T. S. WOOD.

PROTECTIVE SEAL.

APPLICATION FILED MAY 13, 1905.

972,971. **Patented Oct. 18, 1910.**

3 SHEETS—SHEET 1.

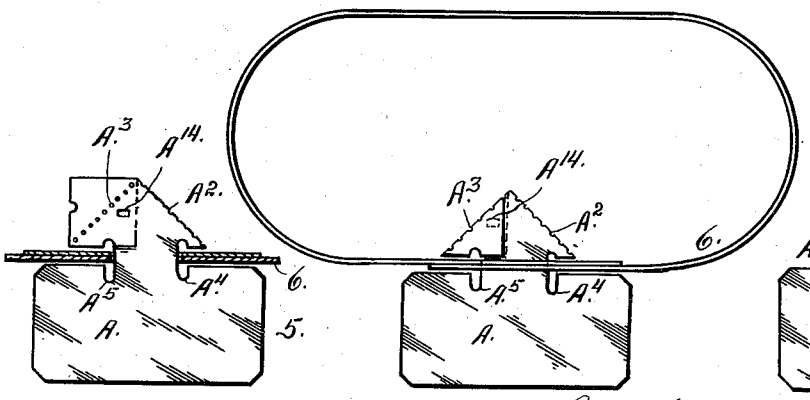

Fig. 3.

Fig. 1.

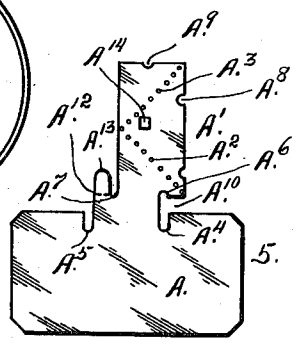

Fig. 2.

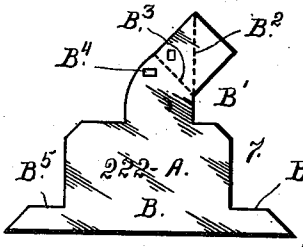

Fig. 5.

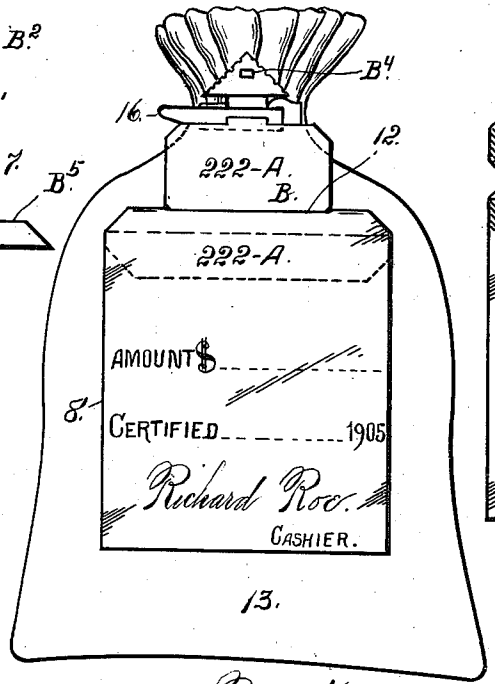

Fig. 4.

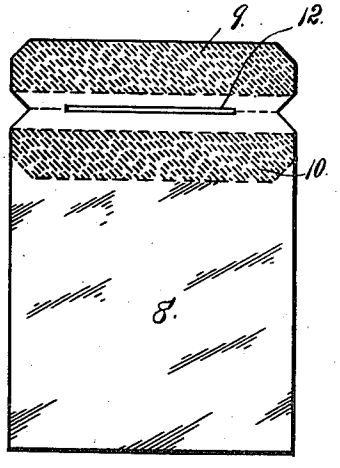

Fig. 6.

