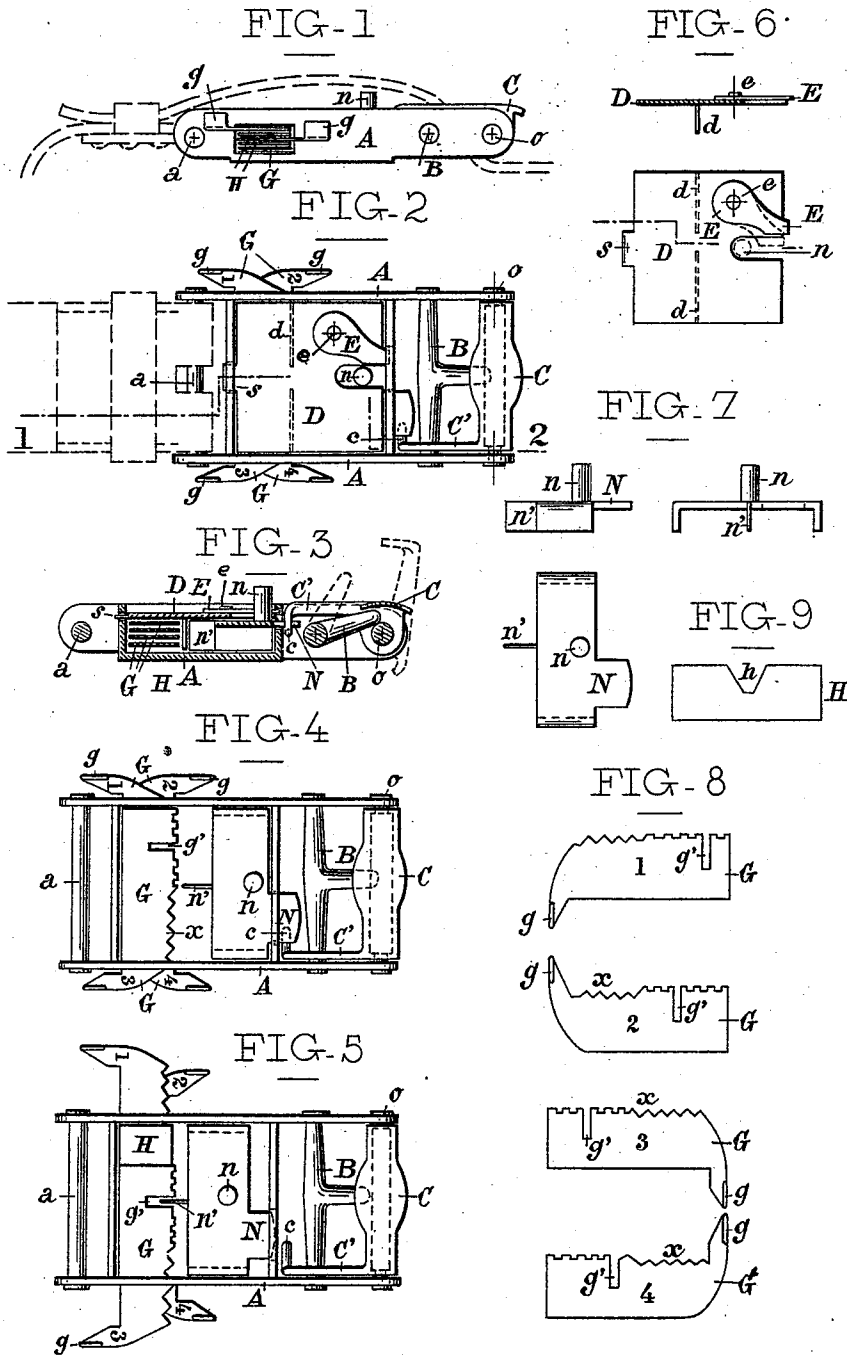


(No Model.)

J. BOIS.
COMBINATION LOCK.

No. 528,651.

Patented Nov. 6, 1894.



Witnesses

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JULES BOIS, OF LYONS, FRANCE, ASSIGNOR TO THE SOCIÉTÉ ANONYME DE LA SERREURE SANS CLEF, OF SAME PLACE.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 528,651, dated November 6, 1894.

