

No. 795,403.

PATENTED JULY 25, 1905.

A. MEYER.
TELEPHONE CALL REGISTER.
APPLICATION FILED AUG. 24, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

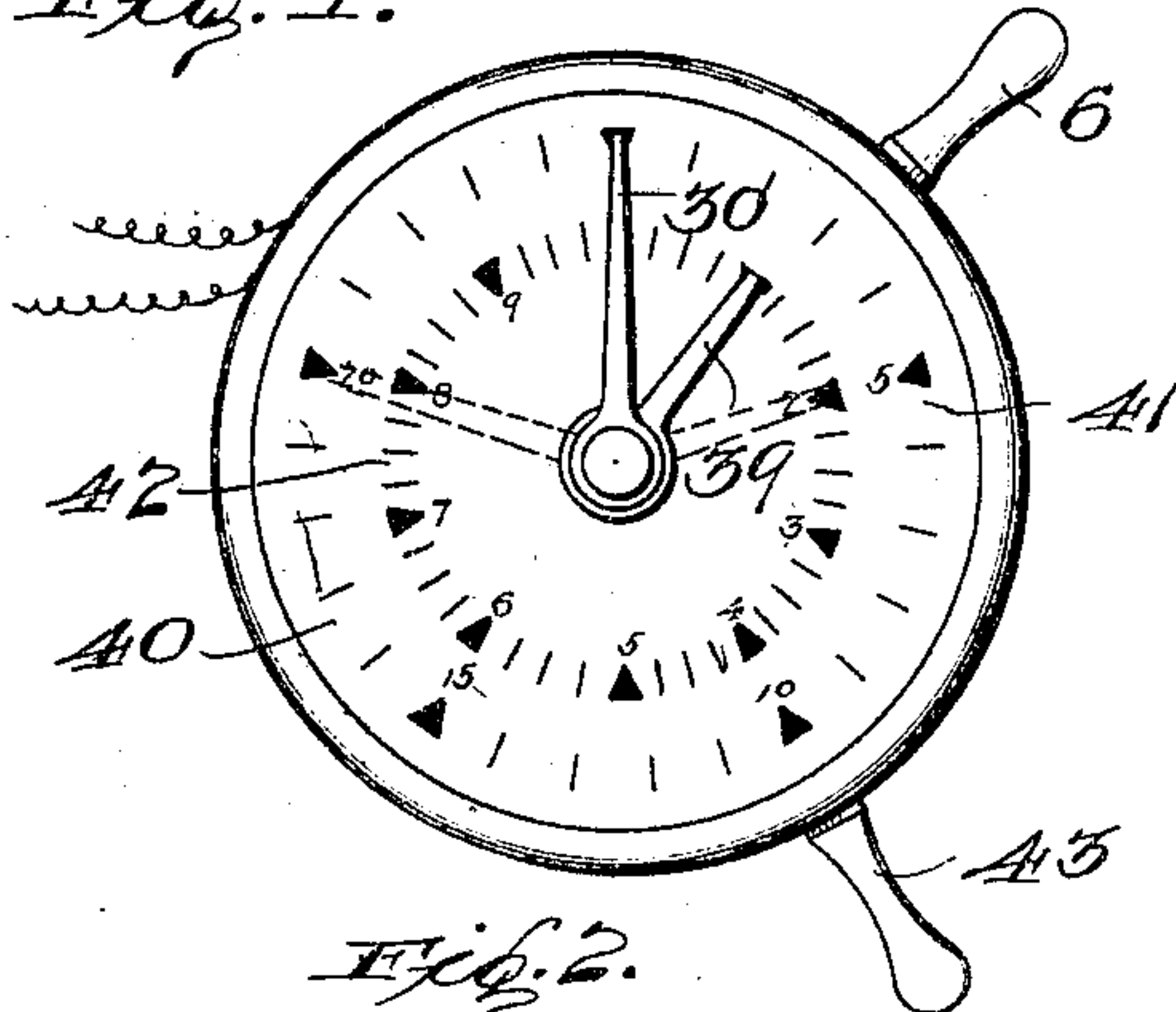
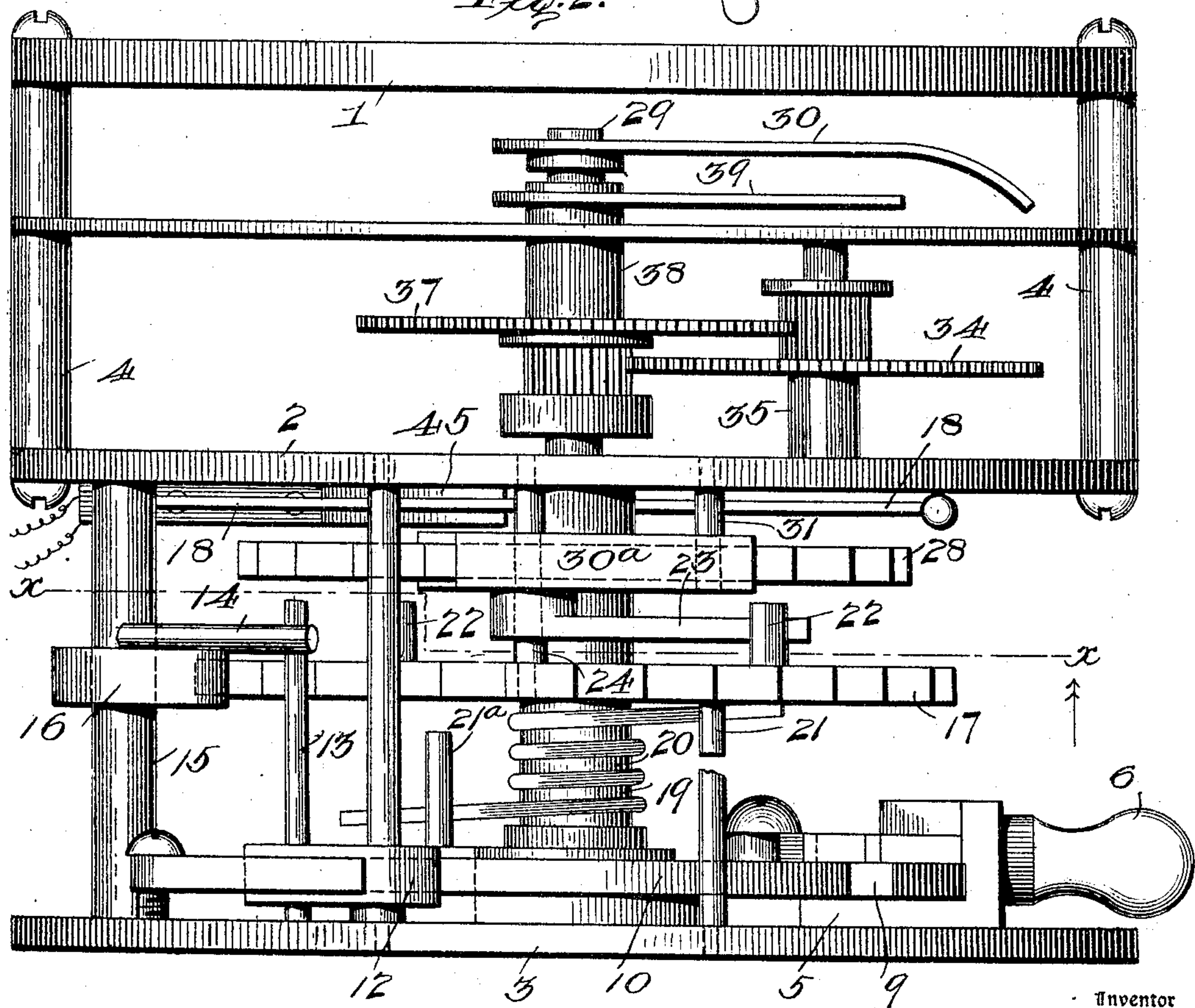


Fig. 2.



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3 SHEETS—SHEET 2.

