

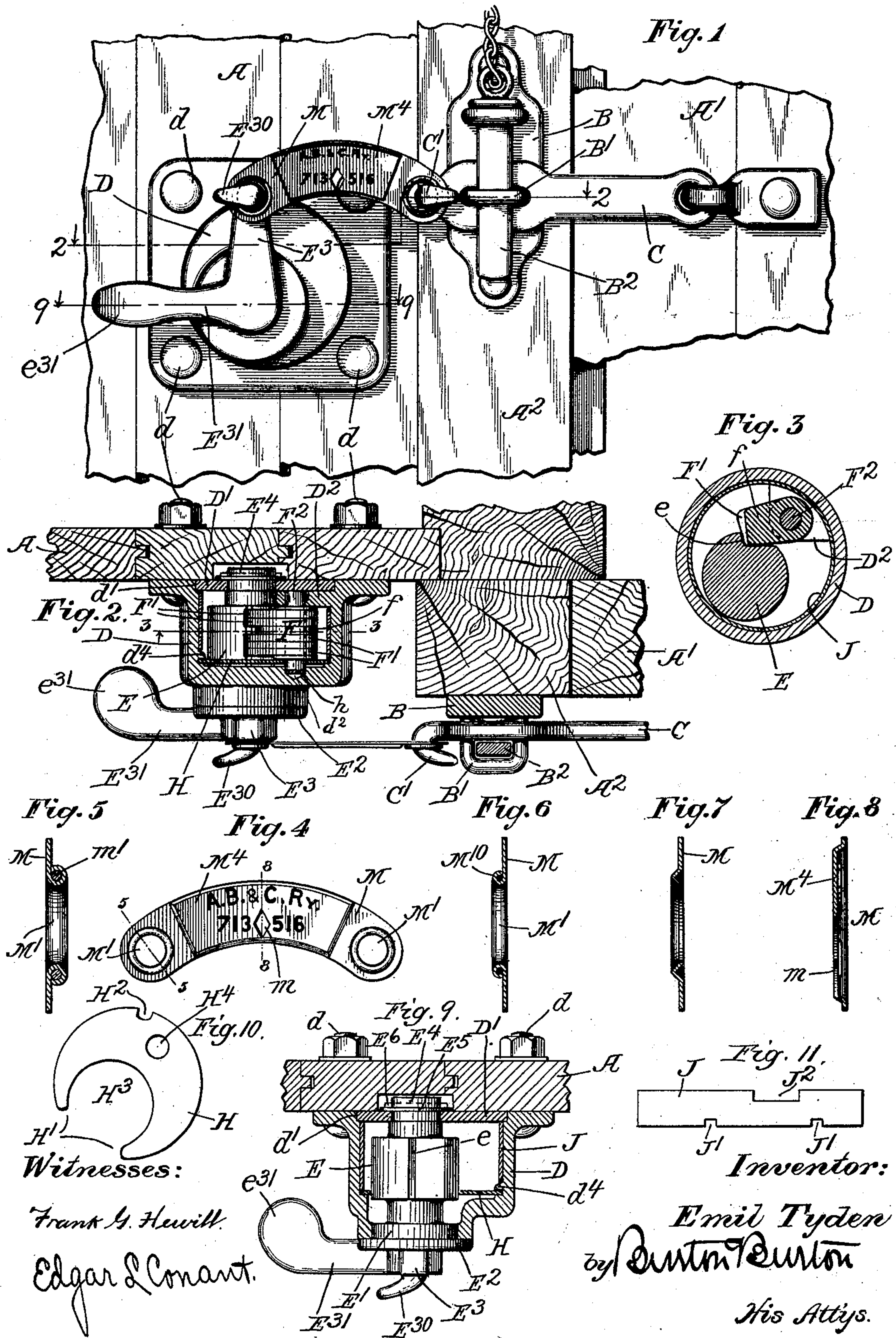
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E. TYDEN.
SEAL LOCK.

(Application filed Mar. 15, 1901.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

EMIL TYDEN, OF HASTINGS, MICHIGAN.

SEAL-LOCK.

SPECIFICATION forming part of Letters Patent No. 712,021, dated October 28, 1902.

Application filed March 15, 1901. Serial No. 51,269. (No model.)

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 certain new and useful Improvements in Seal-Locks, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

10 The purpose of this invention is to provide an improved lock or locking device adapted to be sealed, the seal-operating part of such locking device being preferably such that it may be applied in a great variety of situations and in connection with a great variety of locks or bolts. It is specifically adapted or designed for use in sealing railway-cars and in the drawings is shown as applied to the common form of hasp, staple, and bolt locking device, such as is used in securing the sliding doors of railway-cars.

