

W. H. THORP.
LOCK.

APPLICATION FILED MAR. 1, 1909.

920,501.

Patented May 4, 1909.

2 SHEETS—SHEET 1.

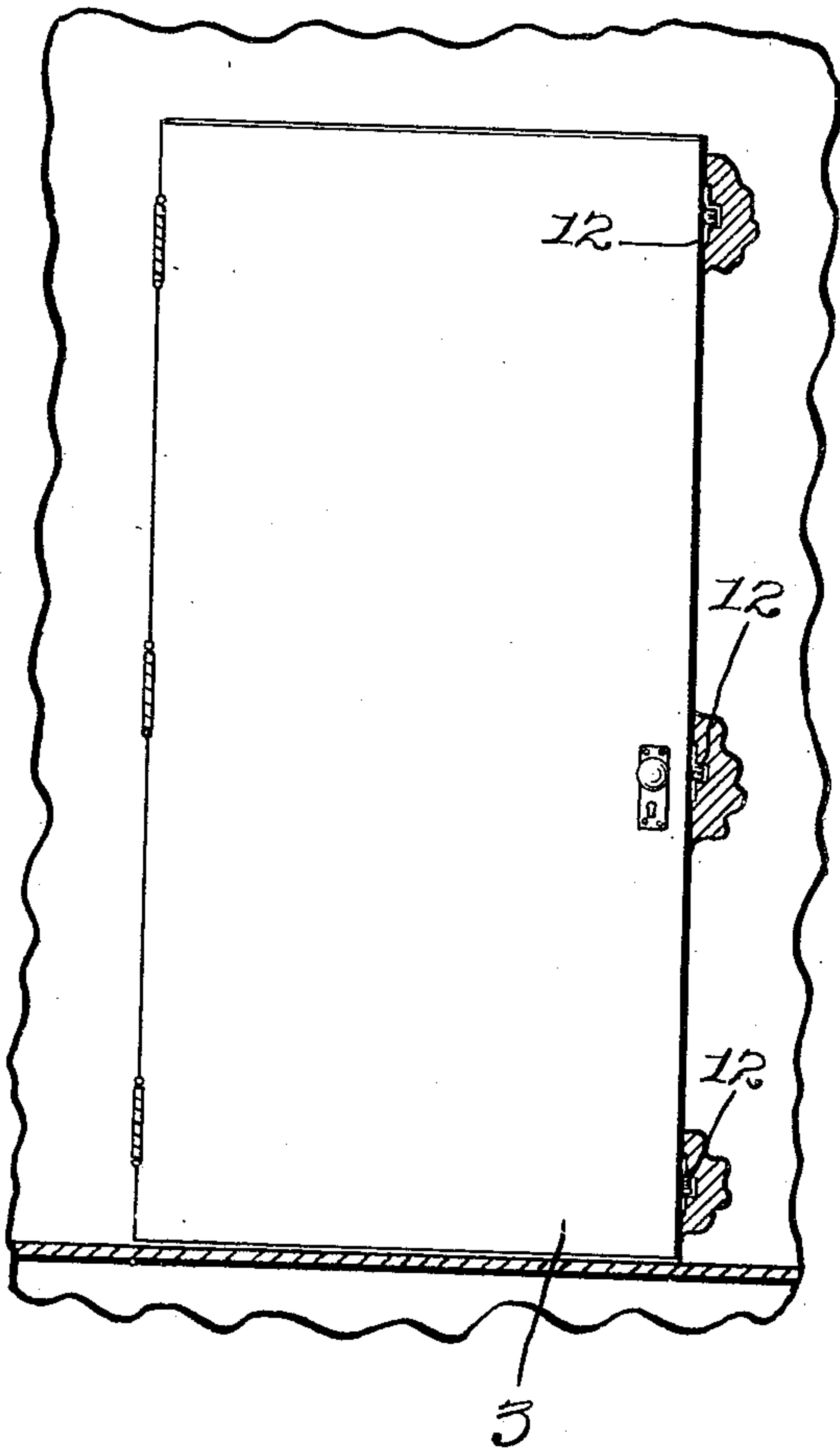


Fig. 1.