Application filed January 9, 1894. Serial No. 496,235. (No model.) Patented in France August 2, 1893, No. 232,074.

To all whom it may concern:

Be it known that I, JULES BOIS, notary, a citizen of the Republic of France, residing at 31 Rue de l'Hôtel-de-Ville, Lyons, in the Republic of France, have invented certain new and useful Improvements in Combination-Locks, (for which I have obtained a patent in France, No. 232,074, bearing date August 2, 1893,) of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a keyless combination lock which is adapted to be used for locking various articles, such as belts, chains, account books, pocket books, money bags, portmanteaus and the like. As the principle upon which the construction of this lock is based is the same for these various applications I will confine myself to describe and represent the same by way of example as applied to a belt.

In the accompanying drawings, Figures 1 and 2 show an elevation and a plan of this lock mounted upon the belt. Fig. 3 shows a section taken on the line 1—2 of Fig. 2. Figs. 4 and 5 are plans explanatory of the operation, the upper closing plate of the lock being in these figures supposed to have been removed. Figs. 6, 7, 8, and 9 represent views of some parts of the lock.

This lock substantially comprises:—

(First.) A box A in which I arrange the combination system and the bolt hereinafter referred to. It has on the prolongations of its sides at one extremity an axis *a* upon which is slid and fixed by sewing or otherwise one of the sides of the belt to be locked, and at the other extremity an ordinary tongue B designed to engage with one of the holes in the belt, and a rocking part C which when the lock is closed is turned back upon the tongue (position Fig. 3) and held in this position by the bolt of the lock, thus preventing the disengagement of the tongue from the belt. This part C, which, articulated at *o* and having for example the shape represented in Figs. 2 and 3, carries an arm forming a prolongation which is bent twice at its extremity, first downward and then inward in order to enable the bolt to take above this extremity and pre-

vent it from being raised to disengage the tongue from the belt. In lieu of a single bolt use may be made of two. In this case the part C carries at each of its extremities a curved arm instead of the single one mentioned. The box A has on each of its other two sides an opening for the passage and the operation of the combination system. This box A is closed by means of a plate D, Figs. 2, 3, and 6, which, being provided with a catch E pivoted at *e*, can be removed from the lock, for changing for instance the combination, only when the bolt is moved to the rear, that is to say when the lock is open. This plate D is held at the rear by a tenon or tongue adapted to engage with a slot provided in the corresponding side of the box, and in front by the said catch E adapted to engage with a corresponding opening formed on the other opposite side of the box, which catch can be brought to the position indicated by dotted lines in Fig. 6, that is to say, disengaged from the box A, only when the lock is open. The plate D has on its under side a partition *d* cut out in its middle, which separates the combination system from the bolt of the lock.

(Second.) The combination system constituted by plates G which may be changed at will and varied in number according to the number of combinations it is desired to have at disposal. These plates, which in the lock represented are four in number, present on the side toward which they must be drawn a bent part *g* for enabling them to be operated easily. They are also provided on one of their faces with teeth *x* serving as marks for their engagement across the box of the lock, and with a recess *g'* in which the bolt can freely move back, that is to say, open the lock when all the recesses in the plates correspond. These several plates are held in the position which each of them is caused to occupy, by springs H, Fig. 9, formed of slightly curved strips of metal, which are interposed between each two plates and separate them from each other. In order that as broad springs as possible may be used without interfering with the back movement of the bolt, recesses *h* have been provided.