The invention consists in the features of construction set out in the claims.

Figure 1 is a front elevation of a portion of the side of a car and car-door having a hasp, staple, and bolt locking device provided with my sealing attachment and seal. Fig. 2 is a section at the line 2 2 on Fig. 1. Fig. 3 is a section at the line 3 3 on Fig. 2. Fig. 4 is an elevation of the seal employed with my lock. Fig. 5 is a section at the line 5 5 on Fig. 4. Figs. 6 and 7 are sections similar to Fig. 5, showing a slightly-modified construction of the seal at the points at which section is made. Fig. 8 is a section at the line 8 8 on Fig. 4. Fig. 9 is a section at the line 9 9 on Fig. 1. Fig. 10 is a plan of a steel disk forming a lining-plate for the pawl-chamber. Fig. 11 is a plan of a blank of a peripheral steel lining-plate, which is sprung into the pawl-chamber.

A represents the side of the car; A', the sliding door; A², the stop against which the door closes.

45 B is the staple-plate, mounted on the stop A², having the staple B' rigid with it.

C is the hasp, secured to the door in the usual manner and adapted to close over the staple and be secured by the bolt B².

50 D is a casing, which contains the devices for operating the seal. As shown, it is mount-

ed upon the outer side of the car-wall, being secured by bolts *d d*, having nuts at the inner side, so that the casing cannot be detached from the exterior without the use of tools to cut the bolts. 55

D' is a back plate, which closes the chamber of the casing at the side next the car-wall, said back plate being stopped on a small shoulder formed by rabbeting the case at *d'*. 60

E is a rotary element in the case D. It is arranged to be inserted into the case from the forward side, being reduced in diameter at the inner end E⁴, so that it passes through and obtains bearing in the plate D'; but at the outer part it has an annular shoulder E', which fits and obtains bearing in the outer end of the case D, against which said element E is stopped by a flange E², which abuts flat on the end of the case D and completely prevents access to the latter at the bearing therein of said element E. At the outer end the element E has formed rigidly and, preferably, integrally with it a radially-projecting arm E³, which terminates in a hook E³⁰, such hook projecting in a plane substantially parallel to the axis of the element E and substantially at right angles to the general trend of the said arm E³ and in that plane being made to trend slightly obliquely forward from the plane of rotation of the arm E³, as seen in Fig. 2. The element E has a second rigid arm E³¹, projecting substantially at right angles to the arm E³ and constituting a handle for operating the element E, said arm E³¹ being weighted, as seen at *e*³¹, for a purpose hereinafter explained. The reduced end E⁴ of the element E, which projects through its bearing in the plate D', is secured by means of a cotter-pin E⁶, passed through it outside a washer E⁵, and thereby the flange E² is held close up against the forward end of the casing. The end of the hasp C is provided with a hook C' similar to the hook E³⁰ on the end of the arm E³ of the rotating element E, and the casing D is designed to be mounted on the car-body in such relation to the hasp C when the latter is in locked position—that is, lodged about the staple and secured by the bolt—that the seal M, made of sheet metal and provided with two eyes M' M' at the op- 100

