

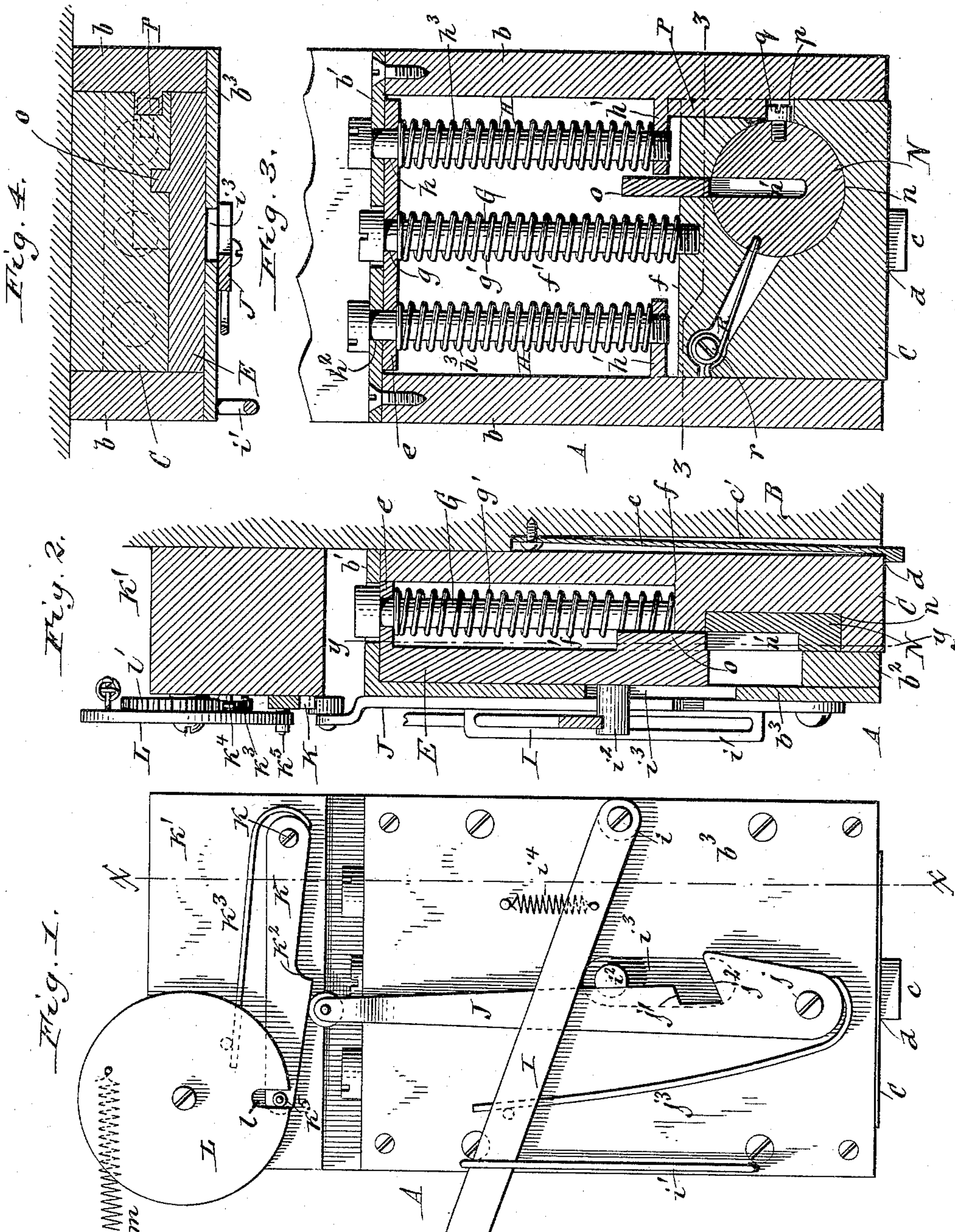
(No Model.)

2 Sheets—Sheet 1.

G. J. H. GOEHLER.
TIME LOCK.

No. 493,862.

Patented Mar. 21, 1893.



Witnesses:
Theo. L. Popp.
Friedrich, Gustav, Wilhelm.

