

913,607.

Patented Feb. 23, 1909.
 3 SHEETS—SHEET 1.

Fig. 1.

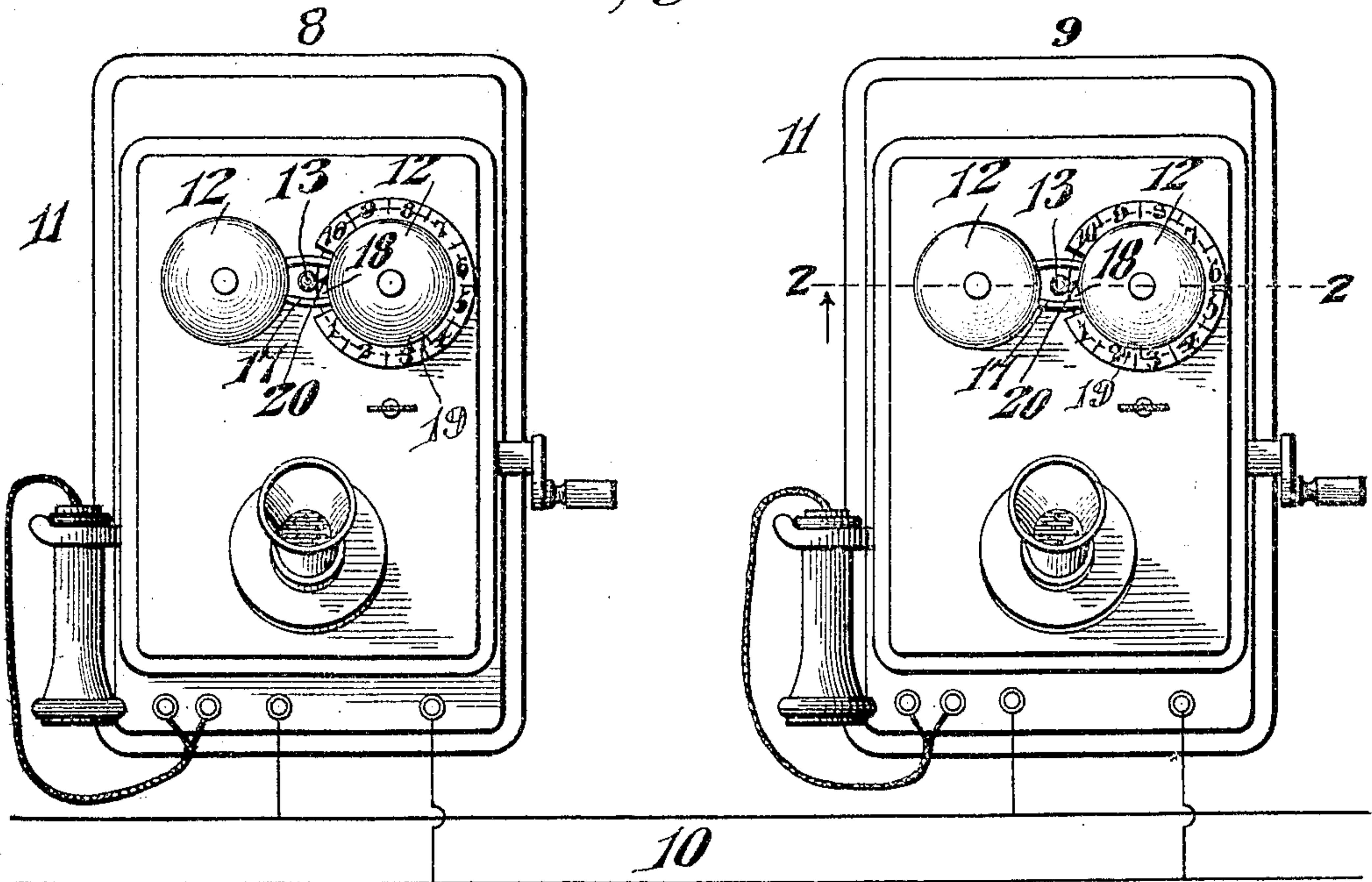


Fig. 7.

