No. 647,052. Patented Apr. 10, 1900.

E. TYDEN.

SEAL.

(Application filed Apr. 29, 1899.)

(No Model.)

Fig. 1.

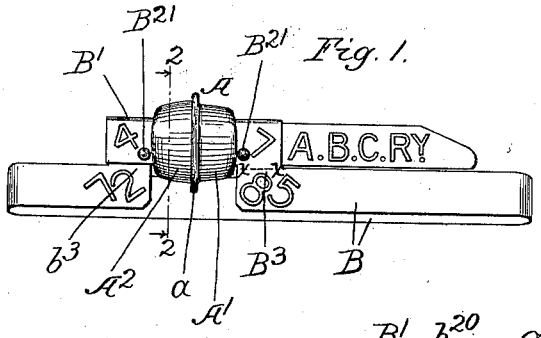


Fig. 4.

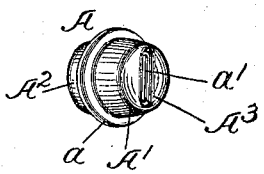


Fig. 2.

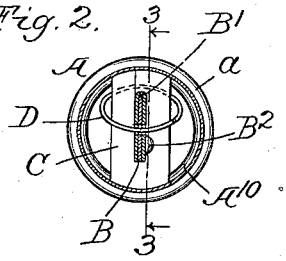
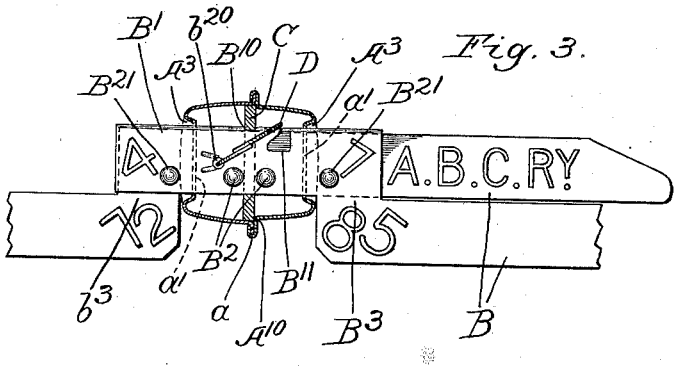


Fig. 3.



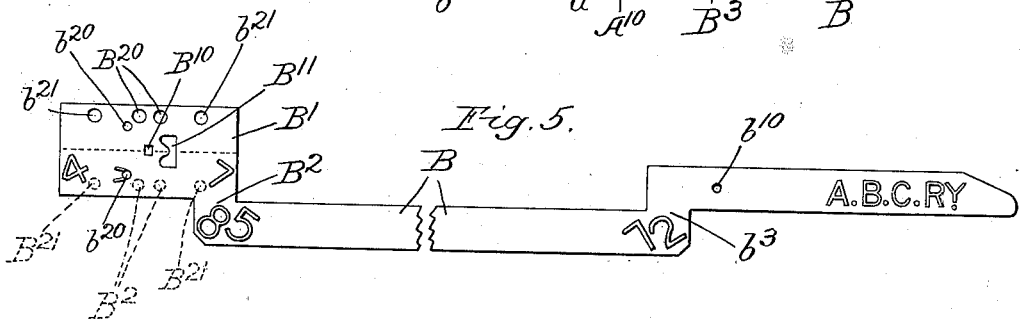


Fig. 5.

Fig. 6.

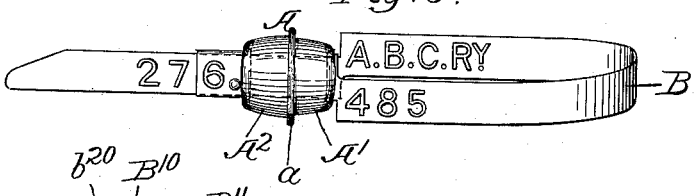


Fig. 8.

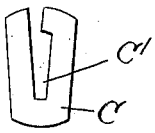
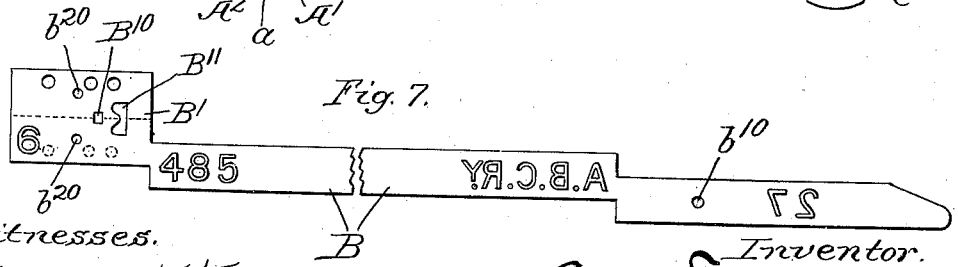


Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

EMIL TYDEN, OF HASTINGS, MICHIGAN, ASSIGNOR TO THE INTERNATIONAL SEAL AND LOCK COMPANY, OF SAME PLACE.

