T. S. WOOD.

PROTECTIVE SEAL.

APPLICATION FILED NOV. 10, 1910.

**1,017,837.**

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.

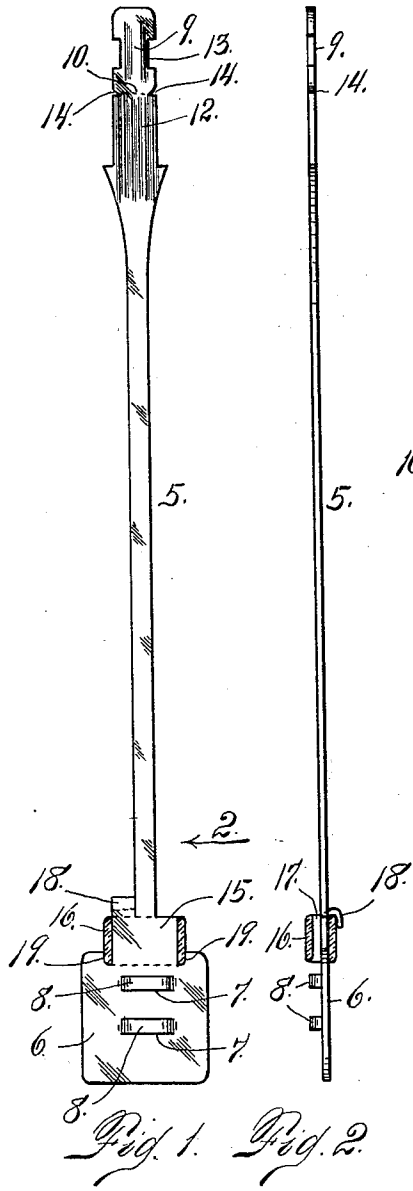


Fig. 1.




Fig. 2.

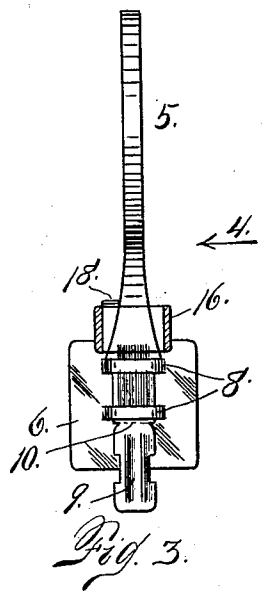


Fig. 3.

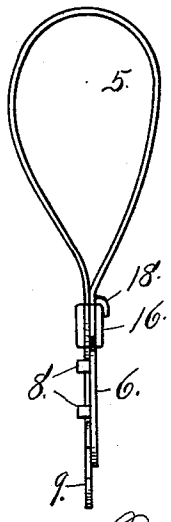


Fig. 4.

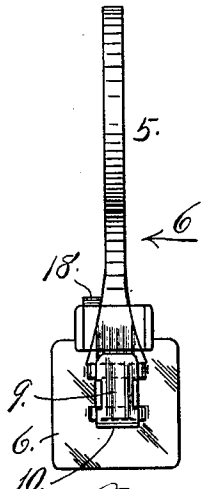


Fig. 5.


Fig. 7.

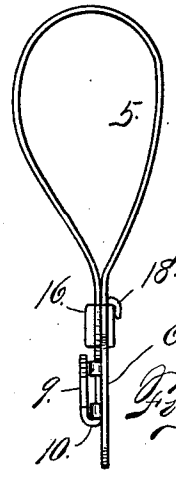


Fig. 6.

Witnesses
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2 SHEETS—SHEET 2.

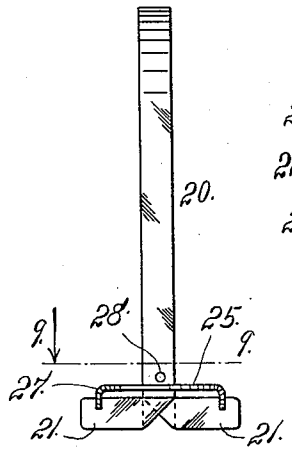


Fig. 8.

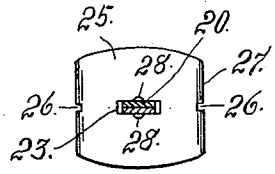


Fig. 9.