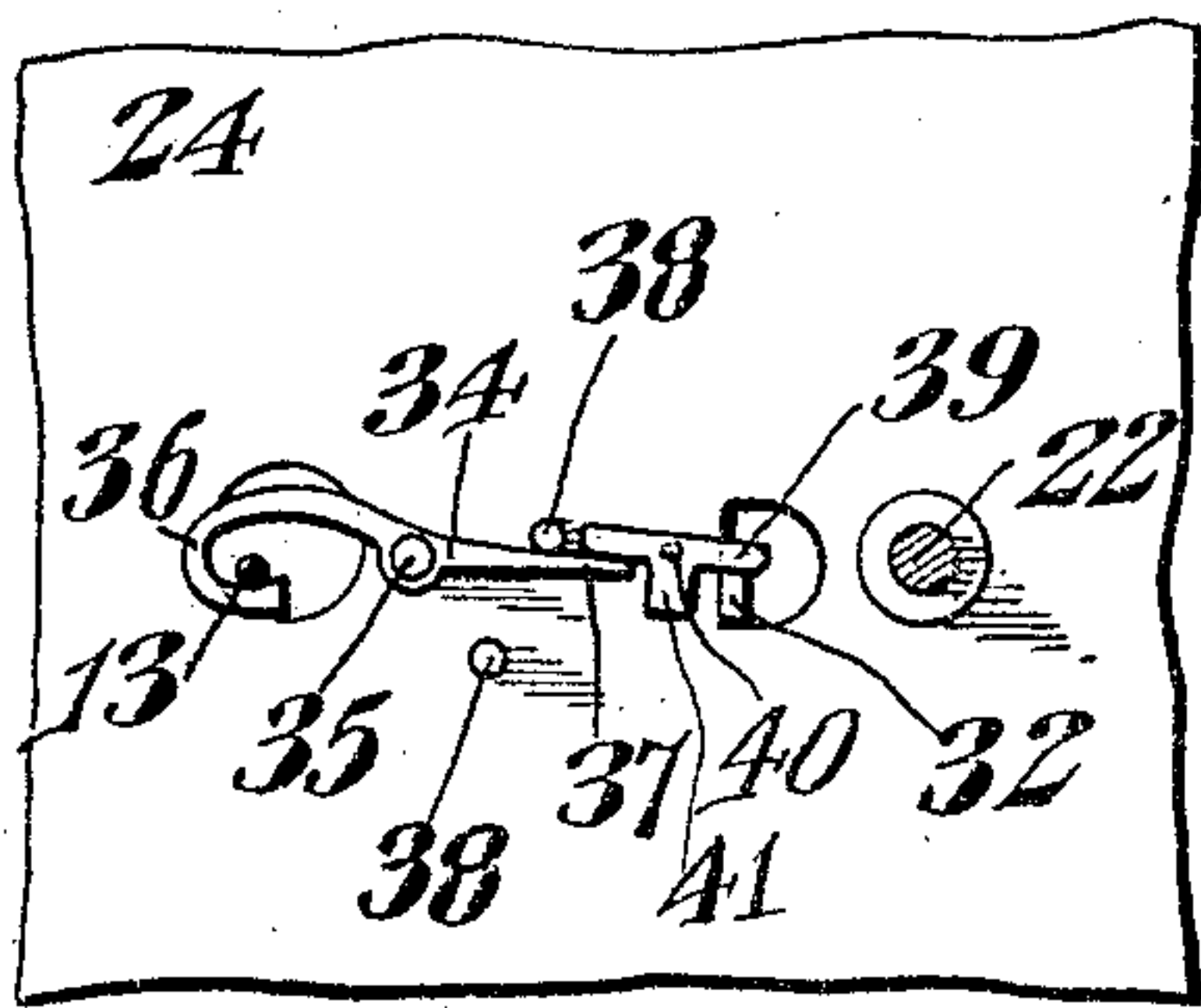
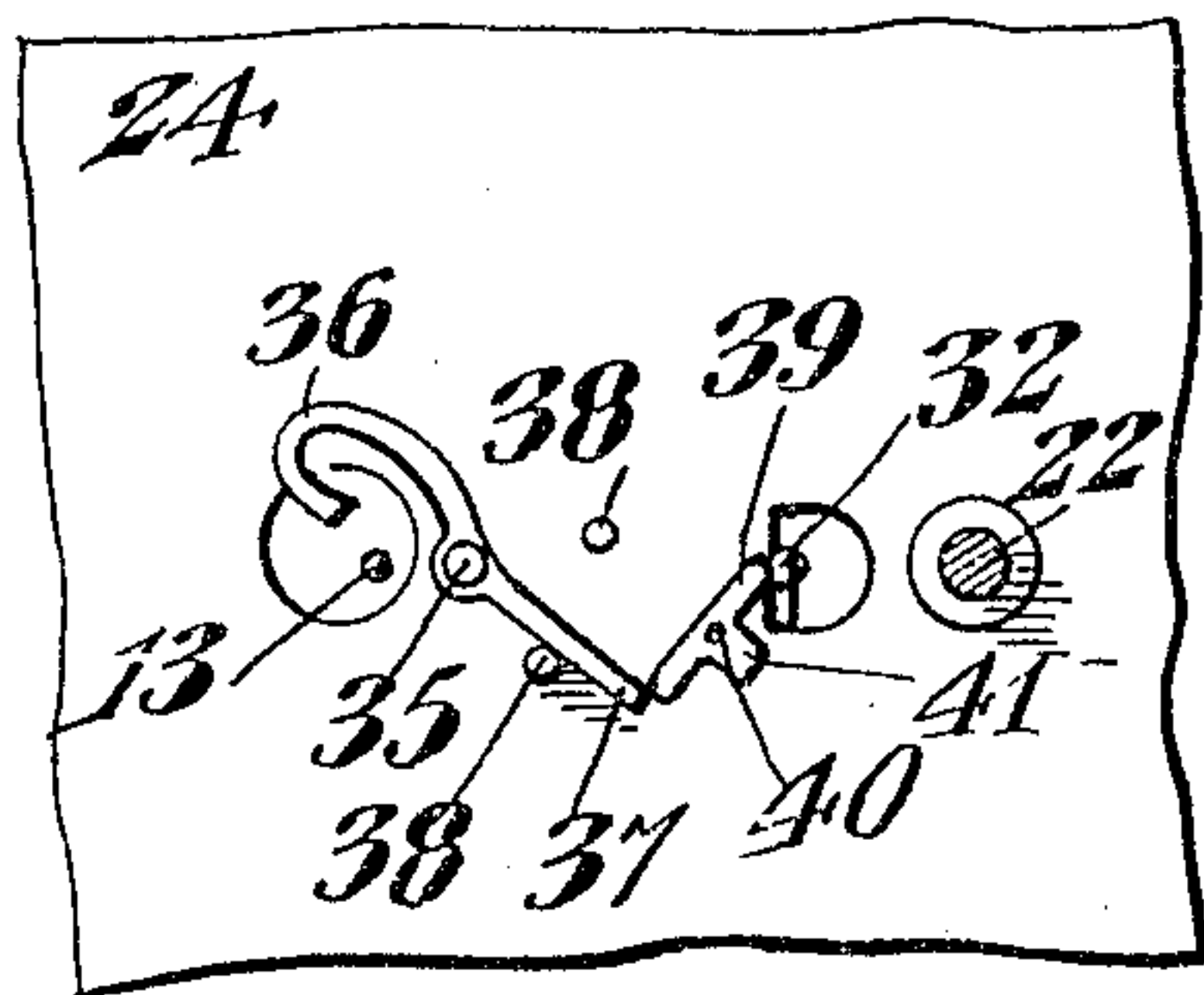


Fig. 8.



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3 SHEETS—SHEET 2.

Fig. 2.

