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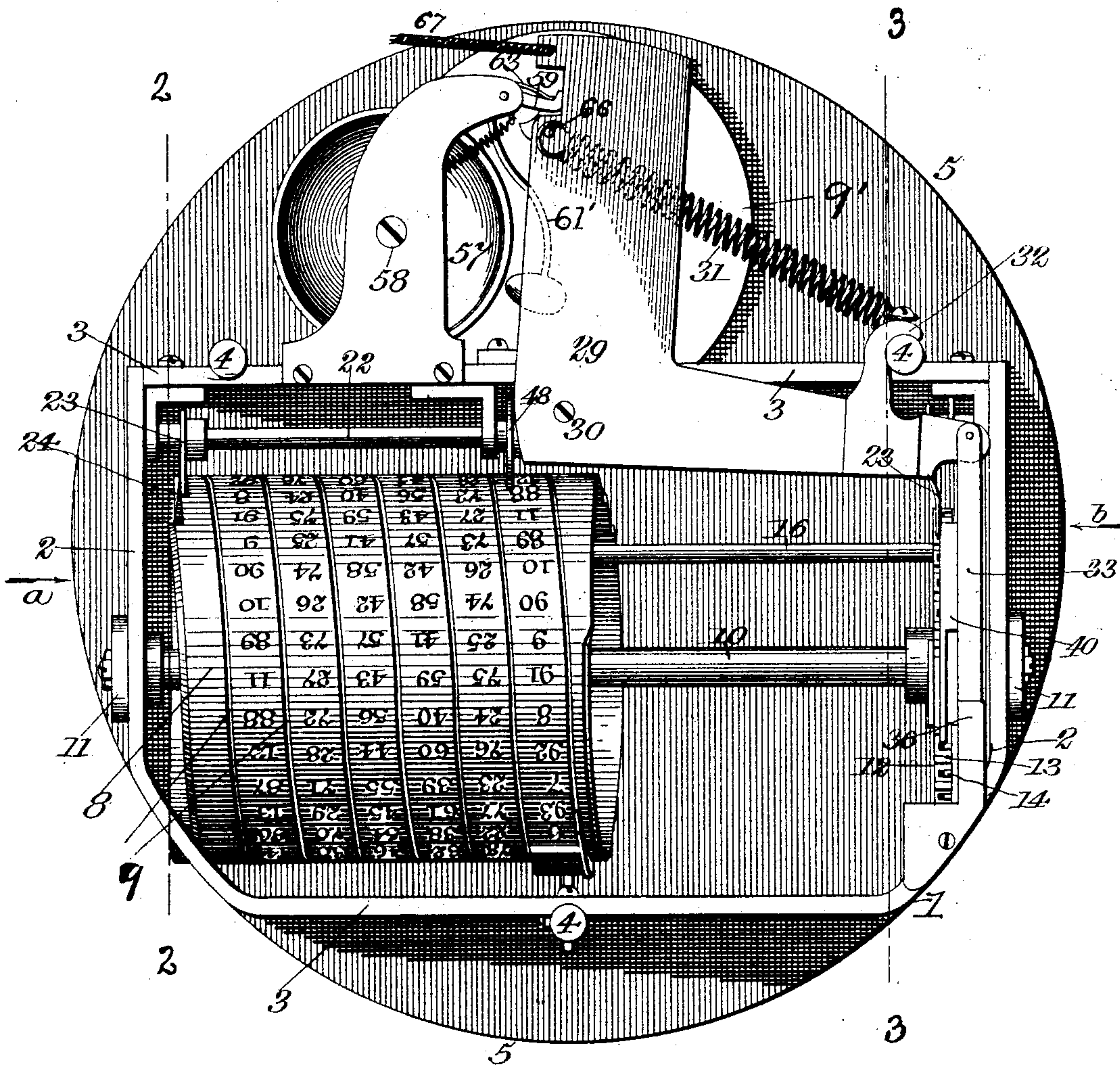
6 Sheets—Sheet 1.

E. T. TAYLOR.  
FARE REGISTER.

No. 515,888.

Patented Mar. 6, 1894.

Fig. 1.



Witnesses:

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Inventor  
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(No Model.)

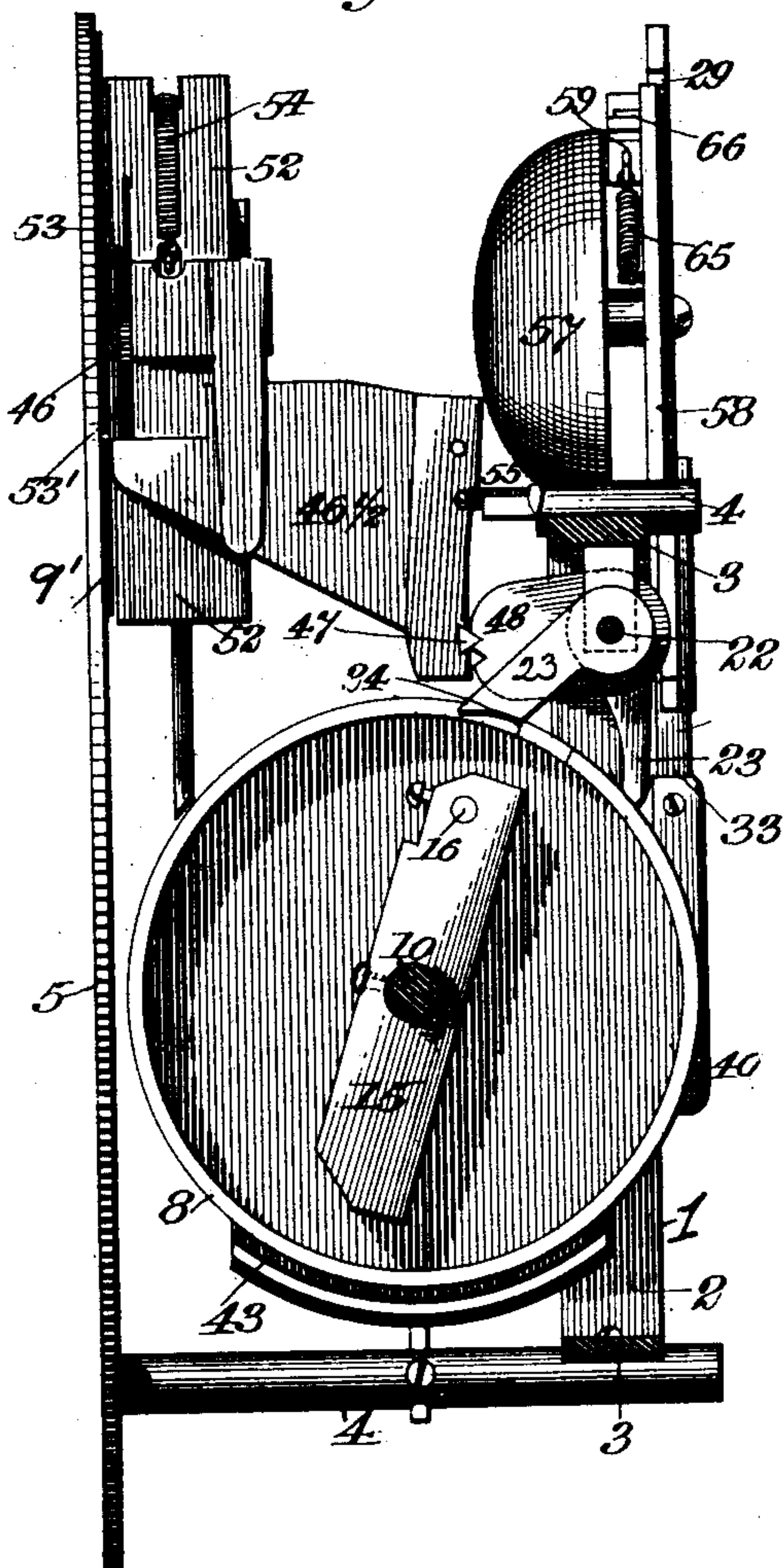
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E. T. TAYLOR.  
FARE REGISTER.

