

No. 617,980.

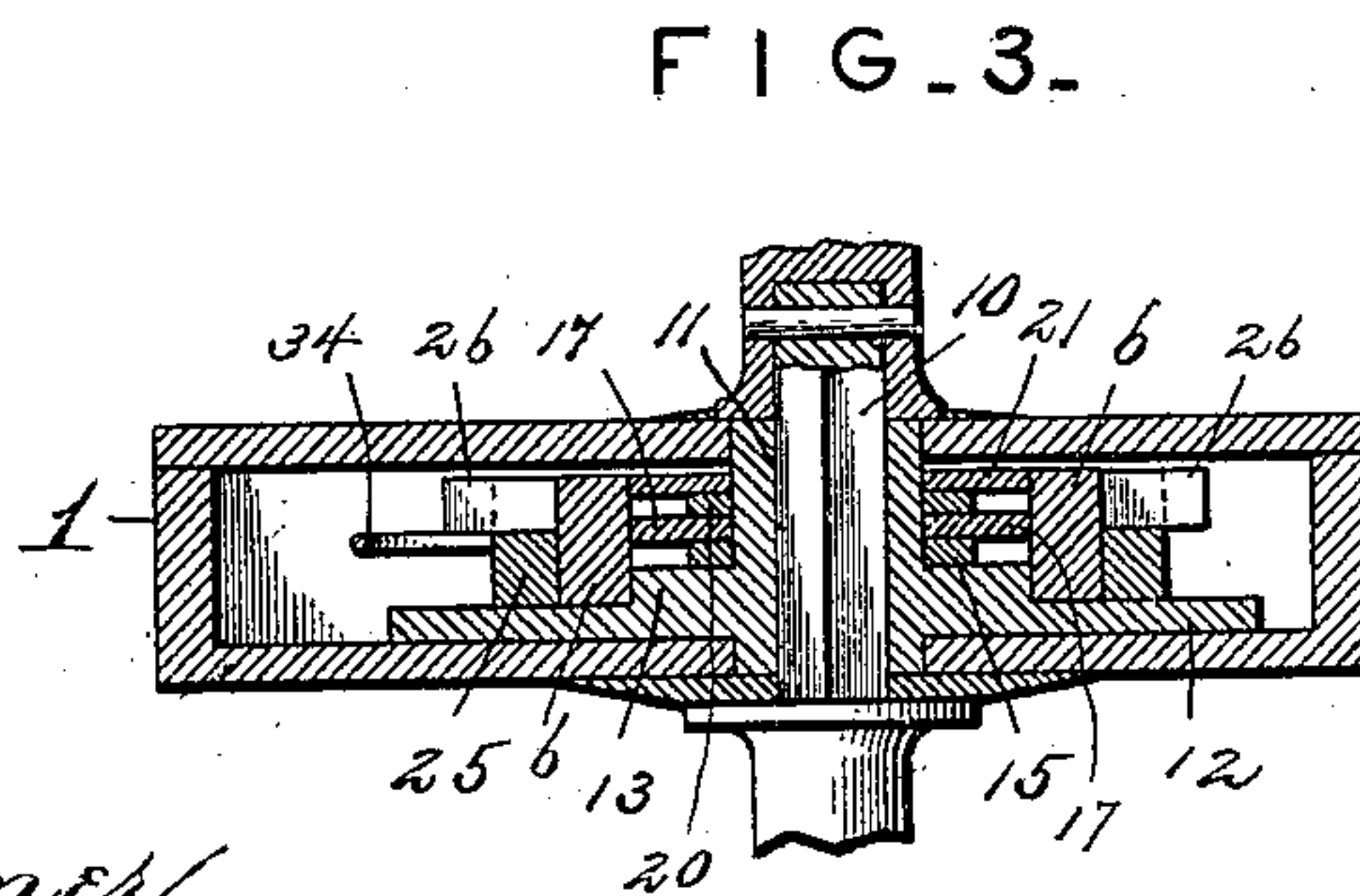
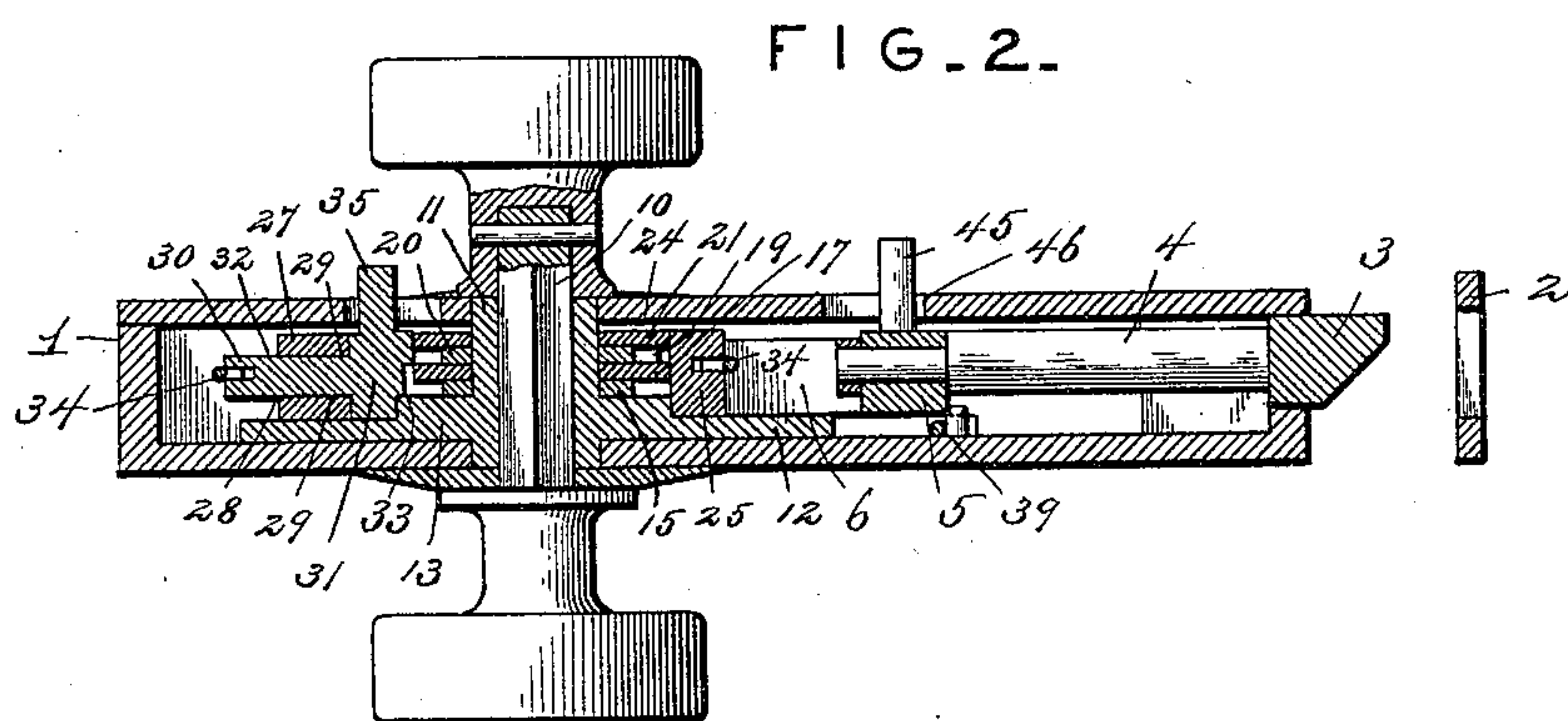
