

A. E. DEITZ.  
Lock.

No. 225,808.

Patented Mar. 23, 1880.

Fig 1.

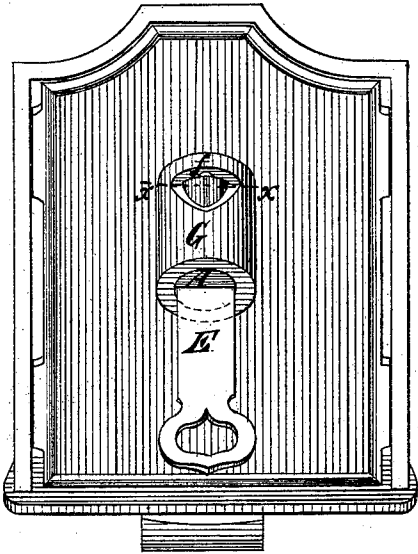


Fig 2

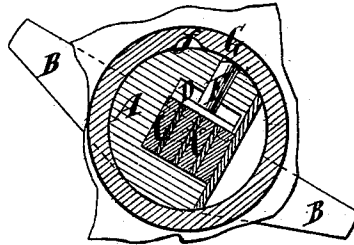


Fig 3

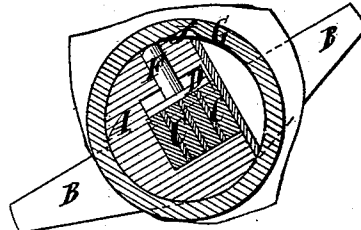


Fig 4.

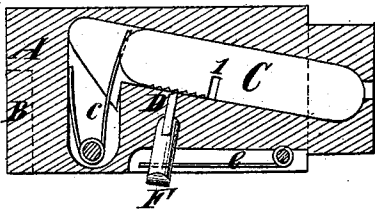


Fig 8.

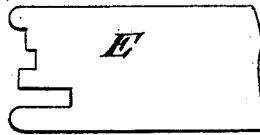


Fig 6.

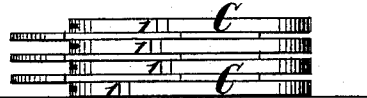


Fig 5.

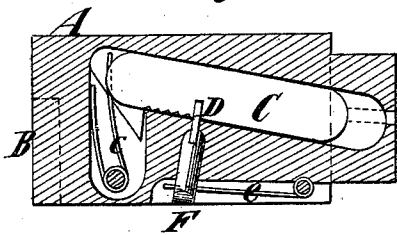
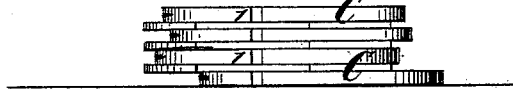


Fig 7.



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# UNITED STATES PATENT OFFICE.

ALONZO E. DEITZ, OF BROOKLYN, NEW YORK.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 225,808, dated March 23, 1880.

Application filed December 6, 1879.

*To all whom it may concern:*

Be it known that I, ALONZO E. DEITZ, of the city of Brooklyn, State of New York, have invented a new and useful Improvement in Locks and Latches; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon, making a part of this specification.

My invention relates to a new construction and arrangement of tumbler-cylinder and tumblers, and to an improved mode of operating them, by which the bolt or latch can be thrown.

Figure 1 is a perspective view of the cap of the lock, a part of the tumbler-cylinder case being cut away to show the parts actuating the knife or fence that enters the tumblers and permits the cylinder to be turned in either direction and the bolt or latch operated. Figs. 2 and 3 are sectional views, enlarged, through the tumbler-cylinder on the line *x x*, Fig. 1, a part of the cap being broken away to show the cross-bar on the tumbler-cylinder that actuates the bolt, the bar being shown in two positions, according as the key is turned in one direction or the other. Fig. 4 is a horizontal sectional view, enlarged, of the tumbler-cylinder, showing the tumblers and the knife or fence in the position they occupy when the bolt or latch is locked. Fig. 5 is a similar view, showing the tumblers and knife or fence in position when the bolt or latch is unlocked. Fig. 6 is an edge view, enlarged, of the tumblers when the bolt or latch is locked. Fig. 7 is a similar view of the tumblers when put in position by the key to receive the knife or fence and permit the bolt or latch to be unlocked. Fig. 8 is a view of the key used.

As referred to in the specification, the bolt or latch is constructed in the usual form, having a talon or cross-bar on its back end, against which the ends of a cross-bar fixed to the tumbler-cylinder act to throw back the bolt or latch whenever the key is turned.

The tumbler-cylinder A, which has fixed thereto the cross-bar B, is solid, and is recessed, as shown in Figs. 4 and 5, to receive the tumblers C and their springs *c*, and also the fence or knife D, which enters slits in the tumblers C when they are placed in position by the key E, preparatory to turning the cylinder and operating the bolt or latch.

The tumblers C are flat plates, separated from each other by thin strips of metal, so as to secure their better action, and slide in the recess before mentioned in the tumbler-cylinder, being moved in one direction by pressure on the key and in the other by the spring *c* when the key is withdrawn. Such tumblers are constructed with slits 1 1, corresponding with the thickness of the fence or knife D, which are cut in different places or locations in the several tumblers, as shown in Fig. 6, the key being so bitted as to bring such slits, when the key is pushed home as far as it will go, in a line with each other, as shown in Fig. 7, and opposite the knife or fence D, so as to allow such fence or knife D to enter such slits, as illustrated in Fig. 5, when the cylinder is turned.