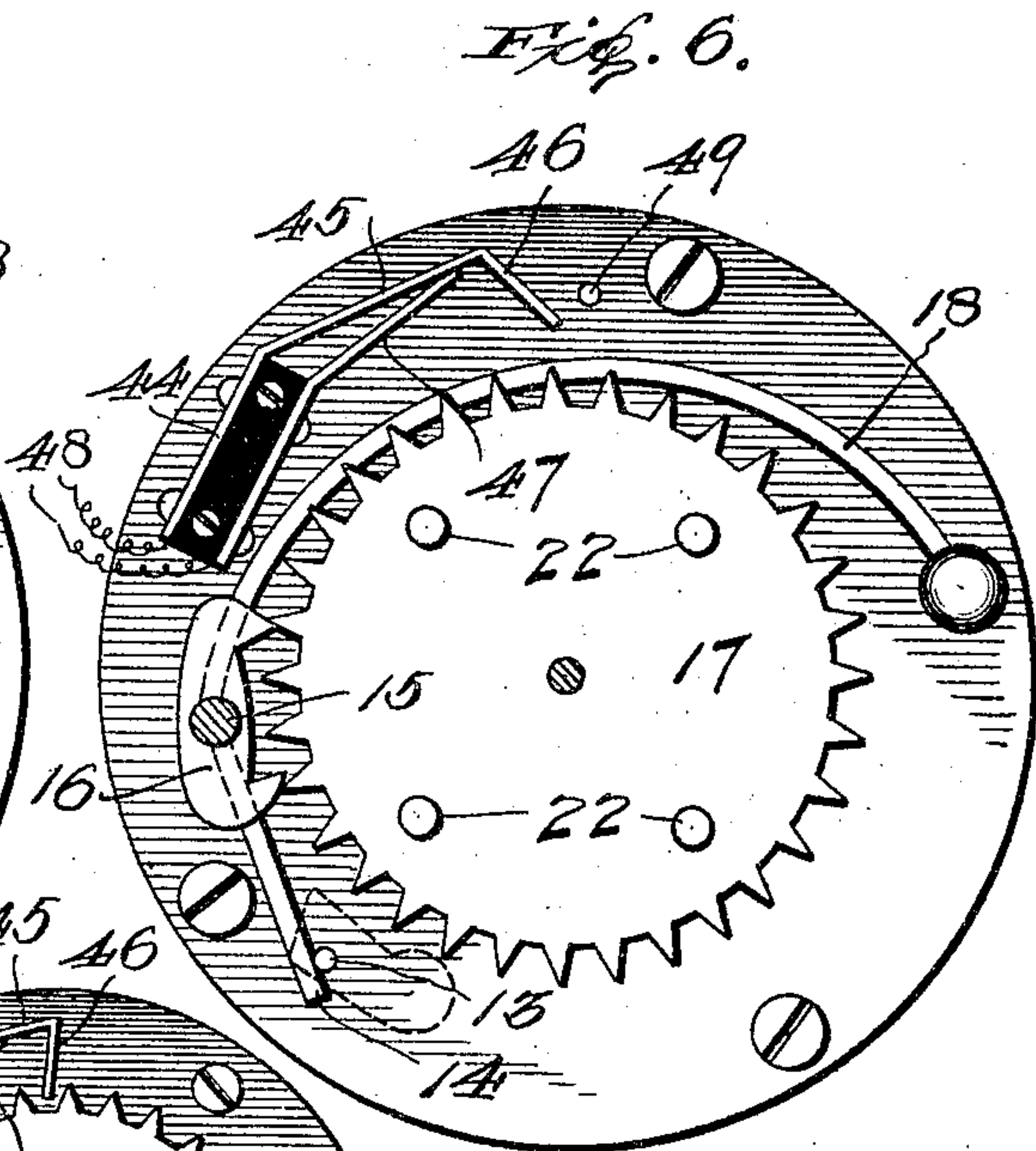
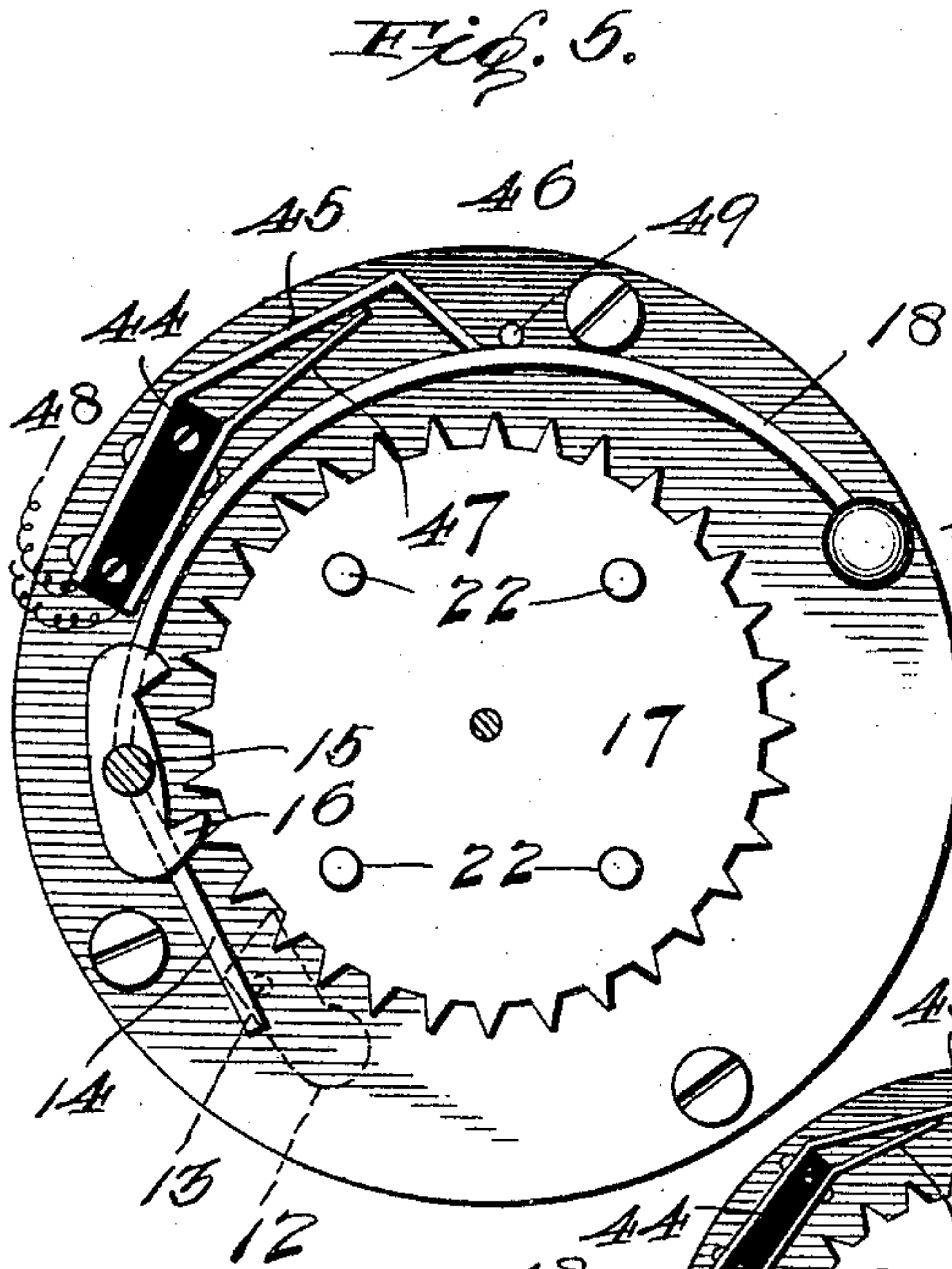
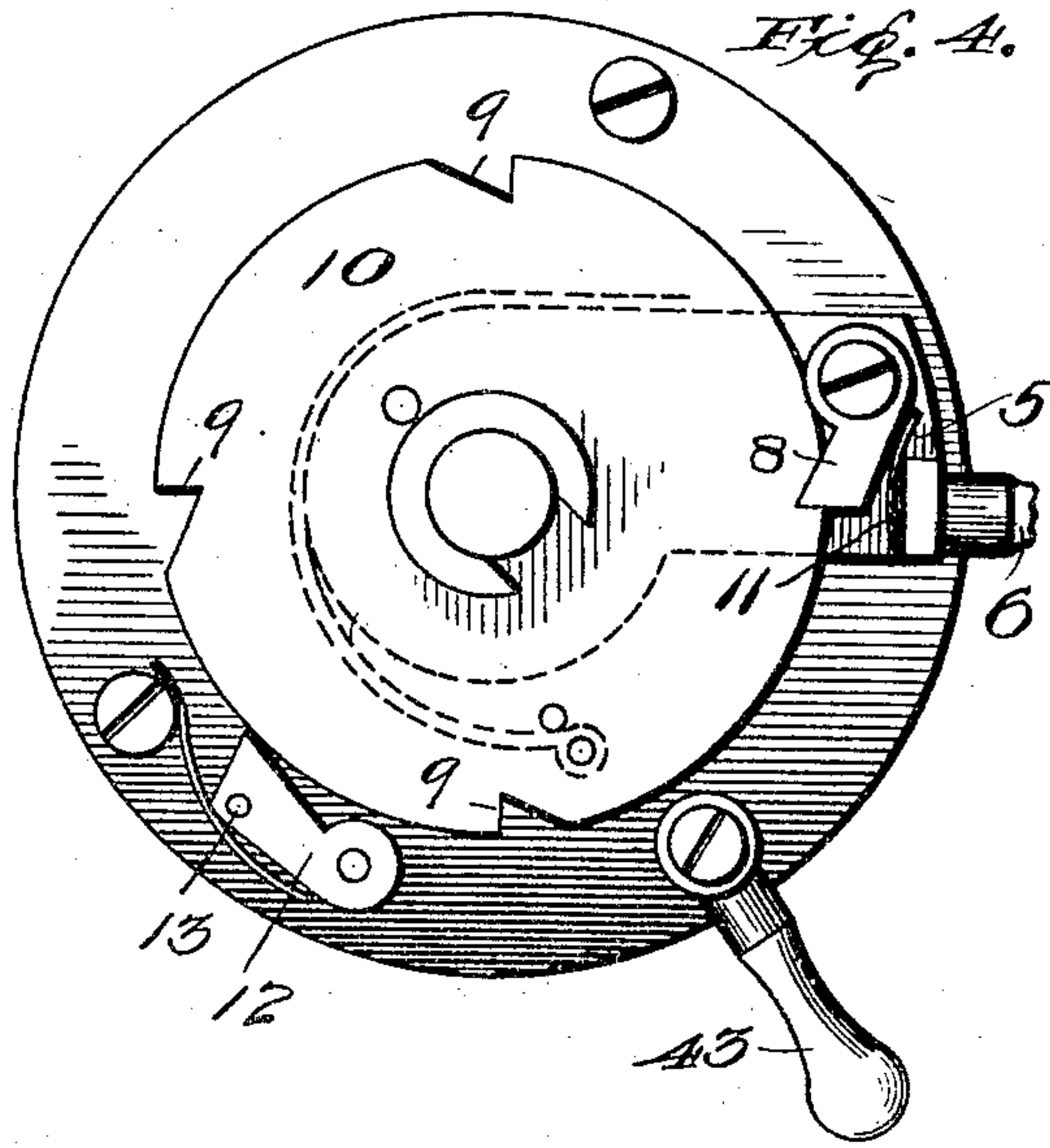
