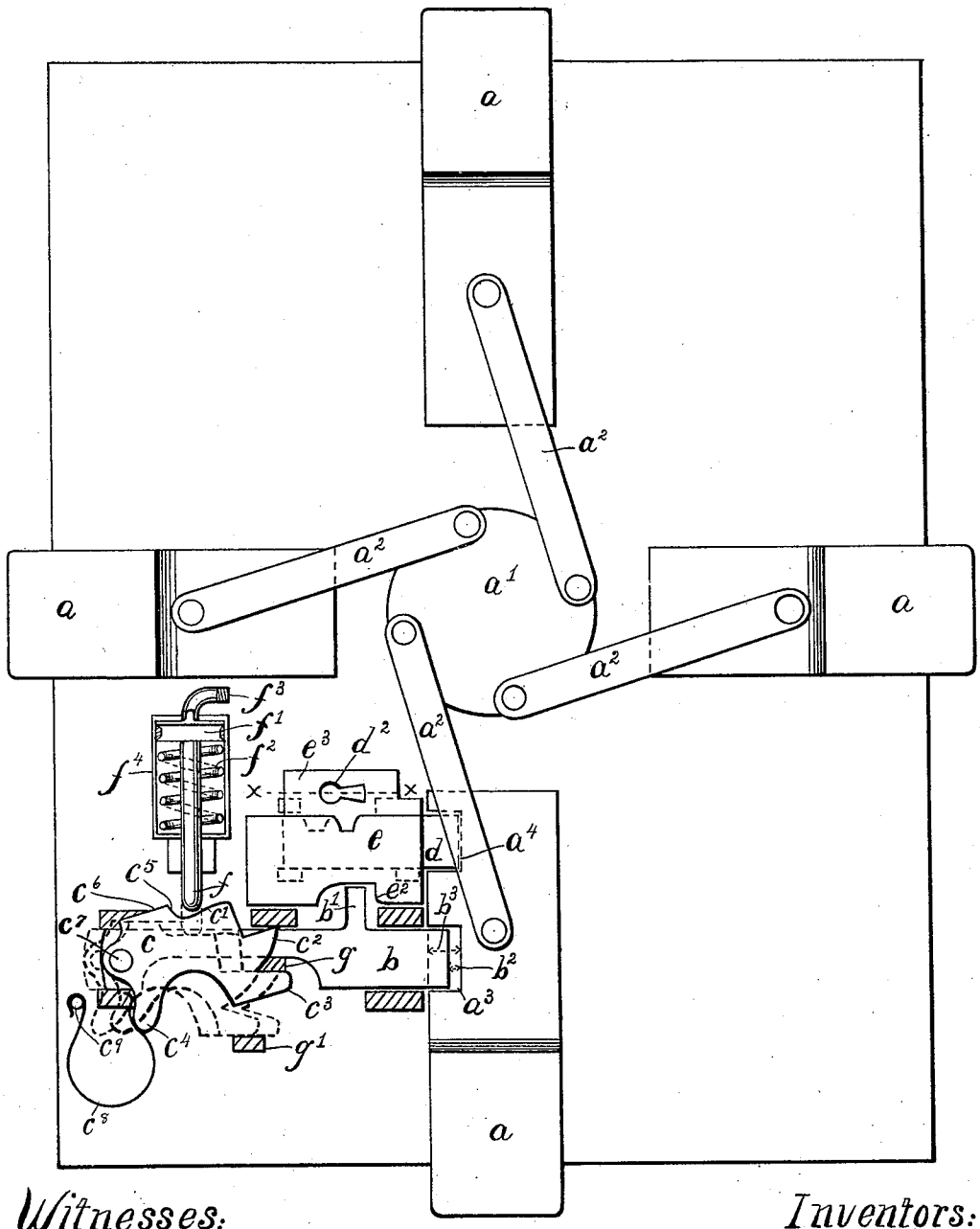
(No Model.) 2 Sheets—Sheet 1.

# D. W. DEARDORFF & C. N. TEETOR.

## LOCK.

No. 600,143. Patented Mar. 8, 1898.

*Fig. 1.*




*Witnesses:*

Charles A. Suffrins.

Jos. Teetor.

*Inventors:*

Daniel W. Deardorff

Charles N. Teetor

By Abel L. Teetor

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

# D. W. DEARDORFF & C. N. TEETOR.

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Fig. 2.

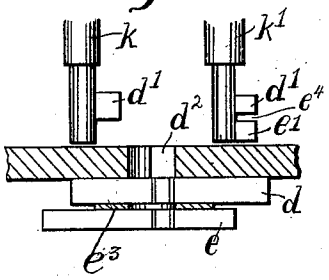



Fig. 3.

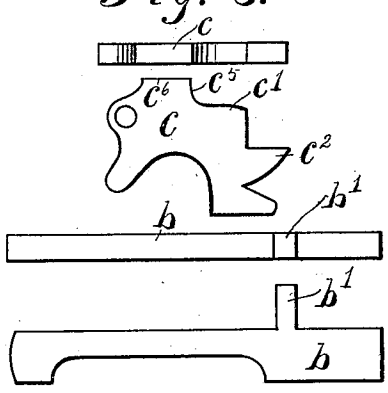



Fig. 4.

