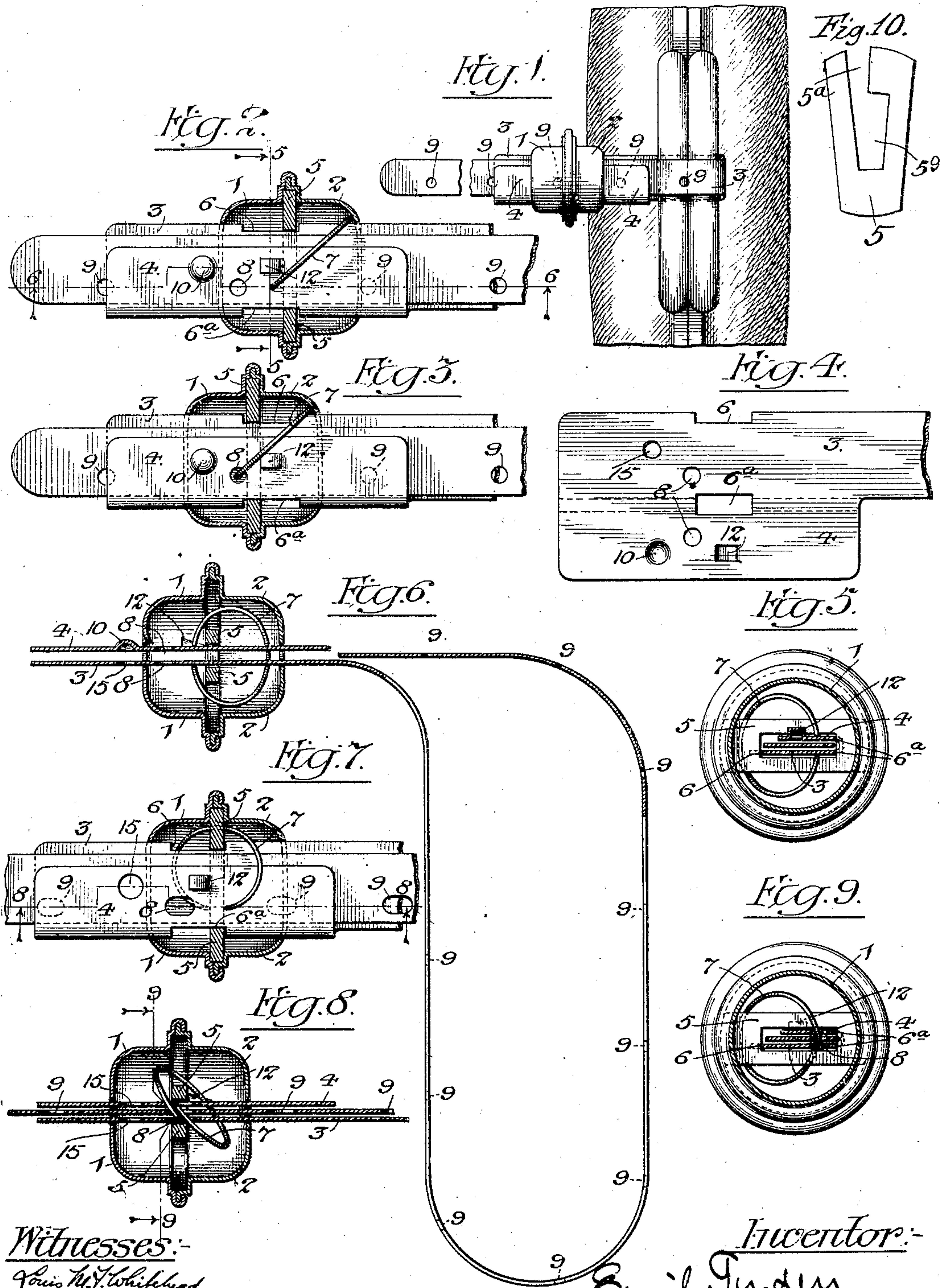


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E. TYDEN.
SELF LOCKING SEAL.

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UNITED STATES PATENT OFFICE.

EMIL TYDEN, OF HASTINGS, MICHIGAN.

SELF-LOCKING SEAL.

SPECIFICATION forming part of Letters Patent No. 788,384, dated April 25, 1905.

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To all whom it may concern:

Be it known that I, EMIL TYDEN, a citizen of the United States, residing at Hastings, in the county of Barry and State of Michigan, have invented new and useful Improvements in Self-Locking Seals, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention is an improvement in self-locking seals which employ a flexible strap or securing device inserted through the body or shell in which the engaging or locking elements are contained; and its purpose is to afford improved adaptation for drawing the strap closely about the locked elements, as the handles of a bag or the staple and hasp of a door or chest or other elements which are to be secured, and causing the locking to occur only after the strap has been drawn as tightly as desired.

It consists of the features of construction set out in the claims.

