

N. H. CRANE.

LOCK.

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3 SHEETS—SHEET 1.

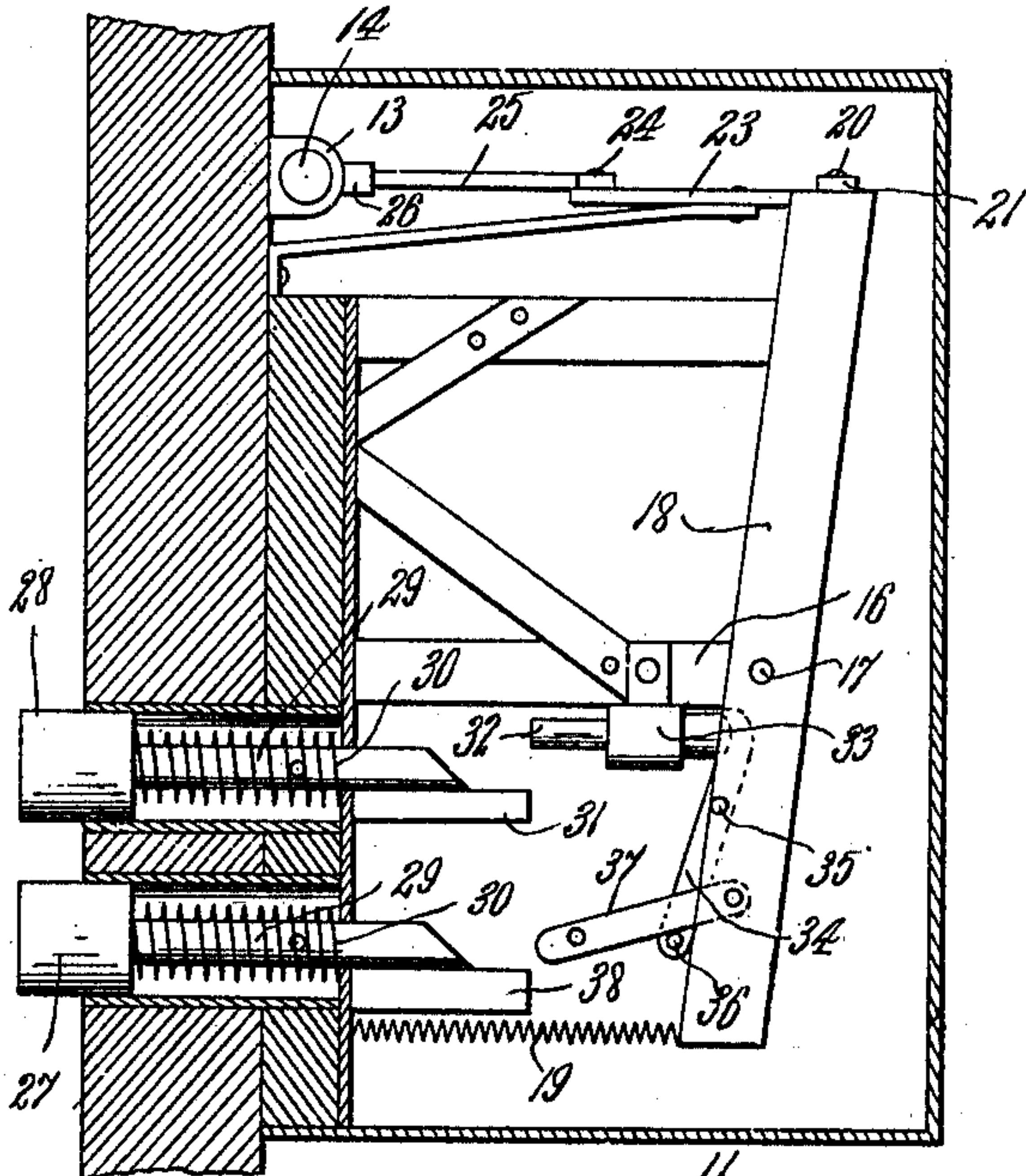


Fig. 1.

