No. 656,906. Patented Aug. 28, 1900.

A. B. SCHOFIELD.

SEAL.

(Application filed Dec. 1, 1899.)

(No Model.)

Fig. 1.

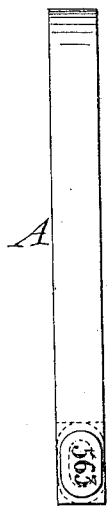

Fig. 2.

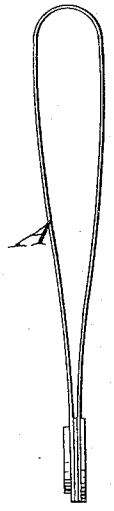

Fig. 3.

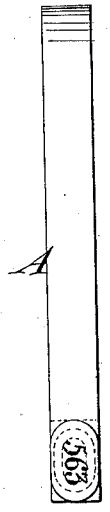

Fig. 5.

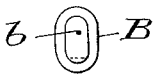

Fig. 4.

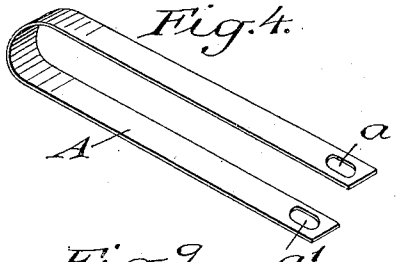

Fig. 6.

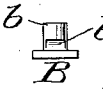

Fig. 7.

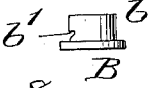

Fig. 8.

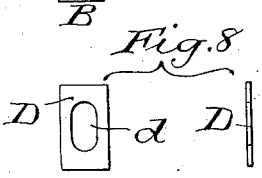

Fig. 9.

Fig. 11.

Fig. 10.

Fig. 12.

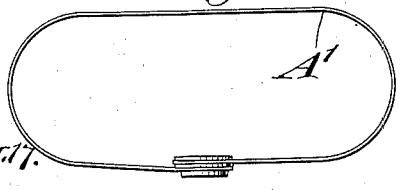

Fig. 14.

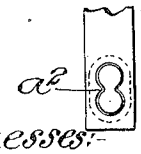

Fig. 16.

Fig. 15.

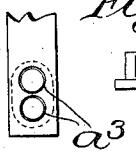

Fig. 17.

Fig. 13.

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UNITED STATES PATENT OFFICE.

ALBERT B. SCHOFIELD, OF NEW YORK, N. Y.

SEAL.

SPECIFICATION forming part of Letters Patent No. 656,906, dated August 28, 1900.

Application filed December 1, 1899. Serial No. 738,866. (No model.)

To all whom it may concern:

Be it known that I, ALBERT B. SCHOFIELD, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Seals, of which the following is a specification.

My invention relates to an improvement in seals, and more particularly to what is commonly known in the art as "tin shackle-seals," in which a flat flexible strip of thin sheet metal, which for convenience I am pleased to call the "bail," has its ends united by a soft-metal tie or rivet of such nature that it may be pressed into locking position after having been inserted through perforations in the strip. It is important for commercial and economical reasons that the sheet-metal strip which forms the bail should not be wider than a predetermined limit, that limit being at present three-eighths of an inch, or thereabout, and it is further desirable that the soft-metal tie or rivet which is utilized to unite the ends of the bail be spread laterally to form a smooth flat surface of considerable extent for the purpose of impressing thereon numbers or characters for identification. It is further important that the soft-metal tie or rivet should be reinforced to prevent the severing of the tie or rivet by a sharp knife intermediate of the two united ends of the bail and, further, that there should be a sufficient width of the bail between the opposite walls of the perforation and the outer edges of the bail to prevent the latter from breaking out when the soft-metal tie or rivet is pressed into locking shape.

My present invention contemplates a structure eminently adapted to fulfil the required conditions without weakening the ends of the bail to an objectionable extent; and it consists, broadly, in making elongated openings in the bail and fitting the shank of the tie or rivet to these elongated openings, thereby providing an increased amount of metal in the shank for spreading under pressure to form an extended impression-surface and at the same time maintaining a sufficient width of the bail between the walls of the hole and its outer edges to insure the required amount of strength.

My invention further contemplates the introduction of a U-shaped piece of wire in the tie or rivet and the introduction of a pressure and guard plate surrounding the shank of the rivet or tie intermediate of the ends of the bail.