In the drawings, Figure 1 is a plan view of my improved seal, showing the strap drawn closely about the handles of a bag which it secures. Fig. 2 is a section through the seal-body in a longitudinal plane transverse to the face of the strap, showing the strap inserted through the body to the point at which it is to be locked, but before the locking is effected. Fig. 3 is a similar section showing the parts after the lock is sprung. Fig. 4 is a plan view of the blank from which the strap and sheath are formed by folding. Fig. 5 is a section at the line 5 5 on Fig. 2. Fig. 6 is a section at the line 6 6 on Fig. 2. Fig. 7 is a view similar to Fig. 2, but showing a modification in respect to the means for preventing the reverse movement of the shell after the lock has been sprung. Fig. 8 is a section at the line 8 8 on Fig. 7, but showing the lock sprung. Fig. 9 is a view similar to Fig. 5, but showing the lock sprung. Fig. 10 is a perspective view of a diaphragm employed to reinforce the body.

A shell or body is formed of the two cap elements 1 and 2, seamed together at a plane transverse to the length of the strap. The strap 3 is formed with a lateral wing 4, which is folded upon the body of the strap to form a sheath which is lodged in and extends through

the shell. A diaphragm 5, of heavier and stronger metal than is employed for the shell or strap, is infolded in the seam by which the two elements of the cap are joined, and thereby made thoroughly rigid with the shell, and is apertured for the sheath which passes through it, the latter being, however, notched at both edges, as seen at 6 and 6^a, for engagement with the inner margins of the slot in the diaphragm, the diaphragm being applied to the sheath before the shells are clenched about it and being adapted to be so applied, notwithstanding the slot 59 is less in length than the width of the sheath, by being cut through at 5^a (see Fig. 10) at one end of the slot, so that it may be bent apart to admit the sheath and closed up again into engagement with the notch at that edge of the sheath.

The engaging device is a spring-ring 7, of which more than one may be employed, if desired, the spring being normally closed and its ends slightly lapped, but being adapted to be spread open, the spring being in the construction of the device held thus spread open by the sheath which it clasps, as clearly seen in the drawings. The ring spread to clasp the sheath extends around to the open side of the latter, and the sheath has apertures 8 directly opposite each other through which the ends of the ring can spring when it is released, said ends being lodged by construction on the outside of the sheath at a little distance from the apertures 8, but in position to be pushed into the apertures and so to be released and permitted to close up by springing its ends through the apertures. The other end of the strap is adapted to be inserted through the sheath between the two side walls, which are clasped by the spring-ring, and the strap has any desired number of apertures 9 at different points throughout its length, any one of which, being registered with the apertures 8 of the sheath, may be locked to the latter by the spring-ring being pushed to the apertures 8, so that it may spring through said apertures and the aperture 9 registered therewith. The shell, it will be observed, is movable along the sheath, except as it is prevented from moving by the engagement of the diaphragm with the sheath at the notches

of the latter. These notches are extended to allow some range of movement of the shell along the sheath, but the sheath has a slight boss 10 struck up from the body of the strap at a point which is outside the shell 1, as the seal is constructed and assembled before locking. This boss is so slight that a sufficient force may be easily applied for moving the shell along the sheath to force the boss past the edge of the slot in the cap forming that end of the shell and to a position within the latter. The spring-ring has its ends lodged upon the sheath between the diaphragm 5 and the apertures 8 at a distance from said apertures, such that the movement of the shell along the sheath far enough to pass the boss 10 from the outer side to the inner side of the shell causes the diaphragm to push the ends of the spring into the apertures 8, and thereby lock the ring with the shell. If the strap has been thrust through the shell and drawn as tightly as desired about the article or fastenings to be secured before the shell is thus pushed over the boss 10, the ends of the spring snapped through the apertures 8 will be grasping the strap within the sheath unless it happens that there is a hole 9 at that point registered with the apertures 8. In that case the ends of the spring will engage with the hole and complete the locking. If there is not a hole 9 at that juncture registered with the holes 8, the strap will be moved through the sheath in either direction to bring the hole 9 which is nearest to the point where the ends of the spring are grasping the strap and cause them to snap through and engage it.

The movement of the shell back over the boss 10 may be prevented by the formation of a boss 12 struck up from one wall of the sheath, having one side sloping and the other abrupt, at a position such that by construction the diaphragm stands on the sheath at the foot of the slope of the boss, so that upon the shell carrying the diaphragm positively with it being forced along the sheath the diaphragm will climb over the sloping boss, the sheath being sufficiently yielding to permit that action and will become engaged behind its abrupt end, the spring being pushed to locking position by such movement, as already described.

A modification is shown in Figs. 6 and 7, which consists in lodging the spring-ring by construction, so that it strides the diaphragm when clasp ing the sheath, one end being stopped against the sheath at one side of the diaphragm, while the other end is stopped against the other side of the sheath at the opposite side of the diaphragm. The diaphragm thus carries the spring with it when it is moved by the shell along the sheath for locking, and when the spring snaps through the apertures and the locking is effected by its engagement with the sheath and with the inserted end of the strap that engagement also

locks the diaphragm against longitudinal movement, and thereby prevents the sheath being pulled back after it has been pushed up thus to the locking position.

