E. J. WOOLLEY.

TIME-LOCK.

No. 186,221. Patented Jan. 16, 1877.

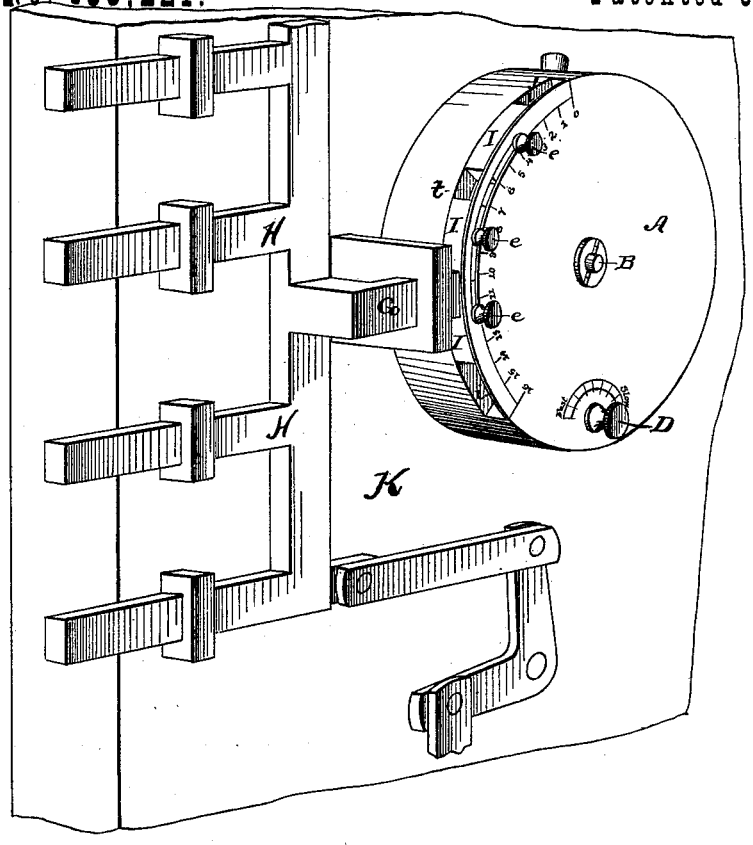


Fig. 1

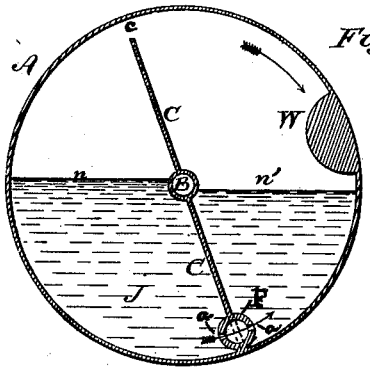


Fig. 2.

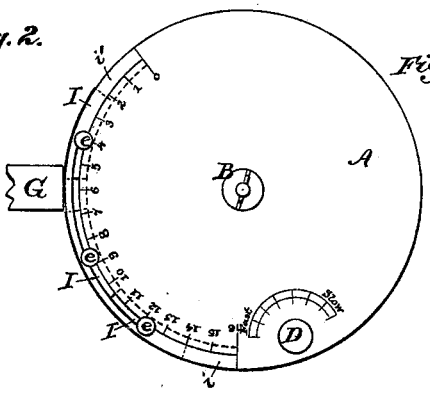
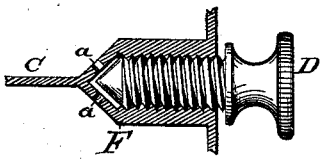


Fig. 3.

Fig. 4.



Attest:
C. Clarence Poole
M. B. Smith

Inventor:
E. J. Woolley
By his attys. R. D. & J. Smith

UNITED STATES PATENT OFFICE.

EDWARD J. WOOLLEY, OF PAMRAPO, NEW JERSEY.

IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **186,221**, dated January 16, 1877; application filed November 6, 1876.

To all whom it may concern:

Be it known that I, EDWARD J. WOOLLEY, of Pamrapo, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Time-Locks for the Doors of Safes, Vaults, &c., of which the following is a full and clear description, having reference to the accompanying drawings, wherein—

Figure 1 is a perspective view of my improvement in operation. Fig. 2 is a vertical section of the same parallel with the face. Fig. 3 is an elevation of the face of the same. Fig. 4 is a longitudinal section, showing the cut-off or controlling plug valve.

The object of my invention is to provide a simple, cheap, and safe time-lock for the better security of safe and vault doors; and it chiefly consists in a rotating case, containing in its surface recesses or cells, into which a portion of the bolt-train must enter, when said bolts are withdrawn to liberate the door, said case being actuated by a descending weight, or by a spring, and its speed governed by a controlled flow of fluid within said case.

