(Model.)

2 Sheets—Sheet 1.

W. S. CHEDISTER.

PERMUTATION PADLOCK.

No. 286,903. Patented Oct. 16, 1883.

Fig. 3.

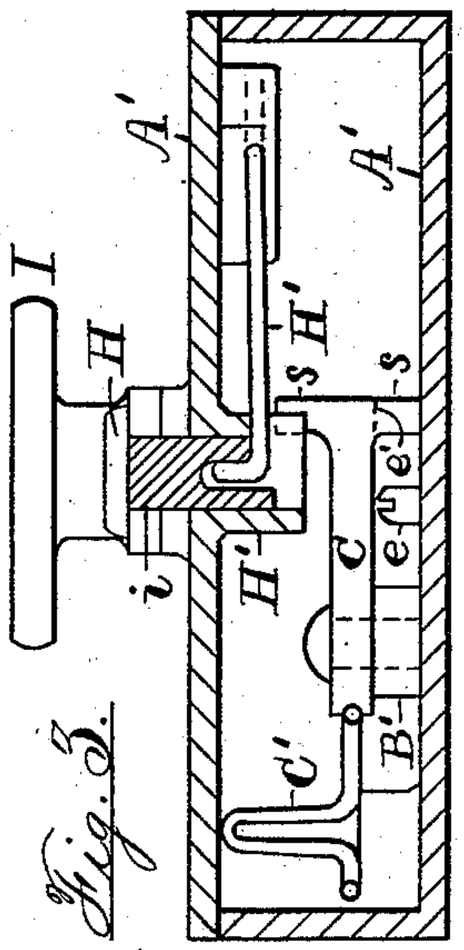


Fig. 2.