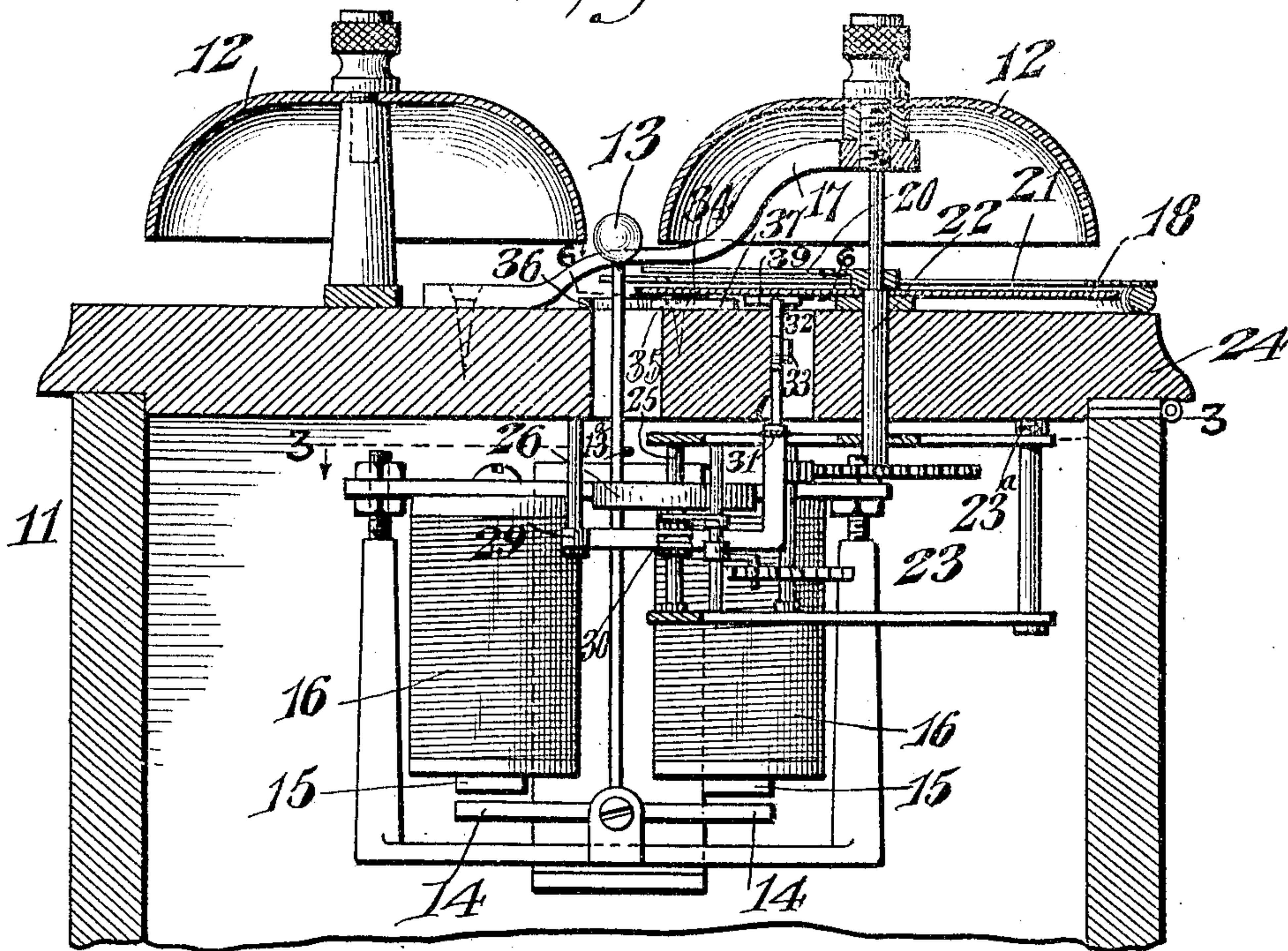


Fig. 5.

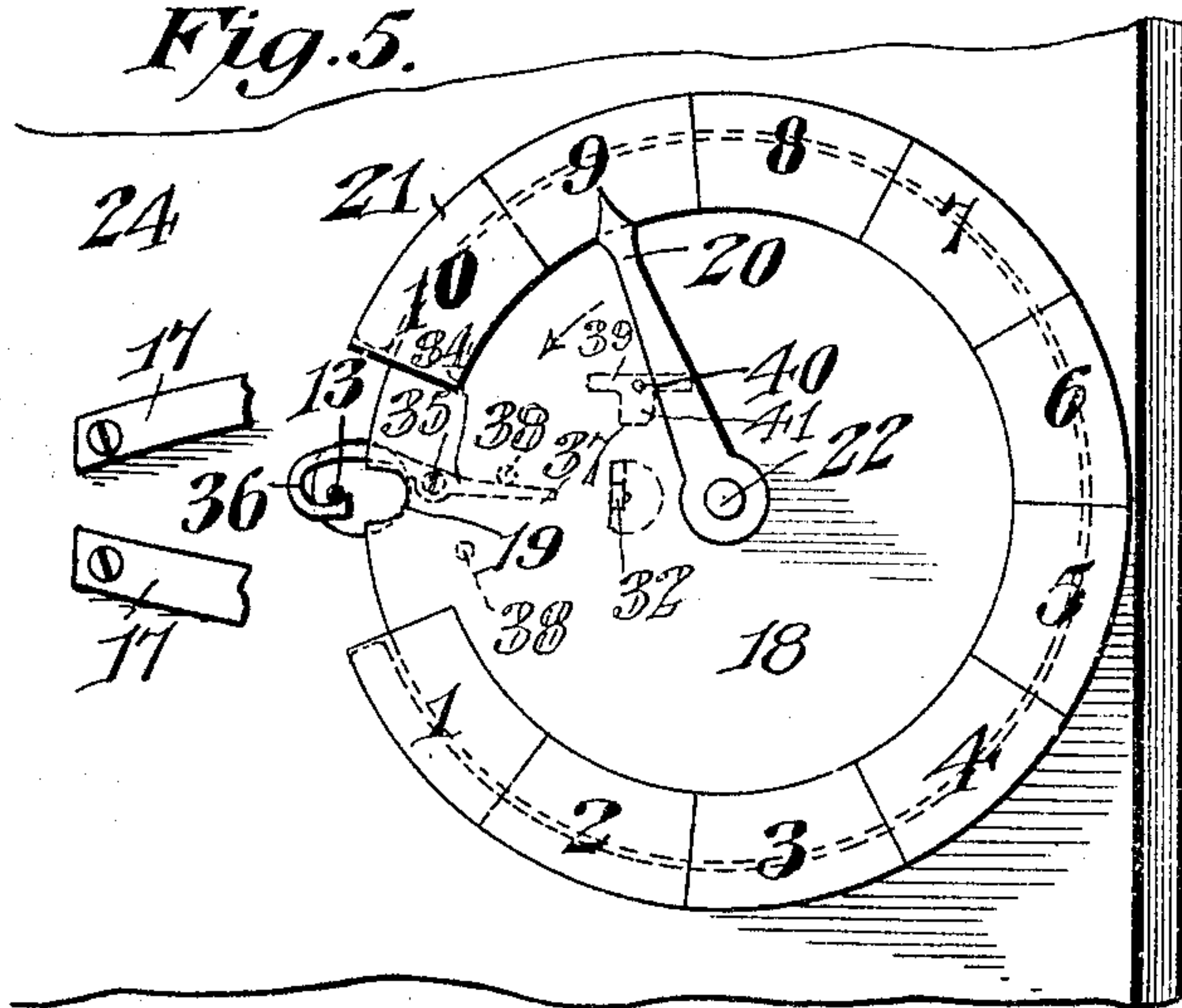
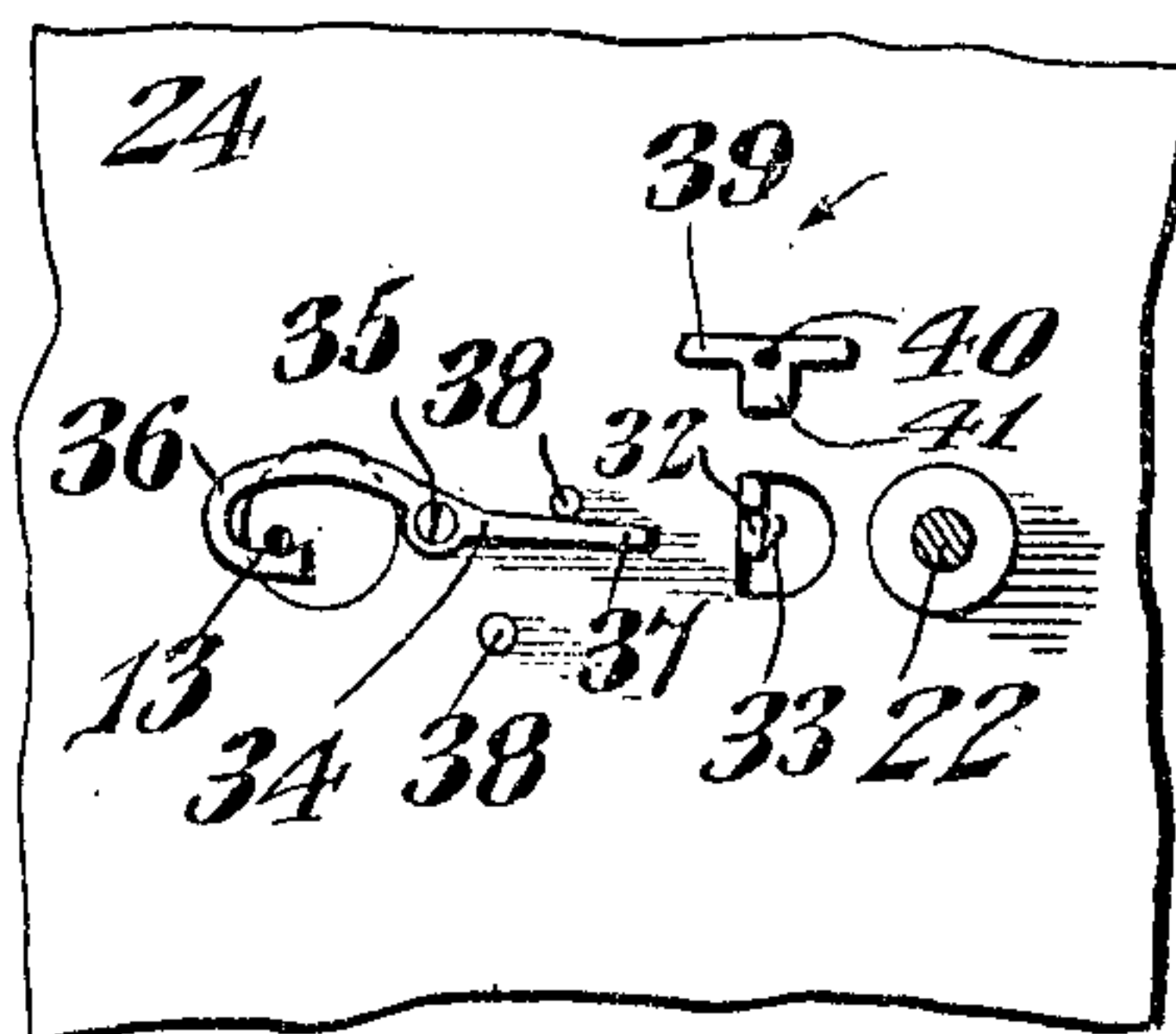