Fig. 6

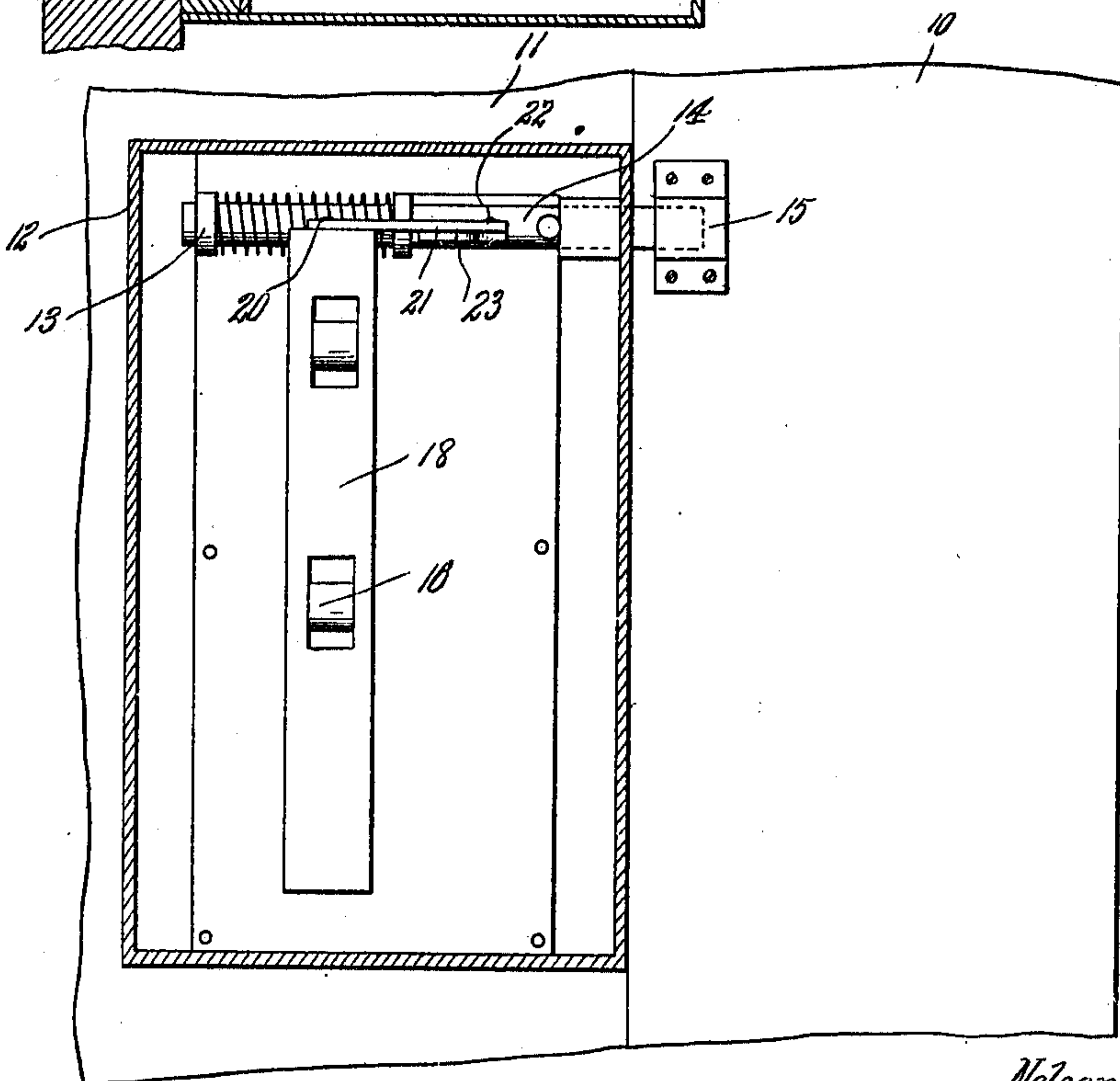
