Sept. 15, 1942. R. N. HOULIHAN 2,295,950

COVER HINGE

Filed Oct. 25, 1939

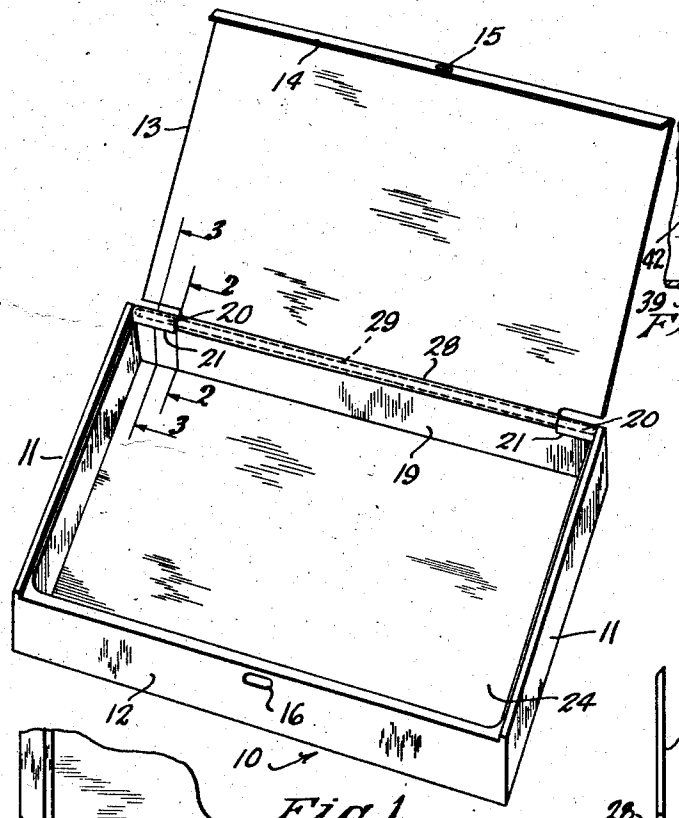


Fig. 1.

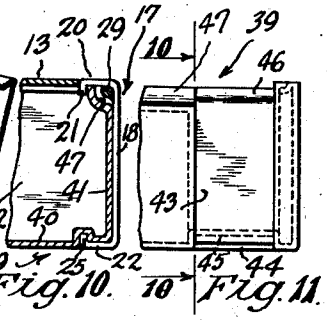


Fig. 10.



Fig. 11.

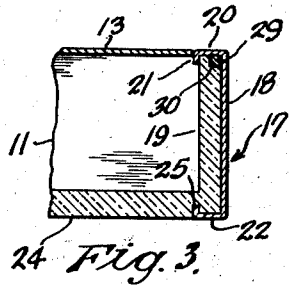


Fig. 3.

Fig. 9.

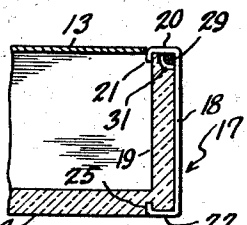


Fig. 2.

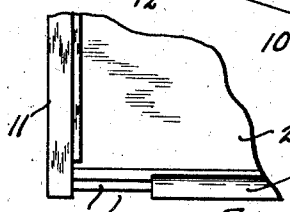


Fig. 7.

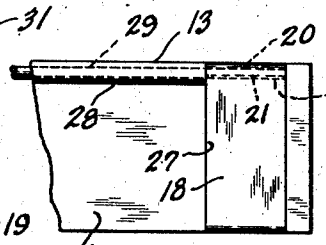


Fig. 4.

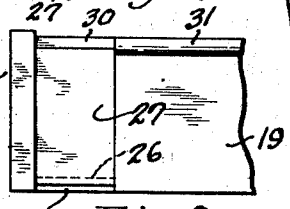


Fig. 8.

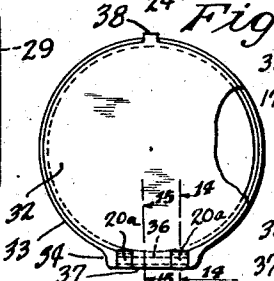


Fig. 12.

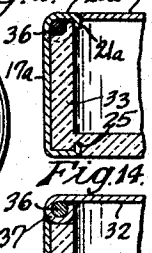


Fig. 14.