In the accompanying drawings, Figure 1 is a front view of the seal as it appears when its ends are locked as in use. Fig. 2 is an edge view of the same. Fig. 3 is a back view. Fig. 4 is a view in detail of the bail. Fig. 5 is a top plan view of the tie or rivet. Fig. 6 is an end view of the same. Fig. 7 is a view of the same in side elevation. Fig. 8 represents in plan and edge elevation the presser and guard plate or washer. Fig. 9 is a longitudinal section representing the parts partially assembled. Fig. 10 is a similar view showing the parts assembled ready for the press. Fig. 11 is a face view of a shackle in which the ends of the bail approach each other from opposite directions and overlap, the press in this instance having forced the opposite ends of the tie or rivet into a circular disk shape as distinguished from the oval shape shown in Figs. 1, 2, and 3. Fig. 12 is an edge view of the same. Fig. 13 is a view in detail of a circular presser and guard plate or washer as distinguished from the rectangular plate shown in Fig. 8. Fig. 14 represents a modified form of opening in the ends of the bail and tie or rivet fitted thereto. Fig. 15 is a view in detail of the tie or rivet of such modified form. Fig. 16 represents another modified form of opening through the bail, and Fig. 17 represents in detail the form of tie or rivet fitted to a hole of such modified structure.

The sheet-metal strip which forms the bail of the shackle is denoted by A and the openings in its ends by *a a'*. The preferred form of these openings *a a'* is that shown in Figs. 1 to 13, inclusive, being oblong in shape, with rounded ends. The elongation may be increased or diminished from that illustrated, the object being to make the elongation sufficient to insure a mass of soft metal in the shank of the tie or rivet, which is intended to pass through the openings *a a'* to afford an extended surface for locking the ends of the bail and to receive the numbers or characters required. This elongation of the openings *a a'* may assume other than the simple

oblong with rounded ends—as, for example, the scalloped form shown in Fig. 14 and denoted by a^2, or the double opening represented in Fig. 16 and denoted by a^3. It is intended, however, that where there is a separation between the consecutive parts of the opening, as in Fig. 16, such separation shall not be so great as to prevent the articulated shank of the tie or rivet from being pressed into a single flattened disk under the force of the press which is applied to complete the locking. To be more explicit, I do not intend to be understood as claiming that the term "elongated opening" extends to cases where the openings are separated a considerable distance to receive corresponding rivets to be headed down independently of one another—as, for example, the two openings and the corresponding rivets shown in the patent to E. J. Brooks, No. 209,008, dated October 15, 1878—but only where the several openings are disposed so near to one another that the distance between them shall be comparatively slight, and the articulated shank of the rivet may be practically and efficiently headed down to form a single head after being passed through these openings. The scalloped form shown in Fig. 14, where the depression in the shank of the rivet receives a corresponding projection on the wall of the elongated opening, is well adapted to hold the end of the bail in position on the shank while the press is being applied without requiring the notch in the shank, to which reference is hereinafter particularly made.

The tie or rivet represented in Figs. 1 to 10, inclusive, consists of a head B, from the face of which there projects an elongated shank b, adapted to fit the elongated openings a a' in the ends of the bail. One end of the shank b of the rivet is provided with a notch b' a short distance from the head B for the purpose of temporarily catching one end of the bail, as will be hereinafter explained. The inner or under face of the head B is made flat and is unobstructed from the shank to its outer edge, so that bails which may happen to be a little wider than others or in which the elongated opening is not exactly central may be readily slipped over the shank into flat contact with the head.

Within the soft-metal tie or rivet there is cast a wire C. (See Figs. 9 and 10.) This wire may be of steel and has a general **U** shape which extends from the head toward the tip of the shank b, the branches of the **U**-shaped portion being turned laterally into the flange of the head B, as shown at c.

The tie or rivet for use in connection with the opening shown in Fig. 14 is denoted by B'. Its shank is made to conform to the opening a^2 in the bail A. The tie or rivet for use in connection with the consecutive openings a^3 (represented in Fig. 16) is denoted by B^2, and its articulated shank is fitted to enter these openings a^3. The heads of the rivets B' and B^2 may be either elongated or circular, as may be desired. In the present instance they are shown corresponding in shape to the head B of the rivet first described.

