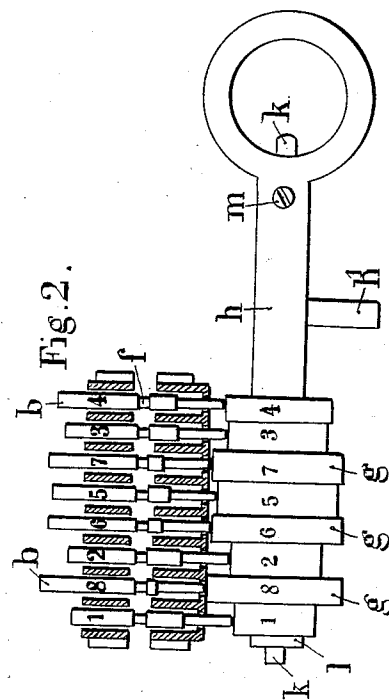
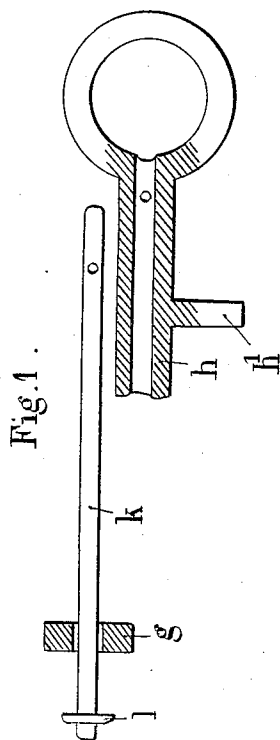
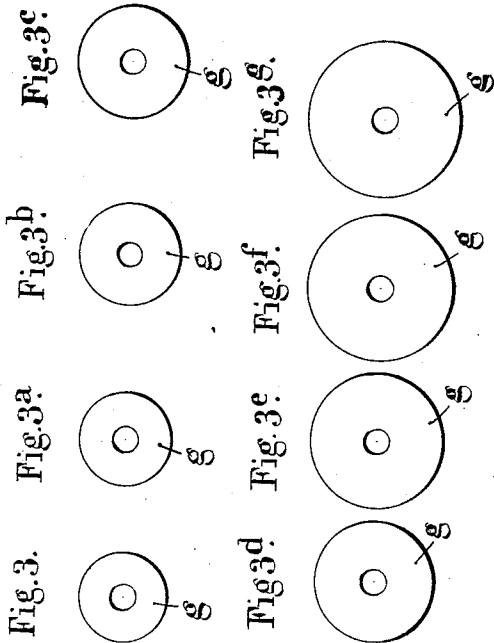


L. J. M. DARDEAU.
 VARIABLE COMBINATION KEY FOR SAFETY LOCKS.
 APPLICATION FILED APR. 1, 1911.

Patented Aug. 12, 1913.
 2 SHEETS—SHEET 1.

1,070,329.