One advantage of this construction is that it lends itself readily to an expedient by which an inspector can tell by a glance at the seal whether it is properly locked. This expedient consists in making a small aperture 15 in the wall of the sheath at a point which is just outside the shell before locking, being directly opposite the boss 10 when the form having that boss is employed, the boss itself being visible at one side and a hole at the other side before locking, but both being concealed after the sheath has been thrust to the locking position. The boss 10 may be omitted and both walls of the sheath may have the aperture 15, as illustrated in Figs. 7 and 8, showing the modified means of holding the sheath against longitudinal movement through the shell.

I claim—

1. A self-locking seal comprising a securing device; an engaging device; means which restrains the engaging device, said securing device and restraining means being adapted to be engaged and connected by the engaging device when it is released from said restraint; a shell or housing inclosing the engaging device movable with respect to the restraining means and having means which in such movement releases the engaging device.

2. A self-locking seal comprising a securing device; an engaging spring; means which restrains the engaging spring, said securing device and restraining means being adapted to be engaged and connected by the engaging spring when it is released from said restraint; a shell or housing inclosing the engaging spring, movable with respect to the restraining means, and having means which in such movement releases the engaging spring.

3. A self-locking seal comprising a securing device; a sheath into which it may be thrust; a spring which is spread to clasp the sheath and is restrained thereby from closing; the securing device and the sheath having apertures through which the spring when released may pass to engage and connect them; a shell or housing which incloses the spring and is movable on the sheath, and means by which in such movement the spring is released.

4. A self-locking seal comprising a securing strap or band having a sheath at one end and the other end adapted to be thrust through the sheath, and a plurality of apertures at intervals in its length; a housing or shell mounted and movable on the sheath; a spring which is spread to clasp the sheath and is restrained thereby from closing; the sheath having apertures in which the spring may engage when released adapted to be registered with the apertures of the strap successively as it is thrust

through the sheath; and means by which the shell when moved on the sheath releases the spring.

5. A self-locking seal comprising a securing strap or band; an engaging device; means on one end of the strap which restrains the engaging device, having an aperture for engagement with the latter when said latter is released, the strap having a plurality of apertures at intervals in its length for like engagement; a shell or housing inclosing the engaging device and adapted to be entered by the other end of the securing-strap, said housing being movable with respect to the restraining means and adapted in such movement to release the engaging device.

6. A self-locking seal comprising a securing device; a sheath into which it may be thrust; a spring which is spread to clasp the sheath and is restrained thereby from closing; the securing device and the sheath having apertures through which the spring when released may pass to engage and connect them; a shell or housing which incloses the spring and is movable on the sheath; the shell or housing having a diaphragm rigid with it and penetrated by the sheath and which in such movement of the housing moves the spring to the apertures of the sheath for releasing it from restraint.

7. A self-locking seal comprising a securing device; a sheath into which it may be thrust; a spring which is spread to clasp the sheath and is restrained thereby from closing; the securing device and the sheath having apertures through which the spring when released may pass to engage and connect them; a shell or housing which incloses the spring and is movable on the sheath, the shell or housing having a diaphragm rigid with it and penetrated by the sheath which in such movement of the housing moves the spring to the apertures of the sheath for releasing it from restraint, the sheath having a feature which is visible outside the shell before such move-

ment, and is covered and concealed by the shell in such movement.

8. A self-locking seal comprising a securing device; a sheath into which it may be thrust; a spring which is spread to clasp the sheath and is restrained thereby from closing, the securing device and the sheath having apertures through which the spring when released may pass to engage and connect them; a shell or housing which incloses the spring and is movable on the sheath, the shell or housing having a diaphragm rigid with it and penetrated by the sheath which in such movement of the housing moves the spring to the apertures of the sheath for releasing it from restraint, the sheath having a ratchet-shaped projection which passes through the diaphragm in such movement and resists a reverse movement.

9. A self-locking seal comprising a securing device; a sheath into which it may be thrust; a spring which is spread to clasp the sheath and is restrained thereby from closing, the securing device and the sheath having apertures through which the spring when released may pass to engage and connect them; a shell or housing which incloses the spring and is movable on the sheath, the shell or housing having a diaphragm rigid with it and penetrated by the sheath, and which in such movement of the housing moves the spring to the apertures of the sheath for releasing it from restraint, the spring being spread to stride the diaphragm in claspings the sheath, and the apertures in the latter being wide enough to be exposed for entrance of the spring at both sides of the diaphragm at once.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Hastings, Michigan, this 4th day of February, 1904.

EMIL TYDEN.

In presence of—

A. C. BROWN,

M. L. COOK.