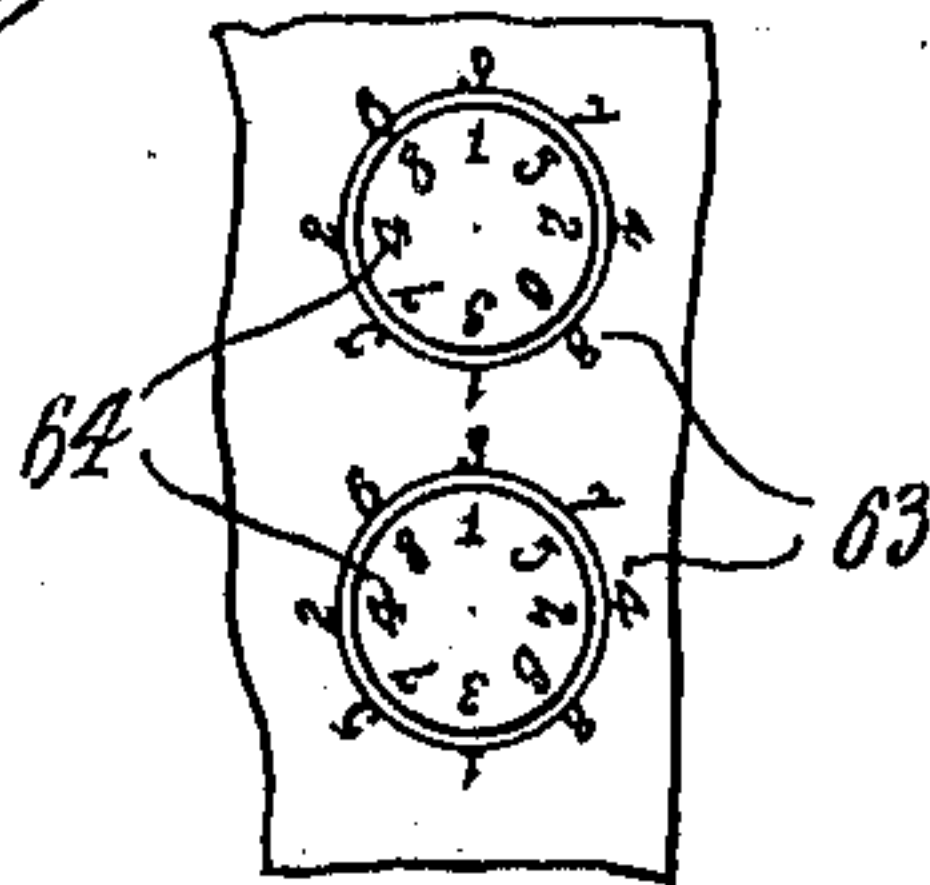


