

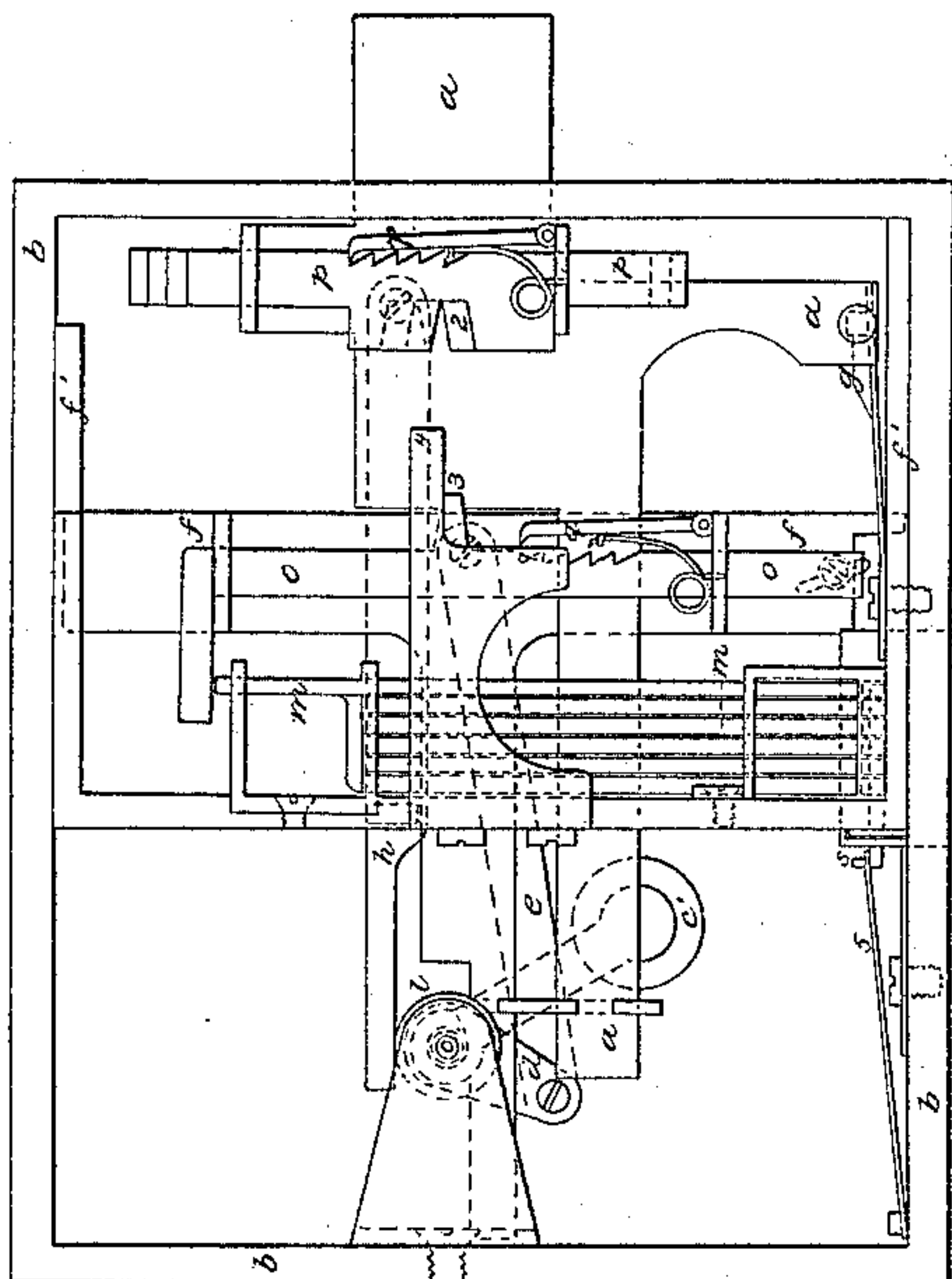
*C. F. C. F. Jr. & W. W. Johnson,*

*Lock.*