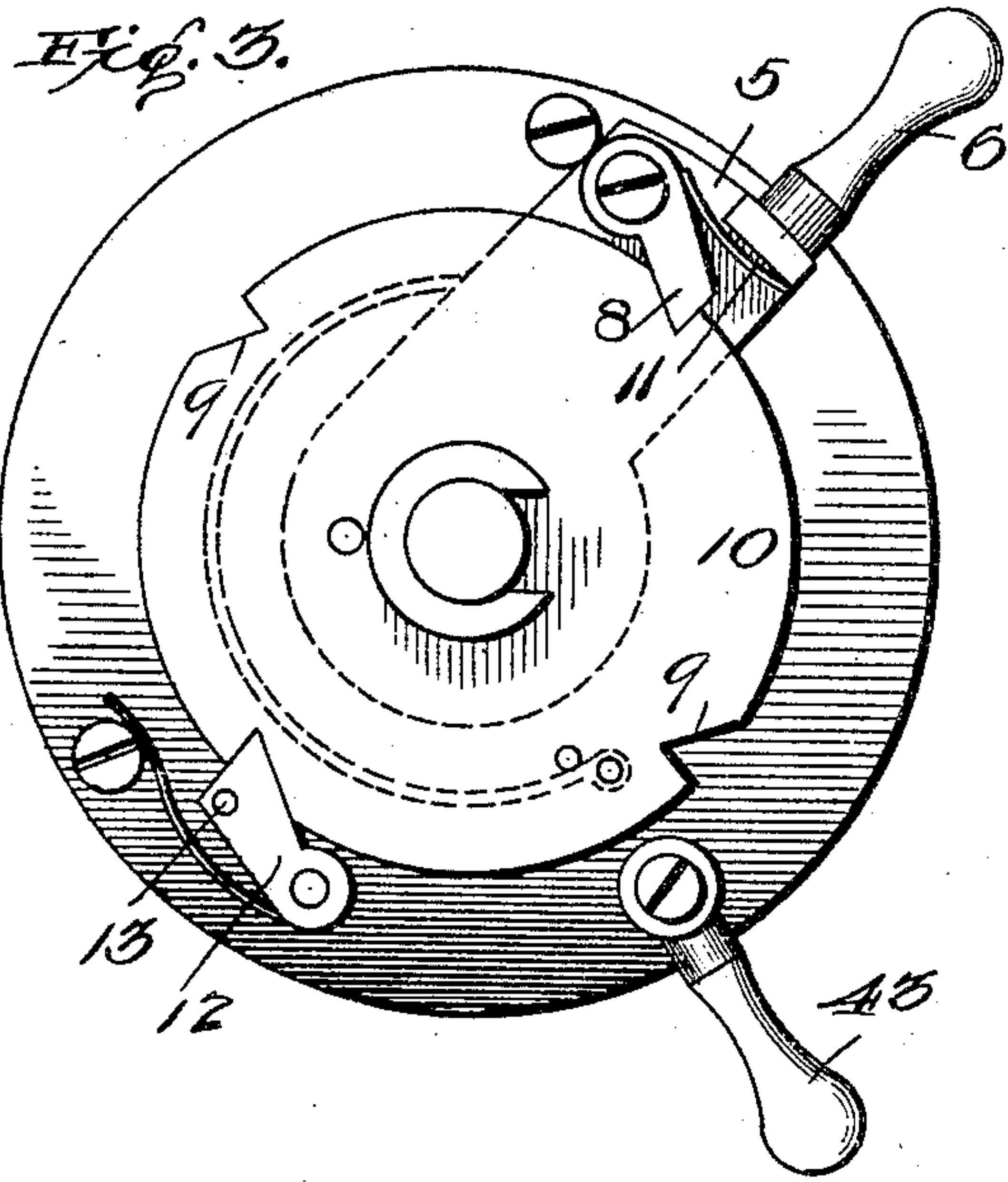
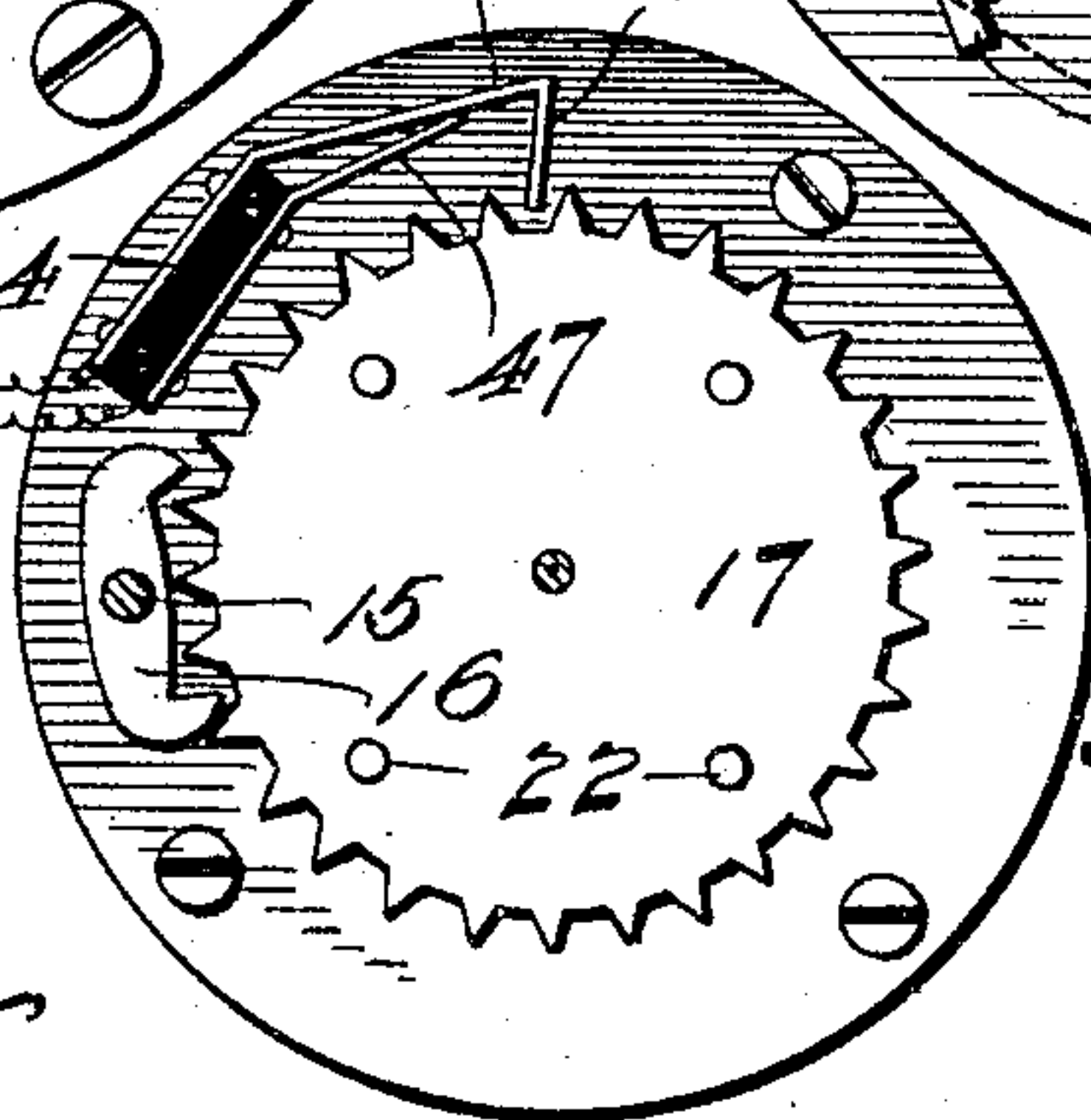


