(No Model.) 2 Sheets—Sheet 1.

W. JOHNSON.

TOOL FOR COMPRESSING SEALS.

No. 278,434. Patented May 29, 1883.

Fig. 1

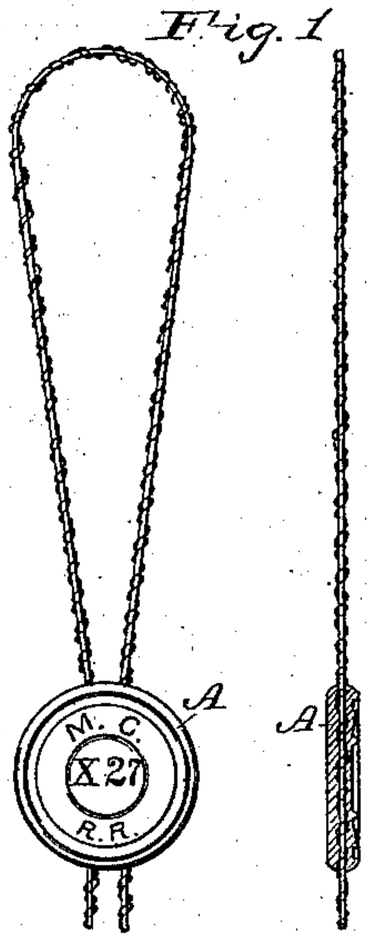


Fig. 2

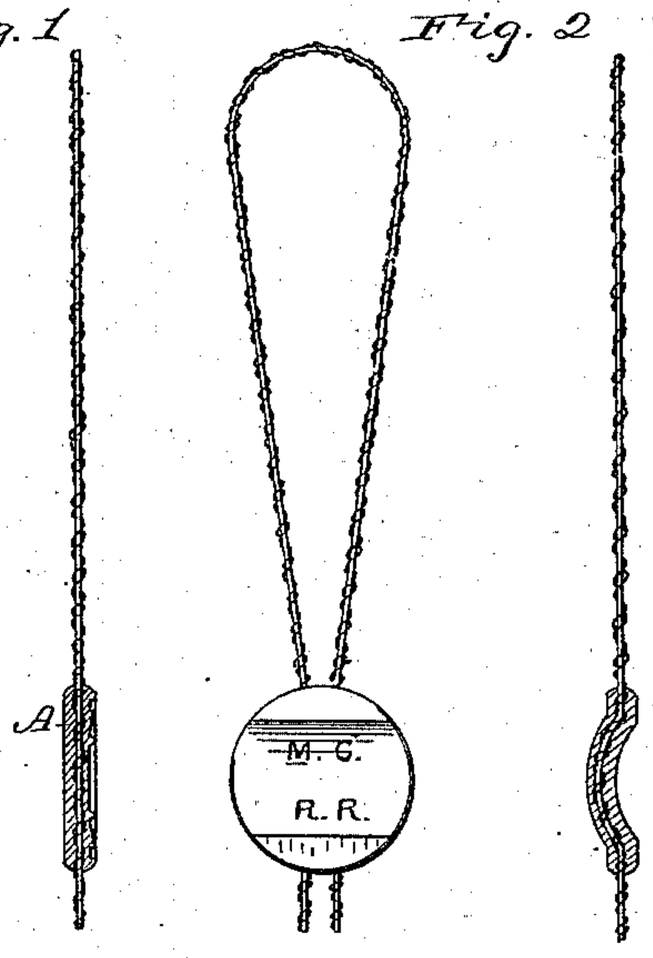


Fig. 5

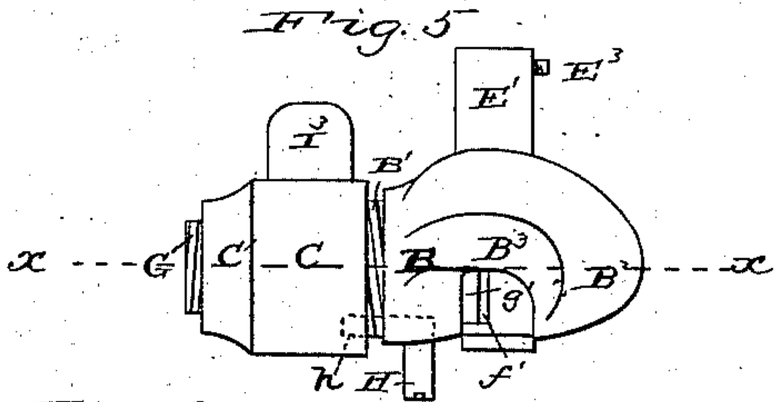


Fig. 3.