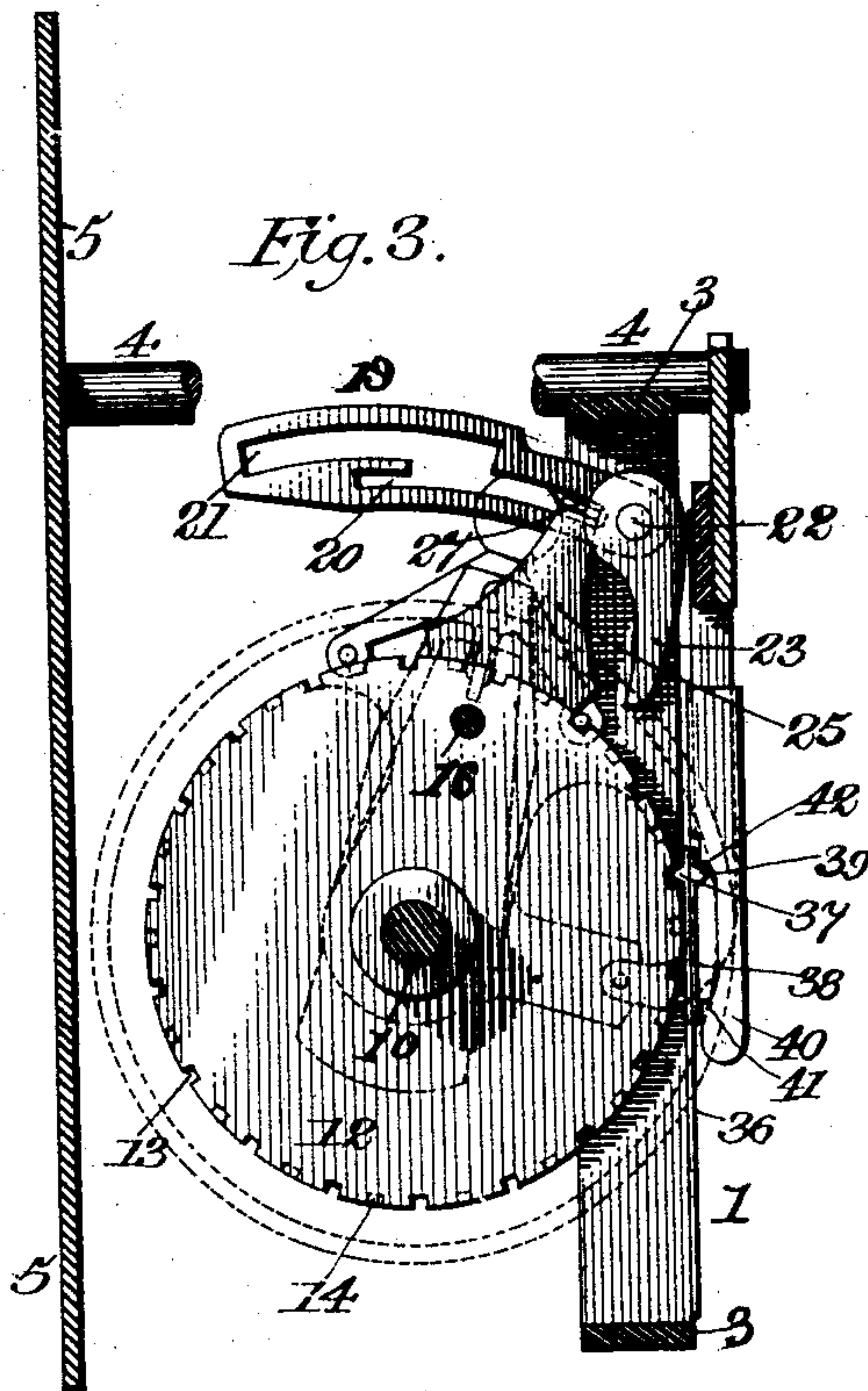
No. 515,888.

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*Fig. 2.*



*Fig. 3.*



Witnesses:  
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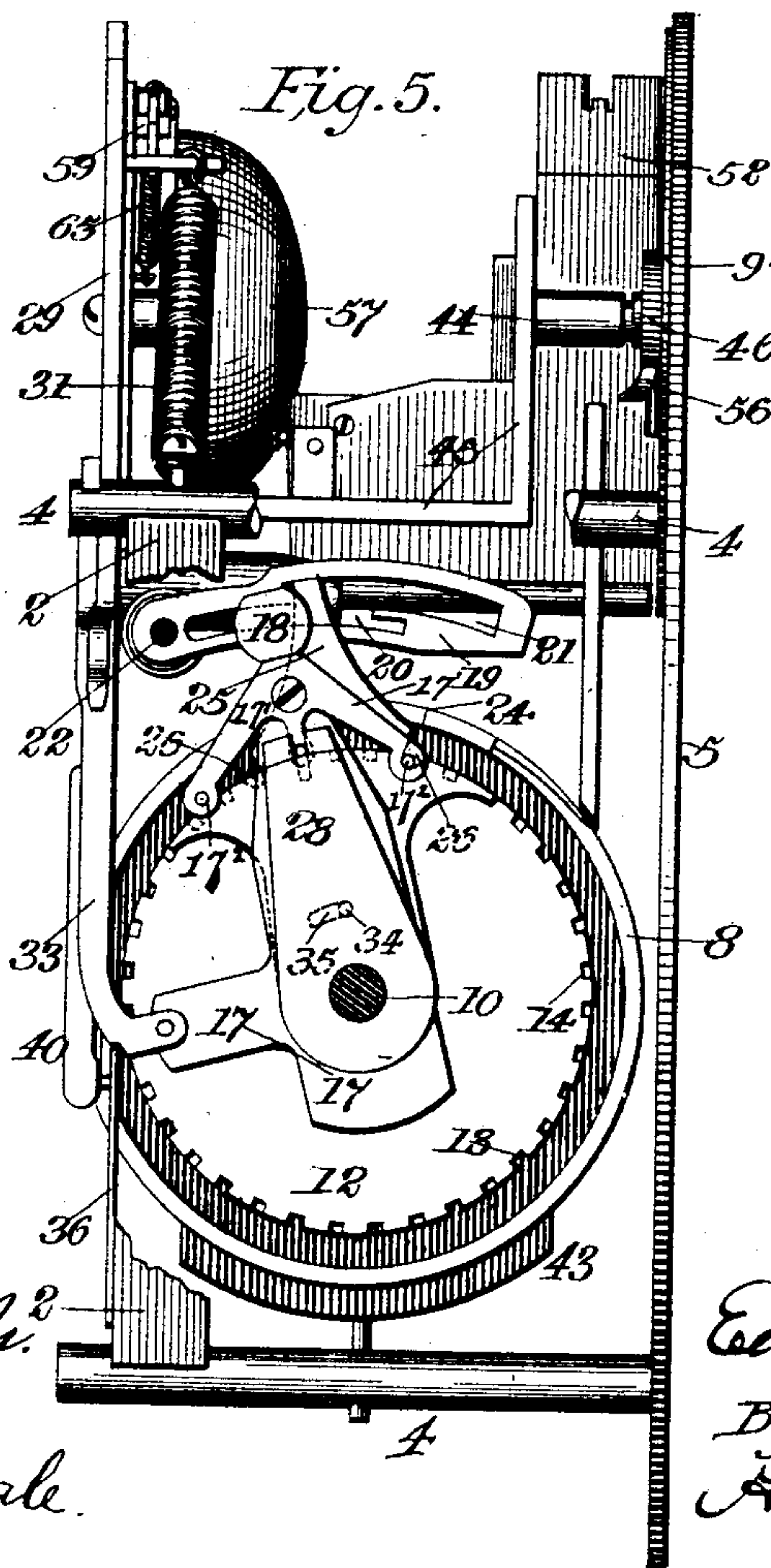
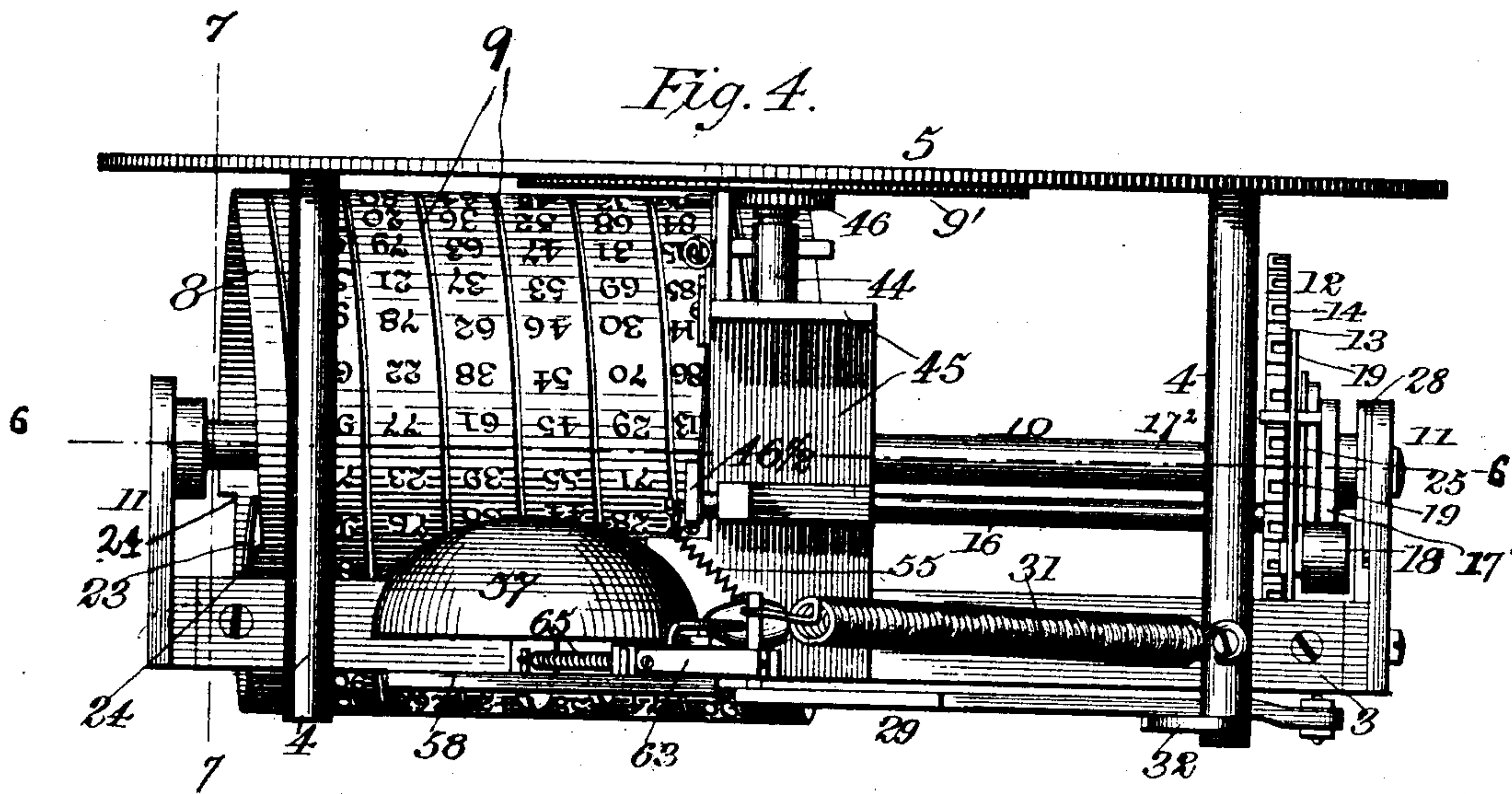
(No Model.)