WITNESSES
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P. J. Bellman

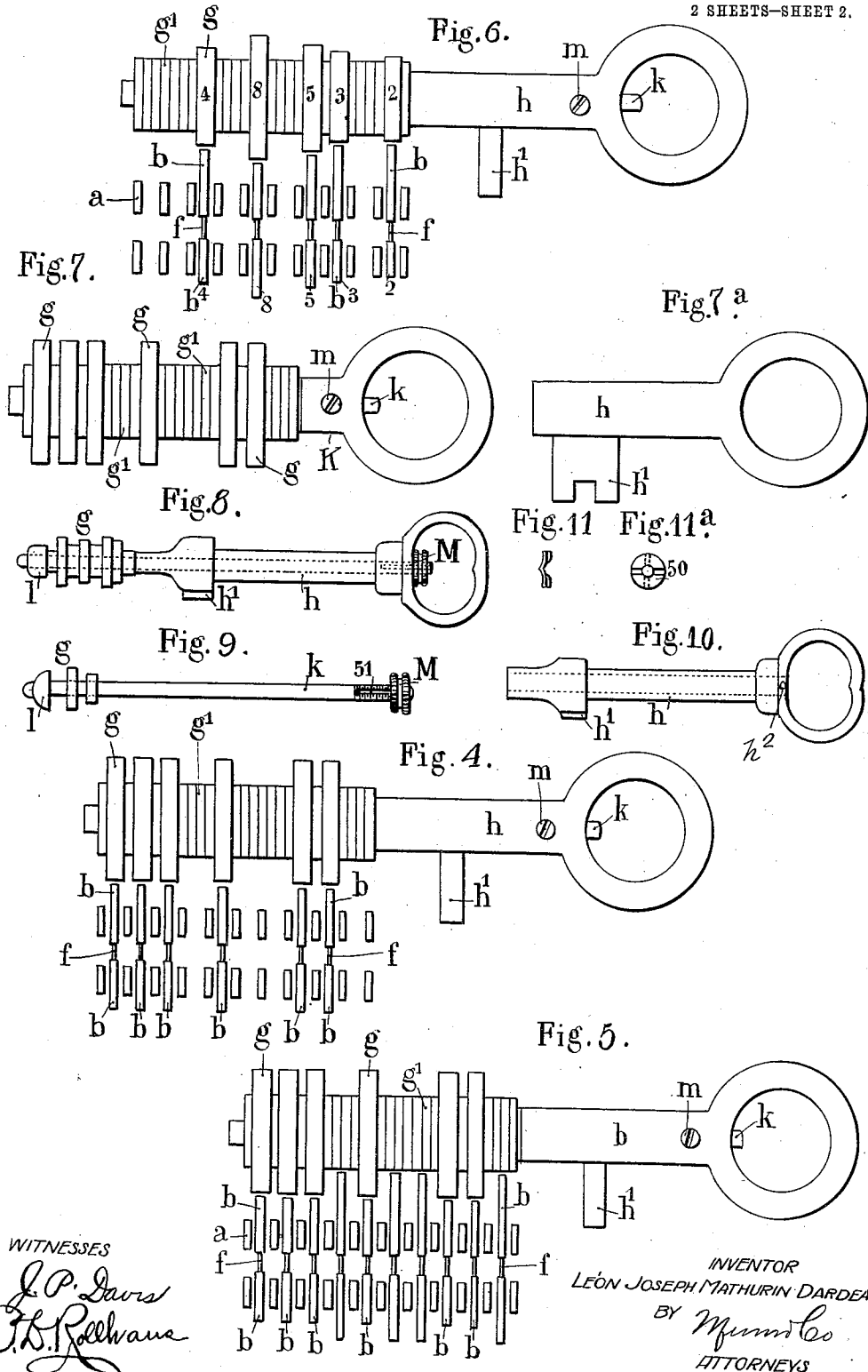
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UNITED STATES PATENT OFFICE.

LÉON JOSEPH MATHURIN DARDEAU, OF PARIS, FRANCE.

VARIABLE-COMBINATION KEY FOR SAFETY-LOCKS.

1,070,329.

Specification of Letters Patent.

Patented Aug. 12, 1913.

Original application filed January 6, 1909, Serial No. 471,020. Divided and this application filed April 1, 1911. Serial No. 618,318.

To all whom it may concern:

Be it known that I, LÉON JOSEPH MATHURIN DARDEAU, of 7 Rue Parrot, in the city of Paris, Republic of France, electrical engineer, have invented a Variable-Combination Key for Safety-Locks, of which the following is a full, clear, and exact description, this being a division of the application filed by me on January 6, 1909, Serial No. 471,020, for the safety device with combinations for locks of all kinds.

The invention relates to a type of key which permits of opening a lock closed by a known combination, when the key usually employed for opening this lock has been mislaid or lost, and the invention consists in a key that can be adjusted, according to any combination set up inside the lock, by means of special elements of combination which make a part of the key.

The invention is illustrated, by way of example, in the accompanying drawings, in which:

Figure 1 is a detail view of the key with the device for setting up the elements of the combination; Fig. 2 shows the key in engagement with the combination elements of the lock; Figs. 3, 3^a, 3^b, 3^c, 3^d, 3^e, 3^f and 3^g show various elements of the key; Fig. 4 illustrates a key on which certain combinations have been obtained by varying the intervals between identical elements; Fig. 5 is a modification of the combination device of the lock indicated in Fig. 4; Fig. 6 illustrates a key the elements of which are not identical in size; Fig. 7 shows the combination elements mounted on a combinator or forming device; Fig. 7^a is a view of the bolt throwing part of the key separated from the combination elements; Fig. 8 illustrates a modified form of key; Figs. 9, 10, 11 and 11^a show details of the key illustrated in Fig. 8.