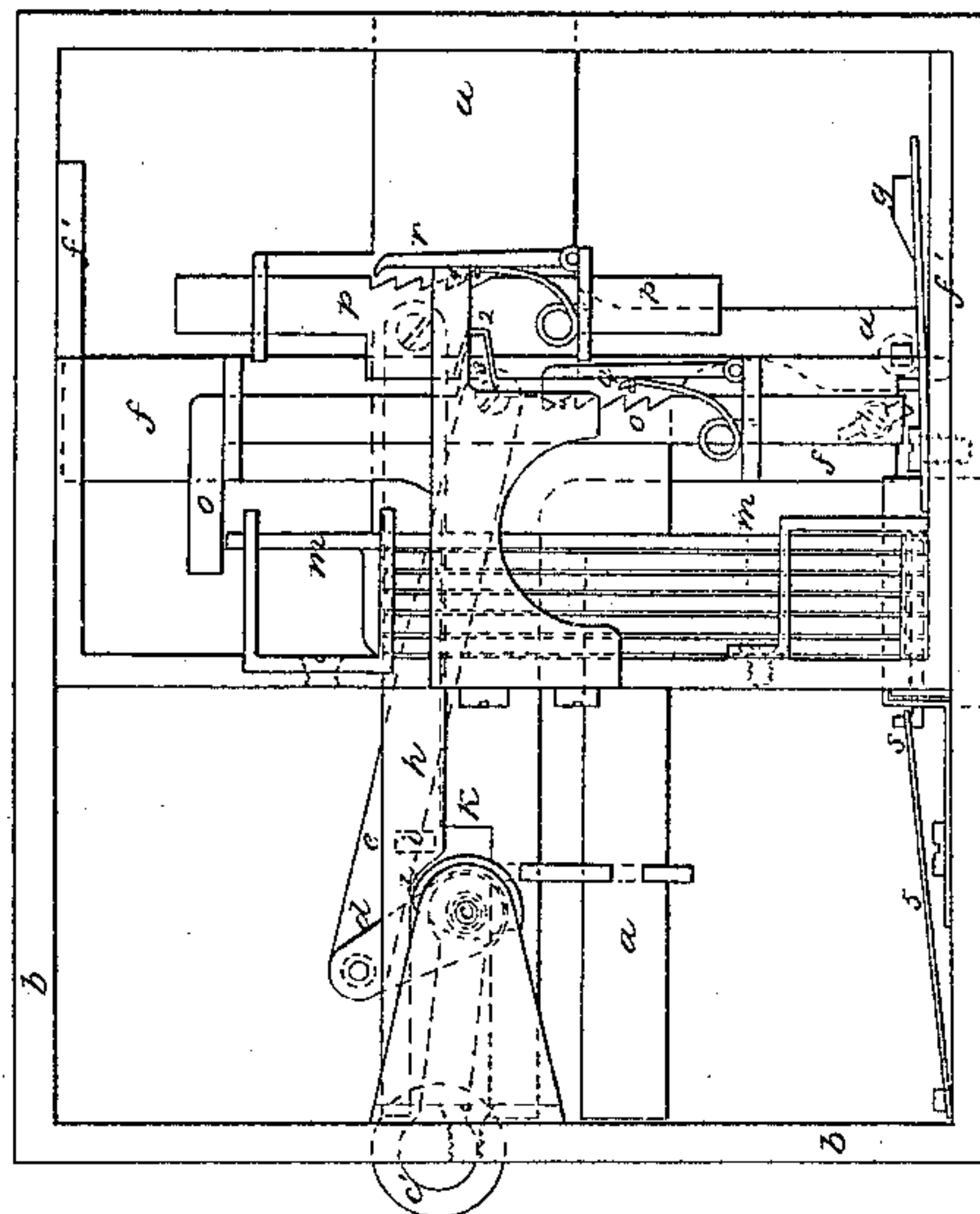
*N<sup>o</sup> 29,975.*

*Patented Sep. 11, 1860.*

