

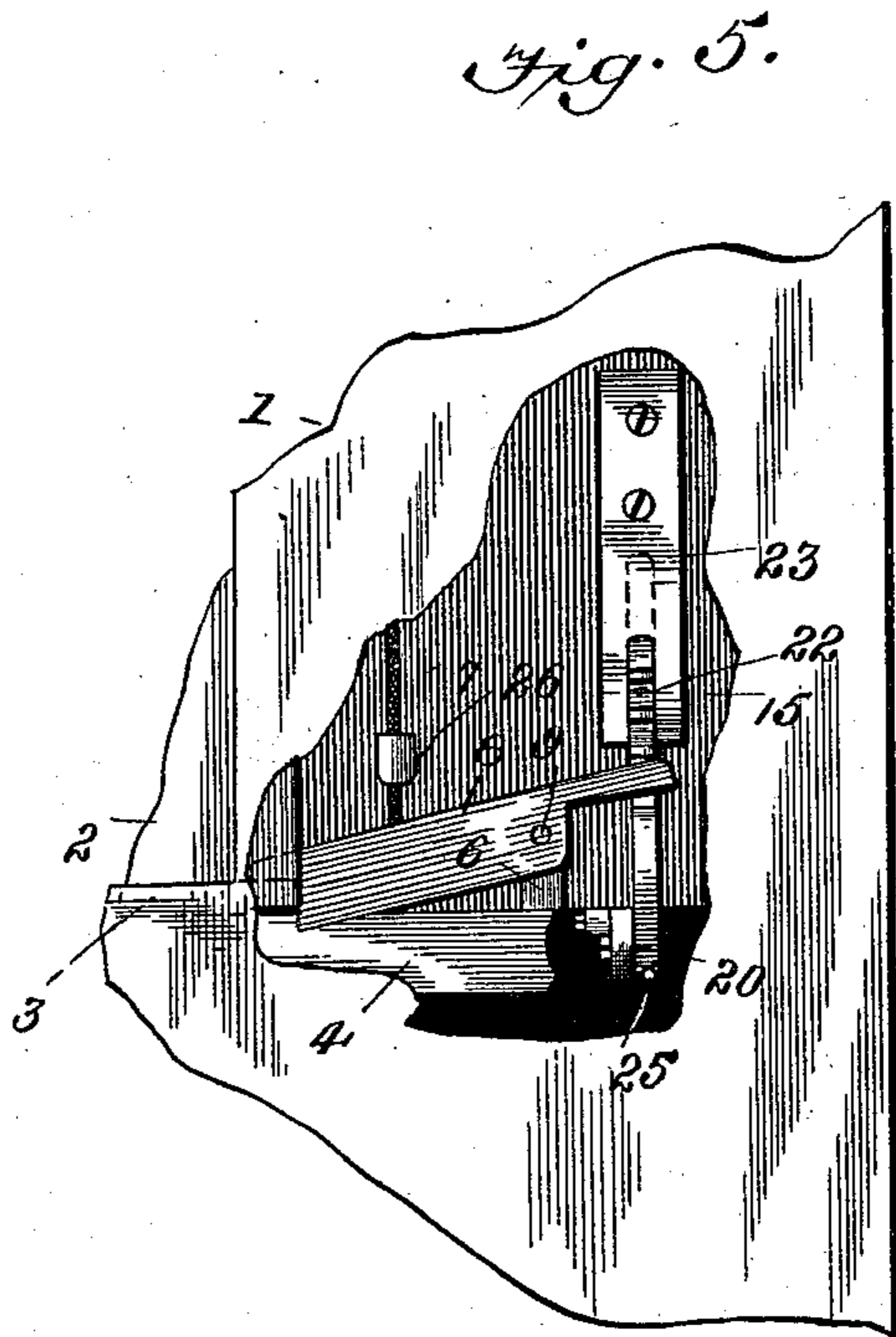