As shown in Fig. 1 of the drawings, the key comprises a rod *k* on which are mounted the combination elements *g*, illustrated in Figs. 3, 3^a, 3^b, 3^c, 3^d, 3^e, 3^f and 3^g. These elements have a perfectly annular shape and are placed on the rod *k* in the order corresponding to that adopted for the elements *b* arranged in the lock, as indicated in Fig. 2. The rod *k* carries a stop *l*, for the elements *g*, another stop being formed by the body *h*

of the key. The rod *k* fits in the hollow key body *h* and is secured in position by a spline or a screw *m*, shown in Fig. 2.

The combination elements *g* which are mounted on the key rod *k* can have different diameters according to the variations of height of the notches *f* of the corresponding lock elements *b*. Supposing for instance the combination elements of the lock to be arranged so as to form the number 18265734 and the same number 18265734 has been formed on the key with the elements *g*, if the key is introduced into the lock the elements *b* of the lock (Fig. 2) will be suitably raised to allow the bit *h'* of the key to perform its stroke for liberating the bolt of the lock. The key may comprise similar elements *g*, of the same size, as in Figs. 4 and 5, or elements of different sizes as in Fig. 6. The elements *g* are maintained the required distance apart, to correspond to the elements of the lock, by washers *g'*. The elements *g* can be readily separated from the key rod *k* to adjust the combination, by withdrawing the screw *m* and disengaging the rod *k* from the key body. The elements *g* of the key can also be mounted independently of the key member having the bit *h'* for throwing the bolt (Figs. 7 and 7^a). In this case the elements *g* are mounted on a combinator *K* independent of the key body *h*, (Fig. 7). It will be understood that when the combinator is employed, the key *h* (Fig. 7^a) can be of any shape or size or be more or less complicated for purposes of safety. The combinator *K* completes the safety of the lock, as the lock can not be opened or closed unless the combinator, corresponding with the combination elements of the lock, is itself in position.

The rod *k*, shown in Fig. 9 has a threaded end portion and is maintained in the body *h* of the key (Figs. 8 and 10) by a nut *M* (Fig. 8), and a washer 50 (Figs. 11 and 11^a) forming a brake and preventing the nut from rotating. The rod *k* is provided with a groove 51 in the threaded part, and the key body *h* is provided with a lug *h*² engaging the groove to prevent the rod from rotating in the key body.

Claims:

1. In a transformable key, a rod, combination key elements mounted on said rod

and comprising perfectly circular disks having plain peripheries, and a member to which said rod is fixedly secured.

2. In a transformable key, a rod, combination key elements mounted on said rod and comprising perfectly circular disks for actuating the combination elements of a lock, a member to which the rod is secured, and means for actuating the lock bolt.

3. In a transformable key, a combinator member comprising a rod, and circular disks mounted thereon for actuating the combination elements of a lock, and a key member for actuating the lock bolt.

4. In a transformable key, a combinator member comprising a plurality of circular disks adapted to be operated to actuate the combination elements of a lock, and a key member separate from the combinator for actuating the lock bolt.

5. In a transformable key, a rod having a threaded end, key elements comprising circular disks mounted on the rod, a member having a hollow shank engaged by the rod, and a washer and nut on the threaded end of the rod for securing the rod to the said member.

6. In a transformable key, a rod having a threaded end provided with a groove, com-

bination key elements mounted on the rod, a member having a hollow shank open at both ends, and through which the said rod extends, the said member having a projection engaging the groove of the rod to prevent the rod from rotating in said member, and a nut and washer on the threaded end of the rod to secure the rod to the said member.

7. In a transformable key, a rod having a stop near one end, key elements comprising circular disks mounted on said rod for actuating the combination elements of a lock, a member having a hollow shank through which the said rod extends, washers on said rod for spacing the key elements, the key elements and washers being held between the stop on the rod and the end of the shank of said member, means for fixedly securing the rod in said shank, and means for throwing the lock bolt.

The foregoing specification of my variable combination key for safety locks, signed by me this 21st day of March, 1911.

LÉON JOSEPH MATHURIN DARDEAU.

Witnesses:

DEAN B. MASON,
R. THIRIOT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."