

No. 719,054.

PATENTED JAN. 27, 1903.

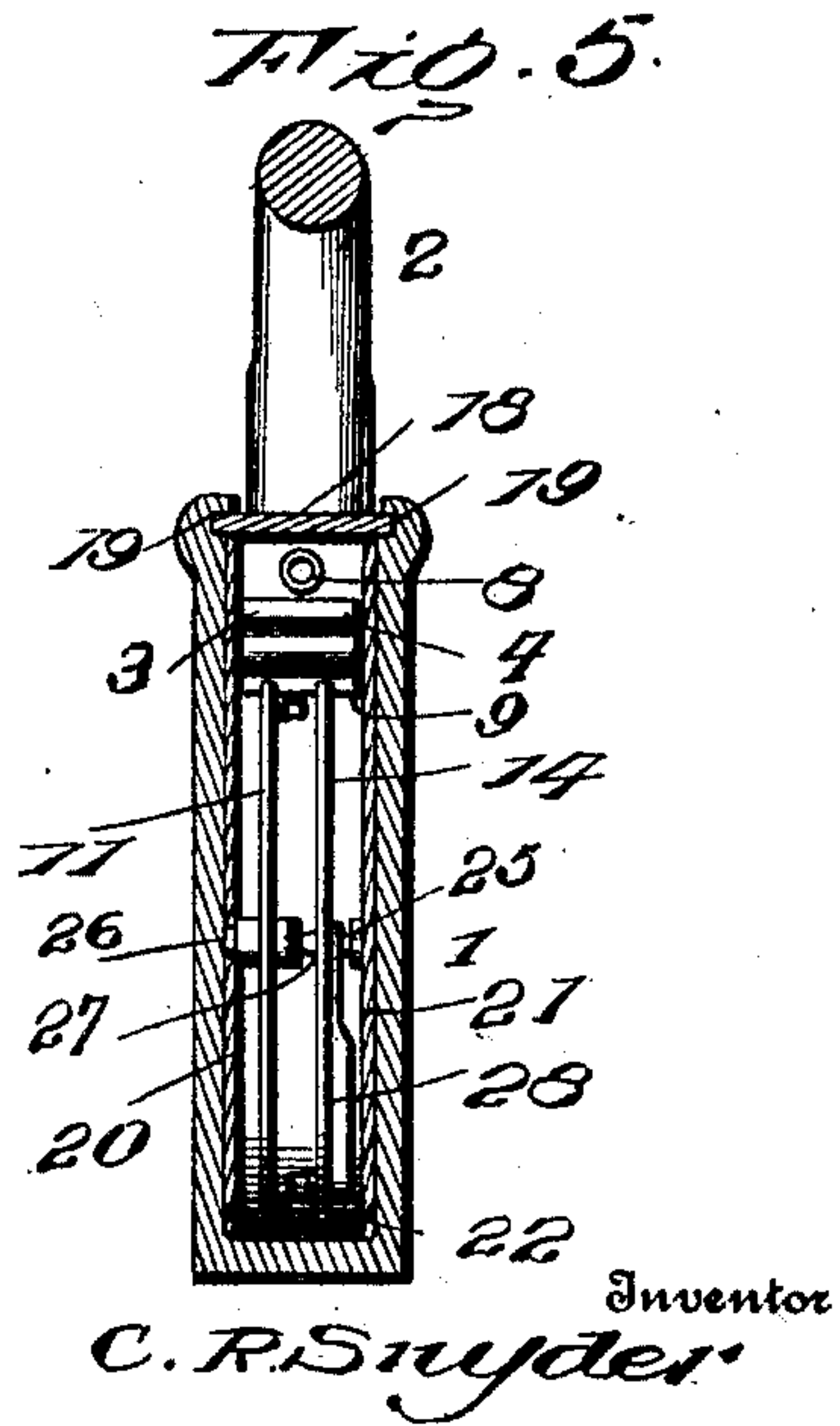