Geo. J. H. Goehler Inventor.
By Wilhelm Bonnet.
Attorneys

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

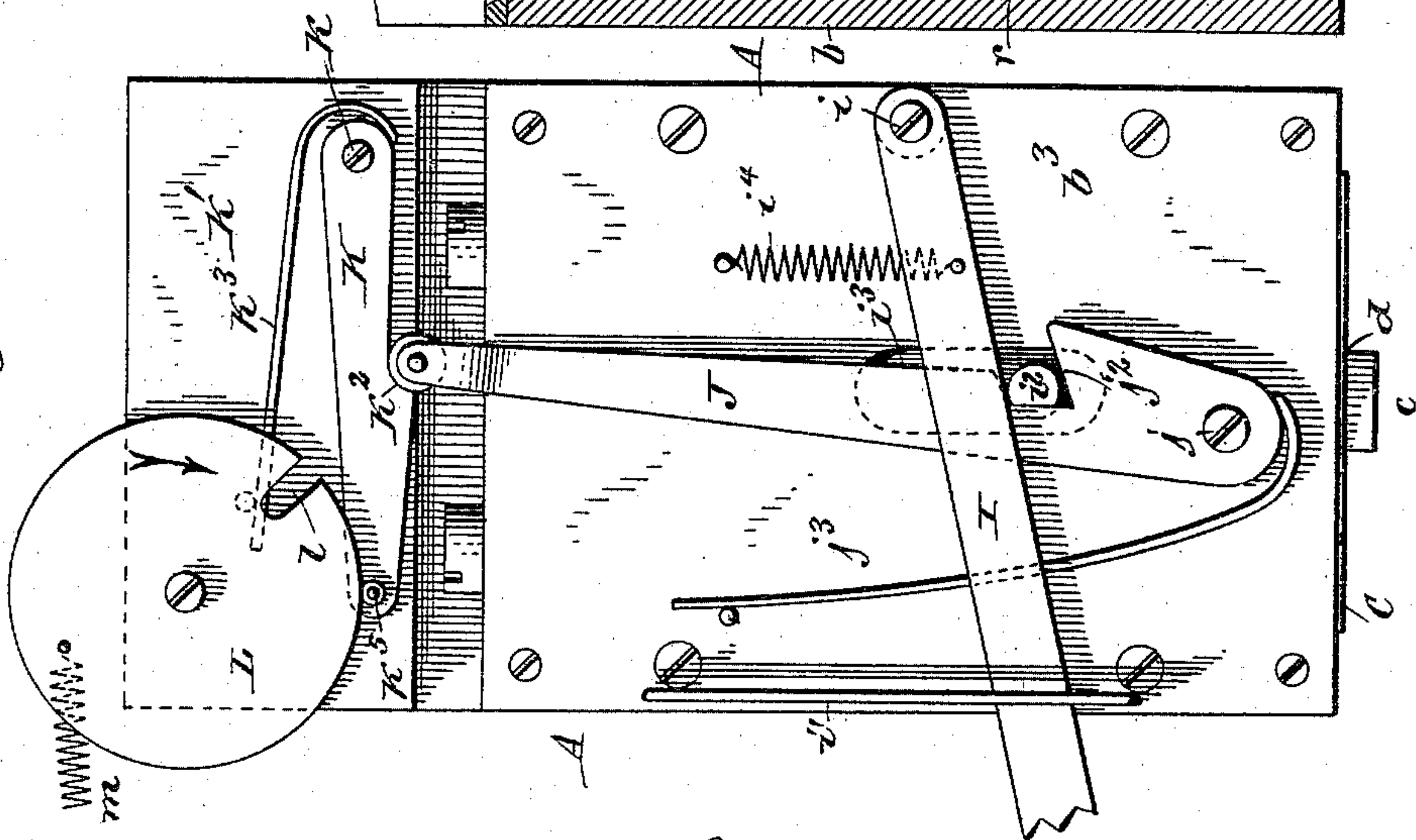


Fig. 6.

