April 26, 1927. 1,626,273

E. DIETZE

SELF LOCKING SEAL

Filed May 14, 1926

Fig. 1.

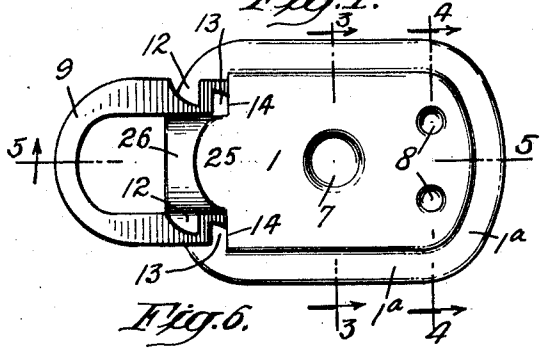


Fig. 2.

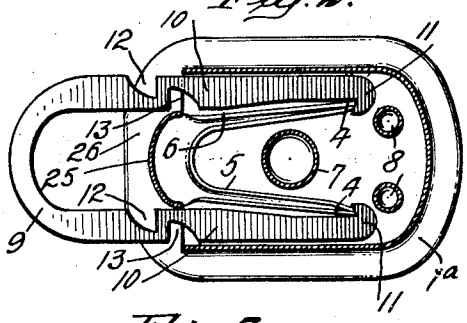


Fig. 6.

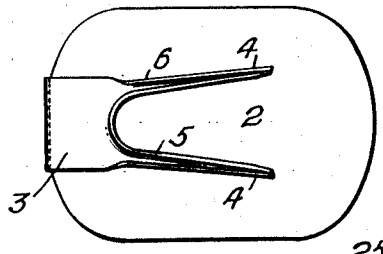


Fig. 3.

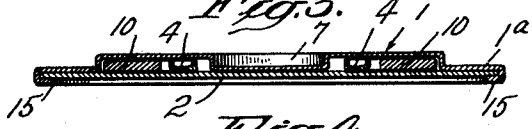


Fig. 4.

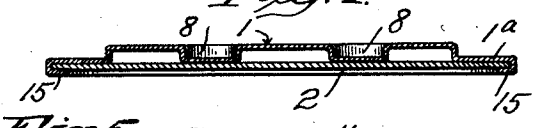


Fig. 5.

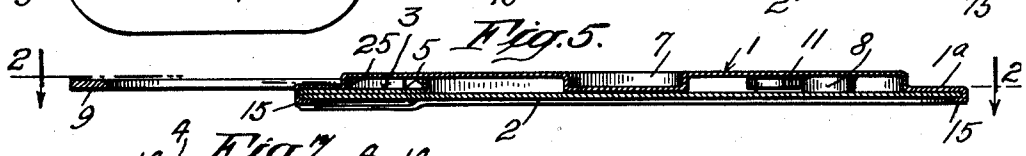


Fig. 7.

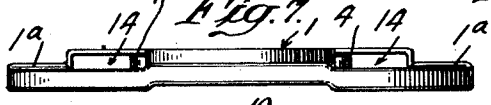


Fig. 8.

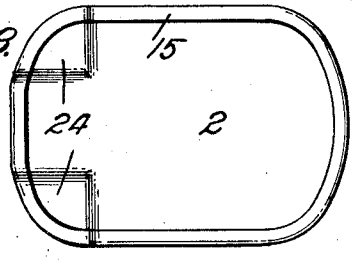


Fig. 9.

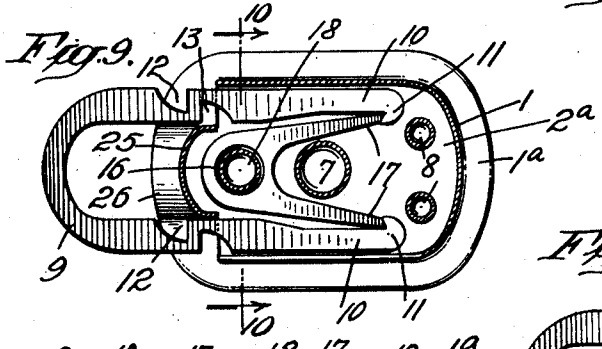


Fig. 10.

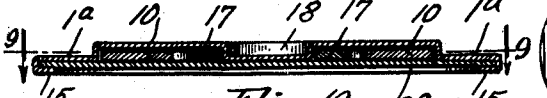


Fig. 12.

