

(No Model.)

2 Sheets—Sheet 1.

H. F. NEWBURY.
MODE OF MOUNTING TIME LOCKS.

No. 284,049.

Patented Aug. 28, 1883.

Fig. 1.

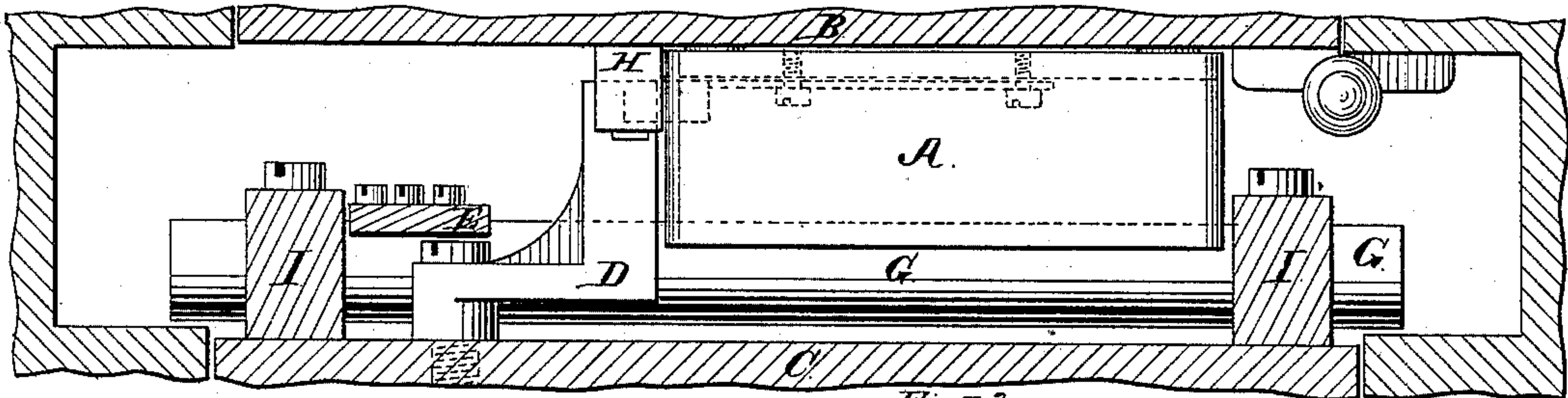
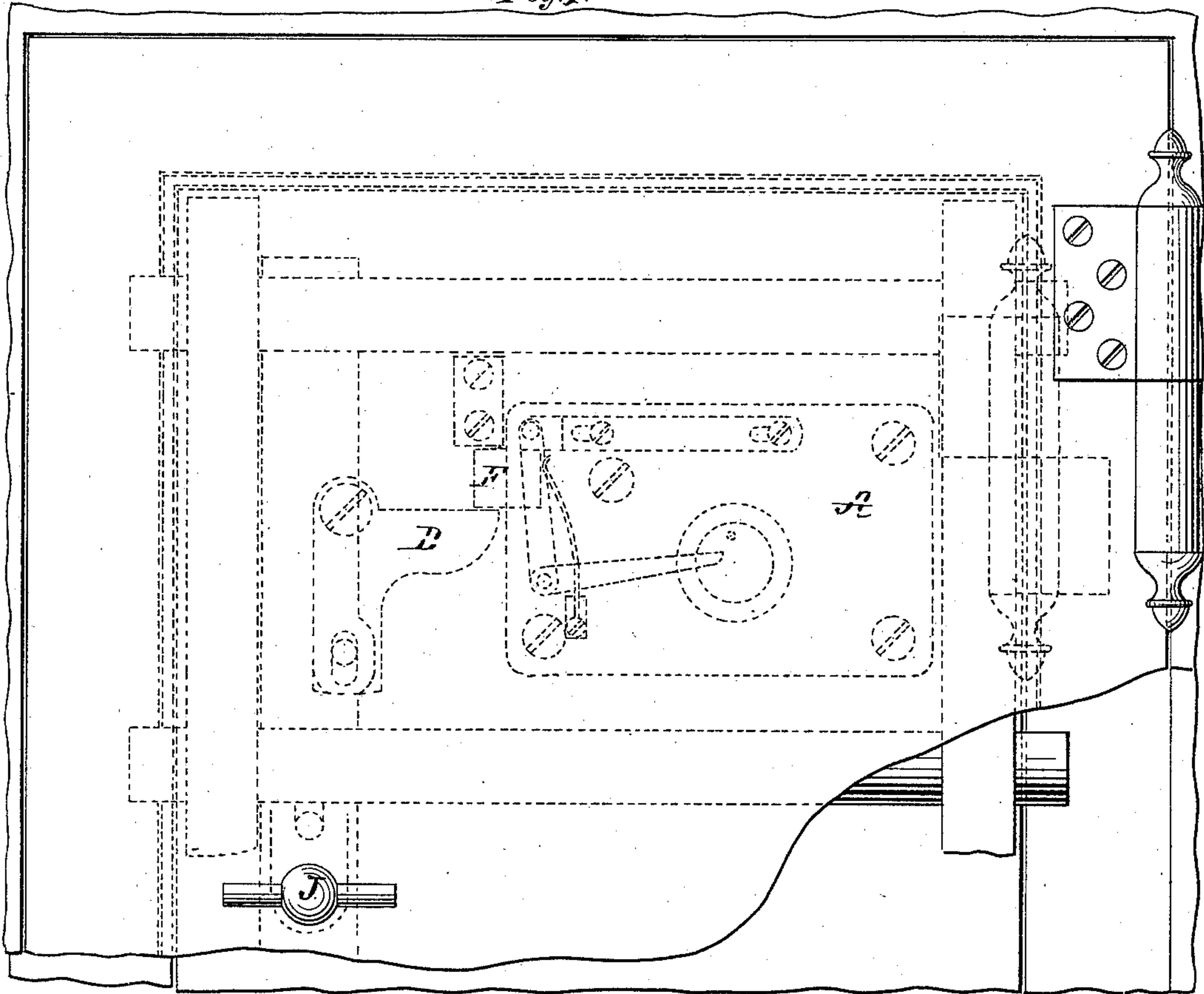


