

W. E. ELLIOTT.
METALLIC SEAL.
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Patented Dec. 7, 1909.

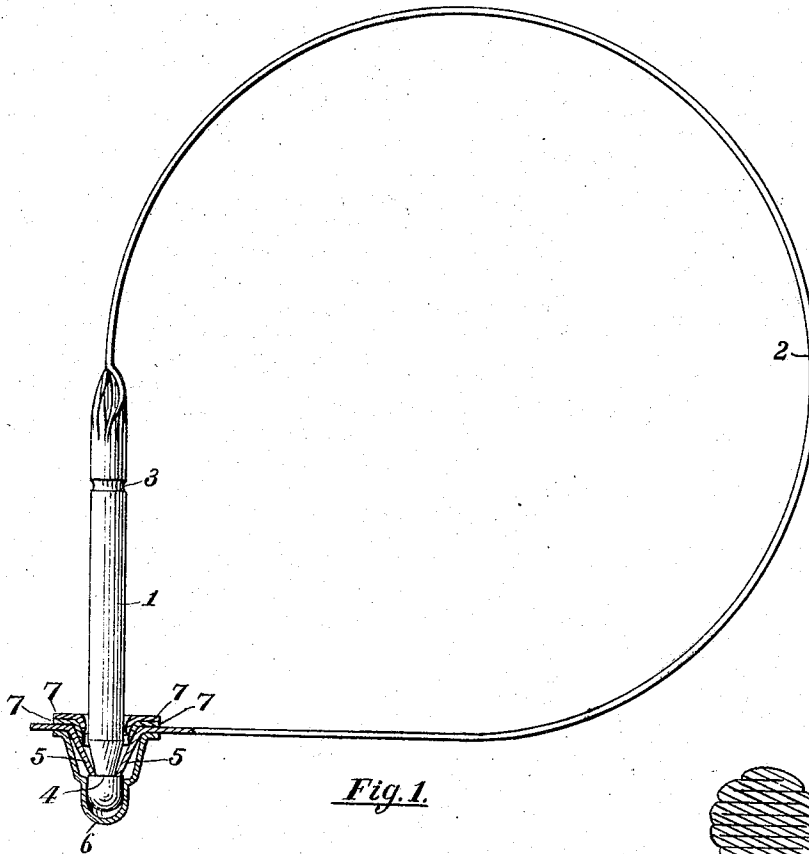


Fig. 1.

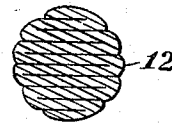


Fig. 7.

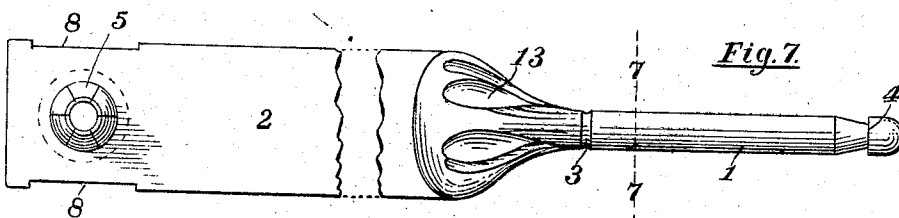


Fig. 2.

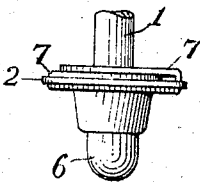


Fig. 5.

Witnesses

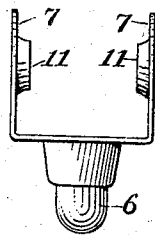


Fig. 3.

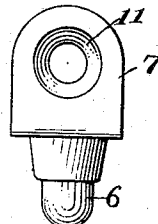


Fig. 4.

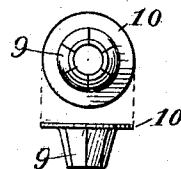


Fig. 6.

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METALLIC SEAL.

942,316.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM E. ELLIOTT, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Metallic Seals; and I do hereby 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.