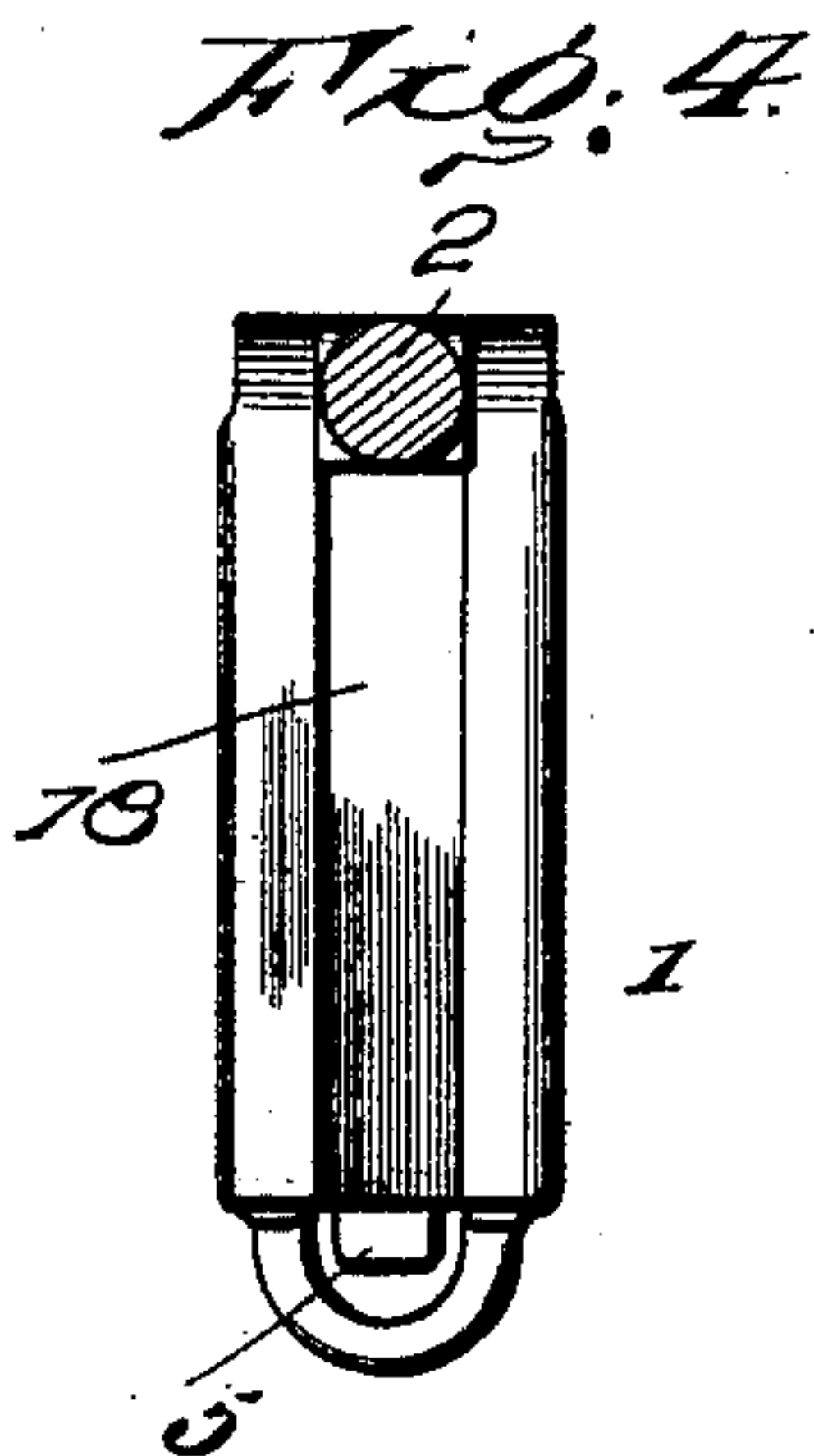
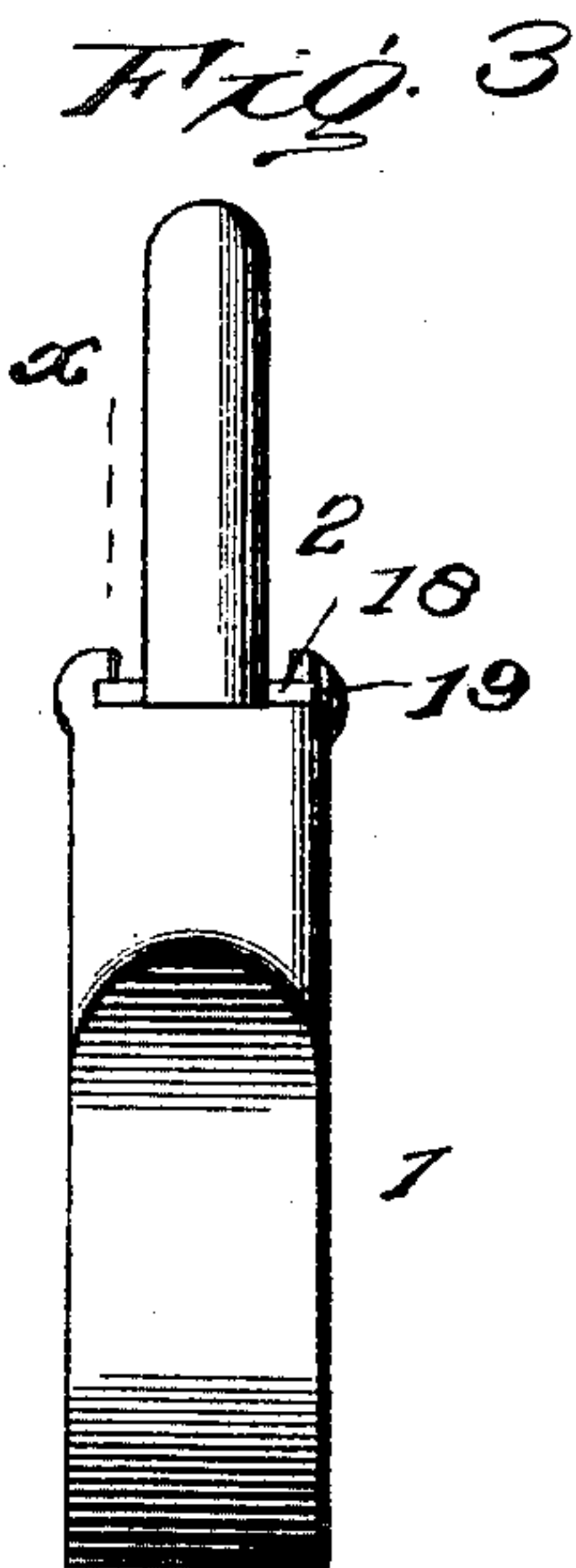