Fig. 12.

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3 SHEETS—SHEET 3.

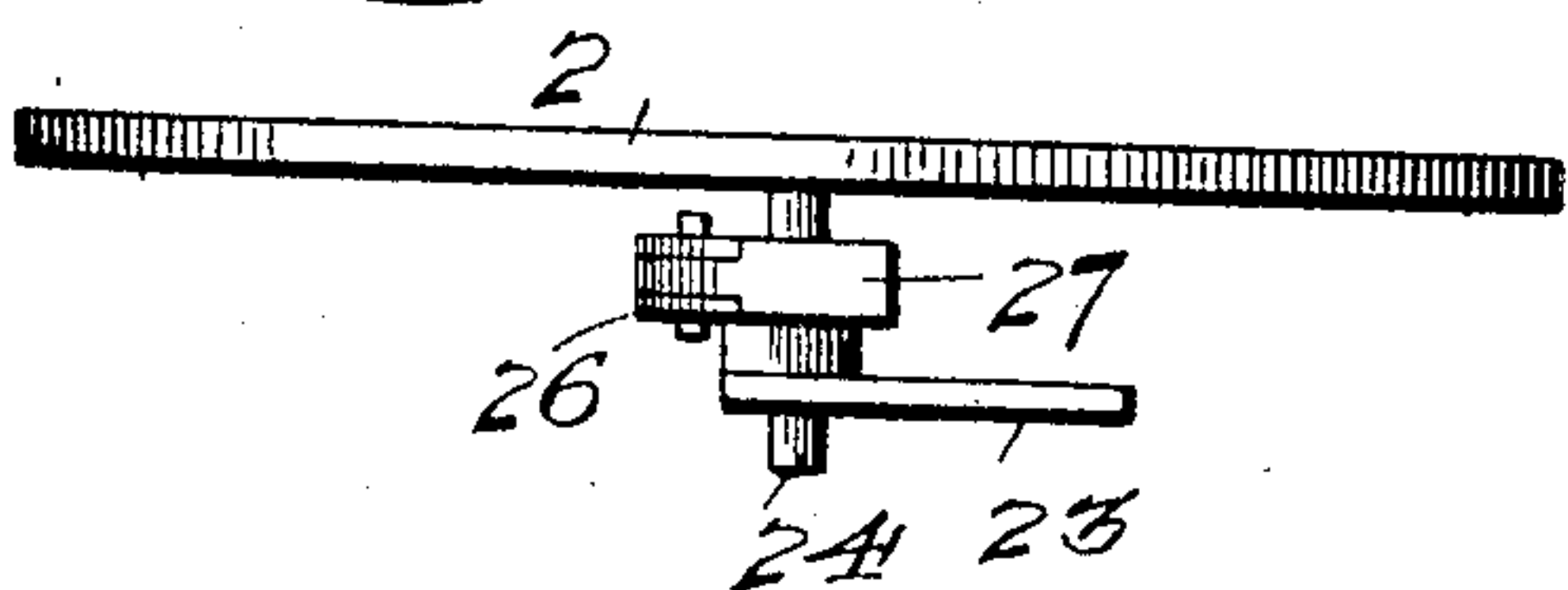
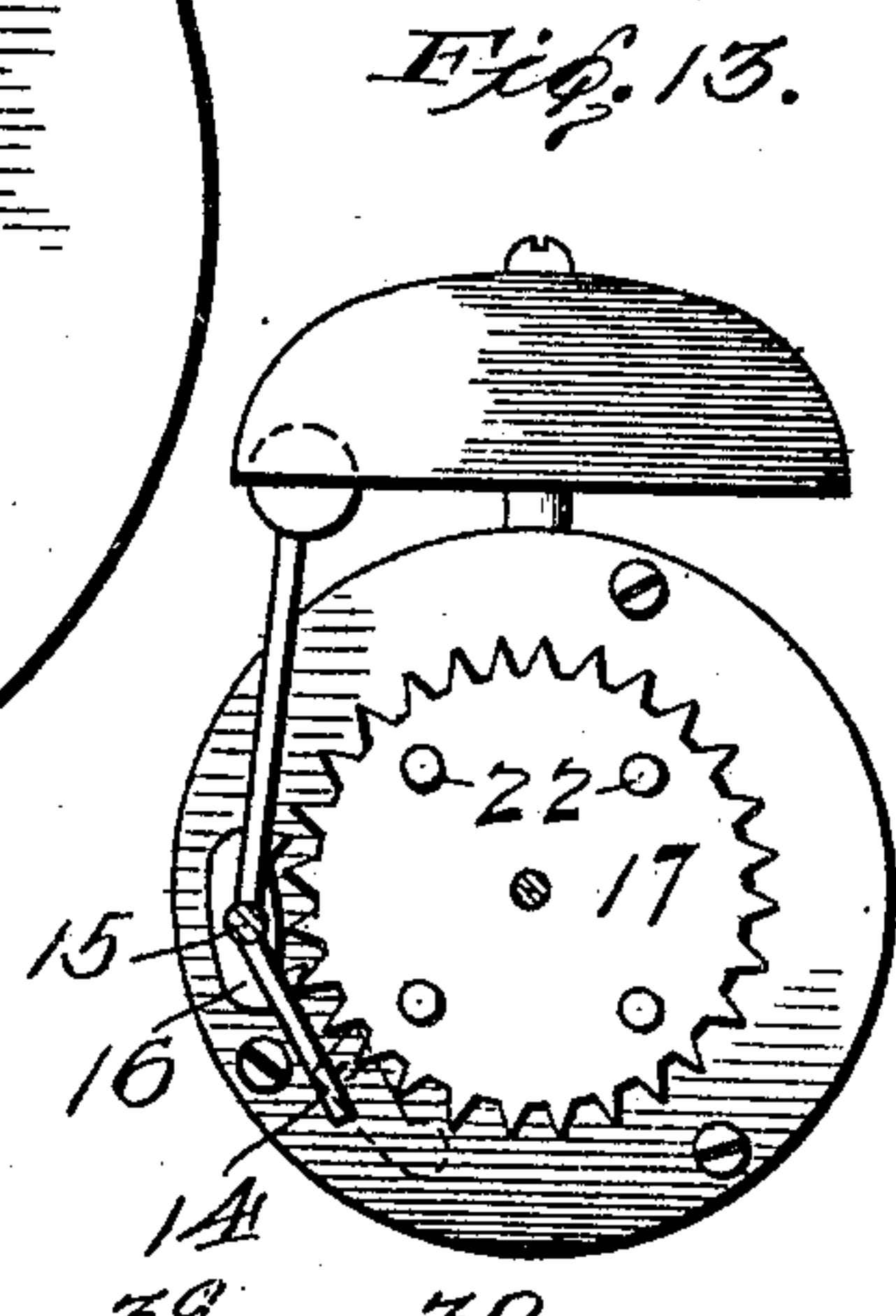
