

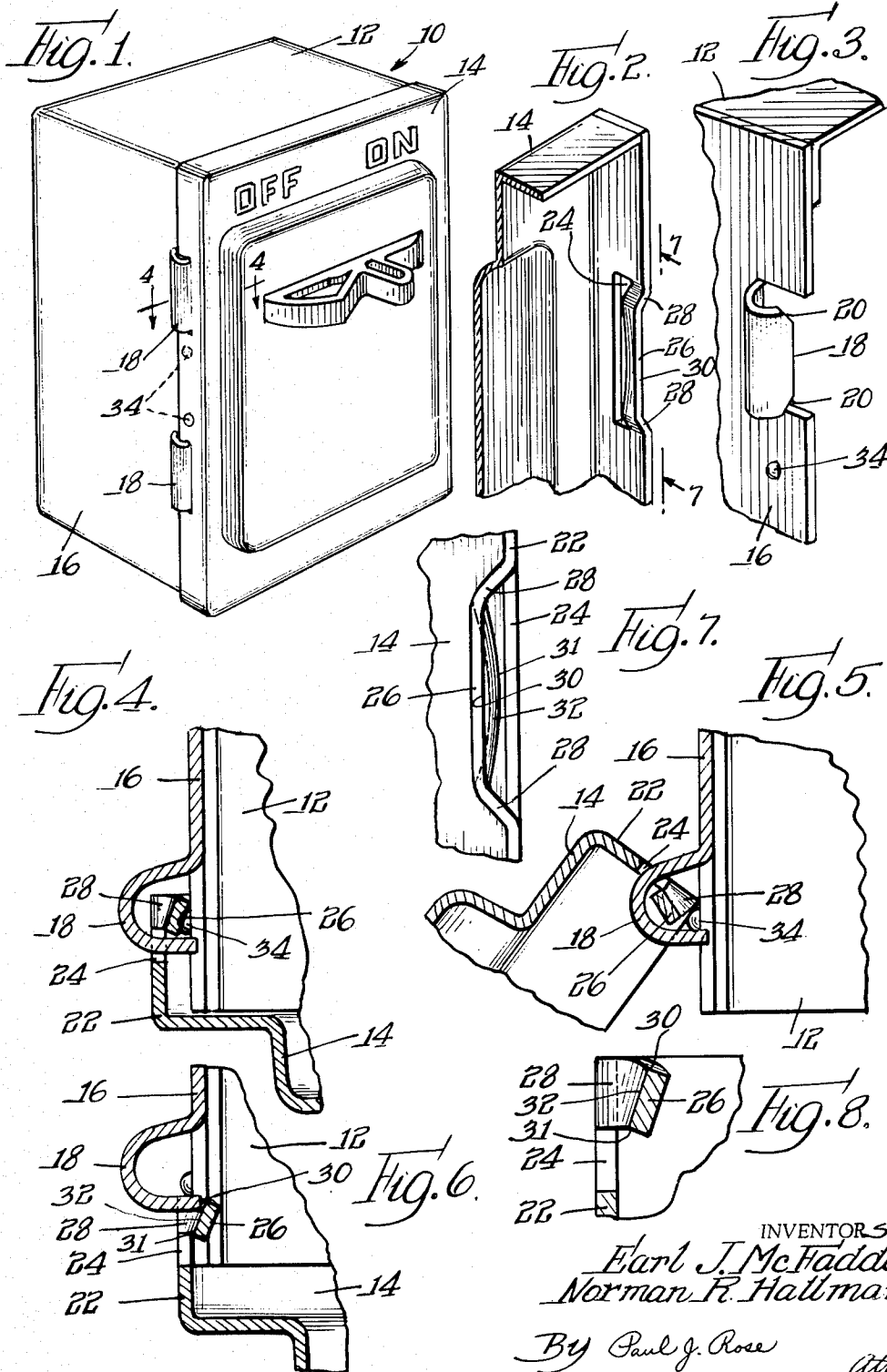
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HINGE CONSTRUCTION FOR BOX AND COVER

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HINGE CONSTRUCTION FOR BOX AND COVER
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This invention relates to a box and cover having snap-together hinge portions.

