

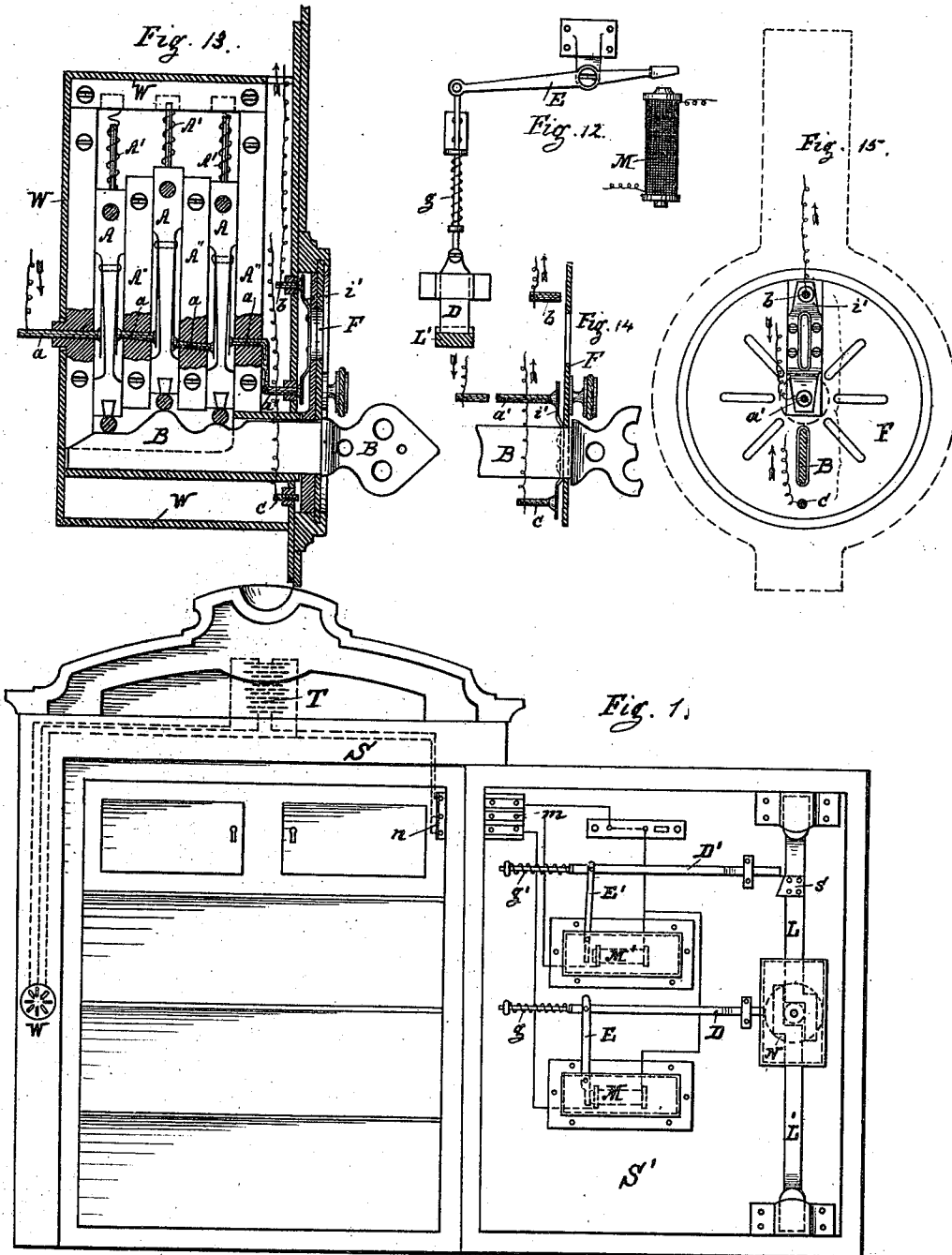
(No Model.)

L. HUEBNER & R. BUSSE.
ELECTRIC LOCK.

2 Sheets—Sheet 1.

No. 408,484.

Patented Aug. 6, 1889.



Witnesses.
H. J. G. L. G. L. G. L.
W. H. Wagner.