posite ends, respectively, may be engaged by the two hooks C' and E^{30} , the engagement being effected with the hook of the hasp before it is lodged on the staple and with the hook E^{30} before the arm E^3 is brought to the up-
 5 standing position shown in Fig. 1. The lodgment of the hasp C over the staple in locking position and the falling of the arm E^{31} , due to its weight, into the horizontal position
 10 shown in Fig. 1, tending to bring the arm E^3 into the upright position shown, draws both hooks through the eyes into position from which disengagement is impossible without reversing the element E —that is, rocking it
 15 backward to carry the arm E^3 to the right from the position in which it appears in Fig. 1 and at the same time withdrawing the hasp C from the staple. It will be seen, therefore, that if means is provided for pre-
 20 venting the reverse rotation of the element E from the position shown in Fig. 1, at which the hook E^{30} is fully engaged with the eye of the seal, it will be impossible to remove the seal without breaking it, and since it will
 25 be impossible to open the door A' without first withdrawing the hasp free from the staple and then withdrawing the staple endwise with the door by moving the latter to the right it will be impossible to open the door
 30 without rupturing the seal. In order to prevent the reverse rotation of the element E , and thereby render it impossible to open the car-door without rupturing the seal, I provide within the casing D the dog or pawl F ,
 35 pivoted so as to lodge by gravity upon the upper side of the element E , said element having a notch at e , forming an abrupt shoulder by which the dog engages said element to prevent its reverse rotation. In order con-
 40 veniently to pivot the dog F in the casing, an interior lug D^2 is provided at the rear side, the dog being inserted between the lug and the forward wall, the pivot-pin F^2 being
 45 passed through said lug, which is bored for that purpose, and through the dog into the socket d^2 , bored for it in the front wall of the casing, and the back plate D' being after-
 50 ward inserted secures the parts in position, as shown in Fig. 2. A plate H , made of spring-steel, is inserted as a lining for the front wall of the casing, so that it will be
 55 practically impossible to reach the dog F by drilling through the front in order to manipulate the dog. The form of this plate is seen in Fig. 10, the gap H' permitting it to be
 60 gotten past the lug D^2 and said gap and the notch H^2 adapting it to be gotten into place between the lugs d^4 d^4 and the front wall, after which it is turned to bring the circular
 65 openings H^3 and H^4 into position for the element E and the pivot-pin F^2 , respectively. In order to guard said pivot-pin from attack from the exterior, I lodge in front of it in the socket d^2 the hard-steel disk h before the
 pivot-pin is inserted. In order to prevent reaching the pawl by drilling in from the pe-

riphery of the case, I lodge within the latter a spring-steel lining J , made up from a blank of spring-steel, (shown in Fig. 11,) which may
 70 be coiled within the case and secured in proper position by engaging at one edge with the lugs d^4 d^4 , which also serve to retain the
 75 plate H . Notches $J' J'$ are provided for engagement with said lugs, and the notch J^2 at the opposite side accommodates the lug D^2 .
 Still further to increase the difficulty of manipulating the dog by any implement which might be introduced through the case in any
 80 direction I make the dog not in a single piece, but, in fact, as a plurality of dogs, each of thin steel plate, as seen in Fig. 2, each being
 85 hung loosely upon the pivot and adapted to move independently, (except as they may affect each other by lateral friction,) so that in order to effectively release the element E to
 90 permit it to be reversed all of the separate dogs $F' F' F'$, &c., making up the compound dog F must be lifted at the same time, any one of them remaining unlifted being sufficient
 95 to prevent the reversion of the element E . These dogs F' being, if desired, of hardened steel will resist drilling, which might be attempted in order to lift them all together by a wire thrust through them. One of the dogs
 100 or plates making up the complete dog F may be made a little shorter than the remainder, as the plate or dog f is shown in Figs. 2 and 3. The purpose of this is to cause that dog
 105 to become engaged with the element E a little before the other dog drops into the notch. The purpose of this is to prevent collusion between the person who may be charged with the duty of sealing the car and any confederate who might be designing to obtain access
 110 thereto, the sealer in that case taking pains to avoid throwing the arm E^{31} over to horizontal position, but throwing it far enough so that the seal will apparently be in proper position on both hooks, the slack or play in the eyes of the seal permitting this to be done
 115 without actually getting the element E in position to be fully locked by the dogs of full length. By wedging the arm E^{31} in this position, as might readily be done with a chip or piece of paper, it might escape attention
 120 until the confederate had opportunity to reverse it and gain access to the car without destroying the seal. The short dog f , however, is designed to be enough shorter than the remainder, so that in order to be arrested
 125 at a position which would prevent that dog from dropping into the notch and engaging the shoulder e the seal would have to be bent or sprung forward and distorted and the position of the arms E^3 and E^{31} would be so manifestly incorrect as to attract attention at a glance.

In order to make it as difficult as possible to cut the seal at the eyes so as to release it and resecure it in a manner to avoid detec-
 130 tion by casual scrutiny, I fortify each of the eyes $M' M'$ by a steel ring m' , about which

the metal of the seal is folded, as seen in Fig. 5. This is not absolutely essential, but I consider it a very efficient protection against the method of tampering with the device, which would consist of clipping the seal at the eye, so as to release it from the hook. The eye may, however, be made as shown in Fig. 6, showing the sheet metal at the margin of the eye, being merely rolled to form a hollow bead M^{10} around the eye or struck up in the form of a V-shaped bead, also hollow—that is, concave on one side—as shown in Fig. 7. Any attempt to clip the eye through either of these hollow beads will so crush the bead as to make the interference obvious at a glance, and even after clipping has been done the lateral bending of the seal, which would be necessary to disengage the eye from the hook, will be almost certain to break the bead at a point other than that at which it is clipped, making the interference still more apparent.

