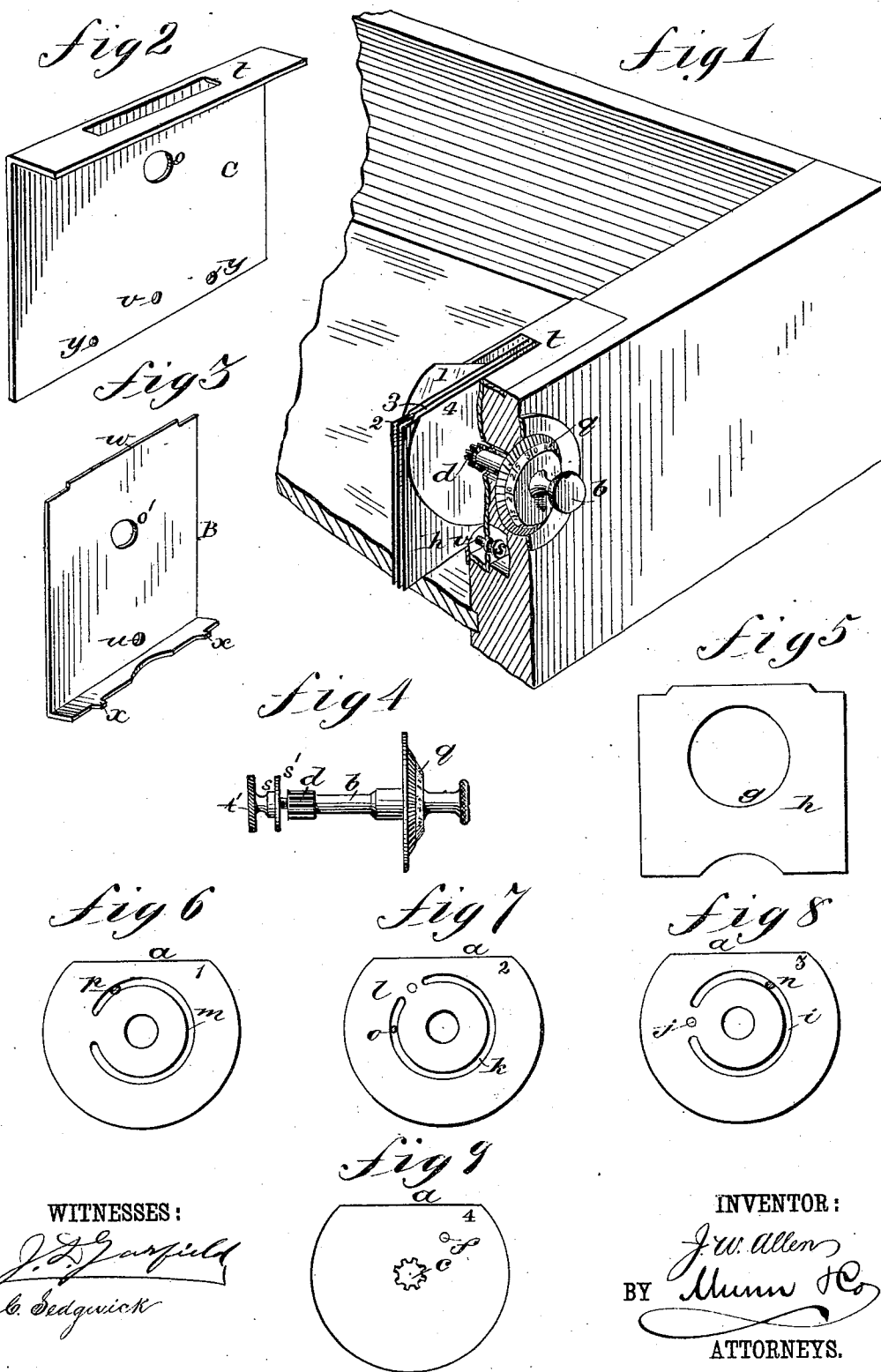


(Model.)

J. W. ALLEN.
COMBINATION LOCK.

No. 282,691.

Patented Aug. 7, 1883.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES W. ALLEN, OF ST. LOUIS, MISSOURI.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 282,691, dated August 7, 1883.

Application filed December 16, 1882. (Model.)

To all whom it may concern:

Be it known that I, JAMES WILLIAM ALLEN, of St. Louis and State of Missouri, have invented a new and Improved Combination-Lock, of which the following is a full, clear, and exact description.

In this improved lock a series of disks are substituted for the bolt, the said disk being mounted on a knob-spindle, to be turned by it to lock and unlock, the locking being effected by shifting the disks, so that any portion of the disks will project through the lock-case, and the unlocking by shifting them to a position in which the line of a segment cut off will coincide with the plane of the lock-case. One of the series of disks is positively connected to the spindle and turns synchronously with it, and, after making nearly a whole revolution, communicates motion to the next. The rest are operated successively in like manner, making a contrivance whereby it is required to shift the knob alternately to right and left a certain number of turns or parts of turns for each disk known to the operator, and controlled by an indicator for opening the lock, all as hereinafter fully described.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a section of a drawer having my improved lock, which is also shown in section. Figs. 2 and 3 are perspective views of the side plates of the lock. Fig. 4 is a side elevation of the knob-spindle and indicator. Fig. 5 is a side elevation of a partition-plate used to separate the disks and prevent one from being turned by the frictional contact of another. Figs. 6, 7, 8, and 9 are side elevations of the respective locking-disks of the series.