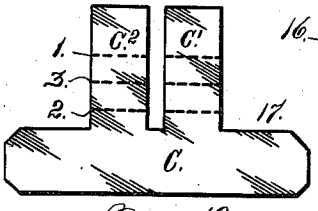

Fig. 10.

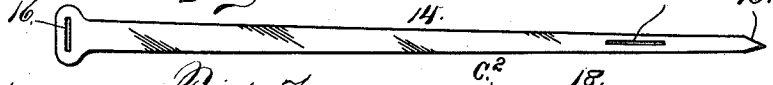

Fig. 7.

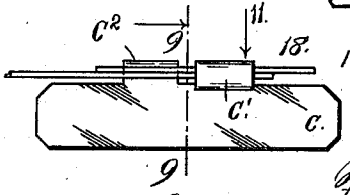

Fig. 8.

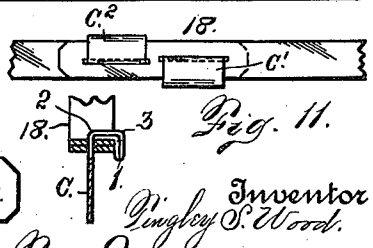

Fig. 11.

Fig. 9.

Witnesses

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By A. N. Bridge Attorney

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3 SHEETS—SHEET 2.

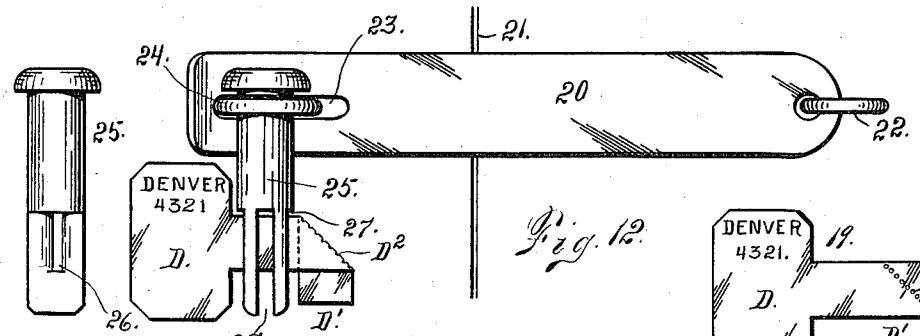

Fig. 14.

Fig. 12.

Fig. 13.

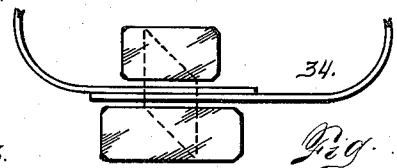

Fig. 15.

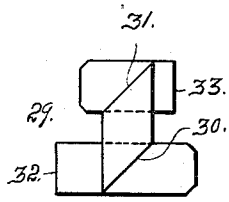

Fig. 16.

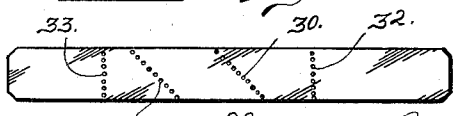

Fig. 17.

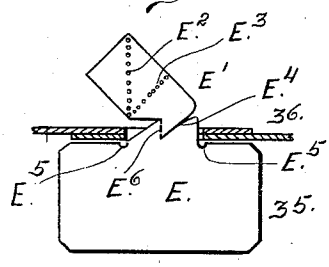

Fig. 18.

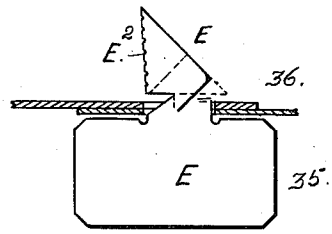

Fig. 19.

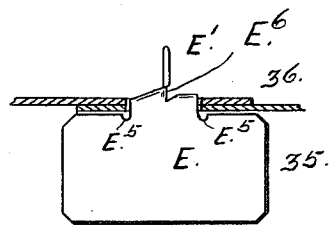

Fig. 20.

