No. 864,559. PATENTED AUG. 27, 1907.

C. D. RINALD.

SAFETY CHAIN FOR DOORS.

APPLICATION FILED APR. 14, 1906.

3 SHEETS—SHEET 1.

Fig: 1.

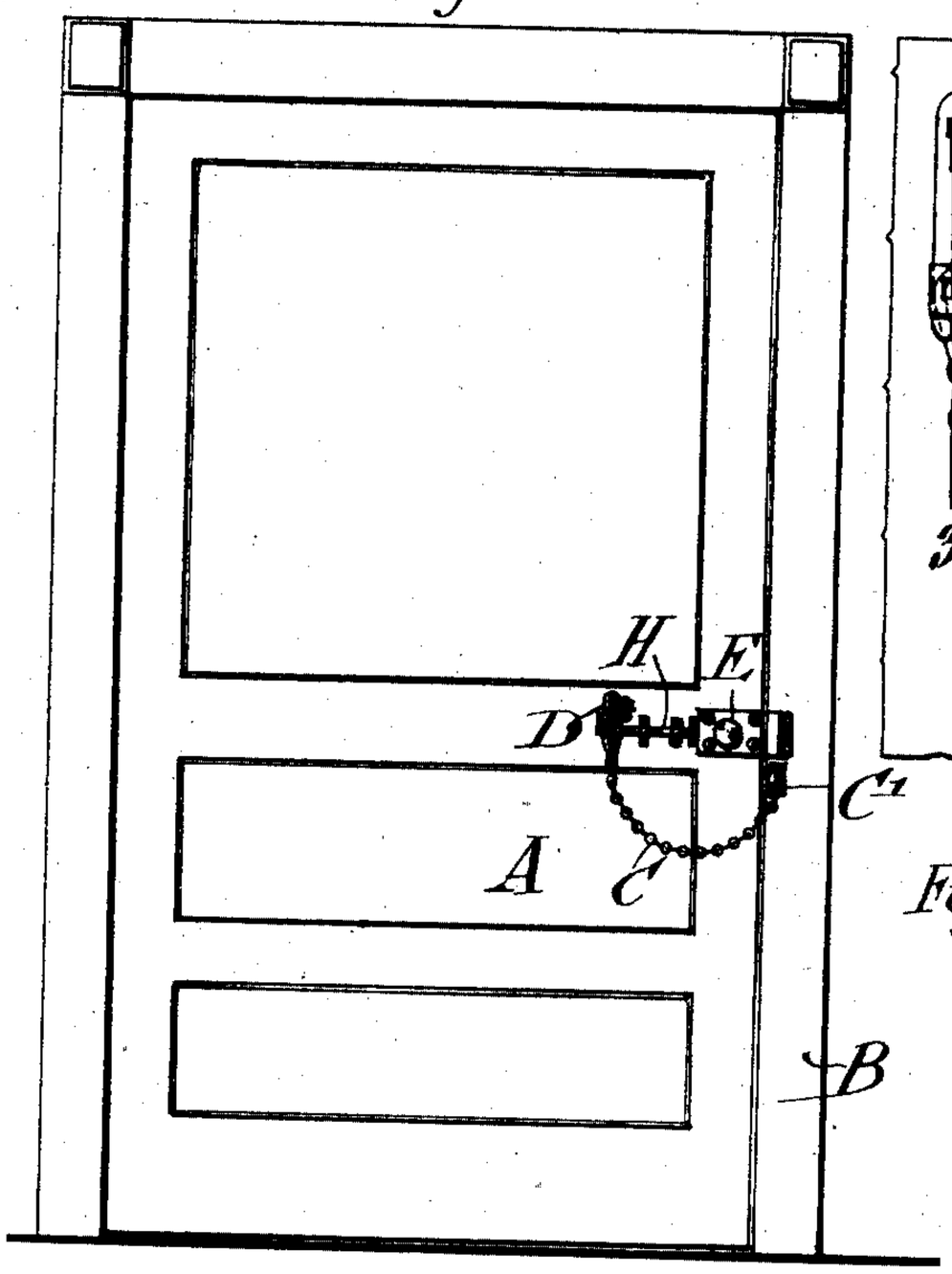



Fig: 2.