The series of disks represented in Figs. 6, 7, 8, and 9, and marked 1, 2, 3, and 4, are alike in size, thickness, and material, and all have a similar segment cut away on the line *a*, and the disk 4 is connected to the knob-spindle *b* positively, so as to turn synchronously with it, and the connection is formed by means of the notches *c* in the eye of said disk and the teeth *d* of the knob-spindle *b*, which teeth engage with the notches *c* in the disk 4, so that the latter is positively revolved with the knob-

spindle. Said disk 4 also has a stud-pin, *f*, which projects through the larger central hole, *g*, in the partition-plate *h*, placed between it and the next disk, 3, and into the curved slot *i* therein, which extends nearly but not quite around the circle. Disk 3 has a pin, *j*, extending into the curved slot *k* of the disk 2, and disk 2 has a pin, *l*, extending into the slot *m* of disk 1, which latter, being the terminal disk of the series, is not provided with a pin. It is to be noted that when the disks coincide in the lines *a* and the lock is open, pin *f* of disk 4 occupies the position *n* in slot *i*, to the right hand of pin *j*; pin *j* occupies the position *o* in slot *k* of disk 2, to the left hand of pin *l*, and pin *l* occupies the position *p* in slot *m* of disk 1, to the right hand of the position for the pin in disk 1, if it had a pin; and it is also to be observed that the disks 1, 2, and 3 turn freely on the knob-spindle. Supposing the lock to be open, the knob-spindle being turned to the left for locking it, pin *f* of disk 4 will soon come to the end of slot *i* of the disk 3, which must be turned nearly a whole revolution before its pin *j* will come to the end of the slot *k* in the disk 2. Then pin *l* of disk 2 will soon be carried to the end of slot *m* of disk 1, which should be turned about half a revolution back, to properly set it with the rest of the disks for locking the lock. Then, for unlocking it, the spindle must be turned four times to the right and stopped at the number on the indicator *q* known to coincide with the zero-mark when line *a* of said disk coincides with the face-plate *t* of the lock. Then turn the spindle two turns to the left and set disk 2 in like manner, then one turn to the right for disk 3, and then a part of a turn to the left for disk 4. More disks may be used for greater complication, if desired, and, as before stated, the combination can be changed by shifting disk 4 on the spindle, which will be readily understood. The whole series of combinations can be changed by turning over disk 1 and interchanging disks 2 and 3, which doubles the capacity of the lock. There is to be a partition-plate, *h*, between each two of the disks, so that they will not turn except when positively connected with the spindle, in order that when shifted to the locking or unlocking positions they will remain undisturbed by the frictional contact of one

with another, as if not so separated. A screw, *s*, passes through aperture *u* in the inner side plate, *B*, and screws at *v* into the outer plate, *C*, holding a lug or tenon, *w*, within the aperture of face-plate *t*, and lugs *x* within apertures *y*, for securely holding the side plates to each other to incase the locking-disks, as will be readily understood from the drawings. The knob-spindle *b* has a longitudinal hole made in the end on which the teeth *d* are arranged, which hole is internally threaded to receive a set-screw, *t'*, having a flange, *s*, and washer *s'*, which, when the set-screw is in place, bears against the outer face of the outer plate, *C*, of the lock and retains the latter in place on the drawer or other receptacle to which it is applied without additional fastenings.

It will be seen that the construction is simple and calculated to be durable, and the lock will be reliable for security and wear.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the segmental disk-shaped lock-bolt 4, positively connected with the spindle *b*, and provided with the pin *f*, of a series of similarly-shaped segmental

lock-bolts arranged to turn loosely on the spindle *b*, and provided with circular grooves and pins, the pins of the several lock-bolts working in grooves of the adjacent segmental lock-bolts, substantially as shown and described.

2. The combination, with the lock-case, knob-spindle *b*, the segmental disk-shaped lock-bolt 4, positively connected with the spindle, and provided with the pin *f*, and a series of similarly-shaped lock-bolts arranged to turn freely on the spindle, and provided with circular grooves and pins, as set forth, of the partition-plates *h*, each having an orifice, *g*, substantially as shown and described.

3. The combination, with the outer lock-plate, *C*, provided with the apertured face-plate *t*, holes *y y*, and threaded aperture *v*, of the screw *S*, the inner side lock-plate, *B*, provided with lugs *x*, tenon *w*, and hole *u*, and segmental-shaped lock-bolts 1, 2, 3, and 4, and partition-plates *h*, clamped between the lock-plates *B C*, substantially as shown and described.

JAMES W. ALLEN.

Witnesses:

N. J. BURROWES,
S. S. BISSELL.