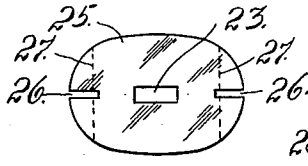


Fig. 10.

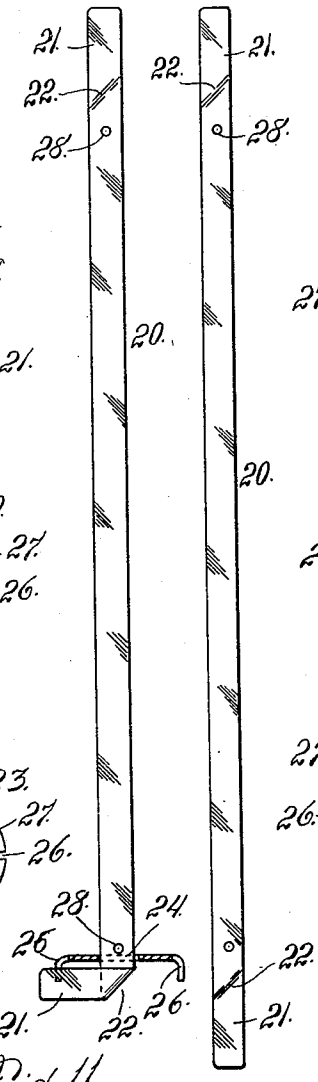


Fig. 11.

Fig. 12.

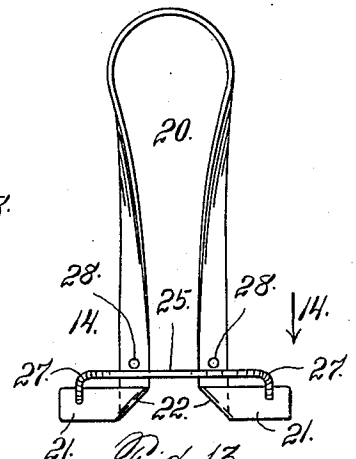


Fig. 13.

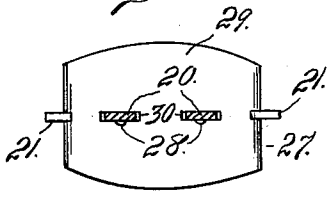


Fig. 14.

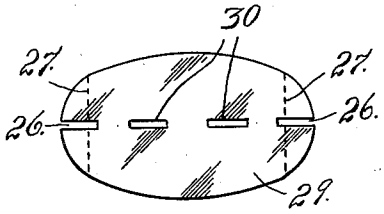


Fig. 15.

Witnesses

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# UNITED STATES PATENT OFFICE.

TINGLEY S. WOOD, OF LEADVILLE, COLORADO.

## PROTECTIVE SEAL.

1,017,837. Specification of Letters Patent. Patented Feb. 20, 1912.

Application filed November 10, 1910. Serial No. 591,683.

*To all whom it may concern:*

Be it known that I, TINGLEY S. WOOD, a citizen of the United States, residing at Leadville, 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 characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in protective seals of the general character set forth in U. S. Letters Patent No. 972971, dated Oct. 18, 1910.

My present invention relates more especially to a sleeve or collar through which one or both ends of a securing device or seal is passed before the final sealing is done, the material employed being preferably made of transparent glass, although it may be made of various other materials without sacrificing the element of safety.

I am aware that sealing devices have been constructed with members which are hard, brittle and transparent, but so far as I am aware these frangible parts have always been designed to receive and retain the locked end or ends of the seal over internal shoulders or their equivalent. Such a separate part can be broken and still leave the end or ends of the shackle or other securing device in their original form, allowing them to enter into a duplicate separate member and apparently restore such seal intact. Casting or otherwise forming internal shoulders or their equivalent is necessarily expensive, as is also individualizing such separate parts by numbers, or in other ways, to identify them with a similarly identified securing device to guard against the destruction of one or the other and allowing the reuse of the destroyed portion.

My present invention provides for a separate member needing no device for identification, and which need not be broken in removing the seal and which can be used over and over again with security equal to the original device.

