

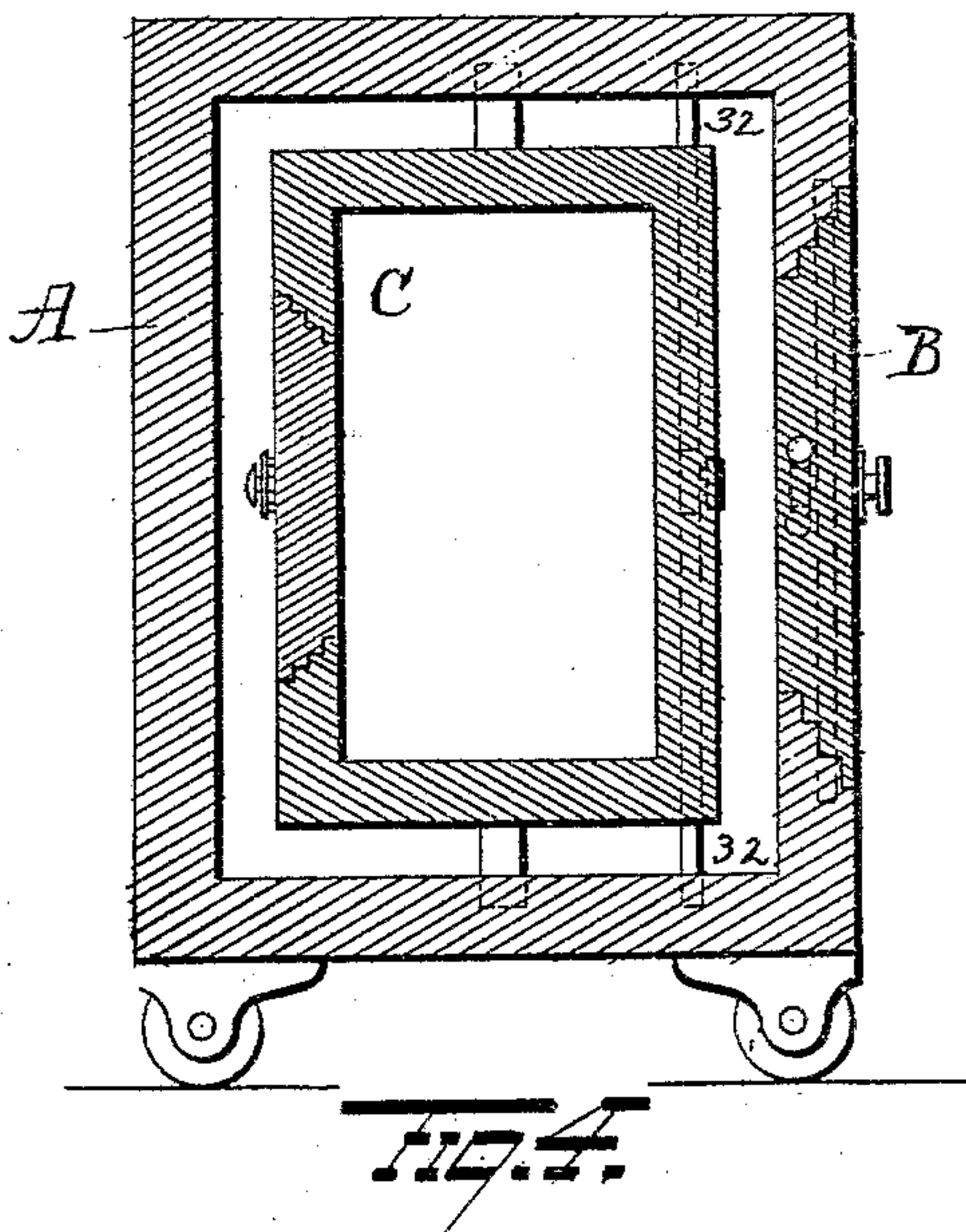