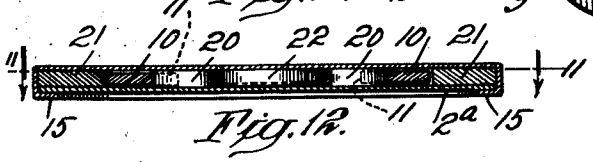
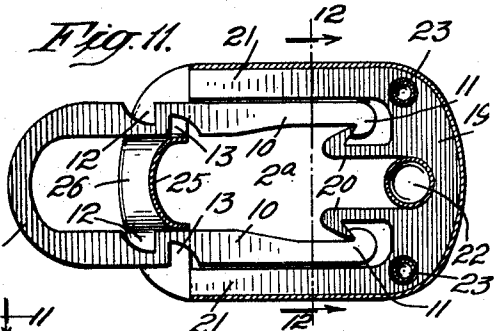


Fig. 11.



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UNITED STATES PATENT OFFICE.

EMIL DIETZE, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN CASTING AND MANUFACTURING CORPORATION, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

SELF-LOCKING SEAL.

Application filed May 14, 1926. Serial No. 109,033.

My present invention relates to a self-locking seal device, adapted for use with meters, as electric or gas meters, and elsewhere, for example boxes, lids, covers, doors, packages, &c., and consists essentially in a metal casing in combination with a shackle of looped form, the arms of the shackle being inserted in openings in the casing or body, completely filling said openings, and being inside the casing irremovably engaged so that the device after attachment to the article to be sealed cannot be released without mutilation; and the exterior breakage of the securing means will indicate that the seal has been tampered with, for the shackle loop cannot be resecured without inserting a new and unbroken device. Any attempt to tamper with the seal results in breaking off the shackle, and as the openings in the casing are only just as large as the inserted portions of the shackle, and as these openings are filled up with the broken off ends of the shackle, this leaves no room or opening for the reinsertion of the broken off part of the shackle. Therefore, with the suggested objects and purposes in view among many which might be mentioned, the invention consists essentially in the construction, arrangement and combination of parts, substantially as will be hereinafter fully described and then set forth in the ensuing clauses of claim.

In the accompanying drawing illustrating my invention:

Figure 1 is a top plan view of one form of my improved seal fastening, with the casing closed and the shackle inserted and locked therein.

Figure 2 is a horizontal sectional plan on the line 2, 2, of Figure 5.

Figure 3 is a cross-section on the line 3, 3, of Figure 1.

Figure 4 is a cross-section on the line 4, 4, of Figure 1.

Figure 5 is an enlarged longitudinal section on the line 5, 5, of Figure 1.

Figure 6 is a detail plan view of the bottom or one side of the casing shown in Figure 1 and indicates the bent integral extension of said side with its diverging fingers.

Figure 7 is an end view of the casing, and shows particularly the openings therein which receive the shackle.

Figure 8 is a bottom plan view of the casing, and shows particularly the compressed spots near the shackle-receiving openings.

Figure 9 is a horizontal sectional plan view, on the line 9, 9, of Figure 10, and shows an alternate form of the inner locking mechanism.

Figure 10 is a cross-section on the line 10, 10, of Figure 9.

Figure 11 is a horizontal sectional plan view on the line 11, 11 of Figure 12, and shows another alternative form of the inner locking mechanism.

Figure 12 is a cross-section on the line 12, 12, of Figure 11.

Similar characters of reference designate corresponding parts in all the different figures of the drawing.

A sheet metal shell, casing, or body is fashioned for the main frame of the seal. It is made in any suitable manner and of as many parts as desired, and it consists usually in the particular form which is shown by way of example of two parts 1 and 2, or 2^a, seated one within the other, the part 1 being flattened down around the edge to make a flat rim 1^a at the edge which is seated on the flat bottom plate 2, or 2^a (except in the forms in Figures 11 and 12 where the construction is a little different) and which flattened down rim provides parallel inner guide lines for the shackle which is inserted into the casing through certain openings, and said rim 1^a having a flange 15 overlapping the edge of the plate 2 or 2^a. Thus the main part of the plate 1 which forms the other side of the casing or shell opposite to the bottom plate 2 or 2^a is spaced away from the plate 2 or 2^a, as the case may be, so as to provide a cavity within the casing to receive the shackle and the parts of the inner locking mechanism. Said plate 1 besides having usually the rim 1^a has the struck-up inward projections 7, 8, 8, and 18, whose functions will be severally presently explained, and the front openings 14, 14, to receive the arms of the shackle, as also the

intermediate ridge 25 and step 26, between said openings, resulting from compressing the two metal parts 1 and 2 or 2^a, at spots adjoining the openings 14, 14, as shown at 24, 24, to make these openings of proper size and shape as shown in Figure 7 to accommodate the shackle ends, while the step member 26 provides parallel edges separated a distance equal to the space between the two arms of the shackle so that said arms may be surely and accurately directed thereby into the receiving mouths of the casing afforded by the openings 14, 14, the whole device being suitably stamped, bent, or struck out from metallic sheets so that the seal may be manufactured in such a way as to guarantee the required configuration of parts.

