

No. 824,370.

PATENTED JUNE 26, 1906.

P. MAGARO, NO. 3.

LOCK.

APPLICATION FILED JAN. 10, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

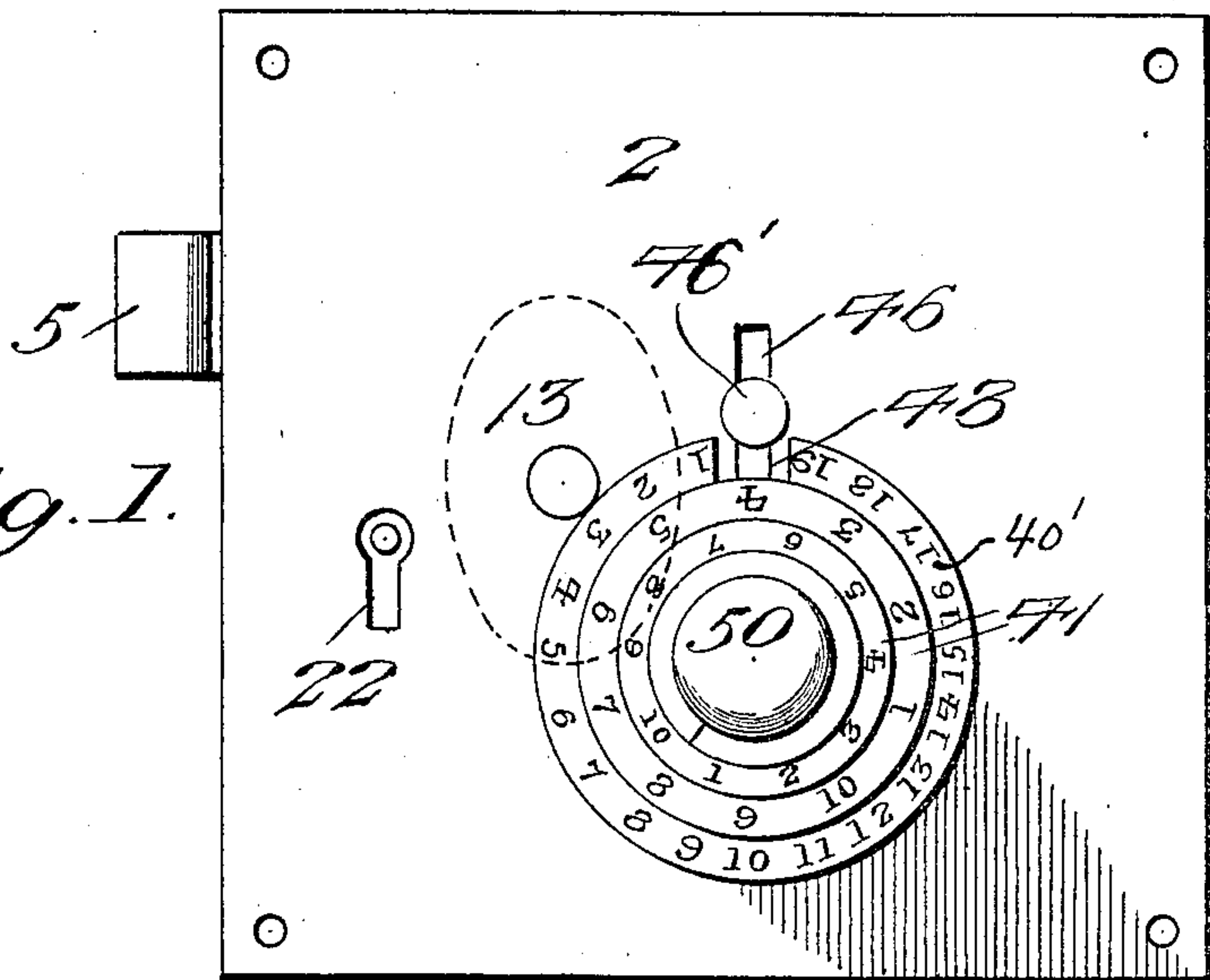
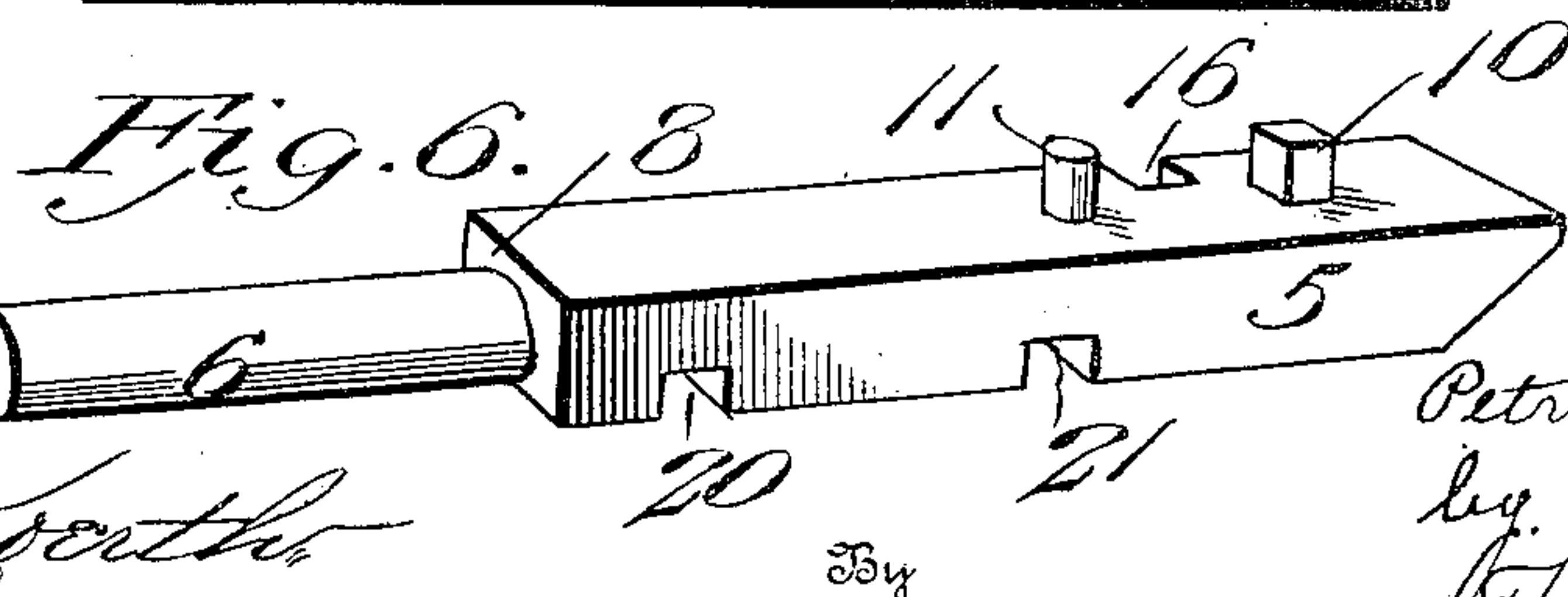
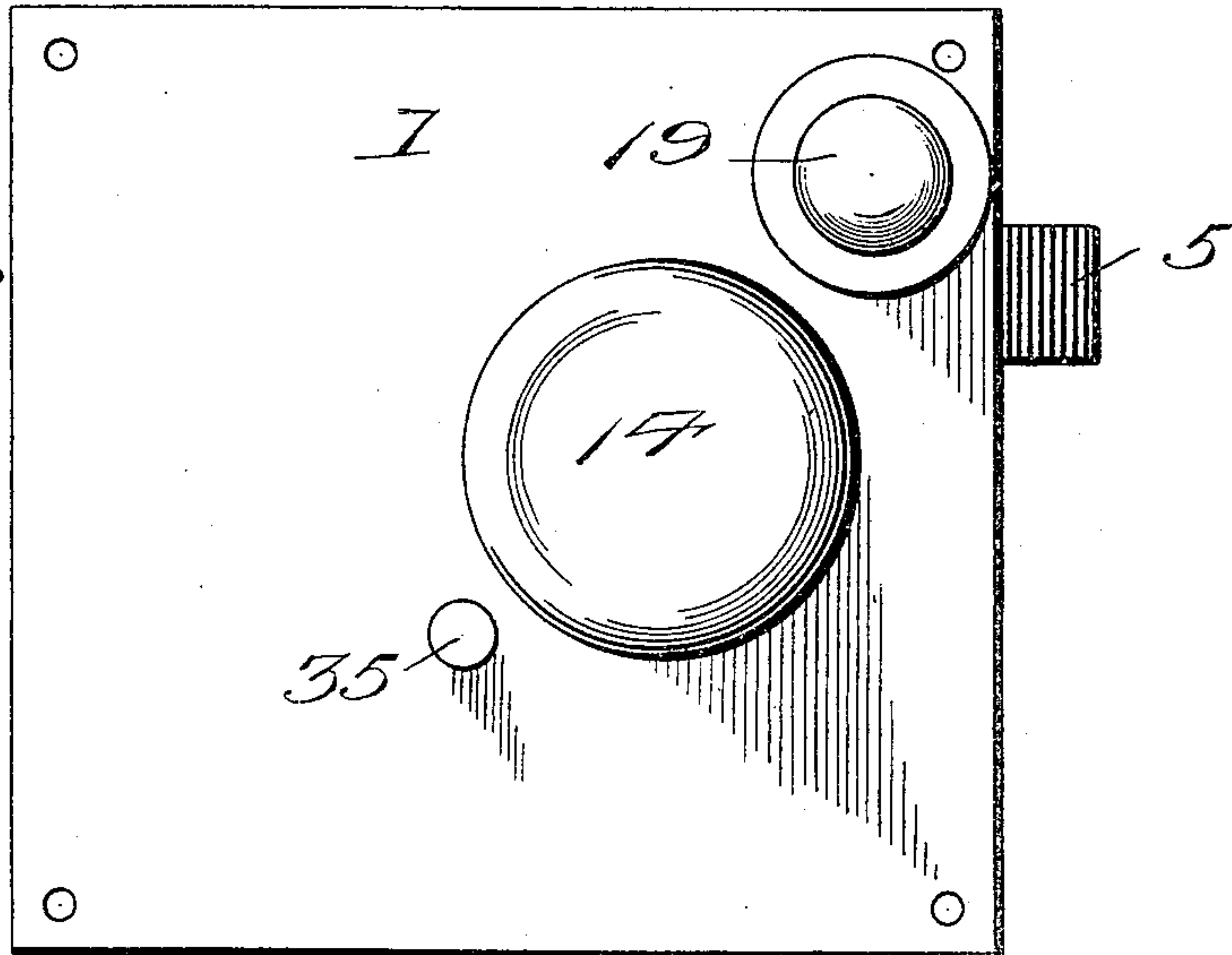


