2 Sheets—Sheet 1.

L. A. HAINES.

TIME-LOCK.

No. 170,553. Patented Nov. 30, 1875.

Fig. 1

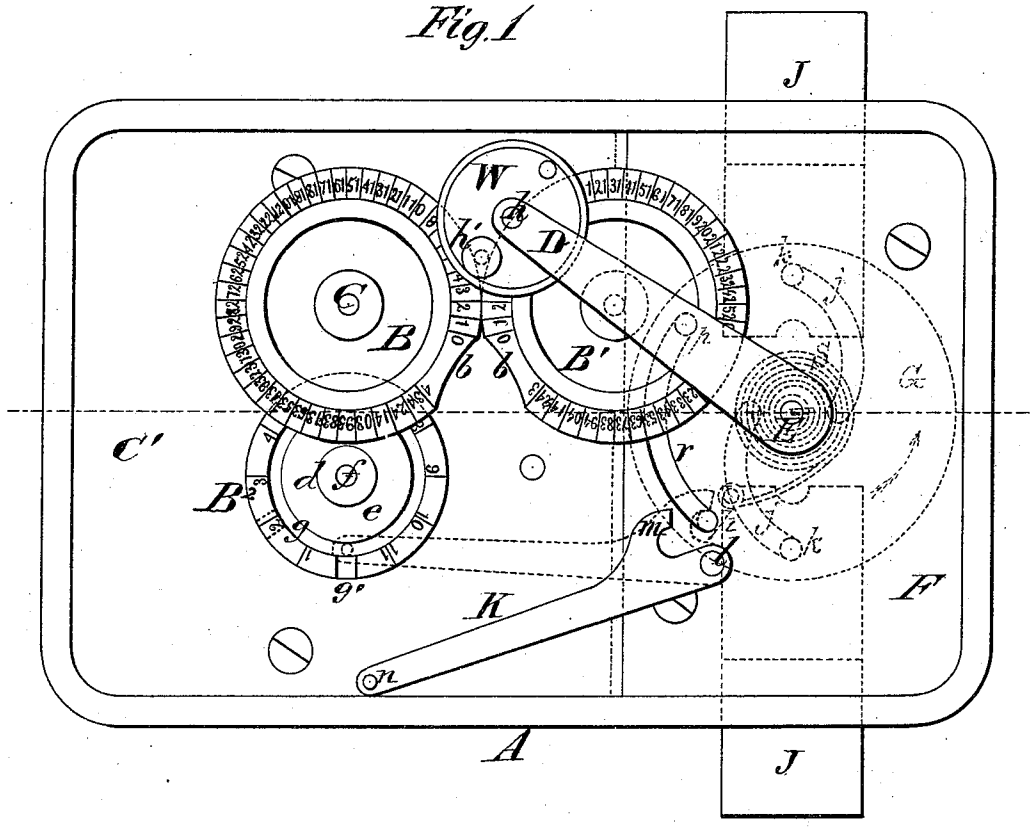
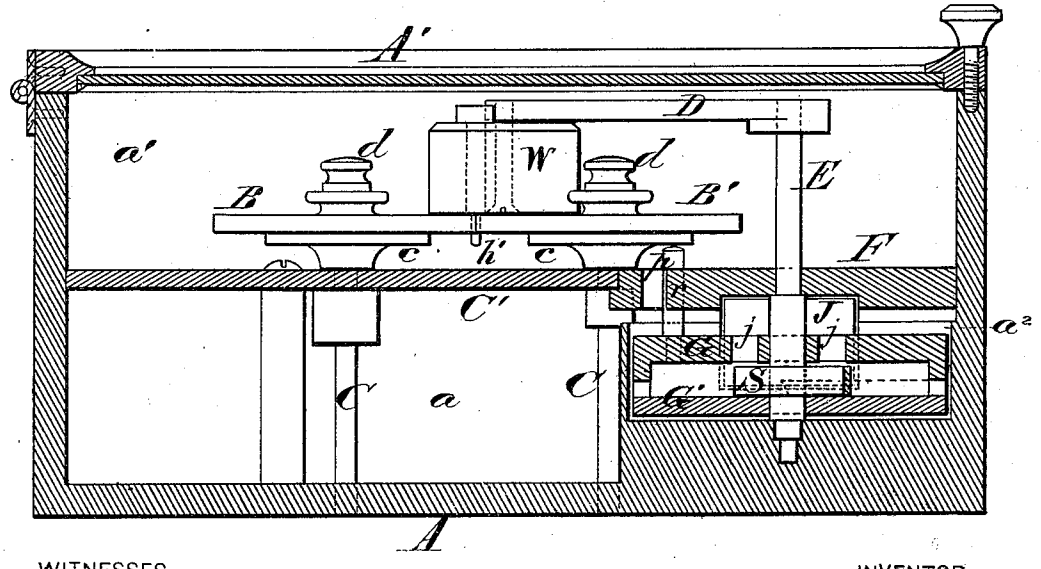


Fig. 2



WITNESSES

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2 Sheets—Sheet 2.

