(No Model.)

E. J. BROOKS.

LEAD AND WIRE SEAL.

No. 294,193. Patented Feb. 26, 1884.

Fig. 1.

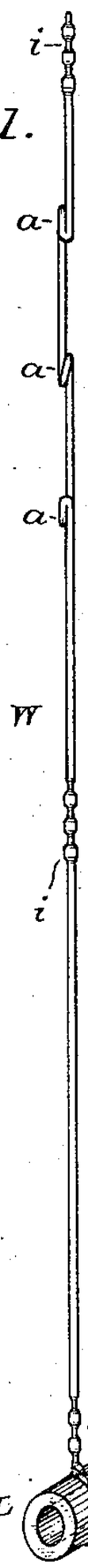


Fig. 2.

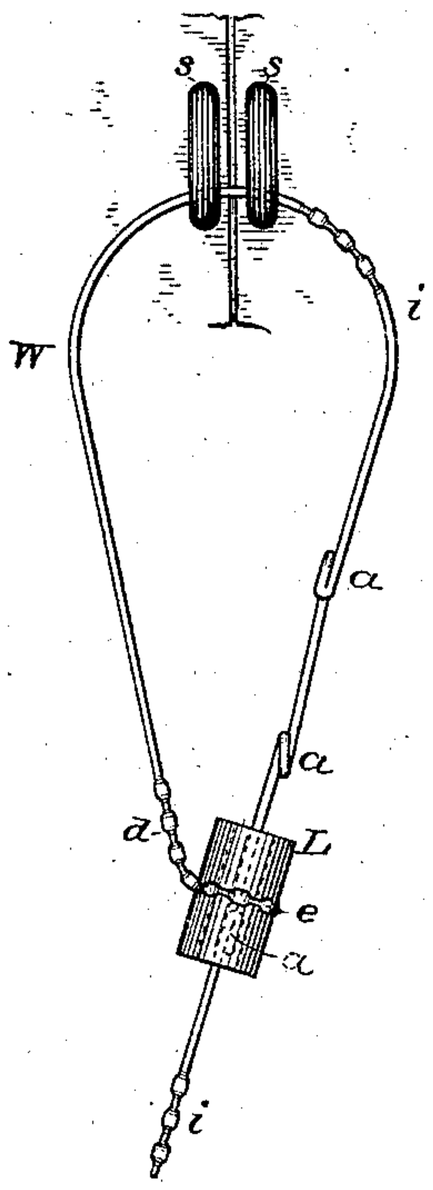


Fig. 3.

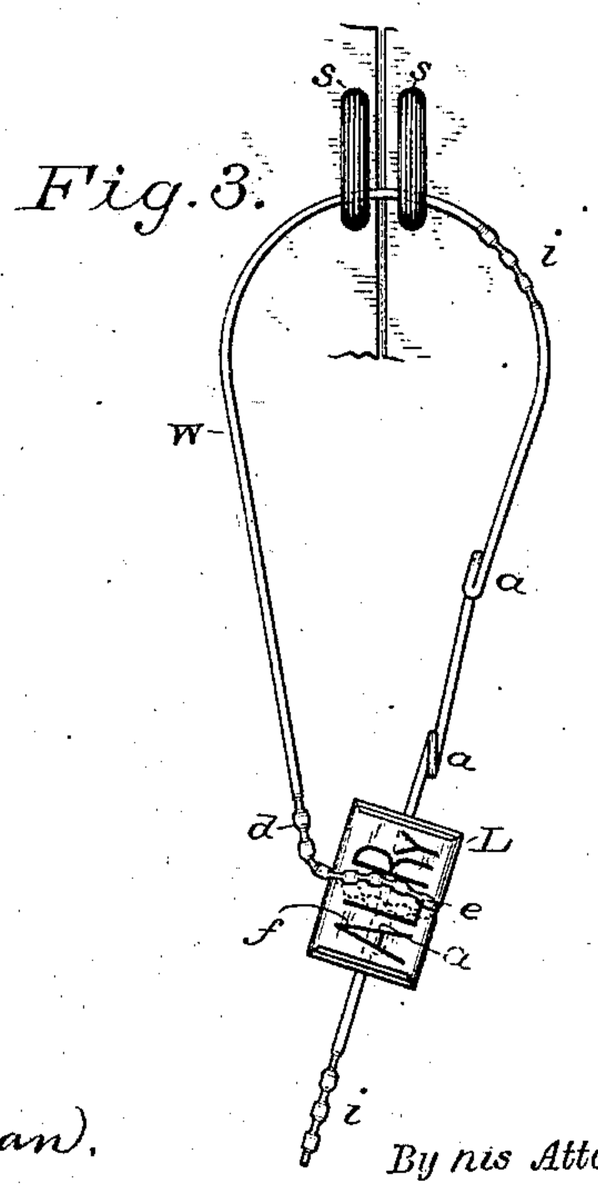
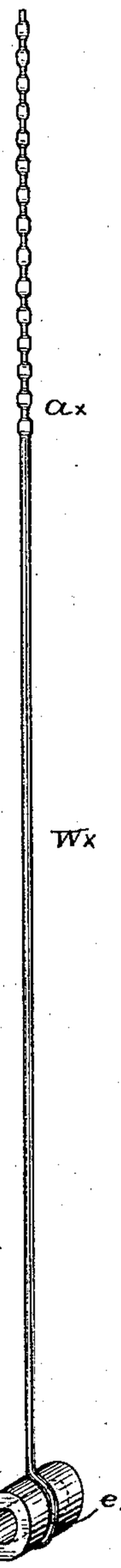


