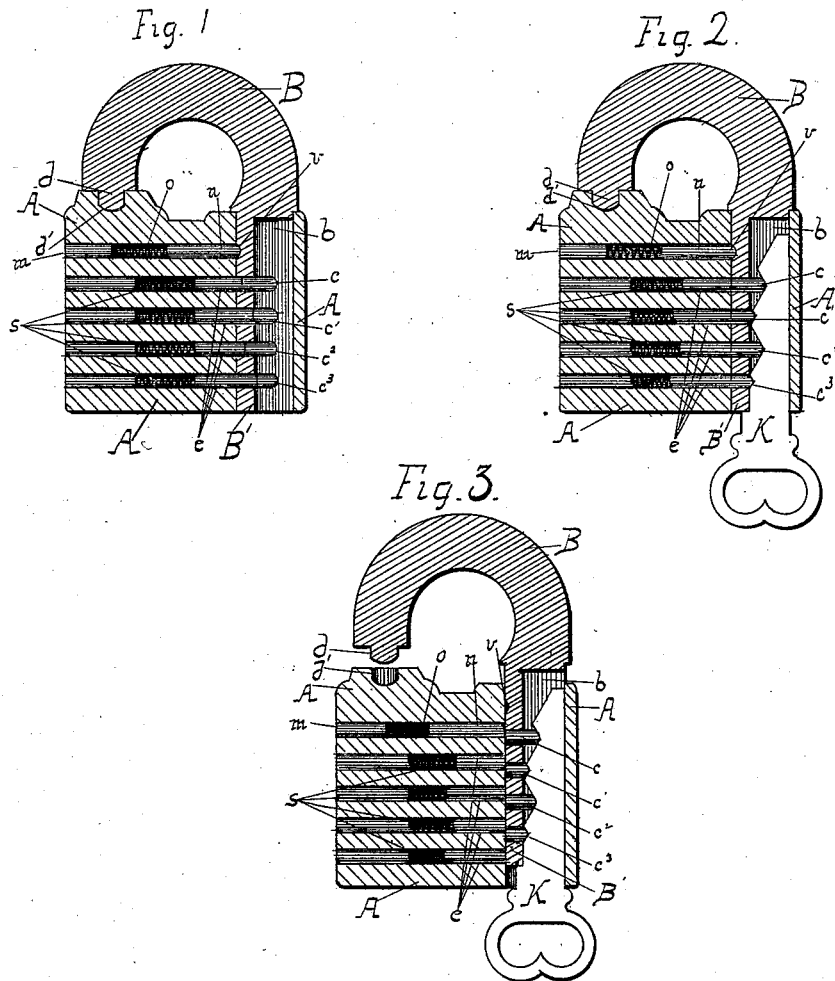


(No Model.)

W. H. BRAMBLE.  
PADLOCK.

No. 418,884.

Patented Jan. 7, 1890.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. BRAMBLE, OF DECATUR, ILLINOIS, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

## PADLOCK.

**SPECIFICATION** forming part of Letters Patent No. 418,884, dated January 7, 1890.

Application filed July 23, 1888. Serial No. 280,690. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. BRAMBLE, a citizen of the United States of America, residing at Decatur, in the county of Macon and State of Illinois, have invented a certain new and useful Improvement in Locks, of which the following is a specification.

In the drawings, wherein similar reference-letters indicate the same parts, Figure 1 is a sectional view representing the structure locked with the key removed. Fig. 2 is a similar view showing the structure locked but with the key inserted ready to unlock it. Fig. 3 is a similar view showing the structure unlocked.

A is the case of the lock, preferably cast solid, but with a hole cored or bored through it to accommodate the straight cylindrical stem or bolt B' of the shackle B, which is secured therein so as to be capable of sliding to a limited extent longitudinally, and also of turning or partially turning on the stem B' as an axis of motion. A projection *d* is formed on the upper edge of the casing A, and a recess *d'* in the free end of the shackle B, (or vice versa,) which will engage thereto to prevent the shackle from turning when locked.

