

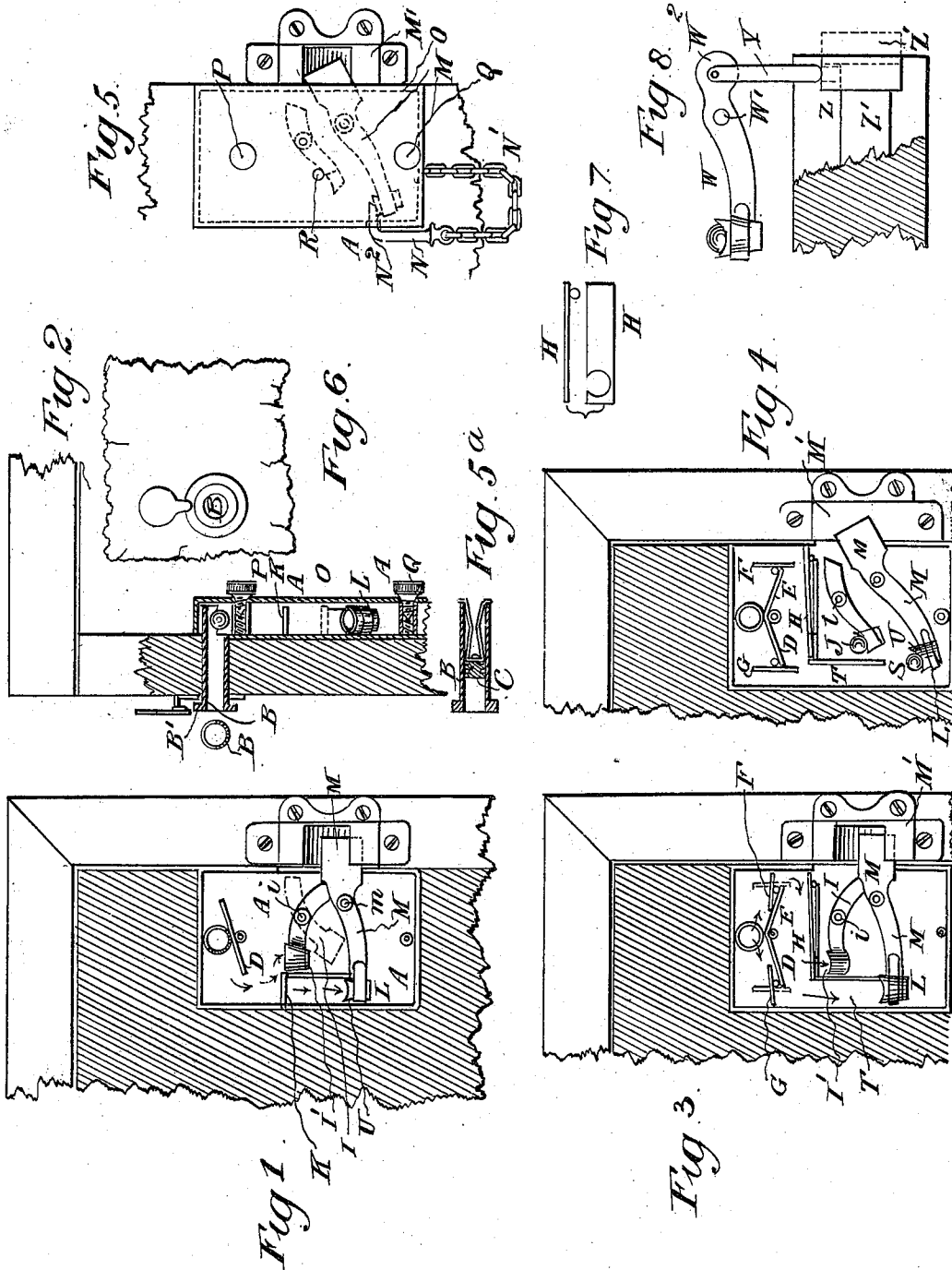
C. McCALLUM.

LOCK.

APPLICATION FILED DEC. 20, 1909.

983,740.

Patented Feb. 7, 1911.



Witnesses
C. Hymann
C. Schallinger

Inventor
Colin McCallum
by J. B. Singer
Att'y

UNITED STATES PATENT OFFICE.

COLIN McCALLUM, OF GLASGOW, SCOTLAND, ASSIGNOR OF ONE-HALF TO WILLIAM REID GILMOUR, OF CAMBUSLANG, SCOTLAND.

LOCK.

983,740.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed December 20, 1909. Serial No. 534,119.