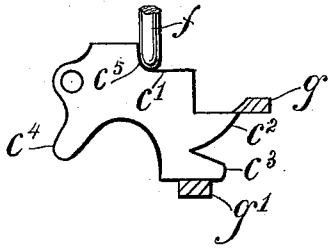
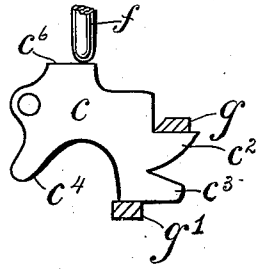



Fig. 5.




Witnesses:
Charles A. Duffurs.
Jos. M. Teetor.

Inventors:
Daniel W. Deardorff
Charles N. Teetor
By Chas. L. Teetor
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

DANIEL W. DEARDORFF, OF CINCINNATI, OHIO, AND CHARLES N. TEETOR, OF HAGERSTOWN, INDIANA.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 600,143, dated March 8, 1898.

Application filed March 22, 1895. Serial No. 542,751. (No model.)

*To all whom it may concern:*

Be it known that we, DANIEL W. DEARDORFF, residing at Cincinnati, in the county of Hamilton and State of Ohio, and CHARLES N. TEETOR, residing at Hagerstown, in the county of Wayne and State of Indiana, citizens of the United States, have invented certain new and useful Improvements in Locks Adapted for Burglar-Proof Safes and Vaults; and we hereby declare the following specification to be a full, clear, and exact description of our invention, such as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings.

The objects of the invention are, first, a cheap, simple, and efficient device; second, a lock provided with two keys or sets of combinations, one being dependent on the other; third, a locking device adapted to combine in one system two or more keys or sets of combinations and an air or steam pressure, a vacuum or magnetic forces to lock or release the bolts of the lock, so that it is possible for the local express agent to lock the transient safe and to leave it in such condition that neither the messenger nor any one else is able to unlock it *en route* from express-office to express-car without the use of one of the forces named above in conjunction with the key or combination provided for the use of the messenger.

In the drawings, Figure 1 is a plan view of our device, showing the position of all the parts when being transported from the main or local express-office to the express-car. Fig. 2 is a sectional view on line $x$ and a side view of the two keys shown in this case, one dependent and the other independent. Fig. 3 is a plan and an edge view of the independent bolt $b$ and its controlling multiple cam $c$. Figs. 4 and 5 show successive positions of the multiple cam $c$.

$a$ is a bolt or one of a series of bolts of a safe-door, which are here shown to be operated from central disk $a'$, being connected to the bolts by means of the links $a^2$. One of said bolts, as $a$, in this case is provided with two slots, as $a^3$ and $a^4$, with which fence-bars $b$ and $d$ are adapted to engage. The independent fence-bar $b$ is provided with a projection $b'$, adapted to engage with a cam $e$, to be described farther on. Said bar $b$ has a controlling or multiple cam pivotally connected to it at $c^7$, said cam being provided with a spring $c^8$, fixed at $c^9$, which fills the double purpose of holding the said cam in position as well as through the latter to drive the fence-bar $b$ when released into engagement with bolt $a$. Cam $c$ is provided with a number of faces and projections $c'$, $c^2$, $c^3$, $c^5$, $c^4$, and $c^6$, adapted to operate as will be described farther on.

$d$ is a dependent fence-bar adapted to engage with bolt $a$ at $a^4$ and is movably fixed beneath a diaphragm $e^3$ and cam $e$. In this connection we will explain the action of the keys $k$ and $k'$. The first, being the dependent key in the hands of the messenger, is adapted to engage with dependent fence-bar $d$ by means of web $d'$, which is so placed on the pin of this key as to engage only with latter said fence-bar, but must always leave the said bar engaged with the bolt $a$ when key is removed. Independent key $k'$ is provided with two webs $d'$ and $e'$ with an intervening space $e^4$. As will be seen, when this key is inserted into keyhole $d^2$ the web $d'$ will engage with dependent fence-bar $d$, while $e'$ will pass through diaphragm $e^3$ and will engage with cam $e$, which when moved by said latter key will communicate motion through stud $b'$ and shoulder $e^2$ to independent fence-bar $b$ simultaneously with the withdrawing of fence-bar $d$, so that with this key it is seen both fence-bars $b$ and $d$ may be operated.

$f$ is a plunger carried by a piston $f'$, fitted in a cylinder $f^4$, having an air-inlet $f^3$, and is held against end of said cylinder by spring $f^2$ until such time as air under pressure may be introduced into said cylinder through pipe $f^3$. Plunger $f$, Fig. 1, when operated by a pressure of air over piston $f'$ will be driven against surface $c'$ of cam $c$ and will partially revolve said cam, pressing the projection $c^2$ against fixed stud $g$ and will thereby withdraw the fence-bar $b$.