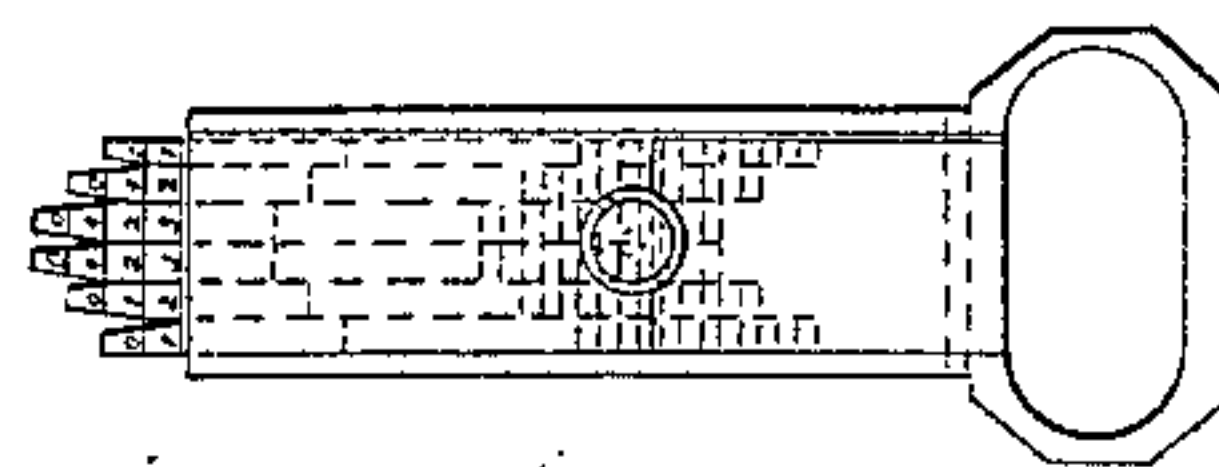
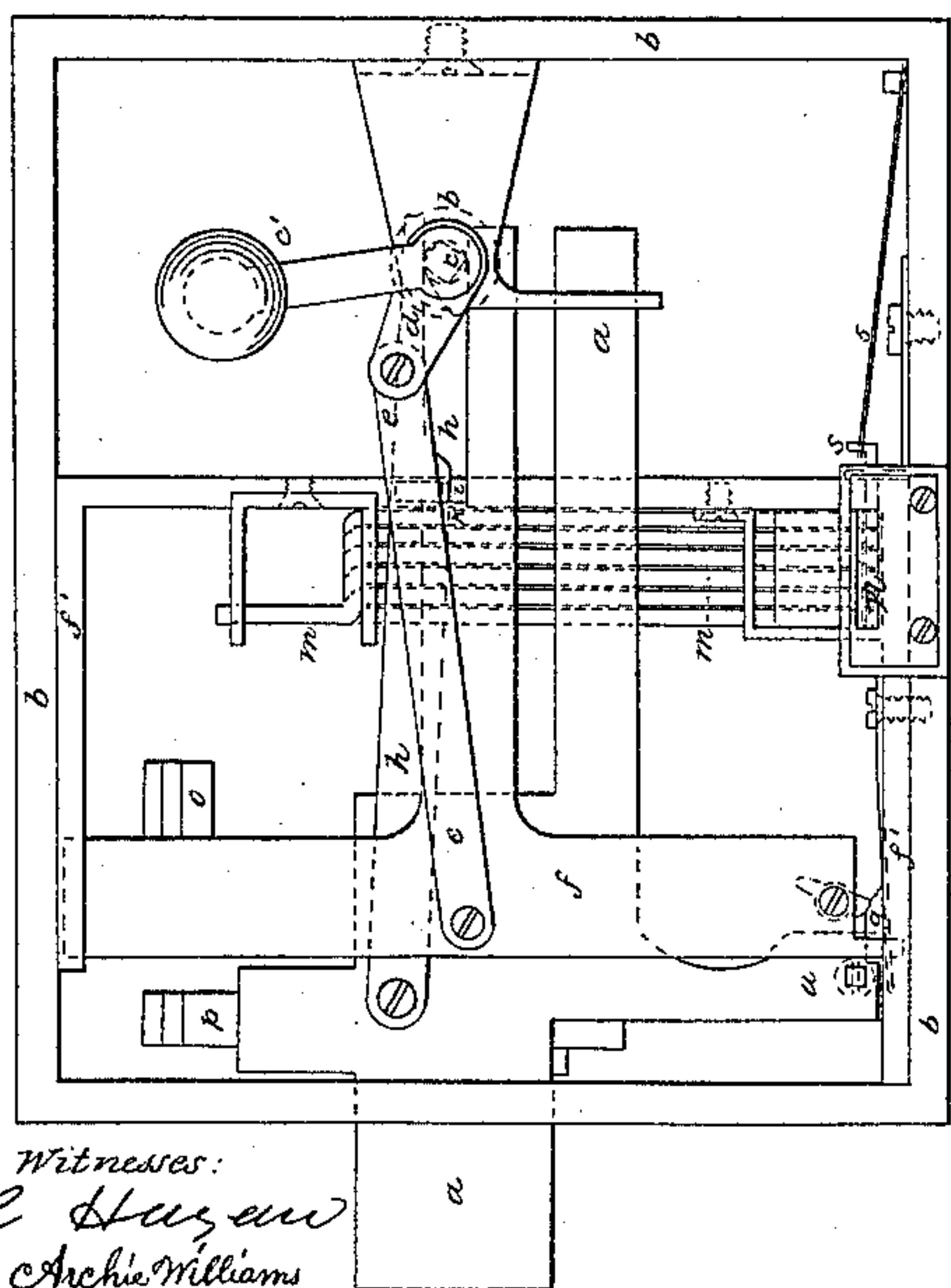
*Fig: 2*