My invention relates to improvements in metallic, or similar seals. In using such seals it is often desirable to insert the same in a small round opening, not adapted to receive a flat flexible shackle because of the width of the latter. It also often occurs, that a rigid bolt like portion instead of a flexible and yielding shackle is needed to not only afford a seal, but also a rigid body to secure the parts in place that are sealed.

The object of my invention is to provide a seal adapted to be used under various conditions, requiring a flat flexible band or shackle, or a rigid bolt like portion inserted in the parts to be sealed to hold the same, or as a bolt like member adapted to be inserted in an opening not adapted to receive a flat band, as occasion may require.

My device consists essentially of a shackle member comprising both a flat flexible portion and a rigid bolt-like portion, the respective portions carrying at their outer ends the seal body and the co-acting locking member adapted to be inserted therein, whereby either the flat flexible part of the shackle or the rigid bolt like part of the same may be engaged with the article to be sealed or secured, as occasion may require, as hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which:

Figure 1 is an enlarged elevation of a device embodying my invention, with parts broken away to show the construction; Fig. 2, a detail in plan view of the shackle portion of the seal; Figs. 3 and 4 details of the housing member; Fig. 5, a detail in end elevation of the sealing portion of the device as shown in Fig. 1.; Fig. 6, a detail in plan and elevation of a modified construction corresponding to the interlocking member 5 of Figs. 1 and 2; and Fig. 7, an enlarged cross section of the rigid or bolt like portion of the shackle on line 7—7 of Fig. 2.

Like numerals refer to like parts in all of the figures.

The shackle portion of the device which is of considerable length, is, for a portion of its length, comparatively rigid and resembles a bolt, as shown by the numeral 1, and adapted to be inserted in various objects having suitable openings to receive it, and thus operate as a rigid bolt to secure objects to each other, and to be forced into an opening against some resistance and without bending or buckling. It is for the remaining portions 2 of its length comparatively flexible, or otherwise adapted to be folded upon itself, or flexed so that it may be bent around the object which it is desired to seal, or extended through the objects which it is desired to fasten together. This shackle, for a portion of its length, is flat, the flat portion being provided with a suitable opening for the insertion of the end of the rigid portion. In the form of the device which I have shown in the drawings, the flexible portion is thus flattened throughout its entire length, and the form shown in Figs. 1. and 2 obviously may be constructed from wire or similar stock, by rolling or flattening out a portion thereof thin enough so as to be conveniently flexible, while the remaining portion remains in its original form and is comparatively rigid. I prefer, however, to form the body from a strip of sheet metal and form the rigid or bolt like portion as hereafter described. In order that the seal may be easily broken when its use is ended, I weaken or partially sever the shackle at some convenient location. In Fig. 2, this partial severance is shown in the form of the circumferential groove 3 in the rigid or bolt like portion of the same.

The bolt end of the shackle is provided with a shoulder 4 which may be circumferential, as shown; and for convenience of insertion, the end of this portion may be made conical or rounded, as shown in Fig. 2.

The flat portion which is located at or near the other end of the shackle from the rigid portion, is provided with an opening, as shown in Fig. 2, adapted to receive the shouldered end. This opening is normally smaller in diameter than the shoulder, so that some portion or all of the edge surrounding the opening will engage the shoulder 4, and the edge of this opening is adapted in any convenient manner to yield and permit the

shouldered end to pass through said opening and then to spring back into engagement with the shoulder. The means shown in Fig. 1. for permitting such yielding and engaging is that the metal surrounding the opening is drawn to a truncated conical form and divided at intervals in the place of its axis, whereby radially yielding spring retaining members 5 are formed to engage the shoulder 4 and securely hold the rigid end in position after it is inserted in such opening.