It consists in a confining collar or sleeve through which a securing shackle or its equivalent passes with one or both ends free. After the final passage, having intermediately been properly adjusted to embrace both sides of the opening which is to be guarded, the free end or ends of the shackle are bent to insure, by their size, against reverse movement through the opening in the separate member. Should such sleeve be broken the whole device becomes destroyed and useless, since a duplicate sleeve can no more go on over the closed seals than be taken off over them, hence it partakes of the individuality of any sealed device in which it forms a part.

It is evident that either one or both ends of the securing shackle may be designed to be bent, since one may be so enlarged as to prohibit a passage through the sleeve, in which case the free end will be twice passed through the sleeve, with intermediate adjustment as above and bent to prevent withdrawal.

Sealing devices should be so made or adjusted as to be applied with greatest ease and least possible loss of time. To this end the separate member should be passed over the shackle and rest upon the enlarged end or an end previously bent, either as a preliminary or in manufacture. It may be readily held in place by a provided ear or lug, or by a slight bend of the shackle above it or other means. It may be then quickly adjusted and sealed with but one free end to pass through the collar with subsequent sealing. Such a seal has every part visible. It is loose in all its parts and if anywhere severed or broken will fall out or lose its form, or if greater strength or rigidity is required the free end may also be passed through slots or straps provided in an enlarged opposite end before bending, still leaving every part of the device in plain view.

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

In the drawing: Figure 1 is a view of a shackle illustrating one of the forms. In this view the flat side of the shackle is illustrated, the separate sleeve or collar of my present improvement being shown in section. Fig. 2 is an edge view of the same or a view looking in the direction of arrow 2, Fig. 1. Fig. 3 is a view of the same construction after the free end of the shackle has been passed through the collar and the slots formed in the enlarged end of the

shackle preparatory to sealing. Fig. 4 is a view of the same looking at right angles to Fig. 3, or a view looking in the direction of arrow 4, Fig. 3. Fig. 5 is a view similar to Fig. 3, but showing the free end of the shackle bent for sealing purposes. Fig. 6 is a view of the same looking in the direction of arrow 6, Fig. 5. Fig. 7 is a perspective view of the collar or sleeve constituting the main feature of my present invention. Fig. 8 is a view showing a modified form of construction, the shackle having both ends bent for sealing purposes. Fig. 9 is a section taken on the line 9—9 looking in the direction of the arrow. Fig. 10 is a detail view of the collar employed with this form of construction, before its ends have been bent to receive the sealing extremities of the shackle. Fig. 11 is a view of the shackle extended, one of its extremities, however, being passed through the collar and bent for sealing purposes. Fig. 12 is a detail view of the shackle completely extended. Fig. 13 shows the complete device having both ends of the shackle bent for sealing purposes and inserted in slots formed in the extremities of the collar, which is slightly modified from the construction shown in Figs. 8 to 12. Fig. 14 is a section taken on the line 14—14, Fig. 13, looking in the direction of the arrow. Fig. 15 is a detail view of the form of collar illustrated in Figs. 13 and 14.