*Fig: 3*



*Fig: 1*



*Fig: 4.*

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# UNITED STATES PATENT OFFICE.

CHAS. F. JOHNSON, CHAS. F. JOHNSON, JR., AND WM. W. JOHNSON, OF OWEGO, NEW YORK.

## LOCK.

Specification of Letters Patent No. 29,975, dated September 11, 1860.

*To all whom it may concern:*

Be it known that we, CHARLES F. JOHNSON, CHARLES F. JOHNSON, JR., and WILLIAM W. JOHNSON, of Owego, in the county of Tioga and State of New York, have invented, made, and applied to use certain new and useful Improvements in Locks for Banks, Vaults, Safes, &c.; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is an elevation of the lock with the front plate removed, the parts being in the position assumed on completing the projection of the bolt. Fig. 2, is a similar view of the back of the lock with the bolt projected and the slide brought back ready for unlocking. Fig. 3, is an elevation of the back of the lock with the bolt retracted, and Fig. 4, is a plan of the key.

Similar marks of reference denote the same parts.

In the bank locks that have heretofore been constructed, permutating key bits and tumblers have been used, and the key bits have been detached and conveyed away to act on the tumblers. Our said invention combines all the advantages of both these characters of locks and removes all the disadvantages attendant upon the combination or permutation locks heretofore in use. In all tumbler locks that we are acquainted with, the key bits in their movement acted upon tumbler slides or auxiliary tumblers that were in contact, or could be brought into contact by a slight end movement of the bolt, thus the connection between the key in the keyhole and the parts on which the security depended was so far continuous that picks might under some circumstances be introduced, and by a delicate sense of sound or feeling the successive tumblers might be raised to correspond with the slides or auxiliary tumblers and the lock be opened.

The nature of our said invention consists in a traveling carriage combined with a series of traveling tumblers that are placed in position by the key and so held while they are moved entirely away from the mechanism that set them, and are applied to the auxiliary tumblers; if the proper key has been used these tumblers and auxiliary tumblers pass into each other and the bolt

is unlatched and can be withdrawn; if the improper key or picks have been used the tumblers and auxiliary tumblers cannot enter each other and the latch or dog holding the bolt is not reached and the lock cannot be opened, and no indication can be obtained at the keyhole of the position of the auxiliary tumblers, because the tumblers themselves are entirely separated and conveyed away from any contact with parts that can be reached through the key hole, before coming into contact with the auxiliary tumblers.

In the drawing *b*, is the casing or box of the lock.

*a*, represents the bolt and the slides that guide the same.

*c*, is a spindle passing through the lock plate and through the door of the safe, vault or bank, where it terminates with a handle or knob, *c'*.

*d*, is a crank arm extending from the spindle *c*, and connected to the pitman or link *e*; the other end of this link *e*, it is attached by a screw to the sliding carriage *f*, that carries the tumblers *o*, hereafter referred to.

*h*, is a link attached to the bolt *b*, by the screw *x*, and the other end lies above the spindle *c*, and *l*, is a cam on said spindle. *i*, is a projection on this link *h*, and *k* is a notch on the carriage *f*.

The operation of this part is that the crank *d*, pitman *e*, and carriage *f* project the bolt, and as the knob *c'*, is turned from the position Fig. 1, to that of Fig. 2, the link *h*, is raised so that the notch *k*, of the carriage *f* does not take the projection *i*, because the link *h*, is raised by the cam *l*, but upon reversing the motion of the handle *c'*, the projection *i*, drops against the notch *k* and the carriage *f* draws the bolt back.