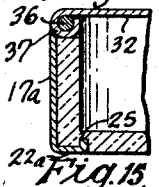


Fig. 15.

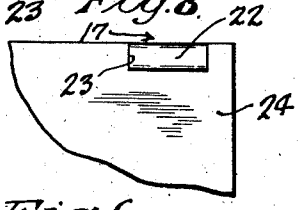


Fig. 6.

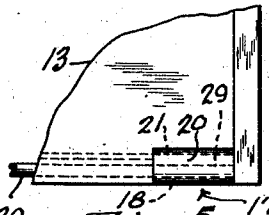


Fig. 5.

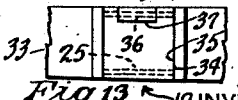


Fig. 13.

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UNITED STATES PATENT OFFICE

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COVER HINGE

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Application October 25, 1939, Serial No. 301,124

7 Claims. (Cl. 220—31)

This invention relates to covered boxes, and more particularly to the hinge for securing the cover to the box, and has for an object to provide an improved and simplified means for hinging the cover to a box of molded or other material, and one which need not project from the surfaces of the box.

It is also an object to provide such hinge construction which can be easily and quickly assembled and when assembled has a neat and attractive appearance.

Another object is to provide a hinge construction in which no loop or lug of the molded material is relied on to hold the hinge pin so that there is no danger of such molded material cracking or breaking away to release the pin.

A further object is to provide a construction in which the ends of the hinge pin are hidden from view.

With the foregoing and other objects in view, I have devised a construction illustrated in the accompanying drawing forming a part of this specification. It will, however, be understood that various changes and modifications may be employed within the scope of the invention.

In this drawing:

Fig. 1 is a perspective view of a box of molded plastic material having a metal cover secured thereto by my improved hinge, the cover being shown in raised position.

Fig. 2 is a detail section substantially on line 2—2 of Fig. 1;

Fig. 3 is a similar section substantially on line 3—3 of Fig. 1;

Fig. 4 is a rear edge elevation of one end portion of the box showing the hinge in elevation;

Fig. 5 is a top plan view thereof;

Fig. 6 is a bottom plan view;

Fig. 7 is a top plan view of one corner of the body of the box showing the mounting for the hinge member;

Fig. 8 is an elevation thereof looking from the bottom of Fig. 7;

Fig. 9 is an end elevation of the hinge portion of the cover;

Fig. 10 is a view similar to Fig. 2 showing how this improved hinge construction can be employed with a box body of sheet metal, the section being substantially on line 10—10 of Fig. 11;

Fig. 11 is a rear elevational view of one end portion of the body of the box looking from the right of Fig. 10, and with the hinge strap and the cover removed;

Fig. 12 is a top plan view showing how this improved hinge may be applied to a circular box, a portion of the cover being broken away to more clearly show the construction;

Fig. 13 is an elevation looking toward the bottom of Fig. 12; and

Figs. 14 and 15 are sections on an enlarged scale taken substantially on lines 14—14 and 15—15 respectively of Fig. 12.

Difficulty has been experienced in fastening the hinges for covers to molded boxes, as lugs or loops of the material are liable to crack or break off.

This hinge construction although devised primarily for securing a metal cover to a box body of molded plastic material, such for example as "Bakelite" and similar plastics, to overcome this objection has been found to be equally adaptable for securing a metal or molded cover to a metal body as well as a molded cover to a molded body.

Referring first to Figs. 1 to 8 a body molded of suitable plastic material is shown at 10 with the upper edges of the end walls 11 and the front wall 12 recessed or lowered to receive the metal cover 13. Along the front ends of this cover may be a downwardly extending flange 14 to extend down a short distance over the front surface of the wall 12 and carrying a catch element 15 to cooperate with a suitable catch element 16 on the body of the box. In Fig. 1 the cover is shown as fastened to the body of the box by two hinge members, one at each of the rear corners thereof, but in the case of a circular box as shown in Figs. 12 and 13, one hinge member is sufficient.