Prior to this invention, the assembling of a box and cover of similar but unimproved construction required bending of the hinge portions of the box after the cover was put in place. In accordance with the present invention, the cover of the improved device may be snapped into assembled relationship with the box and no further forming operations are required on the hinge portions of the box to secure the cover thereon.

An object of the invention is to provide an enclosure formed of a suitable material such as sheet steel and including a box and a cover which are provided before assembly with completely formed integral hinge portions and which are assembled without further forming operations, yet cannot be readily disconnected.

Other objects and advantages will appear when the following description is considered along with the accompanying drawings in which:

FIG. 1 is a perspective view of an electrical safety switch having an enclosure constructed in accordance with the invention;

FIG. 2 is an enlarged fragmentary perspective view of the cover of the enclosure of FIG. 1 illustrating one of the hinge portions of the cover;

FIG. 3 is an enlarged fragmentary perspective view of the box of the enclosure of FIG. 1 illustrating one of the hinge portions of the box;

FIG. 4 is an enlarged fragmentary sectional view taken along the line 4-4 of FIG. 1;

FIG. 5 is a view similar to FIG. 4, but showing the cover in an open position;

FIG. 6 is a view similar to FIG. 4, but showing the cover in the process of being applied to the box;

FIG. 7 is an enlarged fragmentary view taken in the direction of arrows 7-7 of FIG. 2; and

FIG. 8 is an enlargement of a portion of the cover shown in FIG. 4.

As an example of the invention, FIG. 1 shows an enclosure 10 for a safety switch. It will be obvious that the invention may be used in the enclosures of other devices.

The enclosure 10 is preferably formed of sheet metal and includes a box 12 and a cover 14 each having a pair of integral hinge portions constructed in accordance with the invention. A side 16 of the box is provided with an integral pair of generally U-shaped resilient hinge portions or hinge curls 18 the free ends of which preferably extend inwardly of the outer surface of the side 16 and preferably are chamfered as shown at 20-20 in FIG. 3.

A flange 22 of the cover 14 is provided with a pair of apertures 24 in which the hinge curls 18 are respectively received. The integral hinge portions of the cover 14 are provided by certain free end portions of the flange 22 adjacent the apertures 24, which portions form a pair of hinge bars 26. Each hinge bar 26 is preferably inwardly offset by a pair of offsetting portions 28-28 which are spaced apart sufficiently to clear the chamfered portions 20-20 of the respective hinge curl 18.

In accordance with the invention, a means is provided to enable the cover 14 to be readily connected to the box 12 without further forming operations on the hinge curls 18. Thus, the hinge bars 26 are twisted as best shown in FIG. 8, and are designed to have an interfering relationship with the free ends of the hinge curls as the cover

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is being applied to the box, as best shown in FIG. 6. It will be understood that the exact location of the free ends of the hinge curls 18 will vary from box to box as the boxes 12 are formed in mass production. The angle of twist of the hinge bars 26 is sufficient to insure that the leading outer edges 30 of the hinge bars 26 of any cover 14 will be spaced inwardly of the free ends of the respective hinge curls 18 of any box 12 and the trailing outer edges 31 of the hinge bars 26 of any cover 14 will be spaced outwardly of the free ends of the respective hinge curls 18 of any box 12 as the cover 14 is being applied to the box, as shown in FIG. 6. The outer surfaces 32 of the hinge bars 26 will then act as wedges to resiliently urge the free ends of the respective hinge curls 18 outwardly as the cover 14 is being applied to the box. An angle of twist of about twenty degrees has been found satisfactory. After the hinge bars 26 have been moved past the free ends of the respective hinge curls 18 in a direction toward the back of the box 12, the hinge curls resume their original position and the cover 14 cannot be readily removed.