Fig. 2.



Witnesses

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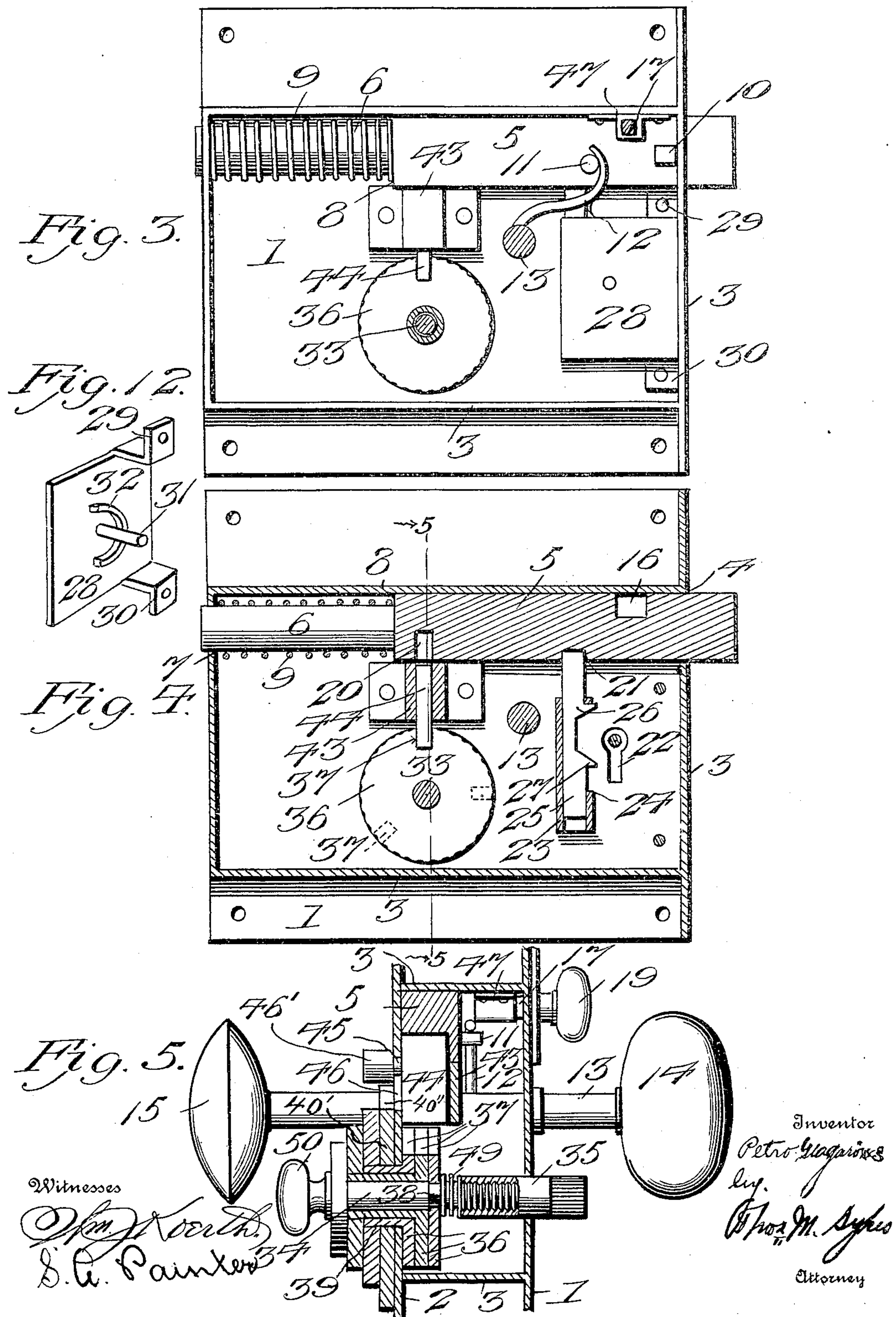
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3 SHEETS—SHEET 2..