6 Sheets—Sheet 3.

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6 Sheets—Sheet 4.

E. T. TAYLOR.  
FARE REGISTER.

No. 515,888.

Patented Mar. 6, 1894.

Fig. 6.

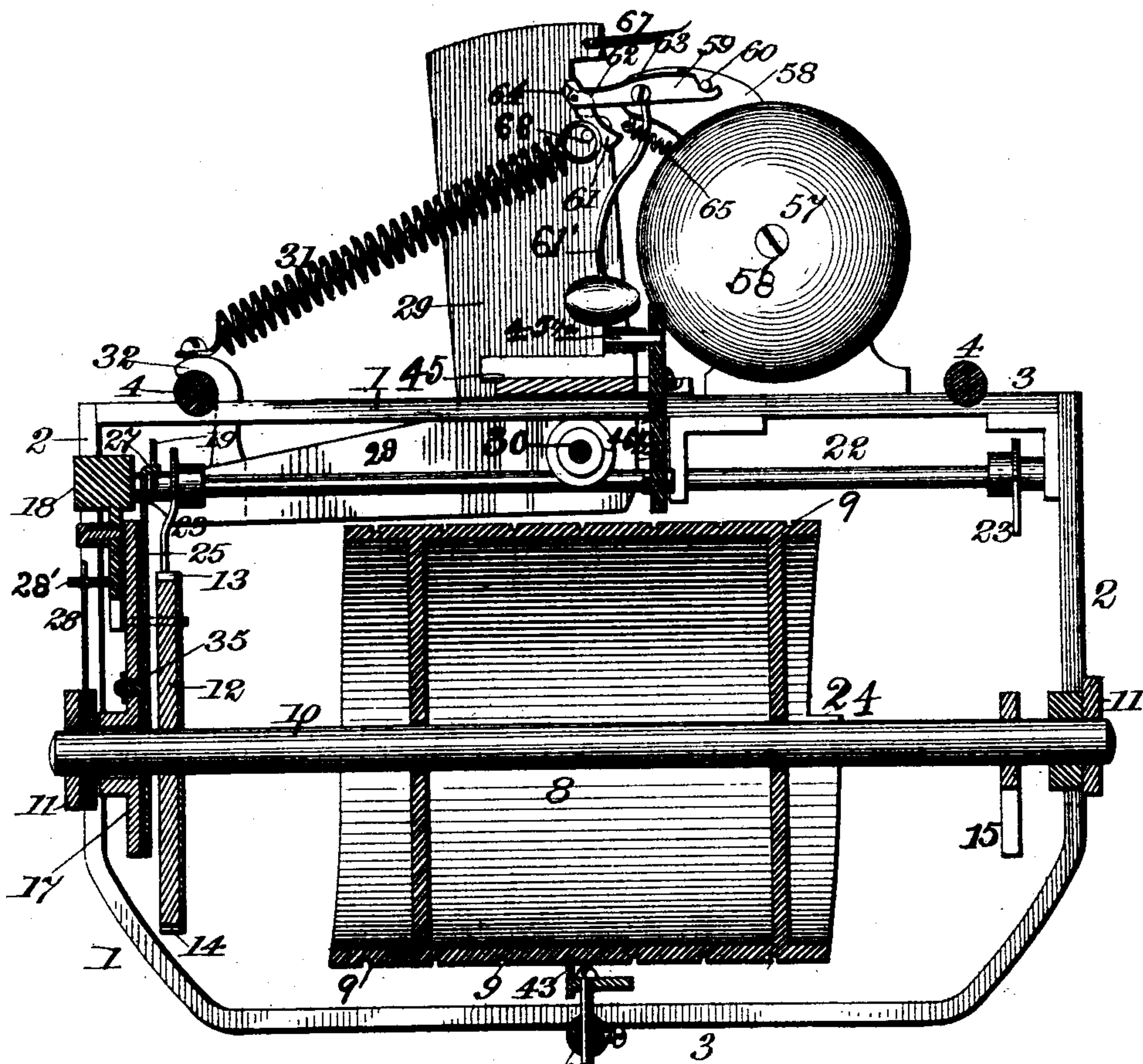
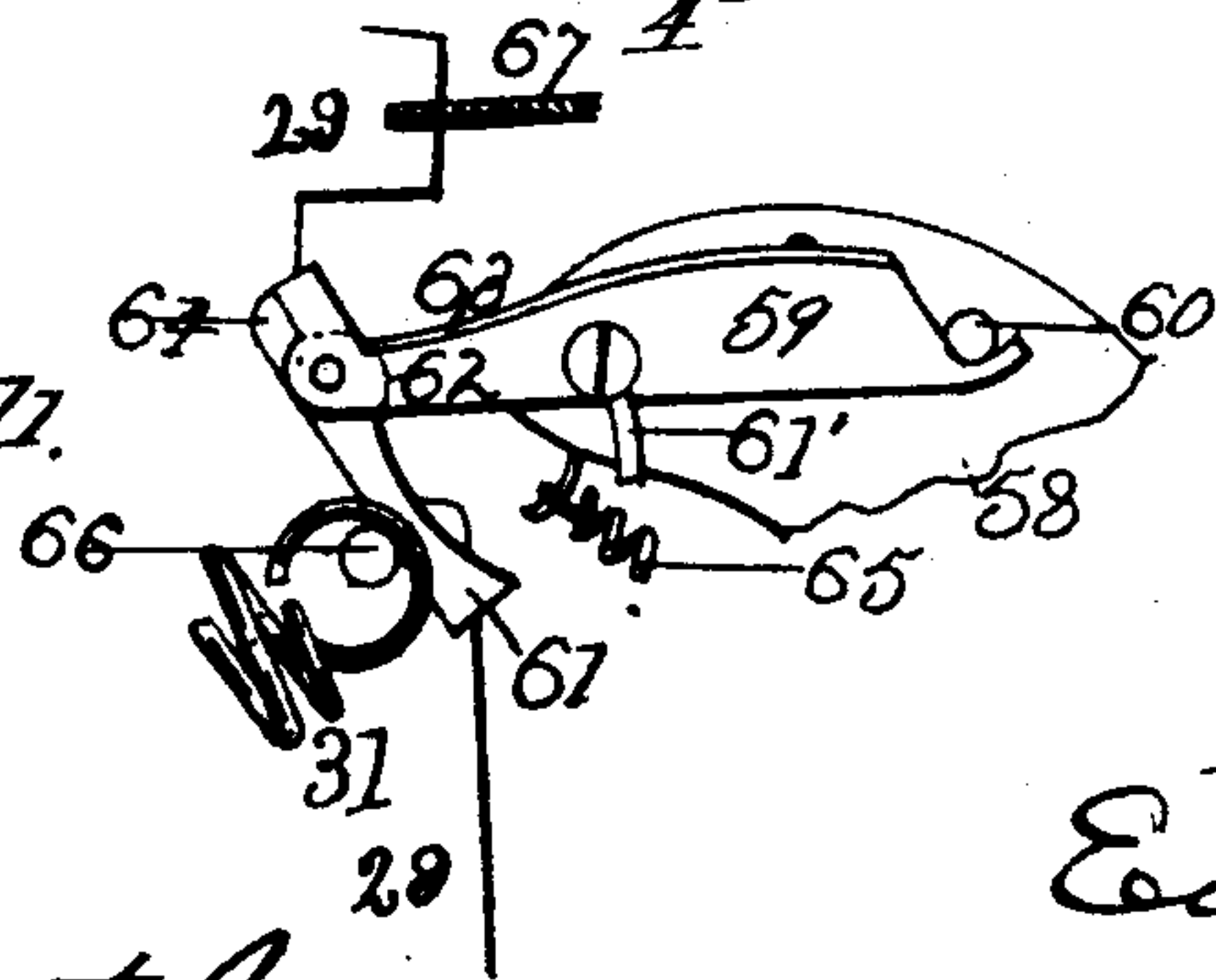