The tumblers are placed in the cylinder A as shown in Figs. 4 and 5—that is, at an angle with the sides or axis of the cylinder—their outer ends, against which the key acts, being central, or substantially so, in the cylinder, and their inner or other ends lying against or near one side of the cylinder, so as to give sufficient space, as shown in Figs. 4 and 5, at the side of the tumblers for securing the springs *c*, which throw back such tumblers. By this arrangement the greatest possible number of tumblers can be placed in any given-sized cylinder, and the action of the key will be direct upon them, and all—the cylinder, tumblers, and springs—will occupy the least possible space. If the tumblers are placed centrally in the cylinder the cylinder would either have to be enlarged to give space for securing and for the action of the springs, or such springs would require to be fixed outside of such cylinder. The arrangement of the tumblers and their springs in the cylinder, as shown in Figs. 4 and 5, not only makes these parts more compact, but also cheapens their construction, as less material is required in making them. It has also been found from experiment and trial that such inclined position of the tumblers renders the lock more difficult to pick than when the tumblers are in a straight position centrally in the cylinder.

The placing of the tumblers in the cylinder at an incline or angle, as described, is not, however, a necessity to the proper operation of the parts, as the tumblers may be arranged

centrally in the cylinder, or in a line with its axis or sides; but the inclined position of the tumblers is desirable for the reasons mentioned.

5 Attached to such knife or fence D is a cam-stem, F, which passes through the solid part of the tumbler-cylinder A, as shown in Figs. 4 and 5, and enters, when in its normal position, or when the lock is locked, a recess or  
10 seat, *f*, in the tumbler-cylinder case G, or in a fixed part of the lock-case or cap, and effectually prevents the tumbler-cylinder from turning and the lock or latch being thrown back or unlocked until such stem is forced out of  
15 such seat or recess.

To permit such cam-stem F to be forced or withdrawn from its seat in the fixed part of the lock its outer end is slightly curved or rounded on opposite sides, (those on a line with  
20 the cylinder,) and the corresponding edges or sides of its seat or recess *f* are also slightly beveled or made V-shaped, as shown in Fig. 1, so that as the cylinder is turned by the key the cam-stem F will be forced down or into  
25 the cylinder A. Such stem F, being attached to and being a part of the fence or knife D, cannot, however, be forced and released from its seat *f* in the fixed part of the lock, except at such times as the tumblers have been  
30 brought by the inward thrust of the key to such position that their several slits 1 1 are all brought in a line under the fence D. This fence D, however, instead of being a straight piece of metal, may be curved or zigzag, and  
35 the key so bitted as to bring the slits in the tumblers properly under the fence. The key E turns in either direction at will.

The operation or action of the parts is as follows: The key being inserted in the end of  
40 the cylinder is pushed home, or as far as it will go, and this movement places all the tumblers in such position that their slits are brought opposite or in line with the fence D. The key then being turned, and the cylinder A  
45 with it, the stem F is forced down or inward, the slits in the tumblers receiving the fence and thus permitting the stem to be forced out of its seat or recess; and as the key is farther turned and the cylinder revolved one end of  
50 the cross-bar B is brought against the talon on the bolt or latch, and the bolt or latch withdrawn from its fastening. When the cylinder is again turned to its normal position the spring *e* throws the stem into its socket in  
55 the fixed part of the lock and thus secures the bolt from being operated from the outside until the proper key is again inserted and the tumblers again adjusted.

This construction and arrangement of revolving tumbler-cylinder and fence D F and  
60 its seat *f* also enable the key to be turned in

either direction and the lock unlocked, which has not before been possible when flat sliding tumblers have been used working in the same line with the key. The action of the key is  
65 also direct upon the bolt, without any lost motion in the operation of the parts, the key not having to be turned any part of a revolution before acting upon the bolt, but as soon as the key begins to turn the bolt is at once  
70 acted on.

The cross-bar B is not, however, a necessary part of the mechanism, as the inner end of the tumbler-cylinder may be recessed to fit over or receive a rib or bar on the bolt, or the  
75 cylinder may be connected with the bolt in any convenient and sufficient manner.

The key used is a flat key and is bitted according to the arrangement of the slits in the tumblers.  
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This invention or improvement can be applied to locks of any ordinary kind locking from one side, and is also applicable to padlocks.  
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What is claimed is—

1. The combination, with the tumbler-cylinder A, capable of operation in either direction and having and containing a series of flat sliding tumblers, C, operating substantially as described, of the tumbler knife or fence D,  
90 having a beveled head or stem entering into a beveled or V-shaped seat or recess situated or placed in a fixed part of the lock-case, whereby the tumbler-cylinder can have movement in either direction to unlock the bolt,  
95 substantially as described.

2. In combination with a tumbler-cylinder capable of operation in either direction and containing a series of flat sliding tumblers, the tumbler-cylinder case G, having located there-  
100 in the beveled or V-shaped seat for receiving and actuating the beveled head or stem of the tumbler-fence, substantially as described.

3. The combination, with a tumbler-cylinder containing a series of flat sliding tumblers and  
105 having a tumbler-fence with a beveled head or stem entering a beveled or V-shaped seat or recess in a fixed part of the lock case or cap, so that the cylinder can be turned in either direction, of a flat key acting against  
110 the ends of the tumblers to move the same, substantially as described.

4. The combination, with the cylinder A, of the flat sliding tumblers C, arranged therein in an inclined or diagonal position with re-  
115 spect to the axis or sides of the cylinder, substantially as and for the purposes set forth.

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Witnesses:

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