L. A. HAINES.

TIME-LOCK.

No. 170,553. Patented Nov. 30, 1875.

Fig. 3

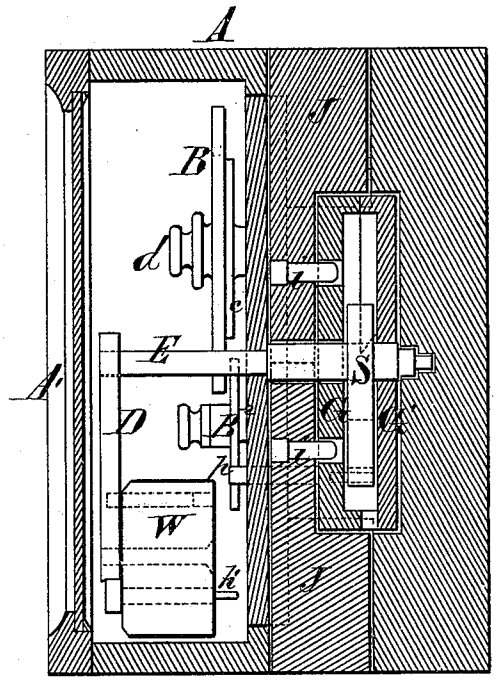


Fig. 4

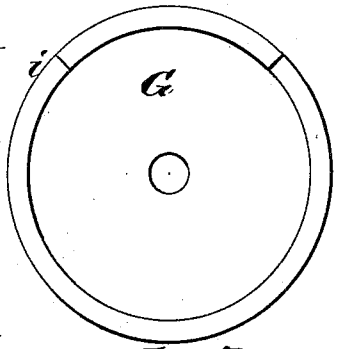


Fig. 5

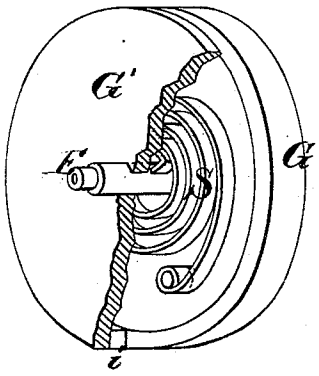


Fig. 6

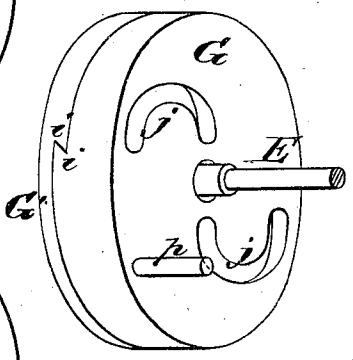
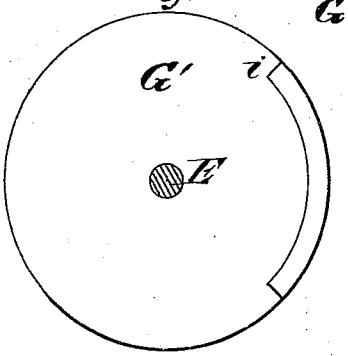


Fig. 7



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UNITED STATES PATENT OFFICE.

LEWIS A. HAINES, OF WESTMINSTER, MARYLAND.

IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **170,553**, dated November 30, 1875; application filed October 16, 1875.

To all whom it may concern:

Be it known that I, LEWIS A. HAINES, of of Westminster, in the county of Carroll and State of Maryland have invented a new and valuable Improvement in Time-Locks; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of my lock, and Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a transverse vertical sectional view thereof, and Figs. 4, 5, 6, and 7 are detail views.

This invention has relation to that class of locks commonly known as "time-locks," wherein the locking and unlocking of the bolts are effected automatically by means of one or more time-pieces inside of the lock-case. My object is mainly to simplify this class of locks, and to secure greater certainty in their operation, and also to provide a simple device whereby a person, after shutting the safe-door, and locking it by any of the well-known locks, can cause the bolts of the time-lock to be shut automatically at any hour he may desire, and to be unlocked at any predetermined hour.

