Sept. 20, 1932. J. B. MURRAY 1,878,991

SEAL

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Fig. 1.

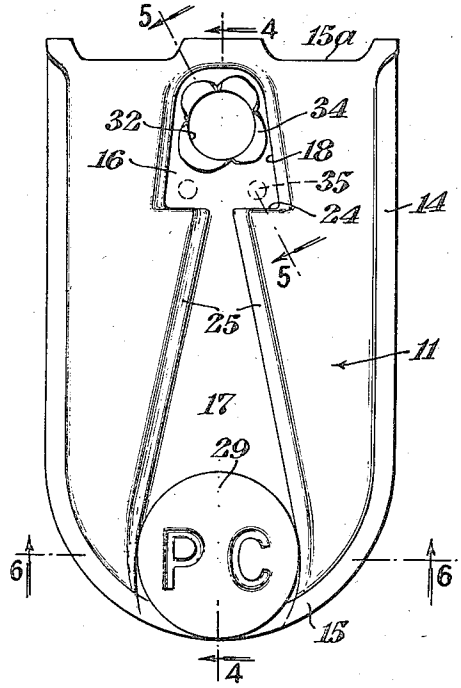


Fig. 2.

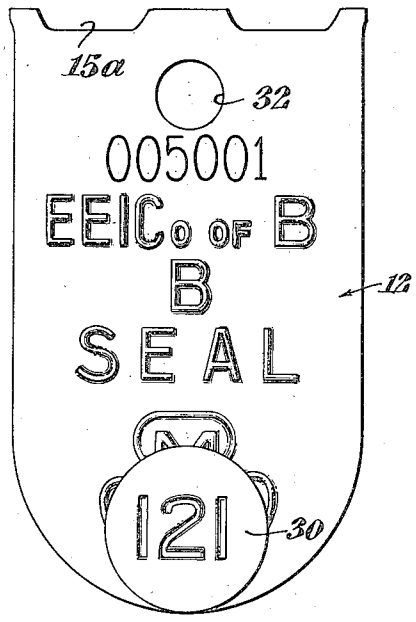


Fig. 3.

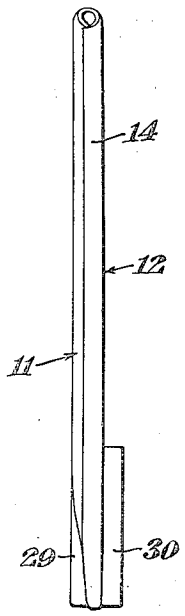


Fig. 4.

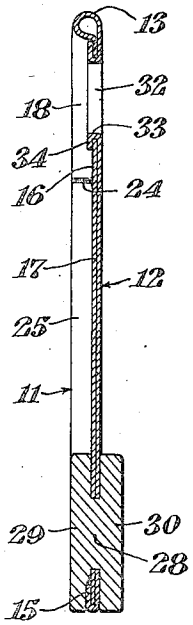
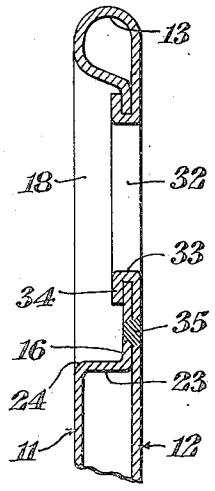


Fig. 5.



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Fig. 6.

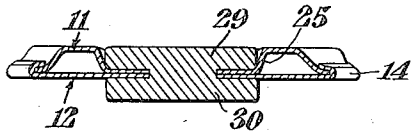


Fig. 7.

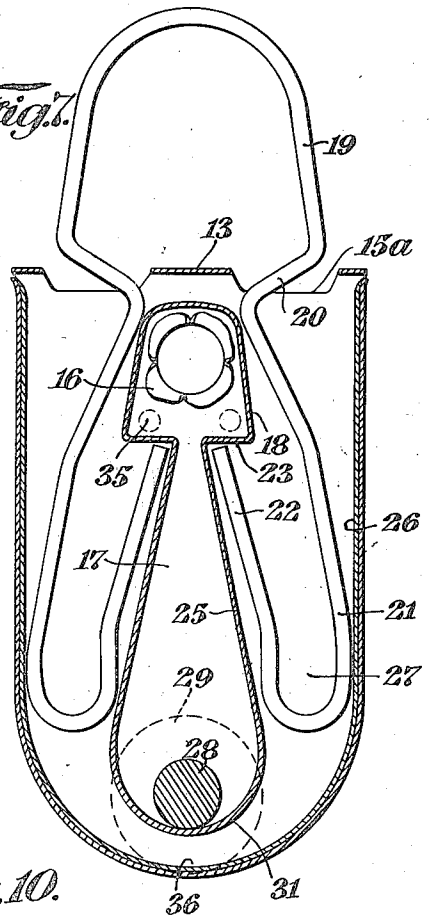


Fig. 9.

