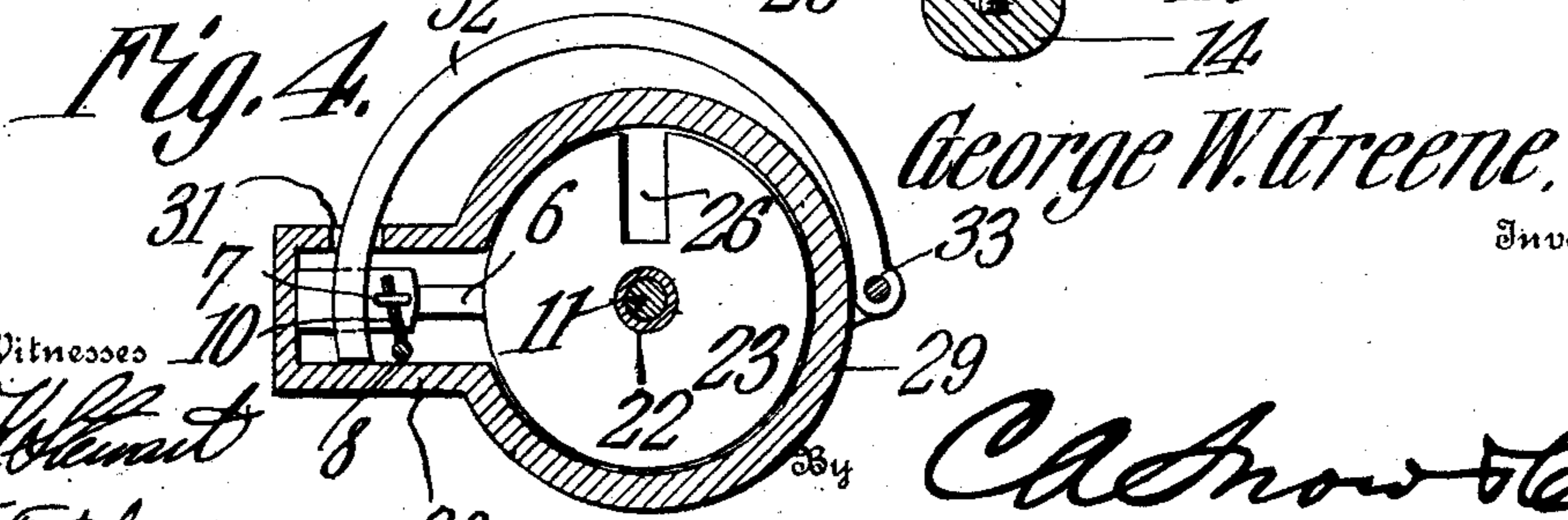
