W. KOOK & J. L. HALL.
Time-Lock.

No. 214,781. Patented April 29, 1879.

Fig. 1.

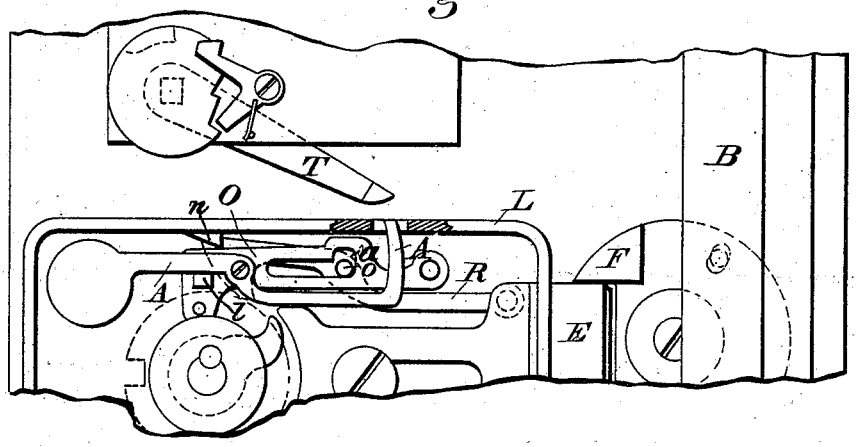
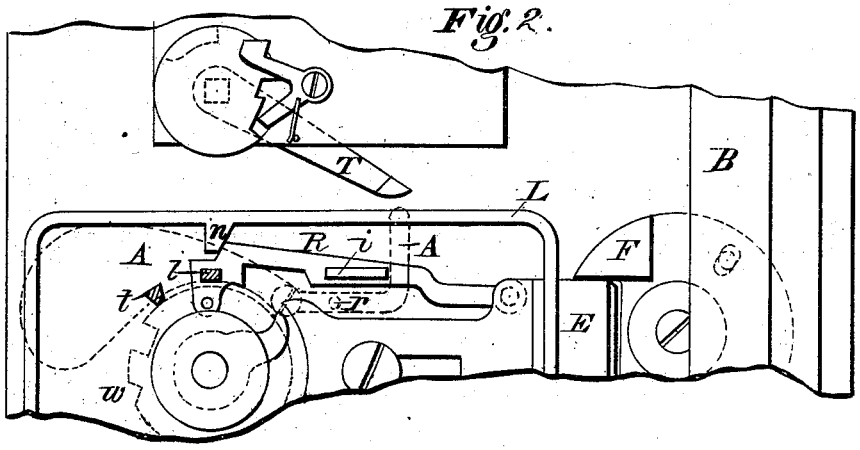


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **214,781**, dated April 29, 1879; application filed March 17, 1879.

To all whom it may concern:

Be it known that we, WM. KOOK and JOSEPH L. HALL, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Locks for Safes, &c., of which the following is a specification.

This invention consists in a weighted lever so applied to a combination-lock as to hold the dogging-bar of the lock up, and prevent the bolt from being retracted even when the tumblers are set on their proper combination, and the arm of the angle-bar enters the notches of the tumblers, thereby preventing the lock from being opened until the dogging-bar is released from the action of said lever; and, second, in the combination therewith of a time attachment arranged to operate on said lever at a predetermined time, and thereby release the dogging-bar, so that the lock can then be opened or operated in the usual manner, all as hereinafter more fully described.

Figure 1 is an inside face view of a portion of a safe or vault door, showing our improvements applied thereto, the cap-plate of the lock being removed to show the working parts. Fig. 2 is a similar view, showing our invention applied to a lock of different construction.

In the drawings, L represents the case of an ordinary combination-lock, in which E is the locking-bolt, engaging under a lug, F, on a disk attached to the arbor or handle that moves the bolt-work, of which B is the connecting-bar, these parts being in common use and well known.

The lock shown in Fig. 1 is of ordinary construction, with the exception that the slot in the angle-bar O is widened at its front end, as shown at *a*, so that said angle-bar is free to move downward far enough to let its arm *l* fall into the notches in the tumblers without drawing down the dogging-bar R, which is thus left with its rear end bearing against the lug *n*, thus dogging or holding the bolt E fast, so that the lock cannot be opened. In order to hold the dogging-bar R in this position when the angle-bar is down, we provide a bar, A, the rear end of which is weighted or made heavier, and which has its front end bent at an angle, so as to protrude through a hole in the top of the case L, which bar is pivoted in the position shown in Fig. 1, so that its front arm will pass under the pin *o*, which is made a little longer than usual, so as to extend out over the top of said bar A. The result of this construction and arrangement is, that even if the combination on which the tumblers are set should be ascertained by burglars or other unauthorized persons they could not open the lock, for the reason that when the tumblers are properly set and the angle-bar arm *l* drops into the notches thereof the dogging-bar R will still be held up by the front arm of the bar A, and thus prevent the bolt E from being withdrawn, the pivoted bar A thus operating as an automatic dogging device.

