

## BOLT WORK FOR SAFES.

No. 315,231.

Patented Apr. 7, 1885.

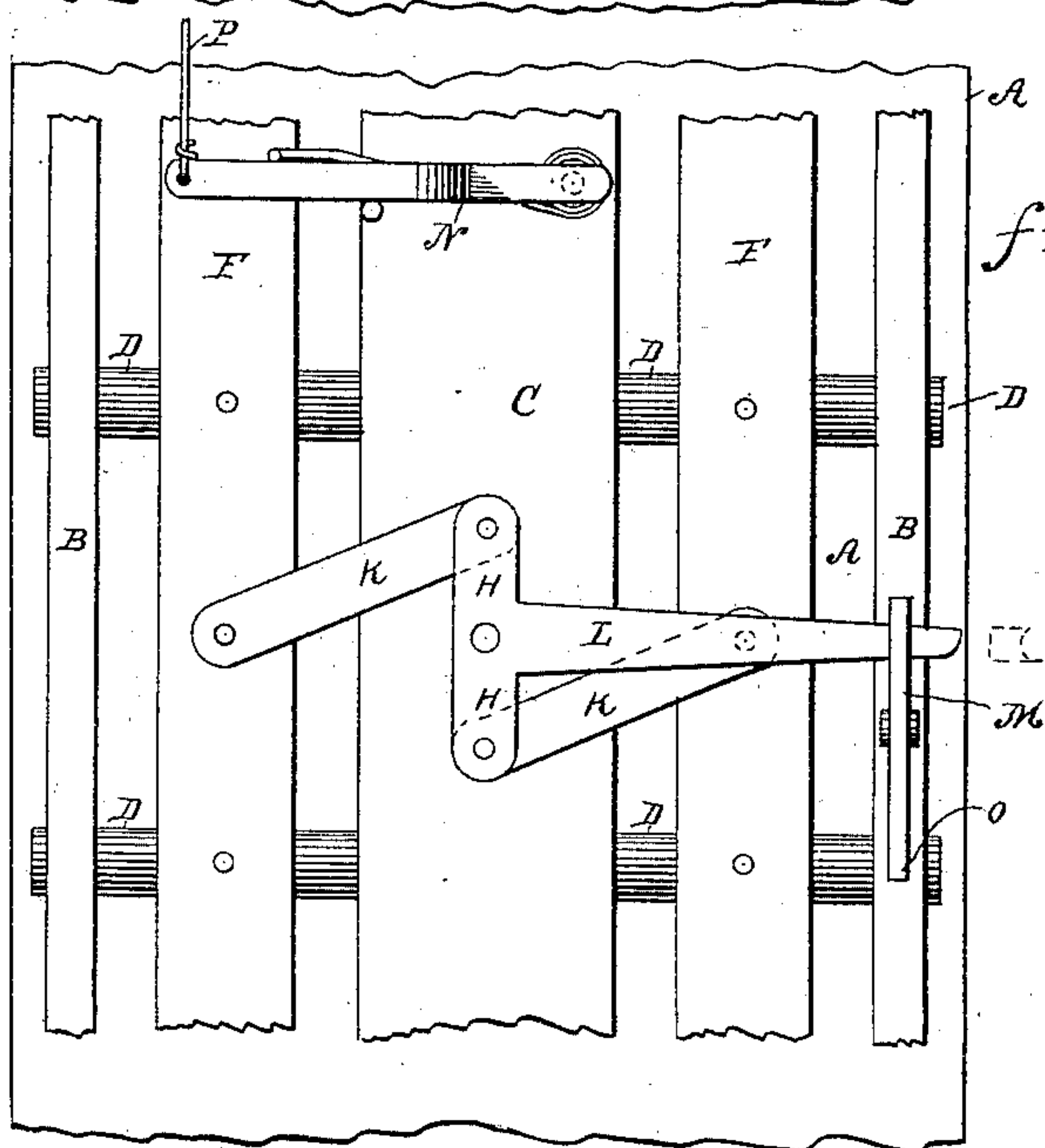
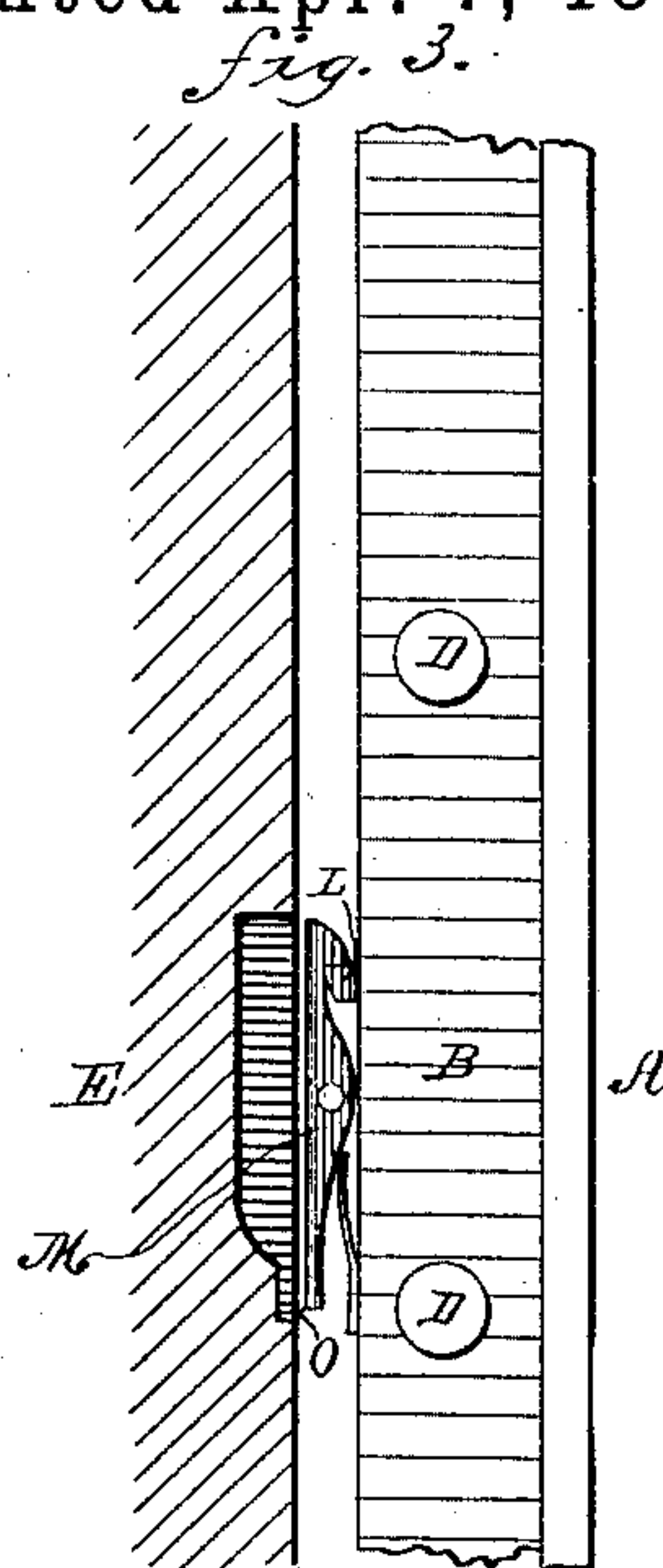