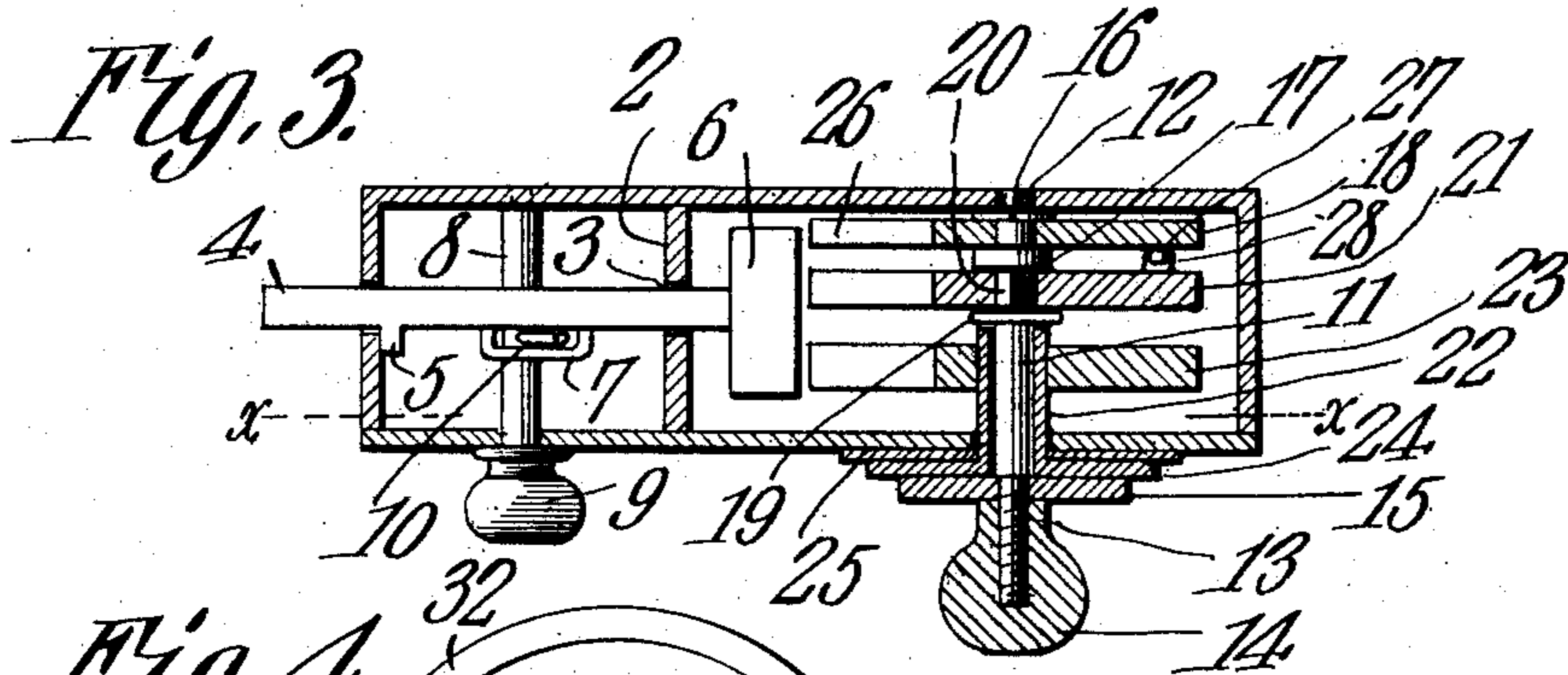
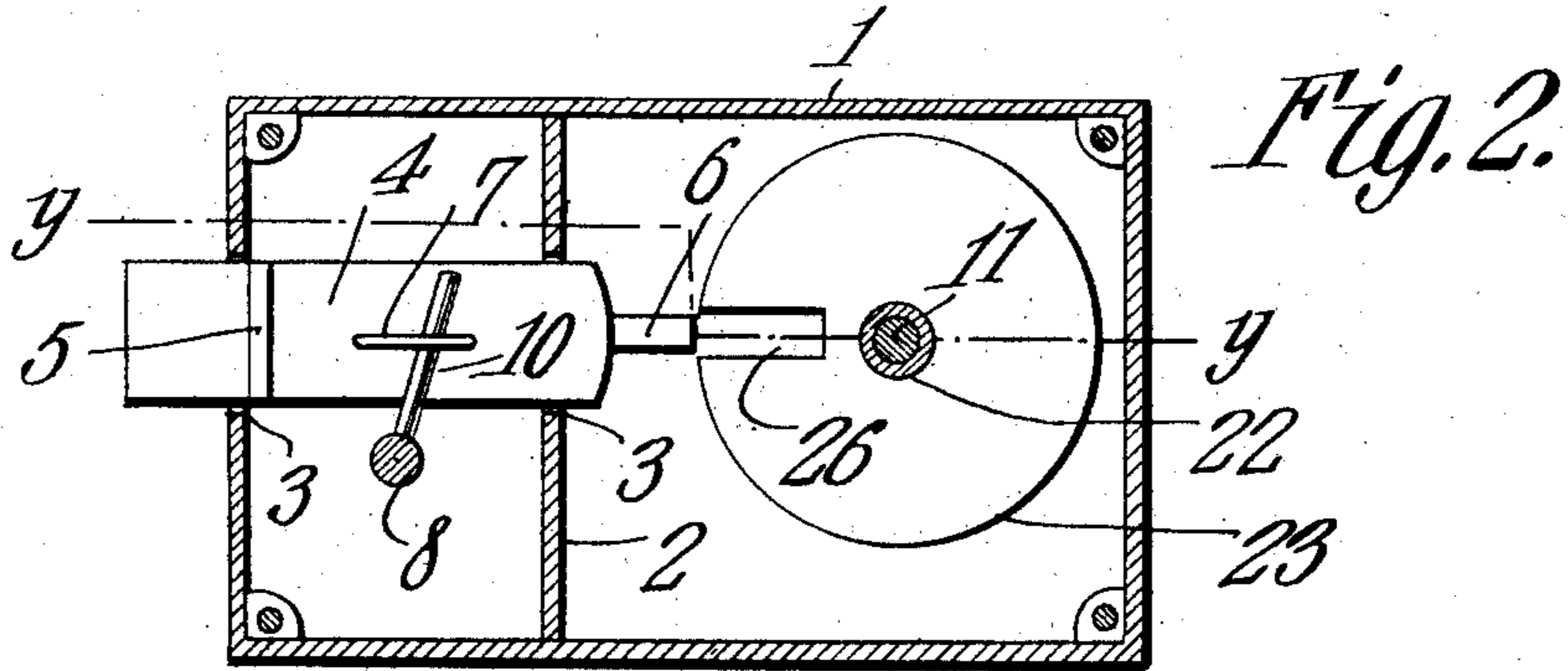