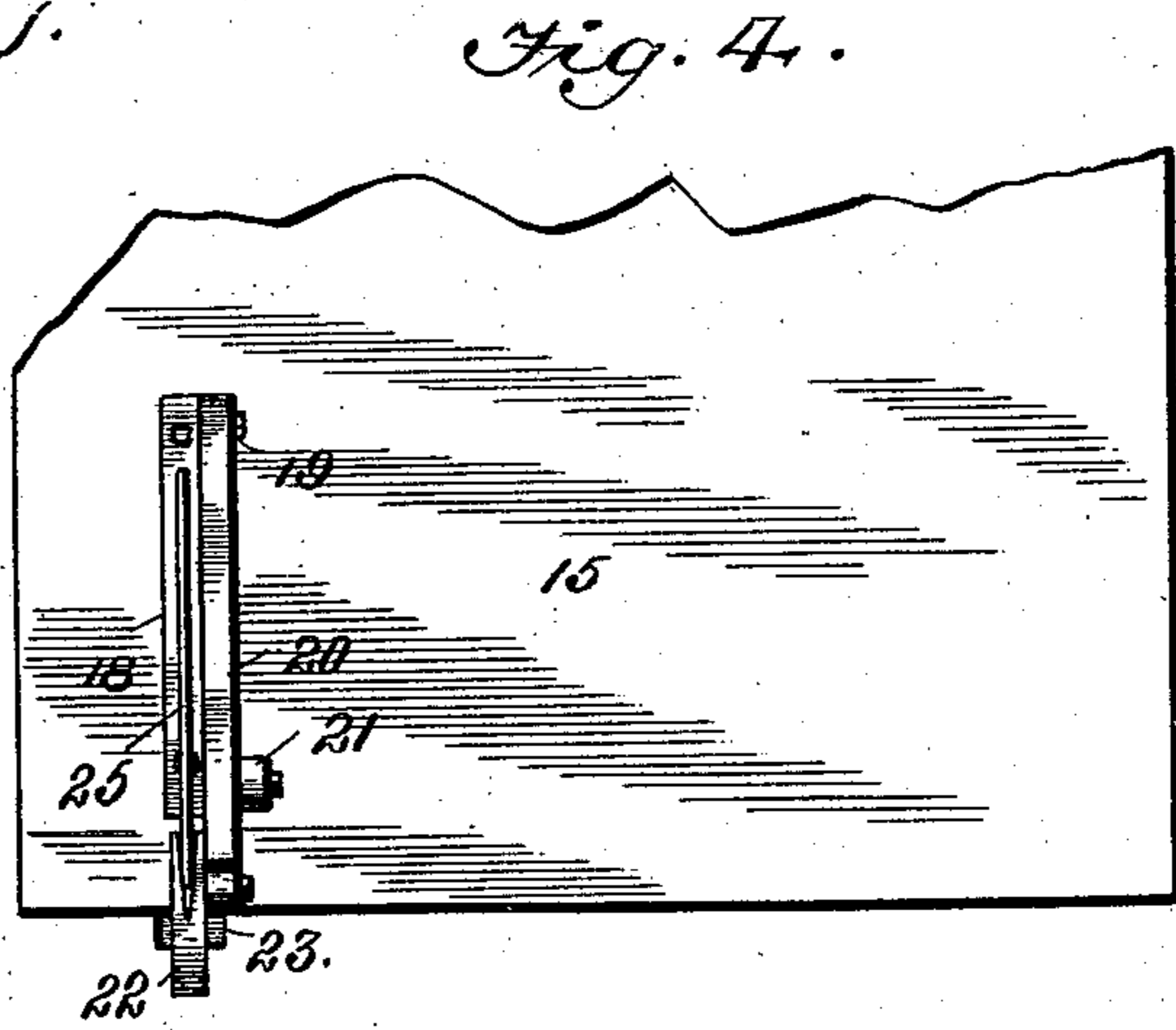