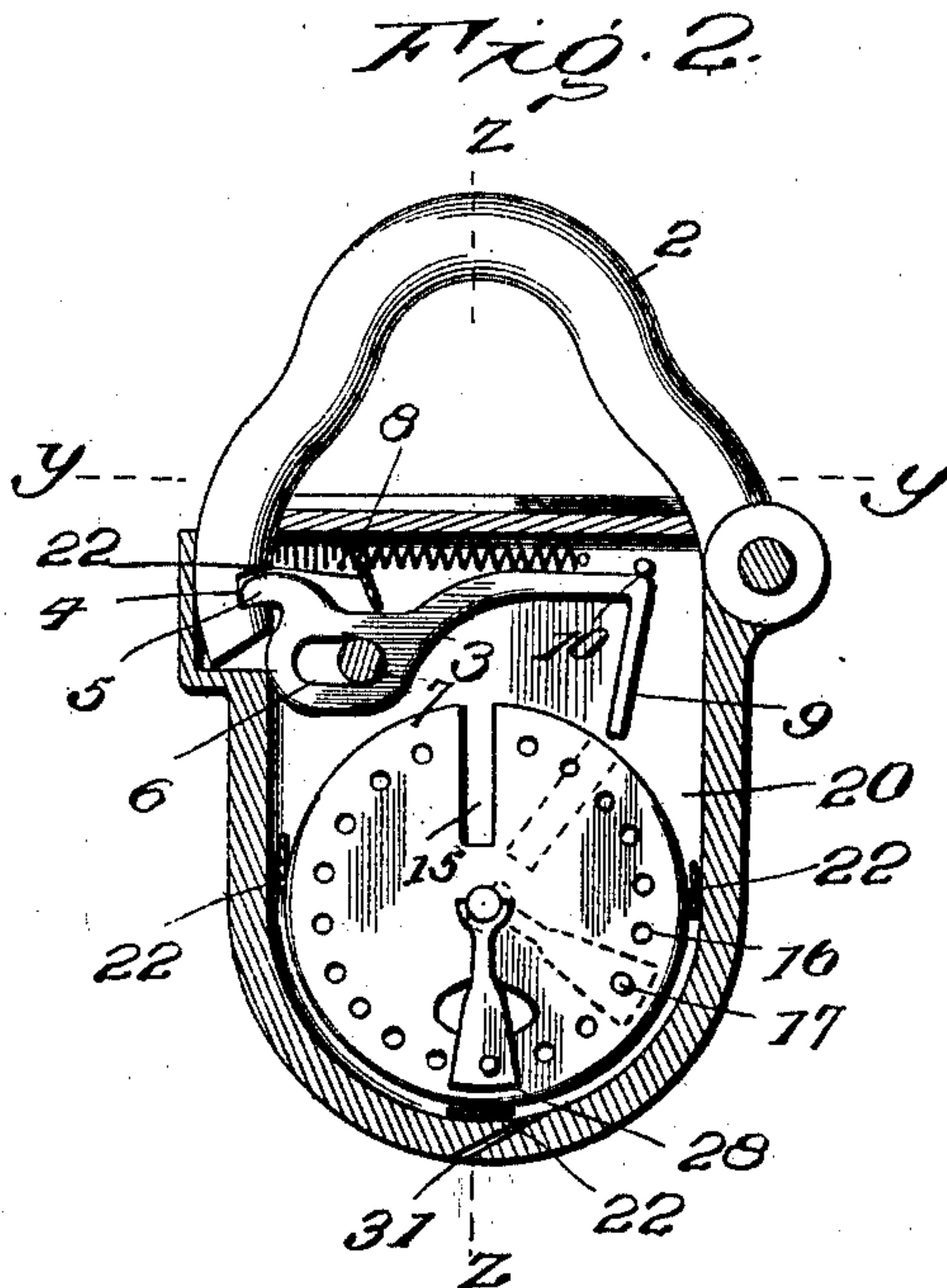
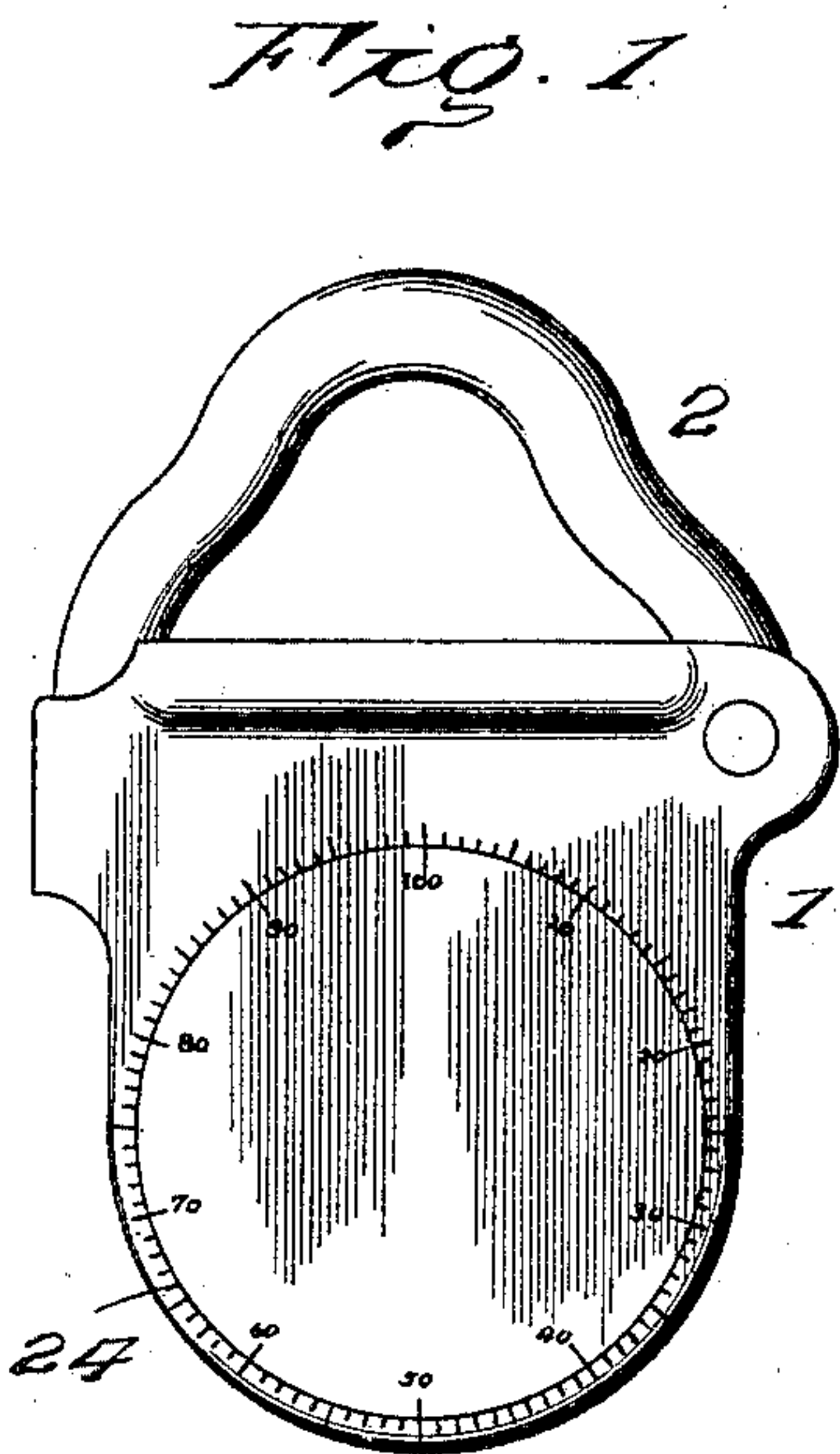
C. R. SNYDER.