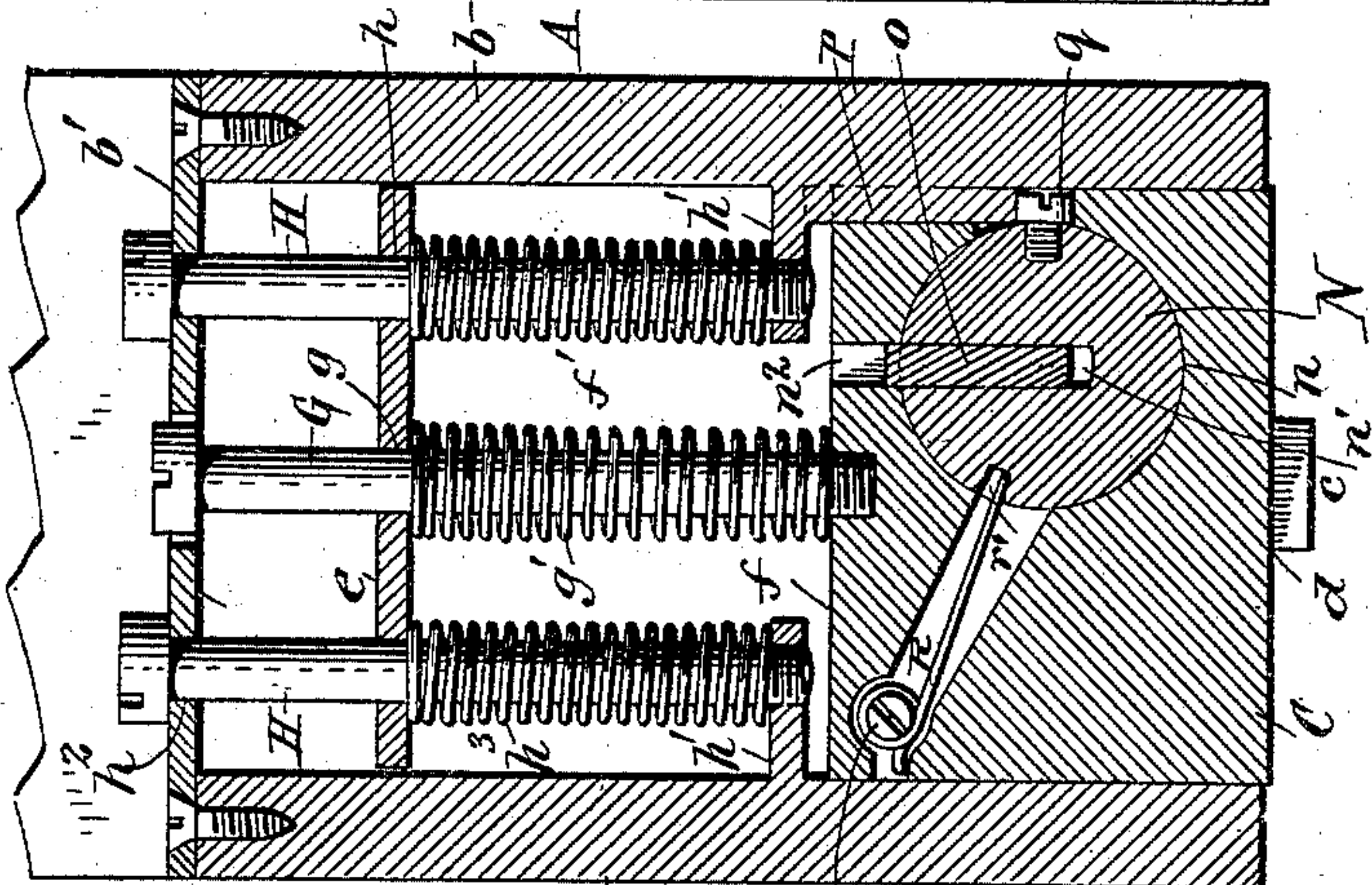
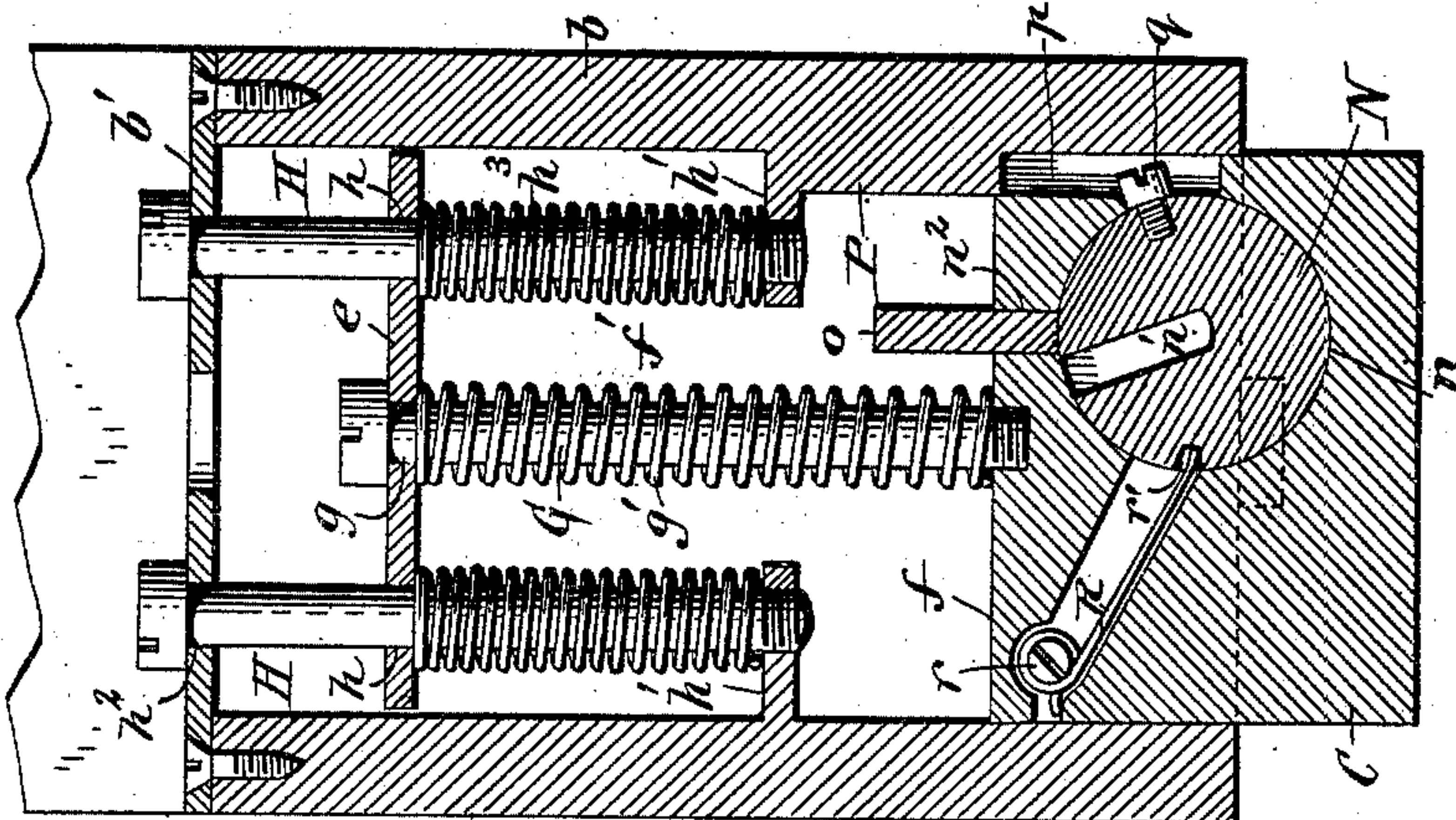


