

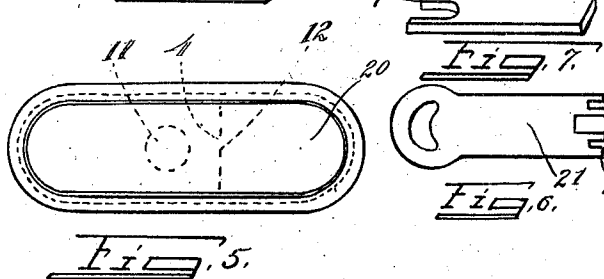
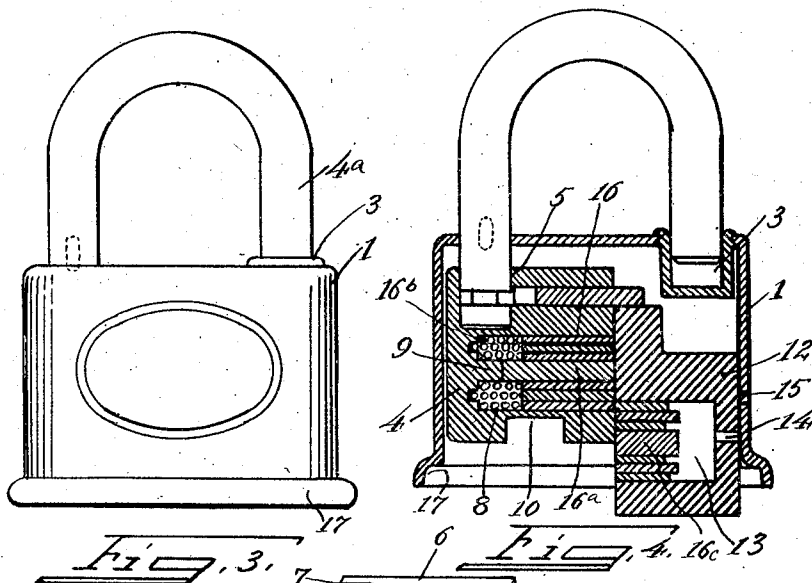
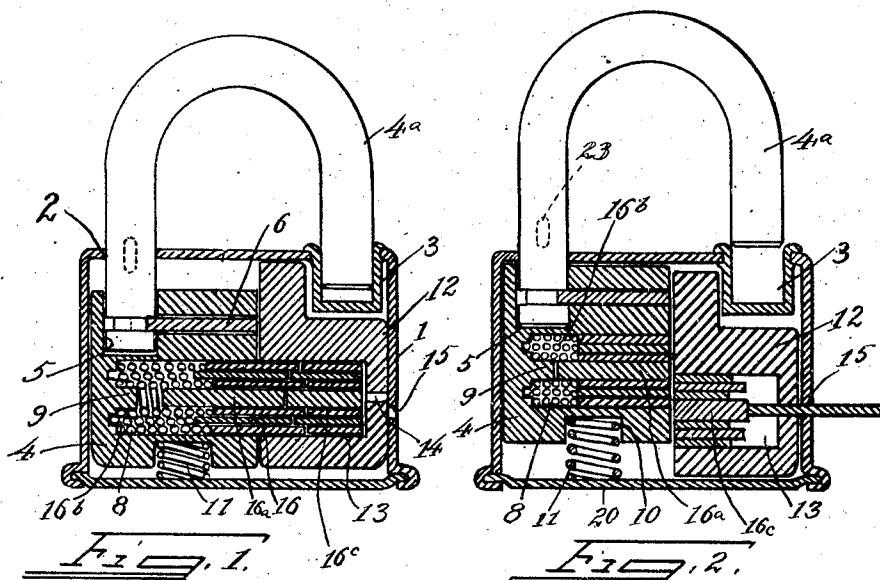
Aug. 24, 1926.

S. WISE

1,597,560

PADLOCK

Filed April 4, 1925



INVENTOR:  
Solomon Wise  
BY  
Allen Allen  
ATTORNEYS.

## UNITED STATES PATENT OFFICE.

SOLOMON WISE, OF CINCINNATI, OHIO.

## PADLOCK.

Application filed April 4, 1925. Serial No. 20,587.

My invention relates to padlocks, employing a type of construction shown in my Letters Patent of the United States No. 1,390,222, granted September 6th, 1921.

5 It is my object in this construction to provide a lock which is formed without rivets, and built up essentially of a shell which is stamped around the lock parts after same are assembled in the shell.

10 It is my object to provide a lock in which the members within the shell are forced by a spring to a position of closing the key hole automatically, thereby requiring the shackle to be pressed into the lock for the key to be insertable. This sets up a difficulty against 15 picking the lock, and keeps moisture, dust and dirt from getting in through the key-hole, and injuring the tubular tumblers and their springs.

20 Among other things I so build the lock that once the parts are in place and the metal of the shell crimped around the plate that holds them there, the removal of the plate from the bottom of the lock will not permit the shackle to be operated, without 25 first operating the plungers correctly, so that the lock is sufficiently secure without the bottom piece inserted.