Fig. 11.



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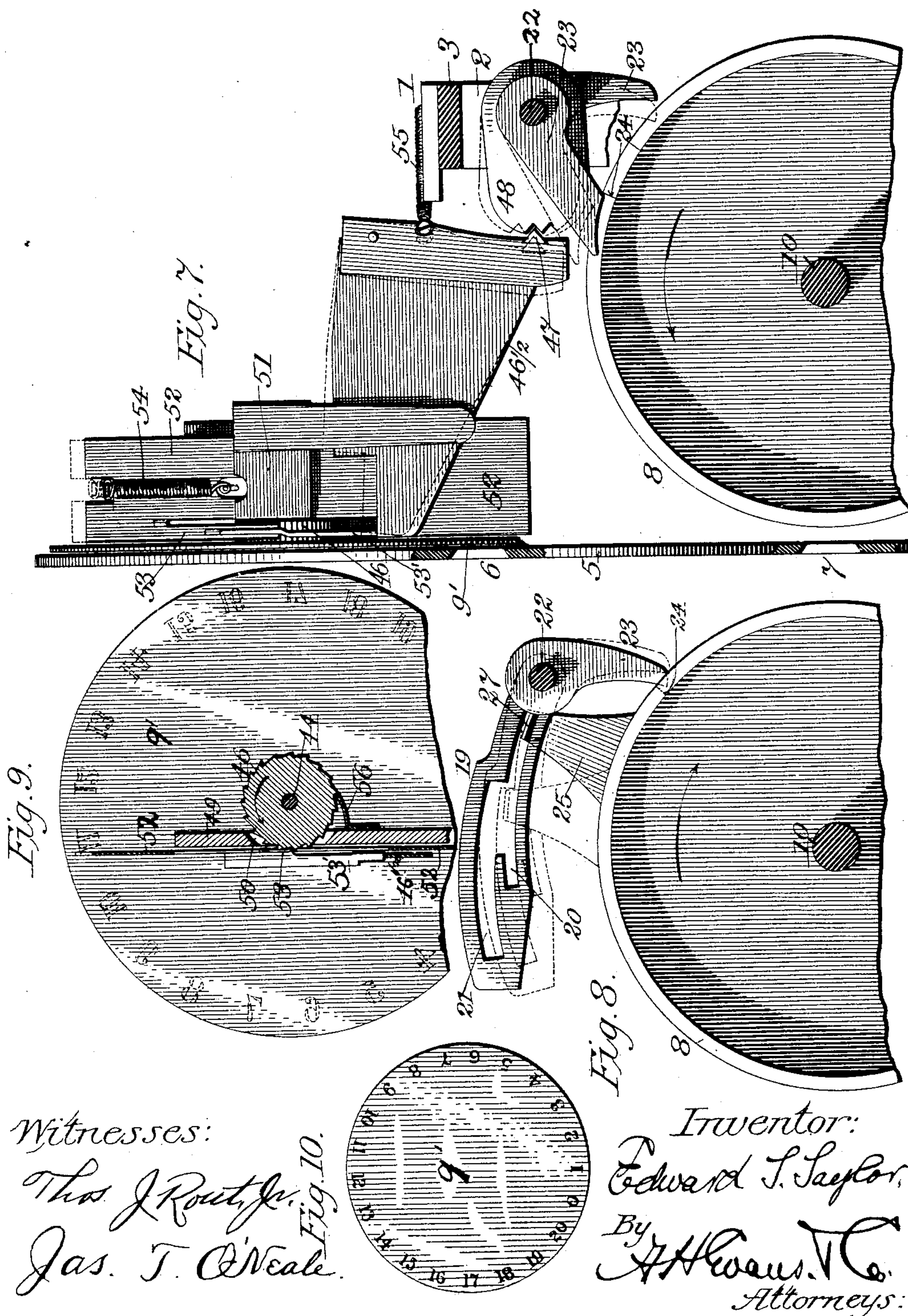
(No Model.)

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E. T. TAYLOR.  
FARE REGISTER.

No. 515,888.

Patented Mar. 6, 1894.



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Fig. 10.

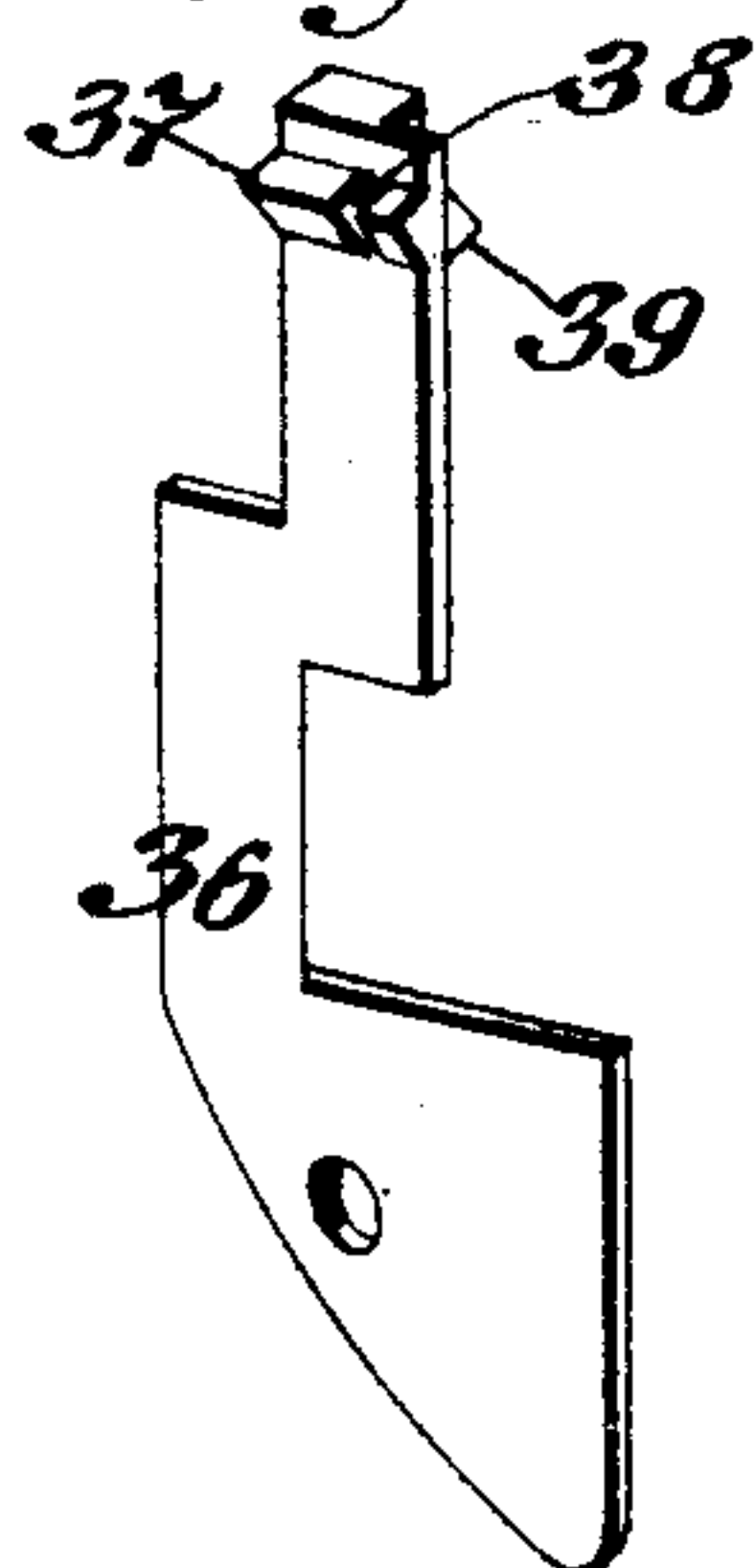
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E. T. TAYLOR.  
FARE REGISTER.