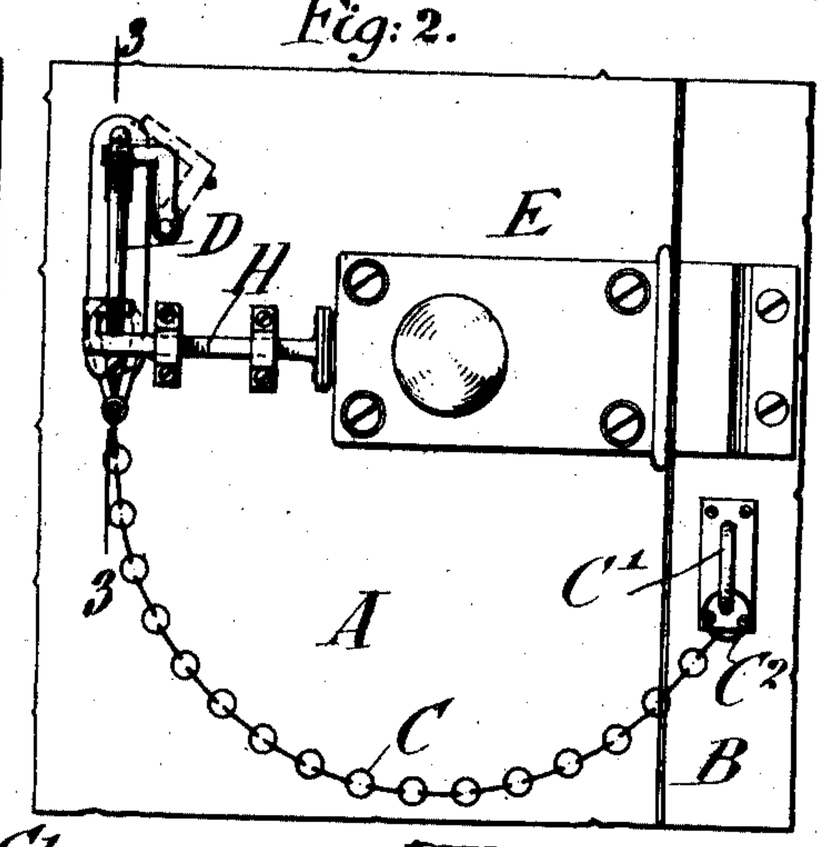
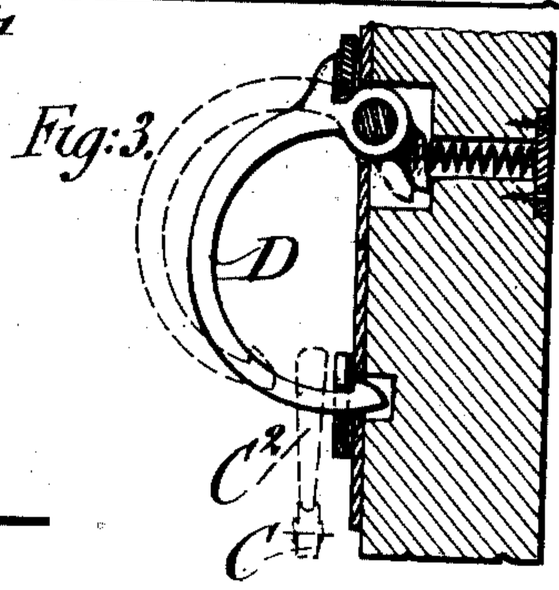



Fig: 3.