Fig. 4.



WITNESSES

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LEAD-AND-WIRE SEAL.

SPECIFICATION forming part of Letters Patent No. 294,193, dated February 26, 1884.

Application filed December 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. BROOKS, a citizen of the United States, residing at East Orange, in the State of New Jersey, have invented a new and useful Improvement in Lead-and-Wire Seals, of which the following is a specification.

This invention is in continuation of my series of improvements in "lead-and-wire" seals. Those heretofore patented are described and claimed in my specifications forming part of United States Patents No. 154,639, dated September 1, 1874; No. 161,475, dated March 30, 1875; No. 179,260, dated June 27, 1876; No. 192,735, dated July 3, 1877; No. 253,674, dated February 14, 1882, and No. 278,866, dated June 5, 1883. My present lead-and-wire seal is of novel form, and embodies certain advantageous new combinations of parts, as hereinafter described and claimed. The objects accomplished therein are provision for greater economy of lead than has heretofore been possible, so far as I am aware, in the production of lead-and-wire seals; provision for affording a large area of available lettering-space or face-space in proportion to the weight of the seal, and for readily making seals with more or less face-space, to suit the requirements of different users, and provision for rendering the lead "cast-in," and for rendering the respective ends of the wire secure against "stripping," and also against counterfeiting, so as to insure detection should the seal be violated.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of these drawings is a perspective view of my present seal aforesaid as it leaves the factory. Fig. 2 is an elevation thereof as applied to a car, but unpressed. Fig. 3 is a like view of the same pressed or sealed; and Fig. 4 is a view similar to Fig. 1 of a seal embodying the same invention in part, illustrating modifications.

Like letters of reference indicate corresponding parts in the several figures.

The parts and features of construction common to the two seals shown by the drawings are a leaden part, L or L^x, of tubular form, and a wire or wire "shackle," W or W^x, of which the former is cast-in by being cast fast within an embracing loop or eye, *e*, of the wire at one end of the latter, and thus permanently united therewith, while the other end of the wire is provided with "anchoring" devices *a* or a^x, to coact with said eye *e* and with the lead within said leaden part L when the latter is pressed or sealed, as shown in Fig. 3. Said anchoring devices a^x of the second seal are those peculiar to my "detective" or "detector" single wire for seals, as described and claimed in said Patent No. 179,260, and may illustrate those anchoring provisions peculiar to the wire itself, including the recesses of "cable" wire. With either kind of wire the tubular cast-in leaden part is the same, and is adapted to be made very light, and at the same time, when pressed, affords a large available face-space, *f*, Fig. 3, and is peculiarly adapted, by simply varying its length, to afford more or less face-space, as desired. Not only so, either kind of wire, being of ordinary size and properly annealed, forms a stiff eye, *e* or e^x, which, when flattened in the pressing operation, as indicated in Fig. 3, tends to lock the threaded end of the wire in the manner set forth in my specification forming part of said Patent No. 154,639, and to resist reopening it to release said threaded end, notwithstanding the location of said eye outside of the lead, and in any case renders the seal superior, as regards security, to those lead-and-wire seals known as "common seals," in which the solidification of lead alone is relied on to lock the threaded wire end. In the preferred construction represented by Figs. 1, 2, and 3, that portion of the wire W which forms said loop or eye *e* is provided with detector-indentations *d*, for the purpose of guarding the more or less exposed eye against being tampered with without detection. They do this not only by manifesting the original length of the wire, so as to provide for detecting any shortening thereof, and consequently any attempt to avoid detection by refastening this end of the wire, as set forth in said Patent No. 278,866, but peculiarly by insuring the breaking of the wire at the eye *e*, should any attempt be made to open the latter, as well as