(Third.) The bolt N of the lock, represented

more particularly in detail Fig. 7. This bolt, which is here actuated by the aid of the head or knob *n* fitted to be displaced in a slot formed in the plate D, carries upon its opposite face a tongue *n'* which enables the bolt to disengage the rocking part C only when this tongue can pass at the same time through the recesses *g'* in the plates G. When after the recesses *g'* in the plates having been provided at the desired place the lock is to be opened at certain numbers the latter are placed in the box A in the desired order so that the several figures by their grouping may constitute the number chosen for example 1,324. All the recesses *g'* having been put in correspondence, I mount the bolt, taking care to engage the tongue *n'* with these recesses. Then I fix the closing plate D, causing the tenon *s* and the catch E to engage with the corresponding sides of the box of the lock. The bolt having been tightened and engaged with the tongue, the rocking part C is turned back upon the latter (position indicated by dotted lines in Fig. 3), then the bolt moved forward in order to be placed above the extremity of this rocking part and prevent it from being raised. The several plates are then completely engaged with the box of the lock, as shown in Fig. 1, which has the effect of fixing the combination. For opening the lock afterward it will be sufficient first to completely draw back all the plates on each side, then cause the plate having a recess for the figure 1 (designated by 1 in the drawings) to engage with one tooth in the interior of the box, next cause the plate having a recess for the figure 3 (designated by 2) to engage with three teeth, then cause the plate having a recess which corresponds to the figure 2 (designated by 3) to engage with two teeth, &c., with all the plates, so as to bring all their recesses in correspondence and permit the tongue *n'* in the back movement of the bolt to pass at the same time through all the recesses (Fig. 5) which back movement being effected by the aid of the knob *n* releases the part C which is then raised in order to cause the tongue B to disengage from the hole in the belt into which it had originally been passed.

According to the number of combinations it is desired to have or the difficulties to be raised in the opening of the lock I may employ a greater or smaller number of plates and provide these with a greater number of notches, which latter and the recess may be formed either on the same side or on both sides of the plates. The engagement of the plates with the interior of the box is effected by the aid of the notches *x* in the plates and a bevel on the side of the box against which the teeth are allowed to escape. If desired each notch may be numbered.

It may be observed that the belt provided with such a system of lock can be employed simply as an ordinary belt, that is to say

using only the tongue, which in this case, instead of taking below the part C, is left above.

As before stated the construction of this lock may be varied according to the uses to which it is to be applied. Thus for account books the axis *a* will be dispensed with and replaced for example by a plate mounted by a hinge and connecting the box of the lock with the cover of the book. The tongue B and part C will likewise be dispensed with and replaced by a suitable ring or the like fixed to the opposite cover, with which the bolt or other kind of hook of the lock engages.

What I claim is—

1. The combination of the casing having a side opening, a sliding bolt, a series of plates each provided with an opening or slot for the reception of the bolt, there being on each plate a series of indentures or notches adapted to engage the wall of the casing opening, substantially as specified.

2. The combination of the casing having a side opening, a sliding bolt, a series of superposed plates, G, held loosely within the casing and each having an operating end portion projecting through the opening, a series of spring plates, as H, between the plates, G, there being in each plate, G, an opening for the reception of the bolt, and one edge of each plate having a series of equi-distant indentures or notches adapted to engage the wall of the casing opening, substantially as specified.

3. The combination of the casing, A, having opposite side openings, a sliding bolt, N, a series of superposed plates, G, projecting through said openings, finger catches, *g*, on each plate, intervening springs, H, between said plates, G, said springs having notches, *h*, to permit the free movement of the bolt, there being in each plate, G, an opening or slot, *g'* for the reception of the bolt, and one edge of each plate having a series of notches, *x*, adapted to engage the walls of the casing openings, substantially as specified.

4. The combination of the casing, a series of adjustable plates having bolt receiving notches, a bolt, N, guided in said casing, an operating lug, *n*, on said bolt, a removable upper cover, D, having a lug, *s*, adapted to an opening in the side wall of the casing, a slot in said cover for the passage of the lug, *n*, and a locking catch, E, pivoted to the cover and adapted to engage in an opening in the side wall of the casing, said catch being held in a locked position by the lug, *n*, when the bolt, N, is in the locked position, substantially as specified.

5. The combination with the locking devices of a sliding bolt, a pivoted tongue, B, a pivoted locking plate, C, adapted to engage said tongue and a projecting arm, C', on said plate, with which the sliding bolt is adapted to engage, substantially as specified.

6. The combination of the casing a series of locking plates, G, therein having bolt re-

5 ceiving openings, a sliding locking bolt, N, having a locking tongue projecting without the casing, a pivoted tongue, B, a pivoted locking plate, C, adapted to engage the tongue, and an arm, C', having a projection, c, all arranged and operating substantially as set forth.

In testimony whereof I have hereunto set my hand this 1st day of December, 1893.

JULES BOIS.

Witnesses:

XAVIER JANICOT,
JEAN GERMAIN.