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 3.

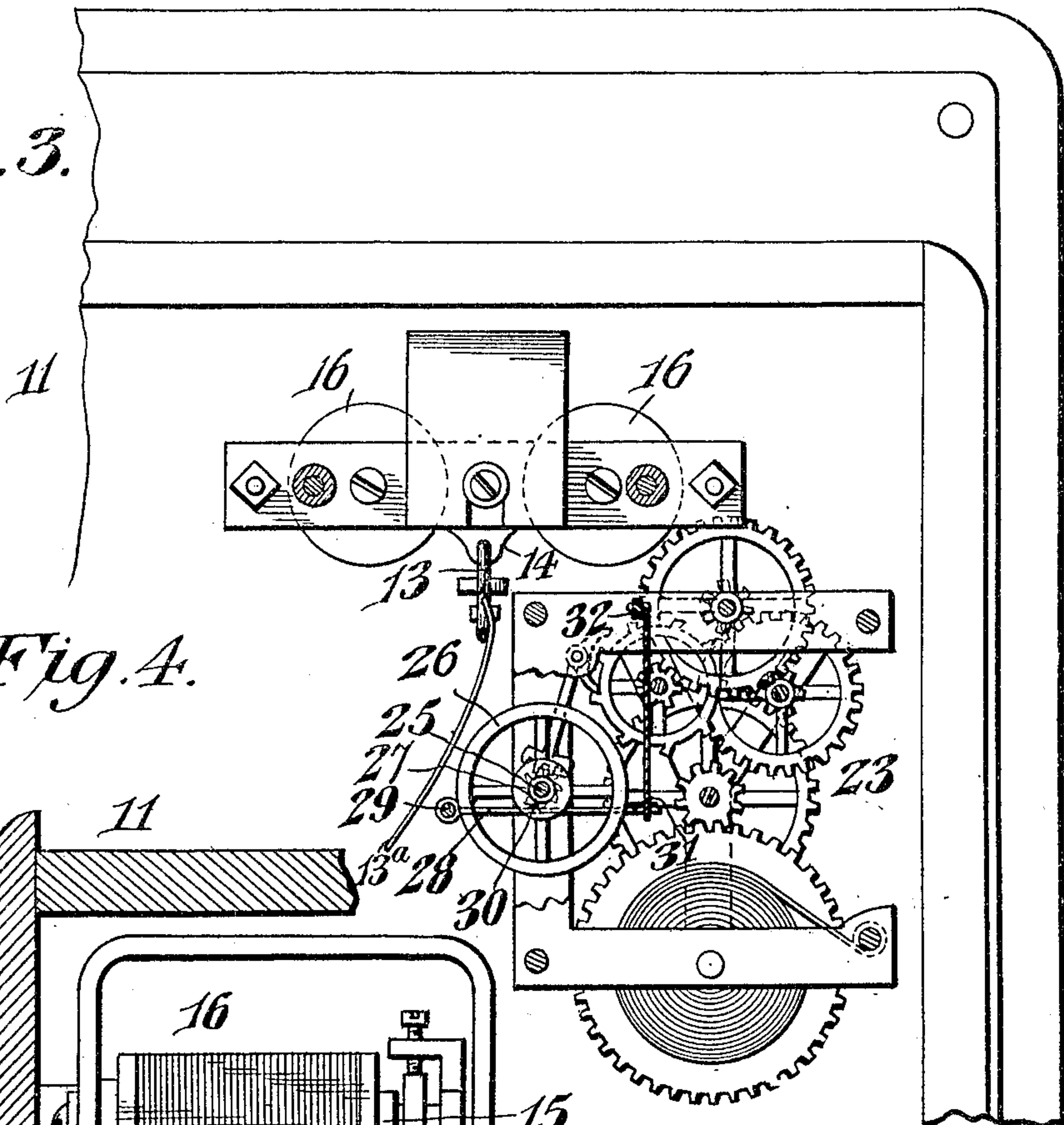


Fig. 4.