Fig. 2.

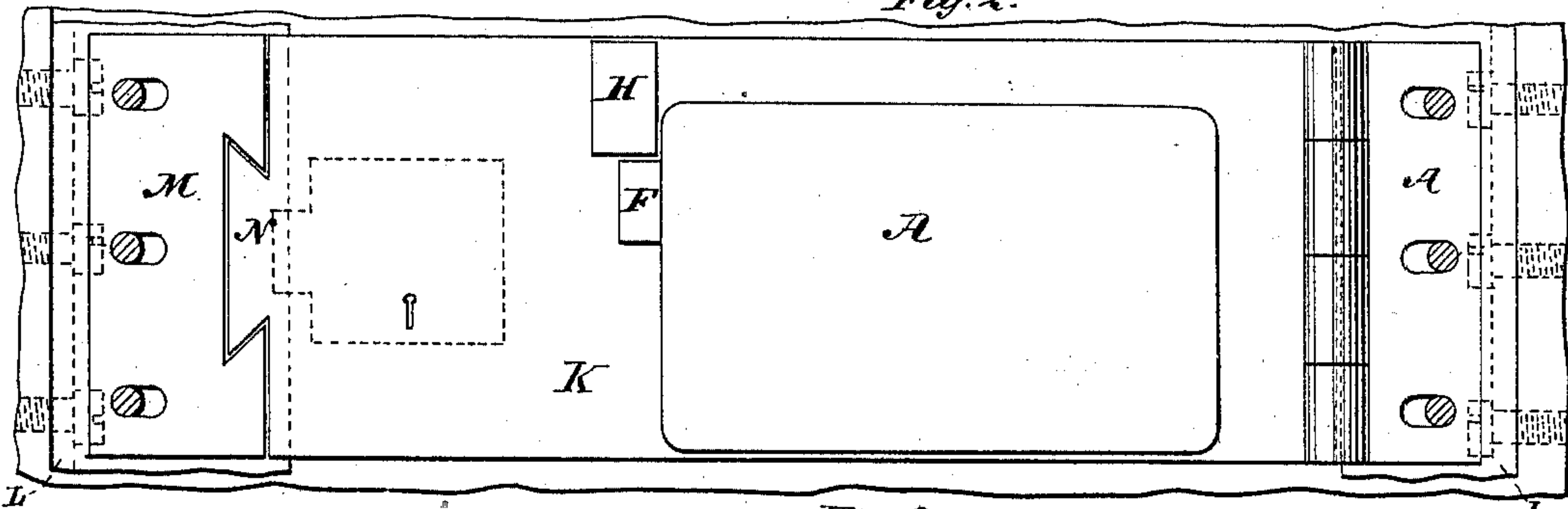


Fig. 3.

Witnesses:
Henry L. King
R. F. Gaylord

Inventor
Henry L. Newbury

(No Model.)

2 Sheets—Sheet 2.

H. F. NEWBURY.
MODE OF MOUNTING TIME LOCKS.

No. 284,049.

Patented Aug. 28, 1883.

Fig. 5.