Fig. 3.

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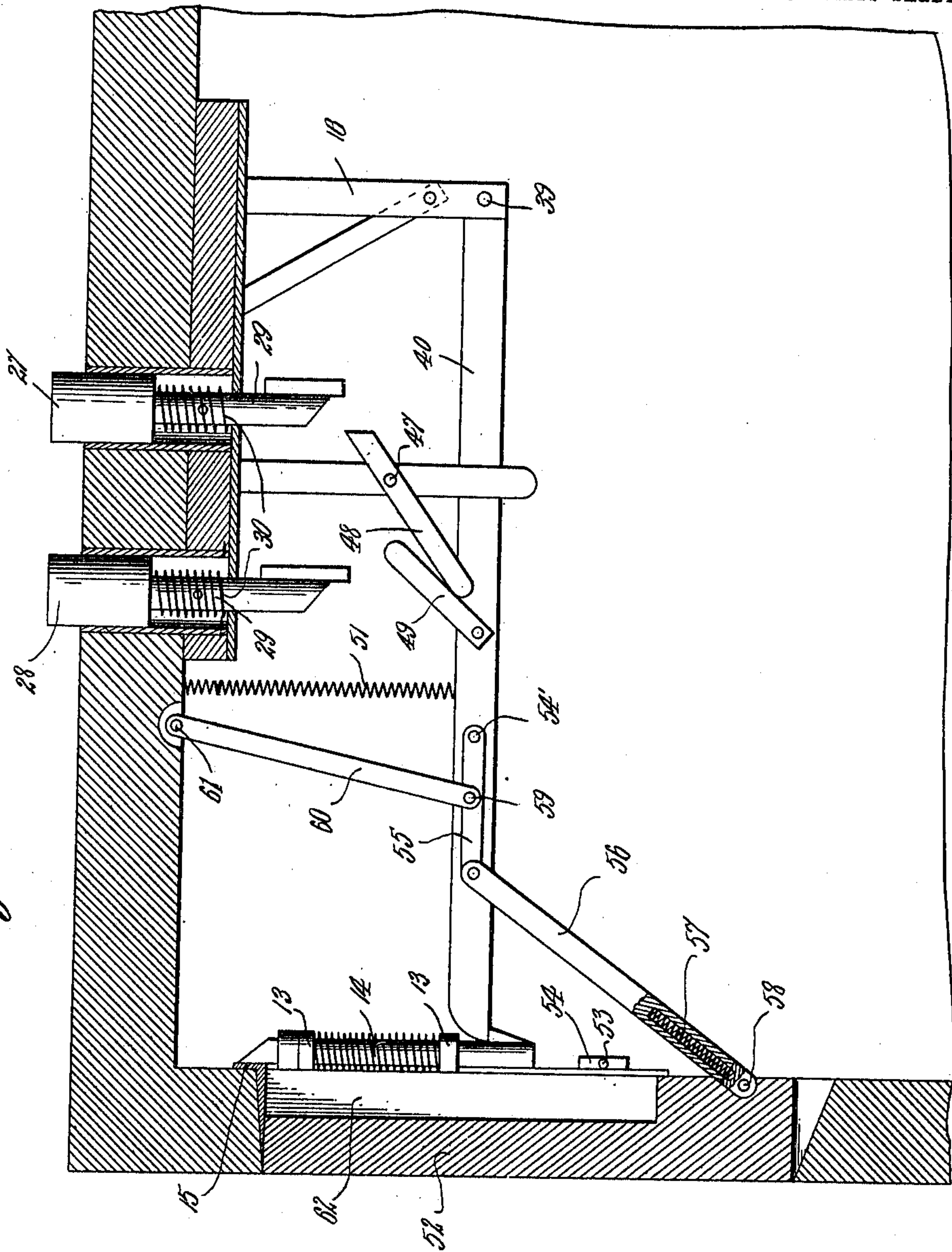
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3 SHEETS—SHEET 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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978,273.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NELSON H. CRANE, a citizen of the United States, residing at McIndoe Falls, in the county of Caledonia, State of Vermont, have invented certain new and useful Improvements in Locks; 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.

The invention relates to a lock and more particularly to the class of button operated door locks.

The primary object of the invention is the provision of a lock of this character in which the locking bolt is controlled or operated by push button mechanism so as to retract the bolt and thereby permit the opening of a door or the like to which the lock is applied.

Another object of the invention is the provision of a lock which may be applied to a door or other movable parts in which mechanism is utilized for the purpose of withdrawing or releasing a sliding bolt from normal engagement with its keeper and this mechanism is operated by push buttons which latter have to be peculiarly manipulated to permit them to actuate the mechanism for operating the locking bolt.

A still further object of the invention is the provision of a lock which shall be simple in construction, efficient in operation and inexpensive in the manufacture.

With these and other objects in view the invention consists in the construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred forms of embodiment of the invention, to enable those skilled in the art to practice the same, and as brought out in the claims hereunto appended.

It is to be understood however that minor changes, variations and modifications may be made, such as come properly within the scope of the appended claims, without departing from the spirit of the invention.