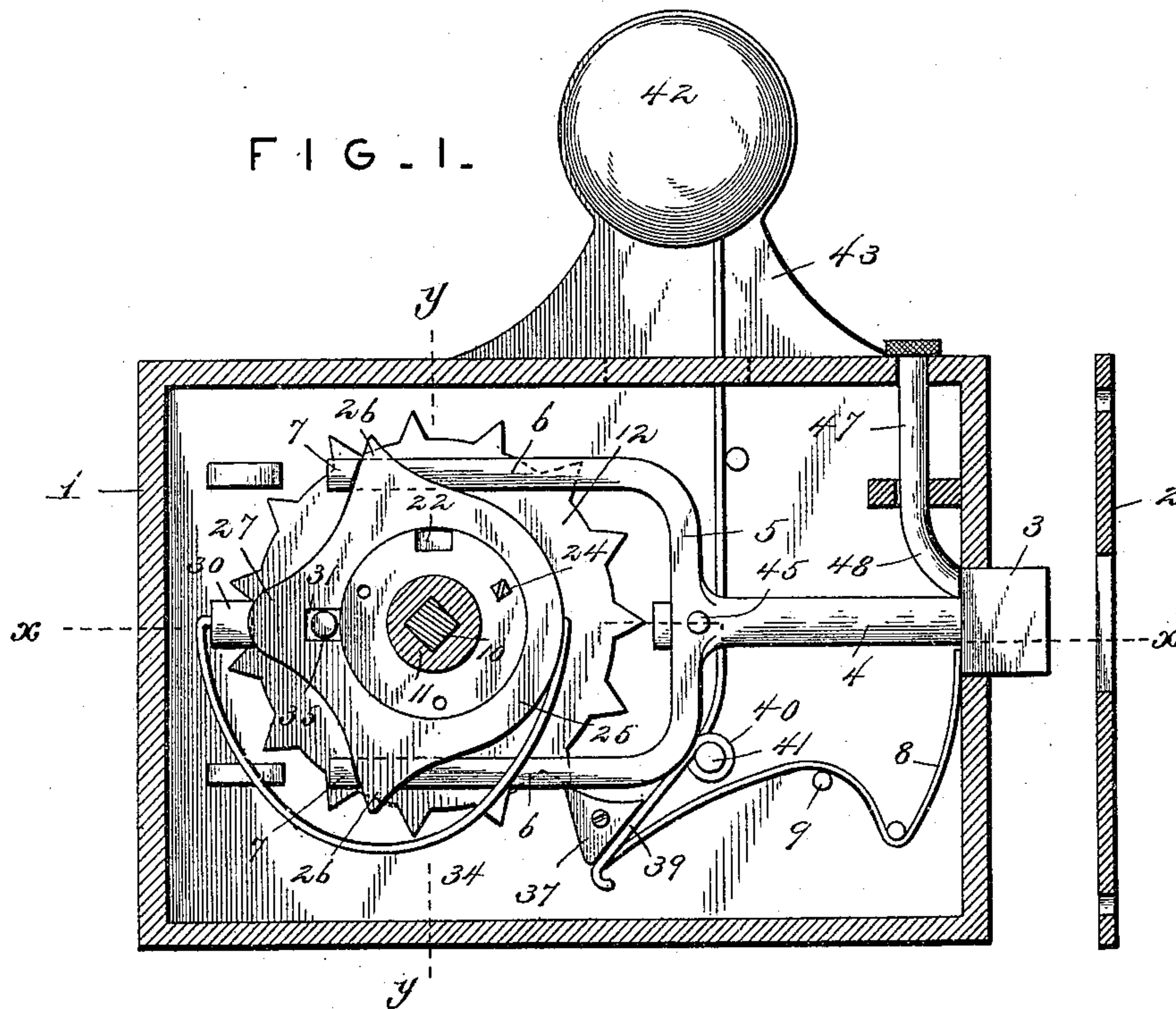
Patented Jan. 17, 1899.