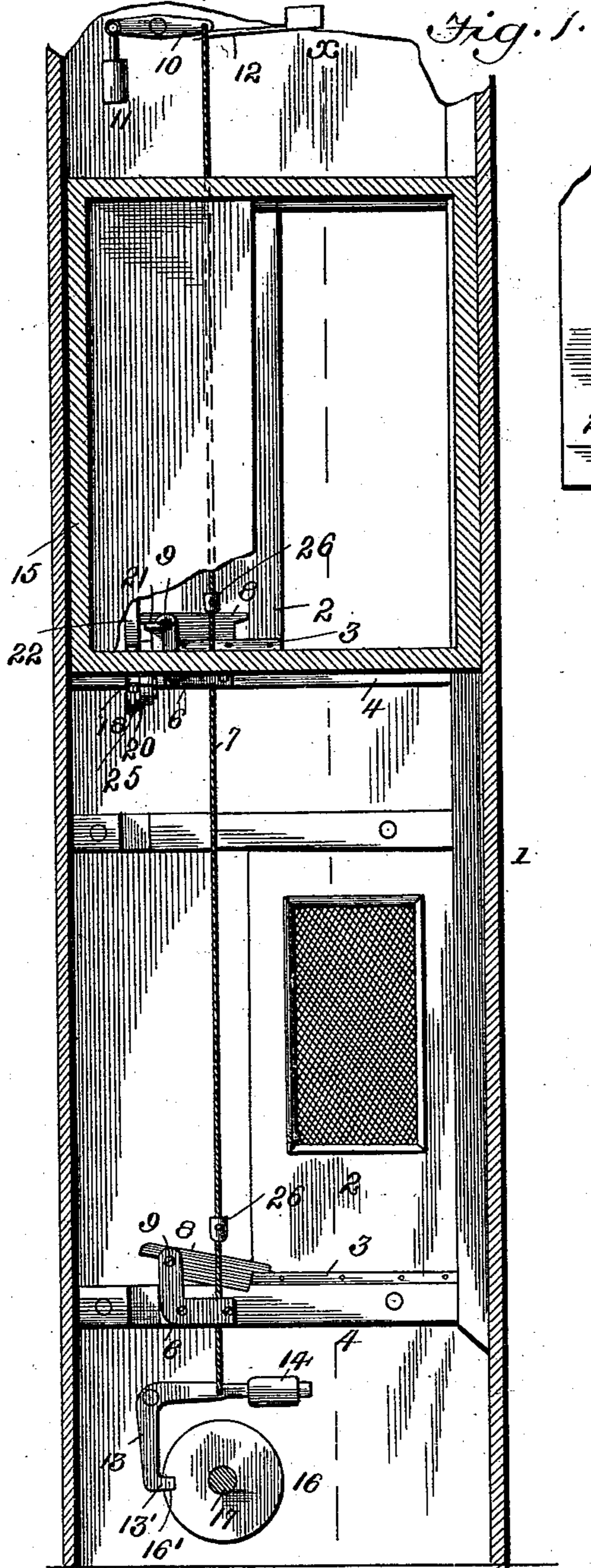
(No Model.)