by necessitating a greater defacement of the lead than would otherwise be necessarily involved in separating the wire which forms the eye from the surface of the pressed lead, should this be attempted. The anchoring devices *a* of said preferred form are, moreover, my superior bent-up "anchoring projections" described and claimed in said Patent No. 192,735, and further set forth as to advantages in said Patent No. 278,866, which are readily formed in part at the same operation as said eye *e* in the process of manufacture, and interlock with peculiar efficiency with the eye *e* after the latter is flattened in the pressing operation, as aforesaid, effectually preventing stripping in the best way known to me. They provide, also, when two or more are used, for indicating that section of a railroad on which a car was sealed—for example, the outer enlargement indicating first, the next second, and so on—as well as for making the loop of the pressed seal longer or shorter, as may be desired. Finally, said wire W, of the preferred construction, is provided with detector-indentations *i*, located at the extremity of its threading end, which carries said anchoring projections *a*, and at a corresponding distance from the innermost projection, (or at the latter point alone.) These detector-indentations *i* not only indicate whether or not this end of the wire has been cut off in violating the seal in the manner set forth in said Patent No. 278,866, but by corresponding in number, as exposed at each face of the wire by each group, with the original anchoring projections, indicate the number of the latter which should appear, and also their location on the wire, and would render visible that shortening which would result from cutting the threading end of the wire close above the lead, and inserting the freed end with the aid of an opening-tool, to conceal the violation.

The process of manufacture hereinbefore referred to, while it forms no part of this invention, may be briefly stated with reference to said preferred form, as shown in Figs. 1, 2, and 3, as follows: The wire W is "indented" and cut into suitable lengths at the wire-mill in its original production, and can only be so indented with the aid of heat and dies, which is the basis of its detective qualities. It is next provided, by a series of coiling operations, with loops or eyes, one of which forms the eye *e*, while the remainder, closed by pressure or hammering, form the projections *a*. Said eye *e* is then inserted in a suitable mold, and the lead is cast within it, as aforesaid, to form the leaden part L. A number are cast at one operation, and the sprues are cut from each mold-full at one time. The seals are shipped and carried "straight," as shown in Fig. 1. After inserting the threading end of the wire W through a pair of sealing-staples, *s s*, or the like, and then through the leaden part L, so as to locate one of the anchoring projections *a* within or below the latter, the seal, as shown in Fig. 2, is ready for pressing or sealing. A suitable seal-press is then applied thereto in customary manner, and it is flattened, together with the eye *e*, so as to securely lock said threaded end, and at the same time to provide its large face *f* (and also its back, if desired) with appropriate lettering or distinguishing-marks, as indicated. The other end of the wire is permanently united with the lead by means of said eye, and provision is made by said indentations for detecting any attempt to counterfeit either end in a violated seal, as already set forth.

Having thus described my said improvement in lead-and-wire seals, I claim as my invention and desire to protect under this specification—

1. An improved lead-and-wire seal having a tubular leaden part cast fast within an eye at one extremity of its wire, substantially as herein specified, for the purposes set forth.

2. The combination, in a lead-and-wire seal, of a tubular leaden part and a wire having an eye at one extremity to embrace said leaden part, and provided at its other end with anchoring devices, substantially as herein described, for the purposes set forth.

3. The combination, in a lead-and-wire seal, of a tubular leaden part and a wire having at one extremity an eye, *e*, within which said leaden part is cast fast, and at its other end anchoring devices, with detector-indentations *d* in that end of the wire which forms said eye, substantially as herein specified, for the purposes set forth.

EDWARD J. BROOKS.

Witnesses:
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H. L. C. WEISS.