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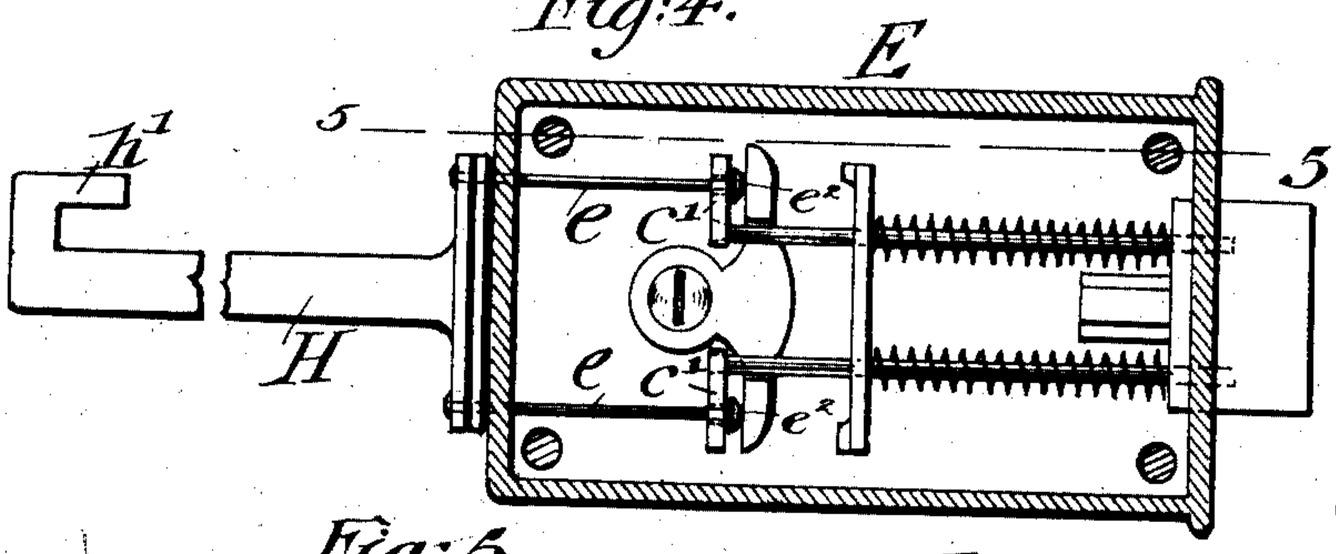


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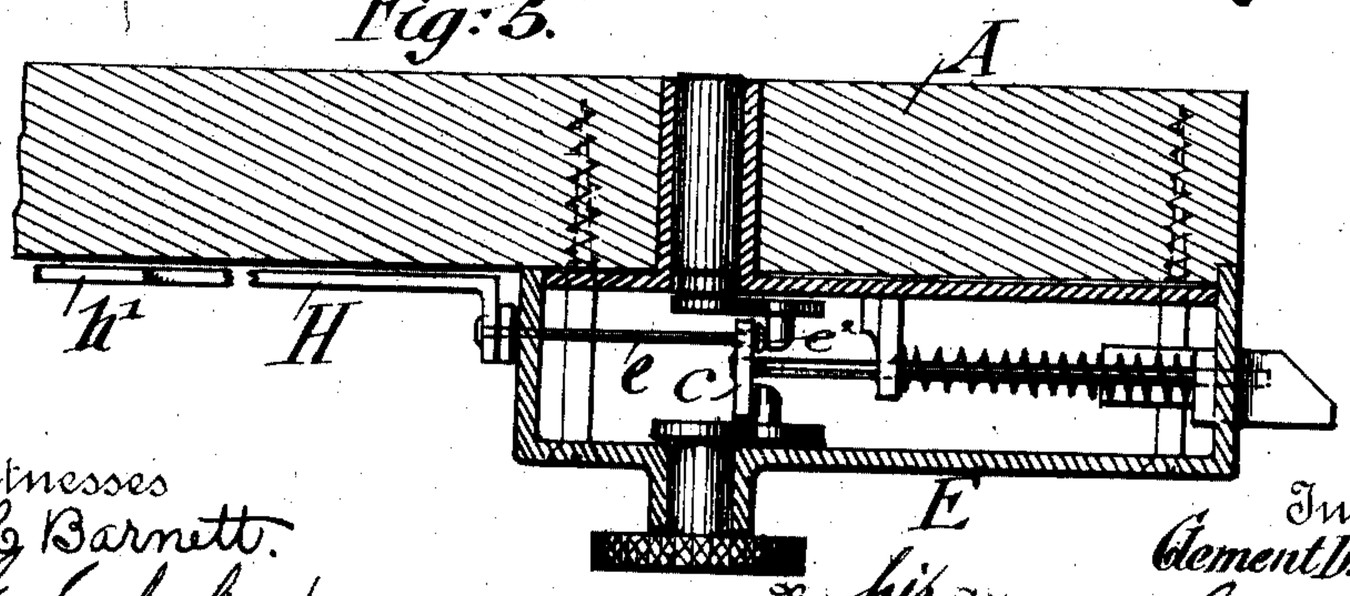


Witnesses
N. C. Barnett.
H. F. Suhrbier.

Inventor
Clement D. Rinald
By his Attorneys
Goepel & Goepel

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3 SHEETS—SHEET 2.

Fig: 6.