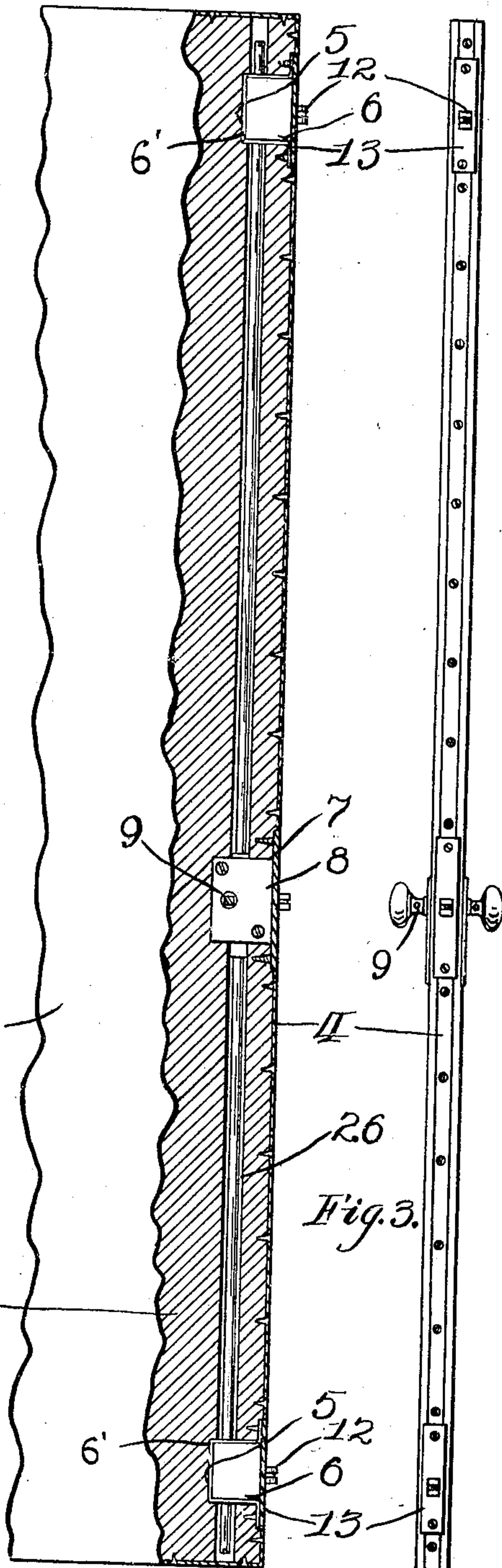


Fig. 2.

Fig. 3.