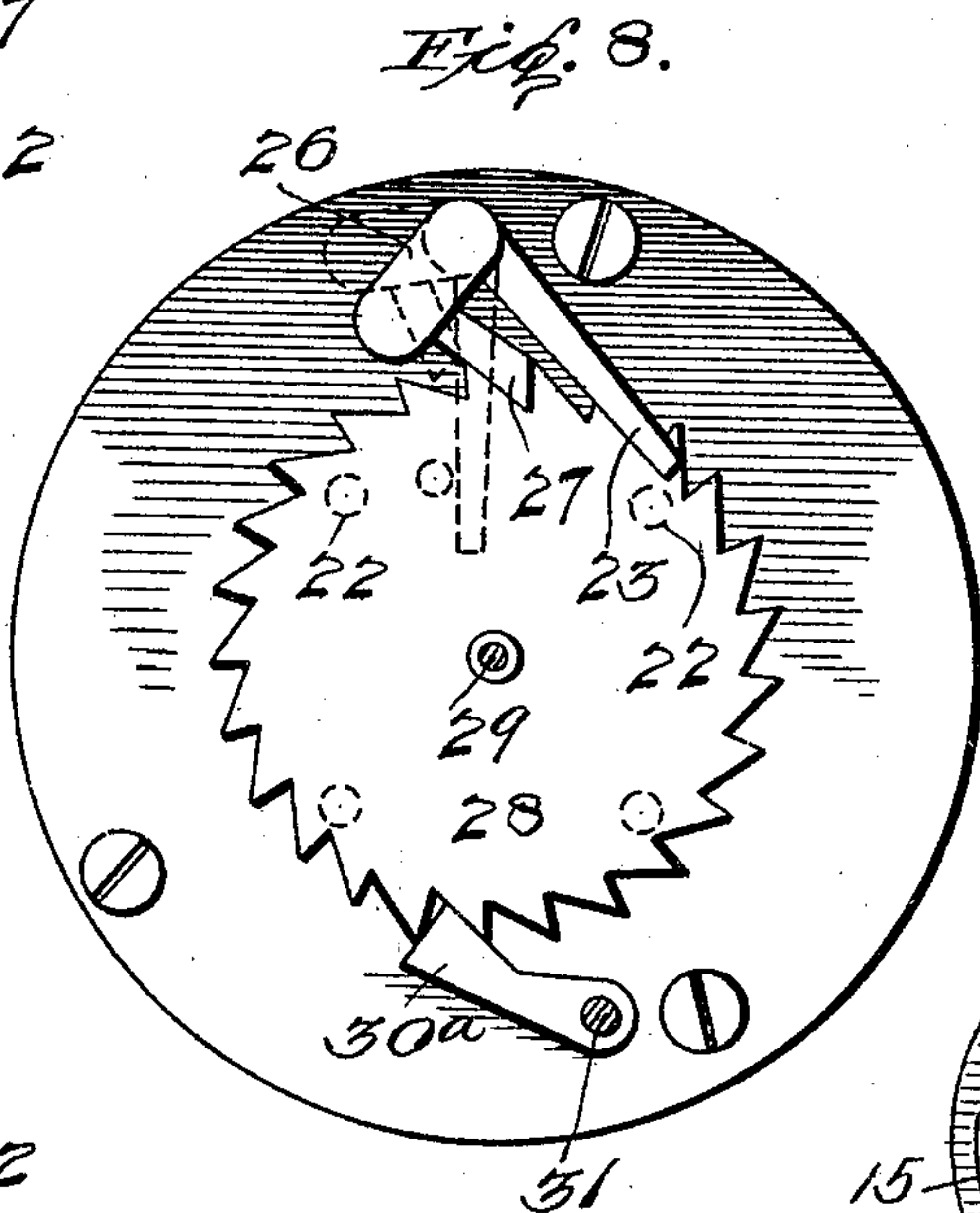
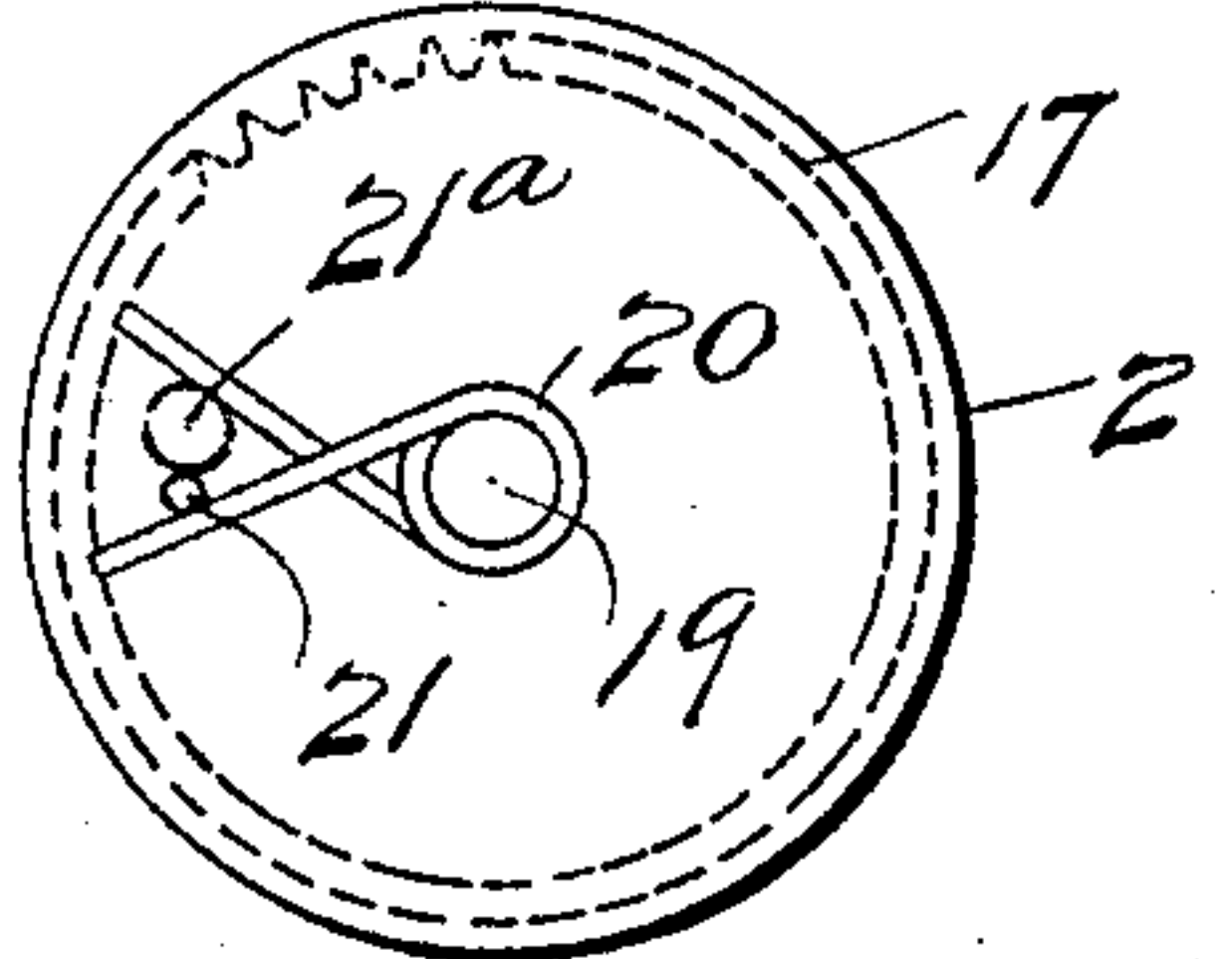
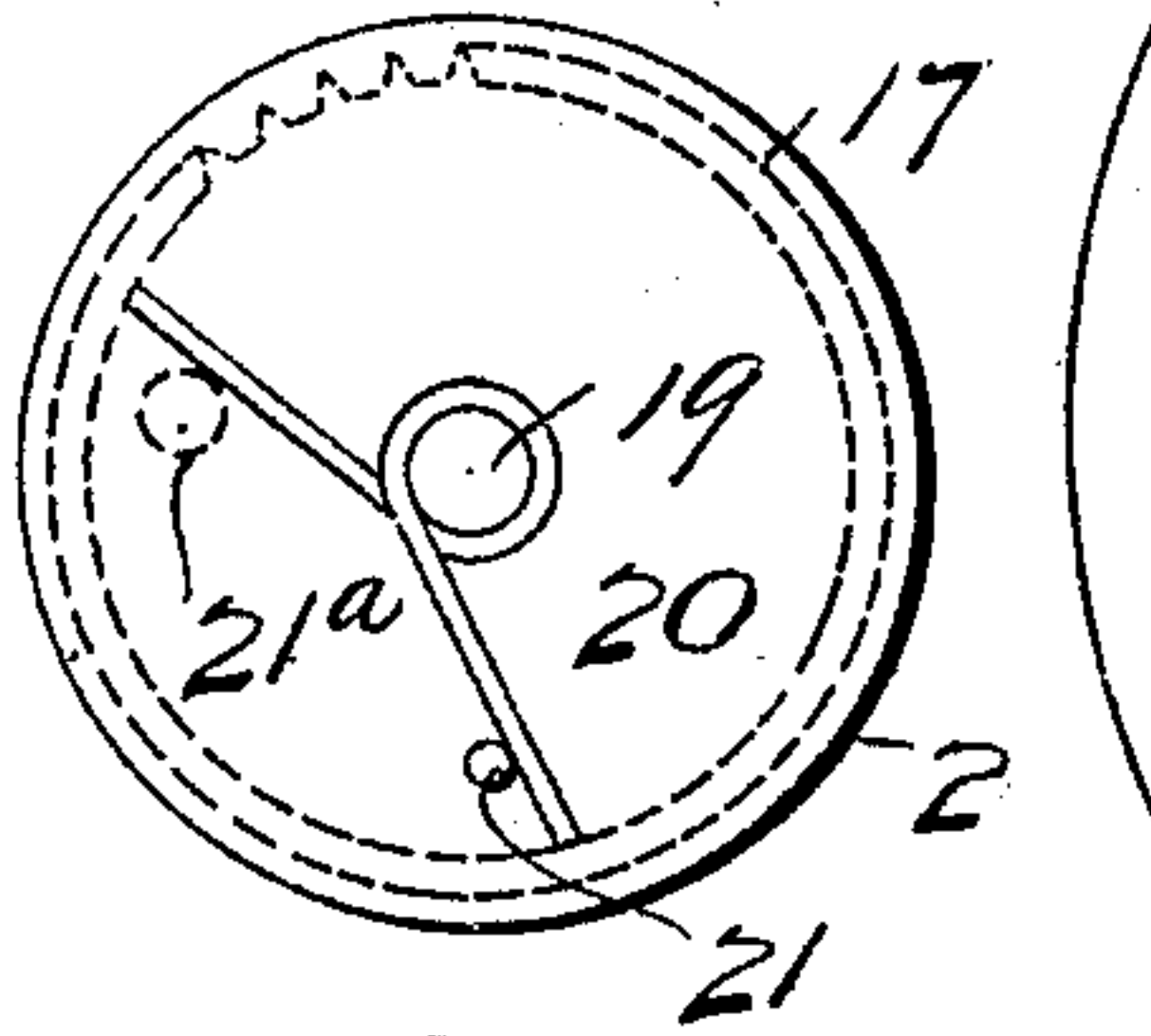