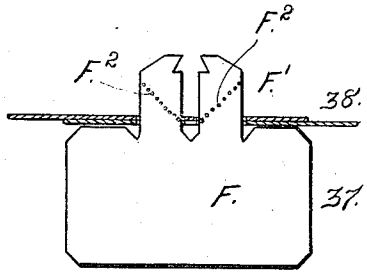

Fig. 21.

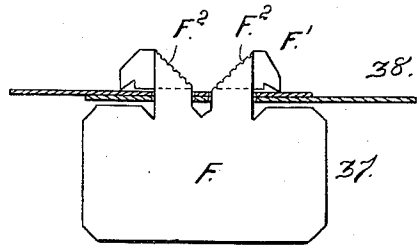

Fig. 22.

Witnesses

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3 SHEETS—SHEET 3.

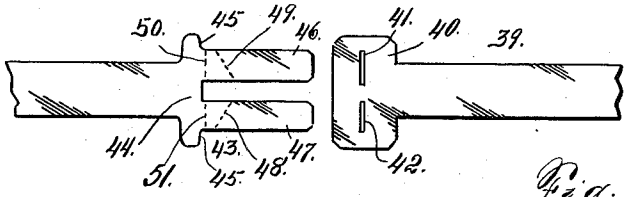

Fig. 23.

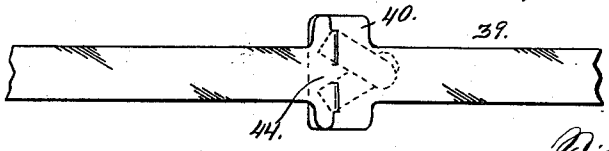

Fig. 24.

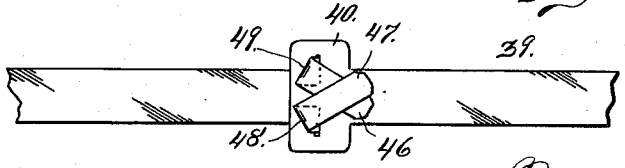

Fig. 25.

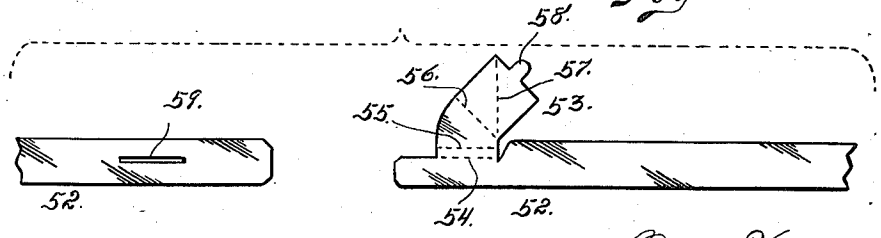

Fig. 26.

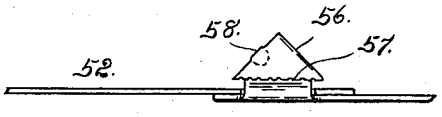

Fig. 27.

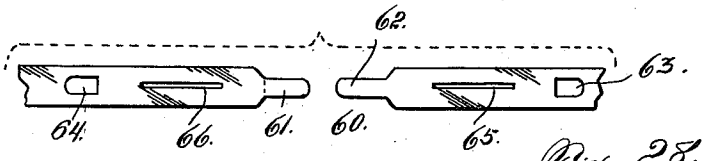

Fig. 28.

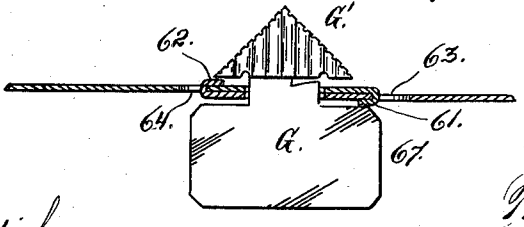

Fig. 29.