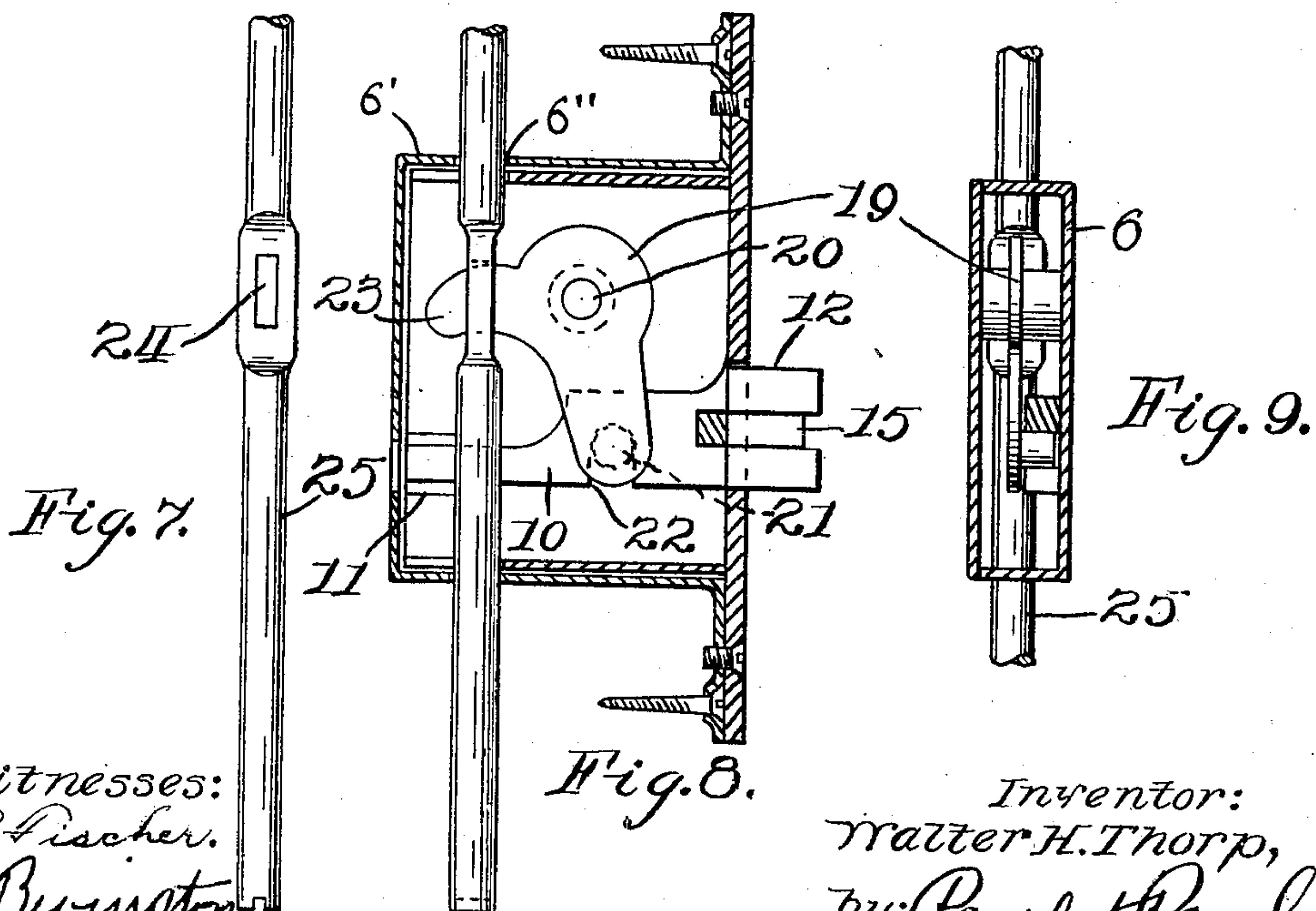
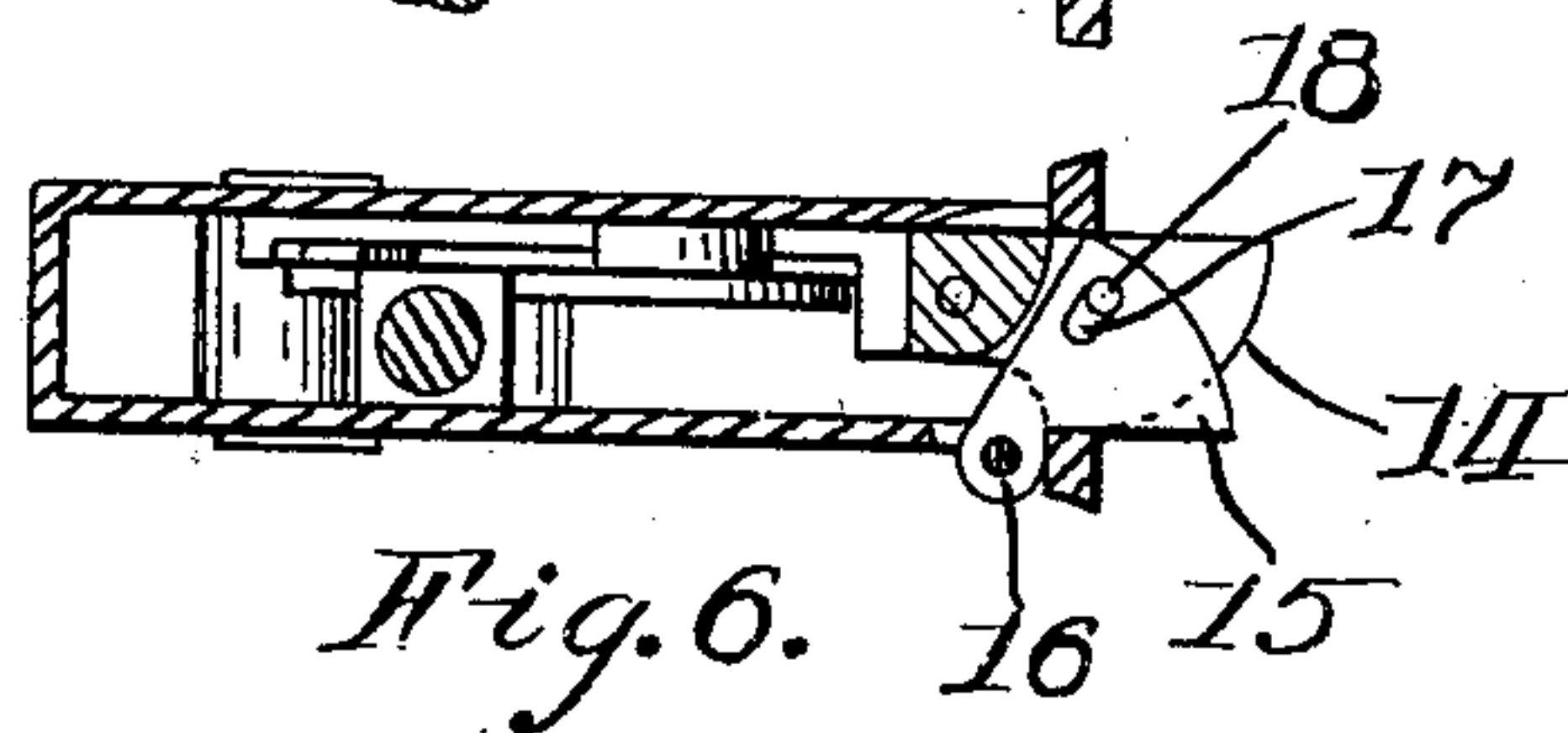