To explain the different positions of the dependent and independent parts of our device,

let it be understood that the normal position of the different parts when the portable safe leaves the local express agent's hands is represented by the positions in Fig. 1. Thus the fence-bar $b$ is partially withdrawn, as at $b^2$, and cam $c$ is pressed at $c^4$ by spring against stud $g$ at projection $c^3$. Now it will be seen that as bar $b$ is not wholly disengaged from bolt $a$ it will be impossible for the device to be unlocked with the key $k$ in possession of the messenger. We will call this the "first" position of the lock, as it is the position that only the master or independent key $k'$ can give it. Next when the safe is placed in the express-car and connection by any suitable means is made between the cylinder $f$ and the air-pressure constantly carried for the operation of the air-brakes the plunger $f$ is pressed against cam $c$ at $c'$, as before stated, and the bar $b$ wholly disengaged to full distance, as seen at $b^3$, and the position of the cam $c$ being, as shown at Fig. 4, resting at $c^5$, by virtue of the spring $c^8$, against plunger $f$, the cam $c$ being pressed as far as possible and resting at $c^3$ against stop $g'$ and the projection $c^3$ catching under stud $g$, so that it cannot revolve back to the first position when the plunger is released, but will be pressed directly forward with the fence-bar $b$, locking the bolt $a$ and blocking any further action or repetition of plunger, as seen at $c^6$, Fig. 5, until the lock is reset by master-key, as before stated. Now it will be seen that the key $k$ can release bolt $a$, as only fence-bar $d$ is engaged with said bolt. This position (seen in Fig. 4) we will designate as the "second" position. Now in case of any accident that will sever the connection between the air-cylinder $f$ and the air-pipes carrying the air-pressure the plunger $f'$ will be carried back by spring $f^2$, and the fence-bar $b$ will be shot by the action of spring $c^8$ into engagement with bolt $a$, and we have a third position which is constituted by a full engagement of fence-bar $b$ with bolt $a$ and cam $c$ in the position shown in Fig. 5, the face $c^6$ of cam $c$ being beneath the plunger $f$, so that it will be impossible for an air-pressure in the cylinder to act again before the independent key $k'$ has again reset the lock into the first position. Now it will be seen that in any attempt at robbery it is possible for the conductor, brakeman, engineer, or any passenger to lock the safe by releasing the air-pressure that is holding the piston $f$ in the second position, as in Fig. 4, when the spring $c^8$ would again shoot fence-bar $b$ into engagement with bolt $a$. Thus it will be seen that any one at any point on the train can lock the safe by releasing the air-pressure below any point that the spring $f$ may be calculated or adjusted to overcome and thus relieve the messenger from all power to open the safe, so that he may not unlock it no matter what inducement may be brought to bear on him by persuasion, intimidation, or otherwise.

While we show our device as adapted to operate with an air-pressure, we deem steam-pressure or a vacuum or a pressure produced by electromagnetism only as substitutes and desire not to be restricted in the application of our device to the employment of the exact and identical arrangement and elements shown and described.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a lock the combination with an independent key, a fence-bar adapted to be operated by said independent key, a dependent key, a dependent fence-bar adapted to be operated by both said dependent and independent keys but only rendered effective in securing and releasing said bolt when said independent fence-bar is disengaged, substantially as and for the purposes specified.

2. In a lock the combination of a bolt having a number of recesses, adapted to receive fence bars or stops, and a corresponding number of fence-bars $b$ and $d$, the former fence-bar being independent of the latter and the latter being dependent on the former as set forth.

3. In a lock the combination of a key adapted to operate one fence-bar of a series, a key adapted to operate two fence-bars simultaneously, one a dependent bar being operated directly and another an independent bar being operated indirectly, and a cam through which latter said bar is so indirectly operated, all as and for the purposes set forth.

4. A dependent fence-bar, a key to operate said dependent fence-bar, an independent fence-bar, a cam $e$, a key adapted to operate said dependent fence and said cam $e$ simultaneously said cam communicating motion from latter said key to said independent fence-bar all as specified.

5. The combination of a locking and controlling multiple cam, an independent fence-bar to which said multiple cam is pivotally attached, a plunger adapted to coact with and drive said multiple cam, a spring adapted to hold said multiple cam in normal position, a fixed stop against which said plunger may drive the free end of said multiple cam, so as to fully withdraw said fence-bar from its engagement with a bolt, a fixed stud under which said cam may catch when driven to the farthest extremity by said plunger as set forth.

6. A cylinder, a piston in said cylinder adapted to be driven forward by air-pressure or its equivalent, a plunger carried by said piston, adapted to operate a multiple cam, a fence-bar adapted to be operated and controlled by said multiple cam, a spring adapted to drive said piston back when air-pressure or other impelling force employed to drive it forward is released all as set forth.

7. A cylinder, a piston in said cylinder, a spring in said cylinder to keep piston in normal position, a plunger carried by said piston, an air-pressure or other equivalent impelling force adapted to drive said plunger, a multiple cam adapted to be operated by said plunger, a stop against which said plunger may drive said multiple cam, a stud beneath which said cam may catch when plunger is withdrawn, a spring adapted to keep multiple cam in position and to drive fence-bar *b* forward when released.

DANIEL W. DEARDORFF.
CHARLES N. TEETOR.

Witnesses:
WILL LAMB,
B. F. MASON.