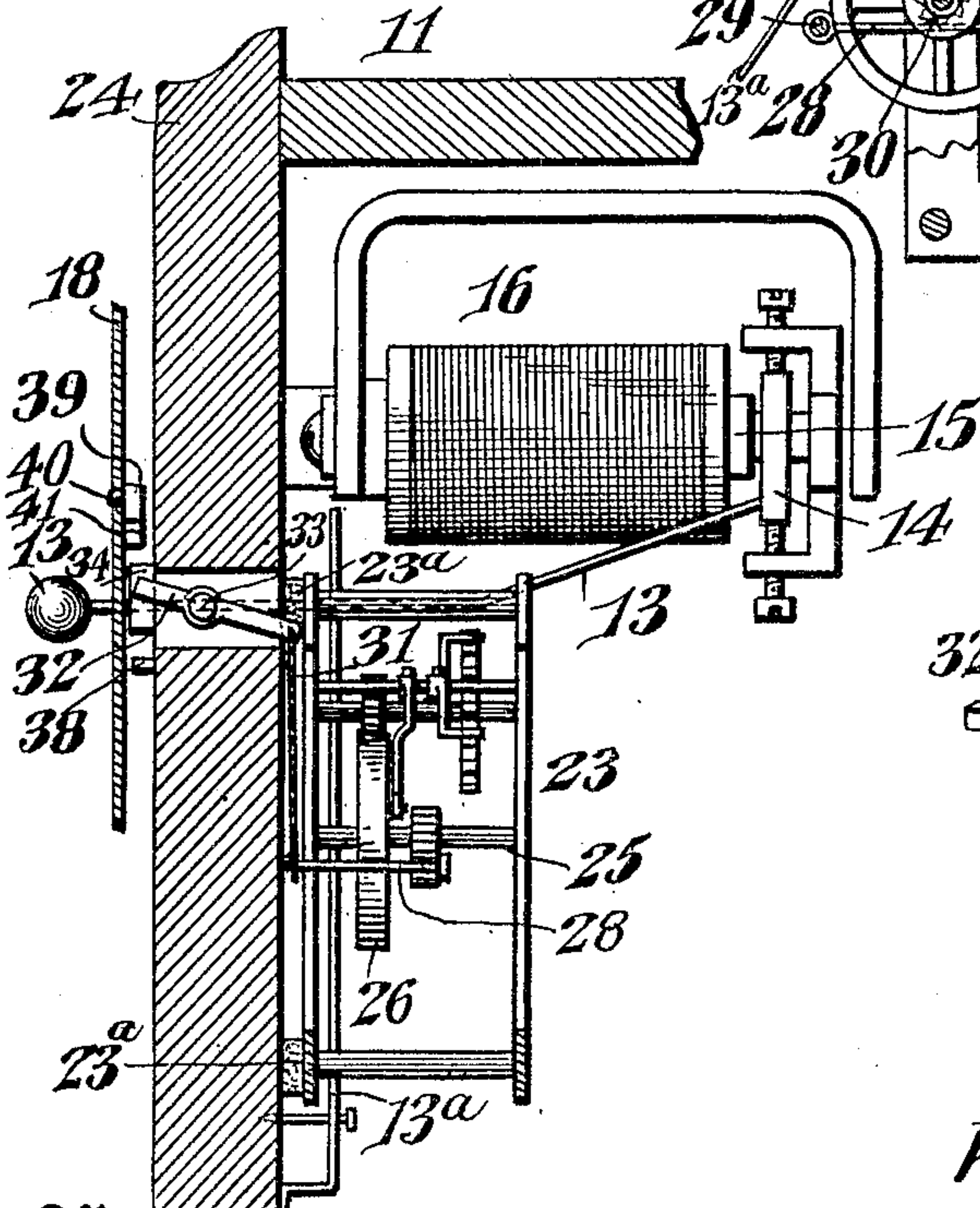
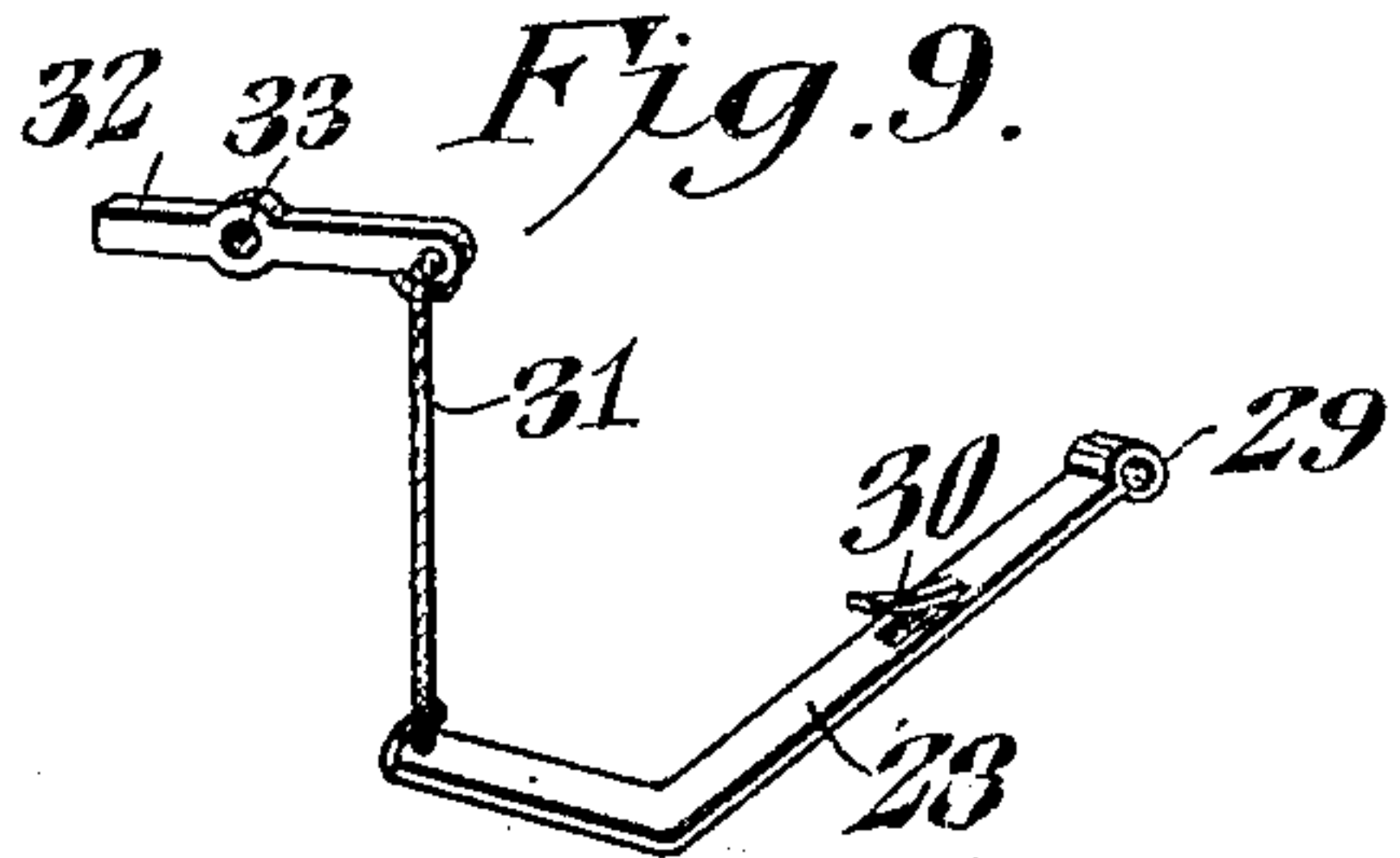