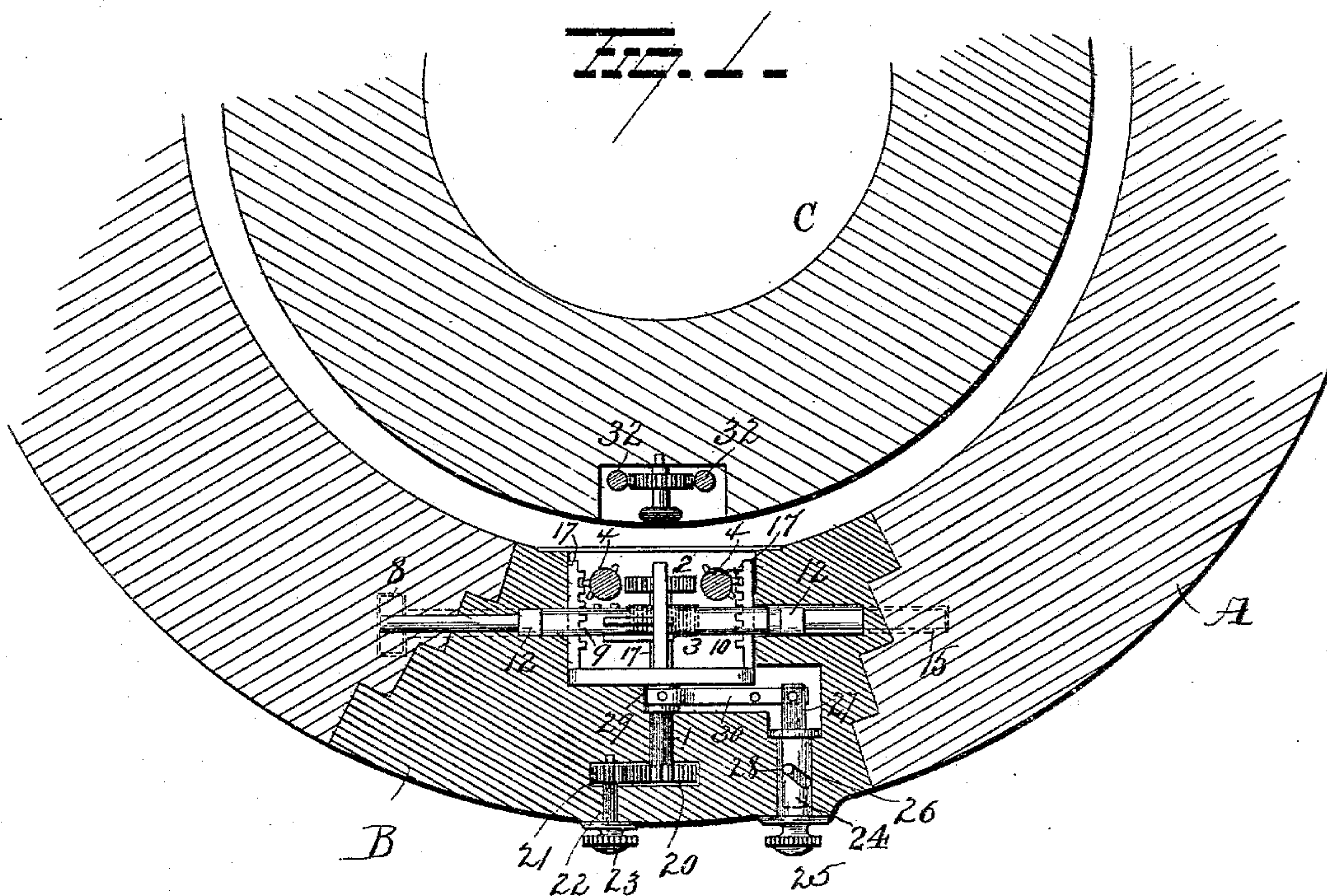
(No Model.)