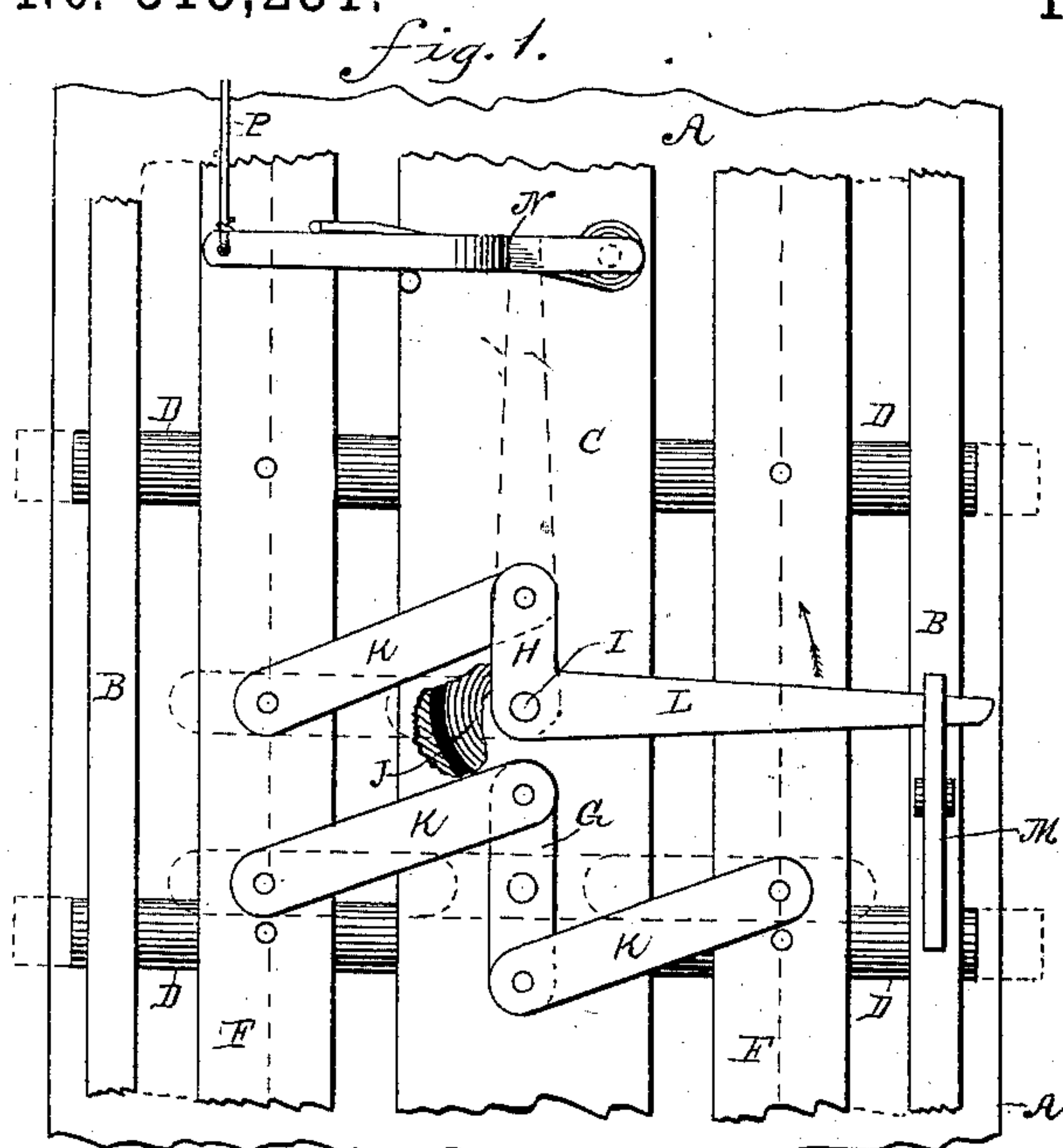
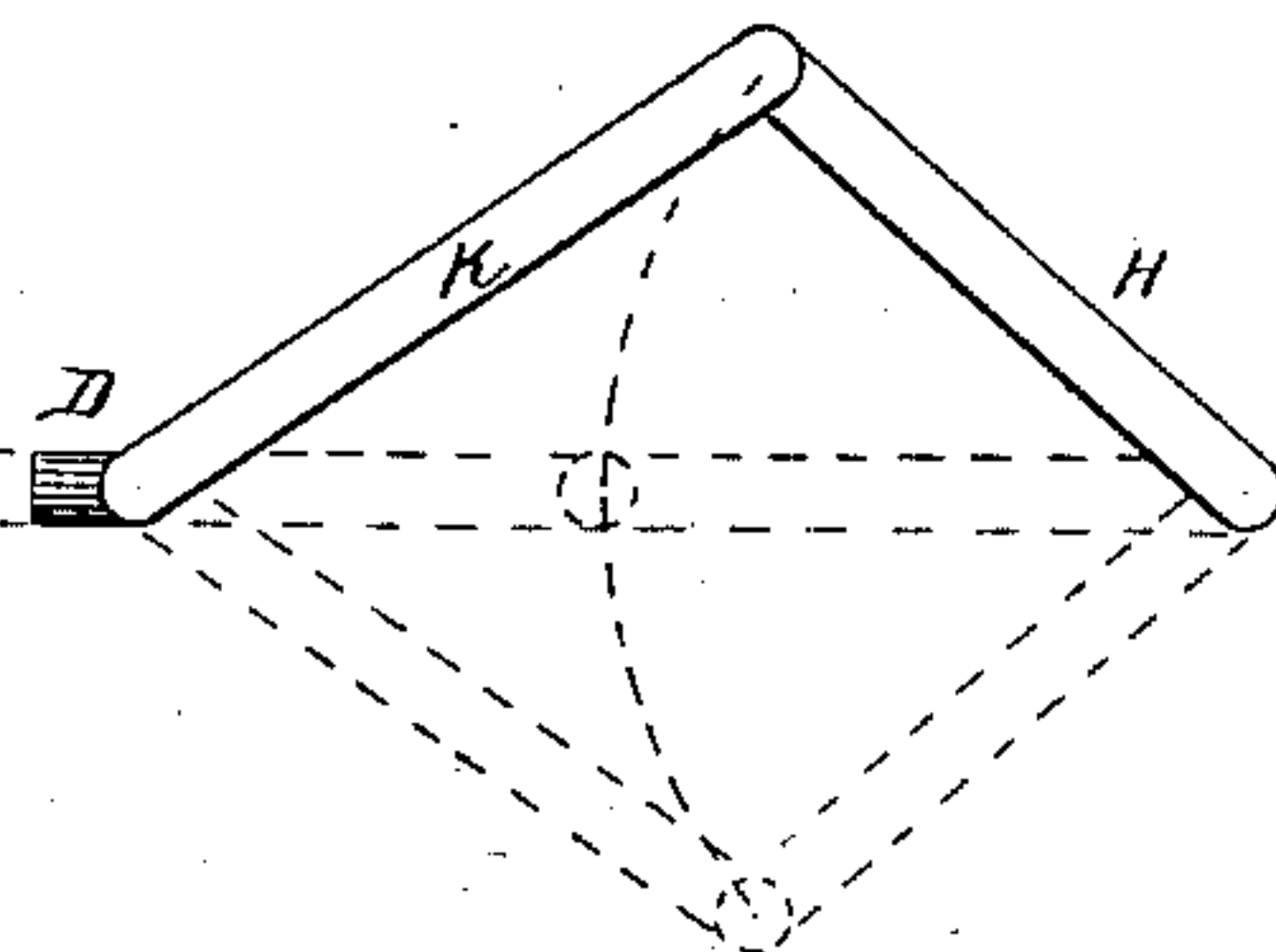