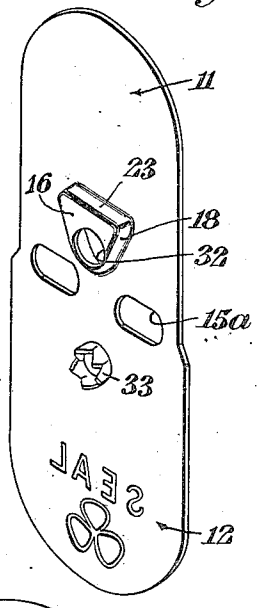


Fig. 10.

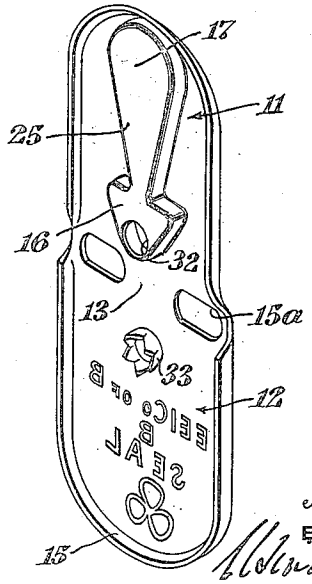


Fig. 8.

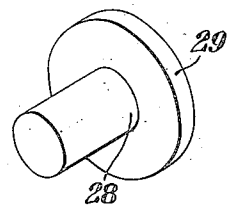
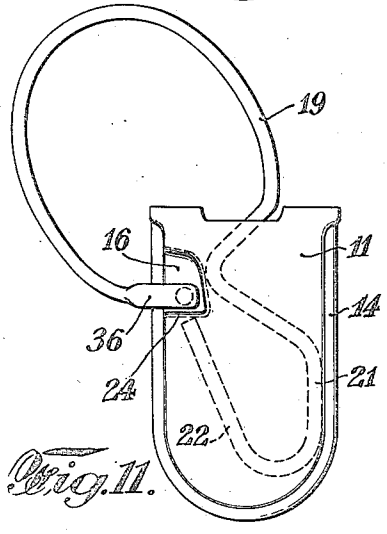


Fig. 11.



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Patented Sept. 20, 1932 1,878,991

UNITED STATES PATENT OFFICE

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SEAL

Application filed March 30, 1932. Serial No. 601,972.

The invention aims to provide an improved seal of the "padlock" type for use in sealing electrical instrument boxes and the like in which a hasp has hooked ends which are thrust into the seal or casing and cannot be withdrawn without destroying or injuring the seal in some manner which will be apparent to the inspector for the electrical company.

The accompanying drawings illustrate an embodiment of the invention.

Figs. 1, 2 and 3 are respectively front, back and side elevations;

Figs. 4, 5 and 6 are sections on the correspondingly numbered lines in Fig. 1;

Fig. 7 is a vertical section showing the configuration within the casing;

Fig. 8 is a perspective view of a button before insertion;

Fig. 9 is a perspective of a blank after the first stamping operation;

Fig. 10 is a similar view after a second stamping.

Fig. 11 is a front view of an alternative design.

Referring to the embodiment illustrated, the casing or seal proper is made of stiff steel or other rigid sheet metal front and back walls 11 and 12 integrally united by a bend 13 at the upper end and having their sides and lower ends united by crimped joints 14 and 15. The front and back walls are spaced apart a distance corresponding to the thickness of the hasp, and the casing is closed except for two openings 15^a in the upper end through which the hooked ends of the hasp may be introduced as in Fig. 7. The central portions 16 and 17 of the front wall are pressed down to contact with the back wall and to form certain partitions or walls extending transversely from front to back.

The depression of the front wall 16 forms longitudinal partitions 18 adjacent to the inner ends of the openings 15^a so that when the hasp 19 is introduced the usual bends 20 therein will bear against the walls 18 and push the lower portions of the hasp against the outer side walls 26. From the portions 20, the hasp bends outward at 21 and thence downward and sharply upward to form the hook ends 22.

The depression 16 of the front wall is shaped also to form lateral shoulders 23 extending inward from the portions 18 for engagement by the ends of the hooks to prevent withdrawal of the hasp. In the stamping down of the portion 16 the shoulder or wall 23 is pressed down sharply at the corner 24, Fig. 5, at substantially a right angle. The drawing of the metal thins the walls 23 and provides weakened lines at the corners 24 so that the walls 23 are somewhat like the familiar knockouts in sheet metal boxes. If an attempt be made to remove the hasp by a strong pull, the walls 23 will yield before the hasp can be straightened sufficiently to remove it; and the breaking of the wall 23 will betray the attempt to tamper with the seal.