2 Sheets—Sheet 1.

J. B. HUSS.  
SAFE.

No. 553,120.

Patented Jan. 14, 1896.



Witnesses  
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G. F. Downing

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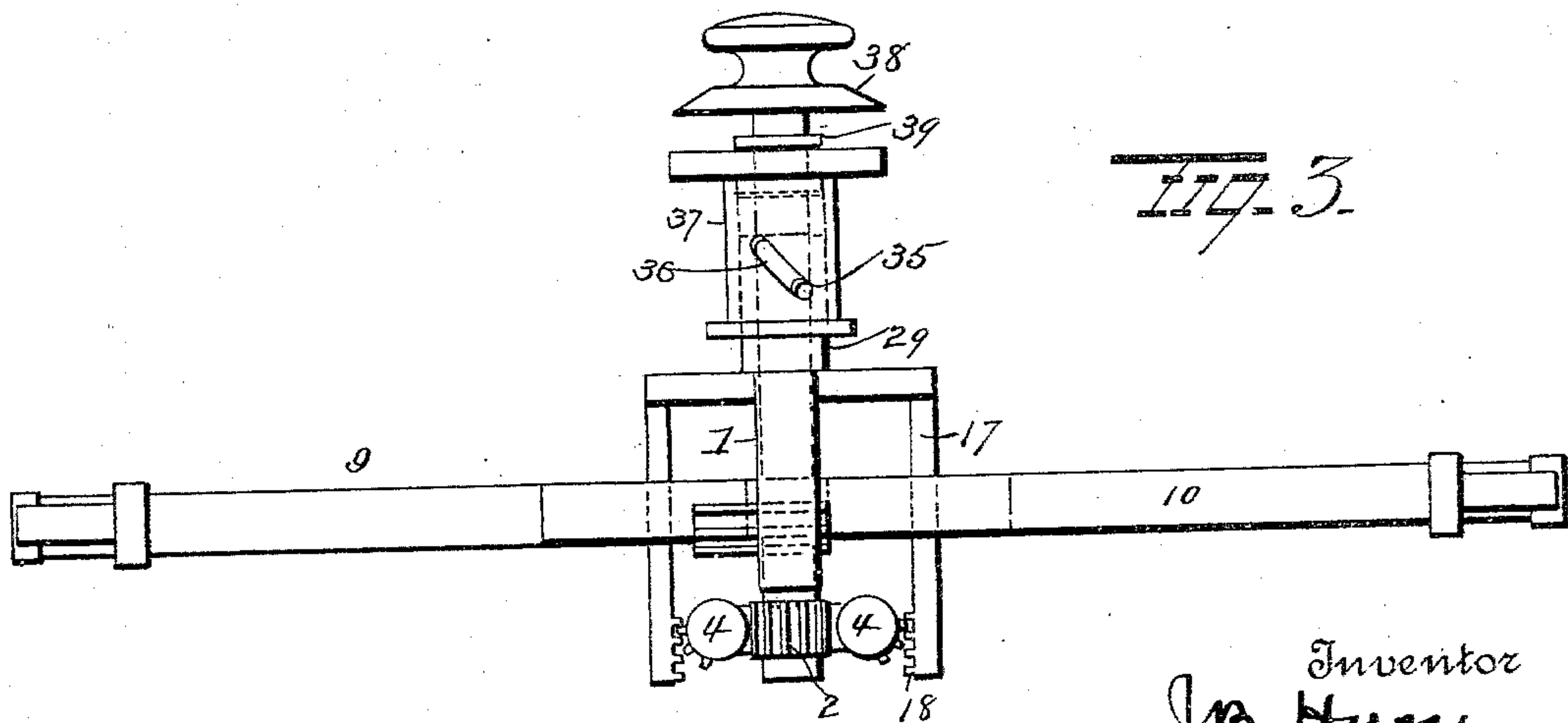
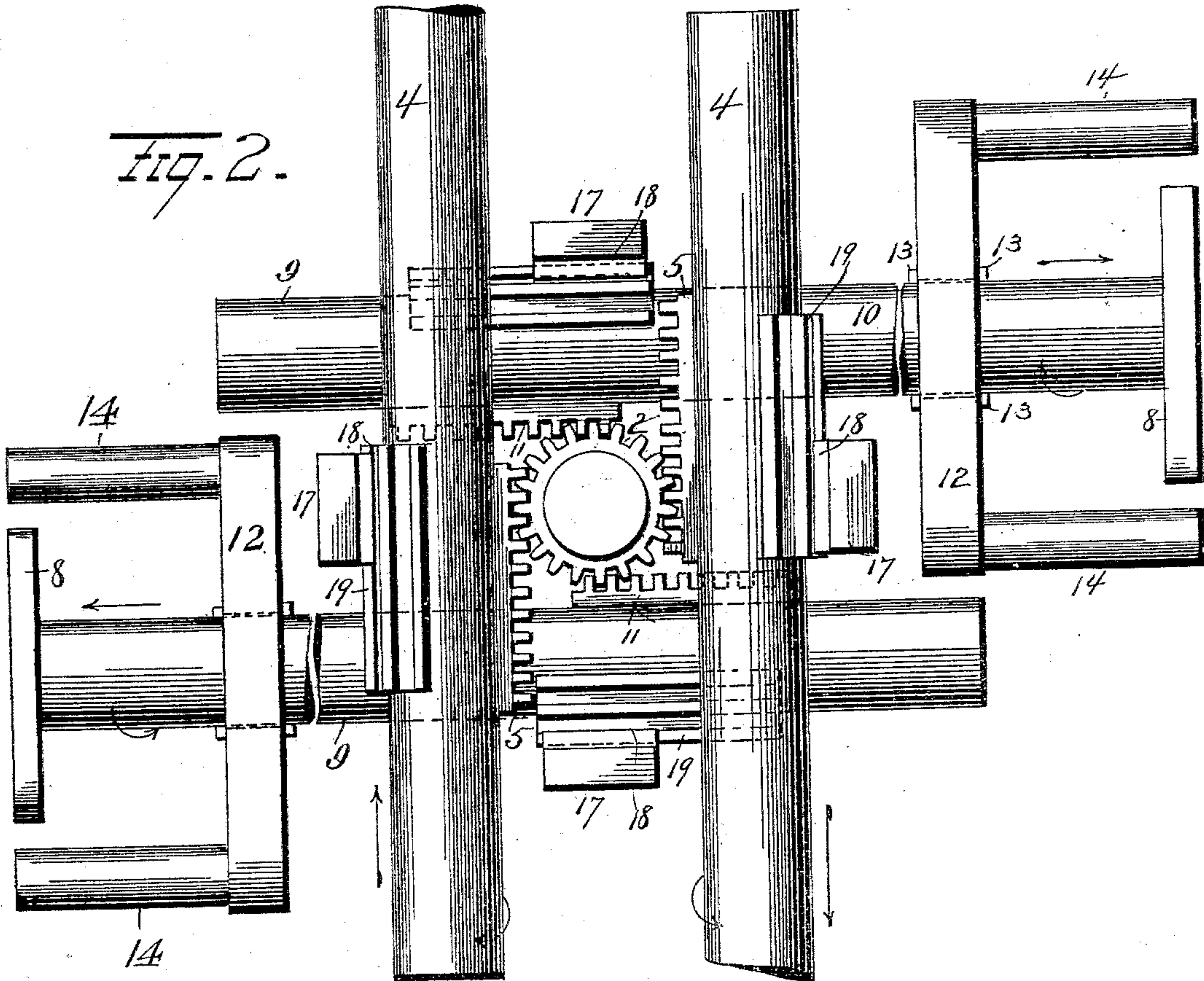
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2 Sheets—Sheet 2.