SEAL.

SPECIFICATION forming part of Letters Patent No. 647,052, dated April 10, 1900.

Application filed April 29, 1899. Serial No. 715,071. (No model.)

To all whom it may concern:

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

This invention is an improvement in self-locking seals.

It consists of the details and special features of construction which are particularly set out in the claims.

Figure 1 is a front elevation of my improved self-locking seal in one of its forms, the same being shown locked. Fig. 2 is a transverse section at the plane of the line 2 2 on Fig. 1. Fig. 3 is a section at the line 3 3 on Fig. 2. Fig. 4 is a perspective of the shell without the strap. Fig. 5 is a plan of the strap detached from the shell of the form shown in Fig. 1. Fig. 6 is an elevation of a modified form. Fig. 7 is a plan of the strap-blank for the form of seal shown in Fig. 6. Fig. 8 is a plan of the strap-engaging diaphragm or interior brace for the shell.

In my improved seal, as shown in the above-described figures, A represents the shell, composed of the two members A′ and A^2, each of which is in the form of a cup, such cups being joined by an ordinary metal seam at their periphery or margin, constituting when joined a shell which is circular about a longitudinal axis transverse to the plane of their junction-seam *a*. Each member has at the otherwise-closed end a narrow slit *a′ a′*, designed to accommodate the secured end of the strap, which is folded, as hereinafter described, to form a sheath for the free end.

B is the strap. At one end it has a wing or lateral extension B′, which is folded upon the strap, forming a sheath, as above stated, for the free end of the strap. The slots *a′ a′* in the opposite ends of the shell are of suitable size to permit the sheath to be inserted through said slots and to extend longitudinally through the shell in a plane therefore at right angles to the junction-seam *a*. The end of the strap thus provided with the sheath and extended through the shell is arranged to be secured fast to the shell, as hereinafter described, and it will be noticed that this mode of construction not only greatly simplifies the structure as compared with prior forms in which the strap has been extended through the shell in the plane of the junction-seam, interrupting its continuity and complicating its construction, but it also results in the production of a shell which has greater structural strength than can be given to a shell of similar size and thickness of metal, in which the seam is more or less interrupted in order to permit formation of the throat or passage-way for the strap. This feature is of especial importance in connection with the other features of construction hereinafter described, particularly the diaphragm employed for the purpose of not only securing the strap more firmly in the shell, but so securing it that forcible extraction of the strap will destroy the shell. C is such diaphragm or bridge. It is made of sheet metal, as steel, which is heavy relatively to the thickness of the sheet metal employed in the formation of the shell and strap, being usually from a tenth to a sixth of an inch in thickness. This bridge or diaphragm extends across the shell substantially at the plane of the junction-seam—that is, at right angles to the axis of the shell—and it is preferably arranged to lodge at opposite ends or sides against the shoulder A^{10}, formed on the member A′, which is the member through which the shaft emerges toward the free end thereof. This member also preferably has its marginal edge folded outside the marginal edge of the other member in the formation of the junction-seam *a*. This bridge or diaphragm C has a slot C′ of suitable dimension to permit the insertion of the sheath B′ through it, but fitting it so closely that after it has been slipped onto the sheath a blow at the end of the bridge in the plane of the width of the sheath will cause the edge or end of the slot to sink slightly into the notch B^{10}, which is formed in the folded side of the sheath, and thus cause the bridge or diaphragm to become securely engaged with the sheath. If a more secure engagement of the sheath and bridge is desired, I split the bridge at one end from the end of the slot to the margin and spread it slightly, as seen in Fig.