I accomplish my objects by that certain 30 construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawing:

35 Figure 1 is a central vertical section of the lock showing it closed.

Figure 2 is a like view showing it open.

Figure 3 is a side elevation of the lock.

Figure 4 is a section like Figures 1 and 2, showing the mode of assembly of the lock.

40 Figure 5 is a bottom plan view of the lock.

Figure 6 is an elevation of a key for the same, and

Figure 7 is a perspective of the shackle 45 dog.

The shell of the lock, in the form illustrated, is formed up primarily as a hollow rectangular box 1 having a hole 2 for the introduction of the anchored end of the 50 shackle and a cup 3, firmly mounted in another hole and swedged into place, which receives the free end of the shackle.

Into the shell are set two die-cast blocks, one of which holds the shackle and slides, 55 and the other of which is fixed in place so that it can slide up and down a slight dis-

tance only. The plungers operate between these two blocks. Thus I have shown the block 4, which has a hole 5 into which the one end of the shackle is introduced. A slot 60 is formed in the block, so as to intersect the hole 5. A dog 6 having a bifurcated end 7 is placed in said slot and engages the shackle.

The shackle 4<sup>a</sup> has a looped form, in the 65 illustrated example, and its end to be anchored in the block 4, has a peripheral groove to be engaged by the bifurcated end of the dog.

The block 4 has also a cylindrical hole 8 70 for the one set of tumblers, at the base of which hole is a short projecting central post 9, for a purpose to be described. The lower end of the block 4 has a hole 10 for a spring 11, said spring being for a purpose to be 75 described.

The other block as illustrated at 12, is formed of a size to fit into the shell with a slight sliding relation, and arranged edge to edge with the block 4. The block 12 80 has a hole 13 for the other set of tumblers and a key slot 14. There is also a key slot 15 in the side of the shell, said two slots being brought to register before the key can be inserted. 85

The tumblers are in the form of concentric telescoping tubes, in two sets, as in my patent heretofore referred to. The tube set at 16 is located in the sliding block 4, with the inner tumbler being a solid pin 16<sup>a</sup> instead of a tube. 90

When the lock is moved to unlocking position, the inner tumbler 16<sup>a</sup> will strike the projection in the base of the tumbler hole in the block 4, indicating to the operator 95 that the lock is ready to open, and preventing the tumblers from being moved too far in by means of the key.

Each tumbler or telescoping member, except the central one 16<sup>a</sup> has its spring, said 100 springs being indicated at 16<sup>b</sup>, for the set 16. The tumbler set 16<sup>c</sup> in the fixed block 12 is so adapted that when the key is brought into engagement with them and pressed home that they will line up the plungers 16 evenly 105 with edges of block 4, thereby permitting the sliding block and with it the shackle to move to a position as illustrated in Figure 2 which releases the shackle at its free end, from engagement in the cup 3. 110

Since the top of the lock is closed except for the shackle hole, and the cup (the latter

being closed at the bottom), the lock parts must be inserted from the other end. To permit this the shell is left open, with a sufficient flange 17 for swedging or crimping in 5 after the lock is assembled.

The act of assembly is as follows:—The two blocks, with the tumblers and springs in place, and with the dog 6 in place, are brought together and thrust up into the 10 shell. The key is then employed to line up the tumblers, thus enforcing the use of a proper key during the assembly of the lock. When the key has released the two blocks from each other, the block 12 is pulled down 15 to a position as indicated in Figure 4, so that the shell can be tipped and the dog shifted by tapping against the shell to a position part way out of the slot in the block 4, as also illustrated in Figure 4. 20 The shackle end having the groove in it, is then thrust through the top of the shell and into the hole in the block 4, until it strikes the bottom thereof, whereupon the dog is caused to slide back in the slot there- 25 for to bring its bifurcated end into engagement with the groove in the shackle. When this has been done, the block 12 can be pushed back up into place and will thereafter hold the dog and thus the shackle, 30 against removal.

The spring 11 is then set into the hole therefor in the block 4 and the bottom plate 20 is set up into the expanded open end of the shell. The flange about this portion of 35 the shell is then crimped in around the plate, forming a tight seal.

Removal of the plate 20 will not release the two blocks, since the shackle will hold them in the shell. Removal of the cup 3 40 will not release the shackle, if the shackle is locked down, without breaking the whole shell away, or operating the lock, it will be impossible to release whatever object is held by the shackle.

The advantages of the concentric tumbler lock have been pointed out in my patent. The chief one is that no amount of hammer- 45 ing or forcing will cause them to give way, since they form a solid mass of strong material which will have to be sheared before it will give way, and since the result of sharp blows will have no effect in setting up a re- 50 leasing alignment of the tumblers.

It should be noted that the effect of the 55 spring 11 will be two-fold, first to push both blocks 4 and 12 up to the top of the shell, which is made slightly larger than the block 12 for this purpose. As a result of this the key slot in the block 12 will be normally out 60 of alignment with the slot in the shell, with the resultant advantages hitherto pointed out. Second the spring 11 causes the shackle to jump to the open position when the proper key is inserted.