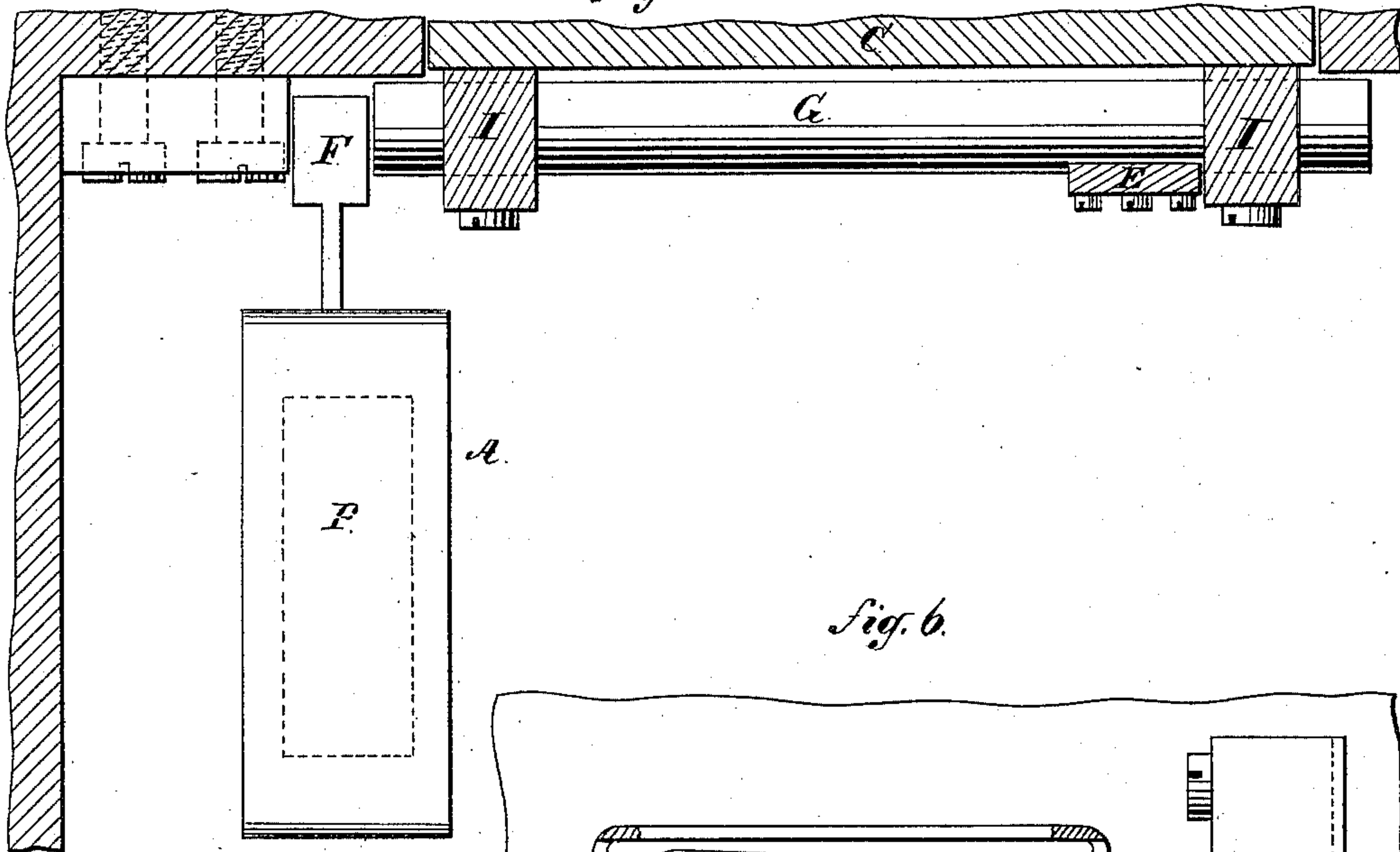


Fig. 6.