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM EDWARD ZABST, OF PORTAGE, WISCONSIN.

TELEPHONE CALL MECHANISM.

No. 913,607.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed July 8, 1908. Serial No. 442,571.

To all whom it may concern:

Be it known that I, WILLIAM E. ZABST, a citizen of the United States, residing at Portage, in the county of Columbia and State of Wisconsin, have invented a new and useful Telephone Call Mechanism, of which the following is a specification.

As is well known to those skilled in the art of telephony, it is the usual custom especially in suburban and country systems to place a number of subscribers on the same line, and as a result, every call upon the line operates the signals of all the instruments, thus necessitating a call of an individual character for each party. The repeated ringing of the call bells, particularly when a comparatively large number of parties are on the line becomes a nuisance, besides parties having eavesdropping propensities, learning the calls of the different subscribers, will know when any particular party is called, and can overhear the ensuing conversation. As a result of both objections, very few subscribers are placed on the same line.

The primary object of the present invention is to provide novel means of a simple nature, whereby any party desired can be called by the central or by any other party without the signal bells of all or any other of the subscribers on the same line being operated, thus providing a system in which the above objectionable features are eliminated, and making it practically possible to place a large number of instruments on the same line.

A further and important object is to provide means of the above character in the form of an attachment that can be applied to practically any style of instrument without materially altering or modifying the structure thereof, and without changing in any manner the electrical features of the instrument or the lines with which it is connected.

An embodiment of the invention that is at present considered the preferable one is illustrated in the accompanying drawings, wherein:—

Figure 1 is a front elevation of a portion of a line, showing two instruments connected thereto. Fig. 2 is a sectional view on an enlarged scale on the line 2—2 of Fig. 1. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Fig. 4 is a vertical sectional view through the structure. Fig. 5 is a front

elevation of the indicating mechanism, with the bell that is placed thereover removed. Fig. 6 is a detail view of the mechanism behind the indicator, and is a sectional view substantially on the line 6—6 of Fig. 2. Figs. 7 and 8 are views similar to Fig. 6, but showing the parts in different relations. Fig. 9 is a detail perspective view of the motor brake and actuating device therefor.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated, a telephone line is shown diagrammatically in Fig. 1, and is designated 10. Connected to the same, in the ordinary manner, are a plurality of instruments 11, two being shown. These instruments are of the ordinary type, and include the usual signal or call bells 12 having clappers 13 for operating the same. The said clappers are connected to armatures 14 coöperating with the cores 15 of electromagnets 16, and thus when the magnets are energized by an alternating current, the clappers will be actuated to ring the bells in a manner well understood. In the present form of construction, mechanism is employed for controlling the actuation of each clapper 13 of the instruments on the line, and as this mechanism is the same for each instrument, a description of one will suffice for all.

One of the bells 12 is supported by a bracket 17, and beneath this bracket, is a rotatable controller in the form of a disk 18, the edge of which is disposed in the path of movement of the clapper 13 so as to prevent its engagement with the bell. It is, however, provided at one point with a notch 19 that permits the clapper to swing into engagement with the bell when the notch is in line therewith, as will be evident by reference to Fig. 5. Carried by each disk is a pointer 20 that operates over a stationary scale 21 that is disposed over the margin of the controller disk 18, the scale being consecutively numbered. In the present embodiment, ten numerals are illustrated. The number, however, varies according to the number of parties on the line, and a much greater number may be employed if desired, ten being here illustrated in order to show the figures on a sufficiently large scale. The notches 19 of the various disks are disposed in different relations to the pointers. Thus in those shown as illustrated more particularly in

Fig. 1, the notch 19 of the right hand instrument aligns with the clapper 13 when the pointer is over the number 9. Consequently this instrument may be designated "9", while on the instrument on the left hand side, the notch is so arranged that it will align with the clapper when the pointer of said instrument is over the reference numeral 8. This instrument for the purpose of explanation may be designated "8".

The disk 18 and pointer 20 are carried by a shaft 22, forming a part of a suitable spring motor 23 secured to the inner side of the door 24 of the instrument and mounted on suitable sound deadening material 23^a, said spring motor including a shaft 25 having a balance wheel 26 thereon, forming part of the usual escapement mechanism. The shaft 25 is also provided with a ratchet wheel 27, and a spring brake arm 28, secured rigidly at one end, as shown at 29, has a tooth 30 that is movable into and out of engagement with the teeth of the ratchet wheel on the flexing of the arm to normally hold the motor against movement. The brake arm 28 has a cord or other suitable connection 31 with a brake actuating device, in the form of a lever 32 pivoted between its ends, as shown at 33, in the door 24 of the instrument, and projecting from the front face of said door behind the disk 18, where it constitutes a movable abutment as hereinafter explained. A latch 34 is pivoted between its ends, as shown at 35, on the outer side of the door at one side of the projecting lever or abutment 32, and has its outer end formed into a hook 36 that is arranged to embrace the arm of the clapper 13, said arm, however, being movable out of the hook, as will be apparent by a comparison of Figs. 7 and 8. The inner end portion 37 of the latch 34 operates between a pair of limiting lugs 38 and is disposed adjacent but in spaced relation to the projecting end of the lever 32. Pivoted between its ends on the rear side of the disk, is a stop element 39, the pivot therefor being designated 40. This element is so arranged that the inner end of the latch 37 and the projecting end of the lever 32 are disposed in the paths of movement of its ends, as shown in Fig. 7. The stop 39 has a depending weight 41.