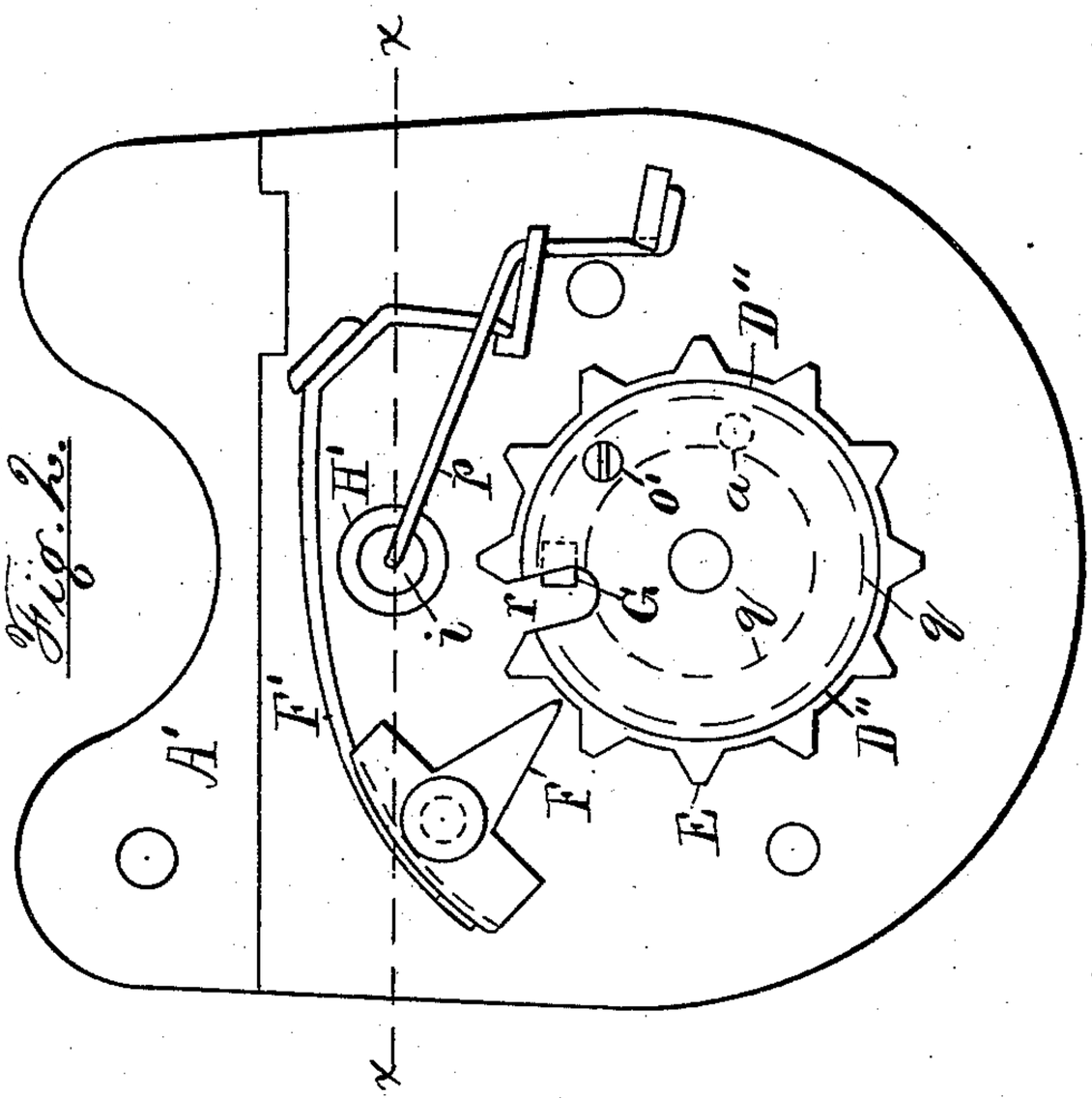
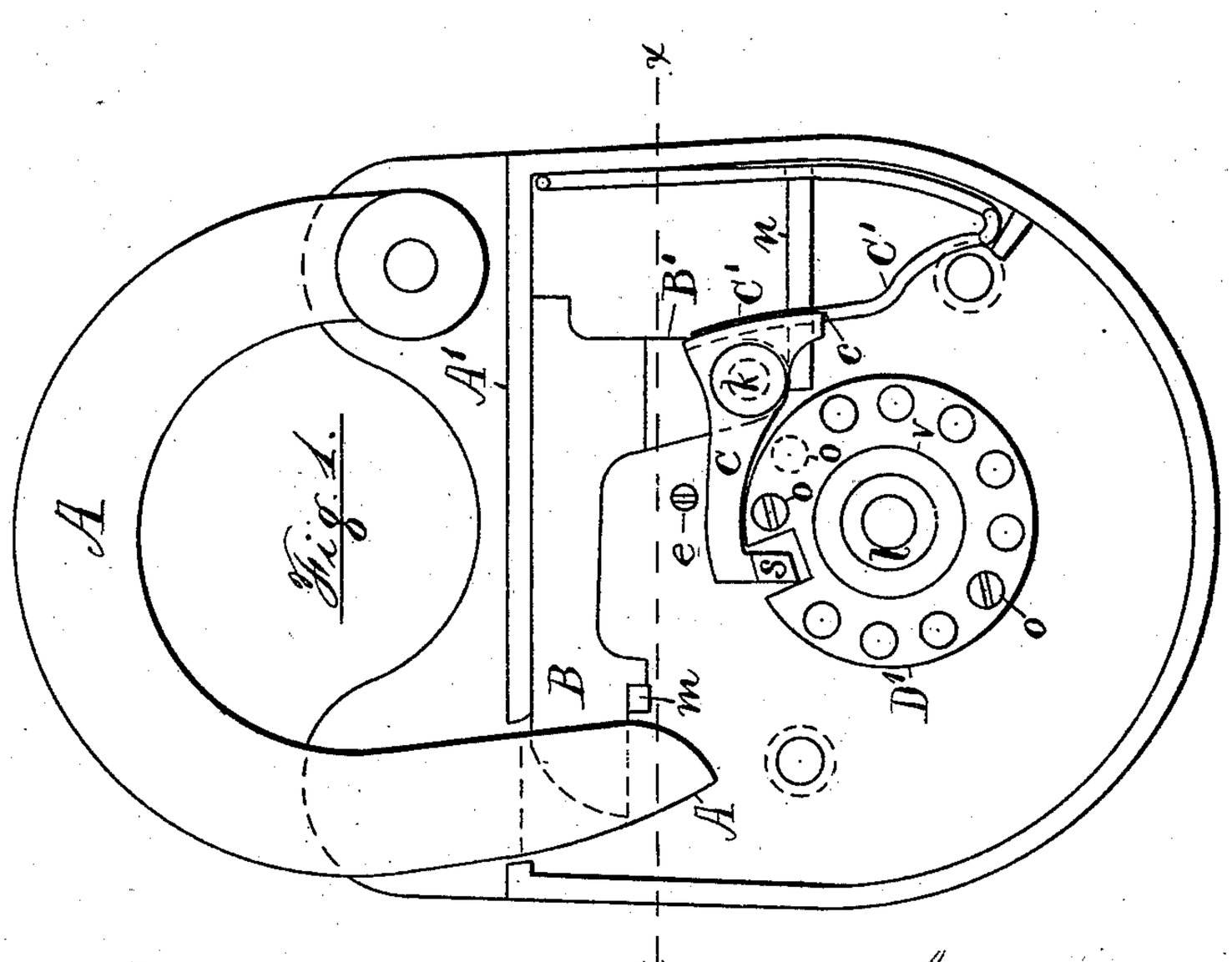