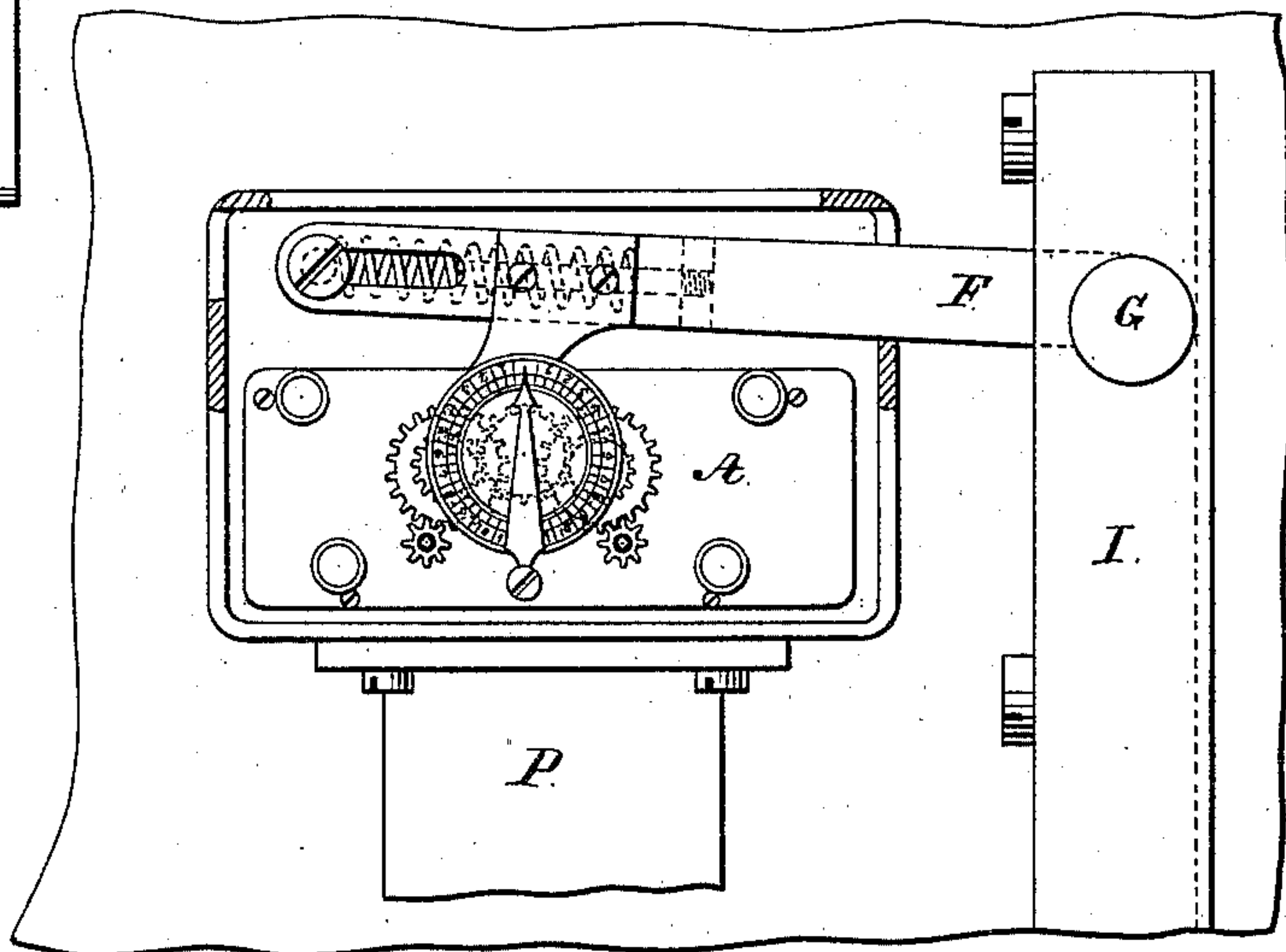