Inventor's
Louis Huebner & Rudolf Busse
per. R. P. P. P. P. P.
Attorneys

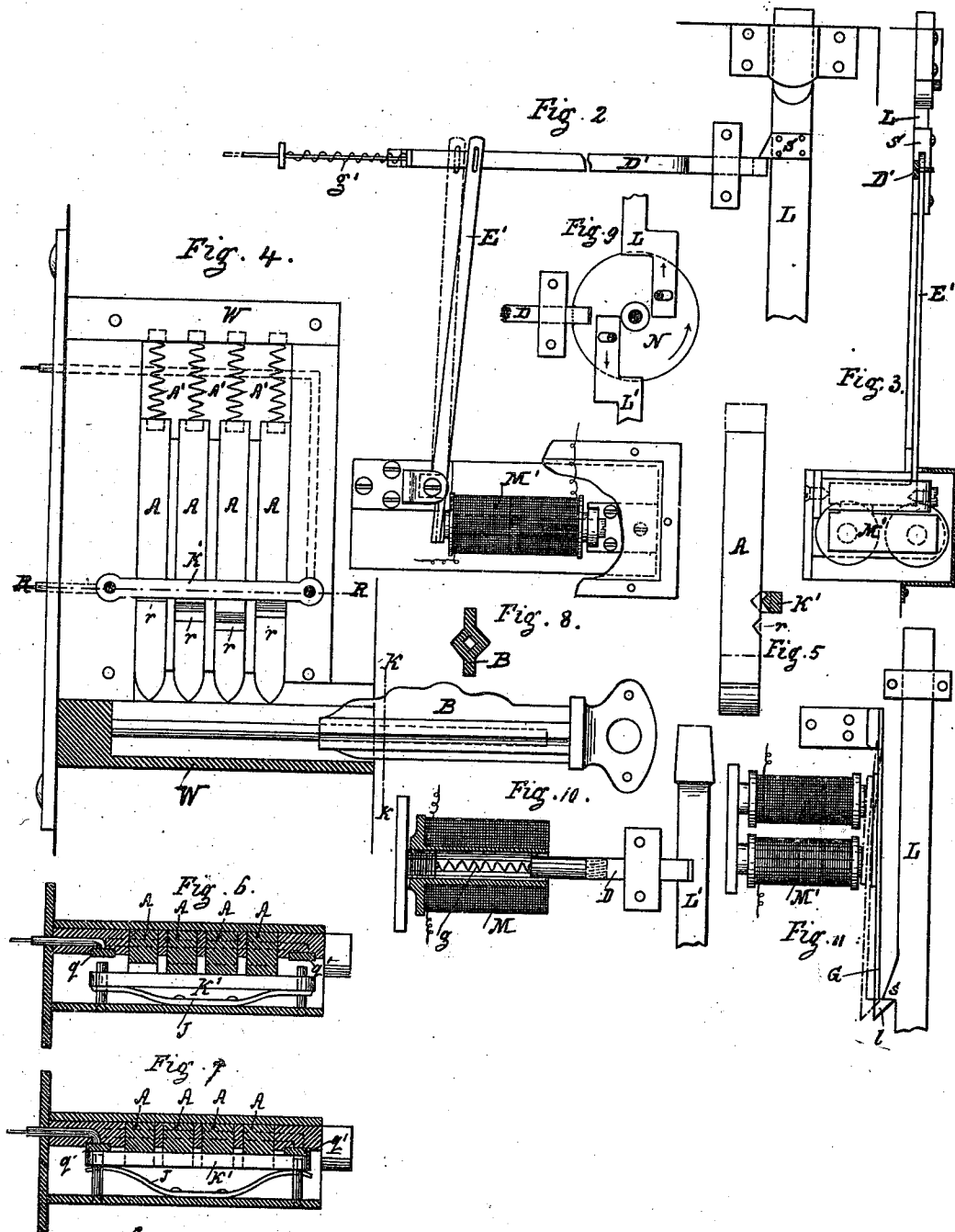
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Louis Huebner & Rudolf Busse
per Roder & Priesner
Attorneys.

UNITED STATES PATENT OFFICE.

LOUIS HUEBNER AND RUDOLPH BUSSE, OF SCHWEIDNITZ, GERMANY.

ELECTRIC LOCK.

SPECIFICATION forming part of Letters Patent No. 408,484, dated August 6, 1889.

Application filed November 23, 1888. Serial No. 291,691. (No model.) Patented in Germany January 3, 1888, No. 44,369.

To all whom it may concern:

Be it known that we, LOUIS HUEBNER and RUDOLPH BUSSE, citizens of Germany, residing at Schweidnitz, in the Empire of Germany, have invented a new and Improved Electric Lock, (for which we have obtained a patent in Germany, dated January 3, 1888, No. 44,369,) of which the following is a specification.