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

Referring first to Figs. 1 to 7 inclusive, let the numeral 5 designate a shackle which as illustrated in the drawing has an enlarged extremity 6 provided with slots or openings 7 which are covered by struck up parts 8 consisting of the metal pressed out of the openings, these parts 8 being pressed outwardly far enough to permit the sealing extremity 9 of the shackle to pass therethrough as illustrated in Figs. 3 and 4. In seals of the character set forth in my aforesaid patent and also embodied in my present invention, I rely upon constructing the sealing extremity or extremities of the shackle of such material and in such a manner that after the extremity or extremities of the shackle have been bent for sealing purposes, these extremities cannot be straightened and rebent to their original position without rupturing the material of which the sealing extremities are formed. These sealing ends are preferably weakened on the line of, or at the extremities of the line of bend. There are many ways of producing this result. For instance, in the construction illustrated in Figs. 1 to 6 the material on both sides of the line 10 of bend, which is indicated by dotted lines in Fig. 1, is corrugated as shown at 12 and 13, for stiffening purposes, the metal being also notched on opposite sides of the line of bend as shown at 14. It is evident, however, that many different methods may be employed for producing this result, as by perforating or weakening the material on the line of bend or at its extremities in any suitable manner. In this form of construction the enlarged part 6 of the shackle is provided with a slightly reduced extension 15 adapted to receive a sleeve or collar 16 which is preferably shaped to fit the opposite ends of the extension 15, but the opening 17 through the collar is of sufficient size to permit the insertion of the sealing extremity of the shackle (see Figs. 3 and 4). In order that this collar may be retained in place upon the shackle before sealing, the extension 15 is provided with a lip 18 projecting beyond the collar and adapted to be bent down over one edge of the collar (see Fig. 2), in order to prevent the latter from moving out of its position adjacent the enlarged extremity of the shackle, this enlarged extremity being also notched or recessed at 19 to allow one end of the sleeve or collar to enter, thus further securing the collar in its proper position. This collar is preferably composed of transparent glass, though as heretofore stated, it may be constructed of other frangible material or other material of any character. In this form of construction, or where a shackle of the character illustrated in Figs. 1 to 6 is employed, double security is obtained, since the sealing end 9 of the shackle after being passed through the sleeve or collar 16, is also passed through the struck up loops or parts 8 of the enlarged extremity 6 of the shackle, after which this end is bent on the original line 10 for sealing purposes, as illustrated in Figs. 5 and 6. This form of construction not only gives additional safety, but affords an important element of strength. It will be understood that if the loops or parts 8 should be removed by breaking or in any other manner, the collar would still prevent the sealing extremity of the shackle from being drawn therethrough without first bending it back to its normal position, and if this is done it cannot be restored without breaking and thus leaving evidence that the seal has been tampered with. It will be understood that in seals of this character the chief object is to provide such a construction that the seal cannot be tampered with without leaving evidence thereof, the object being to be able from such evidence to trace the act or locate the person guilty thereof.

In the form of construction illustrated in Figs. 8 to 12 inclusive, a shackle 20 is employed consisting of a plain band of metal or other suitable material which is shown of the same width throughout its length. In this form of construction both extremi-

ties 21 of the shackle are bent for sealing purposes on diagonal lines 22 where the material has been weakened in any suitable manner. In this form of construction, when the device is manufactured, one end of the shackle is passed through an opening 23 formed in a plate 25 which as illustrated in the drawings is elliptical in shape, though it is evident that any other suitable configuration may be employed. This extremity 21 is then bent to prevent it from pulling through the slot 23 and its bent end is inserted in a slot 26 formed in one extremity of the plate 25, the extremities of the said plate being bent on dotted lines 27 to make this practicable. In order to limit the passage of the shackle extremity through the slot 23, the shackle is provided with stops 28 a short distance from the weakened folding lines 22. Hence after one extremity of the shackle is passed through the plate 25 and bent to the position shown in Fig. 11, the plate or collar is secured in place upon the shackle ready for sealing. The stops 28 may be formed from striking up the metal of the shackle sufficiently for the purpose. In order to seal the shackle it is only necessary to pass the opposite extremity 21 through the slot or opening 23 which is sufficiently wide for the purpose, and then bend this extremity in a direction opposite to that of the bending of the original sealing end of the shackle, this second shackle extremity 21 being also crowded into a slot 26 in the opposite end of the plate or collar. These slotted bent ends of the collar give additional strength to the device, the collar being allowed sufficient movement on the shackle to permit the insertion of the sealing ends 21 in the slots 26 thereof, and these extremities when inserted in the said slots fit closely, the friction being sufficient to retain them in place against accidental removal. After the first sealing extremity 21 of the shackle is passed through the slot 23, the collar 25 may be rocked or tilted sufficiently between the sealing end of the shackle and the stop 28 to permit the bending of the extremity 21 to a position at right angles to the body of the shackle. The collar may then be pressed toward the sealing shackle end causing the latter to enter the slot 26. Now before the second extremity 21 is bent to the sealing position, the collar must be tilted in the opposite direction, whereby the first sealing end 21 is caused to pass farther into the slot 26 which is of sufficient length for the purpose, the tilted or rocking action of the collar being sufficient to permit the bending of the second sealing end 21 to the position shown in Fig. 8. After this is done the collar is adjusted to the position shown in Fig. 8, whereby both sealing ends engage the slots 26 in the collar, giving the shackle and sealing extremities thereof additional strength, though the security of the device is complete whether or not the sealing ends engage slots in the collar or plate.