In the rear side of the shackle-stem B' a deep longitudinal kerf *b* is sawed to receive the key K. A series of small holes parallel to each other are bored through the case A and stem B' into the kerf *b*. Into these holes a series of short pins *c c' c''* of different lengths are inserted, followed by a series of longer pins *e* of uniform length, each backed by a small coiled spring *s*, after which the outer end of each hole is closed by a plug, and the case is finished so as to conceal the plugs. When the shackle is in its locking position, as shown in Fig. 1, the pins *c c' c''*, &c., are projected by their spring *s* into the holes in the stem B', where they prevent any longitudinal movement of the stem and thus hold the structure locked. When the key, which is of the usual "Yale" form, is inserted, its notches are adapted to align the points of contact between the two series of pins with the joint between the stem and the case, so as to leave all the pins *c c' c''* wholly in the stem and all the pins *e* wholly in the case, as

shown in Fig. 2, and thereby allow the stem to slide outward (or upward, as shown in the drawings,) and disengage the projection and recess *d d'*, after which the shackle may be turned in its bearings to enable it to be withdrawn from the staple.

Theoretically a lock constructed substantially as above described would seem to be practical and useful; but experience has demonstrated that it is seriously defective. In attempting to insert the key to unlock it it is found that the pins refuse to align, and that they resist and practically prevent the introduction of the key. The true cause of this difficulty was so obscure that it required much study and many experiments to discover and obviate it. I found, however, that it arose from the two facts, that the stem is easily movable longitudinally, and the pins *c c' c''* are necessarily slightly smaller than the holes in which they play, so that as the result upon attempting to insert the key its action against the end of the first pin with which it came in contact slid the stem very slightly, but sufficiently to make the pins bind in their holes and thus effectively resist the further movement of the key. To obviate this difficulty, therefore, I now provide the stem B' with a yielding holder to prevent such initial end movement, which constitutes in part the improvement herein described and claimed.

The holder may be constructed and applied in a variety of ways without departing from the principle of my invention. The best form, however, in which I have contemplated its application is as follows: I make a slight notch or depression *v* in the side of the stem B', bore a hole *m* in the case at a point which registers with the depression *v* when the shackle is locked, insert into said hole a closely-fitting pin *n* having, preferably, a rounded end, place a small coiled spring *o* behind said pin, and plug the outer end of the hole in the same manner as the other pin-holes. When the shackle is locked, the end of the spring-pin *n* engages in the notch *v* and holds the stem B' immovable. The force of the spring *o* being properly proportioned to that of the several springs *s*, the latter will

yield and allow the key to enter and the pins  $c\ c'\ c^2$  to properly align before the stem  $B'$  will move, and then a slight additional pressure on the key causes the stem  $B'$  to force the pin  $n$  back out of the way and move out and unlock the shackle. The difficulty is thus completely remedied.

The stem  $B'$  forms an ordinary key-hub for a Yale plate-key, and the operation of the key is to unfasten the stem, push it and the shackle forward, disengage one end of the shackle from the lock-case, and then turn the shackle on its pivot—the stem  $B'$  or key-hub.

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

1. In a lock, the combination of the case, the longitudinally-sliding shackle adapted to engage detachably with the case at one end, and the stem  $B'$ , forming a rotary key-hub and pivot for the shackle and adapted to be

pushed longitudinally and turned by the key, substantially as set forth.

2. In a lock, the combination of a sliding shackle having a stem  $B'$  provided with locking pins and springs, with a yielding holder adapted to engage with the shackle and hold it firmly in place during the insertion of the key and then to yield to a push from the key after the key is in place, so that the shackle may be slid out of engagement at one end with the case and turned, substantially as set forth.

3. The combination of the case  $A$ , shackle  $B\ B'$ , pins  $c\ c'\ c^2\ e\ e\ e$ , and springs  $s\ s\ s$ , with the longitudinally-sliding spring-pin  $n$ , adapted to engage in the depression  $v$  when the shackle is in the locked position, substantially as described.

WILLIAM H. BRAMBLE.

Witnesses:

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