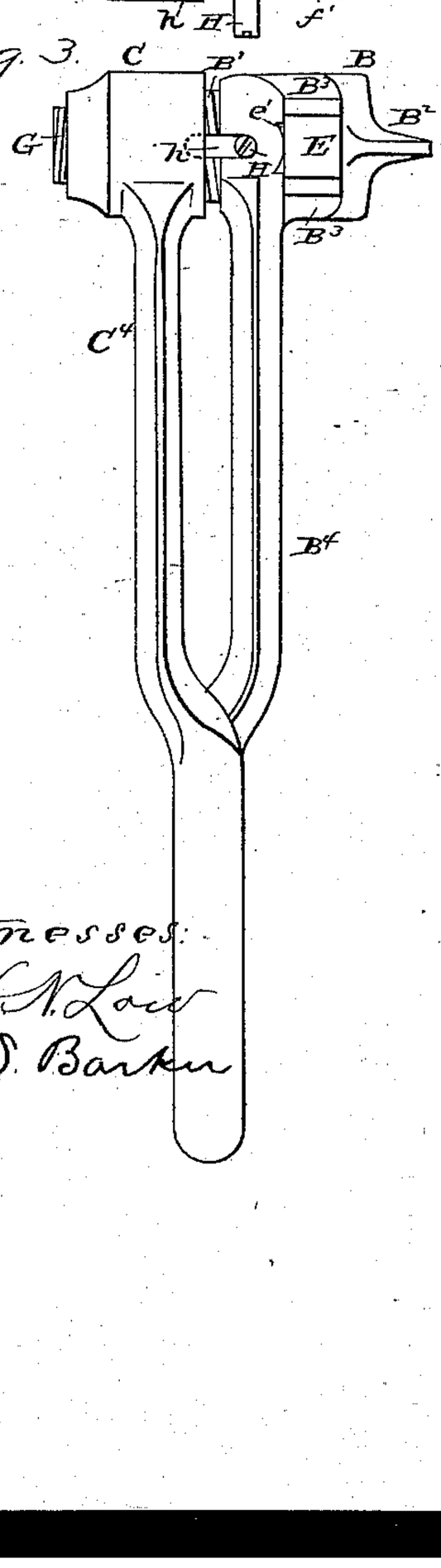


Fig. 4.