Fig. 1.



Attest:

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Thos. S. Crane, atty.

(Model.) 2 Sheets—Sheet 2.

W. S. CHEDISTER.

PERMUTATION PADLOCK.

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Fig. 8.

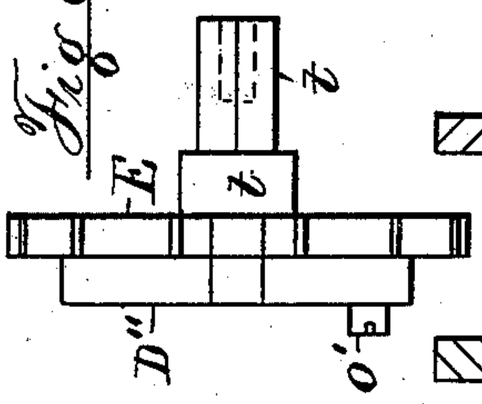


Fig. 9.

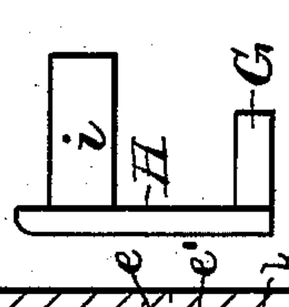


Fig. 6.

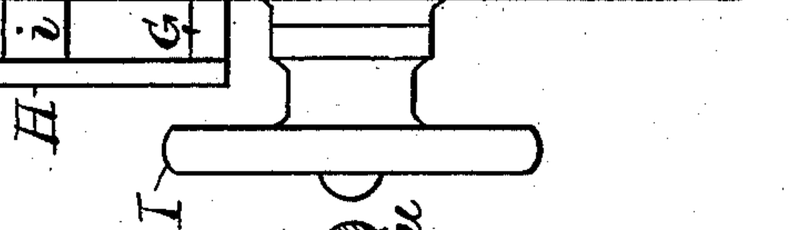


Fig. 7.

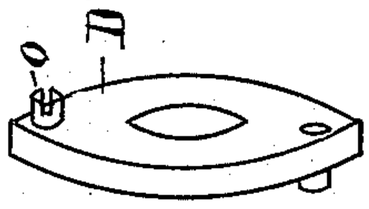


Fig. 5.