J. B. HUSS.  
SAFE.

No. 553,120.

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Witnesses  
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# UNITED STATES PATENT OFFICE.

JACOB B. HUSS, OF SPRING VALLEY, ILLINOIS.

## SAFE.

SPECIFICATION forming part of Letters Patent No. 553,120, dated January 14, 1896.

Application filed June 6, 1893. Serial No. 476,746. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB B. HUSS, a citizen of Spring Valley, in the county of Bureau and State of Illinois, have invented certain new and useful Improvements in Locks for Safes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in locks for safes, the object of the invention being to produce a simple and burglar-proof lock.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an enlarged view of a portion of a safe showing the boltwork applied thereto. Fig. 2 is an enlarged detached view of the boltwork. Fig. 3 is a view of a modification. Fig. 4 is a vertical sectional view of the safe.

A and C represent the outer and inner shells of the safe and B the outer door. Mounted in the door and extending only part way through the same is a spindle 1, provided with two pinions 2 3. A series of preferably two vertical bolts 4 4 are located within the door at opposite sides of the spindle 1, and carry rack-bars 5 5 with which the pinion 2 is adapted to mesh so as to cause said bolts to move up and down, said bolts being adapted respectively to align with recesses in the top and bottom walls of the opening in the safe in which the door fits. The outlets of the recesses are elongated for the reception of cross-bars 8 on the ends of the bolts, which latter are adapted to be turned in a manner hereinafter described, so as to cause the cross-bars to extend across said elongated slots or outlets. Two horizontal bolts 9 10 are arranged within the door at opposite sides of the spindle 1, and are provided with rack-bars 11, with which the pinion 3 is adapted to mesh, whereby to throw or withdraw said bolts 9 10. The bolts 9 10 are also provided with cross-bars 8, adapted to enter and be turned in recesses or slots in the vertical walls of the opening in which the door fits. The bolt 10

is adapted to enter the slot or recess in the wall of the opening in the safe at which the door is hinged, and on said bolt 10 (and the bolt 9, if desired) a cross-bar 12 is loosely mounted and prevented from movement longitudinally of the bolt by means of a pin or projection 13. Sub-bolts 14 project from the ends of the cross-bar 12 and are adapted to enter recesses 15 in the wall of the opening in the safe in which the door fits, at the side where the door is hinged, thus providing additional means of security at the side or edge of the door where the latter is hinged. A series of slides 17 are arranged within the door, one slide in proximity to each bolt, and each slide is provided with a rack-bar 18, adapted to mesh with an elongated mutilated or partial gear 19 on the respective bolts. Now it will be seen that, when the door is closed, by turning the spindle 1, all the bolts will be shot or thrown, and that by moving the slides longitudinally said bolts will be turned or partially rotated, thus causing the cross-bars at their ends to become disposed across the elongated slots which form the outlets of the recesses in the walls of the opening in the safe, into which said bolts project. It will also be seen that when the bolts are thus turned, after being thrown or shot, the rack-bars carried by the bolts will be thrown out of mesh with the pinions 2 3 carried by the spindle 1, so that if the spindle 1 be turned it will not operate to withdraw the bolts.

Should the slides 17 be not moved far enough to cause the rack-bars on the bolts to move out of alignment with the pinions 2 3, still the spindle 1 could not be turned to withdraw the bolts, because the cross-bars at the ends of said bolts would be disposed across the elongated slots in the walls of the opening in the safe, and the bolts could not therefore be withdrawn until the cross-bars are brought exactly in alignment with said elongated slots, and this could not be accomplished without moving the slides 17 to the extremity of their movement. From this construction and arrangement of parts it will be seen that in order to open the door it is necessary to cause two movements of the lock mechanism at right angles to each other. In other words, it is necessary to first oscillate the bolts and then move them longitudinally.



In order to provide means whereby to turn or oscillate the spindle 1, said spindle is provided at its outer end with a pinion 20, adapted to receive motion from a pinion 21, carried by a spindle 22, which extends through the front face of the door and is provided at its free end with a knob or dial 23 by means of which to operate it.

In order to provide means whereby to move the slides 17 the devices now to be described will be employed. A tube 24 is revolvably mounted in the door and projects beyond the front face thereof and at its free end is provided with a knob or dial 25 by means of which to turn it. The tube 24 is made with a spiral slot 26 and within said tube a longitudinally-movable rod 27 is located, and is provided with a pin 28 adapted to enter the spiral slot 26, so that when the tube is turned the rod will be moved longitudinally. The slides 17 are connected with a sleeve 29 mounted loosely on the spindle 1. A lever 30 is located within the door and pivotally supported at a point between its ends, and one end of this lever is connected with the sleeve 29, while the other end is connected with the rod 27. From this construction and arrangement of parts it will be seen that when the sleeve or tube 24 is turned the rod 27 will be moved and cause to slide the sleeve 29, whereupon the slides 17 will be moved to oscillate the bolts, in the manner and for the purposes above described.