The bending down of the portion 17 of the front wall provides longitudinal partitions or walls 25 which form with the side walls 26 enclosed spaces 27 to receive the hooked ends of the hasp. These spaces taper toward the lower end. They must be of considerable length to permit the thrusting in of the hooked ends of the hasp, which have to be fairly long to provide a sharp upward bend of the hook and length enough for a certain spring action to snap into engagement with the lateral shoulders 23.

The bent down portions 16 and 17 of the front wall are continuous with each other. See Fig. 1. Consequently the two lateral shoulders 23, (Fig. 7) are separate from each other, each being limited at its inner end by a partition 25.

In previous seals of this class a single shoulder served as a stop for both hooks 22 of the hasp. By pulling the hasp forcibly and laterally, the end of one hook could be made to push the end of the other sidewise sufficiently to clear the shoulder and permit withdrawal of the hasp in a distorted shape and its rebending and reinsertion in sufficiently good shape to conceal the fact.

By interposing a longitudinal wall, or two such walls 25, between the shoulders 23 this method of tampering is prevented. It is

preferable to have two walls 25 inclined outwardly at the lower ends as shown so as to form the enclosed spaces 27 of downwardly tapered shape fitting the shape of the hasp ends so as to limit their lateral play.

In the lower end of the seal I provide a button of lead or similar soft metal with a shank 28 passing through the two plates and having enlarged heads 29 and 30 on the opposite faces of the seal. The button is originally of the shape shown in Fig. 8 with one head 29 and an elongated shank 28 which is passed through the hole in the plates and swaged to form the opposite head. This button serves two purposes.

It provides an identifying means upon which the electrical company can impress its own initials or other mark with a simple hand tool; so that this company's seals cannot be gotten from the manufacturer by stealth or otherwise. With the two buttons the company's mark "PC," Fig. 1, can be impressed on one button and the individual inspector's mark "121," Fig. 2, on the other button.

This button also helps to secure the seal against tampering. It rivets the front and back walls together at the end remote from that at which they are joined integrally; thus preventing the opening of the lower end of the seal by uncrimping the edges at this point. Preferably also the button head at the front is made so large as to extend over the crimped joint and prevent access thereto. See Fig. 1.

The shank 28 of the button is placed in the extreme lower end of the space outlined by the partitions 25, close to the lower wall 31 which connects these two partitions. A certain length of the spaces 27 is required to accommodate the hooked ends of the hasp and this space must have a certain width at the bottom corresponding to the bend of the hasp.

The placing of the button at the lowest possible point permits such a location of the lower ends of the walls 25 as to secure the maximum width in the lower ends of the hook-receiving spaces 27; notwithstanding the making of the front button large enough to extend over the crimped joint. The lowest point of the two heads of the button practically coincides with the lower edge of the seal so as to provide a stiff backing and prevent distortion when the marks are being impressed thereon.

The walls of the casing are also fastened together near the upper end so as to prevent lifting of the part 16 by a tool introduced through the top openings 15ª, which would permit the forcing of the hooks 22 outward and the withdrawal of the hasp.

In seals of this character the fastening has been accomplished by punching a hole 32 (Fig. 9) in the top wall 11 of the blank and punching up a flange 33 from the lower wall 12. When the blank is bent over, as in Fig. 4, the flange 33 is passed through the opening and crimped down at the edge 34 to rivet the parts together. But this is a rather weak fastening which can be bent up with a knife blade sufficiently to permit the separation of the plates.

I propose to make a substantially integral connection either as a substitute for the riveted connection described or as a supplement thereto.

In the design illustrated, the riveted connection is supplemented by two spot welds 35 closely adjacent to the walls 23 so as to offer the greatest obstacle to the separation of the plates at these particular points.

In the manufacture of the seal, the first operation is to stamp out the flat blank, Fig. 9, of appropriate shape with end openings 15ª, with the portion 16 drawn down with sharp angles as above described, and with the opening 32 and the struck up flange 33.

In the next operation (Fig. 10) the top and bottom walls 11 and 12 are flanged around their edges and the top plate drawn to form the depressed portion 17. In this operation it is common to stamp in the sheet metal various identifications such as are shown; and some companies require that they be serially numbered as a further security, which must be done in this flat condition of the blank.

The blank is then bent across the line through the two openings 15ª and crimped around the edges and riveted by the flange 34 near the top and then spot welded at the points 35.