Our invention consists of the various improvements hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a safe with its door open, showing our improvement arranged thereon. Fig. 2 shows part of the mechanism at an enlarged scale. Fig. 3 is a side view of the same. Fig. 4 represents a section of the lock-case, showing the tumblers. Fig. 5 is a side view of one of the tumblers, showing a section of bar K'. Fig. 6 is a horizontal section at line R R, Fig. 4, showing the circuit open. Fig. 7 shows the same with the circuit closed. Fig. 8 is a section of the key at line K K, Fig. 4. Fig. 9 shows part of the arrangement of the bolts and door-knob for operating the same at an enlarged scale. Fig. 10 shows a modification of the electro-magnets operating the bar D. Fig. 11 shows a modified arrangement for operating the upper part of bolt L. Fig. 12 is another modified arrangement for operating bar D. Figs. 13, 14, and 15 show modifications of the arrangement and manner of operating the tumblers.

S represents a safe, and S' the door of the same.

N is the inner part of the door-knob, which operates the bolts L L' in the usual manner.

On the inner side of the door S' two electro-magnets M M' are arranged, operating, through levers E E', the bars D D'. These bars D D' are acted upon by springs g g' in such a manner as to move the same toward the bolts L L' when the circuit is open.

To the door S' plates m are attached, and corresponding plates n are attached to the inside of the safe, which, when the safe-door is closed, come in contact with each other, and thus form the connection between the electro-magnets M M' and the battery T, arranged at the top of the safe or at any other convenient place within the safe.

W is the lock containing the tumblers A. These tumblers have recesses r at different positions, Fig. 4. Against these tumblers a bar K' is arranged, shaped at one side to fit the recesses r, and pressed against the tumblers A by a spring J.

q q' are the terminals, connected in the usual manner with the battery T. The tumblers A are pressed downward when the key B is withdrawn by their respective springs A', forcing thereby the V-shaped bar K' out of the recess r back into its original position. The key B, Fig. 4, is on its upper edge so shaped that when pushed into the lock the projections on the same raise the several tumblers A into such a position that their recesses r come in line to allow the spring J to move the bar K' into the recesses r, bringing at the same time said bar K' in contact with the terminals q q', and thus close the circuit.

Supposing that the safe-door is closed and the same locked, this above-described closing of the circuit will cause the magnets M M' to operate the levers D D', so as to draw the same away from the bolts L L', and thus allow said bolts to be moved by the usual door-knob to unlock the safe. As soon as the door is opened, the circuit will be broken as the plates m and n are moved away from each other, when the action of the springs g g' will force the bars D D' toward the bolts L L'. The bar D will rest against the straight surface of the lower bolt L', while the bar D' will come above the projection s, arranged on the upper bolt L.

To allow the movements of the bolts L L' when the circuit is open, so as to lock again the safe, the projection s on the upper bolt L is made wedge-shaped on its edge, (see Figs. 1 and 2,) whereby the upward movement of this bolt will cause the bar D' to be pushed inward against the action of its spring g' until said bar D comes below the projecting piece s, when the door is locked, and is then by the action of its spring moved under the same to prevent the moving of the said bolt L. At the same time the lower bolt L' has been moved below the bar D, when this action of its spring g moves the same above the top of said bolt.

Instead of operating the bars D D' by the

levers E E' from the magnets M M', as above described, the bar D may be arranged in a solenoid, as shown in Fig. 10, and in place of the bar D' a spring *g* may be arranged, operated by the magnet M', as shown in Fig. 11. The relative position of the magnet M and bar D may likewise be arranged as shown in Fig. 12, where the lever E is connected with the bar D by a link, and the spring *g* is placed around said link, bearing against a collar on the link and a fixed projection through which the link passes. In Figs. 13, 14, and 15 the bar K' is dispensed with. The tumblers A are recessed at the sides and provided with springs. In the guides A'' for the tumblers the terminals *a* are arranged, which, when coming in a certain position, by the action of the key B will close the circuit. The end *a'* of the outer terminal *a* is

in contact with a plate *i'*, attached to a movable plate F, by which arrangement the complicity of the lock may be increased, as the inner end of the plate *i'* being always in contact with *a'* the outer end of said plate *i'* may be brought in contact either with the terminal *b* or *c*.

What we claim is—

The combination of the tumblers A, bar K', terminals *q q'*, and battery T with the key B, as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

LOUIS HUEBNER.
RUDOLPH BUSSE.

Witnesses:

OTTO TAWORSKY,
PAUL EXNER.