UNITED STATES PATENT OFFICE.

PETRO MAGARÒ, NO. 3, OF STEELTON, PENNSYLVANIA, ASSIGNOR OF
ONE-THIRD TO SALVATORL MAGARO AND NICOLA GRANDONIO, OF
HARRISBURG, PENNSYLVANIA.

LOCK.

No. 824,370.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed January 10, 1905. Serial No. 240,421.

To all whom it may concern:

Be it known that I, PETRO MAGARÒ, No. 3, a citizen of the United States of America, residing at Steelton, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Locks, of which the following is a specification.

This invention relates to locks, and bears more particularly on that class known as "combination-locks."

An object of this invention is to provide a device of this kind that will be simple in construction, efficient in practice, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts, to be hereinafter more fully set forth and claimed.

In describing the invention in detail reference will be had to the accompanying drawings, forming part of this specification, wherein like characters denote corresponding parts in the several views, in which—

Figure 1 is a view in side elevation of a lock embodying the invention. Fig. 2 is a view in elevation of the side opposite to the one illustrated in Fig. 1. Fig. 3 is a view in elevation, partly in section, of the invention, one of the side plates being removed. Fig. 4 is a longitudinal section of the device. Fig. 5 is a view in cross-section taken on the line 5 5 of Fig. 4. Fig. 6 is a view in perspective of the sliding bolt. Fig. 7 is a view in elevation of a lock with a side plate removed, illustrating a modified form of my invention. Fig. 8 is a view in side elevation of the lock illustrated in Fig. 7. Fig. 9 is a sectional view taken on the line 9 9 of Fig. 7. Fig. 10 is a view in perspective of the night-latch employed in both forms of the invention. Fig. 11 is a view in perspective, showing a disk and its corresponding part detached. Fig. 12 is a view in perspective of the key-plate employed in the invention.

Referring to Figs. 1 to 5 of the drawings, 1 and 2 indicate the opposite side plates of a lock-casing, and 3 the edge strips, all of any preferred or ordinary construction.

The front edge strip at its top is provided with a suitable aperture or opening 4, through which an end of the sliding bolt 5

passes. This bolt 5 is provided at its rear end with a reduced circular extension 6, which passes through an aperture 7 in the rear edge plate of the lock-casing. The walls of the apertures act as guides or supports for the bolt and hold the same in its horizontal position. The extension 6 forms with the bolt 5 a shoulder 8, and interposed between this shoulder 8 and the rear edge plate of the lock-casing is a spiral spring 9, which embraces the said extension 6 and is adapted to exert sufficient pressure on the bolt 5 to hold the outer end thereof normally beyond the front edge plate of the casing.