Before the lead button is applied there will be a slight space between the lower end wall 36 and the part 31, inside partition, as shown in Fig. 7. The application of the button and the pressing down of the head 29, however, will flatten the front wall against the back wall and close such space as shown in Figs. 3 and 4. For some purposes it is not necessary to have a lead button, the name of the company using the seal being stamped on the sheet metal in the course of manufacture.

I have referred to a rigid sheet metal casing and a soft lead button, but these terms are used in the comparative sense and other materials having similar physical properties may be employed in making the seal.

I have also referred to the back and the front of the seal and to its upper and lower ends in the comparative sense merely since the seal may lie in various positions in practice.

Certain features of the invention may be applied to a hasp or similar wire or strip with only one hooked end, the opposite end being fastened to the box or other apparatus to be sealed or being fixed to the seal in such a way that it cannot be removed without detection.

Fig. 11 shows such a design. The casing is like that of Fig. 1 split along a central line. The hasp 19 has one end 36 flattened and welded on the outside of the depressed portion 16 of the front wall 11 of the casing, just above the shoulder 24; the same weld 35 may serve to fasten the hasp-end and to fasten the part 16 to the back wall. The button may be applied to this form of seal or omitted as desired.

What I claim is:

1. A seal of the character described having front and back walls, one of said walls having a continuous depressed portion forming within the casing lateral partitions and separate longitudinal partitions extending downward from the inner ends of the lateral partitions.

2. A seal of the character described having front and back walls of sheet metal, the front wall having a depressed portion near the upper end forming lateral shoulders for engagement by the hooked ends of a hasp and a further depressed portion forming two separate longitudinal partitions extending from said shoulders downward.

3. A seal of the character described having a casing with an internal lateral shoulder adapted to be engaged by the hooked end of a hasp, said shoulder being comparatively weak so as to be breakable by a strong pull on the hasp.

4. A seal of the character described having front and back walls spaced apart, one of said walls being of sheet metal and being sharply depressed and drawn so as to thin the metal while forming a shoulder adapted to engage and lock the hooked end of a hasp introduced into the casing so that such shoulder can be broken by a strong pull on said hasp.

5. A seal of the character described having front and back walls formed of a single sheet of metal integrally connected at the upper end and crimped together along their sides and lower end with an opening through the upper end for introduction of a hasp, the front wall having a depressed portion forming an internal lateral partition near the upper end for engagement by the hooked end of a hasp, said depressed portion being welded to the back wall at a point above said shoulder and accessible through said opening, so as to prevent separation of the walls at this point.

6. A seal of the character described having front and back walls formed of a single sheet of metal integrally connected at the upper end and crimped together along their sides and lower end, the front wall being depressed to form lateral shoulders for engagement by the hooked ends of a hasp and to form longitudinal partitions constituting the inner walls of downwardly tapering spaces for receiving the elongated ends of the hasp, and a button of soft metal having a shank passing through said walls at the extreme lower end of the depressed portion of the front wall.

7. A seal of the character described having two lateral internal shoulders for engagement by the hooked ends of a hasp inserted into the seal, and having longitudinal internal shoulders extending downward from said lateral shoulders a distance corresponding substantially to the length of such hooked ends so as to prevent substantial lateral movement thereof.

8. A seal of the character described having front and back walls for sheet metal, the front wall having a depressed portion forming two lateral shoulders near the upper end for engagement by the hooked ends of a hasp and forming two longitudinal partitions extending from said shoulders downward, the depressed portion extending continuously over the space between said partitions and between said shoulders so as to separate a shoulder and partition at one side from a shoulder and partition at the other side.

9. A seal of the character described having a casing with an internal lateral shoulder for engagement by the hooked end of a hasp and having a longitudinal wall extending downward from said shoulder and adapted to prevent substantial lateral movement of such hooked end, said lateral shoulder being comparatively weak so as to be breakable by a strong pull on the hasp when its hooked end is thus confined laterally.

10. A seal of the character described having lateral internal shoulders for engagement by the hooked ends of a hasp and longitudinal internal shoulders extending downward from said lateral shoulders and adapted to prevent substantial lateral movement of such hooked ends, said lateral shoulders being of metal so weakened as to be breakable by a strong pull on the hasp when its ends are thus confined laterally.

11. A seal of the character described having front and back walls formed of a single sheet of metal integrally connected at the upper end and crimped together along their sides and lower end, the front wall being depressed to form lateral shoulders for engagement by the hooked ends of a hasp and to form longitudinal partitions constituting the inner walls of downwardly tapering spaces for receiving the elongated ends of the hasp, the depressed portion of the front wall above said shoulders being fastened directly to the back wall, and a button of soft metal having a shank passing through said walls at the extreme lower end of the depressed portion of the front wall.

In witness whereof, I have hereunto signed my name.

JOSEPH B. MURRAY.