In the drawings:—Figure 1 is a side elevation of a door frame and its hinged door with the invention mounted on the latter and its casing broken away. Fig. 2 is a plan view on an enlarged scale with the top of the lock casing removed. Fig. 3 is an end elevation with the door shown in sections. Fig. 4 is a top plan view of a modification

with the lock casing removed. Fig. 5 is a side elevation of a further modification. Fig. 6 is a detail fragmentary plan view of the casing and push buttons.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

In the drawings, the numeral 10 designates a door frame which may be of any well known construction and having hinged thereto a swinging door 11, the same also being of the usual construction. Mounted at any convenient locality upon the inner face of the door in close proximity to its free edge is a lock casing 12, the latter being formed with spaced perforated guide ears 13, arranged in alinement with each other and in which is slidably mounted a locking bolt 14, the latter adapted to normally project through the casing and engage a keeper plate 15, secured to the edge of the frame of the door 10, when the door is in a closed position.

Projecting inwardly of the casing is a supporting post 16, to which is connected by a pivot 17, a swinging lever 18, the latter having connected to its lower end one end of a retractile spring 19, which has its opposite end fixed to the lock casing and is adapted to hold the lever in normal inoperative position. Connected to the upper end of the lever by means of a pivot 20, is one end of a link 21, the opposite end thereof being connected by a pivot 22, to a rocking link 23, which contains an elongated slot engaging a pin 24, at one end of a pivoted rocking striker dog 25, the same having its free end movable into the path of an offset or lug 26, formed on the locking bolt 14, and adapted to engage the latter to release or retract the bolt when operated in the manner as will be hereinafter described.

Contained in the door 11 are suitable sockets or recesses in which are mounted push buttons 27 and 28, the same being capable of turning movement therein and provided with inwardly extending stems or shanks 29, which project into the lock casing. Surrounding the shank between the push button and the adjacent wall of the lock casing are coiled expansion or resetting springs 30, which latter are adapted to return the buttons to normal position after being operated. On the inner end of the shank 29 of the push button 28 is a nose 31, which latter is adapted to be brought into a

position by the button 28, to register and engage with one end of a slidable pin 32 mounted in a guide piece 33, depending from the supporting post 16, and this pin 5
 10 5 actuates a rocking member 34, pivoted as at 35, to the lever 18. The lower end of the rocking member 34, is provided with a lug 36, which engages and is adapted to lift a hinged element 37, carried by the lever 18, to
 10 permit the actuation of the latter as will be hereinafter described.

Formed on the shank 29 of the push button 27 is a nose 38 which latter is adapted to be brought into alinement with the hinged
 15 element when shifted by the rocking member 34, so that upon depressing the said button 27, the lever 18 will be caused to impart movement to the pivotal dog 25, so as to withdraw or release the locking bolt 14, from
 20 its keeper and in this manner the door will be free to be opened. Surrounding the locking bolt 14, is a coiled retractile spring one end of which is fixed thereto and the opposite end having its bearing against one of
 25 the guide ears 13, which serves to effect the automatic locking of the bolt with the keeper when the door is being closed.

In Fig. 4 there is shown a modification and upon the door 11, is mounted a lock casing in which is supported the locking bolt 14, slidably mounted within the ears 13, and adapted to engage the keeper 15, and upon
 30 the supporting post 16 is mounted by a pivot 39, a rocking bar 40, the latter having pivotally connected thereto at its opposite end a link 41, the same pivoted as at 42 to a rocking dog 43, adapted to engage the lug 26, of the locking bolt to retract the same and this rocking dog is fulcrumed on a pin
 35 44 secured to a prop 45 suitably mounted in the lock casing.