3 Sheets—Sheet 1.

W. P. KIDDER.
SAFETY DEVICE FOR ELEVATORS.

No. 543,153.

Patented July 23, 1895.



Witnesses

John D. Moore
A. E. Clandaniel

Inventor
Wellington P. Kidder
By *T. J. W. Robertson*

Attorney

(No Model.)

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Fig. 3.

Fig. 2.

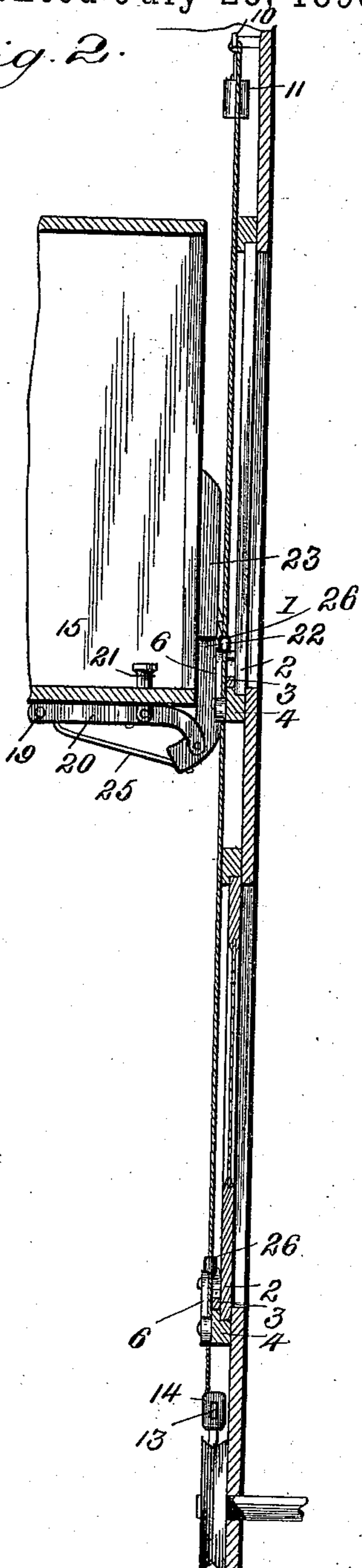
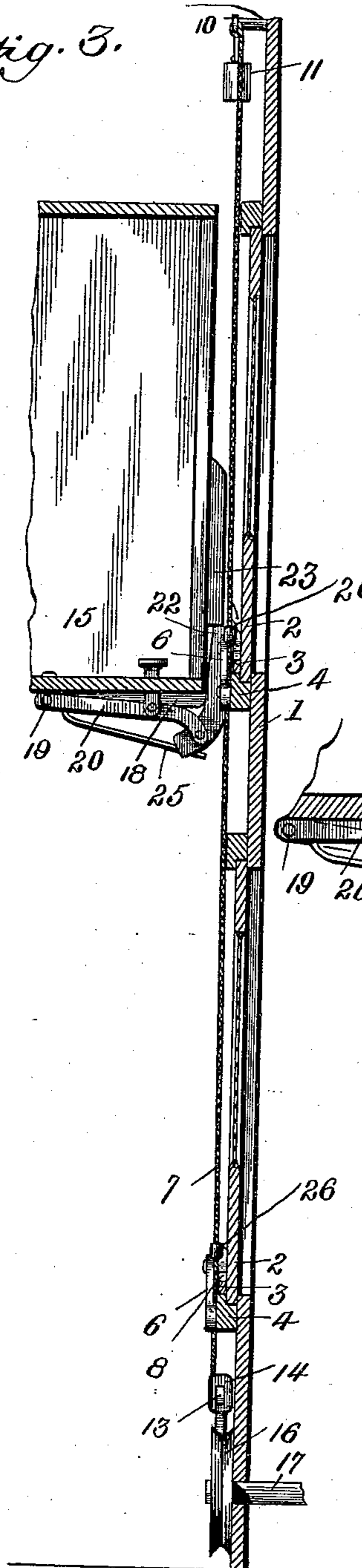
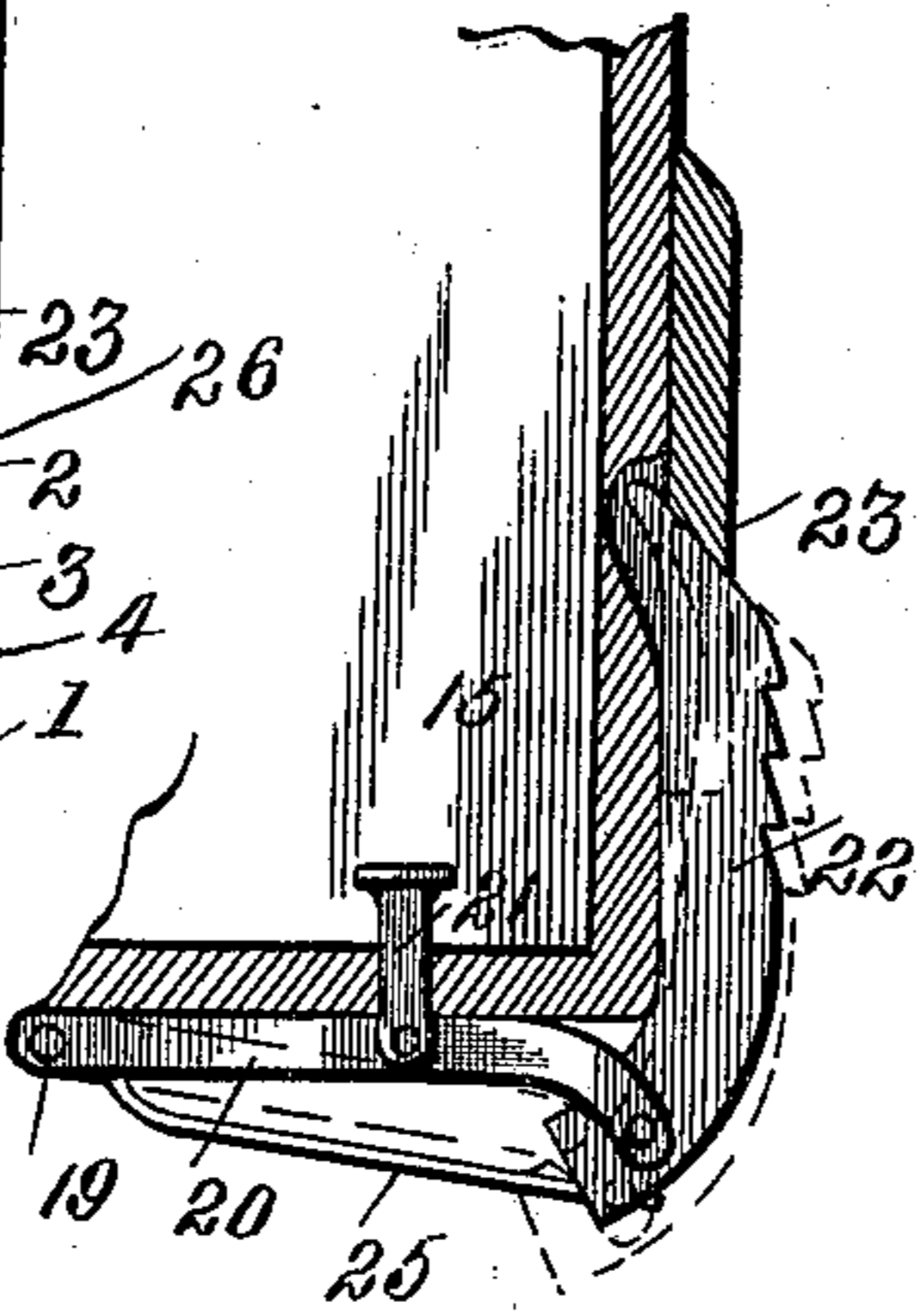


