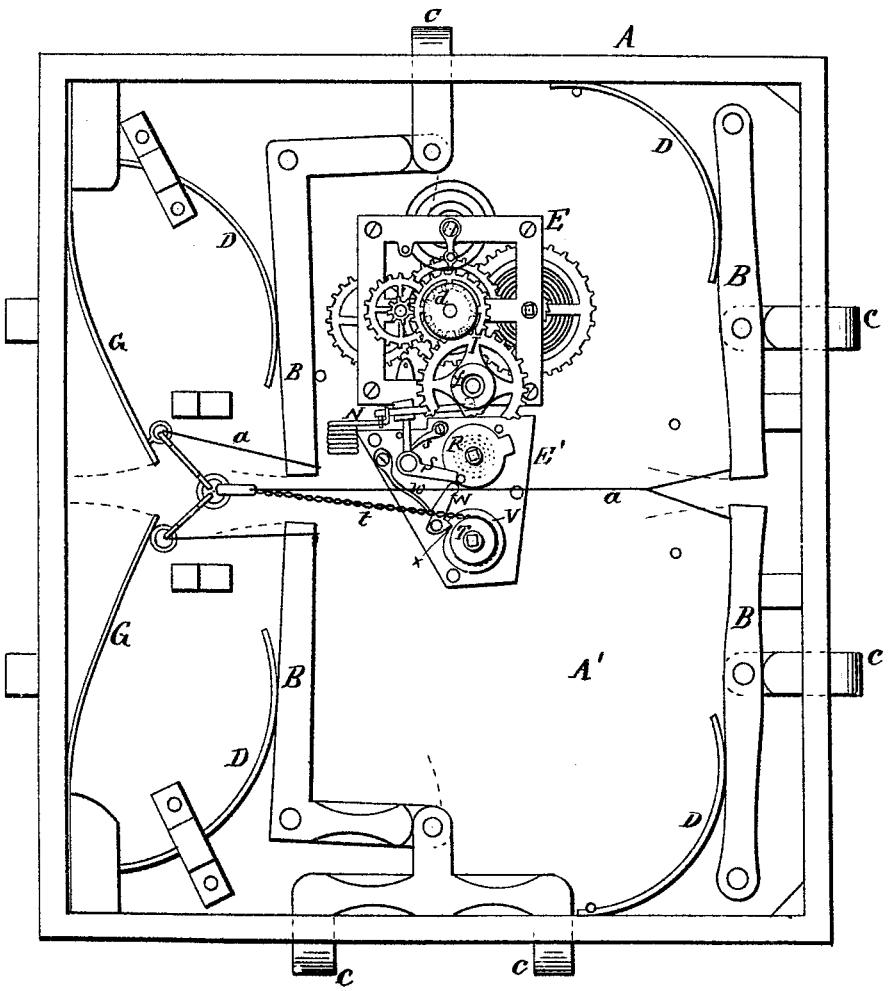
2 Sheets—Sheet 1.

Z. PHILLIPS.

TIME-LOCK.

No. 183,966. Patented Oct. 31, 1876.

Fig. 1.



WITNESSES

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2 Sheets—Sheet 2

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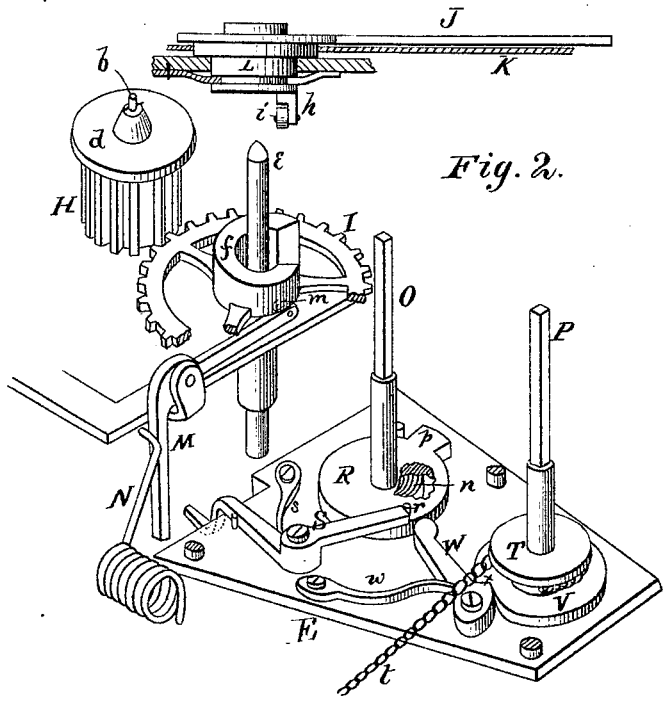

Fig. 2.

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UNITED STATES PATENT OFFICE.

ZEPHANIAH PHILLIPS, OF BRIDGEPORT, OHIO.

IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **183,966**, dated October 31, 1876; application filed September 23, 1876.

