July 8, 1958 O. BERGE ET AL 2,842,117

DOOR HINGE MECHANISM

Filed July 21, 1955

FIG. 1

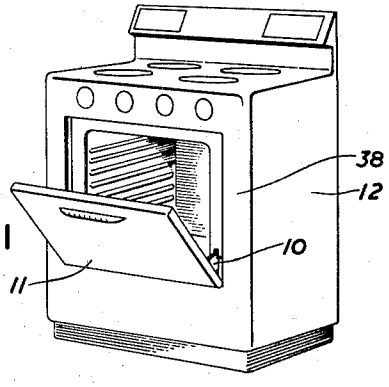


FIG. 2

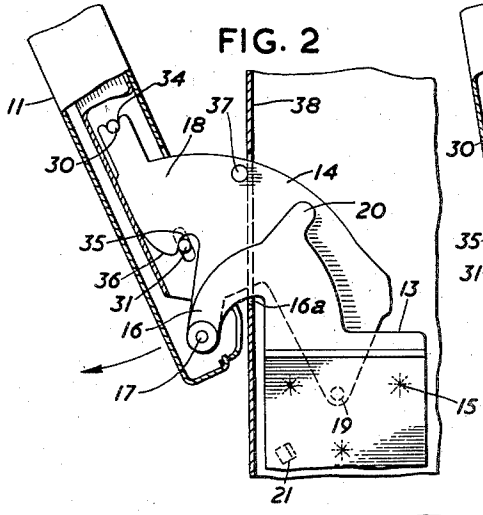
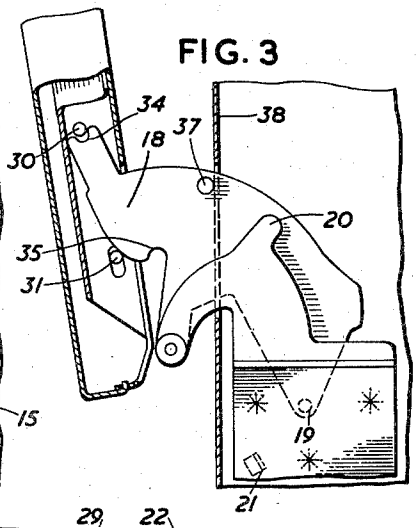


FIG. 3



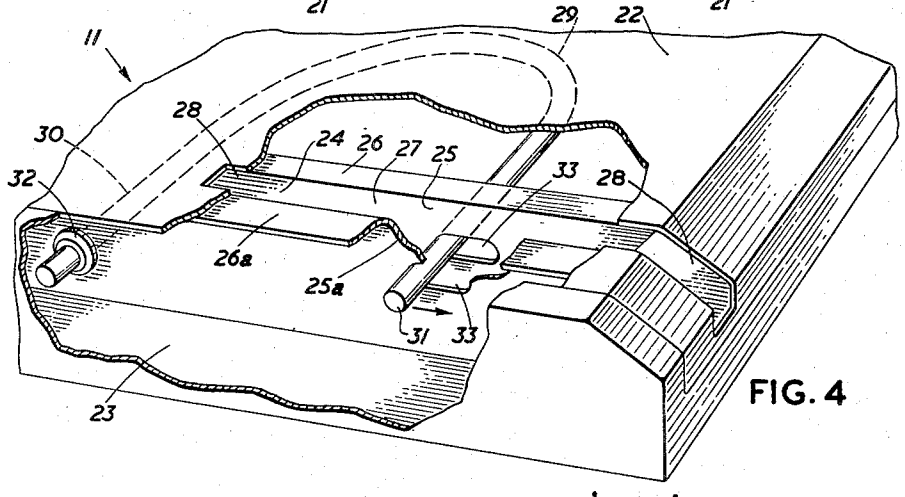


FIG. 4

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DOOR HINGE MECHANISM

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4 Claims. (Cl. 126—194)

This invention relates to hinge mechanisms and, in particular, to a hinge mechanism which is adapted to releasably engage a hinged member.

The factory assembly of hinged members using conventional hinges has been a common source of difficulty in the past. Broadly speaking, there are two alternatives which may be employed during assembly; the hinge may be separated at the pivot pin and each portion of the hinge secured to the appropriate member and the hinge and hinged member then mounted by means of inserting the hinge pin in the mating parts of the hinge. Alternatively, the complete hinge may be secured to one member and the second member then positioned and the hinge then secured thereto.

Both of these methods have disadvantages and present difficulties when the hinged member is relatively heavy and in particular when concealed hinges are to be used.

It is an object of the present invention to provide a hinge of the concealed type which will enable the hinged member to be quickly, simply and removably mounted on the hinge.

According to the invention, the hinge mechanism comprises a fixed plate, a movable plate pivotally secured thereto, the movable plate having two notches cut therein, a hinged member having means mounted thereon adapted to releasably engage the notches on the movable plate.

A preferred embodiment of the invention is illustrated as applied to the oven door of a stove in the accompanying drawings in which like reference numerals refer to the same parts in the various views and in which:

Fig. 1 is a perspective view of a stove having an oven door mounted thereon with a hinge made in accordance with this invention;

Fig. 2 is a side elevation of the hinge and the mounting mechanism;

Fig. 3 is a view similar to Fig. 2 with the hinged member in a slightly different position relative to the hinge, and

Fig. 4 is a cut-away perspective view of a portion of the door showing the latching mechanism mounted therein.

While in the following description of a preferred embodiment of the invention, it will be described as applied to an oven door of a stove, it will be appreciated that the invention is not limited to this application and that modifications in the invention may be made within the scope of the appended claims.