J. ARNER.  
KEYLESS DOOR LOCK.

(Application filed Jan. 10, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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2 Sheets—Sheet 2.

FIG. 4.

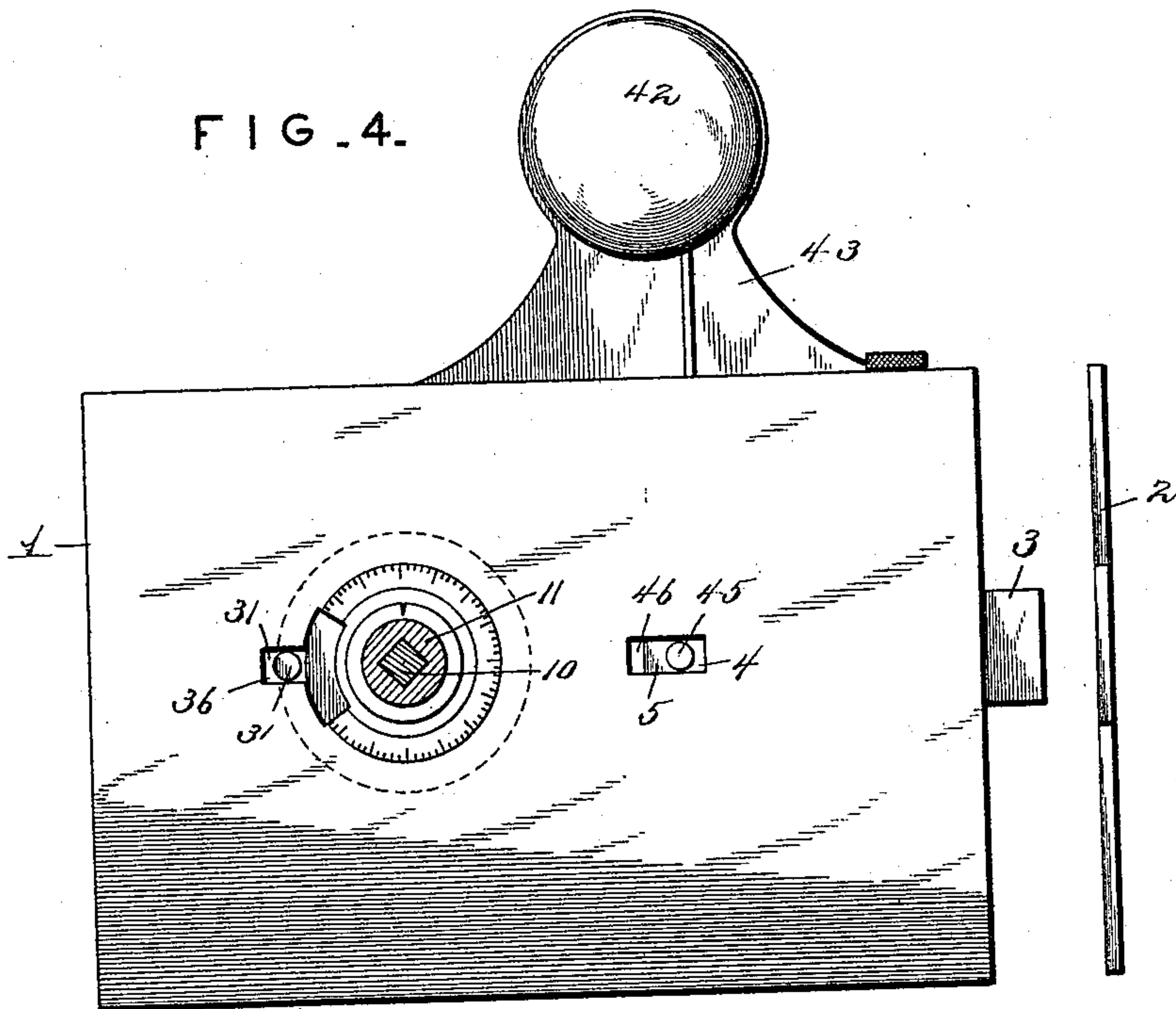


FIG. 5.

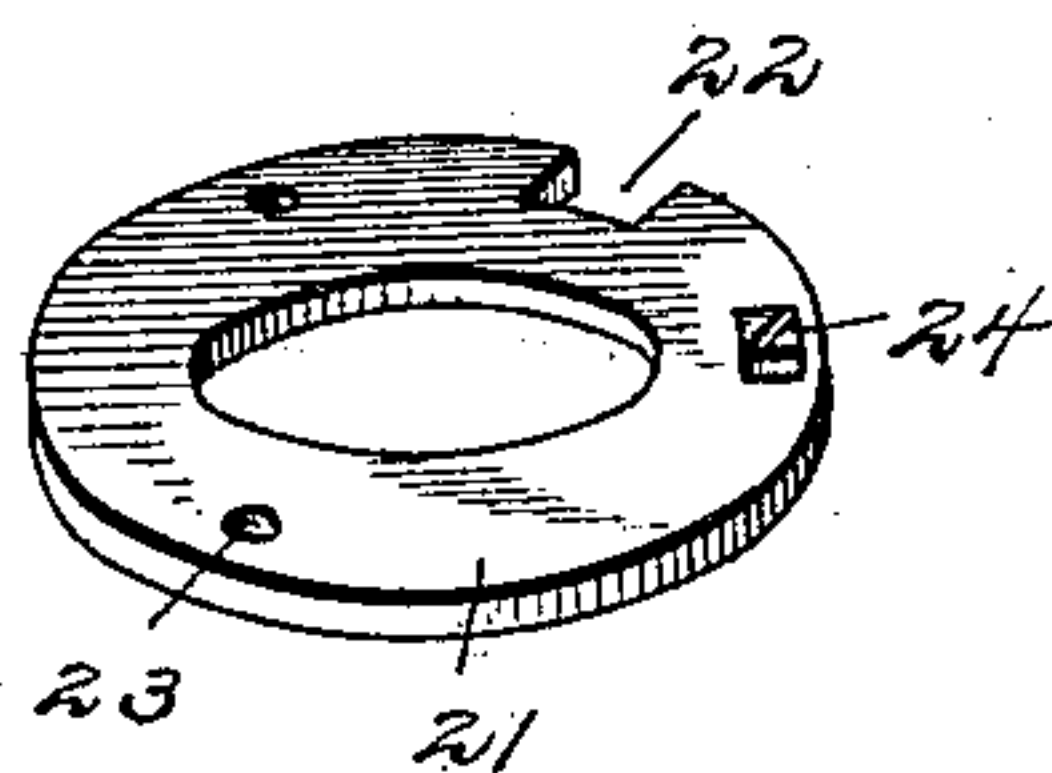


FIG. 7.