PADLOCK.

APPLICATION FILED JUNE 6, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



## Witnesses

Mr. Minnie  
George Watt

*R. H. B. Carey*

Attorneys

No. 719,054.

PATENTED JAN. 27, 1903.

C. R. SNYDER.  
PADLOCK.

APPLICATION FILED JUNE 6, 1902.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 6.

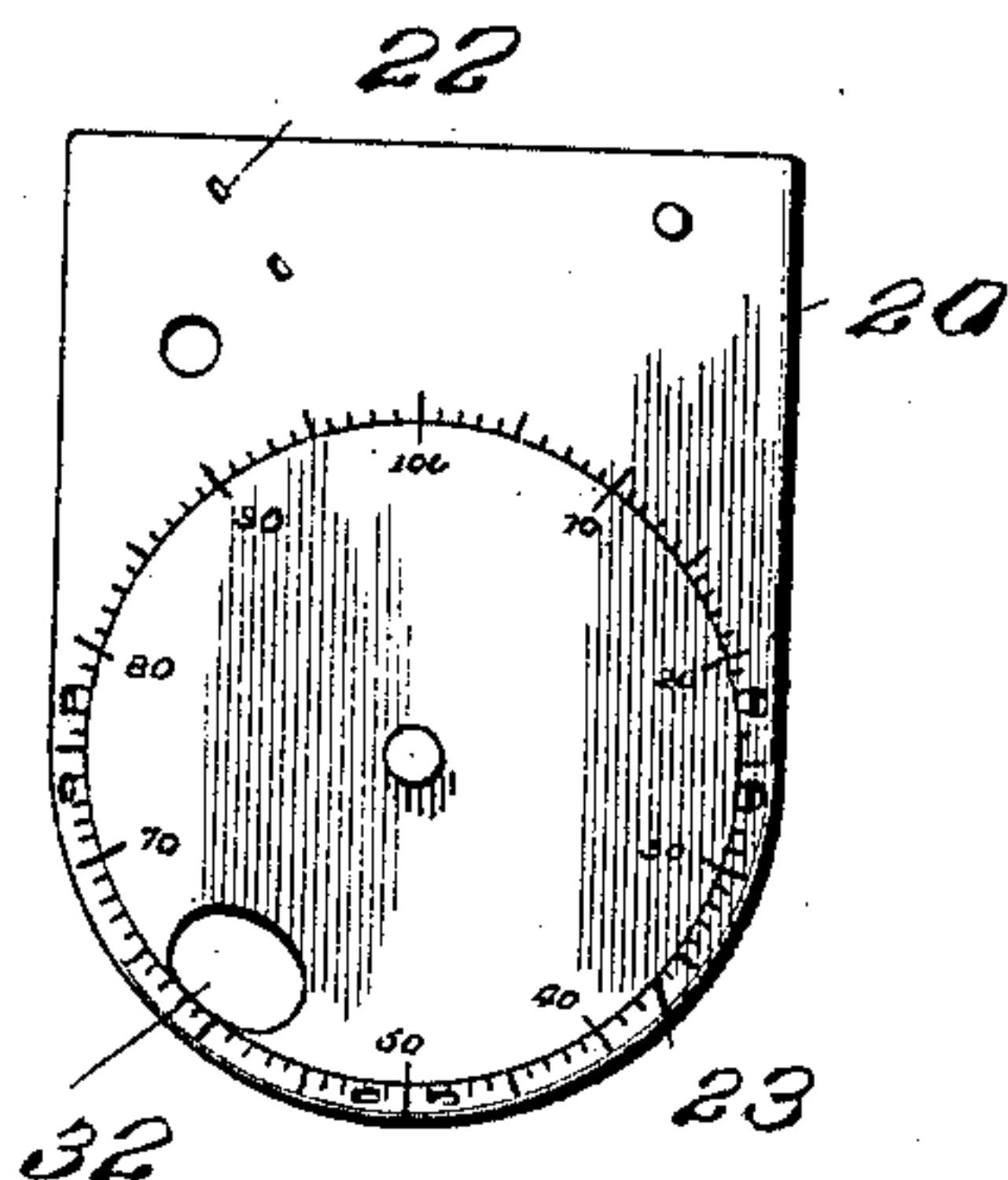


Fig. 7.

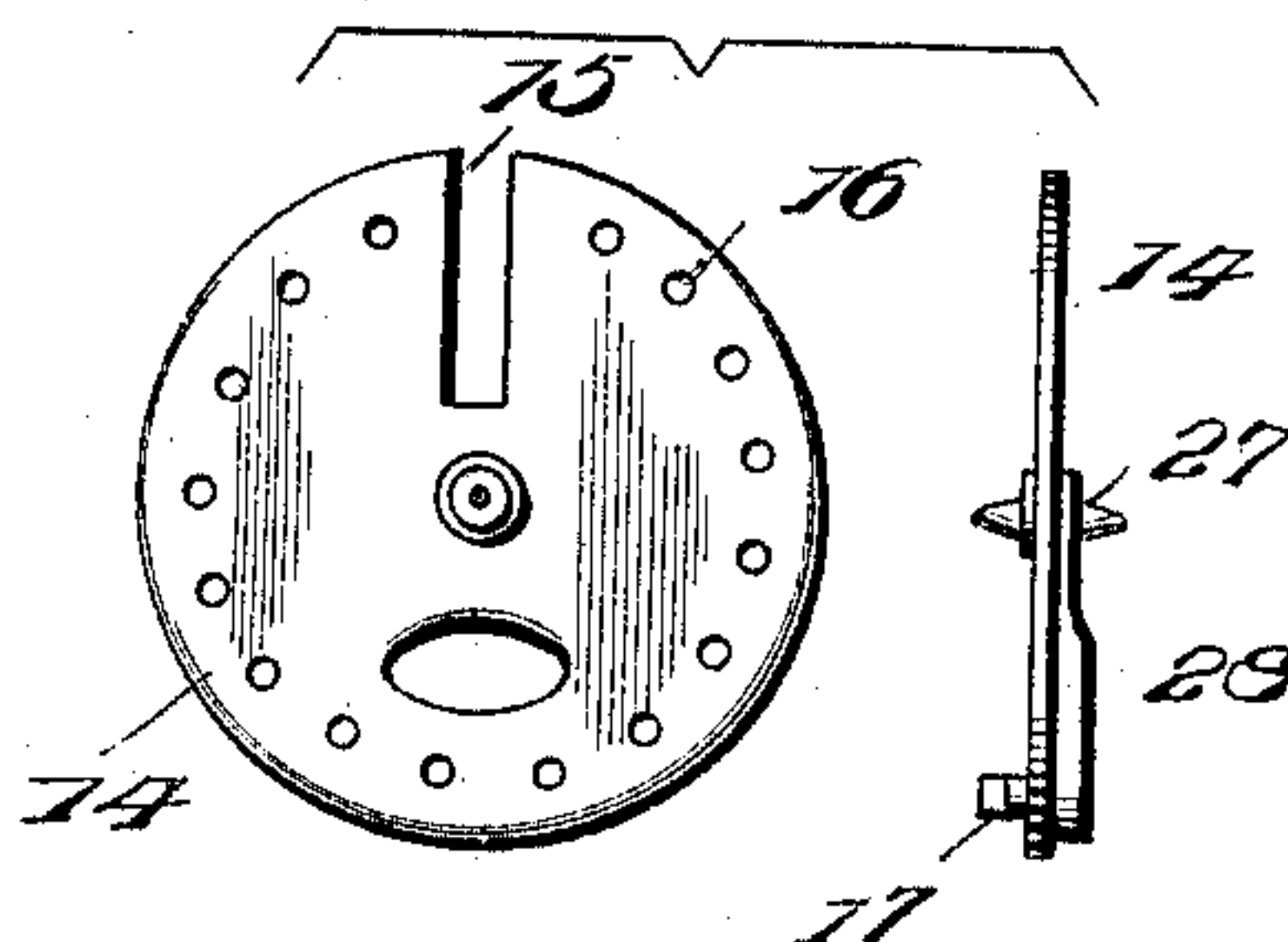


Fig. 8.