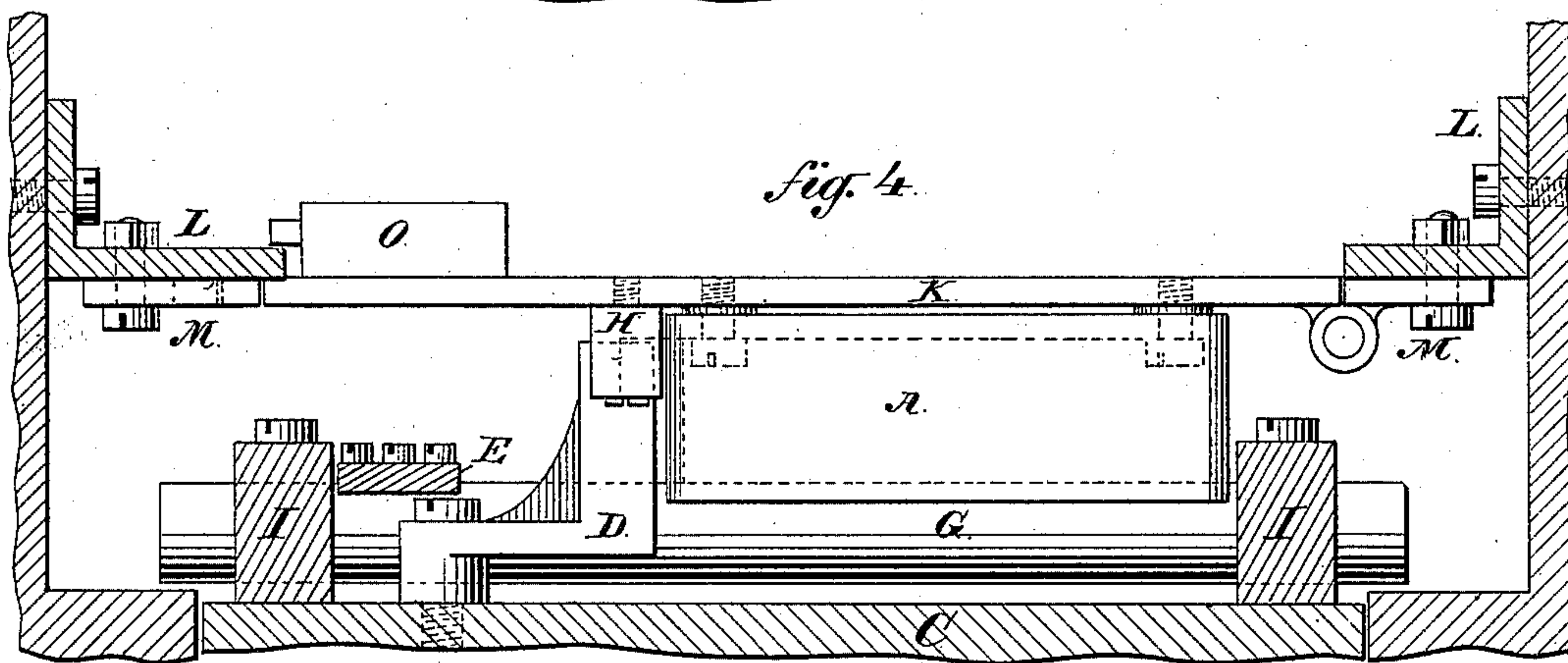