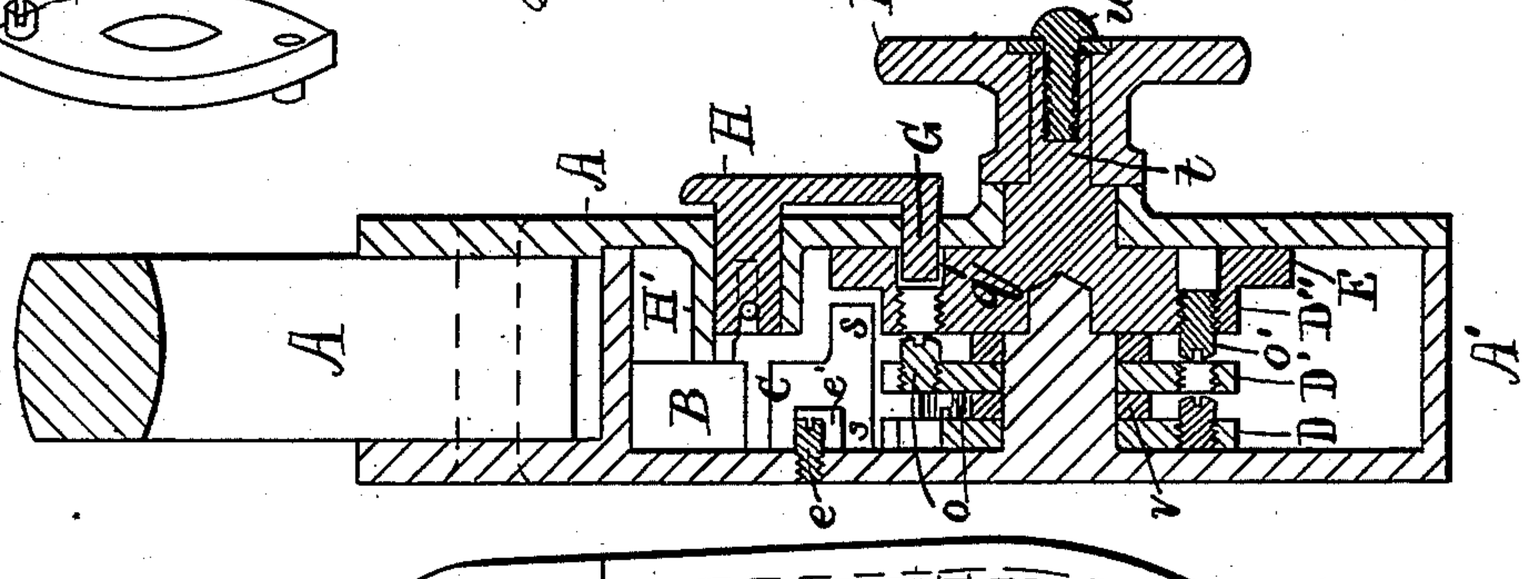
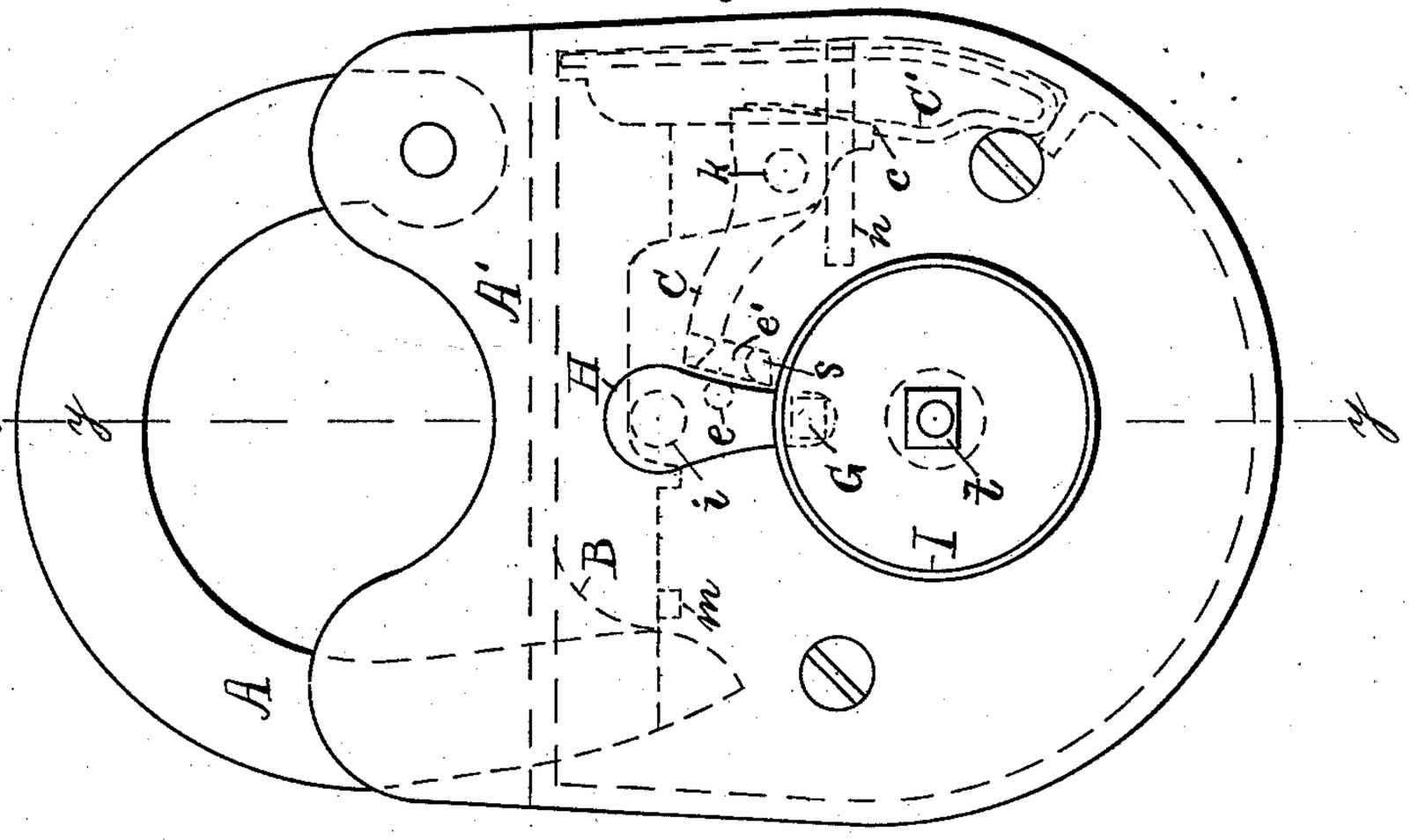