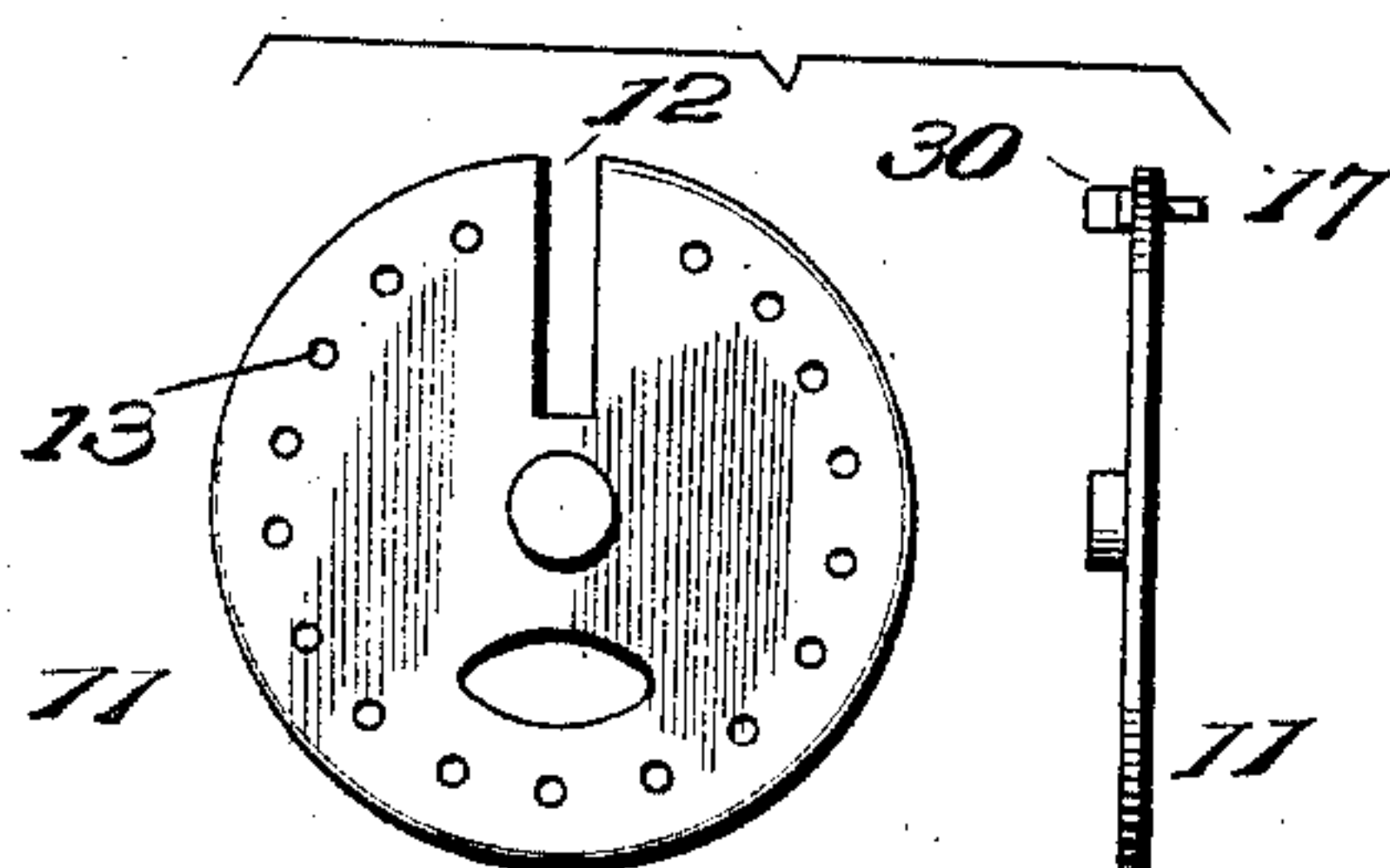


Fig. 9.

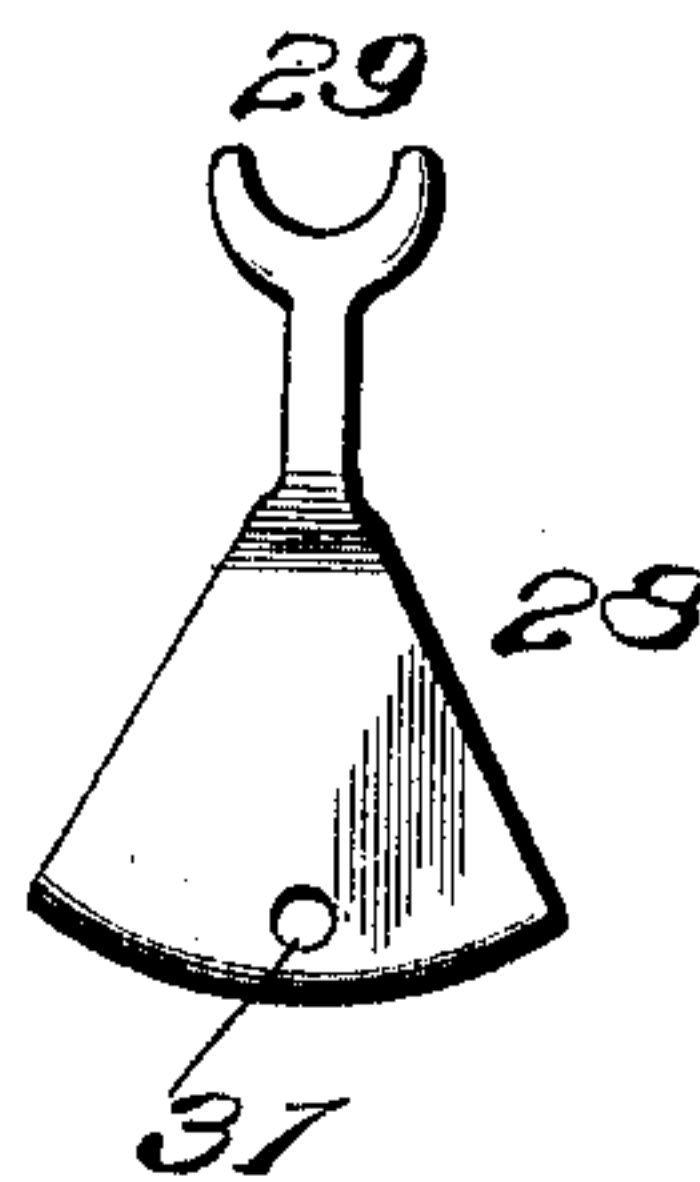


Fig. 10.