8, in order to allow it to be passed onto the sheath and then close it up when the notch B^{10} is reached. In this manner any depth of engagement desired may be obtained between the bridge and the notch of the sheath. As a further means of securing the bridge fast with respect to the sheath, and thereby the strap, I sometimes employ the prominent bosses B^2 B^2, struck up outwardly from one wall of the sheath at opposite sides of the bridge, thus preventing it from moving either way with respect to the sheath. Obviously at least one of the bosses must be formed after the bridge is in position on the sheath. In practice I form both bosses after the bridge is placed on the sheath, and in order to do so I make the apertures B^{20} B^{20} in the opposite wall of the sheath at position opposite the desired location of the bosses, and when the bridge has been passed onto the sheath I strike with a proper tool through the apertures B^{20} and form the bosses B^2, as described, protruding outwardly at opposite sides of the bridge.

The locking device of this seal is the same as in my former seals—that is to say, an open ring D, which is held spread by the sheath B', adapted to be drawn by the engagement of the inserted end of the strap to a position where its ends will extend through the apertures b^{20} b^{20} in the opposite wall of the sheath and lap past each other through the aperture b^{10} in the inserted end of the strap. The sheath has in its folded side the notch B^{11} to accommodate the ring when it is in position occupied before locking by the insertion of the free end of the strap. It may be noted also that the ring is so located as to encompass the diaphragm or bridge. For the purpose of further securing the end of the strap in the shell I employ the bosses B^{21} B^{21}, struck outwardly from one wall of the sheath at the ends of the shell exterior thereto, and in order to form these bosses after the strap is in position extending through the shell, as is necessary, I employ the same expedient above described with respect to the bosses B^2 B^2—that is to say, in the opposite wall of the sheath I form the apertures b^{21} b^{21}, through which the tool protrudes and operates in forming the bosses B^{21} B^{21}.

In view of the character of my locking device, which renders the seal practically incapable of being picked, the method of obtaining access to the bag, package, or car secured by the seal which is most likely to be resorted to consists in cutting off the strap close to the shell or body, removing the entire seal, and then replacing it by tucking the severed end into the shell far enough to cause it to be temporarily retained, so that the tampering to which the seal has been subjected, as described, will not be discovered at a glance, and if the severed and inserted end is sufficiently held in the shell when tucked back into it, as stated, the tampering may not even be discovered by taking hold of the seal unless the parts are pulled with considerable force, so as to disclose the fact that the strap has been cut. Certain features of my present invention, therefore, are directed to overcoming this difficulty and making it impossible to tamper with the seals in the manner described without causing such tampering to be obvious at a glance or at least upon the slightest handling of the seal by the inspector. One of the expedients which I adopt for this purpose consists in forming at the exterior of the shell around the margin of the apertures through which the strap is inserted—that is to say, around the sheath where it protrudes from the shell—recesses or depressions A^3 A^3. This makes it exceedingly difficult to sever the strap by cutting across the sheath close to the aperture, as is necessary in order that the fact of severance shall not be manifest at a glance by the appearance of the severed end. In order to sever the sheath close to the aperture, it will be necessary to provide a special tool of peculiar adaptation to enter the recess and reach the bottom of it and cut the sheath. The best that could be done with any ordinary tool, as a file or shears, would be to cut off the sheath so as to leave it protruding at least the full depth of the recess. A more important expedient for the same general purpose, however, consists in forming the strap so that immediately outside the shell it is offset laterally edgewise, as distinctly shown in the drawings. This expedient may be employed not only at the end which is made fast to the shell, but also at the other end, which is designed to be inserted through the shell and secured by the locking device therein. Such offset is shown at B^3 just outside the shell at the secured end and at b^3 just outside the shell at the inserted end of the strap. When this offset amounts to substantially the width of the strap, as in the form shown in Fig. 1, the offset portion at the secured end of the shaft will stand alongside the inserted end, such portion of the inserted end being the extremity which is protruded entirely through the shell and exposed beyond it when the lock is used in the form shown in Fig. 1, but being a portion farther back from the end when the device is used in the form shown in Fig. 6. When a serial number or other identifying character or series of characters is presented on the face of that portion of the strap which thus stands along the offset portion of the secured end and to a somewhat less extent, even when there is no character thus shown, any tampering with the device which prevents these two portions of the strap standing edgewise adjacent to each other near the shell at the secured end of the strap will be very quickly perceived by the inspector, even without close attention, and it will be observed that on account of the formation of the strap with this offset it will be impossible to sever it in such manner as to leave an end which can be tucked back into the shell or give the appear-