Fig. 8.



Witnesses

John D. Moore
W. E. Clendinning

Inventor
Wellington P. Kidder

By *J. W. Robertson*

Attorney

(No Model.)

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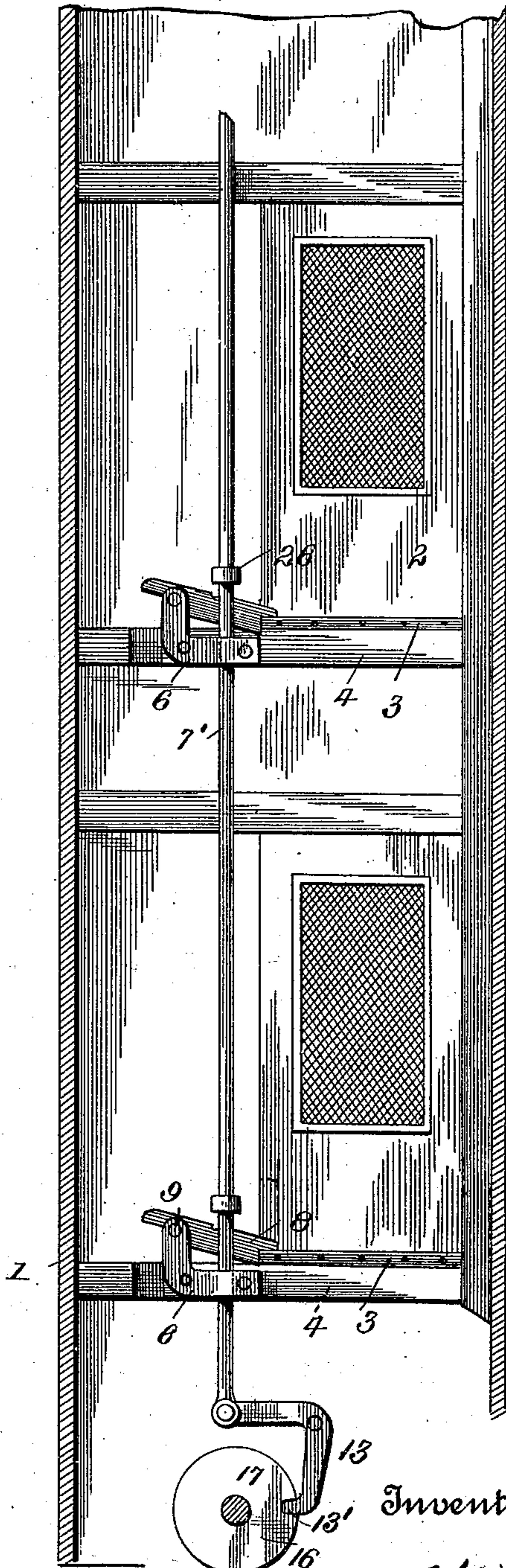
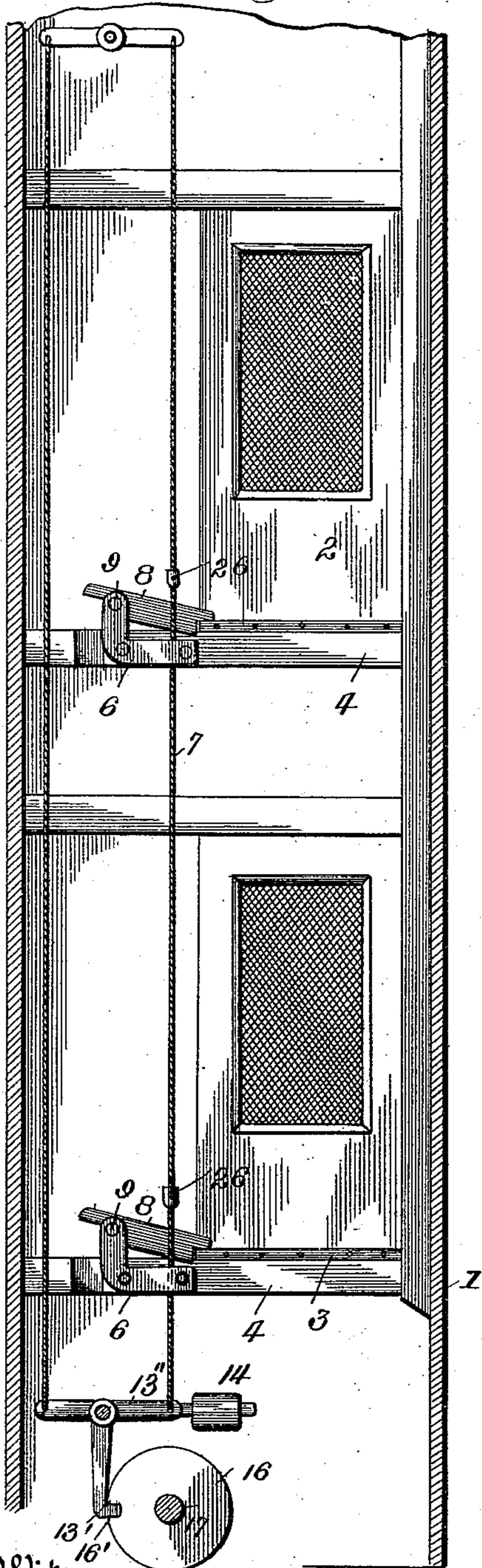
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Fig. 6.

Fig. 7.



Witnesses
J. H. D. Mire
W. E. C. C. C. C. C.

Inventor
 Wellington P. Kidder
 By *T. J. W. Robertson*
 Attorney

UNITED STATES PATENT OFFICE.

WELLINGTON P. KIDDER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
KIDDER ELEVATOR INTERLOCK COMPANY, OF NEW YORK, N. Y.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 543,153, dated July 23, 1895.

Application filed May 8, 1895. Serial No. 548,596. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON P. KIDDER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Safety Devices for Elevators, of which the following is a specification, reference being had to the accompanying drawings.

