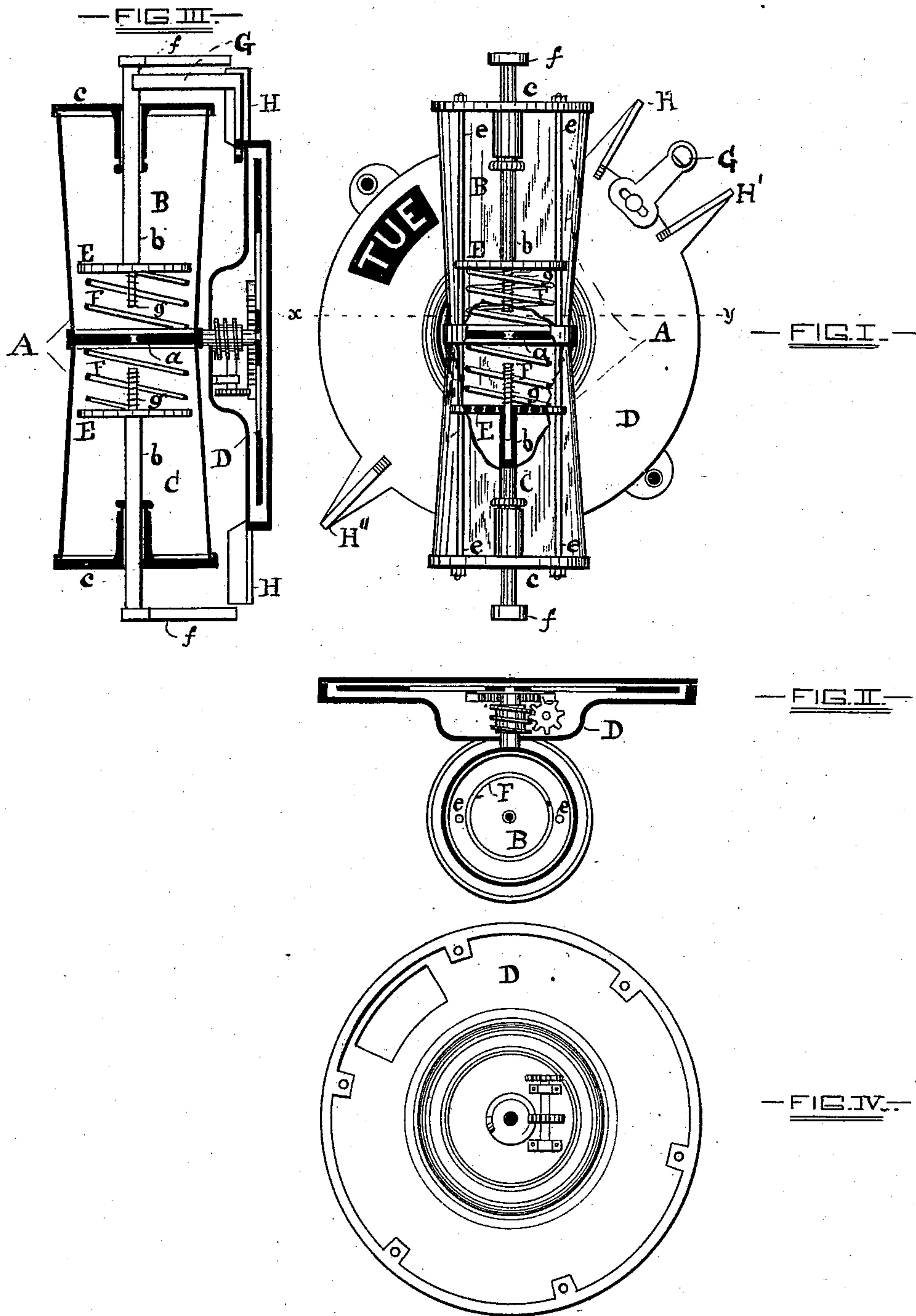


W. H. O'CONNELL.
Watchman's Time Check.

No. 230,565.

Patented July 27, 1880.



— WITNESSES —

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UNITED STATES PATENT OFFICE.

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WATCHMAN'S TIME-CHECK.

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To all whom it may concern:

Be it known that I, WILLIAM H. O'CONNELL, of the city of Baltimore and State of Maryland, have invented certain Improvements in Time Devices for Locks, &c., of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to a time device adapted for application to a lock, watchman's clock, or other piece of mechanism in which periodic movements are to be made or admitted of to prevent the opening of the lock or changing of the registering contrivances of the clock, except at such time or times as shall have been arranged for in the construction of the time device.

The said invention consists, first, in supporting a piston, the depression of which is necessary to the operation of the lock or watchman's clock, by means of a body of sand in a sand-chamber constructed in such manner as to admit of the escape of the said sand from below the piston in a certain period of time.

The said invention consists, secondly, in combining two or more of the said pistons and sand-chambers and supporting the same upon a stationary or fixed plate in such manner as to allow of the rotation, or partial rotation, of the said chambers and their pistons to change the direction of the sand current, or to cause the sand after passing to one of the chambers to be reversed in position and the empty chamber refilled.

The said invention consists, thirdly, in the novel construction of the various parts of the device, as will be hereinafter fully described.

In the further description of my said invention which follows reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure I is a partly-sectional front view of the invention, together with parts of a watchman's clock illustrating one of the uses to which my invention may be applied. Fig. II is a cross-section of the same on the dotted line *x* *y*. Figs. III and IV are respectively a vertical section of the invention and a back view of the same with a portion of the casing removed.

Similar letters of reference indicate similar parts in all the views.