Fig. 4.



Witnesses:
Henry F. Gillingham
R. F. Gaylord

Inventor
Henry F. Newbury

UNITED STATES PATENT OFFICE.

HENRY F. NEWBURY, OF BROOKLYN, NEW YORK.

MODE OF MOUNTING TIME-LOCKS.

SPECIFICATION forming part of Letters Patent No. 284,049, dated August 28, 1883.

Application filed August 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. NEWBURY, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain
5 new and useful Improvements in Chronometric or Time Locks and the Mode of Mounting the Same, (Case B';) and I do hereby declare that the following is a full, clear, and exact description of my invention, which will enable others
10 skilled in the art to which it appertains to make and use the same.

A chronometric or "time" lock, as the term is understood in the art of safe and vault protection, is a lock whose bolt or checking device (sometimes technically called "dog") is,
15 for the purpose of unlocking at least, under the control of a time-movement capable of withdrawing it automatically, or of permitting it to be withdrawn from the locking position upon the arrival of the hour for which the mechanism has previously been set. By placing such locks upon the interior of the structures to be protected, and without mechanical connection with the exterior thereof, it has
20 been supposed that an efficient security is provided against what are known as "masked burglaries," and that thus locks of this class afford complete protection against the operations of the burglar, except where he resorts
25 to violence calculated to force the walls of the safe or vault. The ordinary mode of mounting such locks has been to bolt them directly and rigidly to the door or wall of the safe. I have discovered that when they are thus
30 mounted the security afforded is apparent only, and that any of the time-locks now upon the market can be defeated by the burglar without difficulty, and without resort to force to break or penetrate the walls of the structure
35 in which the lock is used. From this it results that practically a safe or vault guarded by a combination-lock has its security increased but little, if any, by the addition of any of the existing time-locks, and that the
40 protection afforded by such time-locks alone is far less reliable than that afforded by an ordinary combination-lock alone. This defect in the existing chronometric locks as heretofore mounted arises from the frangible character of certain parts of the time-movement,
45 which in all fine work are made so slight and delicate as to be broken readily by a sudden

shock—such as might be communicated to them through the walls of the safe or vault by the explosion of a small charge of dynamite, 55 nitro-glycerine, or other quick explosive outside the walls of the structure, but in proximity to that part of the walls against which the lock is secured. The parts of a time-movement which are the farthest removed from the
60 main wheel are the most delicate, and therefore the most easily broken, this being the case especially with the staff of the third wheel and with the pallet and escape-wheel staffs. The journals of these staffs, as ordinarily constructed, are exceedingly small, for the purpose of reducing the surfaces of contact, and
65 thus the friction, to a minimum, and the finer the workmanship of the lock the slighter and more frangible are these parts liable to be. 70 Any material increase in the extent of the bearings, whereby the strength of the parts would be augmented, would correspondingly increase the friction and impair the time-keeping properties of the movement. Time-locks 75 with jeweled movements also are especially exposed to injury in the manner indicated, since the jewels, by reason of their brittleness, might easily be broken by the force of an explosion of great intensity in close proximity to them. The destruction of any of the
80 parts intermediate between the balance-wheel and the main wheel at once releases the main wheel from the control of the escapement, and the movement immediately begins to "run
85 down," a movement which otherwise would continue to run for several days without re-winding now running down almost instantly. As the dial or other device arranged to act upon the lock-bolt or dog to withdraw it or
90 permit it to move from the locking position is actuated from the same spring that drives the main wheel, its speed will be correspondingly accelerated, so that the dog, instead of being withdrawn from engagement with the bolt-
95 work of the door at the regular hour for which the lock has been set, will be withdrawn immediately upon the explosion or other shock, leaving the safe or vault, so far as the time-lock is concerned, entirely under the control of the burglar. If there are other locks on the door, (either combination or key locks,) the burglar will probably have effected the unlocking of them in advance of his attack upon