Fig. 4.



Attest:
Samuel H. Baldwin
William F. D. Crane.

Inventor.
W. S. Chedister, per
Thos. L. Crane, Atty.

UNITED STATES PATENT OFFICE.

WINFIELD S. CHEDISTER, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO JOSHUA S. COOLEY, OF NEW YORK, N. Y.

PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 286,902, dated October 16, 1883.

Application filed November 22, 1882. (Model.)

To all whom it may concern:

Be it known that I, WINFIELD S. CHEDISTER, a citizen of the United States, residing in the city of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Permutation-Locks, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in the combinations of mechanisms herein shown and described, the object of the devices being to provide the bolt with a tumbler that shall be secured by a series of permutation-disks, and to operate such disks by means of the combined indications of sound and feeling.

I am aware that other locks have been devised to indicate, by means of sounding devices, the position of certain parts of the mechanism, as in United States Patent No. 273,466, and others; but my invention differs from them in the manner in which the different parts are combined and operated, as well as in the construction of certain parts—as, for instance, the stop employed to fix the initial position of the operative spindle.

The nature and operation of the mechanism used will be understood by reference to the annexed drawings, in which—

Figure 1 is a side view of a padlock provided with my improvements, a portion of the devices being removed with the cover of the lock, so that the view exhibits only the hasp A, the bolt B, the tumbler C, the permutation-disk D′, and the spring C′ for operating the tumbler and bolt. Fig. 2 shows the inner side of the cover and the remaining pieces of the lock-works, consisting of the combined ratchet-wheel E and permutation-disk D″, the click F, and the springs F′ and *p*. Fig. 3 is a section of the entire lock in a transverse direction to Figs. 1 and 2, the parts shown in the section being indicated by the dotted lines *x x* in Figs. 1 and 2. Fig. 4 is an external side view of the entire lock, the bolt and tumbler being indicated in dotted lines to express their relations to the other parts when the bolt is retracted. Fig. 5 is a vertical section on line *y y* in Fig. 4, showing the parts in the right-hand side of the latter figure. Fig. 6 is an edge view of the lock at the right side, with the casing A′ removed. Fig. 7 is a similar view of one permutation-disk, D. Fig. 8 is an edge view of the combined wheel E and disk D″, and Fig. 9 is an edge view of the stop G detached.