In the form of construction shown in Figs. 13, 14 and 15, a slightly modified form of collar or elliptical plate is employed. In this form of construction the collar, which I will designate 29, is provided with two separated slots 30 to receive the opposite sealing extremities 21 of the shackle. In this event the said slots are only made of sufficient width to permit the passing of the shackle extremities easily therethrough. In other respects this form of construction is precisely the same as just described in connection with Figs. 8 to 11 inclusive, and it will therefore not be necessary to repeat the manner of applying the shackle to the collar for sealing purposes.

Any means which may be applied to a free end to form a check to prevent reverse movement through the confining member may be used in connection with this device. In the illustrations herewith one form of the protective seal described in U. S. Patent No. 972971 as shown in Figs. 23 to 25 thereof is used as apparently the most suitable, inasmuch as the seal is integral with the shackle.

The corrugations shown in the drawing are made longitudinally or diagonally to stiffen the sealing member on each side of the line of sealing bend. They will also cause molecular disturbance through concurrent stress and strain which weakens cohesion upon the line of bend, causing an immediate breakage through the whole thickness of the material on any attempt to straighten to the original plane. The weakened line is manifestly made much weaker proportionally by the stiffening of the material by corrugations on each side thereof.

In further explanation of the manner of connecting the sealing extremities 21 with the bent slotted extremities 27 of the plate 25, it may be stated that when this plate is composed of resilient material, as spring metal, the resilience of the metal will be sufficient to cause the extremities to be forced away from the sealing extremities 21 as the said extremities are bent to the sealing position, until the sealing ends 21 are brought into alinement with the slots 26, when the ends of the plate will return to their normal position with the sealing ends 21 engaging the slots 26. This is due to the fact that the bent extremities of the plate are rounded and as the sealing ends 21 are bent against them they are forced outwardly, as will be readily understood.

Having thus described my invention, what I claim is:

1. A protective seal, comprising a sealing

shackle and a separate collar or sleeve surrounding the extremities of the shackle, the protruding extremities of the shackle being shaped to prevent withdrawal through the opening in the collar, one extremity at least of the shackle being bent for sealing purposes and constructed to produce rupture of the material if the bent sealing extremity is straightened and rebent.

2. The combination of a sealing shackle bent to form a loop, and a collar open to receive the extremities of the shackle when doubled to form a securing loop, the extremities of the shackle being bent on weakened lines for sealing purposes, substantially as described.

3. The combination of a sealing shackle and a collar open to receive the extremities of the shackle when doubled to form a securing loop, one extremity of the shackle beyond the collar being bent on weakened lines for sealing purposes, the shackle being formed with a stop to limit the collar between the sealing extremity of the shackle and the stop, substantially as described.

4. The combination of a sealing shackle and a collar adapted to receive the extremities of the shackle when doubled to form a securing loop, the extremities of the shackle being shaped to prevent withdrawal through the opening in the collar, one extremity at least of the shackle being bent for sealing purposes, the shackle being provided with a stop to limit the movement of the collar thereon between the stop and the sealing extremity of the shackle.

5. The combination of a shackle bent upon itself to form a loop a separate collar surrounding the extremities of the shackle, the extremities of the shackle beyond the collar being bent to prevent withdrawal through the opening in the collar, and means for preventing movement of the collar upon the shackle substantially as described.

6. The combination of a sealing shackle a collar open to receive the shackle when doubled to form a loop, the extremities of the shackle being bent on weakened lines to facilitate rupture and to prevent the withdrawal of the shackle through the collar, and means for preventing movement of the collar upon the shackle.

7. A seal, comprising a shackle having loops formed on one extremity thereof and offset from the shackle, the opposite extremity of the shackle being adapted to be passed under the said loops and bent upon itself through an arc of approximately 180° over the said loops on weakened lines.

8. A seal, comprising a shackle having loops struck up out of one extremity thereof to form a space between the shackle and the loops, the shackle being adapted to be bent to form a loop, and the opposite extremity being adapted to be passed under the loops of the shackle and bent upon itself through an arc of 180° over the said loops on weakened lines.

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

TINGLEY S. WOOD.

Witnesses:
F. E. BOWEN,
HORTENSE UHLRICH.