the time-lock, either by picking them or forcing them, or by compelling the co-operation of the custodian of the key or combination. In whatever way this may be done, the subsequent unlocking of the bolt of the time-lock in the manner indicated (and repeated experiments show that this can readily be done with a charge of dynamite so small as to make but little noise, and not even indent or otherwise appreciably affect the walls of the safe) removes all obstructions to free access to the valuables placed under the protection of such lock. When, again, a time-lock is mounted in the way usually heretofore practiced, there is a danger that a shock occasioned by the explosion of dynamite or other quick explosive against the exterior of the safe in the vicinity of the lock may destroy the fastening-bolts that hold the lock in position, and thus unseat it. This of course would release the door and permit it to be opened.

The present invention seeks to overcome this difficulty, incident to the use of existing time-locks as ordinarily mounted; and it consists in special means which I have devised, and which are described hereinafter, for effecting a practical isolation of the lock from the door and the exposed parts of the walls of the safe or vault. Various methods may be adopted for thus isolating the lock. For instance, in the case of a vault it may be mounted on a solid standard rising from the bottom of the structure. So, also, if the vault or safe have double doors, the lock which is used to guard the bolt-work of the outer door may be attached to the face of the inner door, with such space between it and the outer door that the lock will not be affected by any vibrations imparted to the latter by a shock less than what would be necessary to set the door-bolts. So, again, instead of placing the lock upon the fixed standard, or upon an inner door, it may be secured to a bar spanning the space behind the door, and arranged to support the lock at the required distance from such door.

The invention is illustrated in the accompanying drawings, in which Figures 1 and 2 show in elevation and plan, respectively, a well-known "Holmes time-lock," A, secured to the inner door, B, of a safe or vault, and guarding the door-bolts of the outer door, C.

It will be seen by reference to Fig. 2 that there is a space left between the frame of the lock and the outer door, so that the latter will be capable of considerable inward movement without being brought into contact with the lock. As here mounted, the angle lever or jaw D, which, together with the tie-bar E, forms the connection between the sliding lock-bolt F and the door-bolts G G, is pivoted to the outer door, while the stud H, which forms an abutment to resist the backward thrust of the door-bolts, is bolted to the inner door. Both of these pieces, however, might be attached to the outer door.

I I are the ordinary bolt-bars, in which the bolts G G have their bearing.

J is the spindle for operating the door-bolts.

As seen in Fig. 1, the lock, bolts, &c., are shown in dotted lines, since they are represented as being behind the outer door.

The construction of the time-lock itself is not shown in detail, being well known, and because, also, the present invention is not limited as regards the particular kind of time-lock to which this mode of mounting is to be applied.

Figs. 3 and 4 show a lock mounted upon a hinged metal bar, K, Fig. 4 showing in plan the position of such lock and bar relatively to the door of the safe. This bar K is supported at its ends by means of angle-irons L, bolted to the side of the safe. To these angle-irons are attached the supporting-strips M M, the bar K being hinged to one of these strips, and being prevented from sagging by the tongue N, which enters a recess in the other one. The object in hinging the bar K is to enable the lock to be swung out of the way when the safe-door is opened, thereby giving free access to the interior of the safe. The strips M M should be made with slots, through which to pass the bolts that secure the strips to the angle-irons L. This will be a safeguard against an explosion or other heavy and sudden shock directed against either side of the safe opposite the angle-iron L. By reason of these slots the side of the safe might be bulged in to a considerable extent without communicating any serious shock to the lock.