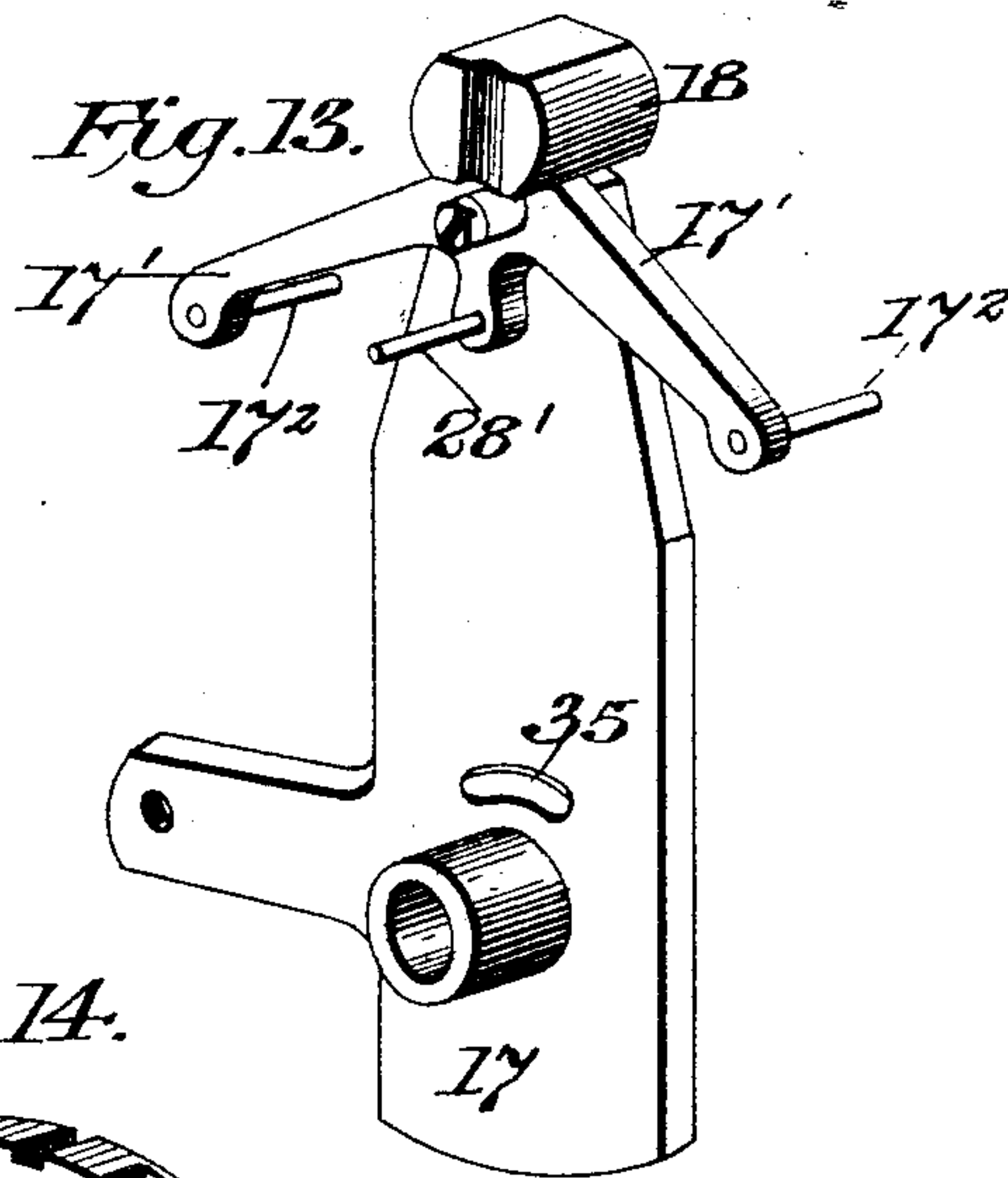
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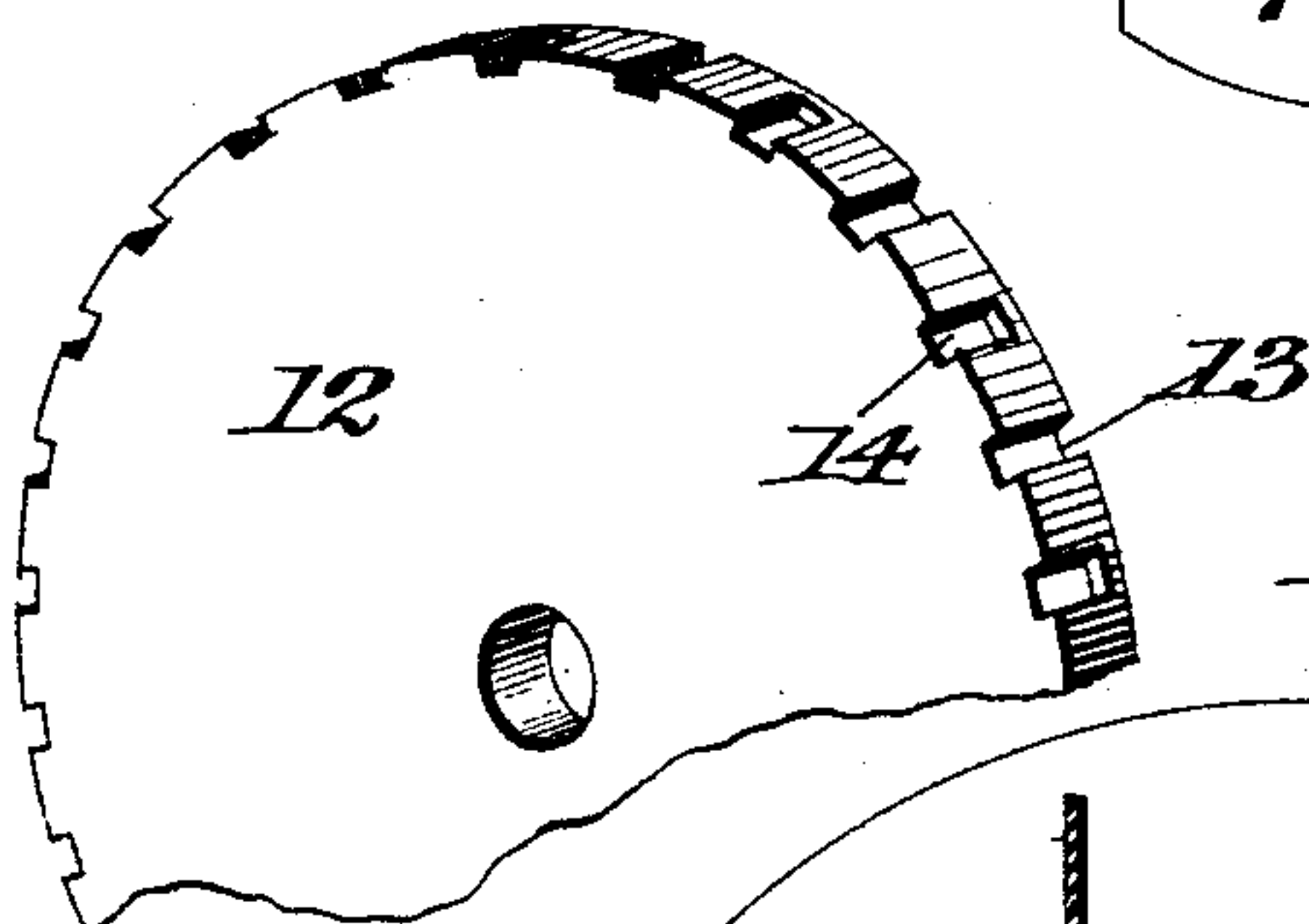
*Fig. 12.*