Referring now to the drawings, and in particular to Fig. 1, a hinge **10** made in accordance with this invention is shown as supporting an oven door **11** on a stove **12**. The hinge **10** is shown in Figs. 2 and 3 and comprises a fixed plate **13** and a movable plate **14**. The fixed plate **13** is secured to the frame of the stove **12** by any suitable means such as spot welding at **15**. This fixed plate **13** has a curved arm **16** which extends forwardly of the frame through a slot **16***a* in the covering **38** of the stove and which terminates in a pivot **17**. The movable plate **14** is pivotally secured to the fixed plate **13** at pivot **17** and is provided with an arm **18** which carries means for securing the door thereto. The movable plate **14** is provided with a stop pin **19** which, in conjunction with a lug **20** provided on the fixed plate **13**, limits the counter-clockwise rotation of the movable plate **14**. A stop **21** is provided at the opposite end of the arcuate path of the pin **19** to limit the clockwise rotation of the movable plate **14**.

Referring now to Fig. 4 the mechanism within the door or hinged member will be described.

Mounted between the inner panel **22** and the outer panel **23** of the door is a U-shaped channel member **24** having legs **25** and **25**a. In the particular embodiment illustrated the channel member **24** is mounted by means of flanges **26** and **26***a* which are spot welded to the interior surface of the inner panel **22**. The channel member **24** defines a space **27** between its legs which is accessible by means of a slot **28** provided in the inner panel **22**.

A stiff, resilient spring **29** of U-shape is mounted with both legs extending through the space **27** between the legs **25** and **25***a*, and one leg **30** of the U is rigidly fixed whilst the other leg **31** is capable of movement towards and away from the fixed leg **30**. The fixed leg **30** passes through aligned holes in the legs of the channel member **24** and is secured by means of a collar **32** which is welded both to the spring and to the channel member **24**. The other leg **31** passes through a pair of aligned slots **33** so as to enable it to move towards and away from the fixed leg **30**.

Referring again to Figs. 2 and 3 the arm **18** of the movable plate **14** of the hinge is seen to be provided with a notch **34** at the free end thereof and with a second notch **35** at the opposite end of the arm **18**. As can be seen in Figs. 2 and 3 the notch **34** is adapted to engage the stationary or fixed leg **30** of the spring **29** while the notch **35** is adapted to receive the movable leg **31** of the spring. The leg **18** of the movable plate **14** is provided with a cam surface **36** which leads to the notch **35**. When the hinge and spring are in the relative position shown in Fig. 2 the door **11** is securely engaged by the hinge and freely pivots about pivot point **17**. If, however, it is desired to remove the door from the hinge mechanism it is merely necessary to insert a pin in hole **37** in the movable plate **14** which is provided for the purpose, thereby jamming the movable member against the covering **38** through which the fixed member **13** extends. By forcing the door in a clockwise direction the movable leg **31** of the spring **29** will be forced to spring out of the notch **35** and assume the position shown in Fig. 3. The door may then merely be lifted away from the hinge plate.

When the door is removed and it is desired to re-engage it with the hinge, the movable plate **14** is rotated about the pivot **17** to the limit of its counter-clockwise movement, the notch **34** is engaged with the fixed leg **30** of the spring and the door is rotated in a counter-clockwise direction. The movable leg **31** of the spring will then encounted the cam face **36** which leads to the notch **35** and the counter-clockwise movement of the door will result in the movable leg **31** of the spring being seated in the notch **35**.

In the description and in the drawings, only one hinge has been described but it will be appreciated immediately that in an application such as to the oven door of a stove as described, two hinges will be required, the second hinge being of identical structure and being engaged by a similar spring member ne arthe opposite edge of the door.

What we claim as our invention is:

1. A hinge mechanism comprising a fixed plate, a mov-

able plate parallel to the fixed plate and pivotally secured thereto, the rotation of the movable plate being in its own plane, the movable plate having two substantially oppositely directed notches cut therein, and a hinged member having a U-shaped spring rod mounted thereon adapted to releasably engage the notches on the movable plate.

2. A hinge mechanism comprising a fixed plate and a movable plate pivotally secured thereto to rotate in its own plane, an arm extending from the movable plate having a notch at its free end and an oppositely directed notch near its base, a hinged member adapted to be supported by the movable plate, the hinged member having a U-shaped spring mounted thereon, one leg of the spring being fixed, the other leg being free to move towards and away from the fixed leg, the two legs of the spring being adapted to releasably engage the two notches on the movable plate.

3. A hinge mechanism comprising a fixed plate and a movable plate pivotally secured thereto to rotate in its own plane, an arm extending from the movable plate having a notch at its free end and an oppositely directed notch near its base, a hinged member adapted to be supported by the movable plate, said hinged member having a U-shaped spring mounted thereon lying in a plane at

right angles to the plane of the movable plate, one leg of the spring being fixed, the other leg being free to move towards and away from the fixed leg, the two legs of the spring being adapted to releasably engage the two notches on the movable plate.

4. A hinge mechanism comprising a fixed plate and a movable plate pivotally secured thereto to rotate in its own plane, an arm extending from the movable plate having a notch at its free end and an oppositely directed notch near its base, a cam surface formed in the movable plate leading to the lst mentioned notch, a hinged member adapted to be supported by the movable plate, said hinged member having a U-shaped spring mounted thereon lying in a plane at right angles to the plane of the movable plate, one leg of the spring being fixed, the other leg being free to move towards and away from the fixed leg, the two legs of the spring being adapted to be releasably engaged by the two notches on the movable plate.

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