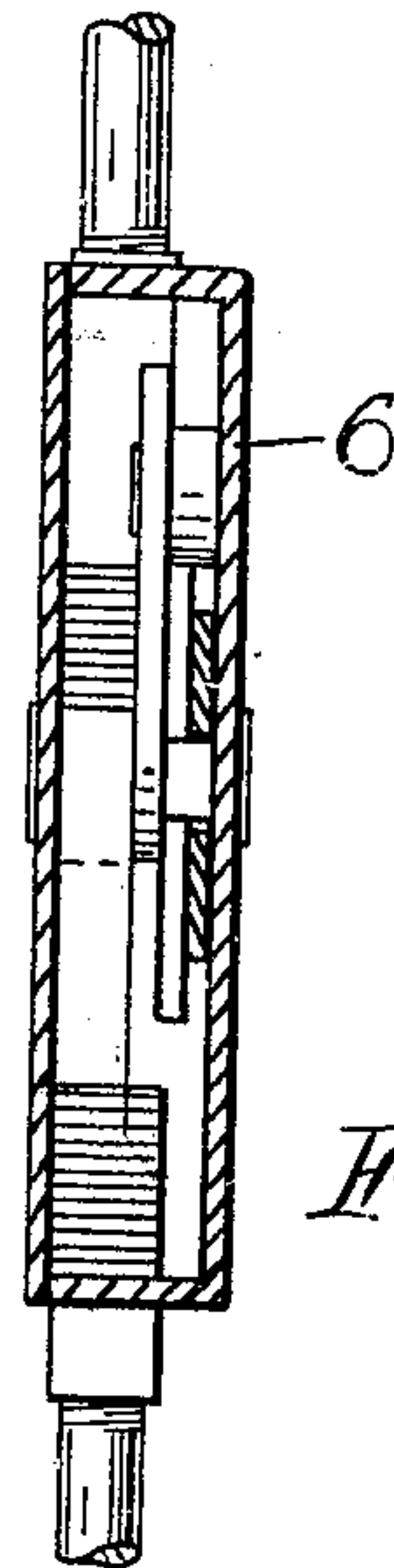