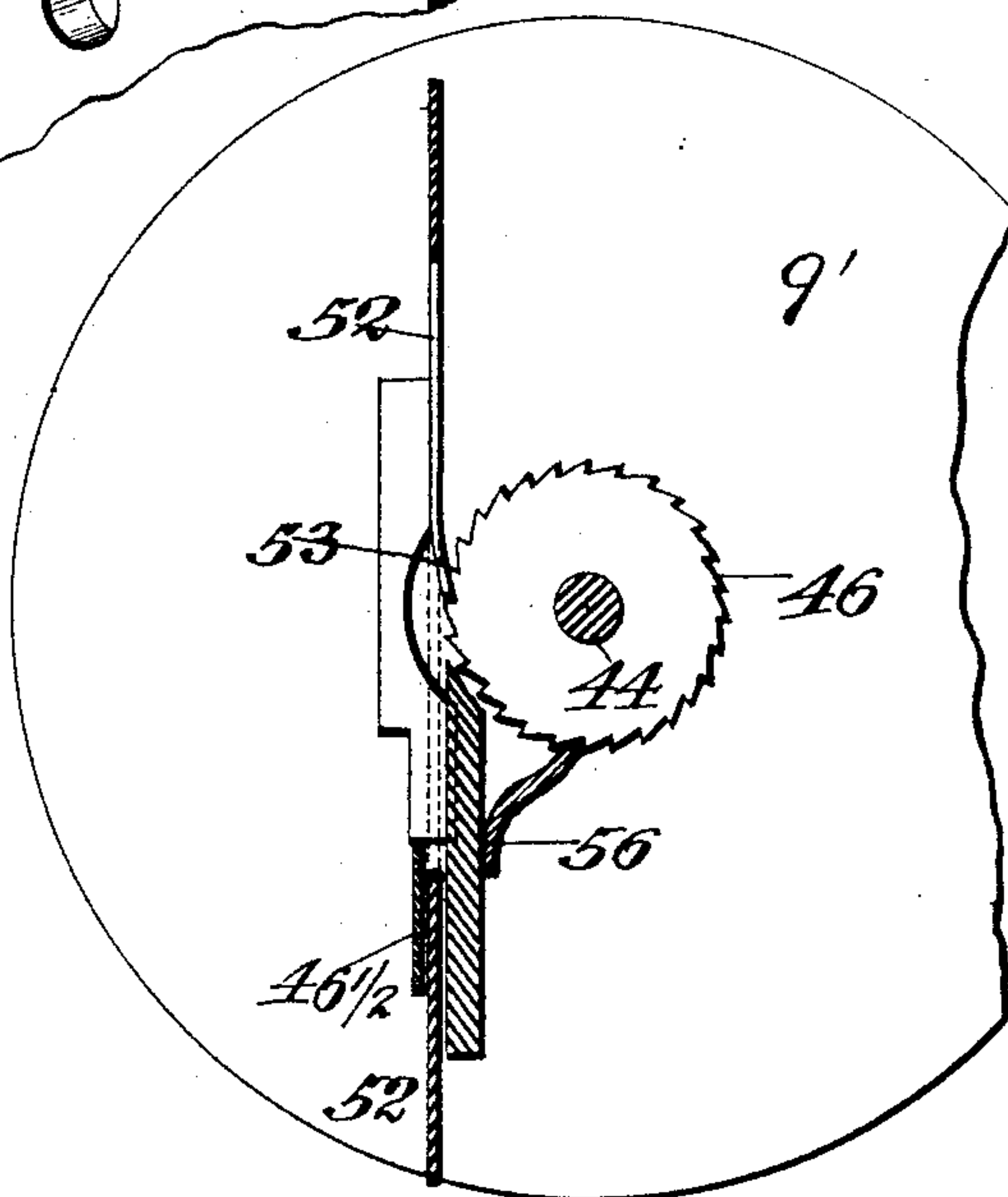
*Fig. 13.*



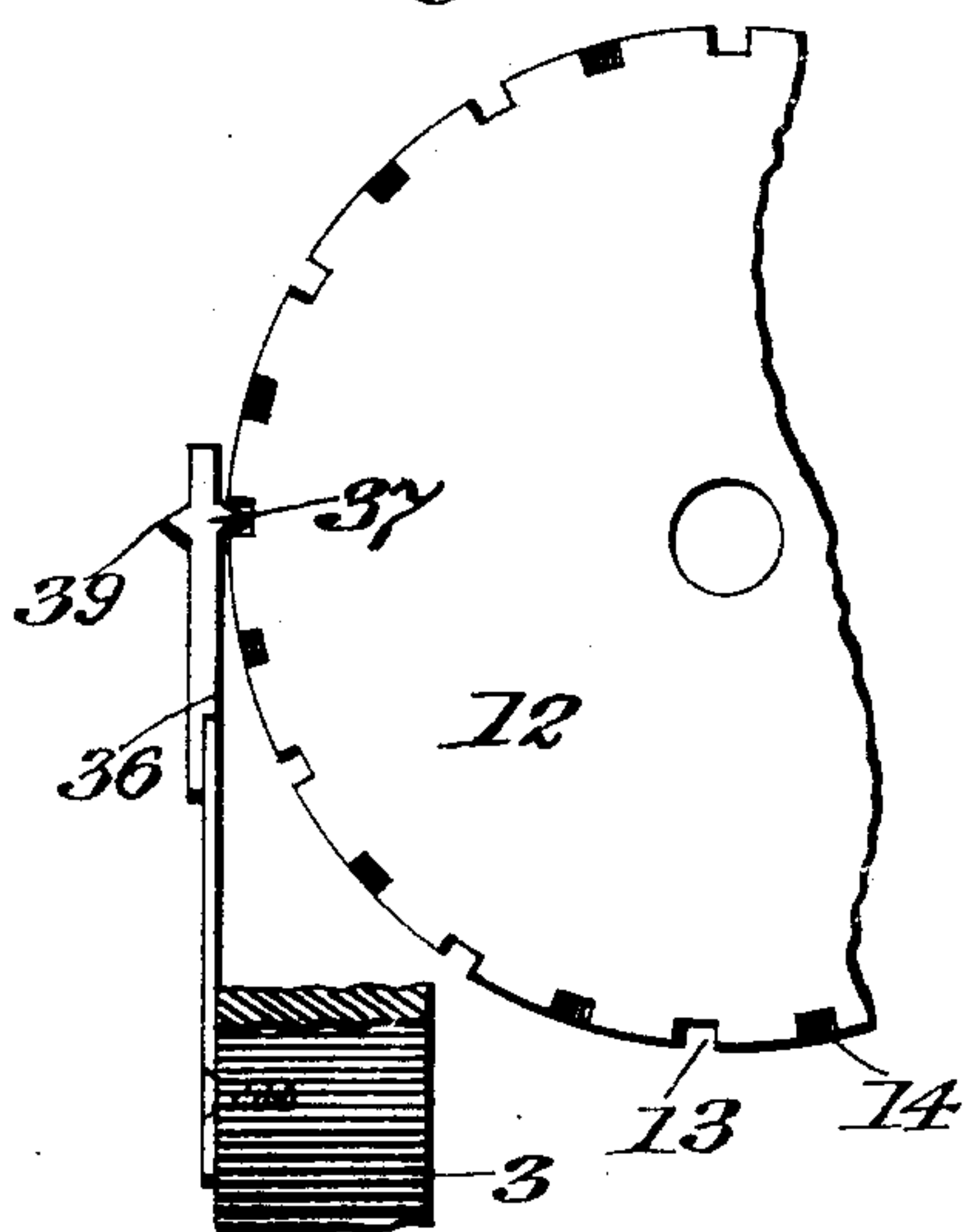
*Fig. 14.*



*Fig. 16.*



*Fig. 15.*



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# UNITED STATES PATENT OFFICE.

EDWARD T. TAYLOR, OF OAKLAND, CALIFORNIA.

## FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 515,888, dated March 6, 1894.

Application filed April 1, 1893. Serial No. 468,679. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD T. TAYLOR, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Fare-Registers; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Figure 1 is a rear view of my improved fare register. Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1 looking in the direction of the arrow *a*. Fig. 3 is a similar view on line 3—3 looking in the same direction. Fig. 4 is a top plan view. Fig. 5 is an end view looking in the direction of the arrow *b* Fig. 1. Fig. 6 is a vertical sectional view on line 6—6 Fig. 4. Fig. 7 is a similar view on line 7—7 Fig. 4 omitting the bell and its sounding mechanism. Fig. 8 is an enlarged detailed view of the reversing lever and a portion of the drum; and Fig. 9 is a sectional view on an enlarged scale of the dial actuating mechanism. Fig. 10 is a view of the hundreds dial plate. Fig. 11 is a detail view of the bell striking mechanism. Fig. 12 is a detail view of the spring actuated locking dog 36. Fig. 13, is a detail view of the pawl-carrying-lever 17 and the double pawl pivoted thereto. Fig. 14 is a detail view of the notched wheel 12. Fig. 15, is an enlarged view of the same showing the spring-actuated dog 36 engaged therewith. Fig. 16 is an enlarged view similar to Fig. 9.