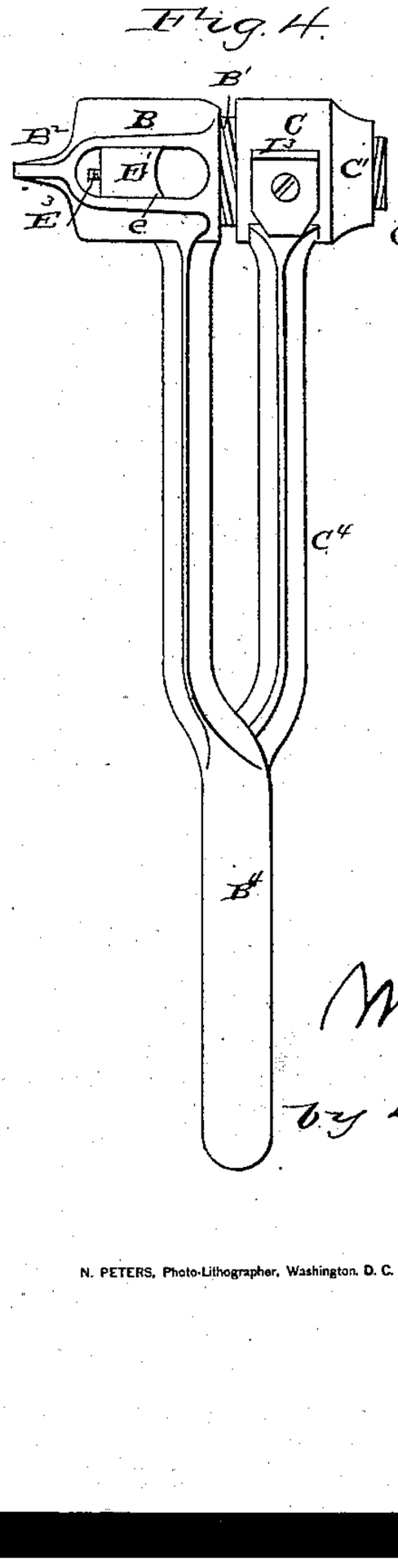
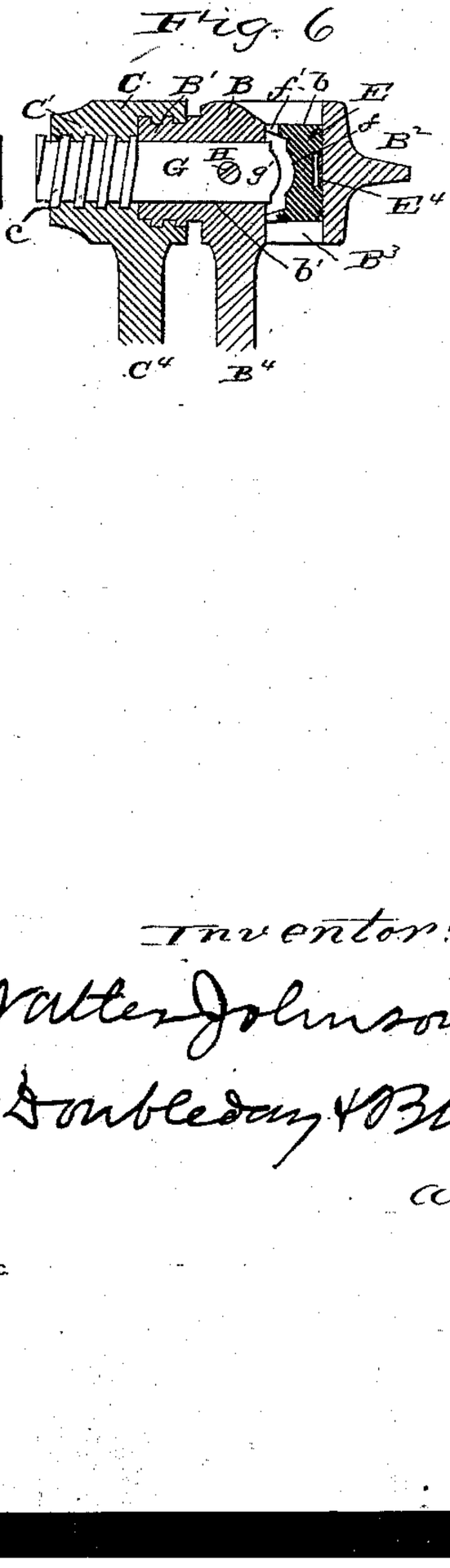


Fig. 6



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(No Model.) 2 Sheets—Sheet 2.

W. JOHNSON.

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Fig. 9.