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE J. H. GOEHLER, OF BUFFALO, NEW YORK, ASSIGNOR TO THE CARY
SAFE COMPANY, LIMITED, OF SAME PLACE.

TIME-LOCK.

SPECIFICATION forming part of Letters Patent No. 493,862, dated March 21, 1893.

Application filed June 20, 1892. Serial No. 437,316. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. H. GOEHLER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Time-Locks, of which the following is a specification.

This invention relates to time locks for safes and vaults, and has the object to provide the bolt with a safety locking mechanism which prevents the bolt from being moved inwardly and unlocked by a force externally applied.

In the accompanying drawings consisting of two sheets:—Figure 1 is a front elevation of a time lock provided with my improvements, showing the position of the parts when the bolt is unlocked. Fig. 2 is a longitudinal vertical section of the same, in line $x-x$, Fig. 1. Fig. 3 is a vertical section at right angles to Fig. 2, in line $y-y$, in said figure. Fig. 4 is a horizontal section in line $z-z$, Fig. 3. Fig. 5 is a front elevation of the lock, showing the position of the parts when the bolt is set, preparatory to locking the same. Fig. 6 is a sectional elevation, showing the parts in the same position with the bolt set. Fig. 7 is a similar view, showing the position of the parts when the bolt is shot or locked.

Like letters of reference refer to like parts in the several figures.

A represents the inclosing case of the lock, which is secured to the frame B of the safe or vault in any suitable manner. This case is composed of side walls $b\ b$, upper and lower end walls $b'\ b^2$, and a cover b^3 forming the front side of the case, the rear side of the case being closed by the safe-frame to which it is secured.

C represents the vertical bolt whereby the safe is locked and unlocked, and which is arranged in the case with its back resting against the frame of the safe, while its lower end passes through an opening in the lower end wall b^2 .

c represents the usual spring catch whereby the bolt is prevented from moving out when the safe door is open. This catch is secured with its upper end in a recess c' in rear of the bolt and provided at its lower end with a shoulder d which engages with the outer end

of the bolt when the latter is in its normal or retracted position.