*f'*, *f'* are slides in which the carriage *f* travels and *g* is a dog taking the bolt when projected, and this dog is depressed by the slide *f* when it completes its forward movement; at all other times it holds the bolt when projected, and cannot be acted on by said slide *f*, unless the tumblers correspond with the auxiliary tumblers so that the carriage is permitted to travel the entire distance.

On the carriage *f* are the tumblers *o*, *o*, that are fitted so that they can slide vertically, and *p*, *p*, are auxiliary tumblers corresponding in number and position to



the tumblers  $o, o$ , but fitted in slides on the bolt  $a$ .

2, and 3, are tongues and jaws on the tumblers and auxiliary tumblers.

5  $r$ , is a spring detent or dog holding the auxiliary tumblers  $p$ , and  $q$ , is a similar detent or dog to the tumblers  $o$ .

10  $m, m$ , are slides corresponding in number to the tumblers; these slides may be of any desired character so as to transfer the impression of the key to the tumblers  $o, o$ . We have however shown vertical wires in a longitudinal range, and their upper ends bent off at an angle to form a transverse range under the heads of the tumblers  $o, o$ , and these slides  $m, m$ , are raised by wedge sections  $m'$ , that are pressed in more or less by the key (Fig. 4,) that is entered at  $u$ , against the end of these wedges.

20  $s$ , is a traveler and 5 a spring tending to force the wedge sections  $m'$ , outward so as to return them to place when the key is withdrawn. It will however be apparent that any suitable device such as racks and slides might take the place of the slides  $m$ , so long as they conveyed to the tumblers  $o, o$ , the impression from the key which key may be a serrated plate or a series of permutating bits.

30 The operation is as follows: The tumblers  $o$ , and  $p$ , being in contact as in Fig. 3, are raised by the slides  $m$ , the dogs  $q$ , and  $r$ , being pressed away from the notches by the stops 1, and 4. On throwing the bolt forward by the handle  $c'$ , and carriage  $f$ , the tumblers  $o$  and  $p$  also move forward, and are held by the dogs  $q$ , and  $r$ , and the auxiliary tumblers  $p$ , retain the impression of the key while the tumblers  $o$ , are brought to the position of Fig. 2, on completing the movement and dropped by the dog  $q$ . If an attempt is made to open the lock by picks or false keys, on moving the handle  $c$ , the tumblers  $o, o$ , are carried away from the slides  $m$ , and retaining the form given the tongues 3, do not enter the jaws 2, and the slide  $f$  cannot be projected sufficiently to disconnect the dog  $q$ ; but when the correct key is applied the slide  $f$  completes its movement and the bolt 50 is drawn back by the link  $h$ , as aforesaid.

The tumblers may be drawn down by springs or a piece may be hinged onto the lock so as to fall or press down onto said tumblers to bring them down level when the bolt is retracted and the parts assume their normal position. 55

To prevent too much force being applied on the jaws 2, 3, by the handle  $c'$ , the connecting bar  $e$ , may be made double and a spring applied so that the parts will slide 60 and prevent rupture of the tumblers and other parts.

The dog  $r$ , might if necessary or desirable be a fixed detent or knife edge attached to the lock case. 65

Our key is represented in Fig. 4, and consists of a series of rods forming the bits, these are fitted so that they can be drawn out more or less from the inclosing case and retained in position by a knife edge or its equivalent taking notches in said rods. It will now be evident that each key bit can be set at any length between the first and last notches, hence that the permutations in the length of bits is vastly increased, because 75 two or more can be of the same length, thus affording additional security.

What we claim and desire to secure by Letters Patent is—

The traveling carriage  $f$  arranged substantially as specified to move forward with the bolt and leave it projected or move forward and connect to said bolt and draw the same back, as set forth, in combination with tumblers ( $o$ ) moving with said carriage and 85 acting between the tumblers  $m$  and  $p$ , as specified.

In witness whereof we have hereunto set our signatures this twenty first day of February 1860.

CHAS. F. JOHNSON.

C. F. JOHNSON, JR.

WM. W. JOHNSON.

Witnesses to signatures of Chas. F. Johnson and C. F. Johnson, Jr.:

A. ARCHIE WILLIAMS,

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Witnesses to signature of W. W. Johnson:

J. W. JOHNSON,

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