The presser-plate and guard or washer is denoted by D. It is provided with a central opening d, adapted to receive with a close fit the shank or stem b of the soft-metal rivet or tie. The presser-plate and guard or washer may be conveniently made of steel and is intended to be made thin, but with sufficient thickness to form a flat stable surface on which the opposite branches of the bail A may rest in order to enable the press to force the opposite ends of the rivet evenly onto the outer faces of the ends of the bail. The plate or washer D also serves, when the parts are assembled, to prevent the insertion of a thin-bladed knife into contact with the shank of the soft-metal rivet or tie, and what is of further material importance it serves to restrain to a considerable extent the lateral spreading of the shank of the soft-metal tie or rivet, which has a tendency to spread the opposite walls of the openings in the sheet-metal bail A apart and in some instances to break the bail intermediate its edge and opening.

In the form shown in Figs. 11 and 12 the head of the-soft metal rivet or tie is made round instead of oblong, and the press for upsetting the rivet is assumed to have carried a die which forced the metal laterally from the elongated stem or shank b while preventing it from spreading longitudinally, thus making a circular disk on the face of the completed lock instead of an elongated face, as in Figs. 1, 2, and 3. The circular head of this soft-metal rivet in Figs. 11 and 12 is denoted by B^4 and its circular face by b^2. The washer, in the event of the circular head on the rivet being used, is preferably made circular, its form being shown in Fig. 13 and denoted by D'. It may be made to extend slightly beyond the edges of the bail A when used with the form of shackle represented in Fig. 1 and beyond the edges of the bail A' when used in connection with the form of shackle shown in Figs. 11 and 12.

In applying the seal the bail A or A' is passed through the staples or other parts which are to be held against unintentional opening either before or after the soft-metal tie or rivet and washer have been placed in position, as shown in Fig. 9. The soft-metal tie or rivet having been passed through the opening a' in one branch of the bail A, the washer D is then pressed on over it, and its frictional contact with the stem or shank of the rivet will be sufficient to hold the latter temporarily in position. The opposite branch of the bail A may then be manipulated to pass the rivet through its opening a, and the notch b' being located in that end of the soft-metal rivet farthest from the free end of the bail A the edge of bail A adjacent to the end of the opening a may be caught in the notch b', thereby holding the end of the bail A flatly down on the plate or washer D, so

that when the press is finally applied to upset the stem or shank of the rivet it will hold the ends of the bail flatly and snugly against the opposite sides of the washer to prevent any opening for the insertion of a thin knife-blade. This is an important feature, because it has proven in practice that when the press begins to act upon the opposite ends of the rivet it will swell the shank wherever the latter is not constrained by a surrounding wall, and this swelling taking place between the washer and the under face of the end of the bail A when the latter is not down flatly in position is liable to prevent it from being subsequently pressed snugly into contact with the face of the washer. Again, the flat stiff washer D serves as a firm level table on which the ends of the soft-metal rivet may be spread and insures a plain impression of the numbers or characters on the dies or jaws of the press.

It is obvious that changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. The combination with a bail provided with an elongated opening extending through it, of a soft-metal tie or rivet carried by the said bail and provided with a stem or shank elongated in cross-section to correspond to the elongated opening in the bail, the inner or under face of the head of said rivet being flat and unobstructed from the stem or shank to its outer edge, substantially as set forth.

2. The combination with a bail provided with elongated openings, of a soft-metal tie or rivet provided with a stem or shank elongated in cross-section, the said elongated shank being provided with a depression and the wall of the opening in the bail being provided with a projection to correspond with the depression in the shank, substantially as set forth.

3. The combination with a bail provided with openings therethrough and a soft-metal rivet fitted to said openings, of a flat plate or washer provided with an opening therethrough for the reception of the shank or stem of the rivet, the said washer being located between the ends of the bail and forming a presser-plate and guard, substantially as set forth.

4. The combination with the bail provided with openings therethrough, of a soft-metal rivet having a wire cast therein, the shank or stem of the said rivet being shaped in cross-section to correspond to the openings in the bail and the ends of the wire being extended into the flange of the head of the rivet and the bight of the wire extending along the shank of the rivet in position to be upset with the stem on the outer face of the bail, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 25th day of November, 1899.

ALBERT B. SCHOFIELD.

Witnesses:

FREDK. HAYNES,

C. S. SUNDGREN.