Witnesses
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By
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PROTECTIVE SEAL.

972,971. Specification of Letters Patent. Patented Oct. 18, 1910.

Application filed May 13, 1905. Serial No. 260,340.

To all whom it may concern:

Be it known that I, TINGLEY S. WOOD, a citizen of the United States, residing at Leadville, in the county of Lake and State of Colorado, have invented certain new and useful Improvements in Protective Seals; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in protective seals, and my object is to provide a device of this class which shall possess certain characteristics which are considered highly desirable if not absolutely essential to a device of this character. These characteristics are absolute security; strength to resist ordinary strain; ease of application, that is to say without the use of an implement; economy in cost; simplicity of construction; and ease of legitimate removal.

My construction is also such that each seal may possess a distinctive number, mark or other characteristic to distinguish it from other seals of the same construction, or in other words giving it individuality.

The frangibility of the material employed in the manufacture of my invention is one of the essential elements to which its efficiency is due, whereby the material will not stand repeated bendings upon the same line without complete rupture. There are many pliable or yielding metals and metallic combinations which when in the form of sheets or plates, cannot be bent or folded back closely upon themselves, straightened out to their original plane, and again bent upon the same line without rupturing at the line of bend. It is this quality which has been utilized in the device covered by this application.

To induce bending upon predetermined lines and to enable the fingers of the user alone without the aid of an implement, to make such bends with ease as well as to insure that any after bends shall occur at the same places, the predetermined lines may be weakened by punctures, cuts, scorings or otherwise to produce these results and also to insure a symmetrical form for the seal when closed.

Having briefly outlined my improved construction as well as the function it is intended to perform, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 illustrates my improved device in use with a shackle. Fig. 2 shows the prepared seal in detail and before use. Fig. 3 shows the seal after the sealing tongue is bent on one of the diagonal perforated lines, the shackle or securing band to which it is applied being shown in section and broken away on opposite sides of the seal. Fig. 4 shows the device applied to a coin sack or bag. Fig. 5 shows the seal employed in Fig. 4, before its use. This is a slightly different form of construction from that shown in Figs. 1 to 3 inclusive. Fig. 6 is a detail view of the tag used in connection with the form of seal shown in Fig. 5. Fig. 7 is a detail view of the securing device or band used in Fig. 4. Fig. 8 shows another form of the seal in use. Fig. 9 is a section on the line 9—9 Fig. 8. Fig. 10 is a detail view of the same form of seal as it appears before using. Fig. 11 is a view looking in the direction of arrow 11 in Fig. 8. Fig. 12 illustrates another form of my improved seal, shown in connection with a pin passing through a staple for holding a locking hasp in place. Fig. 13 is a detail view before use of the seal shown in Fig. 12. Fig. 14 is a detail view of the pin shown in Fig. 12. Fig. 15 illustrates another form of my improved seal shown in use. Fig. 16 is a detail view of the form of seal shown in Fig. 15 viewed from the side opposite that seen in the last figure. Fig. 17 is a detail view of the seal shown in Figs. 15 and 16 showing its form before bending into the shape shown in said figures. Fig. 18 shows another form of my improved seal after passing it through the shackle or securing device but before bending it to the locked position. Fig. 19 shows the seal in full lines after one bend of the tongue has been made and in dotted lines after two bends have been made to form the complete seal. Fig. 20 shows the position of the tongue after an additional bend or twist of the tongue whereby the folded part of the tongue occupies a position at right angles to that shown in Fig. 19. Figs. 21 and 22 show another form of my improved seal. Fig. 23 shows the seal integral with the securing device or shackle and before use.