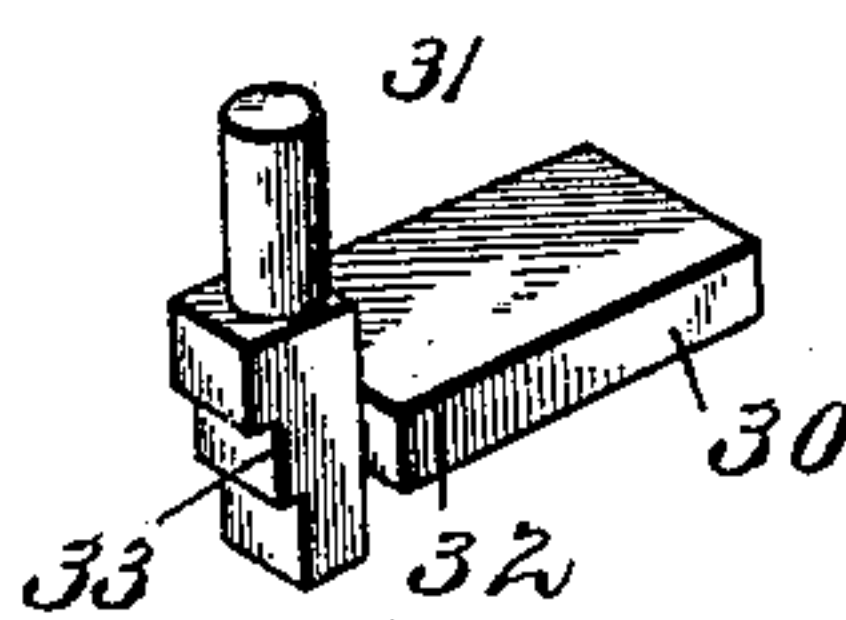


FIG. 6.

