved outwardly and inserted into the respective hollow bosses 7 and when in this extended position the tongue 11 is bent inwardly between the inner ends of the pin members 13 preventing them from inadvertently retracting into the sleeve 9. See Figs. 3 and 4.

With the parts in the above described position the respective pin members 13 effectively provide axes members on which the members 1 and 2 of the hinge pivot and the pin members are entirely concealed at the outside of the hinge. If it should be desirable to disassemble the hinge the tongue 11 may be bent outwardly by an instrument provided for that purpose so that the pin members 13 may again be retracted into the sleeve 9 to permit removal of the extension 8 from between the ears 4.

The hinge pin embodying this invention as above described has various advantages. It provides, in the first place, a hinge of extremely attractive appearance because of the absence of the projecting or visible ends of the hinge pin and this construction permits the ears 4 to be smoothly finished. When a hinge is chromium plated its parts must be plated separately before being assembled and it would be impossible to plate the ordinary hinge pin and then rivet its ends to hold it in place because this riveting operation would ruin the chromium plate but with the present hinge the exposed parts may be properly plated and the hinge pin may be cromium plated if desired because no riveting or operation detrimental to the plating is used but inasmuch as the pin is not visible it is not necessary to plate it. Furthermore, the hinge is simple to construct and is rigid and durable.

The foregoing description and the drawings disclose a hinge of sheet metal construction but it is conceived within the scope of this invention that the same type of concealed hinge pin may be applied to other forms of construction.

The hinge members 1 and 2 could be of cast metal with the sheet metal sleeve 9 inserted with its bendable tongue to carry and hold the pin members extended or a spacing member of a different type than the tongue 11 might be substituted to be inserted between the inner ends of the extended pin members 13 to hold them extended and in operative position.

While we have described a complete embodiment of our invention we do not wish to be limited to the particular construction shown, our invention being in fact limited solely by the attached claims.

We claim:

1. In a hinge, a hinge plate having spaced apart ears, each ear having a hinge pin receiving opening, a second hinge plate having an extension between said ears, two hinge pins mounted for longitudinal movement in said extension and extendible into the openings of the respective ears and a flexible tongue forming a part of the said extension structure bendable into a position between the inner ends of said hinge pins to retain them in extended position.

2. In a hinge, a hinge plate having spaced apart ears, each ear having a hinge pin receiving opening, a second hinge plate having an extension between said ears, a sleeve fixed in said extension, two hinge pins mounted for longitudinal movement in said sleeve and extendible into the openings of the respective ears and a flexible tongue formed on said sleeve and bendable into a position between the inner ends of said hinge pins to retain them in extended position.

3. In a hinge, a hinge plate having spaced apart ears, each ear having a hinge pin receiving opening, a second hinge pin having an extension between said ears, a sleeve fixed in said extension, said sleeve being provided with a substantially centrally located opening, two hinge pins mounted for longitudinal movement in said sleeve and extendible into the openings of the respective ears, and a tongue formed on said sleeve adjacent said opening therein and bendable into a position between the inner ends of said pins to retain them in extended position.

4. In a hinge, a hinge plate having spaced apart hollow ears, a hinge pin supporting member having two legs each insertable in the opening of a respective ear and each leg having a hinge pin receiving opening, a second hinge plate having an extension located between said ears and the respective legs of the hinge pin supporting member therein, and hinge pin members longitudi-

nally movable in said extension and extendible into the said openings of the hinge pin supporting member, means passing through the legs of the hinge pin supporting member and the said extension of the second hinge plate whereby the hinge plates are pivotally connected together.

In testimony whereof we affix our signatures.

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ANDREW EKMAN.