fig. 2.

fig. 4.



WITNESSES:

Harrison B Brown  
W. E. Stevens.

INVENTOR:

Thomas M. Brintnall  
BY *Maunz &*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

THOMAS M. BRINTNALL, OF MARYVILLE, ASSIGNOR TO HIMSELF AND GEORGE R. MANN AND NATHAN P. OGDEN, OF ST. JOSEPH, MISSOURI.

## BOLT-WORK FOR SAFES.

SPECIFICATION forming part of Letters Patent No. 315,231, dated April 7, 1885.

Application filed November 21, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS M. BRINTNALL, a citizen of the United States, residing at Maryville, in the county of Nodaway and State of Missouri, have invented a new and useful Improvement in Bolt-Work for Safes, of which the following is a description.

This invention relates to that class of devices which retract the bolts of a safe-door when set into action by clock-work.

The object of the invention is, first, to extend the bolts from the door into the casing by the act of closing the door, thereby locking the door; and, second, to retract the bolts at a signal given by time mechanism, thereby unlocking the door.

To this end my invention consists in a lever so connected with the bolts and so intercepted by latches that it will first extend the bolts and afterward retract them, while impelled continually in one direction by a spring or its equivalent, and in certain other details of construction, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of the inner side of a safe-door, showing my invention with the bolts retracted. Fig. 2 is a similar view of a modification of the same; and Fig. 3 is a front edge view of the door nearly closed, showing a portion of the jamb or door-casing in section. Fig. 4 is a drawing showing the theory of the lever action.

A represents a safe-door provided with ribs B on its inner face, forming thickened edges for the door, and with ribs C near the center of the door. Through these ribs pass the locking-bolts D, to engage suitable apertures in the door-jamb E. The bolts may be connected together, so as to move simultaneously or as a unit, by any usual means—such as the bars F, secured to the bolts.

In order that the action which moves one set of bolts to the right may move the other set to the left to lock the door at both edges at the same time, I provide a reversing-lever, G, whose opposite ends are connected with the opposite sets of bolts by means of links K, secured at one end of each to the lever and at the other end of each to one of the cross-bars

F, which cross-bars are rigidly fixed to said bolts.

By means of bell-crank or elbow levers sets of vertical bolts may be connected with the horizontal bolts or with their driving mechanism to lock the door at its top and bottom—as, for instance, if bolts like D were placed vertically, and bars like F were placed horizontally, and links like K were to connect these bars with the arms L at about the same distance from center at which they are attached to lever H, then the elbow-lever or bell-crank motion would be produced and utilized, as aboved indicated.