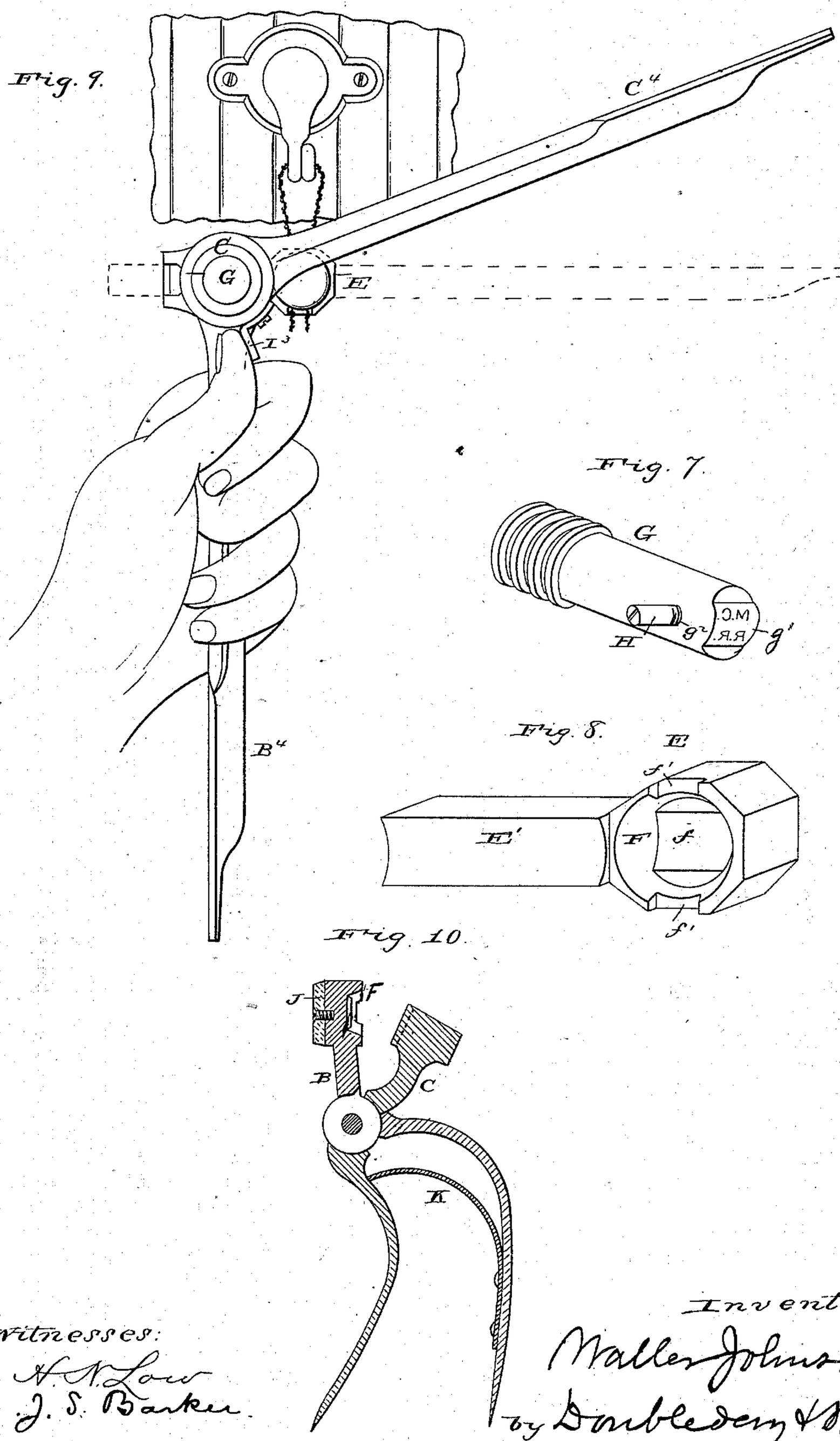

Fig. 7.

Fig. 8.

Fig. 10.

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UNITED STATES PATENT OFFICE.

WALTER JOHNSON, OF JACKSON, MICHIGAN.

TOOL FOR COMPRESSING SEALS.

SPECIFICATION forming part of Letters Patent No. 278,434, dated May 29, 1883.

Application filed July 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, WALTER JOHNSON, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Tools for Compressing Seals, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improved device for securing a seal to the wire passing through it. I have devised, also, an improved seal, which, however, is not herein claimed, as I am about to make it the subject-matter of another application, it being here shown to assist in illustrating the method of using the compressing-tool.

Figure 1 is a front view and a sectional view of a seal of the kind heretofore ordinarily employed. Fig. 2 shows similar views of the improved seal I have devised. Fig. 3 is a side elevation of the device for imparting to the seal its peculiar shape and the impressions thereon. Fig. 4 is an elevation from the opposite side. Fig. 5 is an end view. Fig. 6 is a longitudinal section on the line *x x*, Fig. 5. Fig. 7 is a perspective, on a larger scale, of the screw detached which carries the die. Fig. 8 is a perspective of the sliding matrix, enlarged. Fig. 9 is a side elevation, showing the positions of the parts when the seal is being inserted. Fig. 10 is a central section of a modified form.