The hinge member comprises a sheet metal strap 17 having a body portion 18 extending vertically across the rear wall 19 of the box and having a forwardly extending ear 20 at its upper end extending over the upper edge of the wall 19 and a lug or flange 21 extending downwardly a short distance on the inner surface of the wall 19. The strap 17 has a similar extension 22 at its lower end seated in a short channel 23 in the bottom wall 24 and an upwardly extending flange or lug 25 seated in a recess 26 at the inner end of the channel 23. This recess 26 provides an upright shoulder in the bottom wall to cooperate with the lug 25 to prevent the strap moving outwardly. It is also preferred that the rear wall 19 of the box be recessed or have an upright channel 27 in which the body portion 18 of the strap is seated so that this strap and the top and lower extensions 20 and 22 are flush with

the outer surfaces of the body of the box and do not project above this surface to thus give a neater and more attractive appearance. The lower edge portion of the cover 13 is rolled into a loop as shown at 28 to receive the hinge pin 29. At the top end of the channel 27 the top edge of the rear wall 19 is recessed or rabbeted as shown at 30 to receive the projecting end portions of the hinge pin 29 and form a seat therefor. It will thus be seen that when these projecting ends of the hinge pin are seated in these rabbeted portions and the hinge member 17 applied as shown in Fig. 3 the upper extension 20 of the hinge strap extends over the projecting end of the hinge pin and holds it in the rabbet or recess 30 in which it remains seated and secures the cover to the body of the box. Also, it will be seen the ends of the hinge pin are hidden from view.

The operations for applying the cover and the hinge are very simple. The cover is placed in position with the projecting ends of the hinge pin 29 in the rabbeted recesses 30. Then the upper lug 21 and top wall 20 of the hinge strap 17 are placed in position over the top edge of the wall 19 of the box at the inner side of recess 30 and over the projecting end of the hinge pin seated in this recess. Then the lower extension 22 and lug 25 are moved inwardly and sprung over the lower edge of the rear wall 19 and lug 25 snapped into the recess 26, there being sufficient spring or resiliency in the metal of the strap 17 to permit this. This locks the strap 18 and the hinge pin in position. This permits lug 21 to be made long enough to insure against strain on the cover forcing the strap over the edge of wall 19 to release this strap and the hinge pin. The lug 25 is made short enough to enable the strap to spring sufficiently to allow it to be sprung or forced into the locked position. The parts are now in the position of Figs. 2 and 3 which completes the mounting of the cover and the hinge member on the box. In order to accommodate the rolled over loop 28 at the edge of the cover the upper edge of the rear wall 19 between the rabbeted recesses 30 is given a curved recess or groove 31 to accommodate this loop 28 and give a neat and attractive appearance.

In Figs. 12 to 15 the same construction is used for fastening the circular cover 32 to the molded body 33 of a circular box, but in this case one hinge only is used. One wall of the circular body is thickened or extended outwardly as shown at 34 to give sufficient stock in which to form the channel 35 corresponding to the channel 27 and the recesses and channels in the bottom wall corresponding to the recesses 23 and 26 to receive the lower extension 22 and lug 25 of the strap 17*a*. The cover is provided with a loop 37 to embrace the hinge pin indicated at 36 and the projecting ends of this pin are held in the recesses in the top of thickened wall at the opposite sides of loop 37 corresponding to the recess 30 and is held in these recesses by the top walls 20*a* and lugs 21*a* the same as in the first arrangement. The opposite edge of the cover may be provided with any suitable form of spring catch 38.

In Figs. 10 and 11 is shown how this hinge may be used to secure the cover to a sheet metal box. These figures do not show the entire box but merely the construction at one rear corner where a hinge is mounted. This metal box is shown at 39 having a bottom wall 40, rear wall 41 and an end wall 42. The rear wall adjacent the corner is offset inwardly to provide an upright channel 43 corresponding to the channel 27 in the molded box and the lower channel 44 corresponding to the channel 23 of the molded box terminating in a recess 45 corresponding to the recess 26 in the molded box. At the top of the channel 43 the wall is rabbeted or recessed at 46 corresponding to the rabbet recess 30 to form a seat to receive the projecting end of the pivot pin 29, and the longitudinal upper edge of the rear wall 41 is given a curved channel 47 corresponding to the channel 31 of the molded box to receive the hinge loop 28 of the cover. In applying the hinge to this metal box the operation is the same as described in connection with the molded box, that is, the cover is placed in position with the projecting ends of the hinge pin 29 seated in the rabbeted recesses 46. Then the hinge strap 17 is applied by placing the upper lug 21 and extension 20 over the upper edge of wall 42 and the projecting end of the hinge pin and then springing the lower end 22, 25 under the lower edge to seat lug 25 in the recess 45 to the position shown in Fig. 10.