E represents the vertically movable draw plate which is yieldingly connected with the bolt by a tension mechanism, which is strained by depressing the draw plate for automatically locking and unlocking the bolt. The draw plate is provided at its upper end with a horizontal flange e projecting rearwardly. The upper front portion of the bolt is cut out, forming a shoulder f on the bolt and a recess f' in the case above the shoulder f .

G represents a central vertical guide rod secured with its lower end to the shoulder of the bolt, while its upper portion passes loosely through an opening g in the flange of the draw plate and is provided with a head bearing against the upper side of said flange.

g' represents a spiral spring whereby the bolt is shot or locked and which surrounds the central guide rod G and bears with its ends against the flange of the draw plate and the shoulder of the bolt.

H represents vertical rods which pass loosely through openings h in the flange e on opposite sides of the central guide rod G, and which are secured with their lower ends to lugs h' on the inner sides of the case, while their upper ends pass through openings h^2 in the upper end wall and are provided with heads bearing upon the upper end wall.

h^3 represents the springs whereby the bolt is retracted or unlocked and which surround the guide rods H and bear with their ends against the lugs h' and the underside of the flange e .

I represents a hand lever whereby the draw plate is depressed and the springs g' and h^3 are strained. This lever is arranged transversely across the front of the case and pivoted at one end by a screw i , while its opposite end passes through a vertical guide loop i' . The draw plate is provided with a pin i^2 which projects through a vertical slot i^3 , in the front wall of the case underneath the hand lever, so that upon depressing the hand lever, the latter will bear upon the pin i^2 and move the draw plate downwardly. The hand lever is raised by a spring i^4 .

J represents the upright catch lever where-

by the draw plate is retained in its depressed position. This lever is pivoted with its lower end to the front side of the inclosing case by a screw j and provided above its pivot with a notch having a shoulder j' on its upper side and an inclined surface j^2 on its lower side. Upon depressing the draw plate, its pin i^2 strikes the inclined surface of the catch lever and throws the latter toward the pin, so that its shoulder j' engages over the pin i^2 and holds the draw plate in a depressed position. j^3 represents a spring which tends to disengage the catch lever from the pin i^2 .

K represents a horizontal trip lever whereby the catch lever is held in engagement with the pin i^2 of the draw plate. This trip lever is arranged above the catch lever and pivoted at one end by a screw k to a supporting block k' on the safe-frame. The lower side of the trip lever is provided with a shoulder k^2 which engages with the upper end of the catch lever.

k^3 represents a spring whereby the trip lever is yieldingly held in contact with the catch lever and which bears against a pin k^4 secured to the supporting block. The opposite end of the trip lever is provided with a forwardly projecting pin or roller k^5 which bears against the periphery of a trip wheel L , whereby the shoulder of the trip lever is held in engagement with the catch lever. The trip wheel is provided with a radial slot l which is adapted to register with the pin k^5 of the trip lever. The trip wheel is connected by a gear wheel l' with a clock-work of any suitable and well-known construction, whereby the trip wheel is rotated in the direction of the arrow, Fig. 5.

m represents a spring whereby the trip wheel is rotated in a direction opposite to that of the arrow in Fig. 5, when the clock and lock are set.

When it is desired to set the lock, the hand lever is moved downwardly so as to bear on the pin of the draw plate and depress the latter until the pin engages in the notch of the catch lever. When the latter engages with the pin of the draw plate, the upper end of the catch lever engages with the shoulder of the trip lever, and the trip lever in turn is held down by the trip-wheel bearing against the pin of the trip-lever, thereby holding the draw plate and the springs g' and h^3 in a depressed position, as represented in Fig. 6. When the rotation of the trip-wheel, caused by the clock-work, brings the slot of the trip-wheel in register with the pin of the trip-lever, the spring of the catch lever disengages the latter from the pin of the draw plate, which causes the upper end of the catch lever to ride over the shoulder of the trip-lever and raise the latter, so that its roller enters the slot of the trip-wheel, which permits the spring g' to raise the draw plate and the bolt, thereby unlocking the safe, as represented in Figs. 2 and 3.

A forcible entrance into the safe has been

effected by discharging an explosive in front of the bolt, which forced the latter inwardly against the pressure of the spring g' and unlocked the bolt.