To all whom it may concern:

Be it known that I, COLIN McCALLUM, of 26 Strathyre street, Shawlands, Glasgow, Scotland, engineer, have invented certain
5 new and useful Improvements in and Connected with Locks, of which the following is a specification.

This invention relates to improvements in locks, and has for its object to provide a lock
10 which will afford greater security to lockfast places, and such like. Various improvements have been devised from time to time, which for the most part have been characterized by the employment of a key for opening
15 such places, and so much care has to be taken that the key does not get lost, otherwise great trouble and expense is incurred in getting the said lockfast place opened, or a key made to fit the lock.

According to my present improvement, I dispense with the existing type of key, and use instead special metal or other balls of different sizes to operate the lock so that
20 should any be lost they can be easily replaced without loss of time. The balls, that is to say, one, two or more of dissimilar sizes are inserted in the lock by means of a revolving tube placed in an opening in the door, and fall by gravity down suitably inclined
25 passages on to one end of a balanced bolt or lever which, when it receives the weight of ball, is made to rise from the keeper and becomes unlocked. The said bolt may be engaged by another bolt or lever requiring a ball to release it from its engagement, as
30 hereinafter further described. The revolving tube has a milled collar at one end which keeps it in proper position in the door and admits of it being easily turned around by the operator to the desired position. Around the
35 face of the said collar, I may provide a certain mark to indicate to the operator the position of the tube at the extreme end of same. The inner end of the tube, that is, the part that enters the lock, has a slit at the end to allow the ball to pass into the desired section of the lock. The said tube is retained in position in the door by a split washer or hoop which fits into a recess in the tube at the inner
40 or extreme end, and by the collar at the front or face end. I may also provide a plug or cap to close up the inlet passage in the tube so that nothing can enter the interior of the lock when the same is not in use.
45 The plug or cap is made to enter the tube

from either end but can only be withdrawn by the operator at inside of door. I also provide detachable traps or gates which are pivoted to the extreme end of each inclined passage, the object of such traps or gates being
50 to allow of one attempt only as, immediately a ball passes over the trap the weight of the said ball tilts and leaves the trap or gate in a vertical position thereby blocking the passage against any further attempt to operate
55 the lock.

In adapting the invention to existing key locks especially those for outer or heavy doors, I alter the lever bolt head to admit of a pin or depending arm being fixed thereto
60 and projecting a given length downward while the cup or ball receiving end remains the same. A hole is bored either through part of the bolt or at the upper part of the key lock, or the recess or shoulder may be
65 taken advantage of for the engagement of said pin. The projecting pin is made to rest on the top of the key lock bolt, and as soon as the bolt is locked the pin falls into the hole or recess in the key-lock and before the
70 key-lock can be unlocked the pin must be withdrawn from hole or recess by the introduction of a ball turning the lever bolt head on its fulcrum and raising the pin or depending arm from the hole or recess as
75 afore-mentioned.

In order that my invention may be properly understood and readily carried into effect, I have hereunto appended one sheet of drawings, of which—
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Figure 1 is a front elevation of the lock embodying my invention in one of its simplest forms and keeper properly mounted on part of a door with the cover plate removed. Fig. 2 is a transverse section of
85 same with the cover plate in position. Fig. 3 is a similar view to Fig. 1 but with an additional inclined passage illustrating the lock in its locked position. Fig. 4 is the same view with lock unlocked by the intermediary of balls. Fig. 5 is a similar view to Fig. 4 with the plate in position and the balanced lever retained in the unlocked position after the removal of the balls. Fig. 5^a is a view of the plugging device. Fig. 6 is part
90 of the door looking toward it at the front or outside of the compartment showing the tubular passage. Fig. 7 are side elevations and plans of a detachable inclined passage or platform. Fig. 8 is a part section and
95 100 105 110

part elevation of an ordinary lock to which my improvements are applied, all hereafter more fully referred to and described.

The improvements embody the following mechanical devices or parts properly assembled and referred to by descriptive letters.

A is the lock in its entirety.

B is a revolving passage or inlet tube (Fig. 2) which has an externally milled head or flange B¹ and an inwardly projecting piece which blocks up one of the inclined passages according to how it is placed. The said inlet B may be plugged or blocked by the device marked C (Fig. 5^a) or it may be placed in such a position as to preclude the balls ever getting into the inclined passages.

D is the inclined passage leading at right angles from the inlet B and E to the corresponding one mounted on the opposite side and used with the lock illustrated in Figs. 3 and 4.

F and G are traps and gates mounted removably at the extremities of the inclined passages.