65 The key as illustrated at 21 will have a

series of tines 22, to engage the tumblers. Due to the construction of the lock, the key is symmetrical and may be inserted either way, with equal results, which makes the lock easy to operate with the key. The 70 key, as is evident, lines up the plungers so as to make a line of cleavage that permits the block 4 to jump to position of release of the shackle, by shifting it so as to lift it from the retaining cup because of expan- 75 sion of spring 11 which is normally in a compressed condition.

The shackle is free to revolve when lifted with its one end free, and it can be located properly for pushing it down to locked 80 position again by a lug 23, on the shackle, that has a clearance groove in the top of the lock casing (not shown).

Having thus described my invention, what I claim as new and desire to secure by Let- 85 ters Patent, is:

1. A padlock having a shackle, and a shell, a pair of blocks within the shell, sets of telescoping tumblers held within the blocks, and adapted when one set is actuated, 90 by a key to set up a line of cleavage so that the blocks can slide with relation to each other, one of the blocks being relatively fixed and the other slidable, means for anchoring the shackle in the block which is not fixed, 95 said shell having an opening therein for introduction of the two ends of the shackle, said means for anchoring the shackle being held in place by the other block, throughout the range of movement of the sliding 100 block.

2. A padlock having a shell formed as a case with an opening at one end, a relatively fixed tumbler block, and a movable tumbler block arranged within the shell, a 105 plate secured across the open end of the shell so as to enclose the same, a pair of holes in the shell at the other end from the plate for the introduction of the two ends of the shackle and means for revolvably holding the 110 shackle permanently in the sliding block, said means being held in place by the relatively fixed block.

3. A padlock having a shell formed as a case with an opening at one end, a relative- 115 ly fixed tumbler block, and a movable tumbler block arranged within the shell, a plate secured across the open end of the shell so as to enclose the same, a pair of holes in the shell at the other end from the plate 120 for the introduction of the two ends of the shackle, and means for holding the shackle permanently in the sliding block, said means being held in place by the relatively fixed block, said means comprising a forked dog 125 held slidably in the slidable block and engaging the shackle, said fixed block being located so as to prevent sliding of said dog.

4. A padlock having a shell formed as a case, openings for introduction of the two 130

ends of a shackle, a shackle, a pair of blocks having interengaging telescoping plungers therein, one of said blocks having a slight sliding movement in the shell, and the other  
 5 a substantial sliding movement therein, a key slot in the slightly moving block, a key slot in the shell, whereby introduction and use of a key will arrange the plungers with a line of cleavage to release the substantial-  
 10 ly sliding block, and spring means impelling both blocks to a position when the lock is locked, of the key slot in the one block out of line with the key slot in the shell, said shackle being anchored in the substantially  
 15 sliding block, and passing out through the shell.

5. A padlock having a shell formed of a single piece of metal having an open end, and shackle introduced through a hole in the  
 20 other end, a substantially fixed and a sliding block within the shell, interlocking tumblers in the two blocks adapted to release the sliding block when brought by a key to a common plane of cleavage and a plate  
 25 closing the open end of the lock, said plate being held in place by swedging in connection with the shell, said shackle being anchored in the sliding block, and an opening through the shell and the fixed block for  
 30 introduction of the key.

6. A padlock having a shackle, a pair of blocks having holes therein in which are located telescoping plungers, a shell surrounding said blocks and holding one of  
 35 them against substantial movement while permitting the other to slide, a key slot in the immovable block and the shell for insertion of a key to establish a single plane of cleavage of the sets of plungers, thereby per-  
 40 mitting the other block to slide, and means

for anchoring the shackle in the sliding block.

7. A padlock having a shell, a substantially fixed and a movable block within the shell, said two blocks having a short move-  
 45 ment when interlocked with each other, tumblers in the blocks adapted to be brought to a single plane of cleavage by insertion of a key through the shell into the fixed block, but otherwise interlocking the blocks,  
 50 a spring in the shell normally retaining the two blocks when interlocked in position to prevent insertion of a key into the fixed blocks, and a shackle retained in the movable block.  
 55

8. A padlock having a shell, a substantially fixed block and a movable block within the shell, tumblers in the blocks normally interlocking the blocks together, and adapted to be brought into a single plane  
 60 of cleavage to release the blocks from each other by insertion of a key through the shell into the fixed block, a shackle, and means for anchoring the shackle in the movable block, said means being retained in place by  
 65 the fixed block.

9. A padlock having a shackle, and a shell, a pair of blocks within the shell, sets of telescoping tumblers held within the blocks, and adapted when one set is actuated by a  
 70 key to set up a line of cleavage so that the blocks can slide with relation to each other, one of the blocks being fixed and the other slidable, means for anchoring the shackle in the block which is not fixed, said tumblers  
 75 being provided as to the sliding block with a stop for one of them, at least, limiting its inward movement under influence of a key to the correct line of cleavage.

SOLOMON WISE.