To all whom it may concern:

Be it known that I, ZEPHANIAH PHILLIPS, of Bridgeport, in the county of Belmont and State of Ohio, have invented certain new and useful Improvements in Time-Locks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in the novel construction and arrangement of a time-lock for safes, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is an interior view of the lock. Fig. 2 is a detached perspective view of the operating mechanism.

A represents the safe-door, provided with an interior recess, A′, to receive the entire lock mechanism and bolts; or it may represent an additional thickness or lock-case to be fastened on the inside of the safe-door. Within the recess A′ are arranged a series of pivoted levers, B B, each of which has one or more bolts, C, pivoted to it, said bolts being arranged to extend beyond the top and bottom and outer edges of the door. Each lever B has a spring, D, arranged to work upon it, for throwing out the bolts, and all the levers are, by cords or chains *a a*, connected with main-springs G G, of sufficient strength to draw back all the levers and bolts. When the tension of the springs G is removed, the springs D, operating upon the levers B, throw the bolts C outward. In this position the bolt or bolts connected to any one lever B acts entirely independent of the others. E represents an ordinary clock-work secured within the recess A′. Upon the last shaft or arbor *b* of this clock-work is secured an elongated pinion, H, with a disk, *d*, at its outer end, projecting beyond the outer edges of the cogs thereof. This pinion meshes with a cog-wheel, I, which is movable out and in on a spindle, *e*. The hub of this cog-wheel is formed with a circular incline or cam, *f*, on its outer end. On the inside of the safe-door is a dial-plate, K, with an index or hand, J, which hand projects from a hollow hub, L, passing through the dial-plate, and held by a forked plate entering a circumferential groove therein. From one side of this hub L depends a hanger, *h*, with a roller, *i*, mounted thereon, which roller rides on the cam-hub *f* of the cog-wheel I. M represents an elbow-lever, pivoted to the frame of the clock-work E, one arm of which lever is provided with a roller, *m*, and this roller held against the under side of the hub of the cog-wheel I by means of a spring, N, operating against the other arm of the lever. E′ is an auxiliary frame secured in the recess A′, and in said frame are two shafts or arbors, O and P. On the shaft O is secured a casing, R, inclosing a coiled spring, *n*. This casing has on one side a projection, *p*, and on its face a pin, *r*. S is an elbow-lever, pivoted to the frame E′, and has one of its arms operated upon by a spring, *s*, to throw the other arm inward over the face of the casing R. On the shaft P is secured a pulley, T, and a notched disk, V. W is a cam-lever pivoted to the frame E′, and operated on by a spring, *w*. *t* is a chain secured to the pulley T, and connecting with the two mainsprings G G of the lock.

The operation of this lock is as follows: The hand J, after being set, remains stationary, while the concealed wheel I rotates by the action of the clock-work to open the lock at the desired time. To prepare to close the lock the shaft O is first turned to the left until the inner end of the elbow-lever S catches on the pin *r*. The shaft P is then turned to the right until the cam-lever W is caught in the notch *x* on the disk V. This turning of this shaft winds up the chain *t* on the pulley T sufficiently to take all the tension of the main-springs G off from the levers B, allowing the springs D to throw their respective bolts C outward beyond the edges of the safe-door. The hand J is then set, according to the dial, at such a point that it will take a given number of hours for the wheel I to turn before the highest part of its cam *f* will reach the roller *i* on the hub of the index. The safe-door being now closed, it is evident that the bolts B will spring into their places, and that

the door cannot be opened till the same are withdrawn. As the wheel I turns by the action of the clock-work, it is gradually forced inward on the arbor *e* by the cam or incline *f* working against the roller *i*. This gradually turns the elbow-lever M on its pivot. Now, as the highest point of the cam *f* passes by the roller *i*, the lever M, operated upon by the accumulated force of the spring, suddenly moves the wheel I outward on the spindle *e*. At the same time the other arm of the lever M forcibly strikes one end of the lever S, releasing the other end thereof from the pin *r*. The spring *n*, within the casing R, quickly rotates the same until the projection *p* on the side of the casing suddenly strikes the cam-lever W, releasing the same from the notch *x* in the disk V, and the mainsprings G then fly back, withdrawing all the bolts C.

By the construction, or rather by varying the inclination, of the cam *f*, the lock may be arranged for any time desired, so as to operate after any desired number of hours.

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

1. The combination of the series of pivoted levers B B with their independent bolts C and springs D, and the mainsprings G G, connected with the levers by cords or chains *a*, substantially as and for the purposes herein set forth.

2. In a time-lock, the combination of the hand J, with hub L, having roller *i*, and the cog-wheel I, provided with cam-hub *f*, and movable out and in on the spindle *e*, and the clock-work E, with elongated pinion H, for rotating said wheel, as and for the purposes herein set forth.

3. The combination, with the wheel I, having cam-hub *f*, of the spring elbow-lever M, with roller *m*, spring-casing R, with pin *r* and projection *p*, spring-lever S, cam-lever W, notched disk V, and pulley T, connected by chain *t* with the mainsprings G, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ZEPHANIAH PHILLIPS.

Witnesses:
C. L. EVERT,
WILLIAM L. BRAMHALL.