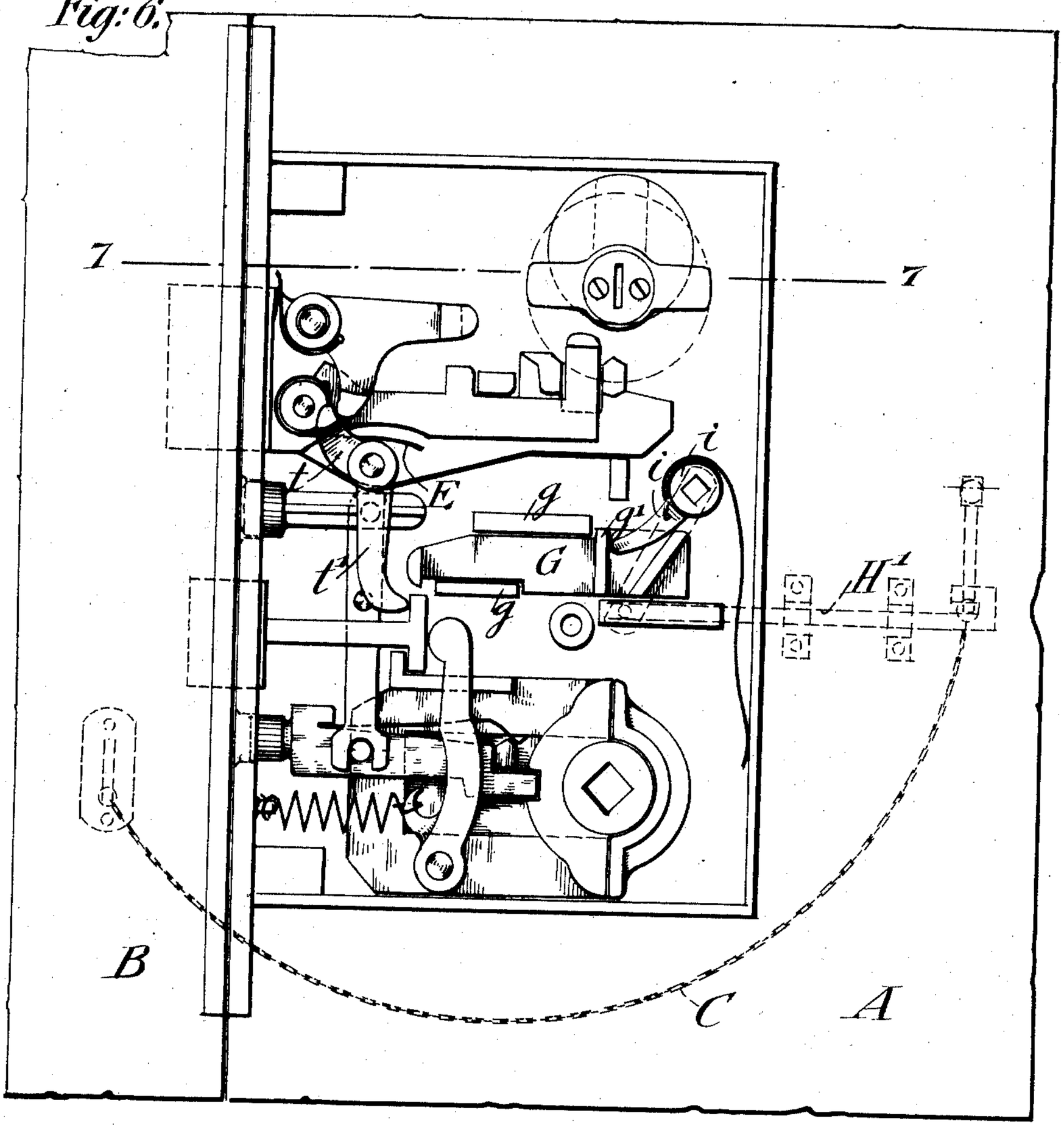
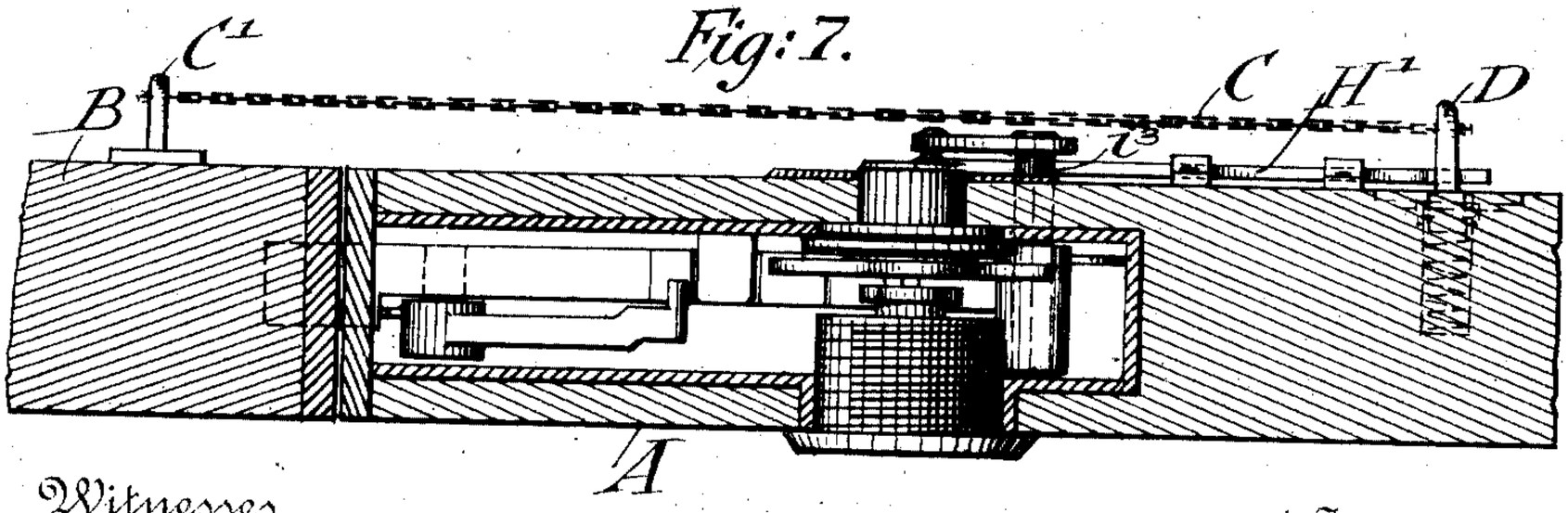