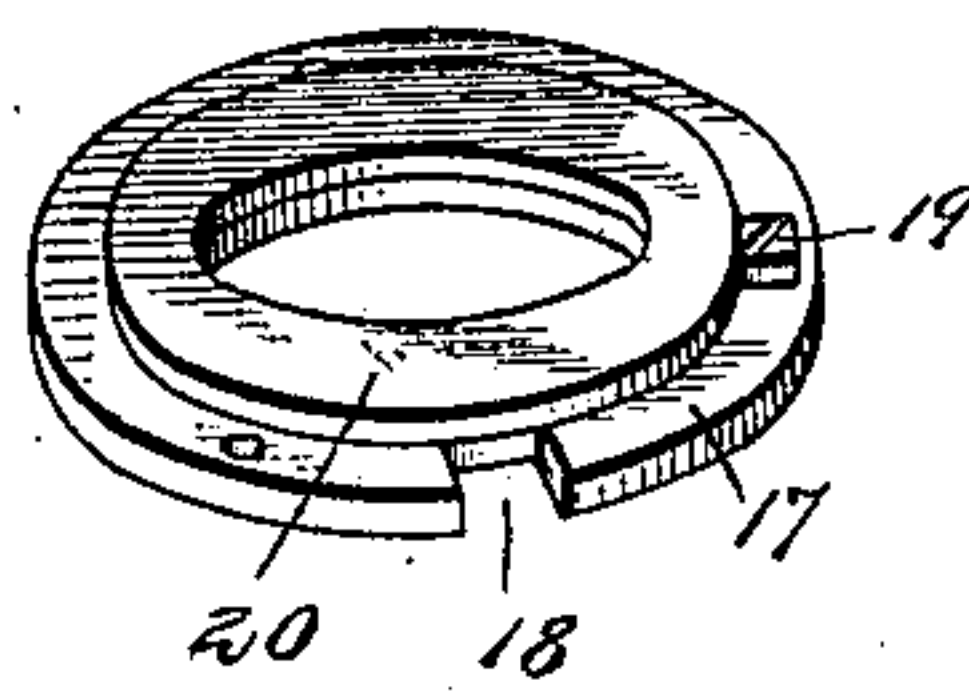
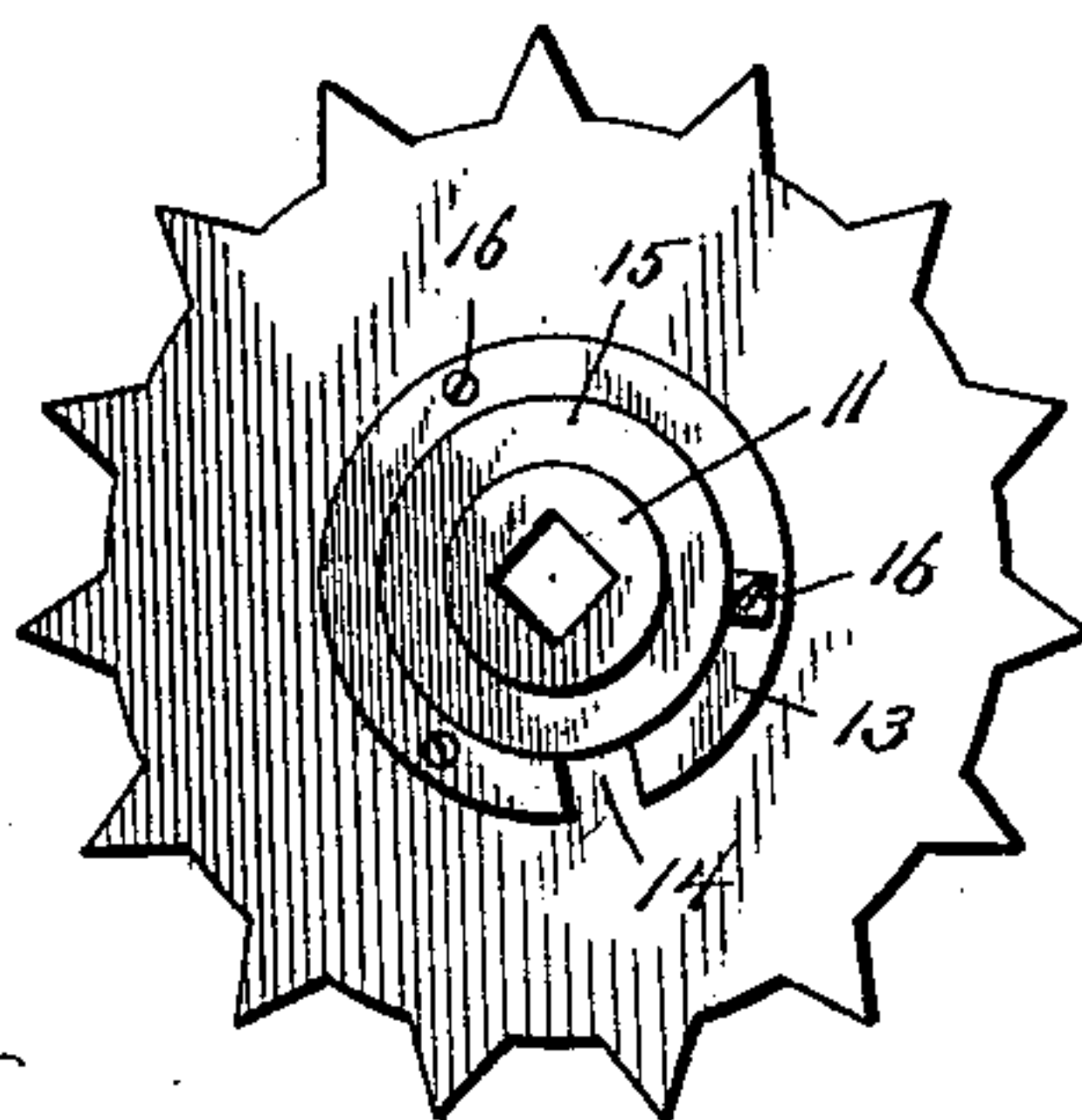