My invention relates to fare registers.

It has for its object to provide a register which shall be simple and strong in construction, durable in use, and comparatively inexpensive of production.

With these objects in view the invention consists in certain features of construction and combination of parts which will be hereinafter described and claimed.

In the drawings, the numeral 1 denotes the supporting frame, shown in this instance as

approximately rectangular in form, 2 denoting the ends, and 3 the upper and lower portions. Secured to and spaced from this frame by rods 4 is the face plate 5 having upper and lower vision openings 6 and 7 respectively. A drum or cylinder 8 having a helical groove 9 is mounted upon a shaft 10 journaled in suitable brackets 11 secured to the frame. The drum slides upon the said shaft and rotates therewith and is provided with two helically arranged series of figures, one series beginning at one end of the drum with 0 and running to 99 to the opposite end, and the other series beginning with 0 at the end opposite the first described 0 and running to 99 in the opposite direction. The figures of one series alternating with those of the other series, so that when the drum is rotated in one direction the figures of one series will be successively brought opposite the vision opening 7 and when rotated in the opposite direction the figures of the other series will be brought to view through the same opening. 9' denotes the hundreds dial having arranged annularly on its face a series of numerals running from 0 to any desired number, say for instance 20. They appear through the opening 6 and denote hundreds while the numerals on the drum denote units and tens.

Secured to the shaft 10 see Figs. 1, 3, 4, 5, and 6 near one of its ends is a wheel 12 having two series of notches 13 and 14. One series 13 is open and the other series 14 closed that is to say, the series 13 extends entirely across the periphery of the wheel, while the series 14 does not, see Fig. 14.

Secured rigidly to the shaft 10 opposite to the wheel 12 is an arm 15 see Figs. 2 and 6 and passing through the heads of the drum is a rod 16 secured at one end to the said arm and at the other end to the notched wheel 12. By this means the drum is caused to rotate with the said notched wheel and at the same time is allowed to move longitudinally upon its shaft.

Journaled upon the drum-supporting shaft 10 is a bell crank lever 17 see Fig. 5 carrying at its upper end a double pawl 17'. This pawl is pivoted to the lever so as to allow it a slight rocking movement and is pro-



vided with a balancing weight 18 and laterally projecting, pins 17<sup>2</sup>, the object of which will hereinafter appear.

19 denotes a slotted plate (see Figs. 3, 5, 6, and 8), which I will term the reversing plate. This plate is fixed to the rock shaft 22 opposite the arm 15 and has two slots, a lower one 20 and an upper one 21, one communicating with the other, one being forward of the other.

23 denotes the trip arms fixed to said rock shaft 22 see Figs. 1, 2, 3, and 8 and adapted to be operated by the cams 24 carried on the ends of the drum.

25 Figs. 2, 4, 5, 6, and 8, indicates a pawl-controlling plate. This plate is pivoted on the main shaft 10 between the notched wheel 12 and the bell crank lever 17 and is provided with two notches 26, one notch of which is engaged by one of the pins 17<sup>2</sup> of the pawl 17' when the cylinder is rotated in one direction and the other notch of which is engaged by the other pin when the rotation of the cylinder is reversed. This plate 25 has only a limited movement with respect to the bell crank lever 17, it being controlled by a pin 34 secured to the plate 25 and entering the slot 35 in said bell crank lever 17. The upper end of the plate is bent inward as shown at 27 and rides in either of the slots in the reversing plate 19, as hereinafter described.

28 see Figs. 5 and 6 denotes a plate journaled upon the main shaft 10 and provided with a slot in its upper end, into which projects a stud 28' see Fig. 6 secured to the double pawl. This plate in conjunction with the weight 18 secured to the pawl serves to balance and regulate the pawl in its movement.

29 denotes a bell-crank actuating-lever pivoted to the frame at 30 see Figs. 1, 2, 4, 5, and 6 and controlled by a spring 31. Near one end of this lever is provided a hook 32 see Fig. 1 which engages the end of one of the spacing rods 4 of the frame and limits the upward and downward movement of that end of the lever, in order to relieve the parts, to which the lever is connected and adapted to actuate, from strain.

33 denotes a link pivoted at its upper end to the actuating-lever 29 and at its lower end to the bell crank lever 17. (See Figs. 1 and 5.)

Secured to the frame to engage the notched wheel 12 is a spring actuated locking dog 36 (see Figs. 1, 3, and 5), having a tooth 37, provided with a slit 38 see Fig. 12, which allows said dog to work in either the open or closed notches of the wheel. The outer side of this dog is provided with a rib 39. A dog-controlling plate 40 is secured to the intermediate portion of the link 33 see Figs. 2, and 5 and is provided with shoulders 41 and 42 respectively at its intermediate portion and lower end.

43 see Fig. 6 denotes, a guide plate fixed to the frame and engaging the groove 9 of the drum so that when the drum is rotated the

drum is made to slide from one end of the frame toward the other.

The hundreds dial shaft 44 see Figs. 4, 5, and 9 is journaled in a plate 45 fixed to the upper cross bar 3 of the main frame and is provided with a ratchet 46.

The dial is caused to rotate by means of the following mechanism: 46 $\frac{1}{2}$  see Figs. 2, 4, and 7 denotes a plate, in the form of a bell crank, pivoted to the part 45 at 45 $\frac{1}{2}$  see Fig. 6 and provided at its lower extremity with a sharp tooth 47, which engages alternately two notches in an arm 48 fixed to the rock shaft 22. Secured to that portion of the plate 45 in which the dial shaft 44 is journaled, is a vertical plate 49 having a slot 50, through which projects one side of the ratchet wheel 46. Between this plate 49 and a fixed strip 51 slides a plate 52 (see Fig. 9), provided with a spring dog 53, shown in this instance as a part of the plate. A strip 53' is secured to the side of the spring dog and normally rests on the free end of the bell crank plate. 54 see Figs. 2, and 7 denotes a spring connected to the fixed strip 51, and the sliding plate 52, and exerts its tension to depress the said plate. 55 see Figs. 2, 4, and 7 denotes a spring connection from the frame to the bell-crank plate 46 $\frac{1}{2}$  to draw the lower free end of said plate rearward and bring the tooth 47 at its inner end into the notches of the arm 48. 56 see Fig. 9 denotes a spring pawl to prevent the ratchet 46 turning in the wrong direction.

To give notice that a fare is registered, I provide a bell 57 which is sounded by the following mechanism: To the support 58 on which the bell is secured, I pivot a bar 59, the movement of which is limited by a stop 60. The free end of this bar is bent upward and is slotted to receive a dog 61, which is pivoted in the slot. This dog has a shoulder 62 shown in Fig. 11, against which bears a flat spring 63 to press the lower end downward. The dog has at its upper end a shoulder 64, which engages the upwardly bent end of the pivoted bar 59. 65 denotes a spring to draw that end of the bar 59 which carries the dog 61, downward. 66 denotes a pin carried by the actuating lever 29 and which is designed to operate the dog 61. 61' denotes the bell hammer carried by bar 59. 67, is a cord by which the actuating lever 29 is operated.