H is a passage leading to the short lever bolt I or detent balanced on a fulcrum *i* with cup recess I¹ at end thereof for holding ball J, as seen in Fig. 4. The said short lever may be rendered inoperative, as shown in dotted lines, when required.

K is a detachable pin for altering the size of the passage leading to the cup or recess end L of the balanced lever bolt M mounted on the pivot or fulcrum *m*.

N is a set pin suspended by the chain N¹ and when passed through the hole N² in the frame as shown is used for retaining the balanced lever bolt M in the unlocked position after the removal of the balls, when door is unclosed. When the door is being closed the vibration or slamming of it causes the pin to become displaced from its hole and the bolt M falls automatically into its locked position within the keeper M¹.

O is the cover plate which is retained temporarily in position by the thumb screws P, Q, and is detached when the balls are being removed for use again.

R is a set pin for keeping balanced lever or clutch I in position when not in use and seen in Fig. 5.

Referring to Fig. 8 the balanced lever is marked W which is balanced on the fulcrum W¹ and is provided with a cup or recess where a ball U has been inserted which ball has raised the lever end W² wherein is mounted a depending arm or pin Y, which when the ball is removed falls into a hole or recess Z in the bolt Z¹ locks the device which is of the ordinary construction.

To operate the lock A successfully and assuming that both sections, as illustrated in Figs. 2 and 3, are to be worked, the revolving tube B is turned by the milled head B¹ aforesaid to the desired position. The

first correct ball J is then placed in the tube and running to the slit at the end of the tube, falls and runs into and down the inclined passage E and passing over the trap or gate F tilts the same to a vertical position which position blocks the progress of any article coming down the same passage again. The ball J then falls into its allotted position at the end of the detent or lever bolt I. The weight of the said ball J being sufficient to raise the clutch or lever bolt from its locked or engaged position with the lever bolt M, freeing the said lever bolt which when operated upon in its turn allows the door to be opened. The other section is operated on by causing the ball S to run over the inclined passage D over the gate or trap G and drop down into the vertical passage T when it falls into the cup or recess U formed at the end of the balanced lever bolt M. The weight being so nicely differentiated so as to raise the said bolt from the locked position within the keeper into that shown in Figs. 4 and 5. Detachable set pins are placed in a position above, and in the passage which only allows the proper sized ball to pass. Any larger size is held in the passage thereby blocking the same, should a smaller ball be inserted, it runs the passage all right until it reaches the recess at the end of the clutch or lever bolt, when the recess being set for a larger sized ball, the latter falls harmless to the bottom of the lock. It is now plain that to operate the lock successfully a person must know every move adopted by the owner of the lock. To work the lock from one section only, as shown in Figs. 1 and 2, I provide a detachable gangway which allows a ball to pass over one passage and fall into another. In this case the trap or gate at the end of the inclined passage is dispensed with as shown.

Claims.

1. A keyless lock comprising in combination, a keeper for one of the members, and a locking device for the other of the members to be locked, said locking device comprising a lever arranged to engage said keeper, a detent for locking said lever in engagement with said keeper, inclined means for guiding weights toward said detent and lever, and weights running by gravity on said means into engagement with said detent and lever to release engagement of said detent therewith and unlock said lever.

2. A keyless lock comprising in combination, a keeper for one of the members and a locking device for the other of the members, said locking device comprising a lever arranged to engage said keeper, a detent normally locking said lever in engagement with said keeper, rolling weights, and means for guiding said weights successively into engagement with said detent to cause said

weights to disengage the same from said lever and into engagement with said lever to disengage the latter from said keeper.

5 3. A keyless lock comprising in combination, a keeper for one of the members and a locking device for the other of said members, said locking device comprising a lever
10 arranged to engage said keeper, a detent normally engaging said lever to lock the same in engagement with said keeper, rolling weights, guiding means above and abreast
15 of said detent and lever for guiding said weights by gravity into engagement with said detent to disengage the same from said lever and into engagement with said lever
to disengage the lever from said keeper, and means for discharging said weights onto said
guiding means.

4. A keyless lock comprising in combina-

tion, a keeper for one of the members and 20
a locking device for the other of said members to be locked, said locking device comprising a member arranged to engage said
keeper, a detent for locking said member in engagement with said keeper, rolling weights, 25
means for guiding said weights into engagement with said detent to disengage the same from said member and to disengage the latter
from said keeper, and rotatable hollow means for containing and discharging said weights 30
onto said guiding means.

In testimony whereof I affix my signature in presence of two witnesses.

COLIN McCALLUM.

Witnesses:

JOHN LIDDLE,

JOHN TRAIN LIDDLE.