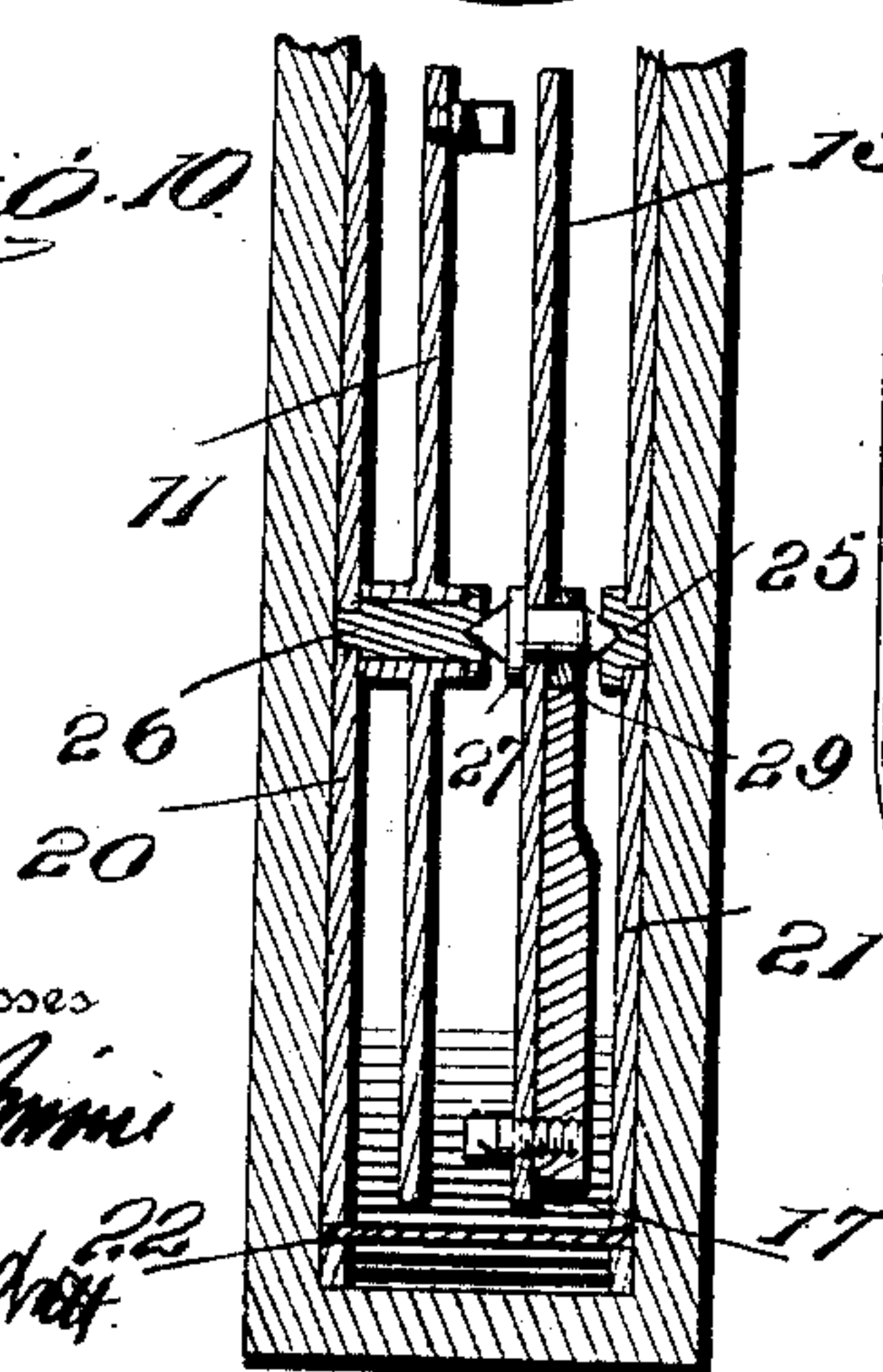


Fig. 11.

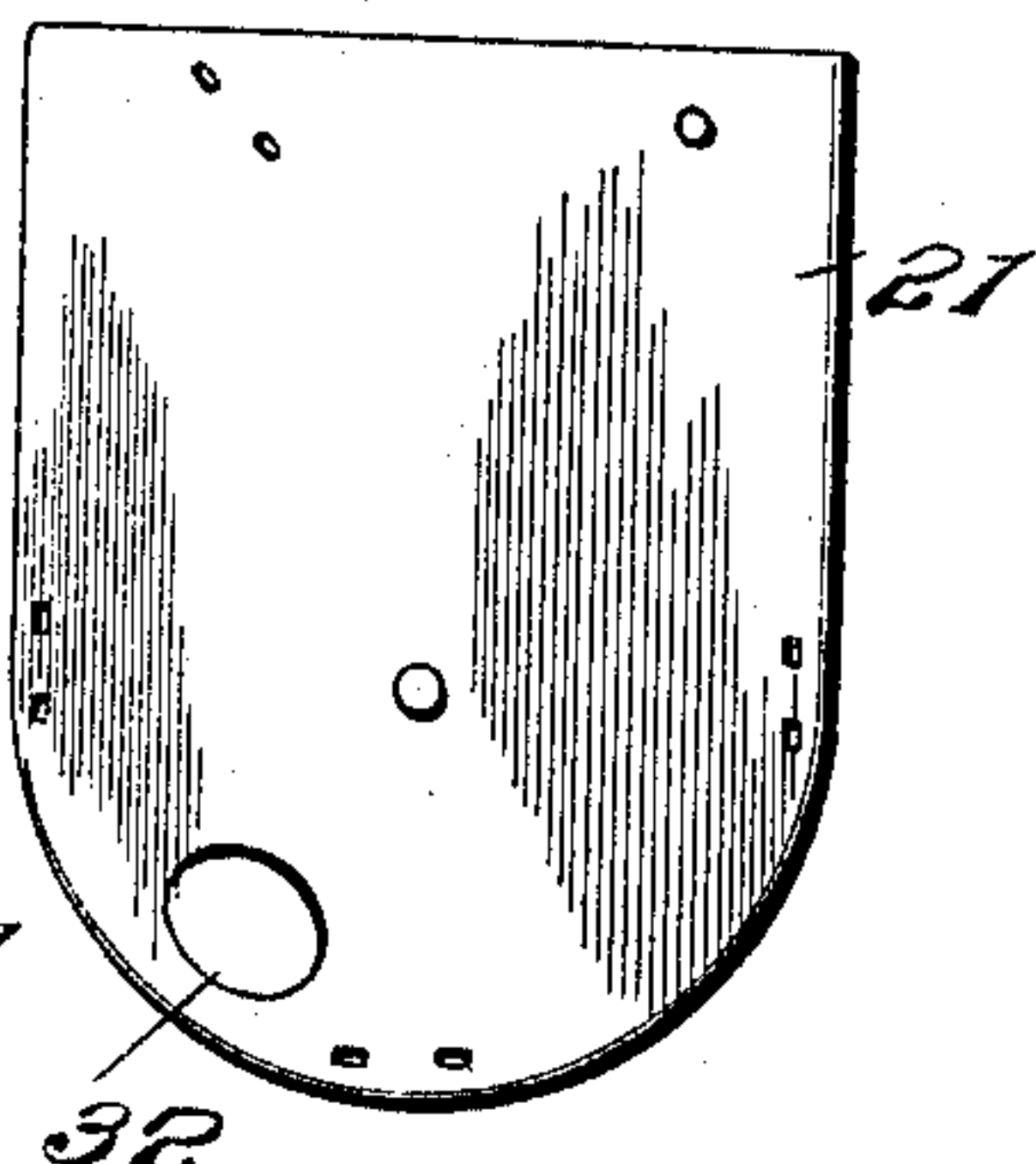


Fig. 12.



