

N. D. GRAY.  
PUZZLE LOCK.

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976,165.

Patented Nov. 22, 1910.

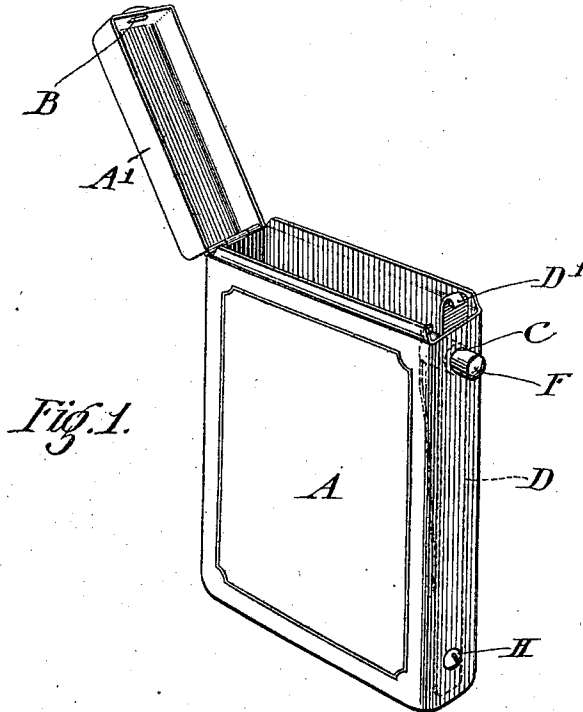


Fig. 1.

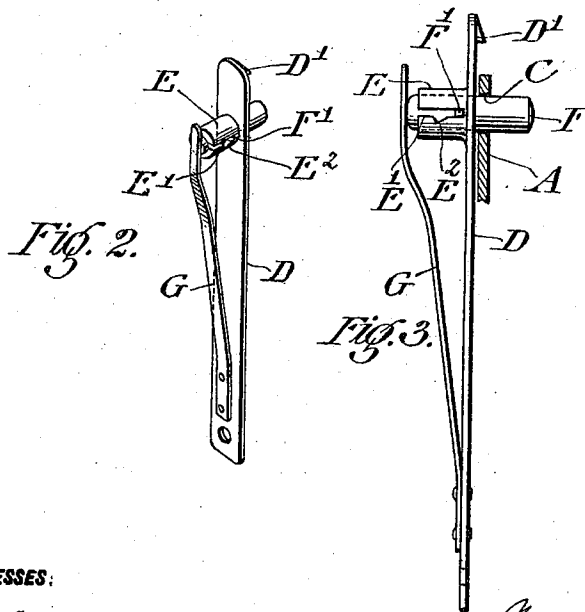


Fig. 2.

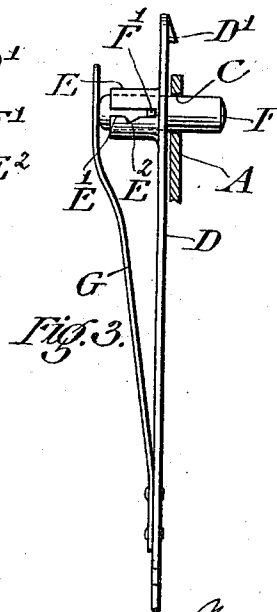


Fig. 3.

Fig. 4.

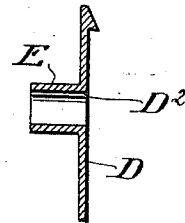
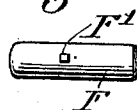


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## PUZZLE-LOCK.

976,165.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed February 24, 1910. Serial No. 545,584.

*To all whom it may concern:*

Be it known that I, NORMAN D. GRAY, a citizen of the United States, residing in West Chester, county of Chester, and State of Pennsylvania, have invented a certain new and useful Improvement in Puzzle-Locks, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to locking mechanism and has for its object to provide a simple and at the same time non-obvious and puzzling mechanism for unlocking a locking device of the latch kind.