The bolt B is arranged to slide transversely in the casing A′, and is kept in place by a guide-pin, *m*, and rib *n*, the latter bearing against a tail-piece, B′, projected laterally downward from the bolt at its rear end, and having the tumbler C pivoted to it near the rib *n* by a pin, *k*. The permutation-disks D, D′, and D″ are mounted upon a spindle, *l*, on the middle line of the lock, and arranged with their upper rims on a level with the pin *k*. They are each formed with a notch, *r*, to catch the tumbler, which is provided with a bit, *s*, extended across the rims of all the disks, as shown in Fig. 5, and the disk D″ is connected with a spindle or shaft, *t*, extended through the front of the casing A′, for turning all the disks with their notches *r* toward the bit *s* upon the tumbler. A hand-wheel, I, is attached to the shaft *t* outside the casing by a screw, *u*, the shaft being made square, as shown in Figs. 4 and 8, or keyed to the wheel, if preferred. The click-wheel E is shown in Figs. 2, 5, and 8 attached to the disk D″, so that the latter partakes of all the movements of the former, and serves to operate the other disks in the following manner when the hand-wheel I is turned: The disks D D′ turn loosely upon the spindle *l* and are rotated solely by means of pins *o*, affixed at determined points and projected toward the adjacent disks. The disks are all separated by fixed collars *v*, and the disk D″, having the spindle *t* and hand-wheel I attached, is provided with a pin, *o′*, projected toward the disk D′ and adapted to rotate the latter disk by contact with its pins *o* when the disk D″ is turned by hand. The pins *o* between the disks D and D′ are also adapted to engage one another when the latter disk is rotated by the pin *o′*, and the disks D and D′ may thus be set in any desired positions by regulated movements of the hand-wheel and disk D″. To effect such regulated movements of the disk D″ the latter is provided, first, with a stop-pin, *a*, and stop G, from which the series of regulated movements is gaged or started; and, secondly, with the ratchet or

click wheel E and click F, by which the operator can determine specific movements of the wheel E without any visible dial or index. The stop G is shown in Fig. 5 as a rectangular pin projecting through from the outside of the casing A′, where it is attached to a thumb-piece, H, for receiving the pressure of the finger. This thumb-piece is mounted upon a sliding shank, *i*, which is fitted to a socket, H′, in the casing A′, and a spring, *p*, pressing upon the inner end of the shank *i*, serves to keep the stop out when not in use, as indicated in Fig. 6. When pressed in by the finger, the stop enters a groove, *q*, formed in the wheels E and D″ adjacent to the casing A′, and serves to check the rotations of the said wheels at a fixed point by means of a pin, *a*, inserted in the groove for that purpose. By pressing upon the stop or piece H at any time, and rotating the wheel I in the proper direction, the movement may thus be checked at a predetermined point, and the stop then released to permit further movements therefrom. To determine such subsequent movements from the initial point, the click-wheel E is furnished with a specific number of teeth—say twelve, as shown in the drawings—and the pins *o* and *o′* adjusted to coincide with certain twelfths of the click-wheel's movements. The three disks are therefore divided in their construction into twelve imaginary sections, and the pins *o* and *o′* inserted in the central points of certain sections corresponding to a certain series of motions of the wheel I and disk D″. The disk D is shown in the drawings in Fig. 5, provided with one pin, *o*, and the disk D′ in Fig. 1 provided with one pin, *o*, shown in dotted lines, to engage with it, while two pins, *o*, are shown with notched heads in the same figure to engage with the pin *o′* upon the disk D″. These pins are shown screwed into tapped holes in the disks D and D′, and twelve holes are shown in the disks to permit the transfer of the pins to various positions for changing the combination-numbers used to open the lock. With the arrangement of pins shown in the drawings, the notches *r* may be brought into coincidence by turning the wheel I from the initial point secured by using the stop G, nine clicks to the left, five to the right, and then two to the left, the wheel I being turned to the right after the bit is in the notches to withdraw the bolt from the hasp. When the notches in the three disks are thus brought to coincide with the bit *s* upon the pivoted tumbler C, the bit falls into the same, as shown in Fig. 1, and the bolt may be moved by turning the handle I and disk D″ to the right. The disk being fixed to the spindle or shaft *t*, and having a notch, *r*, in its periphery to engage the bit *s*, moves the bolt by pushing the tumbler to the right, the bolt and tumbler sliding together, being pivoted at the pin *k*, and advancing against the resistance of the spring C′, which is fixed at a point in the casing below the rear end of the tumbler, and presses against the widened end of the latter. This widened end extends transversely across the rear of the tumbler, so that the spring presses upon the upper or lower corner as the tumbler is raised or lowered, and such end, therefore, operates as a spring-bearing. The pressure of the sides of the notch *r* against the bit *s* tends to keep the bit in the notch when the movement of the bolt is effected by the disk D″; but when the bolt is moved by the insertion of the hasp into the lock the spring exercises another influence by bearing against the lower corner, *c*, of the spring-bearing at the rear end of the tumbler and tilting the front end of the tumbler upward, as shown in Fig. 4. When the bolt springs forward after the insertion of the hasp, the bit is prevented from falling into the notches *r* by a tripping-pin, *e*, fixed in the casing behind the side of the bit, and arranged to enter a channel, *e′*, formed in the bit next the casing.