Having thus described the parts forming my invention, I will now set forth the operation of the same. When the actuating lever 29 is drawn back, by cord 67 its free end is raised, carrying with it the link 33. The link 33 will then cause the bell crank 17 to swing forward carrying with it the double dog 17', the inner pin 17<sup>2</sup> of which will pass from its notch over one notch and drop into the next notch. The spring 31, then exerts its tension to return the lever and thus rotates the notched wheel 12 a distance of two notches bringing figure 1 to view through the lower vision open-



ing. In the first movement of the lever the dog controlling plate 40 ascends and as the lever is being drawn back to its normal position by the main spring, the lower shoulder of the dog-controlling plate 40 is released from the shoulder of the locking dog 36 and allows the notch with which the tooth of the locking dog 36 is engaged to force the locking dog back and this movement is so timed that when the notched wheel has been rotated a distance of two notches the plate shall have descended far enough to hold with its upper shoulder the upper end of the locking dog in its proper notch, thus preventing the notched wheel being thrown too far. When the drum 8 is being advanced from the left side of the machine to the right side thereof, the forward pin of the locking dog engages the forward notch in the pawl-controlling plate 25 and the upper end of this plate travels in the upper slot 21 of the reversing plate 19. It will be noticed that the rear pin of the locking dog is held out of engagement with the notches by the opposite end of the pawl-controlling plate 40 and riding with said plate over said notches. It will also be noticed that after the operating lever has been drawn back by its cord 67 and the rear pin 17<sup>2</sup> is over the notch with which it is designed to engage, when the pawl starts to return to its normal position, its stud in the slot of the plate 28 meets with a slight resistance which causes the rear pin of the dog to swing down into its notch. After ninety-nine fares have been registered the drum will have been advanced to the other or right hand end of the frame, as shown in Fig. 1 of the drawings, with the cam shoulder against the trip arm 23. The next movement of the actuating lever will cause the trip arm to ride over the shoulder of the cam thus rocking the shaft 22 and throwing the upper bent end of the arm into the lower slot of the reversing plate 19, and the pawl-controlling plate 25 rearward—to allow the rear notch thereof to be engaged by the rear pin, at the same time throwing the forward pin out of the forward notch of the plate. This last movement of the actuating lever throws the dog only one tooth owing to the fact that the movement of the pawl-controlling plate has been checked by engaging the shoulder of the lower slot of the reversing plate 19 which has been slightly raised by the cam engaging the trip arm. This causes the drum to show the numeral 0 through the opening 7, inasmuch as the drum has rotated the distance of only one notch. Through the opening 6 1 is registered on the hundreds dial which represents one hundred fares received. Further operation of the actuating lever 29, the machine having as above described, been reversed, returns the drum and when it reaches the left-hand side of the machine the lower vision opening 7 will show 99 and the upper vision opening 6 will show 1. The shoulder on the left-hand side of the drum now strikes the trip arm and the same

action takes place at this end of the machine as at the other, the dial 9', however, showing 2, and the drum 0 through their respective vision openings 6 and 7. Owing to the closed notches the pins 17<sup>2</sup> are prevented dropping therein and are thereby allowed to travel the full throw of the bell crank 17. When, however, the drum reaches the end of its shaft and its rotation is reversed the split tooth 37 instead of skipping one tooth is forced into the tooth next to the one from which it has just sprung. It will be noticed that while the drum or cylinder is being advanced on its shaft toward the reversing plate, the energy of the spring 31 is employed to rotate the drum, and when the cylinder is advanced on its shaft in the opposite direction the pull of the cord 67 rotates the cylinder while the spring acts to return the parts to their normal position to be ready for the next movement of the lever 29.

The operation of the dial mechanism is as follows: When the drum registers 99 and its movement is reversed by the reversing plate, the rock shaft which reverses said plate, rocks the notched plate which engaging the tooth on the bell crank plate forces it inward, thus raising the upper end of the bell crank plate upward and lifting the plate carrying the spring dog 53. As the sharp tooth 47 on the bell crank 46<sup>1</sup> passes the middle tooth forming the two notches in the toothed plate, the spring controlling the bell crank plate draws it rearward into the other notch and draws the upper end of the bell crank lever downward. This allows the spring controlling the dog carried by the plate to force the plate downward, the dog engaging the ratchet wheel and rotating it one tooth.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A registering cylinder provided with a helically arranged series of numerals progressing in regular succession from one end, and a second series of numerals alternating with the first and progressing in regular succession from the opposite end of the cylinder, substantially as herein described.

2. In a register, the combination with the main shaft, of a cylinder having a rotary movement with and an endwise movement thereon, and provided with a helically arranged series of numerals progressing in regular succession from one end, and a second set of numerals alternating with the first and progressing in regular succession from the opposite end of the cylinder, and means for reversing the direction of rotation of the cylinder to change the direction of its endwise travel, whereby after one series of numerals have been displayed the other series will be presented, substantially as herein described.

3. In a register, the combination with a main shaft, of a cylinder having a rotary movement with and an endwise movement



thereon, and provided with a helically arranged series of numerals progressing in regular succession from one end, and a second series of numerals alternating with the first and progressing in regular succession from the opposite end of the cylinder, and means for automatically reversing the direction of said cylinder to change the direction of its endwise travel, substantially as herein described.

4. In a register, the combination with a main shaft, of a cylinder having a rotary movement with and an endwise movement thereon, and provided with a helically arranged series of numerals progressing in regular succession from one end, and a second set of numerals alternating with the first and progressing in regular succession from the opposite end, a hundreds dial, and means for automatically reversing the direction of rotation and endwise movement of the cylinder and simultaneously actuating the hundreds dial, substantially as herein described.

5. In a register, the combination with the rotary and endwise movable cylinder provided with cams at its ends of a rock-shaft provided with trip arms in the path of travel of the cams, and a reversing plate secured to the rock-shaft and actuated by the movement of the trip arms to change the direction of rotation and endwise movement of the cylinder, substantially as herein described.

6. In a register, the combination with a frame having a shaft mounted therein, and provided with a toothed wheel, of a cylinder mounted on said shaft to turn therewith and slide thereon, and provided with a helically arranged series of numerals progressing in regular succession from one end, and a second series of numerals alternating with the first and progressing in regular succession from the opposite end of the cylinder, an actuating lever, a double pawl, connection between the pawl and actuating lever a rock-shaft adapted to be rocked by the drum when it arrives at either end of its shaft, a reversing plate secured to said rock-shaft and a pawl controlling plate moving with the double pawl and having a slight movement independent thereof, substantially as herein described.

7. In a register, the combination of the main frame, of a shaft journaled therein and provided at its end with a fixed notched wheel, of a cylinder mounted to rotate with said shaft and slide thereon, an actuating lever fulcrumed on the frame, a pawl-carrying lever journaled on the shaft, and connected with the actuating lever, a pawl pivoted on the pawl-carrying lever to engage the notched wheel and a plate journaled on the shaft and loosely connected to the pawl by a pin and slot to rock the pawl into one of the notches of the aforesaid wheel, substantially as herein described.

8. In a register, the combination with the main frame of the hundreds dial shaft mounted thereon and provided with a dial, a ratchet

wheel on said shaft, a vertically movable spring pawl, a spring for depressing said pawl a rotary and endwise movable cylinder and intermediate mechanism actuated by said cylinder to raise the pawl whereby upon the return of the pawl to its normal position the hundreds dial will be rotated, substantially as herein described.

9. In a register, the combination with a registering mechanism and its operating lever, of a bell and its sounding mechanism, said sounding mechanism consisting of a bar pivoted between its ends, a bell hammer carried by said bar, a pawl pivoted to one end of said bar, a spring secured to the bar for depressing the pawl and permitting it to yield upwardly, a pin carried by the operating lever and pressing said pawl upwardly until the lower end of the pawl rests on the pin to set the hammer and the opposite movement of the actuating lever releasing said pawl and the hammer to sound the alarm, and a stop above the inner end of said pivoted bar, substantially as herein described.

10. In a register, the combination of the main shaft, a cylinder mounted to rotate therewith and slide thereon, a notched wheel secured to said shaft, a rock-shaft rocked by means carried by the cylinder, a reversing plate carried by the rock shaft, said plate provided with two communicating slots or ways, one located above and in advance of the other, a lever carrying a double pawl one of the two pins of which is adapted to engage the notched wheel to rotate it in one direction and the others to engage the notched wheel to rotate it in an opposite direction, and a pawl controlling plate adapted to rock with the pawl carrying lever and having a slight movement independent thereof, and provided with two notches, in one of which one of the pins travels when the cylinder is rotated in one direction and in the other of which the second pin travels when the rotation of the cylinder is reversed, the pin in the notch engaging the notches in the wheel while the pin out of the notch of the plate is held above the notches of the wheel, substantially as herein described.

11. In a register, the combination with a rotary main shaft, of a cylinder mounted to rotate therewith and slide thereon, a notched wheel, an actuating lever, oppositely operating pawls for rotating said wheels in opposite directions, a link connecting said pawls with the actuating lever, a spring dog to engage the notched wheel, and a dog controlling bar carried by said link to lock the dog into the notched wheel at the limit of each movement of the actuating lever, substantially as herein described.

12. In a register, the combination with a wheel having two series of alternating notches, one series of which are open and the other series having walls at their inner ends, pawls for engaging said notches and rotating the wheel, an actuating lever, a link connecting



the actuating lever with the pawls, a spring  
actuating dog having a slit to allow it to en-  
gage either the open or closed notches, and  
a dog controlling bar carried by the link to  
5 lock the spring pawl into either series of  
notches on the up and down movement of the  
link, substantially as herein described.

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

EDWARD T. TAYLOR.

Witnesses:

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W. Z. EDMUST.