As already suggested in describing the figures, one form of the invention, so far as the casing and locking mechanism are concerned, appears in Figures 1 to 8 inclusive; an alternative form in Figures 9 and 10; and another alternative form in Figures 11 and 12; but these forms are all practically the same, with only some slight modifications in certain of the parts, and it will be noted that the shackle is always the same and operates in substantially the same way, whatever may be the form of the casing or the precise arrangement therein of the details of the locking device.

This shackle is usually short, with a comparatively small external loop 9, provided with parallel arms 10, 10, adapted to be inserted into the casing through openings 14, 14, which they completely fill when so inserted, the inner ends of the arms 10 being hooked at 11. Said arms at a point which will be just outside the openings 14 when the shackle is operatively related to the casing are provided with a pair of indents or cuts 12, 12, and another pair of similar cuts 13, 13, on the opposite edges which cause reduced or weakened points in the arms, whereby they can be easily fractured or broken by hand, and the outer loop 9 thus broken off from the arms 10, 10, near openings 14, leaving the inner portions of these arms irremovably engaged with the locking mechanism inside the casing. The shackle moreover may obviously be made of any size, or of any shape in cross-section, being flat or round or angular, so that it will be a wire or a strap or narrow plate, accordingly as may be preferred for the particular use to which it is put.

It will be manifest that my improved seal device is unique in that the openings 14, 14, which receive the shackle through them into the seal body, are only just as large as the material size of the shackle, and hence if an attempt is made to break off the shackle there can be no way of reinserting the same; then again the formation of the cuts in the shackle to weaken it causes it when an attempt is made to break it, to stretch and immediately break at that point. The shackle covers the entire seal body and the opening or entrance into the seal, and the seal body is so constructed around the openings 14, with the ridge 25, step 26 and compressed spots 24, that the shackle fills the full opening and allows nothing else to be inserted through said opening to pick the inside devices.

Inside the casing or shell the inserted arms of the shackle are automatically locked in an irremovable manner by devices for the purpose which may assume several different but equivalent forms and combinations. I will first explain the form in Figures 1 to 8 inclusive. Here the blank which constitutes the casing bottom or side 2, see Figure 6, has an integral narrowed extension 3, which is folded back and down on the plate 2 and is shaped with a pair of diverging integral spring fingers 4, 4, around the inner opposite edges of which runs a flange 5, while the outside edges are provided with flanges 6. These flanges stiffen the fingers without preventing them from being resilient. When the extension 3 is bent back against the plate 2 and the fingers 4 lie down closely on plate 2, the latter will be on opposite sides of the struck-up inner projection or bump 7 on the casing member 1, so that when the shackle arms are inserted in the casing and slid past the fingers 4, 4, pressing the latter inwardly toward the projection 7, said fingers cannot be pressed too far and the hooking ends 11 of the shackle arms will pass along on the fingers 4, until they snap off the ends and engage the ends of these fingers 4, all as shown in Figure 2, it being noted that the projection 7 between the fingers 4 guides and spreads the shackle arms and keeps them from becoming disengaged from fingers 4. Moreover the adjoining pair of projections or bumps 8 are used as stops and guides so that when the shackle is inserted in the casing they will guide these hooked ends and prevent them from going in too far or departing from the ends of fingers 4, and thus the hooked ends 11 will be guided and kept properly related to the ends of fingers 4 so that it will not be possible to wiggle the shackle from side to side and get it loose from the seal body.