The operation of the mechanism is substantially as follows: Under normal conditions or when the instruments are not in use, the parts are in the positions shown in Fig. 1, in which case, the pointers 20 are preferably in line with the bell clappers. When so arranged, the latches, actuating levers and stops are in the positions shown in Fig. 7. That is to say, the arm of each bell clapper is engaged in the hook 36 of its latch, and the stop 39 bears against one end of the latch and against the outer end of the actuating lever 32. Consequently the brake 28

will be held in elevated position with its tooth 30 engaged in the ratchet wheel. If now it is desired to call some one along the line, a current is sent over said line in any well known manner. As a result, the magnets 16 will be energized, the armatures 14 will be moved, and the clappers 13 operated. These clappers have sufficient play to disengage from the hooks 36, but they cannot strike the bells, because of the intervening edges of the controller disks 18. As soon, however, as they move out of the hooks 36, the upward tension on the outer ends of the levers 32 due to the spring of the brake arms, is sufficient to cause the inner ends 37 of the latches 34 to be depressed, thus swinging the stops 39. As a result, the brake arms 28 drop and carry their teeth 30 out of engagement with the various ratchet wheels 27. The motors, which before were at a state of rest, now begin to operate, and all are so arranged that they will move at the same speed. As a result, the various controller disks 18 and pointers 20 will be rotated. Therefore the different notches 19 of said controller disk will successively pass the clapper arms 13, and the pointers 20 will indicate when each passes. The person calling therefore waits until the pointer of his instrument reaches the number desired, whereupon he gives another ring. At that time, the notch of the party called is in line with the clapper arm. Consequently that particular clapper can operate sufficiently to ring the bell, while all the others cannot. In this connection it may be stated that the left hand bell can be so located that it will not be struck except when the clapper can secure sufficient momentum by its movement into the notch, or the left hand bell can be placed so that it will not be struck. The party called removes his receiver from the hook in the ordinary manner, and the conversation is carried on. When through, the parties hang up their receivers, and the line is in its original condition. In explanation of this, attention is invited particularly to Fig. 8, wherein it will be noted that as the stop 39 passes the lever 32 and latch 34, it will be swung, but as soon as it has passed the same, the weight 40 will cause the said stop to swing back to its original position, so that when it has made one complete cycle, or in other words, when the controller disk has made one complete revolution, the opposite ends of the stop will again engage the lever 32, and latch 34. The outer end of said latch being heavier than the inner end, it will swing back to its original position. As soon as the stop has passed it, the clapper will again engage in the hook. In this connection, it will be noted that a spring 13^a is employed that normally holds the clapper in its extreme left hand position so that the hook 36 will always engage the same, the

spring also preventing the clapper from catching in the notch of the disk and preventing its rubbing against the edge of the disk. The parts therefore will be again
 5 stopped as soon as the pointer has revolved once, for the spring brake arm 28 will be raised so that the tooth 30 will engage the teeth of the ratchet wheel 27 and will stop the motor. This stoppage occurs moreover
 10 when the escapement is off its dead center so that the motor will always start when released.

With this construction therefore, it will be evident that any party along the line may
 15 be called without the signal of any other party being operated, and this call may be made either from the exchange or from any instrument along the line. Moreover the motors are normally at a standstill so that
 20 they will be operative for a comparatively great length of time. The mechanism furthermore is very simple and can be applied to any instrument by merely changing the support for the right hand bell, and without
 25 the necessity of altering the mechanism of the instrument. Furthermore the motor and the various parts associated therewith are housed within the casing where they are out of the way, and are not apt to be tam-
 30 pered with, the device for winding the spring preferably projecting from the front door, as shown in Fig. 1.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will
 35 be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction, may be resorted to without de-
 40 parting from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by
 45 Letters Patent, is:

1. In a system of the character set forth, the combination with a signal member, of controlling means engaging with the signal member to hold the same from full operation
 50 but permitting it to be partially operated, a motor, holding means for the motor, means acting to withdraw the holding means from engagement with the motor, and mechanism engaged with the holding means to pre-
 55 vent its releasing the motor, said mechanism being held in its engaged position by the signal member, but adapted to be released by a partial movement of the signal member, thus permitting the motor to actuate the
 60 controlling means and move it out of the way of the signal member.

2. In a system of the character set forth, the combination with a signal, of a controlling device therefor, preventing the full ac-
 65 tuation of the signal but permitting partial

movement thereof, means coacting with the controlling device for normally holding the motor against movement, mechanism mounted on the controlling device engaging with the signal and with the holding device to
 70 prevent release of the holding device, and electrically-operated means for partially moving said signal, releasing the mechanism above referred to and the holding means to permit the motor to actuate the control-
 75 ling device.

3. In a system of the character set forth, the combination with a signal, of controlling means therefor, a motor for operating the controlling device, means for normally hold-
 80 ing the motor against movement, said means including a latch that is associated with the controlling means, and a device movably mounted on the controlling means and en-
 85 gaging the latch.

4. In a system of the character set forth, the combination with a signal, of a controlling device therefor, a motor for operating the controlling device, means for nor-
 90 mally holding the motor against movement, said means including a latch that is associated with the controlling device, a stop element movably mounted on the controlling device and detachably engaging the latch, means for normally holding the latch in the
 95 path of movement of the stop element, and means for holding the stop element against movement when engaged by the latch.

5. In a system of the character set forth, the combination with a signal, of a con-
 100 trolling device therefor, a motor for operating the controlling device, means for normally holding the motor against movement, said means including a pivotally mounted latch that is associated with the controlling
 105 device, and a stop element pivotally mounted on the controlling device and detachably engaging the latch.

6. In a system of the character set forth, the combination with a signal, of movable
 110 controlling means therefor, a stop pivotally mounted between its ends on the controlling means, an abutment located in the path of movement of one end of the stop, and a latch located in the path of movement of the other
 115 end of the stop, said latch being movable to a position to permit the stop to pass the same and the abutment.

7. In a system of the character set forth, the combination with a vibratory signal ele-
 120 ment, of controlling means for the signal element, a motor, a brake for the motor, and means mounted on the controlling means and operated by a movement of the signal element for effecting the operation of the
 125 brake.