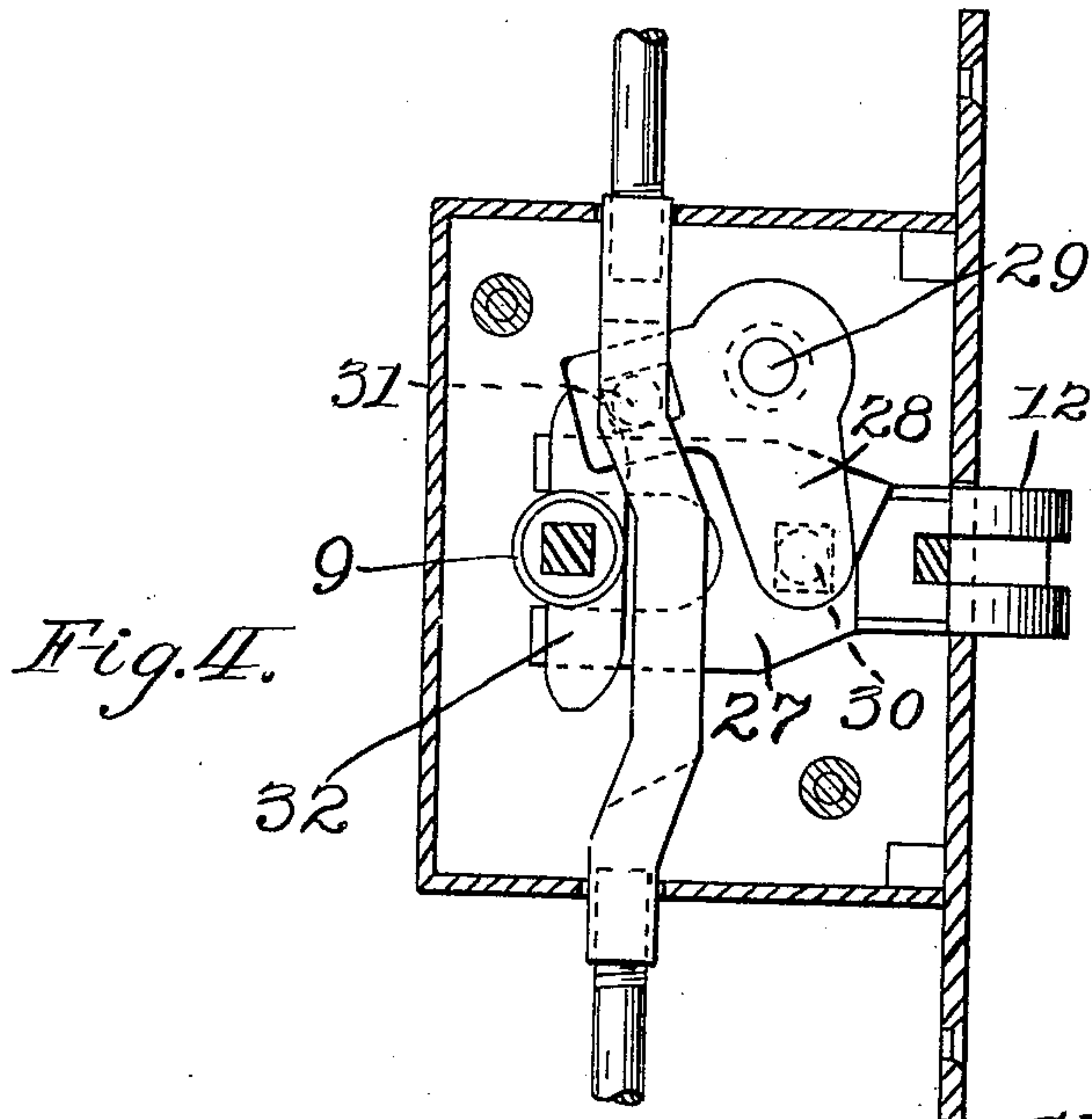
Witnesses:
R. G. Fischer,
J. A. Bejington.