It will be seen that whenever the angle-bar is raised its arm *l* will strike against the lever A, in rear of its pivot, thereby throwing its front arm down away from the pin *o*, and that consequently the lever A has no effect upon the lock except when the tumblers are gated, when it automatically operates to hold up the dogging-bar R. While this prevents the possibility of picking or opening the lock it would also prevent it from being opened by the parties in charge, and it therefore becomes necessary to provide means for throwing this automatic dogging device out of operation at such time as it is desired to open the door. For this purpose we use a time attachment of any suitable construction, preferably that patented to H. Gross February 8, 1876, No. 173,121, of which T in the drawings represents the arm or lever, which, in this case, is arranged with its free end over the point of the automatic lever A, as shown, so that at the proper time this arm T will be made to bear upon the end of lever A, where it protrudes through the case L, and by pressing down on said lever forces it away from the pin *o*, thereby leaving the dogging-bar R free to drop down away from the lug *n* whenever the arm of the angle-bar enters the notches of the tumbler. While the lever A is thus held out of action by the arm T of the time attachment the lock is free to be operated in the usual manner, the same as though the lever A were not present; but whenever the time attachment is set and the door closed and locked, the lever A again

comes into operation, and will prevent the lock from being opened, as before described.

In both Figs. 1 and 2 the automatic dogging-lever A is shown applied in such a manner as to act directly upon the dogging-bar R of the lock; but it is obvious that in the style of locks represented in Fig. 1, and in which the dogging and angle bars are made separate, the automatic lever A may be so applied as to operate upon the angle-bar O instead of on the bar R, the result being the same, because so long as the fence of the angle-bar O is prevented from entering the notches of the tumblers it is obvious that the lock cannot be opened, for two reasons—first, because the dogging-bar will be held up against the lug by the angle-bar; and, second, because the hook on the arbor cannot engage with the bar that retracts the bolt of the lock.

It is obvious that instead of having the point of lever A protruding through the case it may be made shorter, and the end of arm T be made to reach through the case, so as to bear on said lever A, the result being the same.

In applying the improvement to that class of locks shown in Fig. 2, and in which the dogging and angle bars are both combined in one, the lever A is provided with a laterally-projecting pin, *r*, which engages under a lug, *i*, on the side of the bar R, in order to hold the latter up against the lug *n*. In this case the lever A has a lateral arm, *t*, which bears upon the tumblers in the same manner as the arm *l* of the angle-bar, so that whenever the tumblers are not set up or gated the rear end of lever A is held up, thereby depressing its front arm, and preventing it from operating on the bar R, this latter at such times being held up by its arm *l* resting on the periphery of the tumblers, as represented in Fig. 2. In this case the tumblers are provided with a secondary notch, *w*, into which the arm *t* of lever A drops whenever the tumblers are gated or set up, so that, although at such times the main notches of the tumblers are in a position to let the angle-bar R drop down away from the lug *n*, still it is prevented from doing this by the fact that it is held up by the lever A, the front arm of which is raised as its arm *t* falls into the notches *w*, thus causing its pin *r* to rest against the lug *i* of the bar R.

It will thus be seen that the pivoted lever A acts the same as in Fig. 1—that is to say, in both cases it has no effect except when the tumblers are set up or gated, but that whenever the tumblers are set on the proper combination for opening the lock it automatically operates to hold up the dogging-bar of the lock, and thereby prevents the latter from being opened until said lever A is thrown out of operation by the arm T of the time attachment, which is applied the same as when the lock shown in Fig. 1 is used.

The lever A may be pivoted upon the outside of the lock, as indicated by the dotted lines in Fig. 1, the arm *t* and pin *r* working through slots cut in the face-plate for that purpose. It may also be so applied with the lock shown in Fig. 1 by providing the lever A with an arm arranged to protrude through a hole in the face-plate in such a position as to be struck by the arm *l* when the angle-bar is raised, and also a similar arm to reach inward under the pin *o*.

By this arrangement the automatic dogging-lever A can be readily applied to locks already in use; but where the locks are to be manufactured anew with our improvement, the lever A will preferably be placed within the case, thereby preventing the necessity of making any openings through the cap-plate.

It is obvious that instead of the weight on the rear arm of the lever A a spring may be used, and made to operate the same; but we prefer the plan shown, because it is simpler, and less liable to get out of order.

We are aware that a patent was granted to J. L. Hall, July 25, 1876, No. 180,227, in which a dogging-lever is shown, so applied as to dog the lock-bolt until released by a time attachment, and said dogging-lever is also shown as holding up the dogging-bar of the lock by engaging under a pin or projection on the angle-bar; but in that the angle-bar is not free to be moved independently of the dogging-bar, and besides the additional dogging-lever used in that case is always in operation until released by the time attachment, whether the tumblers be set or not; whereas in this the dogging-lever A does not operate upon the lock until the tumblers are set, when it automatically comes into operation.

Having thus described our invention, what we claim is—

1. The combination of the dogging-bar R of a permutation-lock and the lever A, automatically acting on said bar to continue its dogging action even when the tumblers are set on their proper combination, substantially as and for the purpose set forth.

2. In combination with the dogging-bar R of a permutation-lock, the lever A, automatically acting upon said bar to continue its dogging action when the combination is set up, and a time attachment arranged to throw and hold said lever out of operation at a predetermined time, substantially as and for the purpose set forth.

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