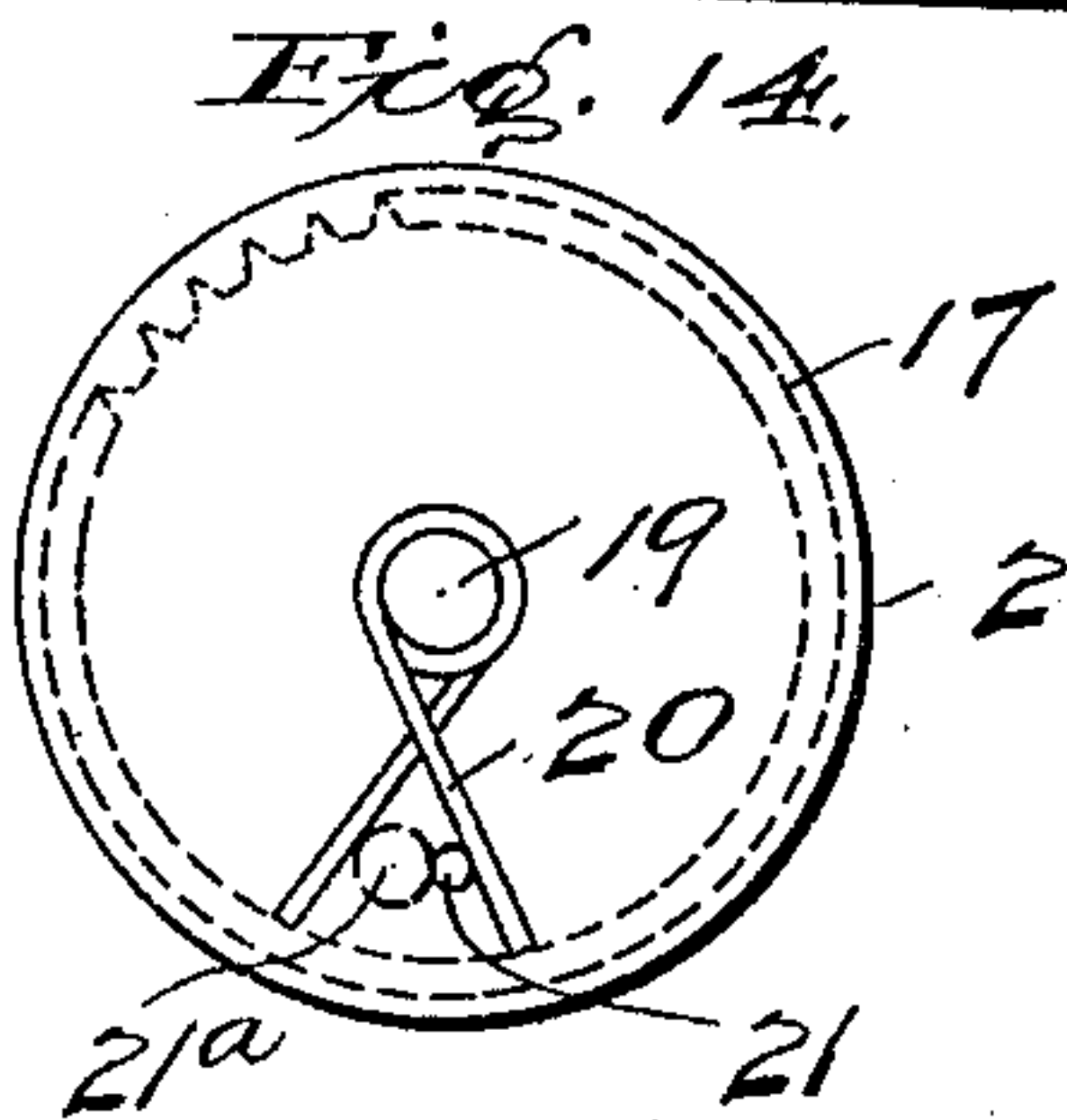
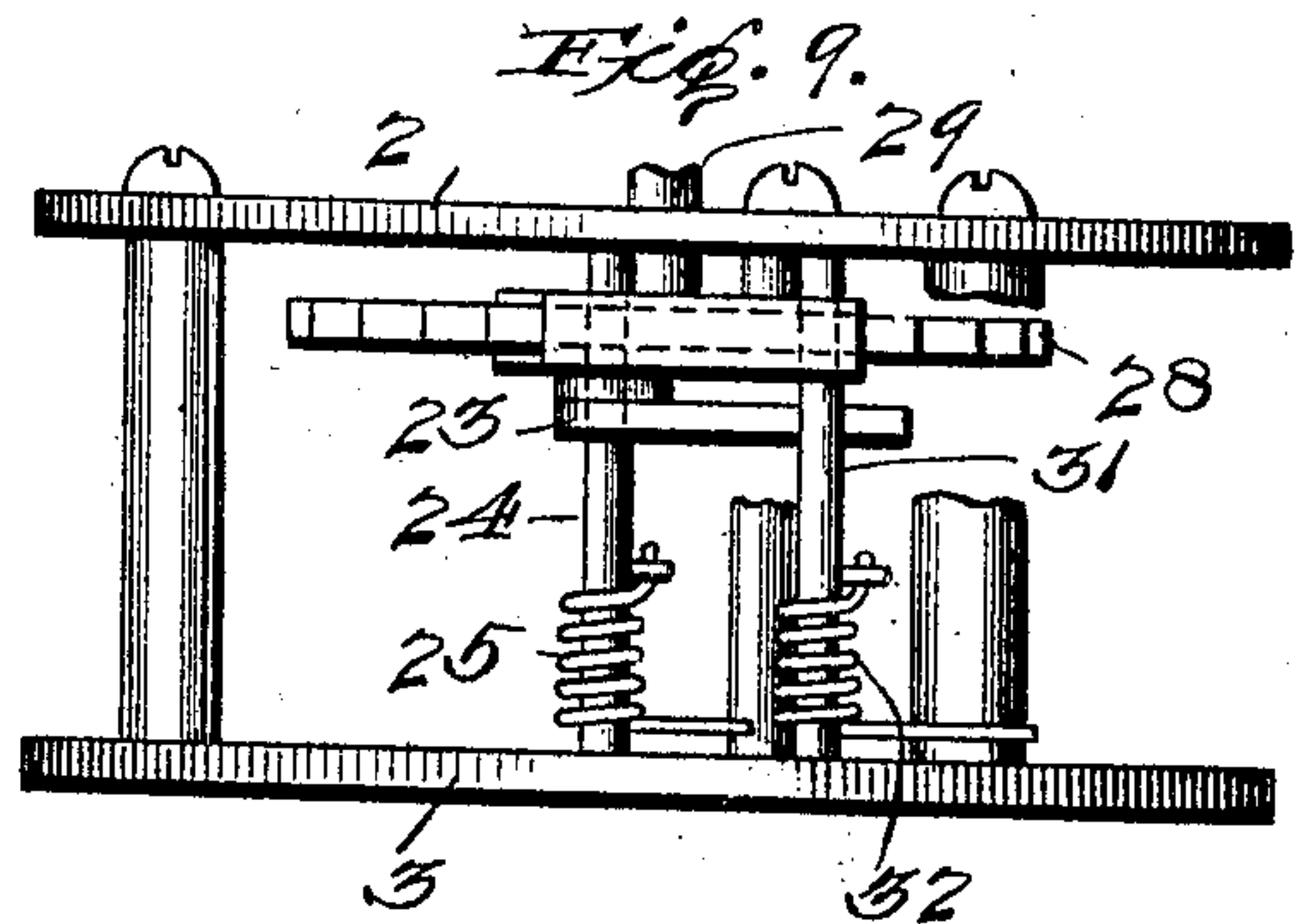
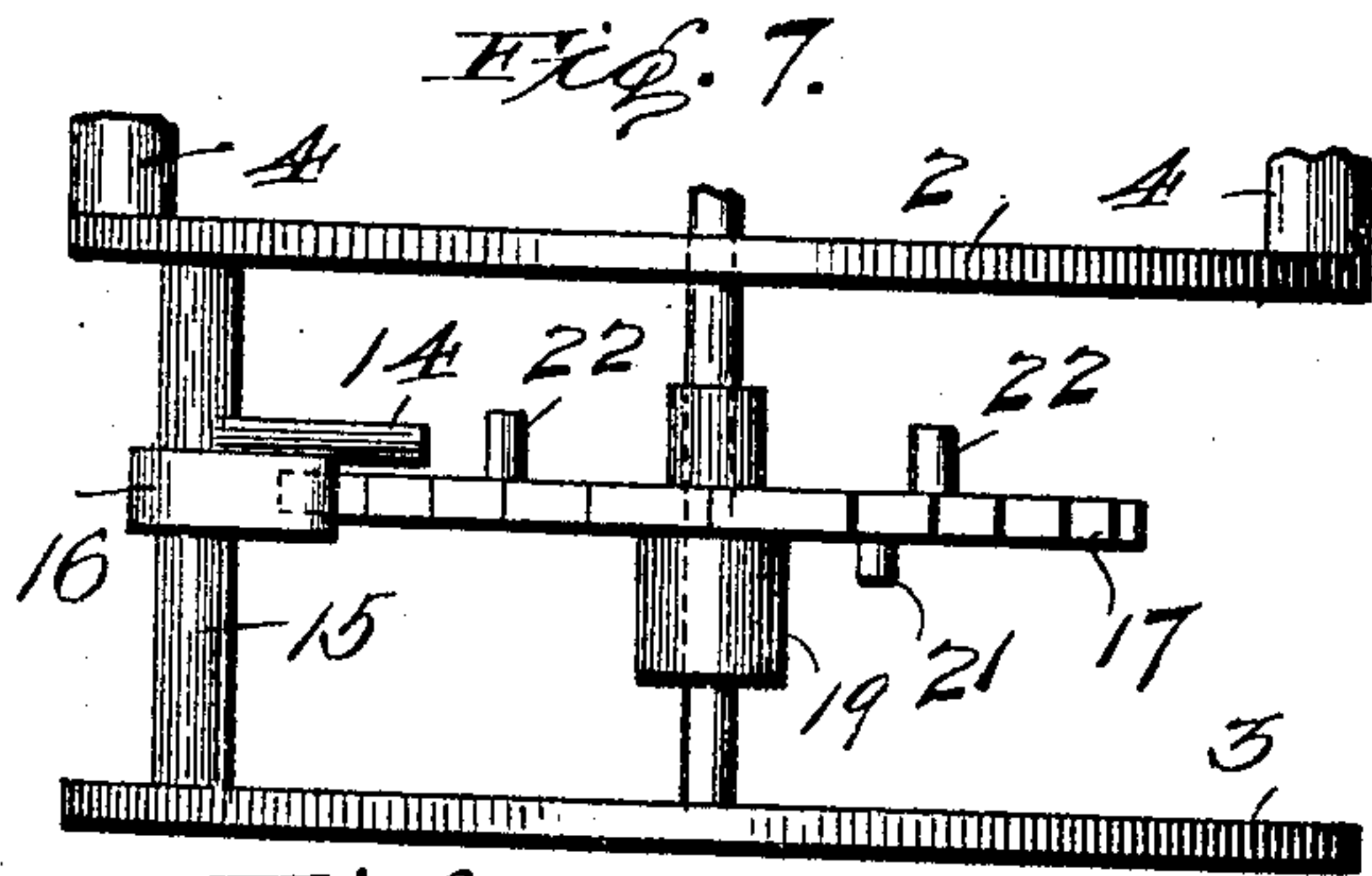
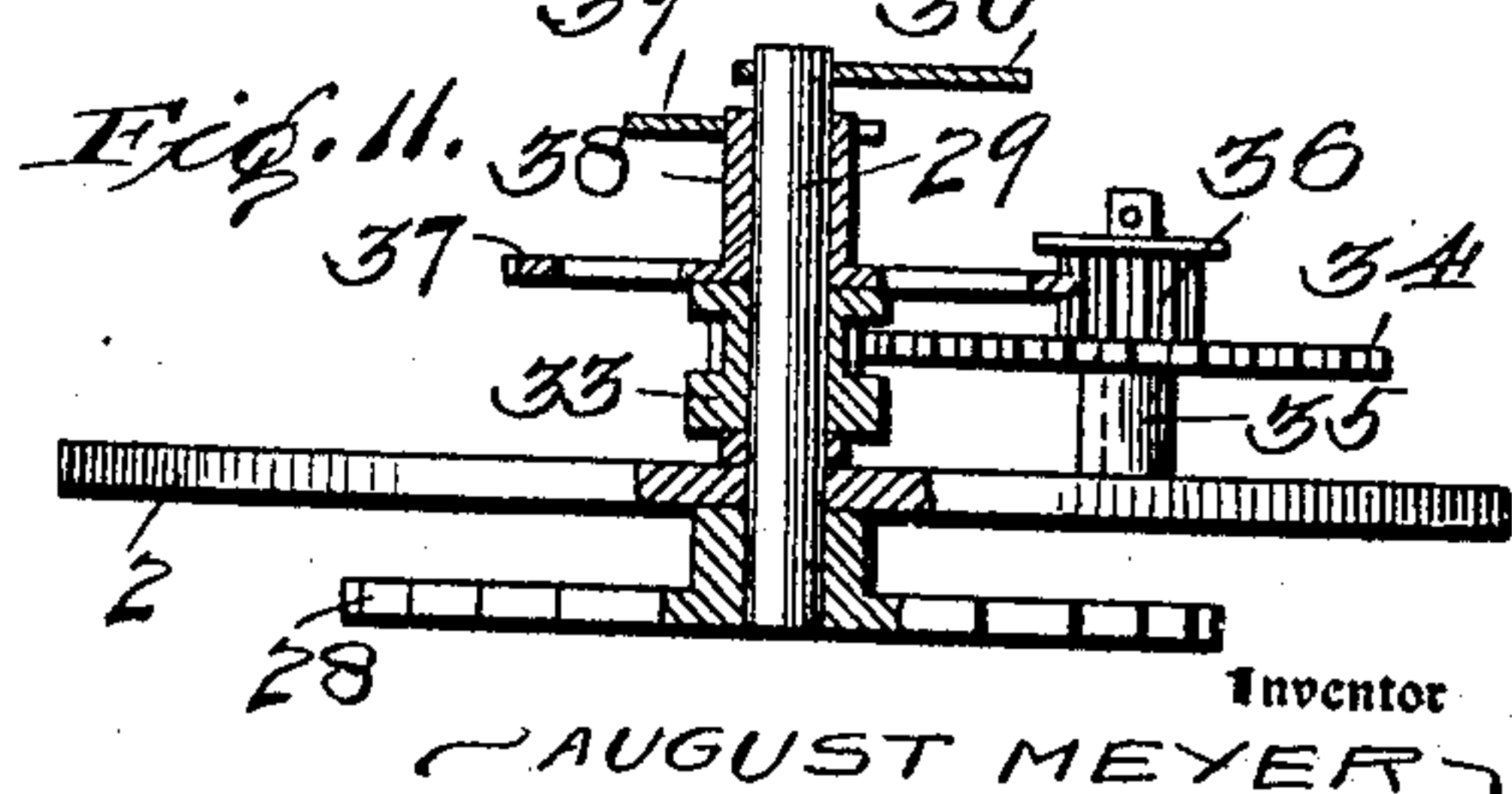