The same construction could be used for securing a molded cover to either a molded or metal box body, the only difference being that the hinge pin would be molded in the cover.

It will be apparent that this makes a very simple and effective hinge construction for hinging a cover to a molded or other box body which may be easily applied and which is of very simple construction. Also, when applied it does not rely on any lug or thin wall portion of the molded material to hold the hinge pin which therefore would be liable to be easily broken or cracked by the forces placed on the hinge pin. Also, that although the hinge is particularly adapted for securing a cover to a molded box body it is easily adapted for hinging a cover to a metal box body.

Having thus set forth the nature of my invention, what I claim is:

1. A covered box comprising a body having side walls, a cover having a hinge pin including an exposed portion located adjacent the top of a side wall, said body provided with a downwardly opening recess in the under side of its bottom wall, and a strap having a body portion extending upwardly over said side wall provided with a lug at its lower end seated in said latter recess, and said strap extending at its upper end portion over the pin to hold it in position relative to the body and provided with a hooked portion at its upper end hooked over the top edge of the side wall to retain the strap on the body.

2. A covered box comprising a body having a side wall provided with an upright groove in its outer surface extending the full height of said wall, said body also having a horizontally disposed open faced recess at the upper end of said groove and a downwardly opening recess at the lower end of the groove, a cover having a hinge pin including an exposed portion seated in the upper recess, and a hinge strap seated in said groove having a lug at its lower end seated in the lower recess and at its upper end extending over the pin to retain it in the recess and hooked over the top edge of the side wall to retain the strap in place.

3. A covered box comprising a body having a side wall provided with a horizontally disposed open faced recess in its upper edge and having an upright shoulder in the lower side of its bottom wall, a cover having a hinge pin including an exposed portion seated in said recess, and a strap having a lug to engage said shoulder, and said

strap extending upwardly along said side wall over the exposed portion of the hinge pin and provided with an ear at its upper end hooked over the upper edge of the side wall to retain the pin in the recess.

4. A covered box comprising a body provided with a horizontally disposed open faced seat for a hinge pin, a cover having a hinge pin provided with an exposed portion seated in said seat, a resilient preformed strap extending over the pin to retain it in the seat, shoulders on the body on opposite sides of the recess and facing away from the recess, and the strap having spaced shoulders cooperating with the shoulders on the body the strap being adapted to be sprung to engage its shoulders over those on the body to retain the strap in said holding position on the body.

5. A covered box comprising a body provided with a side wall, a cover having a hinge pin including an exposed portion, an upright preformed metal strap extending over said pin to retain it in position relative to the body and provided with hooked portions at its upper and lower ends, and vertically spaced shoulders on the body on opposite sides of the pin over which said hooked portions engage to retain the strap in said position on the body to hold the pin and cover in place.

6. A covered box comprising a rectangular body having spaced longitudinally disposed open faced recesses at the top edge of a side wall, a cover having a hinge pin including exposed portions seated in said recesses, a metal strap extending upwardly over the outer surface of the side wall and over the exposed portion of the pin in each recess to retain it therein, said body having inwardly facing shoulders at the top and bottom of the side wall, and said straps each having hooked portions at its upper and lower ends engaging over said shoulders to retain the straps in said hinge retaining positions on the side wall.

7. A covered box comprising a rectangular body having a rear wall provided with upright grooves in the outer surface thereof extending for the full height of the side wall adjacent the rear corners of the box, said rear wall also having longitudinally disposed open faced recesses at the upper ends of said grooves, a cover having a hinge pin including exposed end portions seated in said recesses, said body having a downwardly opening recess in the lower side of its bottom wall at the lower end of each of said grooves, and resilient metal straps seated one in each of said grooves and extending over the exposed portions of the pin to retain them in the recesses, said straps each having a lug at its lower end seated in the recess in the bottom wall at the lower end of its respective groove and at its upper end provided with a hooked portion extending over the top edge of the rear wall to retain the strap in said position in its groove.

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