If the material most convenient to use for the shackle is not of such character that the yielding margin, constructed as shown in Fig. 1. will properly engage with the shoulder and lock it in position, a small plate of suitable material and having the opening and the yielding margins thereof, may be inserted in or held in connection with the shackle in any suitable manner. Such a plate for insertion or attachment is shown in Fig. 6. in which numerals 10 represent the plate itself, and the numerals 9 represent the yielding margin of the opening therein. The dotted lines surrounding the opening in Fig. 2. indicate the outer edge of this plate 10, which is secured to the shackle in any convenient manner, whereby the shackle and the plate are held in proper relation to each other. Instead of manufacturing the shackle from round stock having a portion rolled or pressed so as to be flat, I have found it in some respects more desirable to construct the same from flat stock, such as sheet tin. This method of construction is illustrated in Fig. 2. After taking a strip of tin or similar stock of suitable width, one end thereof can be struck up in suitable dies and transformed into a substantially solid and comparatively rigid and bolt like body, preferably circular in cross-section. This portion is shown in Fig. 7. by numeral 12, while the numeral 13 (Fig. 2.) indicates the tapering corrugations in the flat stock as it is passing into the round form. These corrugations serve to stiffen that portion of the strip so that it will be sufficiently rigid to serve as a bolt and will not buckle as it is pressed into locking position or yield laterally when inserted in openings in the members secured thereby. In order that this portion so struck up may have the most rigidity and may be capable of carrying a suitable shoulder, I bend the tin so that it is folded upon itself and compressed in the form shown in cross section in Fig. 7. When struck up in this form, and especially if it is then subjected to heat whereby the layers are at least partially welded together, this portion becomes in a practical way the equivalent of the solid body. The heat welding, however, I do not consider essential. To protect the shoulder end after it is inserted through the opening in the other end of the body member, I provide a housing, or casing,

shown by 6 in Figs. 1 and 5 and shown in detail in Figs. 3 and 4, thus inclosing the retaining members 5 and the inserted end. This casing is approximately conical with rounded or globular apex in form, but I find it very desirable to contract the middle thereof so as to be of substantially the same diameter as the end to be inserted therein, thus holding the inserted end in position and preventing any play or motion thereof which would tend to loosen the retaining members 5, and release the shoulder from its engagement. This housing may be secured in place in any suitable manner; but the means I have shown is to provide it with oppositely extended members 7, which are intended to be folded transversely across the flat portion of the body member opposite and over the opening therein. To prevent longitudinal motion of this casing upon the shackle, and more accurately to register its proper position in the process of assembling, I provide the shackle with recesses 8 8, with which recesses the wings 7 7 engage, and when these wings are folded down over the shackle, the edges of the same present no protuberance caused by the wings. Further to secure the housing or casing in its proper position after the seal is locked, and further to protect against accidental or intentional injury to the spring engagement with the shoulder, I make these wing members long enough so that when they are folded down, they will overlap the opening in the shackle, and I provide them with superposed openings 11 which are preferably countersunk or truncated conical, as shown in Fig. 3. and adapted to register with each other and with the opening in the shackle. This countersinking, as shown, more securely retains them in proper position and also guides the end of the bolt member when it is inserted therein. The diameter of these openings should be substantially the same as that of the end of the rigid portion to be inserted therethrough, thus preventing any access to the locking engagement between the retaining members and the shoulder, and also preventing any lateral play or working of the rigid portion with reference to the opening or the casing whereby the parts might become loosened.

I have shown preferred forms of construction, but it will be obvious that many details can be varied without departing from the invention. For example the length of the shackle, the length of the bolt-like part thereof: the degree of flexibility or rigidity of its parts, its area and shape in cross-section at different parts, the location, form and length of the shoulder, the location, size and form of the opening, the extent that the yielding margin projects from the plane of the shackle, and the degree of resistance furnished by the yielding margin,—all these, as well as other details, can

be varied to meet the peculiar requirements of the use desired.

What I claim is:

1. A seal comprising a seal body having locking means therein to retain the end of the shackle, a shackle attached to the seal body at one end, said shackle being flexible throughout a portion of its length next the seal body, and rigid and bolt-like throughout the remaining portion of its length, the end only of the rigid portion being adapted to be inserted in the seal body, whereby the shackle may be applied either as a flexible band or the rigid portion thereof outside the seal body may be applied as a rigid bolt.

2. A seal comprising a shackle having a flat flexible portion provided with an opening near one end to receive the other end, and a rigid bolt-like portion having a shoulder near the other end, and adapted to be inserted in said opening, a housing to inclose the end only of said rigid portion, and locking means in the housing to engage said shoulder, whereby the shackle may be applied as a flexible band, or the rigid portion extending outside the housing may be applied as a rigid bolt.