This improvement relates to that class of safety devices for elevators wherein the hoisting apparatus cannot be set in motion while a well-door is open, nor a well-door opened while the car is in motion; and its object is to provide a device of this kind which will be very reliable, cheaply made, easily applied, and not likely to get out of order.

To these ends the invention consists in the mechanism hereinafter more particularly described and then definitely claimed at the end hereof.

In the accompanying drawings, Figure 1 represents a vertical section of an elevator well and car provided with my improvement and with part of the front of the car broken away. Fig. 2 is a vertical section on the line *xx*, Fig. 1. Fig. 3 is a similar section with some of the parts in a different position. Fig. 4 is a bottom plan of the car. Fig. 5 is an elevation of part of the front of the car. Figs. 6 and 7 are modifications which will be more fully described hereinafter. Fig. 8 is an enlarged detail of a latch-operator.

Referring now to the details of the drawings by figures, 1 represents the well provided with doors 2, each having a bar or projection 3 thereon and sliding on guides 4. Fastened by screws or otherwise to the lower guides are L-shaped brackets 6, the horizontal part forming a guide for a wire or rod 7, hereinafter further described, and a support for a door-fastener or a latch 8 pivoted at 9 to the vertical part of the bracket 6, and normally dropping behind the end of the bar 3, whereby the door is prevented from being opened as long as the latch is down, as shown in the lower part of Fig. 1.

The wire or rod 7 may be suspended from

a lever 10, from the opposite end of which hangs a weight 11 to keep the wire taut, or a spring 12 may be employed for the same purpose, or both weight and spring may be used if preferred. The lower end of the wire is connected to a bell-crank lever 13, carrying a weight 14, which should be heavy enough to overcome the weight 11 or spring 12, or both of them if both are employed. The lower end of the lever forms a detent 13', which engages with a notch 16' in the pulley 16, which represents the ordinary pulley commonly used to move the valve shaft or stem 17. These two coacting parts—the detent and the notched pulley—thus form a lock, as they prevent any movement of the valve.

Attached to the bottom of the car 15 is a block 18, and pivoted at 19 to said block is a lever 20, carrying a foot-piece 21 and a catch 22, both pivoted to said lever, as shown. The upper end of the catch 22 works in a guide 23 and is toothed, as shown at Fig. 8. Its lower end is acted on by a spring 25, the fixed end of which is secured to the block 18.

Firmly secured to the wire 7 in any convenient manner are blocks 26, one at each door, and they are so arranged that when a latch is lifted, so as to allow a door to open, said latch bears on the under side of the block just above it and moves the wire upward.

The operation is as follows: Supposing the car is just about to stop or has stopped, the operator presses his foot upon the foot-piece 21, which depresses the lever 20 and the catch 22, causing one of the teeth of the latter to catch on the short end of the latch 8, and thus through the block next above it, raising the wire 7, which will operate the bell-crank lever 13, and cause the detent 13' to enter the notch 16' in the pulley or disk 16, and thus lock the valve shaft or stem from turning. When in this position, the well-door opposite the car can be opened, and when opened the bar or stop 3 will hold the latch 8 in its raised position, which in turn will keep the wire 7 raised, and the latter will hold the detent 13' in the notch 16' in the pulley 16, so that as long as the door is open the valve of the hoist-

ing apparatus cannot be operated, but when the door is closed the latch will descend, thus allowing the detent 13' to leave the notch 16' under the force of the weight 14.

5 From the foregoing it will be seen that this apparatus forms a perfect lock for the valve, the movement of which is governed entirely by the position of the well-doors, so that the valve cannot be operated while a well-door is
10 open; nor can any well-door be opened unless the car is opposite said door and the valve is in the closed position, for if an attempt be made to open a well-door when the valve is open and the car in motion the detent 13' will
15 come in contact with the periphery of the pulley and will thus be prevented from moving sufficiently to allow of the opening of the door, and perfect safety is thus secured under all circumstances.

20 Instead of the weight or spring for keeping the wire taut, I may sometimes use a return-wire, as shown in Fig. 6, in which case a T-shaped lever 13'' will have to be used, or instead of a wire I may use a stiff rod 7', as
25 shown in Fig. 7.