In the said drawings, A is a cylindrical or other shaped vessel, divided by the partition *a* into the sand-chambers B and C. The vessel A is pivoted to a circular plate, D, which plate, in case the device is to be applied to a vault-lock, is secured to the door of the vault, or when the invention is combined with a watchman's clock the plate is fastened to a wall or partition in one of the rooms of a building. The partition *a* is perforated, one or more apertures being used to allow a body of sand contained in the upper chamber to pass gradually to the lower one.

The chambers B and C are each provided with a stem, *b*, which passes through the head *c*, and a piston, E, secured to the inner end of the said stem. The pistons E are held yieldingly apart by means of spiral springs F, and a body of sand of sufficient quantity is introduced to the vessel A.

When a chamber is filled with sand and placed so as to be the upper one a portion of the sand falls to below the piston and hinders its depression by any means. To allow of the ready passage of the sand to below the partition the said piston is perforated and made somewhat smaller than its chamber.

The pistons are guided by rods *e*, which prevent the rotation of the pistons and their stems in the chambers B and C.

G is a pin secured in any appropriate manner to the periphery of the plate D, which pin, when the pistons are extended or at their greatest distance apart, comes in contact with the arms *f* on the outer end of the stems *b*, or with the said stems, and prevents the rotation of the sand-chambers and their connections.

H H' H'' are lugs projecting from the circumference of the plate D, over which the arms must pass in the revolution of the sand-chambers B and C. The partition *a* has preferably but a single central opening for the passage of sand from one sand-chamber to the other, which opening is closed upon the depression of either of the stems by rods *g*, supported by spiral springs.

When the invention is applied to a watchman's clock the vessel A is connected to a register-plate, I, located at the back of the circular plate D, by means of a system of gear-

ing of any approved description, and the register-plate is marked with a series of characters, words, or figures, which, in the rotation of the sand-chambers, are brought successively into view through a slot in the plate D. 5
Supposing the watchman is to be on duty for twelve hours per day, the gearing connecting the sand-chambers with the register-plate is arranged to require twelve semi-revolutions 10 of the sand-chambers to effect the change of one character, word, or figure. To cause this change of the exposed character the watchman must at the expiration of each hour of duty (the sand in that period of time having 15 passed from the upper to the lower chamber) reverse the position of the chambers by turning them.

To prevent the pistons of the said chambers being reversed oftener than once at the 20 expiration of each hour, or turned backward with a view to conceal neglect of duty, the lugs H H', before briefly alluded to, are used, and they operate to effect the above-named results as follows: In changing the position 25 of the sand-chambers the upper stem, *b*, and its attachments must first be depressed to enable the arm *f* on the said stem to pass the pin G; but in order to escape the lugs H' H'' it must be again elevated, and should the said 30 arm, after passing the lug H, be again depressed for the purpose of passing the pin G a second time, it would come in contact with the lug H. To escape this lug the arm *f* requires to be again elevated, and in its elevation 35 the sand contained in the said chamber passes to beneath the piston connected to the said stem and arm and interferes with its further depression until the expiration of another hour.

40 From the foregoing it will be seen that the lugs H H' have a common office and interfere with any change of the relative positions of the sand-chambers except at the proper time. An attempt to gradually force down the upper piston, E, as the sand is removed from 45 underneath thereof, and thereby effect the full depression of the said piston before the escape of the entire body of sand from the upper sand-chamber, is frustrated by the upper 50 spring-rod, *g*, closing the aperture in the partition *a*; but the closing of the said aperture to retard the flow of sand from below the said partition is prevented by the lower arm, *f*, coming into contact in its upward movement 55 with the lug H'', as will be readily understood.

I claim as my invention—

1. In a time device for application to a lock, watchman's clock, or other mechanism in

which periodic movements are to be made or 60 admitted of, a sand-chamber having a movable piston therein and exterior device for depressing the same within the said chamber, combined with a body of sand adapted, when the chamber is placed in a certain position, to pass to 65 the under side of the said piston, and thereby prevent its depression until the escape of the said sand through an aperture in the said chamber, substantially as herein described.

2. In a time device for application to a lock, 70 watchman's clock, or other mechanism in which periodic movements are to be made or admitted of, two or more communicating sand-chambers fitted with movable pistons adapted to be depressed or moved toward each other 75 by means of mechanism situated exteriorly of the said chambers, combined with a body of sand having access to either or all of the said chambers, the said chambers being pivoted to a plate or other support and adapted to be rotated 80 upon their axes for the purpose of changing the direction of the sand-current, substantially as herein specified.

3. The pistons E, supported yieldingly within the sand-chambers B and C by means of 85 the spiral springs F, substantially as herein described.

4. In combination with the sand-chambers B and C and pistons E, the rods *g*, adapted in the depression of the said pistons within the 90 sand-chambers to close the aperture forming the means of communication between the said chambers, substantially as herein set forth.

5. In combination with the sand-chambers B and C, pivoted to the plate D, the register- 95 plate I, connected to the sand-chambers by gearing, and adapted to indicate the number of revolutions made by the said chambers in a given period of time, substantially as herein 100 specified.

6. In combination with the pivoted sand-chambers B and C, piston E, stems *b*, and arms *f*, suitable stops located on the supporting-plate D, against which the said stems or 105 arms come in contact and prevent the rotation of the sand-chambers except when the pistons and their attachments are depressed, substantially as herein described.

7. In combination with the pivoted sand-chambers B and C, piston E, stems *b*, and arms 110 *f*, the lugs H, H', and H'', the said lugs being a part of or projecting from a fixed support for the said sand-chambers, substantially as and for the purpose herein specified.

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Witnesses:

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