Fig. 10.



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UNITED STATES PATENT OFFICE.

AUGUST MEYER, OF BALTIMORE, MARYLAND.

TELEPHONE-CALL REGISTER.

No. 795,403.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed August 24, 1904. Serial No. 222,011.

To all whom it may concern.

Be it known that I, AUGUST MEYER, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Telephone-Call Registers, of which the following is a specification.

This invention relates to telephone-call registers.

The primary object of the invention is to provide a register that will embody such construction that will invariably produce a predetermined uniform sound with each operation to register the call—that is to say, a sound that will be the same in volume and intensity and of uniform duration—so that the operator becoming familiar with the particular sound that cannot be imitated will know that the call has been registered before the desired connection is given.

A further object is to provide a simple, cheap, and durable register that may be attached to the frame of a wall instrument or placed on a desk or other support in convenient position to be operated by the subscriber.

The construction and arrangement of the register permit of it being some distance from the transmitter and dependent in no way upon it for the transmission of the sound to the operator. This feature is deemed highly advantageous in that when the device described or similar device depending upon the transmitter to transmit the sound to the operator is attached to a desk instrument the free use of the instrument is hampered to a very considerable extent.

In using the device the subscriber asks for a particular number or connection, which when gotten the operator informs the subscriber that the line is ready and requests that the call be registered, which will be done at the same time the sound from the sounding device will be communicated to the operator. Thus the device, which is especially useful where phones are used under the limited-service system, enables the subscriber and company to know the exact number of calls used, thus doing away with annoying differences that frequently arise between the subscriber and the company. Under the present system, where a record of calls is seldom, if ever, kept by the subscriber, there is no way of knowing the number of calls used except as recorded by the operator, and in many instances differences arise between the subscriber and

the company, especially in cases where the desired line or connection has been gotten and the operator being busy connecting other lines and not knowing whether a conversation is being carried on over the connected line charges the call, assuming that the desired connection has been established, when in reality the subscriber has hung up the receiver.

The objects of the invention require, essentially, the employment of a sounding device, a means for registering and indicating the call, an operating device, and a means for limiting the movement of the sounding-device actuator, whereby the sound of uniform character and duration is produced.

In the drawings illustrating the invention, Figure 1 is a face view of the register. Fig. 2 is a bottom plan view thereof with the casing removed, showing the mechanism in bottom plan. Fig. 3 is a view of the operating-lever and operating-disk as seen by looking toward the back plate, the parts being in normal position. Fig. 4 is a similar view showing the position of the operating lever and disk which these parts occupy when a call is being registered. Fig. 5 is a section showing the mechanism for actuating the sounding device, the pawl which permits the sounding device to be operated and which prevents it from being so operated being shown in dotted lines, the sounding device being also shown in elevation in one of the positions it occupies when it is being operated. Fig. 6 is a similar view of these parts in another position. Fig. 7 is a top plan view of the wheel for operating the sounding mechanism, a portion of the frame being also shown. Fig. 8 is a view taken about on line *x x* of Fig. 2 looking in the direction of the double arrow and showing the individual-call wheel or ratchet and a mechanism for moving the same upon the movement of the operating-lever. Fig. 9 is a bottom plan view of this portion of the device. Fig. 10 is a detail bottom plan view of the pawl for moving the individual-call wheel, a portion of the arm for rotating said wheel being also shown. Fig. 11 is a detail plan view, partly in section, of the individual-call wheel, showing its connection with the long and short hands of the register. Fig. 12 is a modification showing the sounding device in direct connection with the actuating-wheel. Fig. 13 is a view like Fig. 3, showing the use of a bell that may be em-

ployed to produce the sound; and Fig. 14 is a series of small views, showing the manner in which the actuator-spring is tensioned.

Referring to the drawings, the numerals 1, 2, and 3 designate circular plates arranged coaxially, the plates 1 and 2 being spaced apart by posts 4 and the plates 2 and 3 by the shafts or parts of the mechanism, which will be referred to later on.

The numeral 5 indicates the operating-lever, provided with a handle 6. This lever is loosely mounted on a short stud or boss on the rear plate and carries the spring-pressed pawl 8, adapted to enter one or the other of the notches 9 in the operating-disk 10 to establish an operative connection between the lever and disk, whereby the disk is rotated or turned forward a quarter of a revolution each time the lever is depressed to register a call and operate the sounding device.

The numeral 11 designates a leaf-spring which may be attached to the rear plate and to the lever in such manner that the lever is kept normally elevated and is returned to normal position after each operation.

Pivoted upon the rear plate below the operating-disk is a spring-pressed pawl 12, adapted to enter one or the other of the notches 9 in said disk. This pawl is provided with a laterally-extending pin 13, adapted to engage and disengage the arm 14 on the shaft 15, upon which shaft is also mounted an escapement-pawl 16, the ends of which engage the teeth of the wheel 17, so mounted on the main shaft that it can turn independently of the operating-disk 10. This pawl performs a double function in the operation of the register—namely, that of holding the wheel 17 stationary when the lever is being depressed, and by reason of the engagement of the teeth of said wheel with the ends of the pawl said pawl is rapidly vibrated for the purpose of actuating the sounding device when the pawl 12 drops into one of the notches in the operating-disk. Rigidly secured to the shaft 15 and offset from the arm 14 is a rod 18, preferably weighted, so that it will drop to the position shown in Fig. 6 after the register has been operated. This rod 18 actuates the sounding device, which will be described farther along.

Referring particularly to Figs. 3, 4, 5, and 6, it will be seen that the pawl 12 when the mechanism is in normal position occupies one of the notches 9; but when the lever is being depressed and, say, for instance, when it has reached the position shown in Fig. 4 the pawl will be out of the notch and sufficiently rocked on its pivot to cause the pin 13 thereon to be brought into engagement with the arm 14 on the shaft 15, thus rocking the upper end of the pawl 16 into engagement with one of the teeth of the actuating-wheel 17 and preventing the wheel from moving with the operating lever and disk until the time when the

pawl 12 shall have dropped into the succeeding notch in the operating-disk, which movement of said pawl takes the pin 13 away from the arm 14 and causes the pawl 16 to release the actuating-wheel, which will be moved just a quarter of a revolution, thereby rapidly engaging and disengaging the ends of the pawl 16 and through the medium of the rod 18 operating the sounding device. Surrounding the hub 19 of the actuating-wheel is a spiral spring 20, with one end in engagement with a pin 21 on the wheel 17 and the other bearing upon a similar pin 21^a on the operating-disk 10. This spring is for the purpose of moving or jumping the wheel 17 when the pawl 12 enters one of the notches 9 during the operation of the device. It will be seen that after the operating-lever has been moved a short distance and the pawl 12 forced out of the notch and in the position shown in Fig. 4 and in dotted lines, Fig. 6, the pawl 16 will lock the wheel 17, as before stated, and the further movement of the operating-lever will tension the spring 20, which tensioning is continued until the pawl 12 again drops into a notch, when the tension is at once relieved by the tendency of the wheel 17 to overtake the disk 10. The operating-lever is then released, and the parts described return to normal position, or to the position in which the device is in readiness for another operation. The pins 21 and 21^a, as more clearly shown in the upper view, Fig. 14, normally engage; but in the initial movement of the operating-lever the wheel or actuator 17 is locked, and consequently its pin 21 remains stationary, while the pin on the operating-disk moves away for a quarter of a revolution. When the pawl 12 drops into another notch and releases the wheel 17, it will be forced by the spring 20, which has been tensioned by the movement of the operating-disk, to overtake the disk, and the parts will be in readiness for another operation. It will be understood that the spring and pins move around together.

I provide the wheel 17 with four short studs 22, which successively engage the arm 23, mounted on a shaft 24 and held normally in the position shown in dotted lines, Fig. 8, by a spiral spring 25. Rigidly connected with the arm 23 is a short arm 26, having its lower end bifurcated for the reception of the pawl 27, which is pivoted to said arm and falls by gravity to a position to engage the teeth of the wheel 28. This wheel is mounted on the end of a shaft 29, and to the outer end of said shaft is secured in the usual manner the long hand 30, that registers the individual calls. In Fig. 8 the arm is shown at a point where it is just about to be released by one of the studs 22, which stud has been brought into engagement with the arm by reason of the movement of the wheel 17. With each operation of the arm 23 the wheel 28, by reason of the pawl 27, is moved forward a distance

of one tooth, corresponding to one graduation on the dial which indicates a call or one operation of the mechanism. Retrograde movement of the wheel 28 is prevented by the pawl 30^a, mounted on a shaft 31, which is surrounded by a spiral spring 32, which keeps the pawl normally elevated and in engagement with the teeth of the wheel.

Mounted upon the shaft 29 is a pinion 33, which is in mesh with the wheel 34, mounted on a short stud 35, secured to the plate 2. The wheel 34 carries a pinion 36, which is in turn in mesh with the wheel 37, also mounted on the shaft 29. This last-mentioned wheel has a sleeve 38, to which the short hand or indicator 39 is secured. The gearing just described is so arranged that the movement of the wheel 28 for the distance of one tooth will move the wheel 37, and consequently the short hand carried on the sleeve thereof, one one-thousandth of a revolution. It will be understood, however, that the arrangement of the gears may be changed at will and so related to each other as to register a greater or less number of calls than is possible with the register shown. The device shown is intended to register calls from one to one thousand, and twenty-five individual calls are registered with one revolution of the long hand and one hundred calls registered and indicated by the short hand with each four revolutions of the long hand.