Fig. 24 is a front view of the same form of device with the tongue members bent to form the protective seal. Fig. 25 is a rear view or a view the reverse of that shown in Fig. 24. Fig. 26 shows another form of seal in which the sealing tongue is integral with the securing device or shackle being formed on one extremity thereof. Fig. 27 shows the same device in use. Fig. 28 illustrates a special construction of shackle the extremities to be connected, only being shown, the rest of the shackle being broken away. Fig. 29 illustrates my improved sealing tongue shown in connection with the form of shackle disclosed in Fig. 28, the seal being corrugated after bending it to the sealing position.

It may be stated that in Figs. 23 to 27, the device is broken away except the extremities to be connected. In the said views it must be considered that the parts shown are the extremities of an integral device similar to that shown in Fig. 1 except that in the Figs. 23 to 27, the sealing device is a part of the shackle rather than distinct therefrom as in the other views. It is evident that any form of the sealing tongue when used with a band shackle may be integral therewith.

The same reference characters indicate the same parts in all the views.

Referring first to Figs. 1 to 3 inclusive, let the numeral 5 designate my improved seal considered in its entirety. A is the body of the seal; A′ the sealing tongue; A^2 and A^3 diagonal perforated lines; A^4 and A^5 recesses formed in the body of the seal; and A^6, A^7, A^8 and A^9 recesses formed in the sealing tongue. The tongue is cut away at the base on one side as shown at A^{10} and correspondingly reinforced on the opposite side as shown at A^{12}. This reinforced part of the tongue is also provided with a lip A^{13} projecting beyond the reinforced part. In Fig. 1 this seal is shown connecting the slotted extremities of a shackle or securing device 6. This securing device may be used in connection with any apparatus, where in order to open the protected package, receptacle or door, it is necessary to separate the fastening elements or break some part of the same.

The manner of applying the seal to the shackle will be readily understood. The shackle extremities are overlapped to cause their slots to register. The sealing tongue A′ is then passed through the slots which by the way are approximately of the same length as the width of the sealing tongue A′. This tongue is passed through the registering slots until the lateral recess A^{10} is reached when the shackle is moved laterally until the edge of the tongue adjacent the opening A^{10} engages one end of the slots. In this event the reinforced part A^{12} together with the lip A^{13} of the tongue, are allowed to pass through the slots of the shackle forming a comparatively close fit. In inserting the tongue, it will be understood that the shackle in order to allow its overlapped extremities to enter the lateral recess or opening A^{10}, must be tilted slightly since the reinforced part A^{12} cannot enter the slot until after the shackle has entered the opening A^{10} and been moved laterally as just explained. After this is done the lip A^{13} may be bent ninety degrees or so that it shall be flat upon one of the overlapped extremities of the shackle and across one side of the slots thereof. This prevents the reinforced part A^{12} of the tongue from passing out of the shackle slots and holds the seal up from the shackle. The sealing tongue is then first bent rearwardly on the diagonal line A^2, the bent part moving one hundred eighty degrees or so that it shall occupy a position parallel and in contact with the unbent part of the base of the tongue as shown in Fig. 3. The tongue is next bent on the diagonal line A^3 when the seal is as shown in Fig. 1 or in its protecting form. The object of the recesses A^4, A^5, A^6, A^7, A^8 and A^9, is to permit the inspection of the shackle at the extremities of the slots on both sides in order that it may be determined that the slot has not been elongated or enlarged. The sealing tongue is further provided with an opening A^{14} which is closed in the rear when the seal is in the protecting form. This is an additional security, since when the package is inspected, if this opening is not closed it will be known that the seal has been tampered with.

It will be noticed that in the form of seal just described, the bending lines of the sealing tongue extend diagonally to the length of the slots of the shackle through which the tongue is passed. The reason of this is that the line of such a bend is longer than the slot or opening through which the tongue entered. There is also a further reason for this diagonal bending line since the part or a tongue folded on a diagonal line flat against the body of the tongue, must be moved through an arc of one hundred eighty degrees (or to its original plane) before it can be withdrawn through a reasonably closely fitting slot such as that employed in the shackle 6 or other device with which the seal is connected.