In order to insure the seal breaking readily and at a proper point, so as not to mutilate the eyes, but leave them in condition to be readily inspected afterward if necessary to determine whether they have been tampered with, I make it in the form shown, being a segment of an annulus in shape, and weaken it at the middle point of the inner curve, as by the aperture m extending nearly to the edge, so that when a rupture is made either by sliding the door or by rotating the element E to carry the hook E^{30} to the left, (which may be done by means of the arm E^{31}), it will break transversely substantially at the line 8 8 on Fig. 4—that is, through the aperture m . In order that the seal may retain its form until forcibly ruptured, it is preferable to emboss it or strike it up throughout the middle portion of its length—that is, between the eyes—as shown at M^4 in Figs. 4 and 8.

I claim—

1. In a seal-lock, in combination with a locking element having a seal-engaging feature, a second element having also a seal-engaging feature, and a seal adapted to be received by said features respectively; one of the seal-engaging elements having a range of movement from its seal-receiving position to a seal-retaining position; automatic means for moving it from seal-receiving to seal-retaining position; and automatic means for locking it at the latter position against reverse movement.

2. In a locking device, in combination with a seal adapted to be engaged at two points, two elements mounted respectively on the two parts or things which are to be secured against separation by the locking device; said elements having respectively features for engaging the seal at said two points respectively; one of said elements being rotatable from the position at which the seal may be engaged with both elements, in a direction to increase the distance between said features; and means

preventing its rotation in the opposite direction.

3. In a seal-lock, in combination with a seal adapted to be engaged at two points, two elements which receive and engage the seal at such points respectively; one of said seal-engaging elements being rotatable, and constructed and supported so as to be rotated automatically by gravity from seal-receiving position to a seal-retaining position; and automatic means for locking it against reverse movement from such seal-retaining position.

4. In a seal-lock, in combination with a seal adapted to be engaged at two points, two elements which engage it at such two points respectively; one of said seal-engaging elements being rotatable, and having a seal-engaging feature, in the form of a hook, located eccentrically with respect to the axis of rotation, and projecting approximately tangentially with respect to its path of rotation, whereby at its nearest position to the seal-engaging feature of the other element the seal may be engaged with such hook without longitudinal movement of the seal, and rotation of such rotatable element through less than ninety degrees causes the hook to extend away from the other seal-engaging feature; and means for locking said rotatable element against reverse rotation from such position.

5. In a seal-lock, in combination with the casing, a seal-engaging element journaled therein; a dog which prevents rotation of said element except in seal-rupturing direction, such dog consisting of a plurality of plates each operating as an independent dog.

6. In a seal-lock, in combination with the casing, a seal-engaging element journaled therein, and a plurality of independently-operating dogs engaging such journaled element to prevent its rotation away from seal-retaining position except in seal-rupturing direction.

7. In a seal-lock, in combination with the casing, a seal-engaging element journaled therein, and a plurality of independently-operating dogs engaging such journaled element to prevent its rotation away from seal-retaining position except in seal-rupturing direction, one of said dogs being arranged to engage said element a little before the remainder of the dogs engage it.

8. In a seal-lock, in combination with the casing, a seal-engaging element journaled therein; a dog which prevents rotation of such element except in seal-rupturing direction; such dog consisting of a plurality of plates, all mounted on the same pivot and each operating as an independent dog, one of said plates being slightly shorter than the remainder, whereby it engages the seal-engaging element a little before the remainder of the plates engage said element.

9. In a seal-lock, in combination with the casing, a seal-engaging element journaled therein adapted by rotation in one direction

to rupture the seal; a dog engaging such jour-
naled element to prevent its rotation away
from seal-engaging position except in seal-
rupturing direction; and a steel lining lodged
5 within the casing encompassing such dog.

10. In a seal-lock, in combination with the
casing, a seal-engaging element journaled
therein, adapted by rotation in one direction
to rupture the seal; a dog lodged in the cas-
10 ing engaging such journaled element to pre-
vent its rotation away from seal-engaging po-
sition except in seal-rupturing direction; and

a steel disk lodged in the casing as a lining to
the outer end wall, apertured for the jour-
naled element and guarding the dog against 15
attack from the front.

In testimony whereof I have hereunto set
my hand, at Hastings, Michigan, in the pres-
ence of two witnesses, this 7th day of March,
A. D. 1901.

EMIL TYDEN.

In presence of—

A. C. BROWN,
NORA COOPER.