Fig: 7.




Witnesses
N. C. Barnett
H. F. Sukrbier.

Inventor
Clement D. Rinald
By his Attorneys
Legget & Legget

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C. D. RINALD.

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3 SHEETS—SHEET 3.

Fig: 8.

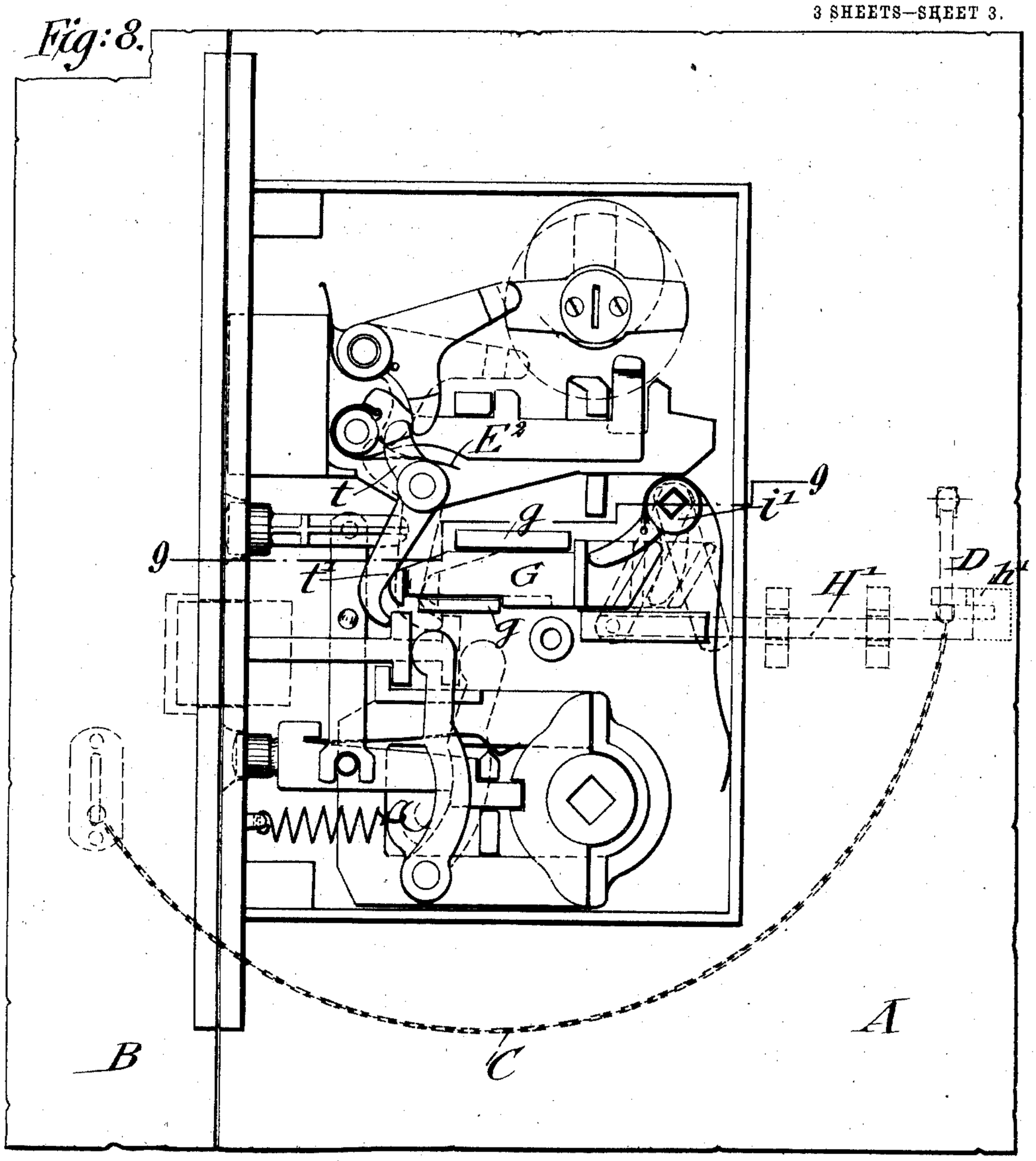
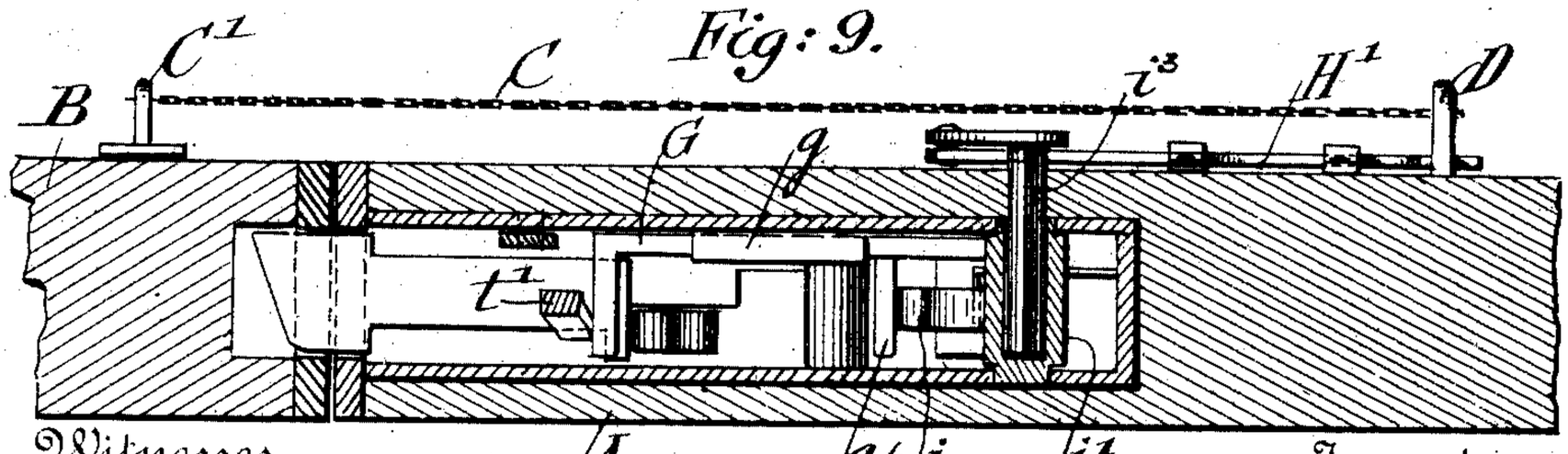



Fig: 9.




Witnesses
N. C. Barnett.
H. F. Sulzbrier.

Inventor
Clement D. Rinald
By his Attorneys
Foster & Freeman.