FIG. 8.



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# UNITED STATES PATENT OFFICE.

JOSEPH ARNER, OF WEISSPORT, PENNSYLVANIA.

## KEYLESS DOOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 617,980, dated January 17, 1899.

Application filed January 10, 1898. Serial No. 666,210. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH ARNER, a citizen of the United States, residing at Weis-  
port, in the county of Carbon and State of  
5 Pennsylvania, have invented certain new and  
useful Improvements in Keyless Door-Locks;  
and I do hereby declare the following to be a  
full, clear, and exact description of the inven-  
tion, such as will enable others skilled in the  
10 art to which it appertains to make and use  
the same.

This invention relates to keyless door-locks;  
and it consists in the details of construction  
and arrangement of the several parts, which  
15 will be more fully hereinafter described and  
claimed.

The object of the invention is to provide a  
combination lock and latch for a door that  
cannot be opened, when set, by any one except  
20 through an acquaintance with the combina-  
tion and the operation of the lock and which  
will defeat nefarious attempts to force an en-  
trance into an apartment through the door  
upon which the lock is located.

25 In the accompanying drawings, Figure 1 is  
a sectional elevation of the lock-casing and  
lock embodying the invention, showing the  
striker-plate adjacent thereto. Fig. 2 is a  
section on the line *x x* of Fig. 1. Fig. 3 is a  
30 section on the line *y y* of Fig. 1. Fig. 4 is an  
elevation of the lock with the casing applied  
thereto. Figs. 5 and 6 are detail views of co-  
acting annular disks. Fig. 7 is a detail per-  
spective view of the dog carried by part of  
35 the device. Fig. 8 is a top plan view of the  
toothed wheel and disk mounted thereon.

Referring to the drawings, wherein similar  
numerals of reference are employed to indi-  
cate corresponding parts in the several views,  
40 the numeral 1 designates a lock-casing of  
any preferred form of construction and ma-  
terial and, as shown, preferably rectangu-  
lar in shape, being provided with an inter-  
ior arrangement to accommodate the dif-  
ferent mechanisms hereinafter more fully re-  
ferred to.