The characteristics of this device are its simplicity of structure and operation, and the absence of all machinery, and the delicacy and reliability of its adjustment and movement.

It may be constructed to run either to the right or left, and it may be adjusted to occupy any desired period of time in completing its movement within the minimum and maximum for which the instrument has been calculated.

That others may fully understand my invention I will more particularly describe it.

A is the cylindrical case of my lock mounted upon an axis, B, and adjusted to turn thereon with as little friction as possible. Within the case A there is a central transverse partition, C, in the plane of the axis B, and said partition is joined to the periphery at one end, and to the two parallel sides or heads of the said cylinder, so as to be fluid-tight along such lines of junction; but at its opposite end it does not join the periphery of said cylinder, but leaves there an open space, *c*, as shown in Fig. 2. A cylindrical valve or governor-case, F, is set in the partition C, near its point of junction with the periphery of the cylinder A, and said case F is provided with two orifices, *a a*, one of which opens into the space on one side of said partition C, and the other opens upon the opposite side of said partition, so that said holes *a a* form a channel of communication between the two sides of said partition, which channel may be enlarged, contracted, or closed by the action of the valve D, as clearly shown in Fig. 4.

A weight, W, is attached to the periphery of the cylinder A in such a manner that the gravity of said weight will tend to set said cylinder in motion upon its axis, which motion, if unarrested, will continue until said weight has reached its lowest attainable point, and the object of the valve D is to regulate the speed of the descent of said weight by the flow of a fluid through the holes *a a*, and for this purpose the cylinder is provided with sufficient fluid J to fill it about one-half full; and it is evident that if the said cylinder is placed in position with the weight W uppermost, and the partition C nearly or quite level, that all or nearly all of the fluid J will pass to the lower chamber, and, thereafter, if the cylinder is liberated, the weight will cause it to rotate until it is exactly counterbalanced by an excess of fluid on the opposite side; but as the fluid J will immediately commence to pass through the holes *a a* the fluid will stand at different levels on the sides *n n'*, on opposite sides of the partition C, and the excess on side *n* exactly represents the quantity necessary to counterbalance the weight W. As the weight W constantly tends to depress one side of the cylinder A, the fluid J will be thereby impelled to flow through the holes *a a*, from side *n* to side *n'*, and it is manifest that the rapidity of the flow through the holes *a a* may be controlled and limited by the valve D, so that the descent of the weight W through a given space may be caused to occupy any desired length of time.

G is a tongue attached to the bolt-train H, and is so adjusted that said bolts cannot be withdrawn to liberate the door K, to which said bolt train and lock are attached, except at such time as the revolution of the cylinder A shall bring a cell, *i*, opposite, or in line with, said tongue G, so that the same may enter said cell and permit the bolts H to be

withdrawn. At all other times the solid periphery of said cylinder will be presented, to prevent any retrograde movement of said tongue and bolts, as shown in Fig. 3.

The adjustment of the valve D will necessarily be a matter of more or less delicacy, and therefore it is not proposed to make any change therein, except in case of necessity; but it is necessary that the person having charge of the safe or vault shall be enabled readily to adjust the lock, so that the bolts may be withdrawn at the expiration of any desired period of time; and for this purpose the cells *i* are made adjustable by means of a series of movable blocks, I I, placed in a groove, *t*, which is an extension of, and unites the cells *i i'* in, the periphery of the cylinder A, said blocks being provided with set-screws *e e*, and their proper positions being determined by graduations upon the face of said cylinder to mark the arc of revolution during given intervals of time.

To prepare or set the lock ready for use, it is only necessary, after the door K has been opened, to shoot the bolts forward and revolve the cylinder A until the tongue G can enter the cell *i'*, and then shoot the bolts back again. Thereby the said tongue G will enter said cell *i'*, and the lock will be set. In a short time after having been brought to that position all the fluid J will have descended to the lower compartment, and thereafter the forward movement of the bolts H in securing the door K will liberate said cylinder, which will immediately commence to rotate and prevent the withdrawal of said bolts until, at the expiration of the required period of time, the cell *i* shall come opposite the tongue G, as above set forth. By a proper adjustment of the valve D the lock may be caused to run several days, if desired.

Having described my invention, what I claim as new is—

1. A fluid time-lock, having a continuous rotary movement while in action, actuated by a weight, and its speed governed by the regulated flow of a fluid, substantially in the manner and for the purpose herein shown and described.

2. The continuous groove *t* combined with the adjustable blocks I I to make the cell *i* movable, substantially as and for the purpose set forth.

EDWARD J. WOOLLEY.

Witnesses:
CHAS E. MAYORGA,
CHARLES ROGERS.