8. In a system of the character set forth, the combination with a signal, of controlling means for the signal including a motor, a brake for the motor, and means including a
 130

device mounted on and movable with the controlling means for releasing the brake to permit the operation of the motor when it is desired to actuate the signal.

5 9. In a system of the character set forth, the combination with a signal element, of a movable device controlling its operation, a motor for moving the controlling device, a brake for normally holding the motor
10 against movement, and means including a device pivotally mounted on the controlling device and engaging with the signal element for controlling the operation of the brake.

10. In a system of the character set forth,
15 the combination with a signal, of a movable device controlling its operation, a motor for moving the device, a brake for normally holding the motor against operation, a movable abutment connected to and constituting
20 actuating means for the brake, and a stop carried by the controlling device and detachably engaging the abutment.

11. In a system of the character set forth, the combination with a signal, of a movable
25 device controlling its operation, a motor for moving the device, a brake for normally holding the motor against operation, a movable abutment connected to and constituting actuating means for the brake, a stop pivoted
30 on the controlling device and detachably engaging the abutment, and a movable latch also disposed in the path of movement of the stop.

12. In a system of the character set forth,
35 the combination with a signal, of a rotatable controlling device for normally preventing its movement except at a predetermined period, a motor for rotating the controlling device, a brake for the motor, a stop pivoted
40 between its ends on the controlling device, an actuating device for the brake disposed in the path of movement of one end of the stop, and a pivoted latch having a portion disposed in the path of movement of the
45 other end of the latch.

13. In a system of the character set forth, the combination with a movable signaling
element, of a movable controlling device therefor, locked in its path of movement and
50 preventing a full actuation of the signal element but permitting a partial actuation thereof, and a latch engaging with and held in position by the signaling element for releasing the controlling device from engage-
55 ment with the signaling element to permit its full actuation.

14. In a system of the character set forth, the combination with a signal including a
movable device, of a movable controlling de-
60 vice operating in the path of movement thereof, and mechanism for preventing the actuation of the controlling device including an element detachably engaged by the movable device of the signal.

15. In a system of the character set forth, 65 the combination with a signal bell and a clapper therefor, of movable controlling means for holding the clapper against engagement with the bell, and mechanism for preventing the actuation of the controlling
70 means including a latch normally held by the clapper and detachably engaging the same, said latch being released upon the movement of the clapper.

16. In a system of the character set forth, 75 the combination with a signal including a movable device, of a movable controller for holding said device against a signaling movement, a motor for moving the controller, and mechanism detachably engaging the movable
80 signaling device for controlling the operation of the motor.

17. In a system of the character set forth, the combination with a signal, including a
movable signal element, of a movable con- 85 troller for holding said element against a full movement but permitting a partial movement thereof, a motor for moving the controller, a brake for holding the motor against movement, and mechanism engaged
90 with the brake to lock it from a releasing movement, said mechanism being engaged by the signal element when stationary and held thereby in its locking position, but re-
95 leased upon a partial movement of said signal element.

18. In a system of the character set forth, the combination with a signal including a
movable device, of a movable controller for holding said device against a signaling move- 100 ment, a motor for moving the controller, a brake for holding the motor against movement, and mechanism for operating the brake including a latch detachably held by the signaling device. 105

19. In a system of the character set forth, the combination with a signal including a
movable device, of a movable controller for holding said device against a signaling move- 110 ment, a motor for moving the controller, a brake for holding the motor against movement, a movable actuating device for the brake, a latch detachably held by the signaling device, and a stop carried by the con-
115 troller and detachably engaging the latch and actuating device.

20. In a system of the character set forth, the combination with a bell and clapper
therefor, of a rotatable controlling device for preventing the engagement of the clapper 120 with the bell, said device having a notch in its periphery that permits the clapper to engage said bell, a motor for rotating the controlling device, a brake for the motor, a
movable actuating device for the brake, a 125 pivoted latch having a portion detachably engaged by the bell clapper, and a stop pivoted between its ends on the controlling de-

vice, the ends thereof being arranged to detachably engage the actuating device and latch.

21. In a system of the character set forth, the combination with a plurality of telephone instruments, of a signal bell and a movable clapper for each instrument, a movable controller for holding each clapper against a signaling movement, said controllers having a predetermined cycle of movement and having portions disposed in different relative positions for permitting signaling movements of the various clappers, a motor for each controller, and means detachably engaging the clappers and disengaged upon the initial movements of said clappers to set the motors in operation and cause one complete cycle of movement of the various controllers.

22. In a system of the character set forth, the combination with a plurality of telephone instruments, of a signal bell, a movable clapper for each instrument, a rotatable controller located in the path of movement of each clapper for holding the same against a signaling movement, said controllers having sockets disposed in different relative positions to permit the clappers to strike the bells, a motor for each controller, and means controlled by the initial movements of the clappers to set the motors in operation and cause one complete synchronous rotation of the various controllers.

23. In a system of the character set forth, the combination with a plurality of telephone instruments, of a signal bell, a movable clapper for each instrument, a movable controller for holding each clapper against a signaling movement, said controllers having a predetermined cycle of movement and having portions disposed in different relative positions for permitting signaling movements of the various clappers, a motor for each controller, and means for normally holding the various motors against movement including latches detachably engaged with the clappers and released upon their initial movements.

24. In a system of the character set forth,

the combination with a plurality of telephone instruments, of a signal bell and a movable clapper for each instrument, a rotatable controller disk for holding each clapper against a signaling movement, the various disks having notches or sockets in their peripheries that are disposed in different relative positions and permit signaling movements of the various clappers, a motor for rotating each disk, a brake for holding each motor against movement, an actuating device for each brake, a stop mounted on each disk and detachably engaging the associated actuating device, and a latch detachably engaged with each clapper and engaging the stop, said latch being released from the clapper upon the movement of the same and reengaging said clapper after the disengagement of the stop from the latch.

25. In a system of the character set forth, the combination with a signal including a bell and a clapper movable into and out of coaction with the bell, a rotatable disk having portions located in the path of movement of the clapper for preventing the movement of the clapper into engagement with the bell, said disk having a notch, means for operating the disk, and a spring cooperating with the clapper for normally holding it out of engagement with the disk.

26. In a system of the character set forth, the combination with a signal including a bell and a clapper movable into and out of engagement with the bell, a rotary disk for controlling the movement of the clapper into engagement with the bell, a motor for operating the disk, means for controlling the movement of the motor including a hook that detachably engages with the clapper, and a spring engaging the clapper for yieldingly urging it away from the disk.

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

WILLIAM EDWARD ZABST.

Witnesses:

WM. M. EDWARDS,
CHAS. R. SELBACH.