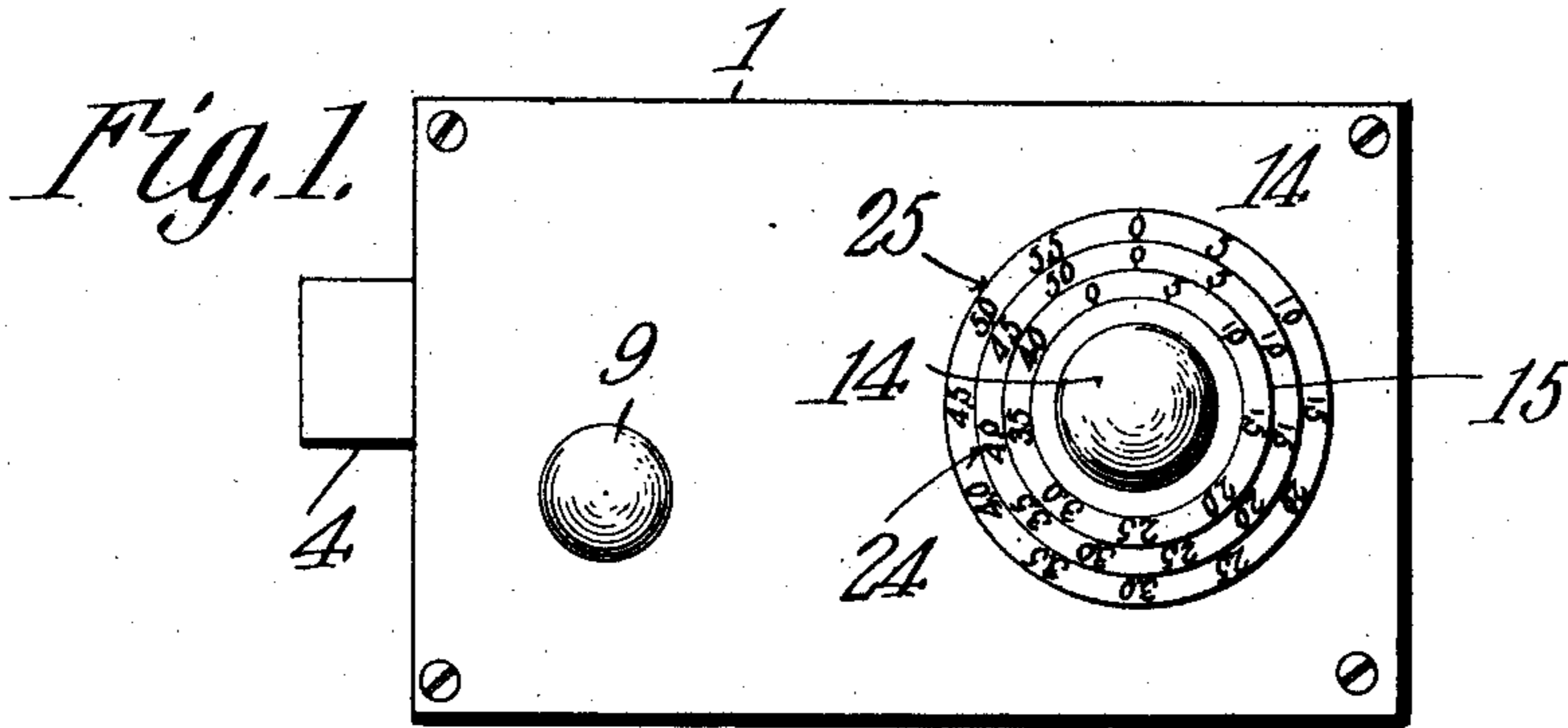