Projecting inwardly of the casing is a post 46, having connected thereto by means of a pivot 47, a trip arm 48, the latter
 45 adapted to be actuated by the push button 27, and this trip arm 48 when actuated moves a swinging element 49, connected by a pivot 50, to the swinging bar 40, so that the said element 49, will be shifted into position to be engaged by the push button 28, when properly set and manipulated to operate the swinging bar for retracting or releasing the locking bolt, so that the door 11, may be opened. Connected to the swinging
 50 bar 40 and to the casing is a retractile spring 51, which is adapted to hold the bar in inoperable position until actuated.

In Fig. 5 there is shown a still further modification of the invention which comprises a door 52 mounted by a pivot 53 in
 60 suitable supports 54, to permit tilting of the said door and the latter has mounted on its inner face the ears 13 in which is slidably supported the locking bolt 14, which normally engages the keeper 15 to hold the door
 65

52 in closed locked position. To the swinging bar 40, is connected by a pivot 54', a link 55, the same also pivoted to a pull bar 56 which latter has connection through the medium of a coiled retractile spring 57, with
 70 a pivotal swinging lug 58, mounted upon the door so that on releasing the bolt, the said door will be simultaneously swung to open position. Connected centrally of the link 55, by a pivot 59, is a rod 60, the latter
 75 also pivoted as at 61, to a fixed part of the frame at right angles to the door. The swinging bar 40, is actuated by the push buttons 27 and 28 in a like manner to the construction shown in Fig. 4, and this swinging
 80 bar 40, has its free end engaging the lug 26, on the locking bolt to retract or release the latter when the bar is actuated. Contained in the door 52 is a pocket 62, which is adapted to receive a key so that when the door is
 85 closed and locked it will conceal the key thus overcoming any possibility of a malicious person gaining possession thereof.

The outer face of the door adjacent the buttons is provided with suitable designations as at 63, and upon these buttons are also suitable characters 64, which are adapted to coöperate with each other to form a predetermined combination when the buttons have been turned in proper position to
 90 actuate the locking bolt to release or retract the same and the said combination is to be known only to a person that is entitled to access through the door or the rightful owner of the key concealed by the latter. 100

What is claimed is:—

1. The combination with a door, of a spring pressed bolt normally locking said door, a swinging lever pivoted in proximity to the door and adapted to trip the bolt, an
 105 arm pivoted to the lever, a second arm pivoted to a suitable stationary support, and push buttons, one being operable upon the arm carried by the support to move it against the other arm for pushing the latter
 110 in the path of movement of the other button whereby upon actuating the latter it will simultaneously shift the lever and the arm pivoted thereto for releasing the bolt.

2. The combination with a normally bolt
 115 locked element, of a plurality of push buttons, a swinging member connected with the element and adapted to trip its bolt, an arm pivoted to said member and adapted to be engaged by one of the buttons, the said arm
 120 being normally out of the path of movement of the button, a fixed support having means carried thereby operable by the other button for moving the said arm into a position to be operated upon by the first mentioned
 125 button whereby upon actuating the latter it will move the arm for operating the member to simultaneously release the bolt and open the said element carrying the same. 130

3. The combination with a door having a bolt automatically locking the same, of a swinging bar connected with said bolt for moving the same to released position, a plurality of combination button controlled devices, means normally out of the path of movement of one of the devices and adapted to be moved into the path of movement of the said device whereby the bar may be operated to release the bolt, means operated upon by the other device to move the said first named means into the path of movement of the device for operating the same, and a door supporting the bolt and having connection with the said bar and operated upon thereby for opening it on releasing the bolt.
4. The combination with a door and a bolt automatically locking the same, of a swinging bar connected with said bolt for moving the same to released position, a plurality of combination button controlled devices, means normally out of the path of movement of one of the devices and adapted to be moved into the path of movement of the said device whereby the bar may be operated to release the bolt, means operated upon by the other device to move the said first named means into the path of movement of the device for operating the same, and a door supporting the bolt and having connection with the said bar and operated upon thereby for opening it on releasing the bolt.
- In testimony whereof, I affix my signature, in presence of two witnesses.
- NELSON H. CRANE.
- Witnesses:
D. ROGER CRANE,
WM. J. ORR.