Inventor:
Walter H. Thorp,
by Paul & Paul
His Attorneys.

920,501.

W. H. THORP.
LOCK.
APPLICATION FILED MAR. 1, 1909.

Patented May 4, 1909.
2 SHEETS—SHEET 2.



Witnesses:
H. A. Fischer.
J. A. Byington

Inventor:
Walter H. Thorp,
by: Paul & Paul
His Attorneys

UNITED STATES PATENT OFFICE.

WALTER H. THORP, OF MINNEAPOLIS, MINNESOTA.

LOCK.

No. 920,501.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed March 1, 1909. Serial No. 480,769.

To all whom it may concern:

Be it known that I, WALTER H. THORP, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful
5 Improvements in Locks, of which the following is a specification.

My invention relates to door locks and particularly those which are controlled by the movement of a knob, handle or similar
10 device, the object of the invention being to provide a lock mechanism, controlling the catches of the door, from which all springs are eliminated, thus simplifying the construction of the device and rendering it more
15 positive and durable.

A further object is to provide a locking device, which will lock the door at three points, all the locks or catches being operable simultaneously.

20 A further object is to provide a locking means, which, while applicable to any style of door, is particularly designed for one of the fire proof type.

My invention consists generally in various
25 constructions and combinations all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a view, illustrating a door in its closed position, with my improved locking device applied thereto, Fig. 2 is a detail, sectional view of the door stile, showing the means for operating the locking mechanism, Fig. 3 is an
30 edge view of the door, Fig. 4 is a detail, sectional view of the middle lock, Fig. 5 is a vertical, sectional view of the same, Fig. 6 is a horizontal, sectional view, Fig. 7 is a detail view of the lock-operating rod, Fig. 8
35 is a vertical, sectional view of the locking device arranged at the top and bottom of the door, Fig. 9 is a sectional view, taken on a line substantially at right angles to the section line of Fig. 8.

45 In the drawing, 2 represents the wooden core of a fire proof door, provided with the usual sheet metal plates 3 inclosing the core on each side and having their edges secured under a strap 4, which is fastened to the
50 edge of the door. At the top and bottom, recesses 5 are formed in the core of the door, in which boxes 6 are inserted, wherein the lock-operating mechanism is arranged. A center recess 7 is also provided to receive a
55 center box 8, in which the knob shank 9 is mounted. Boxes 5 have shanks 10 therein