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LOCK.

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907,038.

Patented Dec. 15, 1908.



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# UNITED STATES PATENT OFFICE.

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## LOCK.

No. 907,038.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed September 12, 1907. Serial No. 392,588.

*To all whom it may concern:*

Be it known that I, GEORGE W. GREENE, a citizen of the United States, residing at Atlanta, in the county of Cass and State of Texas, have invented a new and useful Lock, of which the following is a specification.

This invention has reference to improvements in locks, more especially of the permutation type, and its object is to produce a lock of this type which can be very cheaply manufactured and which will at the same time provide safety from picking by dishonest persons.

The invention comprises essentially a suitable casing with a lock bolt capable of sliding therein and having means for actuating the lock bolt, together with a spindle having a number of disks mounted thereon, each disk having a radial entering slot. One of the disks is fast on the spindle while another disk is loose thereon and there are pin connections between the two disks. There is still another disk fast on a sleeve carried on but loose on the spindle, and the spindle and sleeve both project beyond the face of the casing. On the casing concentric with the spindle there is fixed a dial plate, while another dial plate is carried by the sleeve, and a third dial plate is carried by the spindle. The arrangement is such that all three disks must have their radial entering slots brought into a predetermined relative position in line with the sliding bolt so that the latter may then be operated by a suitable knob, all as is usual in locks of the permutation type.

The invention will be fully understood by reference to the following detailed description, taken in connection with the accompanying drawings forming part of this specification, in which,—

Figure 1 is a plan view of a lock constructed in accordance with my invention; Fig. 2 is a longitudinal section on the line  $x-x$  of Fig. 3; Fig. 3 is a longitudinal section on the line  $y-y$  of Fig. 2; and Fig. 4 is a sectional view illustrating the application of the invention to a padlock.

Referring to the drawings, there is shown a casing 1 which may be of any suitable shape and in the particular structure shown in Figs. 1, 2 and 3 this casing is of general rectangular shape and is in form similar to the casing of an ordinary face or mortise lock. Within the casing and closer to one

side than to the other is a cross partition 2. In this partition and in the nearer end wall of the casing are matched perforations 3—3 through which slides a lock-bolt 4, preferably of the same width throughout and wider than thick.

On one side of the lock-bolt there is a cross lug 5 which limits its projection beyond the end of the casing, and at the other end of the lock-bolt is a laterally extending head 6 which may be of the same thickness as the body of the bolt but extends at right angles thereto on each side of the body of the bolt. On one face of the lock-bolt there is formed an eye 7, and pivotally mounted in the casing adjacent to the bolt is a knob spindle 8 carrying a manipulating knob 9 exterior to the casing. The knob spindle 8 has projecting therefrom a pin 10, the free end of which passes through the eye 7 so that when the knob 9 is turned upon its axis the pin 10 engaging the eye 7 will move the lock-bolt in one direction or the other according to the direction of rotation of the knob 9. In line with the lock-bolt there is mounted another spindle 11 having a journal bearing 12 in one wall of the casing and projecting through the other wall of the casing where it is formed with a screw-threaded extension 13 upon which is screwed a knob 14. The threaded extension 13 is of less diameter than the spindle 11, thus forming a shoulder at the point of junction of the threaded extension with the spindle. This shoulder constitutes a rest for a dial plate 15 held in place by the knob 14 when screwed upon the extension 13.

Between two collars 16—17 upon the spindle 11, near one end thereof, is mounted a disk 18 free to turn upon the spindle 11 and prevented from moving longitudinally thereon by the collars 16 and 17. Between the collar 17 and another collar 19 the spindle 11 is made square or other non-circular shape, as shown at 20, and mounted upon this non-circular portion is another disk 21.

Surrounding the spindle 11 between the collar 19 and the dial plate 15 is a sleeve 22 free to turn upon the spindle but prevented from longitudinal movement thereon by the collar 19 and the dial plate 15. Fast upon the sleeve 22 is another disk 23 located within the casing, and exterior to the casing the sleeve 22 carries another dial plate 24 of greater diameter than the dial plate 15, and

located behind said dial plates is still a third dial plate 25 fixed upon the face of the lock concentric with the other dial plates and also of greater diameter.

Each of the several disks 18, 21 and 23 is provided with a radial slot 26 extending from its periphery radially inward toward but not reaching the center of the disk, while projecting from the contiguous faces of the two disks 18 and 21 are pins 27 and 28 respectively, one being in the path of the other.

The three disks 18, 21 and 23 within the casing are so related that when their radial slots 26 are brought into coincidence with each other and with the head 6 of the lock-bolt 4 the said head 6 may be moved into these several slots, but when any one of the slots is out of line with the lock-bolt the latter is prevented from longitudinal movement by engagement with the periphery of the disk having its slot out of coincidence with the head 6 of the lock-bolt. Under these conditions the other end of the lock-bolt is always projected from the corresponding end of the casing and is engaged by a keeper (not shown) after the manner of an ordinary lock.