Adjacent to the lock-casing a striker-plate  
2 is located, as in ordinary constructions  
of this character. Within the casing a slid-  
50 ing bolt 3 is mounted, having a head at the  
outer end adapted to pass through one end  
of the said casing and engage the striker-

plate 2. Extending from the head of the bolt  
is a shank 4, and at the inner termination of  
the latter a yoke 5 is connected to or inte- 55  
grally formed with said shank. The yoke  
consists of a curved member directly secured  
to or formed with the said shank, at the cen-  
tral portion thereof, and having opposite lon-  
gitudinally-disposed parallel arms 6 with en- 60  
gaging lugs 7 on the rear end thereof and  
which stand out from one side. The bolt-  
head is engaged at its inner end by the free  
end of a flat spring 8, which is held in the  
bed of the lock-casing by suitable retaining 65  
lugs or projections 9, its opposite end being  
also free for a purpose which will be herein-  
after more fully described.

Extending transversely through the casing  
is a knob-spindle 10, of angular form and 70  
passing through a collar 11, having a corre-  
sponding opening therein, which is secured to  
the toothed wheel 12, adapted to be rotated  
by the movement of the said knob-spindle  
and lying flat against the adjacent portion of 75  
the casing. On the said toothed wheel 12  
and surrounding the collar 11 is a disk 13,  
having a notch 14 in one portion thereof, and  
also surrounding the said collar and resting  
on the disk is a space-ring 15. The disk 13, as 80  
well as the ring 15 and the toothed wheel 12,  
all move with the collar 11, and the said disk 13  
is a part of wheel 12. A screw 16 is mounted in  
said disk 13 and formed with an angular head  
which stands out from the adjacent surface of 85  
the said disk, and this screw may be changed  
from one position to another in rearranging  
the combination of the lock. Over the collar  
11 and resting against the space-ring 15 is a  
second disk or tumbler 17, also formed with 90  
a notch or gate 18 in the edge thereof and  
having adjustably mounted therein angular-  
headed screws 19, projecting from opposite  
sides. These screws may be adjusted to  
change the combination of the lock by being 95  
placed in other screw-openings formed in the  
said disk 17. Next to the disk 17 and also  
surrounding the collar 11 is a space-collar 20,  
and thereagainst is placed a third disk or  
100 tumbler 21, through which the end of the col-  
lar 11 projects. The said disk 21 has a notch  
22 in the edge thereof and screw-openings 23  
at regular intervals. One of the said open-  
ings has removably mounted therein an an-



gular-headed screw 24, which projects over the periphery of the space-ring 20. The said disks, their interposed space-rings, and the collar 11 are movably seated in the opening of the sleeve 25, which has an irregular peripheral contour, owing to the formation of the laterally-projecting ears 26, with engaging edges to bear upon the lugs at the rear ends of the longitudinally-disposed arms 6 of the yoke 5. The rearmost part of the sleeve 25 is formed with an extension 27, having an opening 28 extending therethrough, communicating with upper and lower slots 29. In the said opening 28 a shank 30 of a dog or fence 31 is movably mounted, and at the forward termination of the said shank the dog projects above and below the upper and lower surfaces thereof, and said projecting portions engage the slots 29 in the reseating movements of the said dog and shank. The engaging face of the dog or fence 31 is shouldered or stepped at regular intervals, as at 33, and the opposite corners or angles of the stepped portions are beveled or chamfered off, as at 32, to provide inclined or cam surfaces, and to the rear of the shank 30 is connected one end of a wire bow-spring 34, which passes around the said sleeve 25 and is secured at the opposite portion of the latter. By this means the said dog is normally impelled forwardly. The outer part of the dog has a pin 35 projecting therefrom and extending through a slot 36 in the lock-casing, said slot comprising a rearwardly-extending straight portion communicating with a transversely-arranged curved continuation to accommodate the recession of the dog and its shank to permit the pin to move in said action in the rearwardly-projecting slot, and when the combination is completed and the sleeve 25 is rotated the curved continuation allows the said pin to move transversely without impediment.