In the drawings, A represents a seal of the kind most frequently used, it being flat—that is to say, rectilineal in cross-section—and in seals of this sort the wires are situated on straight lines. When the seal is thus shaped and the wires are thus inserted, the withdrawal of the latter frequently occurs accidentally and otherwise. I have obviated the difficulty thus arising by shaping the seal as shown in Fig. 2—that is to say, forming it so that it shall be angular or curved in cross-section. It is put into this shape by means of the compressing-tool to be hereinafter described. The line about which the curving or bending occurs is transverse to the apertures through which the wires pass, so that the latter are bent also, and, after being thus bent, it is practically impossible to withdraw them without breaking or marring the wires and the seal.

B represents one of the main parts of the compressing-tool, and C the other, these having, respectively, handle portions B^4 and C^4. The part B is provided with a portion, B′, having an external thread and an internal longitudinal aperture or passage, *b′*. The part C engages with it by means of the external screw-thread, and the internal longitudinal aperture, *b′*, extends through the part B to allow the passage of the die.

E represents the matrix. It is formed with or has attached to it a sliding arm, E′. It is mounted in the part B of the implement by means of an aperture, *b*, formed through it at right angles to the aperture *b′* through the threaded sleeve B′. The part B extends around to the outside of the matrix, as shown at B^2, and is made thick enough to provide a strong abutment on the outer side. Preferably the matrix is guided by means of one or more projections, *e*, and grooves formed in the wall of the aperture. The head portion E is wider than the aperture *b*, so that when said head part strikes the surrounding arms B^3 the matrix is stopped in proper position opposite to the aperture *b′* through the sleeve B′. When the matrix is pushed upwardly or outwardly it is prevented from coming entirely out by means of a stop at E^3.

E^4 is a flat spring, which bears against the part B^2 in such manner as to hold the matrix in proper position.

The matrix is concave, or provided with a depression or recess, F, the outline of which, in cross-section, conforms to that of the seals which are to be compressed, and at the bottom of this recess there is a depression, as shown at *f*.

f′ f′ are recesses in the rim of the matrix to receive the wires when a seal is in place in the recess F. When the matrix is pushed into its innermost position the center of the recess F corresponds with the center of the longitudinal aperture *b′* through the threaded sleeve B′. The die is carried by or formed upon the end of a bolt or circular bar, G. At the outer end it is provided with a left-hand thread, which

engages with a corresponding thread formed in an aperture, *c*, concentric with the threaded part C′. The threads upon the above-mentioned parts C′ and B′ are right-hand threads. The die proper consists of a projection, *g*′, with a curved face corresponding to the recess *f* in the matrix.

The parts of the implement may be put together and adjusted as follows: The bolt or threaded bar G is first passed through the aperture *c* outwardly sufficiently far, and the part C′ is then caused to engage with the part B′. The bolt G can then be adjusted properly relatively to the matrix from the outside, and is fastened in proper position by means of a pin or key, H, passing through a slot, *h*, in the part B′, and engaging with an aperture, g^2, in the bolt, the slot and aperture being so related that the die shall exactly correspond with the recesses in the matrix.

After the parts have been properly joined the implement is used as follows in compressing the seal: The matrix is moved outward sufficiently far to have the seal placed in the recess F, the wire lying in the recesses *f*′. The matrix is then pushed in to its innermost position, and the part C is rotated sufficient to force the die against the seal, the inward movement of the die being caused by means of the right-hand threads on the parts B′ and C′. The power thus made available by means of the screw is very great, and sufficient not only to impart to the seal the impressions that are desired, but also to bend or curve the seal across the wires, so as to put it into the shape shown in Fig. 2.

By examining Figs. 6, 7, 8, and 10 it will be seen that the recess or cavity F in the matrix is beveled or flaring around its outer edge, and also that the end of the die is convex. By constructing the matrix and die in this manner I insure that the seal, while being compressed, shall be held in proper position, and I obviate the difficulty heretofore largely experienced with the pressing-tool ordinarily in use—namely, the producing of an imperfect impression.

In Fig. 9 I have shown in full and dotted lines the positions of the parts just after a seal has been introduced into the matrix, and by full lines the positions of the parts just before the matrix is pushed into place, carrying the seal with it. It will be seen that there is an ear or projection, I^3, carried by the part C, with which the operator's thumb can engage to rock said part C more or less, as may be necessary, to permit the movements of the matrix.