3. A seal comprising a shackle embodying a rigid portion, and also having a flat, flexible portion, said rigid portion having a shoulder near its end, said flexible portion having an opening near its end to receive the end of said rigid portion and normally of less diameter than the said end, and also having yielding margins, and a housing inclosing the end of said rigid portion and said margins.

4. A seal comprising a shackle having a bolt-like portion provided with a shoulder near its end and a broad flat flexible portion having an opening near its end adapted to receive the shouldered end of the bolt-like portion, means for locking the shouldered end after it has passed through said opening, a housing secured to the shackle and inclosing said shouldered end and locking means, and means carried by the housing to receive the said end and hold the same against lateral movement.

5. A seal comprising a shackle having a bolt-like portion provided with a shoulder near its end, and a broad flat flexible portion having an opening near its other end adapted to receive the shouldered end of the bolt-like portion, means for automatically locking the shouldered end after it has passed through said opening, and a housing inclosing said means and end and having a portion to receive the said end adapted to fit closely around the same and prevent lateral movement thereof.

6. A seal comprising a shackle having a round bolt-like portion and a flat flexible portion having an opening to receive the end of the bolt-like portion, means for auto-

atically locking the end of the bolt-like portion after it has passed through said opening, and a housing inclosing said means and the said end, said housing having a base extension folded upon the flat portion of the shackle opposite the opening therein and provided with an opening to receive the end of the bolt-like portion.

7. A seal comprising a shackle having a round rigid portion and a flat flexible portion provided with an opening to receive the end of the rigid portion, means for automatically locking the said end after it has passed through said opening, a housing inclosing said means and end, opposing base extensions on said housing folded around the flat portion of the shackle opposite said opening and each having an opening to receive said end and registering with each other and with the opening in the flat portion.

8. A seal comprising a shackle having a round rigid portion at one end and a flat flexible portion at the other end provided with an opening to receive the end of the round rigid portion and marginal recesses opposite said opening, means for automatically locking said end after it has passed through said opening, a housing inclosing said end and means, opposing base extensions on said housing engaging said lateral recesses and folded around said flat portion and also having openings to receive said end and registering with each other, and with the opening in the flat portion of the shackle.

9. A seal comprising a shackle having a portion at one end round and rigid and also provided with a circumferential shoulder, and the remainder of the other end flat and flexible and provided with an opening to receive the round end, said opening having a truncated conical margin radially slitted to permit the shouldered end to pass therethrough and to retain the same, a housing inclosing said end and truncated conical portion, and a base extension on said housing folded around said flat portion and having an opening registering with the opening in the said portion, said opening having its margin depressed into the base of said truncated conical margin.

10. A seal comprising a shackle having a rigid round portion at one end and a flat flexible portion at the other end provided with an opening to receive the end of the round portion, and also having marginal recesses opposite said opening, means for automatically locking said round end after it has passed through said opening, a housing inclosing said end and means, and opposing base extensions on said housing engaging said recesses, and folded over the edges of said flat portion.

11. A seal comprising a shackle having a round, rigid portion at one end provided

with a circumferential shoulder near the end, and a flat flexible portion at the other end provided with an opening of less diameter than the round end and having a flexible margin to said opening, and also having marginal recesses opposite said opening, a housing inclosing said end and margin, and opposing base extensions on the housing engaging said marginal recesses and folded over the said flat portion, and also having openings registering with the opening in the flat portion.

12. A seal comprising a shackle having a rigid round portion provided with a circumferential shoulder near its end, and a flat flexible portion having a truncated conical portion near the other end provided with an opening to receive and retain the

shouldered end, and also having marginal recesses opposite said conical portion, a housing inclosing said conical portion and having a portion to receive and fit closely around said round end to prevent lateral movement thereof, opposing base extensions on said housing engaging said recesses and folded around said flat portion, said extensions also having openings to receive the said round end said openings having margins depressed within the base of the said truncated conical portion.

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

WILLIAM E. ELLIOTT.

Witnesses:

LUTHER V. MOULTON,
GEORGIANNA CHACE.