H represents the lever, which is the main feature of my invention. It is pivoted to the door at I, and is provided with a spring, J, by which it is constantly actuated to rotate in the direction of the arrow. Its arc of rotation is bisected by a radius parallel to the line of motion of the bolts with which it is connected, and it is so connected with the bolts that as it moves toward this bisecting radius it drives the bolts in one direction, and as it passes this radius and recedes therefrom it drives the bolts in the direction opposite to their first-named movement. I have devised various means of connecting this lever with the bolt; but I shall give preference in this application to a link, K, which is pivoted at one end to the lever, at some distance from the center thereof, and is pivoted at the other end to a set of bolts, D, in a direction from the pivot I in the line of motion of the bolts.

L is an arm of the lever H projecting in any convenient direction from the pivot I, here shown as projecting in a horizontal direction, to engage first a spring-latch, M, which retains it in position to hold the bolts retracted against the strain of its spring, the lever having been revolved to this position by hand; and, second, to be caught when freed from latch M by a latch, N, which retains it in position to hold the bolts extended, as shown in dotted lines. When the latch M is holding lever H, one arm, O, is located in the path of the door-jamb to be struck thereby at the instant of closing the door to release the lever. This permits the lever to be forced around by its spring, extending the bolts, and the lever is caught by



the latch N at that point in its arc of motion when it has fully extended the bolts. The latch N is connected with clock mechanism to be tripped thereby at a given time, to again  
 5 free the lever H, permitting it to proceed in its course, forced along by the spring J, to retract the bolts and unlock the safe.

I have shown only a wire, P, to connect the latch N with the clock-work; but any suitable  
 10 device may be substituted therefor—such as the hair-trigger arrangement of a rifle-lock, whereby the power required of the clock to trip the latch may be reduced to a minimum.

Fig. 2 shows a modification of my invention  
 15 in which the lever H is provided with two arms and with two links, K, having direct connection with the cross-bars F of the two opposite sets of bolts, whereby both sets of bolts will be extended at one movement of the  
 20 lever and retracted by another or continued movement thereof. Many equivalents to the link K might be shown. One would be a slot in the bar F at right angles to the line of motion thereof to be engaged by a crank-pin in  
 25 the lever H. It is not necessary that the lever H should swing through an arc of a complete half-circle. It may be so proportioned with its link-connections as to give the bolt the required motion while moving through  
 30 any desired arc. (See Fig. 4.) The only requirement is that it should be first held by a latch with the bolt retracted, this latch to be sprung by the door-jamb or some adjunct thereof in the act of closing the door, and  
 35 that a latch shall catch it and hold it with the bolt extended until said latch is sprung to release the lever by time mechanism.

In operation the lever H is first turned by hand in the direction opposite to the arrow  
 40 until it is caught and retained by the latch M. Now, the clock is to be set at the hour at which it is desired that the safe shall be unlocked. Then the safe is to be closed, and in the act of closing it locks itself. Then when the fixed  
 45 hour arrives it unlocks itself. There is no

hole through the door, and no means or way whatever whereby my bolt-works may be communicated with after the door is closed until it is opened by the clock at the time set, and there is no possible means of knowing from  
 50 the exterior of the safe the location of any part of the bolt-works.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a safe-door, a door-jamb fitted for it to close against, a bolt fitted  
 55 to slide from the door into the jamb, a spring for extending the bolt, and a latch fitted to hold the bolt retracted, the latch being movably mounted on the door with its actuating  
 60 portion in the path of the door-jamb, substantially as shown and described, whereby the act of closing the door brings the said actuating portion of the latch against a portion of the  
 65 door-jamb and springs the latch, thereby setting the bolt free to be extended into the jamb by the said spring, as set forth.

2. The combination, with a sliding bolt in a safe-door, of a lever pivoted to the door, a spring for rotating the lever, and a connection  
 70 between the lever and the bolt, substantially as described, whereby a continuous circular movement of the lever in one direction will first extend the bolt to lock the door and then retract the bolt to unlock the door, as set  
 75 forth.

3. The combination, with a sliding bolt in a safe-door, and a rotary lever pivoted to the door and connected with the bolt to slide it first  
 80 out and then in while rotating in one direction, of a spring-latch fixed to the door in the path of the rotary lever to hold the same with the bolt retracted, and a time trip-latch attached to the door in the path of the rotary  
 85 lever to retain it with the bolts extended, substantially as shown and described.

THOMAS M. BRINTNALL.

Witnesses:

W. X. STEVENS,  
 SOLON C. KEMON.