One object of perforating the bending lines, is to weaken the material along these lines and prevent the possibility of unbending the folds of the tongue and then rebending them to their closed or sealing position, without completely rupturing the parts along the weakened or perforated bending lines. It must, however, be understood that it is not absolutely essential to weaken the bending lines since material may be employed which will answer every requisite in a device of this character without weak-

ening the bending lines in any degree whatever. However, by weakening the lines the user is able to perform the bending function easily by using the fingers only, no implement being needed. At the same time the closed seal has sufficient strength to answer every purpose in a device of this character.

Attention is called to the fact that the bending lines of the sealing tongue are such that after the tongue is folded as shown in Fig. 1, it has parts projecting beyond the extremities of the shackle slots at one or both ends, thus preventing the possibility of drawing the folded tongue through the slots without unbending the folds, and in fact returning the tongue to its original condition. This can scarcely be done without completely rupturing the tongue along the bending lines. But if the evilly disposed person should succeed in straightening out the tongue, and opening the article to which the seal is applied, it would be absolutely impossible for him to conceal his work by rebending the tongue on the folding lines to its original position, without completely rupturing the tongue along the said lines and thus leaving evidence that the seal had been tampered with.

Let 7 designate the form of seal shown in Figs. 4 and 5 considered in its entirety. In this seal let B designate the enlarged or body part; B′ the sealing tongue and B^2 and B^3 the folding lines of the tongue. The tongue is also provided with an opening B^4 formed in its base or unbent part. Fig. 6 shows a tag 8 provided with gummed parts 9 and 10 and a slot 12 between the gummed parts. This slot is of sufficient length to receive the enlarged part B of the seal 7 as far as the shoulders B^5. After the seal has been so inserted in the slot 12, the gummed parts 9 and 10 are folded against and below the base of the seal and secured together, whereby the tag is held in place with reasonable security. This arrangement is illustrated in Fig. 4 in which the manner of closing and sealing a coin sack 13 is illustrated. The form of shackle which I will designate 14, the same being illustrated in Fig. 7, is used in closing the mouth of the sack as shown in Fig. 4. This shackle or securing device is provided with slots 15 and 16 the latter being a transverse slot formed at one extremity thereof, while the slot 15 is longitudinaly disposed and located near the pointed extremity 16^a of the device. This extremity is pointed to allow it to be passed through the material of the sack one or more times, in order to securely fasten the same. The manner of applying the securing device 14 to the sack will be readily understood from the illustration. The mouth of the sack is first closed, after which the securing device 14 is wrapped around the closed end its pointed extremity being passed through the folds thereof one or more times, after which the pointed end is passed through the slot 16 of the opposite end, far enough to disclose the slot 15. The sealing tongue B′ is then passed through the slot 15, after which the tongue is folded on the lines B^3 and B^2 successively, thus forming the seal shown in Fig. 4. The seal and tag are numbered to correspond so that it is useless to change the tag without also changing the seal. The designation upon the seal is supposed to be indelible, preferably by cutting or stamping the same into and upon the enlarged part of the seal which it is assumed is composed of some metal suitable for the purpose. In bending the tongue B′ upon the lines B^3 and B^2, the movement of the bent part is supposed to be rearwardly in both instances, in order to harmonize with Fig. 4 in which the orifice B^4 is disclosed after the sealing act is complete. This is also desirable in closing a package of the character shown in Fig. 4, in order that the opening B^4 may be readily observed, as it could not be if the bends were made in such a manner as to conceal the said opening in front.