In Fig. 4 the hasp is shown pressed all the way down, and the bolt as it is pushed back thereby. Were it not for the pin *e*, the tumbler would fall into the notches *r* when the bolt springs forward after being thus pushed back by the hasp, and the lock could be opened again by the turning of the knob I. The pin is fixed in the casing, so as to engage the channel *e′* as soon as the bolt commences to move forward, and is thus shown in Fig. 5, the view in Fig. 4 indicating the pin just before the end of the tumbler, and ready to engage it as it first moves. The length of the channel is proportioned to keep the tumbler elevated, as in Fig. 4, until the bolt is entirely closed, when the tumbler falls upon the rims of the disks, and the regulated movements have to be repeated before the lock can be again opened. The combined tilting action of the spring C′ and the pin *e* thus secure a resetting of the combination every time the lock is used, and the hasp is permitted to be self-locking.

The construction and operation of my invention have been represented herein, for illustrative purposes, as applied to a padlock; but it is obvious that the same works can be used for a desk or chest lock.

Having thus fully set forth the nature and operation of my invention, I claim the same as follows:

1. The combination, with the casing A′, of the click-wheel E, arranged inside the latter, and provided with pin *a* and connected by the shaft *t* with the handle I outside the casing, and the stop G, constructed to pass through the casing to engage the pin *a*, and operated by pressure from the outside, substantially as and for the purpose set forth.

2. The combination of the notched disks, the sliding bolt B, the tumbler C, pivoted thereto, and constructed with the channel *e′* in the side adjacent to the pin *e*, and the bearing for the spring C′, and the spring C′ and the pin *e*, inserted in the case so as to enter the channel *e′* when the tumbler is raised, the whole operating to prevent the tumbler from

entering the notch *r* when the bolt springs forward, substantially as set forth.

3. The combination, with the notched disks rotated by pins *o*, as described, of the combined click-wheel E and notched disk D″, the wheel and disk being connected to hand-wheel I by shaft *t*, and the movable stop G, operating with a pin, as *a*, in the wheel E, to set the mechanism in its initial position, substantially as shown and described.

4. The combination of the bolt B and tumbler C, constructed and operated as described, with the notched disks, the combined click-wheel E, and disk D, provided with stop-pin *a*, as described, and the stop G, operating through the casing of the lock upon the pin *a* to adjust the click-wheel to a specific position, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WINFIELD S. CHEDISTER.

Witnesses:
THOMAS S. CRANE,
WILLIAM F. D. CRANE.