Witnesses

*John A. ...*  
*George ...*

Inventor  
C. R. Snyder

By *R. B. Lacey*

Attorneys



# UNITED STATES PATENT OFFICE.

CHARLIE R. SNYDER, OF CADIZ, OHIO.

## PADLOCK.

SPECIFICATION forming part of Letters Patent No. 719,054, dated January 27, 1903.

Application filed June 6, 1902. Serial No. 110,501. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLIE R. SNYDER, a citizen of the United States, residing at Cadiz, in the county of Harrison and State of Ohio, have invented certain new and useful Improvements in Gravity-Operated Padlocks; 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.

This invention has relation to locks which when in service are capable of being manipulated according to a predetermined plan to admit of operation of the internal mechanism by gravitative action, whereby the lock may be opened without requiring the use of a key or other instrument requiring operation by hand.

The invention is adapted more particularly for padlocks, and is illustrated in this connection in the drawings, although it is contemplated to apply the principle to locks of any type capable of being turned, inverted, and similarly manipulated to admit of actuation of the mechanism by gravitative action.

In accordance with this invention the lock comprises a lock-bolt, a balanced tumbler, a gravity-operated tumbler, and coöperating stops between the two sets of tumblers, whereby the balanced tumbler is properly positioned by means of the weighted tumbler and the latter subsequently positioned by gravitative force, so as to admit of operation of the lock-bolt when opening the lock.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a padlock embodying the invention. Fig. 2 is a section thereof on the line X X of Fig. 3. Fig. 3 is an edge view. Fig. 4 is a plan section on the line Y Y of Fig. 2, the free end of the bow being omitted. Fig. 5 is a section about on

the line Z Z of Fig. 2 looking to the right, the lock-bolt, tumblers, and parts coöperating therewith being in full. Fig. 6 is a detail view in elevation of the frame removed from the casing. Fig. 7 shows, respectively, a side elevation and an edge view of the weight or gravity-operated tumbler. Fig. 8 shows views similar to Fig. 7 of the balanced tumbler. Fig. 9 is a front view of the weight on a larger scale. Fig. 10 is an enlarged section of the frame and tumblers, showing the mountings and stops on a larger scale. Fig. 11 is an elevation of the rear plate of the frame. Fig. 12 is a perspective view of one of the stops adapted to be applied to either one of the tumblers at the desired position.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The casing 1 may be of any form, depending upon the pattern, make, or style of lock to which the invention is applied. The lock shown being of the padlock variety is provided with a bow 2, pivoted at one end to a corner of the casing and adapted to have its opposite end enter the casing at the opposite corner and become engaged by means of a lock-bolt 3. The notch 4, near the free end of the bow, is inclined so as to engage under the nose or cog 5 of the lock-bolt, thereby preventing opening of the lock by a smart blow delivered upon the edge of the casing adjacent to the pivot of the bow 2. The lock-bolt 3 is mounted for pivotal and sliding movements and is provided near one end with an elongated opening or slot 6, through which a pin 7 passes and upon which the lock-bolt is pivotally and slidably mounted. A spring 8 exerts a pressure upon the lock-bolt to normally hold its nose or cog 5 in engagement with the notch 4 of the bow. The tail end of the lock-bolt is provided with a dog 9, adapted to enter the gateways of the tumblers when opening the lock. The upward movement of the lock-bolt at the end provided with the dog 9 is limited by means of a pin 10.

To illustrate the invention in its simplest form, two tumblers only are shown, one being balanced, the other weighted. However, it is to be understood that the tumblers may be provided in any series, according to the



required cost, character, and type of lock desired. The tumblers are pivotally mounted and consist, preferably, of disks having gateways to be brought into coincident relation and position, so as to receive the dog 9 when it is required to open the lock. The tumbler 11 is balanced and is provided with a gateway 12 and a series of openings 13 near its periphery. The tumbler 14 is weighted or gravity-operated and is coaxially mounted with the tumbler 11 and is provided with a gateway 15. The tumblers 11 and 14 are of equal diameter, and each has a portion cut therefrom at a point diametrically opposite the cut-away part, so as to compensate for the amount of metal removed by said gateway, so as to balance the tumbler, this being essential in the case of the tumbler 11. The tumbler 14 is provided near its periphery with a series of openings 16 for the same purpose as the openings 13—namely, to admit of changing the combination by differently positioning the stops 17, projected from proximal sides of the tumblers. The tumblers are mounted for independent movement, the position of the balanced tumbler being controlled by the weighted tumbler, as will appear more fully hereinafter.

The tumblers and the lock-bolt constitute the essential elements of the lock mechanism and may be mounted in any convenient way.

To admit of access being readily had to the working parts, especially when the casing is of integral construction or so formed as to prevent removal of any of its sides, the operating parts are fitted to a frame which is removably inserted into the casing through the upper end, which is open and adapted to be closed by a slide 18, operating in the ways 19 and held in place by the bow, said slide being readily removable when the bow is open, thereby admitting of withdrawal of the frame from the casing. The frame comprises corresponding plates 20 and 21, connected in any convenient way, as by means of pins 7 and 10 and tie-pieces 22. One of the plates, as 20, is graduated on its outer side, as shown at 23, the graduations corresponding in every particular with like graduations 24 on the outer side of the casing 1, the graduations being in circular form and determining the position of the lock when turning or manipulating it preliminary to opening. A bearing 25 is affixed to or projects from the inner side of the plate 1, and a corresponding bearing 26 projects from the inner face of the plate 20, the two bearings 25 and 26 being in transverse alinement and having conical depressions in their ends to receive the points of cone-bearings of a stub-shaft 27, secured to the tumbler 14, so as to rotate therewith. The tumbler 11 is loosely mounted upon the bearing 26, so as to turn freely thereon.

A stop 17 is adapted to be fitted to a selected opening 13 or 16 of the tumblers, and these stops face inward and are adapted to come in contact, so as to cause both tumblers to move

in unison in one direction, thereby admitting of the balanced tumbler being operated by means of the weighted tumbler. After the balanced tumbler has been moved to the predetermined position, so as to bring its gateway 12 in position to receive the dog 9 of the lock-bolt, the weighted tumbler is free to move in an opposite direction to admit of its gateway being brought in coincident relation with the gateway 12, whereby the dog 9 may enter the gateways 12 and 15 upon pulling upward upon the latch end of the bow 2, the lock-bolt turning upon the pin 7 as the latch end of the bow is withdrawn from the casing and the dog 9 entering the gateways of the tumblers. The lock-bolt is moved in opposition to the tension of the spring 8, and the instant the latch end of the bow clears the nose or cog 5 of the lock-bolt the spring 8, regaining itself, returns the lock-bolt to a normal position. When the latch end of the bow is thrust into the casing, as when in the act of securing the lock, its beveled end coming in contact with the nose or cog 5 represses or slides the lock-bolt inward to permit of the entrance of the latch end of the bow to the limit of its movement, and when the notch 4 comes opposite to the part 5 the lock-bolt is shot forward by the spring 8 and its nose or cog 5 enters said notch 4, thereby securing the lock, as will be readily comprehended.