To limit the outward movement of the bolt, a lug 10 is provided on the bolt, which is adapted to abut or contact with the front edge plate of the lock-casing, and thereby act as a stop. Also carried by the same surface with the stop is provided a second lug 11, which is engaged by an operating-lever 12, secured at one end to the lock-operating spindle 13. The operating-lever 12 is bent on a compound curve and is adapted to engage the lug 11 of the bolt 5 and impart a rearward longitudinal movement thereto of sufficient distance as to draw said bolt within the casing through the aperture 4. The lug 11 is in position on the bolt 5 slightly in advance of the spindle 13 when the bolt 5 is in its normal position. When the spindle 13 is rotated rearwardly, the lever 12 will contact with the lug 11 and force the bolt 5 rearwardly. The spring 9 returns the bolt 5 automatically to its normal position as soon as the strain is released from the operating-spindle. This spindle, it must be understood, extends laterally through the lock-casing and is provided at its ends with the hand-grasps or knobs 14 and 15.

The upper edge of the bolt 5 intermediate its length and at a point near its outer end is provided with a recess 16, in which moves a latch 17, provided with a stem 18, preferably square in cross-section. This stem passes through a suitable aperture (not shown) in the plate 1 of the lock-casing and is provided at its free end or the portion exterior of the casing with a hand-grasp or knob 19. This stem and latch extends within the recess 16 transversely of the bolt and is moved laterally with relation to the casing by the knob. This knob or hand-grasp is adapted to be lo-

cated on the inside of the door or closure and is used as an auxiliary means for holding the bolt 5 in its locked position, although the person or persons on the exterior may be familiar with the workings of the lock. This latch may be termed a "night-latch."

Near the plate 1 of the casing and secured to the upper strip 3 is the guide 47 for the stem 18 of the latch 17.

10 The lower surface of the bolt 5 is provided with two grooves or recesses 20 and 21, which extend transversely across its entire width. The groove or recess 20 is positioned near the rear end of the bolt 5, while the groove or recess 21 is approximately centrally of the bolt. 15 The groove 21 is employed with the key-operated locking means. The plate 1 is provided with a keyhole 22. Within the casing and to one side of the keyhole 22 is secured to the plate 1 a hollow vertical guide 23, open at 20 both ends and preferably square in cross-section and alining with the groove 21 in the bolt. The edge of the guide adjacent the keyhole 22 is provided with a slot 24 intermediate its length. Within the guide is 25 mounted a slide or latch 25, provided with the suitably-spaced lugs 26 and 27. These lugs are adapted to engage the ends of the slot 24, and thereby limit the movement of said latch 25 in either direction. The lug 26 30 or upper lug is so positioned on the latch 25 that when it is in contact with the upper edge of the slot 24 the end of said latch is within the groove 21 of the bolt 5 to hold said bolt against movement. The lug 27 is so positioned that when it is in contact with the lower edge of the slot 24 the latch 25 is free of 35 the groove 21. The latch 25 is reduced at its edge between the lugs 26 and 27 and has the ends of the reduced portion beveled, the said bevel being continued on the inner edges of the lugs 26 and 27. The blade of a key (not shown) is adapted to work between the lugs 26 and 27 and either elevate or lower the 40 latch 25, as the case may be. The latch 25 is held in engagement with the slot 21 by friction.

A key-plate 28 is positioned within the casing above the keyhole and consists of a flat 50 piece of metal having at one end at opposite corners feet 29 and 30, which are secured to the casing-plate 1 in any preferred manner.

Projecting from the key-plate 28 and extending toward the keyhole 22 is a key-post 55 31, which is adapted to fit within a hollow end portion of the key, as is ordinary. Also carried by the key-plate is a stop 32, which prevents any undue rotation of the key. It is to be understood that in employing this invention it is not necessary to utilize a hollow 60 key or a key-plate, but in practice it has been found that such use greatly enhances the efficiency of the lock.