# UNITED STATES PATENT OFFICE.

CLEMENT D. RINALD, OF PHILADELPHIA, PENNSYLVANIA.

## SAFETY-CHAIN FOR DOORS.

No. 864,559. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed April 14, 1906. Serial No. 311,659.

*To all whom it may concern:*

Be it known that I, CLEMENT D. RINALD, a citizen of the United States, residing in Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Safety-Chains for Doors, of which the following is a specification.

This invention relates to the addition of certain devices and parts to the locking and releasing mechanisms in door-locks, either mortised or of the rim-lock variety, whereby the release of a safety-chain fastened to the inside of a door may be effected from the outside by means of the same key intended for unlocking and opening said door, while the position of the safety-chain will not be disturbed when such door is opened from the inside, or even from the outside, in cases where the safety-catch controlling the outside knob has been accidentally left or become released.

For this purpose the invention consists in the novel features of construction and combinations of parts which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents an inside-elevation of the door with my improved safety-chain shown thereon in position for use, in connection with a surface or "rim" lock, Fig. 2 is a rear-elevation, drawn on a larger scale, and showing the safety-chain in connection with the hasp and rim lock, Fig. 3 is a vertical section on line 3—3, Fig. 2, Fig. 4 is an elevation of one form of rim-lock, with the covering-plate removed, and showing the parts by which the bolt is connected with the hasp, Fig. 5 is a horizontal section of the door-lock on line 5—5, Fig. 4. In Fig. 6 is shown an inside elevation of the door with the safety-chain connected with a mortise door lock, the covering portion of the door and the covering plate of the lock being removed to show the interior parts, Fig. 7 is a horizontal section on line 7—7, Fig. 6, Fig. 8 is also an inside elevation showing the bolt of the lock thrown back and the parts ready for withdrawing the latch bolt and releasing the safety-chain, and Fig. 9 is a horizontal section on line 9—9, Fig. 8.

Similar letters of reference indicate corresponding parts in the different figures of the drawings.

Referring to the drawings, A represents the door, B the door-frame and C a safety-chain which is attached at one end to a stationary staple or hasp $C^1$ on the jamb of the door-frame in about the same position as the ordinary safety-chains. The opposite end of the chain is provided with a snap-hook $C^2$ which is attached, when the chain is used, to an interiorly-disposed hasp D which is pivoted into a mortise of the door. The hasp D is disposed at the inside of the door. A rim, mortise or other lock E is attached to the door in the usual manner at a point distant from the hasp D and connected by a sliding bar H with the hasp D, so as to lock or release the hasp. When a rim lock is used the sliding bar H is connected by interior parallel rods *e* with lugs $c^1$ on the shank of the bolt, said lugs being perforated for the connecting-rods *e* and provided with enlarged heads $e^2$ at the inner ends. The connecting rods *e* pass through corresponding holes in the casing of the lock to the outside of the same and are connected with lugs on the sliding-bar H, said bar being moved forward and backward in connection with the bolt by means of the usual wings applied to the hub of the key-operated portion but which remains stationary whenever the lock is opened from the inside by means of the knob provided for that purpose. The two wings engage the lugs on the shank of the bolt either when turned with the key, inserted into the lock from the outside, or when turned by the knob on the inside, according as the door is to be opened from the outside or inside. The connecting-rods *e* and the sliding-bar H follow the motion of the bolt, only when the latter is operated by means of the key in inward and outward direction in such a manner that the hook-shaped end $h^1$ of the bar H engages or releases the free end of the hasp. The safety-chain C is connected by its snap-hook $C^2$ with the hasp and held firmly by the same as long as the bar H serves to engage the hasp and holds it in closed position, while, as soon as the bar H is released from the hasp by a turn of the key opening the door from the outside, the hasp is released and the snap-hook and the safety-chain are dropped and are suspended vertically alongside of the jamb, until replaced in position in the hasp. The hasp is then returned into locked position, that is to say, it is pressed downward and reëngaged by the bent-up end of the sliding-bar H after which the snap-hook of the safety-chain can be readily applied to the hasp so as to permit the holding of the door in partly open position as usual with safety-chains.