O is a small lock or catch for holding the bar K in its proper position when the safe-door is locked.

In Figs. 5 and 6 there is shown in plan and elevation, respectively, a time-lock mounted on a rigid standard, P, detached from the door which the lock is designed to guard. This standard is set at such distance from the adjacent walls that the body of the lock is not exposed to concussion by the inward movement of such walls, unless produced by a force sufficient to make an absolute breach therein, and by this isolation of the lock any vibration or shock given to the adjacent walls less than what would be necessary to break them in will produce little or no effect upon the lock.

As in the particular construction here shown the dogging end of the lock-bolt F is brought near to the wall of the safe, it may be found advisable to slot the other end of this bolt, as shown in Fig. 6. A spring arranged behind the bolt and bearing against the pivot on which the bolt swings in locking and unlocking will serve to keep the dog in its advanced position for work. If, now, at any time a shock should be communicated to the wall of the safe in front of the lock and be transmitted to the lock-bolt, it would only tend to force such bolt back upon its pivot, (the spring yielding for this purpose,) without materially disturbing the lock itself, or the time-movement forming a part of it. An opening in the rear end of the lock-case will permit the heel of the lock-bolt, if necessary, to pass through the case. This

construction of the lock-bolt, as, in fact, any other construction which will permit the bolt to give back relatively to the lock and then automatically restore itself, may be found useful, not only when the lock is mounted on a standard, as shown in Fig. 6, but when it is otherwise mounted in an isolated position.

I am aware that heretofore it has been proposed to isolate the clock-work of a time-lock from the door and door-frame of a safe in order to protect it against derangement and consequent stoppage from blows and jarring inflicted upon said door or door-frame. This was proposed by Charles E. Chinnoek, in Letters Patent No. 197,826 of the United States, dated December 4, 1877. The present invention, however, is distinguished from Chinnoek's in that it is now proposed to isolate the lock-bolt as well as the clock. In Chinnoek's the lock-bolt D of the time-lock and the electromagnet and armature by means of which it is operated are all secured directly to the door of the safe, and therefore are in a situation to be dislodged by the force of an explosion of dynamite or other similar material placed against the exterior of the door. Manifestly, if these parts should be thus displaced, it would be of no substantial importance that the clock had been placed where it would not be stopped by a jar or concussion. In no fair sense can it be said that Chinnoek's lock was "isolated," or that it was "protected against any destructive shock" arising from the use of dynamite, &c., against the exterior of the safe. The danger now under consideration is one that was not contemplated by Chinnoek, and against which, therefore, his said patent did not at-

tempt to provide. By isolating the lock-bolt as well as the clock, as now proposed, security is afforded against the new danger which I have discovered.

I do not propose herein to claim, broadly, the isolation of a time-lock from the exposed parts of a safe or vault, whereby it will be protected from injury under the force of a sudden and heavy shock produced by an explosion directed against the exterior of the structure, such being in substance the claim in the original application from which this application has been separated, and of which it may be regarded as constituting a division. The present application, as will be seen, relates to details of construction.

What is claimed as new is—

1. In combination with the door-bolts of a safe or vault door, a lock having a locking-bolt and a time-movement connected therewith, mounted upon a support behind such door, and isolated therefrom and from the walls of the structure, and made movable for giving entrance to the safe or vault.

2. The combination of a safe or vault door, a time-lock mounted on an independent support behind such door, and yielding connections between such lock-support and the walls of the safe or vault.

3. In combination with a lock isolated from the inner walls of a safe or vault, a yielding lock-bolt arranged to operate substantially as and for the purpose set forth.

HENRY F. NEWBURY.

Witnesses:

SAML. A. DUNCAN,
ROBT. H. DUNCAN.