Let the numeral 17 designate the form of seal shown in Fig. 10, the same being composed of an enlarged or body part C, and a tongue composed of two members C′ and C^2 each provided with folding lines 1, 2 and 3 extending transversely of the tongue members. In applying this seal to a shackle 18, the latter is provided with slots in both extremities which are overlapped to cause the slots to register. These slots are of the same length approximately as the width of the tongue members C′ and C^2. These tongue members are then passed through the registering slots, after which the said members are successively bent in opposite directions, first on the line 1, until the part above the line is moved one hundred and eighty degrees or until it is parallel and in contact with the tongue part below. The doubled tongue members are then bent in opposite directions on the line 2, the bent part being moved ninety degrees or at right angles to the body of the tongue. These members are then each bent downwardly over the edge of the shackle ninety degrees on the line 3, whereby the extremities of the shackle or securing device are locked in place with sufficient security for all practical purposes, while at the same time the sealing tongue cannot be straightened out and rebent to its original position without completely rupturing the tongue members on the folding lines and leaving unmistakable evidence that the seal has been tampered with.

In the form of construction shown in Figs. 12 and 13, let 19 designate the seal in its entirety, the same being provided with an enlarged part D, and a sealing tongue D′ having a bending line D^2 extending diag-

onally thereof and perforated in order to weaken the bending line for the purposes heretofore stated. In Fig. 12 the numeral 20 designates a hasp which it may be assumed is connected with a car door 21 or other movable device which it is desired to secure in place, the hasp being connected with a staple 22. The opposite extremity of the hasp is provided with a slot 23 which is passed over a staple 24 made fast to a stationary part to which it is desired to secure the movable door. A pin 25 having a slot 26, is then passed through the staple in front of the hasp, after which the tongue D′ of the seal 19 is passed through the slot of the pin below the hasp. The tongue is then bent on the folding line D^2 to the position shown in Fig. 12, the bent part of the sealing tongue being of sufficient length to prevent the removal of the tongue through the slot of the pin since this slot is made only of sufficient length approximately to receive the tongue when in the condition shown in Fig. 13. Now it will be understood from what has heretofore been stated that it will be impossible to restore the tongue to its original position shown in Fig. 13, and then rebend it to the position shown in Fig. 12, without completely rupturing the tongue on the folding line D^2. In the construction shown in Figs. 12 and 14, the slot 26 formed in the pin is provided with rounded or beveled corners, whereby the tongue where it passes through the slot is made visible. In order to facilitate this, the pin is shouldered as shown at 27 and slotted as shown at 28.

In the form of construction shown in Figs. 15, 16 and 17, let the numeral 29 designate the seal before use, the same consisting of an elongated piece of metal provided with perforated lines 30 and 31 formed diagonally across the seal; and perforated lines 32 and 33 extending across the seal at right angles to its length. In using this seal it is passed through registering slots formed in the overlapping extremities of a shackle or securing device 34 until the lines 31 and 33 are on one side of the shackle and the lines 30 and 32 on the other side. The seal is then bent first on the diagonal lines 30 and 31 on opposite sides of the shackle, the bent part being moved one hundred eighty degrees in both instances, or until the bent part occupies a position flat against the unbent part. The seal is then bent again on the lines 32 and 33, when the protective seal is completed as shown in Figs. 15 and 16. It will be observed that in this case the bending of the seal forms stops on both sides of the shackle to prevent the removal of the seal by passing it through the slots of the shackle, the said slots being made of the same length approximately as the width of the seal 29.

In the form of construction shown in Figs. 18, 19 and 20, the numeral 35 designates the seal in its entirety the same having an enlarged body part E, and a tongue E′ passed through the slots of the overlapping ends of a shackle 36. This tongue normally extends at an angle to the body of the seal and is provided with perforated lines E^2 and E^3, and a slit E^4. The seal is also provided with recesses E^5 at the opposite extremities of the slot for the purpose heretofore stated, that is to say in order that the extremities of the slot may be visible when the seal is inspected. After the tongue is passed through the overlapping extremities of the shackle, it is first bent on the line E^2 forming the construction shown in full lines in Fig. 19, after which it is bent on the line E^3 to form the construction partly shown by dotted lines in Fig. 19. The entire tongue is then bent on the short line E^6, to occupy a position at right angles to its normal position or that shown in Fig. 20.