The weight 28 is adapted to be secured to the tumbler 14 at any point, according to the combination determined upon for opening the lock. This weight may be of any form and, as shown, has the outline of a segment and is provided at one end with a fork 29 to receive a part of the shaft 27, thereby preventing turning of the weight upon the single fastening securing it to the tumbler 14, and which in the present instance is the stop 17, applied to said tumbler. The stops 17 have threaded shanks to pass through a selected opening 13 or 16 of the tumblers and receive either a nut 30 or enter a screw-threaded opening 31 of the weight 28. In order to admit of changing the position of the stops 17, each of the plates of the frame is provided with an opening 32 for the insertion of a suitable tool or instrument to admit of removing and placing the stops in the required position.

The lock being secured and it being desired to open the same, it is manipulated by turning the case in the proper direction, either to the right or to the left, so as to bring the stop 17 of the weighted tumbler in contact with the stop 17 of the balanced tumbler, the lock being turned to cause the weighted tumbler to move the balanced tumbler to the proper position, which is with its gateway 12 in position to receive the dog 9. The lock is manipulated with reference to an imaginary perpendicular line, the case being turned in the predetermined direction, either to the right or to the left, until the first indication of the combination coincides with the aforesaid imaginary perpendicular line. During this opera-



tion the stop 17 of the weighted tumbler 14 engages with the cooperating stop of the balanced tumbler 11 and moves the latter to a position so as to bring its gateway 12 opposite to the dog 9 to receive the same when the lock-bolt is actuated to release the bow 2. The lock is now turned in the opposite direction to bring the next indication of the combination in coincidence with the aforesaid imaginary perpendicular line, thereby bringing the gateway 15 thereof in coincident relation with the gateway 12 of the balanced tumbler and in position to receive the dog 9. During the second operation of the lock the weighted tumbler moves in a direction to carry its stop away from the stop of the balanced tumbler, the latter remaining in the adjusted position by reason of the inertia of its parts, the friction between the pivot-bearings of said balanced tumbler being insufficient to overcome the inertia of the balanced tumbler to move it to any appreciable extent, so as to throw the gateway 12 out of line with the dog 9. The gateways of the tumblers and the dog 9 are of such relative proportions as to allow for variations, a nicety of adjustment not being necessary in order to position the tumblers to admit of opening of the lock in the manner stated. After the tumblers have been moved to bring their gateways opposite to the dog 9 of the lock-bolt the lock may be opened by pulling upon the catch end of the bow 2, the lock-bolt turning upon the pin 7 and its dog 9 entering the gateways of the tumblers. The dog 9 upon entering the gateways 12 and 15 turns the tumblers slightly and upon leaving the said gateways under the rebounding action of the spring 8 moves such force as to throw the gateways out of register with each other and with the dog, so that it is necessary to manipulate the lock, as before explained, in order to bring the gateways in position to receive the dog 9 before the lock can be opened.

A drain-opening 31 is provided in the bottom portion of the case for the escape of any water or moisture finding its way therein.

Having thus described the invention, what is claimed as new is—

1. In a lock, and in combination with the lock-bolt, balanced and weighted tumblers adapted to cooperate with the lock-bolt and adapted to be properly positioned by gravitative force, substantially as set forth.

2. In a lock, and in combination with the lock-bolt, a series of cooperating tumblers coaxially mounted and comprising balanced and gravity-operated elements to be properly positioned by manipulation of the lock, substantially as specified.

3. In a lock, and in combination with the lock-bolt, balanced and weighted tumblers coaxially mounted, and stops projected from proximal sides of the tumblers for engagement, whereby the gravity-operated tumbler

is adapted to properly position the balanced tumbler, substantially as specified.

4. In a lock, the combination with the lock-bolt, tumblers for cooperation with the lock-bolt, one of the tumblers being balanced, a weight having adjustable connection with another tumbler and adapted to properly position the tumblers by gravitative force, and engaging means between the tumblers, whereby motion may be transmitted from one to the other, substantially as specified.

5. In a lock, and in combination with the lock-bolt, coaxially-mounted tumblers, a weight adapted to be applied to one of the tumblers at any point and having a fork at one end for engagement with the shaft of the tumbler, and a pin for securing the weight to the tumbler and adapted to engage with a projecting part of the adjacent tumbler to position it, substantially as specified.

6. In a lock, and in combination with the lock-bolt, coaxially-mounted tumblers having openings near their peripheries, one of the tumblers being balanced, a weight applied to the other tumbler to admit of actuating the lock mechanism by gravitative force, and pins fitted in selected openings of the tumblers and adapted to come in contact whereby the gravity-operated tumbler may serve to transmit motion to the adjacent balanced tumbler, substantially as set forth.

7. In a lock, and in combination with the lock-bolt having a dog, a series of tumblers coaxially mounted and having gateways for reception of the said dog and adapted to be positioned by gravitative force, substantially as set forth.

8. In a lock, and in combination with the lock-bolt, transversely-alined bearings, a tumbler loosely mounted upon one of the bearings, a second tumbler located between said bearings and having a stub-shaft journaled therein, a weight adapted to be secured to the last-mentioned tumbler at any point, and pins adapted to be applied to the tumblers at any point to admit of opening the lock by a predetermined combination, substantially as set forth.

9. In a padlock, the combination of the bow having a notch near its free end, a lock-bolt mounted for pivotal and sliding movements and having a nose or cog to engage with the said notch of the bow, and gravity-operated tumblers cooperating with said lock-bolt, substantially as set forth.

10. In a padlock, the combination of the bow having an inclined notch near its free end, a lock-bolt pivotally and slidably mounted and having an inclined nose or cog to engage with the said inclined notch of the bow and provided with a dog, and gravity-operated tumblers having gateways for reception of the said dog, substantially as set forth.

11. In a lock, and in combination with the casing provided with a scale upon its outer side, a frame removably fitted within the cas-



ing and having a corresponding scale, a lock  
mechanism applied to the frame and adapted  
to be properly positioned according to a pre-  
determined combination determined by the  
5 scales upon the frame and case, substantially  
as set forth.

12. In a padlock, a casing having its upper  
end open, a frame provided with a lock mech-  
anism and insertible into the case through its  
10 open end, and a slide for closing the open end

of the case and holding the frame in place,  
said slide being retained in position by the  
bow of the lock, substantially as set forth.

In testimony whereof I affix my signature  
in presence of two witnesses.

CHARLIE R. SNYDER. [L. S.]

Witnesses:

WM. C. SMOCK,  
MARSHALL B. GOODING.