Although I have above described that form of tool which I prefer to employ, yet it will be readily seen that my improved matrix and die can be combined with tools of the common sort, or implements of any proper character adapted to this use. Thus in Fig. 10 I have shown a tool of another character, in which the arms B and C are pivoted together, one carrying the matrix and the other the die. The matrix, so far as the guiding and bending cavity is concerned, and the die, so far as the operative face or end thereof is concerned, are the same as those shown in the construction above described. Under some circumstances a tool of the character shown in said Fig. 10 will be preferable. The compression can be caused by means of a hammer or other implement for imparting a blow to the end of the die.

J represents a leather back piece secured to the under or rear side of the matrix to act as a cushion for it when the blow is being imparted to the die.

If desired, a spring, K, may be employed to return the arms B and C to their open position.

Therefore I do not wish to be limited to the exact form of tool so far as this part of my invention is concerned—to wit, the cavity or recess formed in the matrix, and the die having a corresponding conformation. The tool shown in Figs. 3, 4, 5, 6, 7, 8, and 9, however, has many advantages, and I therefore prefer that form. It will be seen that I provide such a support or holder for the seal while it is being compressed that it shall be more or less inclosed on all sides to prevent its escaping from the recess or cavity in which it is seated. This is effected in the construction shown by having a part of the end of the die-support lie over the face of the seal after the matrix has been put into position, for it will be seen that the aperture through which the die moves is somewhat less in diameter than the widest part of the cavity or recess, and therefore the metal immediately around the die-aperture will tend to bear against the edges of the seal and prevent it from slipping laterally. Some of the advantages, however, of this part of the tool can be attained if the aperture through which the die moves is as large as the widest part of the cavity in the matrix, for the end of the die in that case will operate advantageously to prevent any moving of the seal. But in either case, after the matrix has been moved back into position, the seal will be surrounded, so far as its edges and the face opposite to the die are concerned. Therefore no eccentric impressions can be produced, and such impressions are frequently produced with the tools ordinarily in use, owing to the fact that the seal is not entirely surrounded by retaining-walls, as in my construction.

I do not in this case claim the bent or curved seal itself which I have shown and described, reserving the right to make this the subject-matter of another application.

What I claim is—

1. The combination, with the reciprocating die, of the part B, provided with an aperture for the passage of the die, and with an abutment, B^2, and the matrix arranged to slide between said abutment and the part having the aperture for the die, substantially as set forth.

2. The combination, with the reciprocating

die, of the part B, provided with an aperture for the passage of the die, and with a way transverse to said aperture, and the sliding matrix situated in said way, and adapted to be moved outward to receive the seal, and to be moved inward to bring the recess in the matrix opposite to the die, substantially as set forth.

3. The combination, with the reciprocating die, and the part B, provided with a passage for said die, and with a way transverse to said passage, of the sliding matrix provided with stops to limit its outward and inward movements, the matrix, when in position, being surrounded by walls which prevent the escape of the seal, substantially as set forth.

4. The combination of the part B, provided with an external screw-thread, the sliding matrix mounted in and adapted to be moved laterally relatively to said part B at every operation, and the part C, carrying the reciprocating die, and provided with an internal screw-thread for engaging with the thread on the part B, substantially as set forth.

5. The combination, with the part C and the die united thereto by a screw-thread, of the part B, which carries the matrix, and is provided with a screw-thread for engaging with the part C, said screw-thread being opposite in pitch to the thread which engages the die with said part C, substantially as set forth.

6. The combination, with the part B, carrying the matrix, and provided with a slot, *h*, of the part C, the die adapted to rotate in said part C, and the pin H, substantially as set forth.

7. In a portable tool for compressing seals, the combination of a matrix having a recess or cavity to hold the seal while being compressed, and means, substantially as described, independent of the die adapted to be placed over the face of the seal during the act of compression, whereby the seal is upon all sides held by retaining devices.

8. In a portable tool for compressing seals, the combination of a sliding matrix having a recess or cavity to hold the seal while being compressed, a die which bears against one of the faces of the seal, and a die-support, which, when the matrix is moved into position for compression, partially covers the face of the seal, whereby it assists in holding it in position, substantially as set forth.

9. A portable tool for compressing seals, having a matrix and die, the one being provided with a recess the bottom of which is curved or concave in cross-section, and the other being provided with a convex projection corresponding to said recess and adapted to bend the seal, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER JOHNSON.

Witnesses:

CHAS. C. REED,

J. H. DES ROSCERS.