In the form of construction shown in Figs. 21 and 22, let the numeral 37 designate the seal in its entirety. The body or enlarged part F of this seal is provided with a tongue F′ composed of two members each having perforated diagonal lines F^2 located on the side of the shackle 38 opposite from the enlarged part F, after the tongue is passed through the slots in the overlapping ends of the shackle. The tongue members are then bent in opposite directions on the perforated lines F^2, to the position shown in Fig. 22, whereby the bent members form shoulders to prevent the removal of the tongue from the shackle or securing device.

In the form of construction shown in Figs. 23, 24 and 25, the shackle or securing device 39 is provided at one extremity with a head 40 having slots 41 and 42 extending transversely of the length of the device. The opposite extremity of the device is provided with an integral sealing tongue 43 consisting of an enlarged part 44 forming shoulders 45 on opposite sides; and two tongue members 46 and 47 which after they are passed through the slots 41 and 42, are bent toward the left referring to Fig. 23 on the dotted lines 50 and 51, until they lie flat upon the shackle. They are then bent in the opposite direction on the diagonal lines 48 and 49 until they occupy the position shown in Figs. 24 and 25, these views being opposite views of the shackle with the seal closed.

In Figs. 26 and 27, another form of shackle or securing device designated 52 is illustrated. One end of this shackle is provided with a tongue 53 which is first bent ninety degrees on the dotted line 54, passed through the slot 59 in the opposite extremity of the shackle, after which the tongue is bent ninety degrees or flat upon the slotted extremity of the shackle. It is then bent

again ninety degrees on the dotted line 55, after which it is bent successively on the lines 56 and 57, and finally the lip 58 is bent down on the folded tongue producing the result indicated in Fig. 27.

In Fig. 28, another form of shackle designated 60 is illustrated. In this case the shackle extremities are provided with reduced parts 61 and 62, which when properly bent, hook into openings 63 and 64 after which they are bent to the position shown in Fig. 29. The shackle slots 65 and 66 will then register with each other, after which a seal 67 is applied to the shackle as illustrated in Fig. 29. The body part of this seal may be designated G, and the folded tongue part G'. This is substantially the form of sealing tongue shown in Figs. 1, 2 and 3, except that the tongue after being folded is corrugated whereby additional security is gained.

From the foregoing description the use and operation of my improved protective seal will be readily understood. While I have shown a considerable number of forms of the device, it is evident that the same general features are embodied in all of them. It is also evident that innumerable other embodiments of the invention are possible without any departure from the invention which has now been fully explained.

Having thus described my invention, what I claim is:

1. The combination with a securing device having an opening, of a seal provided with an enlarged part and a tongue extending from the enlargement, the tongue having weakened lines upon which it may be folded upon itself through an arc of 180° after being passed through the opening of the securing device to form a stop to prevent reverse movement, the seal being made of such material as to prevent repeated bending on the same line without rupturing the material on the line of the bend.

2. The combination with a slotted shackle or other securing device, of a seal of the class described provided with a tongue at one end and an enlarged part at the other end to limit the movement of the tongue in the direction of its insertion through the slot of the shackle or other securing device, the seal being provided with recesses at the base of the tongue whereby the extremities of the slot through which it is passed may be disclosed.

3. The combination with a securing device provided with a slot, of a sealing device having a tongue at one extremity and an enlarged part at the other extremity, the tongue having a width equal or approximately equal to the slot of the securing device, the tongue being cut away on one side and correspondingly reinforced on the opposite side of its base, the reinforced part being provided with a lip adapted to be bent down over the slot of the securing device after the tongue is inserted to its limit of movement, the tongue being adapted to be folded to prevent reverse movement after insertion.

In testimony whereof I affix my signature in presence of two witnesses.

TINGLEY S. WOOD.

Witnesses:
A. J. O'BRIEN,
DENA NELSON.