Extending transversely through the lock-casing is a shaft or spindle 33, which is

formed in two sections 34 and 35, having end portions threaded one within the other. Arranged on the shaft within the lock-casing is a disk 36, provided in its periphery with an elongated recess 37, said disk being held between a shoulder 38, formed on the shaft-section 34, and an end of a spring 49, the opposite end of the spring bearing against the end of the shaft-section 35, said section 35 being threaded on the section 34. The shoulder 75 38 is formed by reducing the section 34 of the shaft 33, said reduced portion being angular in cross-section. The inner disk 36 is mounted on the angular portion and is thereby caused to move with the shaft 33 80 when the same is rotated. It is well to mention that the dial 40' is turned by hand independent of its shaft. The next succeeding disk is loosely mounted on the shaft and is provided with a sleeve which extends through 85 the casing-plate 2. The next succeeding disk is mounted on the sleeve just described, said second disk being also provided with a sleeve which extends through the casing-plate 2. The outer ends of the sleeves are 90 angular in cross-section for the reception of indicating-dials 41, with central apertures 42, conforming to the configuration of the angular section of the sleeves. These latter-named disks are also provided with elongated 95 recesses, also marked in the drawings as 37. Loosely mounted on the outer sleeve and interposed between the dial thereof and the casing-plate is a dial 40', said dial being provided with a notch 40'', which arranged beneath the knob 46' of the latch 44 permits 100 movement thereof. When said dial is turned, it is to be understood that the latch 44 will be held in engagement with the bolt 45. These dials rest one upon the other and 105 are of different diameters, so that indicating means, shown in the drawings as figures carried thereby near their peripheries, may be readily distinguishable. It is to be understood that the combination of the lock used 110 in connection with these dials may be easily changed by removing one or all of said dials and replacing them again with a suitable number carried thereby, registering to an "operative" point 48 on the plate, which in 115 this instance may be the slot 46. Each of the dials operates its disk independent of the remaining disks, and in order that this may be easily done a spring 49 is interposed between the end of the shaft-section 35 and the 120 inner disk 36, so that a yielding movement may be given the disks to prevent the binding thereof. The inner disk is operated by the shaft 33 itself, which at its end is provided with an indicating-knob 50. The 125 shaft 33 is positioned on a line beneath the groove 20 when the bolt 5 is in its normal position, and interposed between the shaft and its disks and the bolt 5 is a vertical guide 43, also alining with the groove 20 of the bolt 5. 130

This guide 43 is attached to the plate 1 of the casing. Riding in the guide is a slide or latch 44, which is adapted to enter the groove 20 when elevated and holds the bolt against movement and when lowered to enter the recesses 37 of the disks when the same are in register. To operate this catch, a lug 45 is carried thereby, which rides in an elongated slot 46 in the plate 1. The lug is provided on its exterior or free end with a button 46', whereby the same may be manipulated to operate the latch.

In Figs. 7, 8, and 9 is illustrated another form of the invention. Within the lock-casing and bearing against the side *a* thereof is the sliding bolt *b*, which has its upper edge bearing against depending lugs *c*, which holds the same slightly below the upper edge plate *d* of the lock-casing. The lower edge of the bolt rests on lugs *e*, projecting from the plate *a*. This bolt *b* also projects through a suitable aperture in the front edge plate of the casing and is provided with oppositely-opposed lugs *j*, which bear against the said front edge plate to limit the outward movement of the bolt. Intermediate its length the bolt is provided with an elongated slot or aperture *f*, which rides over a hollow lug or guide *g*, and interposed between the outer end of the slot and the guide and embracing the projection *h* is a spiral spring *i*, which exerts sufficient pressure on the bolt to hold it in its normal position, which is with the lugs *j* bearing against the front edge of the casing. The upper edge of the bolt is provided near its rear end with a transverse recess *k*, in which fits the night-latch *m*, carried by the stem *n*. This stem *n* rides through the hollow boss *o*, formed on the upper edge plate of the casing, and is provided at its free end with an operating-knob or hand-grasp. The boss *o* acts as a guide for the stem *n*.

Approximately centrally of the lower edge of the bolt is a transverse recess *p*, in which fits an end of a latch *r* when the bolt is in its normal position. This latch *r* rides between guiding-lugs *s* and *t*, the bolt *b* resting on the lugs *t*, while the lugs *s* are spaced a suitable distance therebelow and are provided with apertures *u*. Carried by the latch near the top are the arms *v*, which have the depending guide-rods *w*, arranged to either side of the latch *r* and riding through the apertures *u* of the lugs *s*.