By constructing and arranging the lock-operating mechanism as above set forth it will be seen that there is no direct path for heat through the door, as the main spindle 1 passes only partially through the same, whereas in locks as heretofore constructed the main spindle extends through the door and constitutes a continuous conductor for heat direct to the heart of the safe, said spindle often becoming red hot. When the safe is closed the interior cylinder or safe proper, C, will be turned so that its back will be adjacent to the door of the outer shell or armor A, with the interposed air-space between it and the outer shell or armor. Should the heat penetrate the outer shell or armor or be transmitted in any way by the locking mechanism, it would first encounter the air-space, and should it be sufficient to penetrate that it would be met by the back of the cylinder C, which, as before stated, is made of alternate layers of metal and non-conducting material.

When the safe is locked, the bolts will be thrown out of operative relation to the spindle 1, in the manner above explained, so that they cannot be operated by turning said spindle.

The inner cylinder or safe proper, C, will be provided with vertical bolts 32 set into the wall thereof, which bolts are adapted to enter sockets in the top and bottom of the armor or shell A, and can be operated by means of pinion and rack-bars the same as above explained, the dial or knob by means of which

this lock is operated being countersunk in the wall of the cylinder.

It may in some instances be desirable to extend the main spindle of the locking mechanism entirely through the door and arrange the means for operating the slides, coincident with said spindle and its knob or dial, as shown in Fig. 3, and this arrangement may be adopted for the lock last above described—viz., for locking the cylinder C to the armor or shell A. In this form of the lock-operating mechanism the sleeve 29 is provided with a pin 35 adapted to enter a spiral slot 36 in a sleeve or tube 37 mounted loosely on the sleeve 29, and said sleeve or tube 37 will be extended through the wall of the door and provided at its ends with a knob or dial 38. The sleeve 37 and the spindle 1 will be prevented from longitudinal movement independently of each other by means of shoulders 39 on the spindle 1.

Various other changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details of construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a safe having an opening therein and a door adapted to close said opening, of a series of bolts adapted to enter slots in the walls of said opening, a spindle mounted in said door, pinions carried by said spindle, rack bars carried by the bolts adapted to mesh with said spindles, and means for rocking the bolts axially whereby to throw said rack bars out of operative relation to said pinions, substantially as set forth.

2. The combination with a safe having an opening therein and a door adapted to close said opening, of a series of bolts adapted to enter recesses in the walls of said opening, a spindle mounted in the door, pinions carried by said spindle, rack bars carried by the bolts, elongated mutilated gears also carried by said bolts, slides, rack bars carried by said slides and meshing with said elongated mutilated gears, and means for moving said slides whereby the bolts are turned and the rack bars carried thereby moved out of mesh with the gears carried by the main spindle, substantially as set forth.

3. The combination with a safe having an opening therein and a door adapted to close said opening, of a series of bolts adapted to enter recesses in the walls of said opening, a spindle mounted in the door, pinions carried by said spindle, rack bars carried by the bolts and adapted to mesh with said pinions, elongated mutilated gears carried by said bolts, a series of slides, rack bars carried by said slides and adapted to mesh with said elongated mutilated gears, a sleeve secured to said slides, a tube revolvably mounted in the door,



and provided with a spiral slot, a rod within  
said tube, a pin on said rod and adapted to  
enter said spiral slot, and a lever pivoted be-  
tween its ends, one end of said lever being  
5 connected with said rod and the other end of  
said lever being connected with said sleeve,  
substantially as set forth.

4. The combination with a safe having an  
opening therein and a door adapted to close  
10 said opening, of a series of bolts adapted to  
enter recesses in the walls of said opening, a  
spindle mounted in the door, pinions carried  
by said spindle, rack bars carried by said bolts  
and adapted to mesh with said pinions, a

pinion carried by the end of said spindle, an- 15  
other spindle mounted in the door and ex-  
tending beyond the outer face thereof; and  
carrying a pinion at one end adapted to mesh  
with said last-mentioned pinion, and a knob  
or dial at the free end of said last-mentioned 20  
spindle, substantially as set forth.

In testimony whereof I have signed this  
specification in the presence of two subscrib-  
ing witnesses.

JACOB B. HUSS.

Witnesses:

J. L. MURPHY,  
WM. HAWTHORNE.