Now, the several dial plates 15, 24 and 25 are provided with a series of numbers, as shown, or any other indicating characteristics desired. These indicating characteristics bear certain relations to the slots 26, and thus the user, knowing such combination, is enabled to move certain of the dial plates to the proper points and thereby bring the slots 26 all into coincidence with each other and with the head 6 of the lock-bolt. When the parts are in this position the lock-bolt may, of course, be moved longitudinally to withdraw the locking end from the keeper or other part in which it engages when the parts are in the locked position.

In order to move the several parts to the several positions the knob 14 is turned with relation to the stationary dial plate 25 until the predetermined number on the dial plate 15 is in coincidence with the predetermined number on the dial plate 25 in accordance with the chosen combination. As this movement is progressing, the disk 21 which is fast to the knob is turned until the pins 27 and 28 are brought into contact, and the continued movement of the knob then causes both disks 18 and 21 to turn together until the predetermined number of the dial plate 15 has reached the predetermined number on the dial plate 25. The dial plate 24 is now turned by hand until the disk 23 has its slot in proper position, as indicated by the coincidence of the chosen number on the dial plate 25. The slots in the several disks are now in coincidence with each other and with the head 6 of the lock bolt, so that the latter may be withdrawn to the unlocked

position. By this means, where there are but two movable dial plates, there is nothing to indicate to a dishonest user of the lock that there is another slotted disk which must be moved into the proper position before the lock is in a position for permitting the withdrawal of the lock bolt from its keeper.

This lock is of very simple construction, requiring no complicated parts, and with the few parts used becomes very efficient and is as little liable to be successfully picked as are highly complicated and expensive permutation locks.

In Fig. 4 the structure is shown applied to a padlock. In this form there is shown a cylindrical casing 29 of such size as to closely embrace the disks 18, 21 and 23, while the lock-bolt portion of the casing is in the form of an extension 30 entirely inclosing the lock-bolt. In one side of the extension 30 is a slot 31 receiving the eye-end of a shackle 32 which is arc-shaped and pivoted at its other end 33 to the casing at a point diametrically opposite from the lock-bolt. By constructing the padlock in this form the eye-end of the shackle may be moved into and out of the extension 30 through the slot 31 through such a shallow arc as to approach closely a straight path, so that the length of the slot 31 is reduced to a minimum.

By the use of one stationary and two movable dial plates many thousand changes in the combination may be made.

Furthermore, the lock structure is adapted for many different purposes besides those shown. For instance, the same lock structure may be used on a trunk with the lock-bolt housed similarly to that shown in the padlock structure of Fig. 4, and the casing may be provided with a slot for the entrance of the hasp or shackle usually employed in trunk locks. These and many other changes in the structure may be made without in any manner departing from the principles upon which the invention is based, and, therefore, my invention is not limited to the exact details of structure illustrated and described.

I claim:—

1. A lock composed of a suitable casing, a lock-bolt capable of sliding therein, means for actuating said lock-bolt, a spindle, a disk having a radial entering slot and fast on said spindle, another disk loose on said spindle and also having a radial entering slot, pin connections between the two disks, a sleeve loose on said spindle, another disk fast on said sleeve also having a radial entering slot, the spindle and sleeve both projecting beyond the face of the casing, a fixed dial plate concentric with the spindle, another dial plate carried by the sleeve, and a third dial plate carried by the spindle.

2. A lock composed of a suitable casing, a

lock-bolt capable of sliding therein, means  
for actuating said lock-bolt, a spindle hav-  
ing a threaded extension of less diameter  
than the body of the spindle, a disk having  
5 a radial entering slot and fast on said spin-  
dle, another disk loose on said spindle and  
also having a radial entering slot, pin con-  
nections between the two disks, a sleeve loose  
on said spindle, another disk fast on said  
10 sleeve also having a radial entering slot, the  
spindle and sleeve both projecting beyond  
the face of the casing, a fixed dial plate con-  
centric with the spindle, another dial plate

carried by the sleeve, a third dial plate car-  
ried by the spindle, and a knob screwed on 15  
to the threaded extension of the spindle and  
clamping said third dial plate to the body  
of the spindle.

In testimony that I claim the foregoing as  
my own, I have hereto affixed my signature 20  
in the presence of two witnesses.

GEO. W. GREENE.

Witnesses:

LEO ILES,

T. F. PERKINS.