Preferably the side 16 of the box is provided with a pair of outwardly extending dimples 34. Alternatively, the flange 22 of the cover could be provided with a pair of inwardly extending dimples. The dimples 34 maintain a space between the side 16 of the box and the flange 22 of the cover after the cover is assembled on the box and thus provide additional insurance that the hinge bars 26 will not readily come out of the hinge curls 18 after assembly.

While the box 12 has been shown with two hinge curls 18 and the cover 14 with two corresponding hinge bars 26, it will be understood that an enclosure could also be provided with just one hinge curl and corresponding hinge bar, or with three or more hinge curls and corresponding hinge bars.

It will be seen that the hinge curls 18 do not have to be bent inwardly after the cover 14 is in place on the box 12. It is merely necessary to "snap" the cover on. An extra forming operation has thus been eliminated.

Various modifications may be made in the structure shown and described without departing from the spirit and scope of the invention.

We claim:

1. An enclosure comprising an open-front box having an integral resilient hinge curl formed on a side thereof, and a flanged cover pivotally mounted on said hinge curl, said cover having an aperture in a flange thereof for receiving said hinge curl and having an integral hinge bar provided by the free end portion of said flange adjacent said aperture, said hinge bar having an interfering relationship with the free end of said hinge curl as said cover is being applied to said box and being twisted from the remainder of said flange sufficiently to locate the leading outer edge of said hinge bar inwardly of said free end of said hinge curl and to provide a wedge for resiliently urging said free end of said hinge curl outwardly as said cover is being applied to said box.

2. An enclosure as claimed in claim 1, wherein said hinge bar is inwardly offset from the remainder of said flange.

3. An enclosure as claimed in claim 1, including means for maintaining a space between said side of said box and said flange of said cover after said cover is applied to said box.

4. An enclosure as claimed in claim 1, wherein the free end of said hinge curl extends inwardly of the outer surface of said side of said box.

5. An enclosure comprising an open-front box having a plurality of integral resilient hinge curls formed on a side thereof and protruding outwardly of the remainder

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of said side, and a flanged cover pivotally mounted on said hinge curls, said cover having a plurality of apertures in a flange thereof for respectively receiving said hinge curls and having a plurality of integral hinge bars provided respectively by the free end portions of said flange respectively adjacent said apertures, said hinge bars having an interfering relationship respectively with the free ends of said hinge curls as said cover is being assembled with said box and being twisted from the remainder of said flange sufficiently to locate the leading outer edges of said hinge bars respectively inwardly of said free ends of said hinge curls and to provide wedges for respectively resiliently urging said free ends of said hinge curls outwardly as said cover is being assembled with said box.

6. An enclosure as claimed in claim 5, wherein said hinge bars are inwardly offset from the remainder of said flange.

7. An enclosure as claimed in claim 5, including means for maintaining a space between said flange of said cover and said side of said box after said cover is assembled with said box.

8. An enclosure as claimed in claim 5, wherein said free ends of said hinge curls extend inwardly of the outer surface of said side of said box.

9. An enclosure comprising an open-front box having an integral resilient hinge curl formed on a side thereof, the free end portion of said hinge curl extending inwardly of the outer surface of said side, a flanged cover pivotally mounted on said hinge curl, said cover having an aperture

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in a flange thereof for receiving said hinge curl and having an integral hinge bar provided by the free end portion of said flange adjacent said aperture, said hinge bar being inwardly offset from the remainder of said flange, and means for maintaining a space between said side of said box and said flange of said cover after said cover is applied to said box.

10. An enclosure comprising an open-front box having a plurality of integral resilient hinge curls formed on a side thereof and protruding outwardly from the remainder of said side, the free end portions of said hinge curls extending inwardly of the outer surface of said side, a flanged cover pivotally mounted on said hinge curls, said cover having a plurality of apertures in a flange thereof for respectively receiving said hinge curls and having a plurality of integral hinge bars provided respectively by the free end portions of said flange respectively adjacent said apertures, said hinge bars being inwardly offset from the remainder of said flange, and means for maintaining a space between said side of said box and said flange of said cover after said cover is assembled with said box.

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