Instead of making the notch 16' in the ordinary pulley on the valve-stem, I may use a separate disk or casting of suitable form connected with said shaft. For convenience in
30 drawing the claims, I shall call said pulley or disk and the coacting detent a "valve-lock," for, as before stated, they constitute a lock that prevents the valve from being moved, meaning to include in said term not only the
35 usual pulley on the valve shaft or stem, but any device connected with said valve shaft or stem by which the valve is locked fast by the coaction of said device and a detent controlled by the position of a well-door.

40 It is obvious that the wire shown in Fig. 1 and the rod shown in Fig. 7 both operate the detent by tensile strain, and that stiffness is not required, but either will accomplish the desired object, and not only may a wire or rod
45 be employed, but a rope or chain, also, although I prefer a wire. In view of this and in order to cover either form of device for operating the detent, I shall in the following claims refer to the wire or rod as a "detent-
50 operator," except in specific claims, where the "wire" may be specially mentioned, and mean to include in such term either a wire, rod, rope, chain, or equivalent device.

What I claim as new is—

55 1. The combination in an elevator and with a well-door and the valve mechanism thereof, of a door-fastener, a valve-lock operating directly upon said valve mechanism and independent of the operating rope, and intermediate
60 connections between the valve-lock and door-fastener for holding the valve locked when the fastener is in position to allow the door to be opened, substantially as described.

65 2. The combination in an elevator and with a well-door and the valve mechanism thereof,

of a door-fastener, a valve-lock operating directly upon said valve mechanism and independent of the operating rope, intermediate
70 connections between the valve-lock and door-fastener for holding the valve locked when the fastener is in position to allow the door to be opened, and a car provided with means for operating the door-fastener, substantially as described.

3. The combination in an elevator and with
75 a well-door and the valve mechanism thereof, of a door-fastener, a valve-lock operating directly upon said valve mechanism and independent of the operating rope, intermediate
80 connections between the valve-lock and door-fastener for holding the valve locked when the fastener is in position to allow the door to be opened, and a car provided with means operated by the foot for operating the door-
85 fastener, substantially as described.

4. The combination in an elevator and with
90 a well-door and the valve-operating mechanism thereof, of a door-fastener, a valve-lock, intermediate connections between the valve-lock and door-fastener for holding the valve
95 locked when the fastener is in position to allow the door to be opened, a car, a foot-lever thereon, and a notched catch carried and operated by said foot lever and operating on the fastener, substantially as described.

5. The combination in an elevator and with
100 the well-door and the fastener thereof, of a car, a foot-lever and a toothed catch for operating the fastener, substantially as described.

6. The combination in an elevator and with
105 a well-door and the valve-operating mechanism thereof, of a door-fastener, a valve-lock, intermediate connections between the valve-lock and door-fastener, and a projection on
110 the well-door to hold the fastener in a raised position, substantially as described.

7. The combination in an elevator and with
115 a well-door and the valve-operating mechanism thereof, of a door-fastener, a valve-lock, intermediate connections between the valve-lock and door-fastener, a projection on the well-door to hold the fastener in a raised position and the locking device in engagement, substantially as described.

8. The combination in an elevator and with
120 a well-door and the valve mechanism thereof, of a door-fastener, a valve-lock operating directly upon said valve mechanism and independent of the operating rope, a detent-operator moved by said fastener and operating
125 the valve-lock, substantially as described.

9. The combination in an elevator and with
130 a well-door and the valve-operating mechanism thereof, of a door-fastener, a detent-operator moved by said fastener, and a detent connected with the detent-operator, and a disk on the valve-shaft or stem having a notch to receive the detent, substantially as described.

10. The combination in an elevator and with 130

the well-doors and car thereof, of a wire 7
running parallel with said doors, blocks 26
on said wire, latches 8 for fastening the doors
closed operated by said blocks, a tension de-
5 vice for keeping the wire taut, a lever 13 pro-
vided with a detent 13', and a disk 16 on the
valve-shaft having a notch 16' to receive the
detent, all substantially as described.

In testimony whereof I affix my signature,
in the presence of two witnesses, this 27th day 10
of April, 1895.

WELLINGTON P. KIDDER.

Witnesses:

WILLIAM J. MILLER,
R. S. BARROWS.