A person, who desires to enter the house from the outside, inserts the key in the lock, throws the bolt and releases thereby simultaneously and automatically by the inwardly sliding motion imparted to the bar H the hasp so as to drop the safety-chain from its position on the hasp, so that the chain no longer bars the way for entering the door from the outside. When the lock is operated from the inside by turning the knob, no effect is exerted on the connection of the bar with the hasp as the wings operated by the knob have no effect on the connecting-rods and bar by which the hasp is locked in position. Consequently the chain remains in position tuntil released by the withdrawal of the snap-hook from the hasp which must be done from the inside of the house. By the simultaneous actuation of the latchbolt from the outside and the automatic release of the safety-chain thereby, the latter

does not interfere with the free unlocking of the door and the admission of the party holding a key to the door.

In place of the connecting-rods and bars, any other means by which the lock is connected with the hasp, which is arranged thereon or in proximity thereto, can be employed, provided that the release of the hasp is only accomplished by withdrawing the bolt by means of the key from the outside, but not interfered with by turning the knob from the inside.

When the door is provided with a mortise lock the construction shown in Figs. 6 to 9 may be used. In this case the shank of the latch bolt, when pulled back by a turn of the door-knob, also turns the two pivoted travelers $t$, $t^1$ which are intended to be operated by the key. This is due to the pressure exerted by a spring $E^2$ acting on the upper traveler. To compensate the pressure of the spring $E^2$, a flat slide-piece G is placed between two parallel guide-bars $g$, $g$, and arranged to abut against the side of the lower traveler $t^1$. The slide-piece G has a transverse lug $g^1$ that is engaged by the arm $i$ on a flat disk $i^1$ which is placed between the side-walls of the casing of the lock. A square hole is cut into this disk $i^1$ and after the lock is inserted into the mortise of the door, a hole is cut through the wood on the inside of the door exactly over the square hole in the casing. A square spindle $i^3$ is tightly fitted into the square hole in the wood and into the square hole in the disk. To the free end of the square spindle $i^3$ sticking out of wood, the slide-bar $H^1$ already described before as engaging and releasing the hasp, is fastened at right angles so that it lies parallel with the door. It will now be found that, when the door latch is operated by means of a key, the key, in forcing back the two travelers, causes the slide-piece to move and thereby turn the square spindle which latter pushes the slide-bar $H^1$ out of engagement with the hasp thus releasing the safety chain; the operation being practically the same as in the case of the rim-lock in which the connecting rods are used for the same purpose. It is furthermore apparent that the turning of the door knob, when opening the door, cannot release the chain, because the pressure of the traveler against the shank is more than compensated by the greater pressure of the slide-piece G. The bolt shank is therefore operated without engaging the travelers whose action is required to turn the square spindle which actuates the bar holding the hasp of the safety chain in place.

When it is desired to have the door permanently locked, without permitting entry from the outside, as, for instance, at night when the last person is in the house, or when the house is vacated during the summer months, the hasp is locked in position and secured against reopening by means of a safety-dog, which is pivoted to the door sidewise of the hasp and adapted to enter a recess in the upper part of the hasp, as shown in dotted lines in Fig. 2. When this dog is placed in position so as to engage the hasp, the same cannot be opened from the outside until the dog is moved again.

The advantages of my improved construction over my prior patent referred to, are that a separate key for releasing the safety-chain from outside is dispensed with, and that the safety-chain is released simultaneously with the opening of the door in case the chain has been placed in position for use. In this manner the main objection to safety-chains, viz., that they are apt to be in the way of persons entitled to admittance, is removed.

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

1. The combination, with the door and door-frame, of a safety-chain attached to the latter, a device on the door for removably securing said chain, a lock on the door at a distance from said device, and an operative connection between said lock and said chain-securing device.

2. The combination, with the door and door-frame, of a safety-chain attached to the latter, a hasp pivoted to the door and operative to secure said chain, a lock on said door remote from said hasp, and a bar to hold said hasp in closed position operatively connected with said lock.

3. The combination, with the door and door-frame, of a safety-chain attached to the latter, a hasp pivoted to said door and operative to secure said chain at one end, a lock attached to the door at a point distant from said hasp, and a sliding bar operated by said lock and having a hook-shaped end to retain said hasp in closed position, said bar being operated by the unlocking of the lock to release said hasp.

4. In a safety-chain for doors, the combination, with the door and door-frame, of a safety-chain attached to the door-frame, a hasp pivoted to the door, means for locking the hasp so as to retain the free end of the chain in position thereon, and a dog pivoted near the hasp and adapted to lock the same so as to prevent the release of the safety-chain when desired.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

CLEMENT D. RINALD.

Witnesses:
PAUL GOEPEL,
HENRY J. SUHRBIER.