In arranging the combination the knob-spindle is turned through the medium of the knob thereon, and consequently the disks or tumblers 13, 17, and 21 are rotated through the engagement of the adjacently-situated angularly-headed screws carried by the several disks and which will bring the notches or gates in said disks successively around in alinement with the dog or fence 31. The beveled steps on the engaging face of the said dog as arranged in the present instance will cause the outermost portion of the dog to enter the gate of the outermost disk first, then the second disk, and finally the third disk, and when all the notches are in alinement and receive the said dog the latter springs into all gates of the disks and the disks are locked to and are turned with the spindle through either of the ears 26 of the sleeve 25 in accordance with the movement of the knob-spindle and brought to bear against either one of the lugs on the rear ends of the parallel arms 6 of the yoke 5, and thereby draw said yoke inwardly and also the shank and bolt-head, releasing the latter from the striker-

plate and permitting the door to be opened. The chamfered or inclined surfaces 32 will produce sufficient resistance to the rotation of the tumblers or disks to overcome the tendency of the rotatable hub when turning to impart corresponding movement to the tumblers. Such resistance, however, will not be enough to be appreciably noticed by an unauthorized person, and should the knob be turned too far in any direction the fence will be thrown out and the tumblers disarranged. In turning the knob-spindle for the purpose of arranging the several disks the toothed wheel 12, as stated, is also rotated, and the teeth thereof strike a movable trip 37 on the lock-casing, consisting of a triangular plate which has bearing at one edge against an arm 39, provided with a coil 40, movable on the post 41 and extending outwardly through a slot in the casing. The outer end of the said arm has a striker thereon in relative striking position to the bell or gong 42, mounted on the extension 43 from the said lock-casing. The inner end of the spring 8 bears against the arm 39, where it engages the trip 37 and normally holds the said trip inward, or so that one of the angles thereof will be in the path of movement of the teeth of said wheel 12, and when the said teeth strike the said part of the trip the latter is moved against the tension of the spring 8 and oscillates the arm 29, causing the bell to be struck. The object of this gong or signal is to indicate the number of turns or movements of the toothed wheel in order to indicate that the lock is being operated. If the combination is so set as to require three revolutions of the knob and being sure that the last disk is caught by the angularly-headed screws, which form stops, the operator then begins to count the strokes of the gong or signal, and if the combination calls for twelve strokes forward a count is made of twelve from the starting-point, which is located behind the knob and indicated by a line or point coacting with a notch in the adjacent knob-flange. The knob is then turned backward as many times as the combination requires and then forward again to the starting-point, when the lock can be easily opened and the number of strokes, as indicated by the sound of the gong or signal, will insure a proper and desired operation when the said strokes tally with said combination. The gong or signal after the lock is opened can be turned out of engagement by any well-known means. The headed projections are primarily arranged to operate the disks, as stated, and the signal forms also an incidental accessory to assist in determining the position of the disks.

The operation of the lock as just set forth will be from the exterior of the door, and when within an apartment the lock can be opened at any time without manipulating the combination through the medium of a pin 45, projecting inwardly from the center of the front portion of the yoke 5, projecting through



a slot 46 in the lock-casing. Furthermore, the knob may have a pointer or indicator in connection therewith coacting with the combination-disk, adjacently situated on the casing. This would be an obvious addition and well known in the art, but has not been shown. When the combination is opened, or as an additional safeguard under any other conditions of the lock, the bolt-head is adapted to be held in engagement with the striker-plate by the dead-latch 47, consisting of a rod having a rotatable bearing in the end of the casing adjacent to the door-jamb, the said rod having an inner angularly-projecting end 48 to contact with the rear of the bolt-head and the outer or lower operating button for turning the same.

It will be understood that the projection or lugs throughout the different parts of the casing to support the several attachments in the position required may be arranged at will, and the rear ends of the yoke, or, rather, the longitudinal arms thereof, are adapted to contact with stops 50 to limit the inward movement of the bolt-head and prevent breaking of any of the parts of the lock as an entirety.

It will be apparent that changes in the form, proportions, and minor details of construction may be resorted to without departing from the nature or sacrificing any of the advantages of the invention.

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

1. In a lock, the combination of a movable

yoke having a bolt-head extending directly therefrom, a sleeve mounted within and adapted to actuate said yoke, tumbler-disks in said sleeve provided with stops and notches, a fence carried by said sleeve and having stepped projections, and a knob-spindle for actuating the disks and sleeve, substantially as described.

2. In a lock, the combination of a sleeve, a series of tumbler-disks therein, a spindle extending through said disks, a fence carried by said sleeve to engage the tumblers, a toothed wheel on which the sleeve rests and operated by said spindle, a yoke having oppositely-arranged legs or branches embracing the sleeve, a gong, and a hammer actuated by the toothed wheel, substantially as described.

3. In a lock, the combination with a movable yoke, of a sleeve mounted therein for actuating the yoke, a series of tumbler-disks in the sleeve, a fence operating in a recess in the sleeve and having stepped projections, a knob-spindle for actuating the disks and sleeve, and a semicircular spring having one end attached to the sleeve and its free end attached to the fence, said spring extending outwardly of the sleeve.

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

JOSEPH ARNER.

Witnesses:

CALVIN E. ARNER,  
VICTOR SOLO.