Generally speaking, my invention consists in combining with a member connected to actuate the latch of the lock provided with a key engaging device, a push button having a key attachment adapted when partially rotated and when and only when the push button is in a position intermediate of the extremes of its longitudinal movement to engage with a latch actuating member, means also being provided to prevent rotative movement of the push button and its key attachment when the push button is in its extreme inward and outward positions. By preference a spring is provided to return the push button to its outermost position and in operation the latch is opened by pushing the push button in to its intermediate engaging position, giving it then a slight movement of rotation to engage its key device with the latch actuating device, and then pushing the button farther inward.

Reference is had to the drawings in which my invention is illustrated and in which—

Figure 1 is a perspective view of a match box provided with my puzzle locking device in what I believe to be its best form. Fig. 2 is a perspective view of the locking mechanism. Fig. 3 a side elevation of the same locking mechanism. Fig. 4 a sectional elevation taken through the center of the guide cylinder E, and Fig. 5 a detached view of the push button and its locking finger.

A is the box having the hinged lid A' from the edge of which is formed the latch engaging detent B.

C is a hole formed through the box for the passage of a push button.

D is a spring bar which may be fastened to the box in any convenient way, as shown, by a screw H and which has at its end a latch indicated at D'. The bar D is formed with

a hole or perforation D<sup>2</sup> for the passage of the push button from the edge of which hole extends the guide cylinder E which is formed, as best shown in Fig. 3, with a longitudinal guide slot E' having in an intermediate position a key engaging detent E<sup>2</sup> extending out from it.

F is the push button which extends through the hole C in the wall of the box and through the perforation D<sup>2</sup> and cylinder E. It is formed or provided with a key finger F' which fits and moves in the slot E' and when in registry with the detent E<sup>2</sup> can be turned into it by a slight rotative movement of the push button, G is a spring pressing on the inner end of the push button and acting to return it to its outermost position, that shown in Fig. 3.

The operation of the device will be readily understood.

The operator presses his finger on push button F and moves it inward to the intermediate position in which its key finger F' registers with the detent E<sup>2</sup>. A slight rotative movement of the finger then throws the key finger into the detent and further pressure on the button carries the cylinder E and latch bar D inward with the push button with the result of unlatching the lock.

While I prefer and recommend the construction illustrated as above described it will be obvious to those skilled in the art that my invention can be modified and the device changed in form without departure from the spirit of my invention.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is,

1. A puzzle locking device having in combination a latch, a member connected to actuate said latch and having a key engaging device, a push button having a key attachment adapted when partially rotated and when the push button is in a position intermediate of the extremes of its longitudinal movement to engage with the latch actuating member and means arranged to prevent rotative movement of the push button at its extreme longitudinal position.

2. A puzzle locking device having in combination a latch, a member connected to actuate said latch and having a key engaging device, a push button having a key attachment adapted when partially rotated and when the push button is in a position intermediate of the extremes of its longitudinal

movement to engage with the latch actuating member, means arranged to prevent rotative movement of the push button at its extreme longitudinal position and a spring  
5 acting to return the push button to its outermost position.

3. A puzzle locking device having in combination a latch, a guide cylinder E connected to actuate said latch and formed with a  
10 guide slot E' and detent E<sup>2</sup> located in an intermediate position in the slot and a push button F movable in cylinder E having a key finger F' moving in slot E' and adapted to engage in detent E<sup>2</sup> by a rotative  
15 movement of the push button.

4. A puzzle locking device having in combination a latch, a guide cylinder E connected to actuate said latch and formed with a guide slot E' and detent E<sup>2</sup> located in an intermediate position in the slot, a push button F movable in cylinder E having a key  
20 finger F' moving in slot E' and adapted to engage in detent E<sup>2</sup> by a rotative movement of the push button and a spring acting to return the push button to outermost position. 25

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Witnesses:

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