In the form illustrated in Figures 9 and 10 the side or plate 2^a of the casing is like the side 2 except that it is simply an oblong or oval shape, without the bent over extension. Thus the extension 3 and the fingers 4 are omitted and in their place is substituted an independent triangular spring device 16 which is pivotally carried on the struck-up projection 18 on the cover 1 (which projection 18 is not needed in the form in Figure 1). The spring device 16 has a pair of

spring fingers 17, 17, diverging on opposite sides of the projection 7, and their ends are adapted to be engaged by the hooked inner ends 11 of the shackle, in the same manner that these ends 11 engage the spring fingers 4, the function of the projections 7 and 8 being substantially the same as before, and the operation of causing the shackle when inserted in the casing to act against spring fingers and cause an interlocking engagement of hooks with the ends of such fingers, so that the fingers cannot be disengaged by manipulating the shackle being substantially the same in all the different alternative forms of the seal fastener I am now describing.

In the device illustrated in Figures 11 and 12 a still different style of inner spring catch fingers is utilized as an alternative lock instead of the others which I have presented. In this latter form I employ a U-shaped member 19 having parallel legs 21, 21 that fit into the casing as shown, and extend more or less through said casing, the form of the plate 1 opposite to plate 2^a being changed to correspond, for in this special shape the plate 1 is mostly flat and the depressed rim 1^a is omitted. The U-shaped member 19 is anchored in the casing by the struck-up projections 23, and also by the central projection 22 (which is the equivalent of projection 7) on the sides of which projection 22 are the central parallel spring fingers 20, that are hooked to be engaged by the hooked ends 11 of the shackle, as before. These hooked fingers 20 have inclined edges over which the hooked ends 11 of the arms ride, pressing the arms toward each other sufficiently to allow said hooks 11 to snap over and tightly engage the hooks on the ends of the fingers 20.

The operation of the shackle is the same in all the forms. When inserted into the casing it hooks into the locking device and cannot be disengaged without destroying the casing and getting access into the interior. The projection 18 when used with a pivoted locking spring simply holds the spring in position, while the large center projection 7 equalizes the two ends of the locking spring fingers so that they will both snap evenly into the shackle ends, and this projection likewise stiffens the spring fingers and helps to guide the shackle ends. Further the formation is such that if any attempt was made to force a withdrawal of the shackle the spring fingers would press tightly against the projection 7, that is to say the spring lock would be tight against the shackle and the shackle would be tight against a raised portion in the seal body. This leaves the ends of the spring fingers so stiff that they could not be overcome, for the shackle would break at the weakest point.

Obviously many changes in the details of the parts may be made, and other alternative forms can be brought within the scope of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a seal device of the class described, the combination with a casing composed of two parts seated one within the other and spaced apart to provide an inner cavity, one part being turned over at one end on itself and split to provide two diverging spring fingers, and the other parts of the casing having an inner projection struck up therefrom to lie between the spring fingers and also a pair of other struck up projections to keep the inner ends of the shackle in proper position, said casing having an opening therein, of a shackle having arms adapted to enter and completely fill said opening, said shackle arms being irremovably engaged and locked by the said diverging spring arms.

2. In a seal, the combination with a casing composed of two parts seated one within the other and spaced apart to provide an inner cavity and having entrances, and a shackle having a looped end and hook-provided arms, said shackle being adapted to completely fill the entrances to the casing, of locking means within the casing consisting of a pair of diverging spring arms integral with a folded over part of the casing and adapted to be pressed toward each other when the arms of the shackle enter the casing, the ends of the spring arms being engaged irremovably by the ends of the shackle.

3. In a seal, the combination with a closed casing composed of two main members seated one within the other and spaced apart to provide an inner cavity, said casing having a pair of openings and being provided with interior struck-up projections, and a shackle having a looped end and parallel hook-provided arms adapted to be inserted into the casing through the said openings and to completely fill the latter, of an inner locking device consisting of two diverging spring arms integral with a folded over end of one part of the casing against which spring arms the arms of the shackle act when it is being introduced so that the ends of the shackle may hook over the spring fingers, said fingers being related on opposite sides to one of the struck-up projections so that said projection will center and stiffen the same, and the hooked ends of the shackle being related to the other projections so that said ends of the shackle will be kept in proper position relatively to the fingers which they engage.

4. In a seal of the class described, the combination with a casing having openings therein, and having compressed portions adjoining the openings together with a flattened rim and interior struck-up projections

and a shackle having arms adapted to enter and fill the openings and provided with weakened points outside the casing to enable it to be broken, of a locking device within the casing consisting of a pair of diverging spring fingers integral with the casing and straddling one of the projections, and said locking device being adapted to be engaged by the shackle in an irremovable manner, the other aforesaid inner projections assisting in the security of the locking engagement.

In testimony whereof I hereunto affix my signature.

EMIL DIETZE.