operating between guides 11 and having catches 12, which project through the plates 13 at the edge of the door and have beveled
surfaces 14 on one side, which contact with
60 the door strike in the casing. Triangular plates 15 are pivoted at 16 in the boxes 5 and have slots 17 therein to receive pins 18 on the catches 14 and these plates have edges, which project outwardly in position to en-
65 gage the door strike and be forced inwardly thereby to withdraw the catches 14 from the sockets in the door frame. The catches are usually held in a projected position by means of bell cranks 19 pivoted at 20 within the
70 boxes 5 and having pins 21 adapted to enter recesses 22 in the shanks 10. The bell cranks 19 also have arms 23 to enter slots 24 in a vertically arranged rod 25, which passes
75 through the boxes 5 and is slidable within a socket 26 in the stile of the door, the ends of the socket being closed by the plates at the top and bottom of the door. At the top and bottom of the door, boxes 6' are pro-
80 vided, arranged to inclose the boxes 6, and having openings 6'' in their upper and lower walls, through which the rod 25 extends, and which serve as guides for said rod in its vertical movement. The middle catch has
85 a forked shank 27 adapted to receive the door knob spindle 9. A bell crank 28 is pivoted at 29 and has a pivotal connection 30 at one end with the shank 27 and a similar connection 31 at its opposite end, with the bar 25, the connections being sufficiently
90 loose to allow the bell crank 28 to oscillate or rotate on its pivot while the rod 25 moves lengthwise in its socket. The weight of the rod 25 normally holds the shanks and the catches thereon in their projected position,
95 withdrawal of them being effected by the engagement of the plates 15 with the door strikes or by means of arms 32 provided on the door knob spindle and arranged to contact with one end of the bell crank 28, said
100 spindle being inclosed within the fork formed on the end of the shank 27.

It will be noted that this apparatus is extremely simple in construction, that the weight of the rod 25 by gravity holds the
105 shanks in their projected position and that all springs, which are liable to break or require adjustment are entirely eliminated. The device is accurate and positive in its operation and being composed of but few parts,
110 cannot easily get out of order.

I have illustrated this device operated by

means of a knob, but a handle or lever may be substituted therefor, if preferred. With this device, the door will be locked at the top, bottom and middle or at three points, 5 by the operation of a single vertically moving rod, all of the catches being operated simultaneously when the knob or handle is turned.

I have illustrated this invention as applied 10 to a fire proof door, having a wooden core, but obviously it may be applied to other types of doors as well, where it is desirable to provide a fastening means at the middle, top and bottom and control the movement 15 of all of the catches by a single vertically-moving rod.

I claim as my invention:

1. The combination, with a door stile having recesses therein, of sliding shanks having catches thereon to engage the door casing strikes, a vertically sliding rod provided in said stile, means connected with said rod and said catches whereby the latter will be 20 normally held by gravity of said rod in their projected position, and means for withdrawing said shanks and catches within said recesses.

2. The combination, with a door stile, having a vertical socket therein, of a rod slidable in said socket, catches having shanks slidable in recesses in said stile at right angles substantially to said rod, means operatively connecting said catches with said rod, and a door spindle having means when 30 rotated for moving said rod and withdrawing said catches.

3. The combination, with a door stile having recesses therein, and door catches fitting

within said recesses, of a longitudinally moving rod, bell cranks pivoted within said 40 recesses and having their ends operatively connected with said rod and with said catches, one of said catches having a forked end, a door knob spindle fitting within said forked end and having arms to engage one 45 of said bell cranks, for the purpose specified.

4. The combination, with a door, of catches mounted therein at the middle, top and bottom, means connecting said catches one with another, said means normally holding 50 said catches in their projected position but allowing them to slide inwardly upon contact with the door strike when the door is closed, and a knob or handle device for moving said means and operating all of said 55 catches simultaneously.

5. The combination, with a door, of catches mounted therein at the top, middle and bottom, boxes inclosing said catches, a rod vertically slidable in said door and in guides 60 provided in the upper and lower walls of said boxes, means operatively connecting said rod and said catches, said catches being normally held in their projected position by the weight of said rod and adapted to slide 65 inwardly and raise said rod upon contact with the door strikes, and manually operated means for moving said rod and withdrawing said catches.

In witness whereof, I have hereunto set my hand this 19th day of February 1909.

WALTER H. THORP.

Witnesses:

RICHARD PAUL,
J. A. BYINGTON.