The nature of my invention consists mainly in two graduated dials, one or both of which is actuated by watch mechanism, said dials having scores in their peripheries, which will at the proper time release a loaded arm, and allow one or more bolts to be unlocked by the turning of a cam-plate, as will be hereinafter explained.

The invention also consists in an auxiliary graduated dial, having a groove and notch in its face, in combination with a gravitating arm, having a stud on one end adapted to be received in the circular groove in said dial, and having a hooked retainer on its pivoted end, which, with a stud on the cam-plate, will hold the bolts unlocked, and, at the expiration of a given time, will allow said bolts to be locked by the recoil of the said cam-plate, as will be understood from the following description.

In the annexed drawings, A designates the case of the lock, which may be made of any desired size, and in any suitable manner. This case A is separated into three compartments, a, a^1, and a^2, and is provided with a door, A′, which may have a transparent plate. B B^1 designate two dials, the peripheries of which are in close relation to each other, and at b b scores are made in the same, as shown in Fig. 1. The faces of these dials are marked off, and the marks numbered on each dial from 0 to 43, the numbers commencing and ending at the angles of the notches or scores. C C are two shafts, which pass through a bearing-plate, C′, and have collars c c rigidly secured on them, against which collars the dials B B^1 are firmly secured by means of milled nuts d d. The shafts will be suitably connected to watch mechanism applied inside of the compartment a, which may be wound up by inserting a key in a hole made through plate C′, or through the back of the case A. If desired, the watch-movement may only be applied to one of said shafts, C. Directly below the dial B is a dial, B^2, which is secured by a clamping-plate, e, and a nut, d, on a shaft, f, which passes through the plate C′, and is actuated by watch mechanism, so as to make a complete rotation once in twelve hours. The face of this dial has a circular groove, g, in it, from which radiates a notch, g', and between the groove and the periphery of the dial are figures corresponding to hours. D designates an arm, which is keyed on a shaft, E, and which has a weight, W, on one end, capable of oscillation about a stud, h. A removable pin, h', is passed through the weight, and is designed for sustaining the arm D in the position shown in Fig. 1, in which position pin h' lies between and upon the two dials B B^1. The shaft E passes loosely through a fixed plate, F, and a flanged circular cam-plate, G, and has keyed to it a circular plate, G′. The inner end of shaft E has its bearing in the back of the case A. The cam-plate G has a convolute spring, S, secured to it, which spring is wound around the shaft E, and secured to it so that by its recoil it will turn plate G in the direction indicated by the arrow in Fig. 1. The plates G and G′ are constructed with shoulder-stops i i on their flanges, for the purpose of preventing the spring S

from unwinding. The plate G has two curved slots, *j j*, through it, arranged on opposite sides of the shaft E, through which pins *k k* are passed, which pins connect two endwise-sliding bolts, J J, to plate G, and cause this plate to shoot the bolts, and also to retract them. Instead of two bolts, a single one only may be used, in which case one of the curved slots, *j*, will be omitted. K designates an arm, which is pivoted at *l* to the plate F, and constructed with a hook, *m*, on this pivoted end, and a stud, *n*, on its free end. The hook *m* is designed to engage with a stud, *p*, which rises from the plate G through a curved slot, *r*, made through the plate F. This engagement is made when the bolts J are retracted and the stud *n* is in the groove *g* in the dial B^2, as indicated in dotted lines in Fig. 1. The hooked arm K, when in the position last named, prevents the bolts from being shot, and when the dial B^2 turns until the notch *g'* is opposite the stud *n*, said arm will drop, release the stud *p*, and allow spring S to shoot the bolts.

The lock is set for unlocking by adjusting the loaded arm D in the position shown in Fig. 1, and then, after loosening the nuts *d d'*, setting the dials B B^1 by the numbers on them, so that at the hour required to open the safe one or both notches *b* will allow the arm D to drop, and thus retract the bolts.

What I do claim as new, and desire to secure by Letters Patent, is—

1. Graduated and numbered dials B B^1, adjustable on shafts C, and notched as described, in combination with weight W, pin *h'*, arm D, shaft E, plates G G', spring S, and one or more bolts, substantially as described.

2. The dial B^2, grooved, notched, and graduated, in combination with the studded and hooked arm K, and the pin *p* on spring-plate G, substantially as described.

3. In a time-lock, the circular plates G G', cam-slots *j j*, pins *k k*, and spring S, as and for the purposes described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LEWIS A. HAINES.

Witnesses:

WALTER C. MASI,

E. H. BATES.