ance of being properly connected without bringing the offset portion up behind or in front of the adjacent portion of the strap, and by locating a portion of the identifying character or number on the offset portion of the strap which may be thus severed in tampering with the seal, whether this offset portion when severed is tucked in behind or in front of the adjacent portion of the strap, some portion of the characters will be concealed—that is to say, either the portion which is on the face of the offset and severed end of the strap or the portion which is on the adjacent portion of the strap. Thus in Fig. 1 there is shown a serial number, part of which, the figures "7 2 8 5," is on the offset portion of the strap, and on the portion of the inserted end which stands alongside this offset portion I have shown another portion of the identifying-mark—for example, the initials of the road or company which attached the seal. Now practically the only way of severing the strap, so as to make it possible to tuck the severed end again into the shell or sheath, would be to cut it at the dotted line $x\ x$ between the figures "7" and "8," and this being done, if the severed end bearing the numerals were tucked either behind or in front of the portion of the strap having the characters "A B C Ry," either the numerals on the severed and reinserted end or the characters on the other portion would be hidden. Of similar nature is the expedient consisting of the location of part of the serial number or other identifying character on the strap immediately adjacent to the shell and another part at the commencement of the offset portion of the strap. Thus in Fig. 1 the serial number being "724,785," the second numeral "7" is on the secured end of the strap immediately adjacent to the shell at the side at which the strap emerges and runs toward the free end and the numeral "8" is located at the commencement of the offset portion. Now if the strap is severed at $x\ x$ and the severed end is tucked back into the sheath or adjacent to it into the shell either the figure "7" on the protruding end of the sheath or the figure "8" on the commencement of the severed offset portion will be wholly or partly hidden. An extension of this expedient and one which affords additional protection in certain respects consists in setting the figures on the offset portion of the strap in inclined or italicized position, so that when the severed end is tucked into the sheath either the first character of such severed end will be only partly hidden or the second character will be partly hidden and partly exposed, or both the first and second characters will be partly hidden and partly exposed. Such partial concealment and partial exposure will not fail to attract the attention of an inspector and cause him to suspect tampering and lead him to test the seal, even though he is unfamiliar with the proper appearance of the seal.

There are involved in the structure above described, consisting of offsetting the seal and in the mode of locating the identifying numbers or characters thereon, two distinguishing methods of detecting tampering. Both of these methods are important for different reasons. These seals, it will be understood, are to be used largely in sealing railway-cars which pass from one railroad to another. While they are on the line of road which employs and applies the seals, the employees or inspectors being familiar with the seal and the method in which it is designed to be inspected will at once observe any change such as would be involved in severing the strap and tucking the end back into the body, so as to remove or obscure the offset outline which the seal would have if it had not been tampered with. This is sufficient for those who are familiar with the seal; but when the seals are passed onto other roads, where the inspectors or employees are not familiar with the proper mode of inspection, this disfigurement will not attract attention; but in such case the inspectors undertaking to record the number of the seal would either entirely fail to get one of the figures (whichever one happened to be concealed by the tucking process) or if the end were not so far tucked as to conceal the figures would discover the partial figure protruding, and in order to read it all would pull the end of the strap out, and thus discover the fact that the seal had been tampered with. If the inspector in such case fails to get one of the figures, his report when compared with the record will show the fact that one figure was concealed, and would thus enable the road which applied the seal and which has the record of its number to establish the fact that it had been tampered with before it reached the inspector who first reported it with the missing figure. Inasmuch as there is a possibility of tampering with the seal in the same manner by cutting the strap at the other end—that is, cutting off the inserted end adjacent to the shell—the same expedients may be adopted at that end, the offset being made in the same way, and identifying characters may be similarly applied, part on the protruding end of the sheath or secured portion of the strap and part on the laterally-adjacent offset portion of the inserted end.

When the seal is used by inserting the free end into the end of the shell from which the fixed end extends, as illustrated in Fig. 6, a form which is in some respects to be preferred is obtained by offsetting the strap just outside the shell about half the width instead of the entire width of the strap, as shown in the other figures. This causes the two offset portions to stand substantially laterally adjacent when the seal is locked.

I claim—

1. In a self-locking seal, in combination with a shell or body and a strap joined fast to the shell at one end and deflected or offset edgewise close to the junction; the shell hav-

ing a throat or passage for the free end of the strap in position causing the latter when inserted to stand with a portion which is exposed outside said shell edgewise adjacent to the offset portion of the secured end.

2. In a self-locking seal, in combination with a shell or body and a strap joined fast to the shell at one end; the shell having a throat or passage through it for the free end, the strap being offset edgewise a distance back from the extremity of the free end, and a securing device in the shell which engages the free end when inserted substantially to the offset shoulder.