In order to prevent the bolt from being moved inwardly or unlocked by an external force, a safety locking mechanism is provided which is constructed and arranged as follows:— N represents a tumbler disk which is arranged in a correspondingly-shaped socket n formed in the front side of the bolt below its shoulder. This disk is provided on its front or outer side with a groove n' extending radially from the periphery toward the central portion of the disk. This groove stands vertically when the disk is in its normal position and registers with a vertical groove n^2 formed in the front side of the bolt and extending from the shoulder of the bolt to the tumbler disk. o represents an abutment or projection formed vertically on the rear side of the draw plate and arranged in the front groove n^2 of the bolt when the latter is in a normal or raised position. When the tumbler disk is turned so that its groove is in line with the front groove n^2 of the bolt, it permits the abutment o to enter the groove of the disk, so that the draw plate and bolt can move lengthwise upon each other. When the tumbler disk is turned so that its groove is out of line with the front groove of the bolt, the abutment engages against the periphery of the tumbler disk and thereby locks the bolt and draw plate together and prevents one from moving lengthwise upon the other. P represents a stop which shifts the tumbler disk to the position in which its groove is in line with the abutment. This stop is formed on the inner side of the side wall b' of the case and is arranged at the inner end of a recess p formed in the side of the bolt adjacent to the stop and extending inwardly to the periphery of the tumbler disk. q represents a screw or projection which is secured to the periphery of the tumbler disk and projects into the recess p , so that when the bolt is retracted the last portion of its backward movement causes the projection q of the tumbler to strike the stop P and turn the tumbler sufficiently to bring its groove in line with the abutment. R represents a spring whereby the tumbler disk is turned to the position in which its groove is out of register with the abutment. This spring is secured by a screw r in a recess formed in the front side of the bolt on one side of the disk and engages with its ends against the bolt and a notch r' formed in the periphery of the disk. In the normal or retracted position of the bolt, the stop P holds the disk in the position in which its groove is in line with the abutment. Upon moving the draw plate downwardly to strain the springs g' and h^3 , the abutment enters the groove in the disk, but the bolt is held against outward movement by the catch c , as represented in Figs. 2 and 3. When the door of the safe is closed the catch is released from the bolt,

which permits the latter to be shot or moved out by the expansion of the spring g' . The outward movement of the bolt removes the projection q of the tumbler disk from the stop P. At the end of the outward movement of the bolt, the abutment is wholly removed from the groove of the tumbler disk, whereby the latter is released and permitted to be turned by the spring R into the position represented in Fig. 7, in which the slots are out of register. The bolt is now prevented from being moved backward, because the solid portion of the periphery of the tumbler disk bears against the abutment of the draw plate and the draw plate itself is held against backward movement by the clock tripping mechanism. The draw plate and bolt are, therefore, locked together, which effectually prevents the latter from being moved backward by an external force. When the clock releases the tripping mechanism, the bolt and draw plate are drawn back together by the springs h^3 , and during the last portion of the backward movement, the projection q of the tumbler disk strikes the stop P and turns the disk into the position in which its groove registers with the abutment of the draw plate, preparatory to again setting the lock.

I claim as my invention—

1. The combination with the locking bolt and the movable draw plate yieldingly connected with the bolt, of a safety locking mechanism connected with the bolt, whereby the bolt is locked against movement on the draw plate by a force externally applied, substantially as set forth.

2. The combination with the locking bolt and the movable draw plate yieldingly con-

nected with the bolt, of a tumbler arranged upon the bolt and adapted to lock the bolt against movement upon the draw plate, substantially as set forth.

3. The combination with the locking bolt and the movable draw plate yieldingly connected with the bolt, of a movable tumbler arranged upon the bolt and provided with a groove, and an abutment formed on the draw plate and adapted to engage either in the groove or against the edge of the tumbler, substantially as set forth.

4. The combination with the locking bolt, and the movable draw plate yieldingly connected with the bolt, of a safety tumbler arranged upon the bolt, and a spring and a stop whereby the tumbler is shifted in opposite directions, substantially as set forth.

5. The combination with the inclosing case, the locking bolt and the movable draw plate yieldingly connected with the bolt, of an oscillating tumbler disk arranged upon the bolt and provided with a groove extending from its periphery inwardly, an abutment formed on the draw plate, a spring whereby the tumbler disk is turned to bring its groove in line with the abutment, and a stop formed on the inclosing case and adapted to engage with the tumbler disk and shift the latter to bring its groove out of line with said abutment, substantially as set forth.

Witness my hand this 13th day of June, 1892.

GEORGE J. H. GOEHLER.

Witnesses:

THEO. L. POPP,
FRED C. GEYER.