Referring particularly to Fig. 1 the numeral 40 indicates the register-dial, with an outer circle of graduations 41 divided into five segments of five individual calls each, and the inner circle of graduations 42 is divided into ten segments of one hundred each, the distance between "0" and "1" on the inner circle representing one hundred calls. Attached to the rear plate, near the bottom thereof, is a stationary handle 43 in convenient position to be grasped by the hand of the person operating the register, together with the handle 6, thus relieving the strain that would otherwise be brought upon the device and its support by the movement of the operating-lever.

The numeral 44 designates what I term the "sounding" device, which, as shown in Figs. 2, 5, and 6, is attached to the plate 2. It comprises an insulating-block, with two spring-metal arms—a long arm 45, having an overhanging end 46, and a short arm 47, normally resting against the under side of the long arm. To the ends of these plates are attached wires 48, that are joined to or cut into the telephone-circuit at any suitable point. The sounding-device circuit is normally closed by the contact between the arms and is adapted to be made and broken by means of the rod 18, vibrating rapidly into and out of engagement with the overhanging end 46. The upward movement of the rod is limited by a stop 49 so positioned, preferably, that the rod will only move the arm 45 sufficiently to

break the circuit, which will be immediately closed by the arms coming together when the rod in its vibrating movement comes away from the overhanging end. This making and breaking of the sounding-device circuit produces a series of quick sharp sounds in such rapid succession as to be substantially continuous, thereby producing a sound easily recognized through the receiver by the operator. The actuating-wheel, by reason of the means for limiting its movement, will move just one-quarter of a revolution with each operation of the register, thereby assuring exactly the same effect upon the sounding device each time a call is registered.

In the modification Fig. 12 the rod 18 is eliminated, and the sounding device is so positioned in the frame that the overhanging end 46 of its upper arm will be in a position to be directly engaged by the teeth of the actuating wheel, which obviously would produce the same results as the construction just described.

While the operation of the register has been fairly suggested throughout the description of the mechanism, the same will nevertheless be described. Assuming the parts to be in the position shown in Figs. 3 and 5, with the pawl 12 in one of the notches of the operating-disk and the escapement-pawl free to vibrate, the lever is depressed, which will at once cause the pawl 12 to ride out of its notch until its point is in engagement with the periphery of the disk, in which position of the pawl the pin 13 will engage the arm 14 and rock the pawl 16 into locking engagement with the actuating-wheel 17, thus locking said wheel against any further movement until the succeeding notch is reached, which will be at a time when the operating-lever occupies its lowest position, when the wheel will be moved by the spring 20, which has been tensioned by the operating-lever. In the forward movement of the wheel 17 one of the studs 22 thereon kicks the arm 23, causing the pawl 27 to move the wheel 28 a distance of one tooth forward, which will move the long hand or indicator of the register to register one call. The short hand will by reason of the gears described be moved a comparatively short distance. During the movement of the wheel 17 the pawl 16 will be rapidly vibrated, rocking the shaft 15 and causing the rod 18 to engage and disengage the sounding device to rapidly make and break its circuit and produce the desired sound. In dotted lines, Fig. 1, I have shown another position of the hands, the short hand being at "2" on the inner circle of the markings and the long hand at "20" on the outer circle of markings, which position would indicate at a glance that two hundred and twenty calls had been registered, the short hand indicating two hundred and the long hand twenty.

It will be understood that the device may be attached by any suitable means to a tele-

phone instrument or in close proximity thereto or be fitted in any suitable case, which may be placed on a desk or other support, and the casing for the mechanism may be provided with suitable sealing devices for preventing the mechanism from being tampered with or reset except by those having authority to do so.

In Fig. 13 a bell and clapper are used to produce the sound. Otherwise the mechanism in this arrangement would be the same as that described. In this construction the device would have to be attached to the telephone in close proximity to the transmitter and would depend upon it for conveying the sound to the operator. However, this construction, while it may be useful in some instances, is not preferable for reasons formerly stated.

It very frequently happens that with subscribers who have phones on a line with others (sometimes as many as four or five subscribers being on the same line, each phone differentiated by a letter) an injustice sometimes results where the operator fails to record the call against the right subscriber, and a subscriber may and sometimes does give a letter different from that which designates his phone, and consequently his call is charged to another subscriber on the line. It is obvious that the use of this device completely prevents mistakes and the imposition of one subscriber upon another and the annoyances resulting therefrom.

While I have shown and described arms 45 and 47 of the sound-producer normally in contact, thus closing the sounding-device circuit, it is obvious that when the register is connected in multiple with the telephone these arms may be normally apart, thus keeping the circuit through the device normally open, so as not to talk through the sound-producer circuit in using the telephone. This feature, however, does not affect the efficient operation of the device, as the sound is produced when the register is being operated in either event by the rapid making and breaking of the sound-producer circuit by the rapid vibration of the actuating device to cause this operation.

I claim—

1. In a telephone-call register, the combination with a suitable frame, dial, indicator, and sound-producer, of an operating-lever and connections between said lever and indicator whereby a call is registered with each operation of the lever, an actuator for the sound-producer, and means for positively limiting the movement of the actuator whereby a sound of the same predetermined duration and character is produced with each operation of the lever, substantially as and for the purpose set forth.

2. In a telephone-call register, the combination with a suitable frame, dial, and indicator,

of an operating-lever, connections between said lever and indicator whereby a call is registered with each operation of the lever, a sound-producer electrically connected in the telephone-circuit, an actuator for said sound-producer adapted to make and break the sound-producer circuit to produce the sound, and a means for positively limiting the movement of the actuator, whereby a predetermined sound of the same duration and character is produced with each operation of the operating-lever, substantially as and for the purpose set forth.

3. A telephone-call register, comprising a suitable frame, dial and sound-producer, an operating-lever, a main shaft journaled in the frame, a spring-actuated device for actuating the sound-producer loosely mounted on the shaft, means for locking said device upon the initial movement of the operating-lever, and means for releasing the same at a given point in the movement of said lever, to permit said device to operate upon the sound-producer, a suitable indicator and connections between said indicator and wheel whereby the indicator is moved to indicate the calls upon each operation of the lever.

4. A telephone-call register, comprising a suitable frame and dial, a shaft journaled in the frame, a sounding device, a spring-actuated device for actuating the sounding device loosely mounted on the shaft, an operating-lever, a pawl actuated by the movement of the operating-lever, and adapted to lock the sounding-device actuator upon the initial movement of said lever, and means operating upon said pawl to cause it to release said actuator at a given point in the movement of the lever to permit the actuator to operate upon the sound-producer, and suitable indicators and connections between them and the actuator whereby the indicators are moved to register the calls upon each operation of the lever, substantially as described.

5. A telephone-call register, comprising a suitable frame and dial, a shaft journaled in the frame, a sounding device, sounding-device actuator mounted on the shaft, an operating-lever, a disk mounted in the frame, and having notches therein, a pawl carried by the operating-lever, and adapted to enter one of the notches in the disk to cause the disk to be moved with the lever, means for locking the actuator against movement upon the initial movement of the operating-lever, a spring interposed between the disk and actuator and so connected with the actuator and disk as to be tensioned upon the movement of the operating-lever, and means for releasing the actuator at a given point in the movement of the operating-lever, to permit said actuator to operate the sounding device, and suitable indicators and connections between them and the actuator whereby they are moved to indicate the calls.

6. A telephone-call register, comprising a suitable frame and dial, a shaft journaled in said frame, a sounding device, a spring-actuated sounding-device actuator loosely mounted on the shaft and carrying studs, an operating-lever, means for locking the actuator upon the initial movement of the operating-lever, and means for releasing the same at a given point in the movement of the lever, a ratchet-wheel suitably mounted in the frame, a pawl engaging the ratchet, and an arm connected with the pawl, said arm being adapted to be engaged by the studs on the actuator, when said actuator is moved, to cause the pawl to partially rotate the ratchet-wheel, and connections between said ratchet-wheel and indicator whereby the indicator is moved with each movement of the ratchet-wheel, substantially as and for the purpose set forth.

7. A telephone-call register, comprising a suitable frame, a dial marked to indicate the individual calls and the sum thereof, a sound-producer, an operating-lever, a spring-actuated sounding-device actuator loosely mounted on said shaft, means for locking the actuator upon the initial movement of the operating-lever, and means for releasing said actuator at a given point in the movement of said lever, a ratchet-wheel mounted in the frame, connections between the actuator and ratchet-wheel whereby the ratchet-wheel is moved when the actuator is released, an indicator for indicating the individual calls, connections between said ratchet and indicator whereby the indicator is moved, a second indicator for indicating the sum or total of

the individual calls, and connections between said indicator and the ratchet-wheel whereby the former is moved, substantially as and for the purpose set forth.

8. In a telephone-call register, the combination with a suitable frame, a call-indicating scale and indicator of an operating-lever, connections between said lever and indicator whereby a call is registered with the operation of the lever, a sound-producer electrically connected in the telephone-circuit, an actuator for said sound-producer adapted to make and break the sound-producer circuit, substantially as and for the purpose set forth.

9. A telephone-call register, the combination with a suitable frame, a call-indicating scale and indicator therefor, of an operating device, connections between said operating device and indicator whereby a call is registered with each operation of said device, the sound-producer electrically connected in the telephone-circuit, an actuator for the sound-producer adapted to make and break the sound-producer circuit, and means for limiting the movement of said actuator whereby it is caused to make and break the sound-producer circuit the same number of times with each operation of the register, thereby producing a sound of the same predetermined duration and character with each of said operations.

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

AUGUST MEYER.

Witnesses:

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DAVID M. NEWBOLD, Jr.