3. In a self-locking seal, in combination with a shell or body and a strap joined fast thereto at one end and deflected or offset edgewise close to said junction, the shell having a throat or passage through it for the free end, the strap being offset edgewise a distance back from the extremity of the free end, and a securing device in the shell which engages the free end when inserted substantially to the offset shoulder.

4. In a self-locking seal, in combination with a shell or body and a strap joined fast to the shell at one end and deflected or offset edgewise close to its said junction outside the shell, the shell having a throat or passage through it for the free end of the strap in position causing the strap, when inserted through such throat, to stand exposed alongside the offset portion of the strap outside the body, and having an identifying character or characters on its face at such exposed portion.

5. In a self-locking seal, in combination with a shell or body and a strap joined fast to the shell at one end and deflected or offset edgewise close to its said junction outside the shell, the shell having a throat or passage through it for the free end of the strap in position causing the strap, when inserted through such throat, to stand exposed alongside the offset portion of the strap outside the body, the offset portion of the strap and such exposed portion alongside the same having each portions of the complete identifying mark or marks pertaining to the seal.

6. In a self-locking seal, in combination with a body or shell, a strap extending therefrom and offset edgewise outside the shell, and having an identifying character or number, one part or figure of which is just outside the shell, another part or figure being at the commencement of the offset portion of the strap.

7. In a self-locking seal, in combination with the body or shell, a strap extending therefrom to the shell and offset edgewise outside the shell, having an identifying-number or other mark, one figure or character of which is just outside the shell, another part being on the offset portion of the strap, the latter portion having the figures or characters inclined so that they are overhung by the adjacent figures.

8. In a self-locking seal, in combination with a shell or body, a strap having one end inserted through the shell or body and having a prominent boss struck up from one face immediately exterior to the shell securing the end of the strap to the shell, the shell having a throat or passage-way through it for the free end of the strap alongside the secured ends.

9. In a self-locking seal, in combination with a shell or body, a strap having one end made fast in the body and extending therefrom, and a diaphragm in the shell transverse to the length of the strap and interlocked therewith.

10. In a self-locking seal, in combination with a body or shell, a diaphragm therein, the strap having one end secured in the shell and interlocked with the diaphragm, the shell and diaphragm being suitably apertured to admit the free end of the strap, and suitable devices in the shell to engage the end when inserted.

11. In a self-locking seal, in combination with a shell or body, a strap having one end portion made fast to the shell or body and extending therefrom, such shell or body being composed of two parts of sheet metal united at a plane transverse to the direction of the lengthwise extent of the strap from the body.

12. In a self-locking seal, in combination with a shell or body, a strap having one end portion made fast in the shell or body and emerging therefrom, such shell or body being composed of two parts of sheet metal united at a plane transverse to the longitudinal direction of the strap to the body; the part through which the strap emerges at the free end having a shoulder adjacent to the seal and facing toward the other part, and a diaphragm lodged on such shoulder and interlocked with the strap.

13. In a self-locking seal, in combination with a shell or body, a strap which is provided at one end with a sheath adapted to receive the other end, said end having the sheath made fast to the body, the remainder of the strap protruding therefrom, and said sheath constituting a throat or passage-way through the body for the free end of the strap, a diaphragm in the shell transverse to the length of the strap and interlocked with the sheath, whereby the strap is made fast to the body.

14. In a self-locking seal, in combination with a shell or body, a strap which is provided at one end with a sheath adapted to receive the other end, said end having the sheath being inserted through the shell or body, and the sheath forming a throat or passage-way through the body for the free end of the strap; a diaphragm in the shell through which the sheath extends and with which it is interlocked and by which it is secured to the shell; a locking-ring having its ends spread by the sheath located transversely encompassing the diaphragm.

15. In a self-locking seal, in combination with a shell or body, the strap having one end provided with a sheath adapted to receive the

other end, said end having the sheath being extended through the shell or body, said sheath constituting a throat or passage-way through the body for the free end of the strap; a diaphragm in the shell or body through which the sheath extends, one side of the sheath having prominent bosses struck up outwardly at opposite sides of the diaphragm to engage the sheath with the diaphragm the opposite side of said sheath having apertures in position opposite the bosses to permit such bosses to be struck up outwardly, as described, without obstructing the throatway or passage through the sheath for the free end of the strap.

In testimony whereof I have hereunto set my hand, at Hastings, Michigan, this 20th day of April, 1899.

EMIL TYDEN.

Witnesses:
H. G. HAYES,
WM. M. STEBBINS.