Interposed between the arms and the lugs on each of the guide-rods and embracing the same are spiral springs *x*, which are for the purpose of holding the latch normally within the recess *p*. One of the cross-arms is extended and bent to form a foot *A*, which is engaged by an arm *B*, carried by a collar *C*, mounted on the operating-spindle *D*. By this means the turning of the spindle in one direction will depress the latch *r* sufficiently to release it from the recess *p*. A set-screw

E or arm is carried by the latch and extends through an elongated aperture or slot *F* in the plate *a* for holding the latch *r* in its lowered or depressed position, the same being held manually. Also carried by the collar *C* is an upwardly-extending arm *G*, which contacts with a depending arm *H* on the bolt *b* for imparting movement to the same when the spindle is turned in the opposite direction.

Depending from the lower end of the latch *r* is an arm *J*, which is adapted to fit between the walls of the notches or recesses *K* of the disks *L*, as in the previous or first described form. In this form of invention the disks are constructed the same as previously disclosed, with the exception that the binding-spring is omitted and in place thereof an aperture is made in the shaft *M*, in which a binding-plate *N* is seated. A set-screw is threaded in the end of the shaft and bears against the plate in order to regulate the pressure of the plate on the disks.

Near the rear edge of the plate *a* is the usual keyhole *O*, and on the interior of the plate and vertical thereof moves a latch *P*. This latch at its top passes between the guiding-lugs *R S* on opposite sides of said latch, and at the bottom on the side adjacent the hole *O* said latch engages a guiding-lug *T*.

Projecting from one side of the latch *P* are suitably-spaced lugs *U V*, between which a bit of a key (not shown) works and engages said lugs in order to engage or disengage the latch *P* from the inner end of the bolt *b*. These projecting lugs *U V* also engage the guiding-lugs *R T* to limit the movement of said latch *P* in either direction.

On the opposite side of the latch *P* is formed another lug *W*, against which bears the free end of a curved spring *Y*, said spring being secured at its opposite end to the plate *a*. This spring also acts as a guide for the latch *P* and is of sufficient tension to hold the latch in its different positions against the guiding-lugs. It is to be observed that the lugs *R S* are in diagonal relation in order to permit an oscillatory movement. The spring *Y* allows a certain oscillatory movement to the latch *P*. This oscillatory movement is permitted the latch *P*, so that no undue wear or strain will be given thereto by the action of a key in operating the same. The oscillatory movement compensates for the rotary movement of the key-blade.

From the foregoing description it is thought that the construction, operation, and advantages will be fully understood, it being noted that various changes may be resorted to for successfully carrying the invention into practice without departing from the scope thereof.

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

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1. In a lock, a casing, a sliding bolt therein, a latch engaging said bolt, a shaft mounted in the casing, slotted disks on the shaft adapted to engage the latch, said shaft being
5 formed in sections, and means carried by one of the sections bearing against a second section and a disk to hold the disks against undue longitudinal movement on the shaft.

2. In a lock, a casing, a sliding bolt therein, a latch engaging said bolt, a shaft mounted in the casing, slotted disks on the shaft adapted to engage the latch, said shaft being
10 formed in sections, and yielding means carried by one of the sections bearing against a
15 second section and a disk to hold said disks against undue longitudinal movement on the shaft.

3. In a lock, a casing, a sliding bolt therein, a latch engaging said bolt, a shaft mounted in the casing, slotted disks on the shaft adapted to engage the latch, said shaft being
20 in sections threaded one within the other.

4. In a lock, a casing, a sliding bolt therein, a latch engaging the bolt, a shaft extend-

ing within the casing, slotted disks on the
25 shaft, one of said disks being held against independent rotary movement thereon, the remainder of the disks being loosely mounted on the shaft, sleeves on the loosely-mounted
30 disks extending beyond the casing, dial-plates secured to the sleeves, and a dial-plate mounted on the shaft, the notches of the disks being engaged by the latch of the bolt.

5. In a lock, a casing, a sliding bolt therein, a latch normally engaging the bolt, said
35 latch being provided with arms, guiding-lugs for the latch, rods carried by the arms engaging the guiding-lugs, and springs embracing the rods and bearing against the
40 guiding-lugs and the arms of the latch to hold the latch in its normal position.

In testimony whereof I affix my signature, in the presence of two witnesses, this 9th day of January, 1905.

PETRO MAGARÒ, No. 3.

Witnesses:

WM. C. ARMOR,
MARY E. HAUER.