No. 707,751.

Patented Aug. 26, 1902.

J. ALEXANDER.

REGISTER.

(Application filed Dec. 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

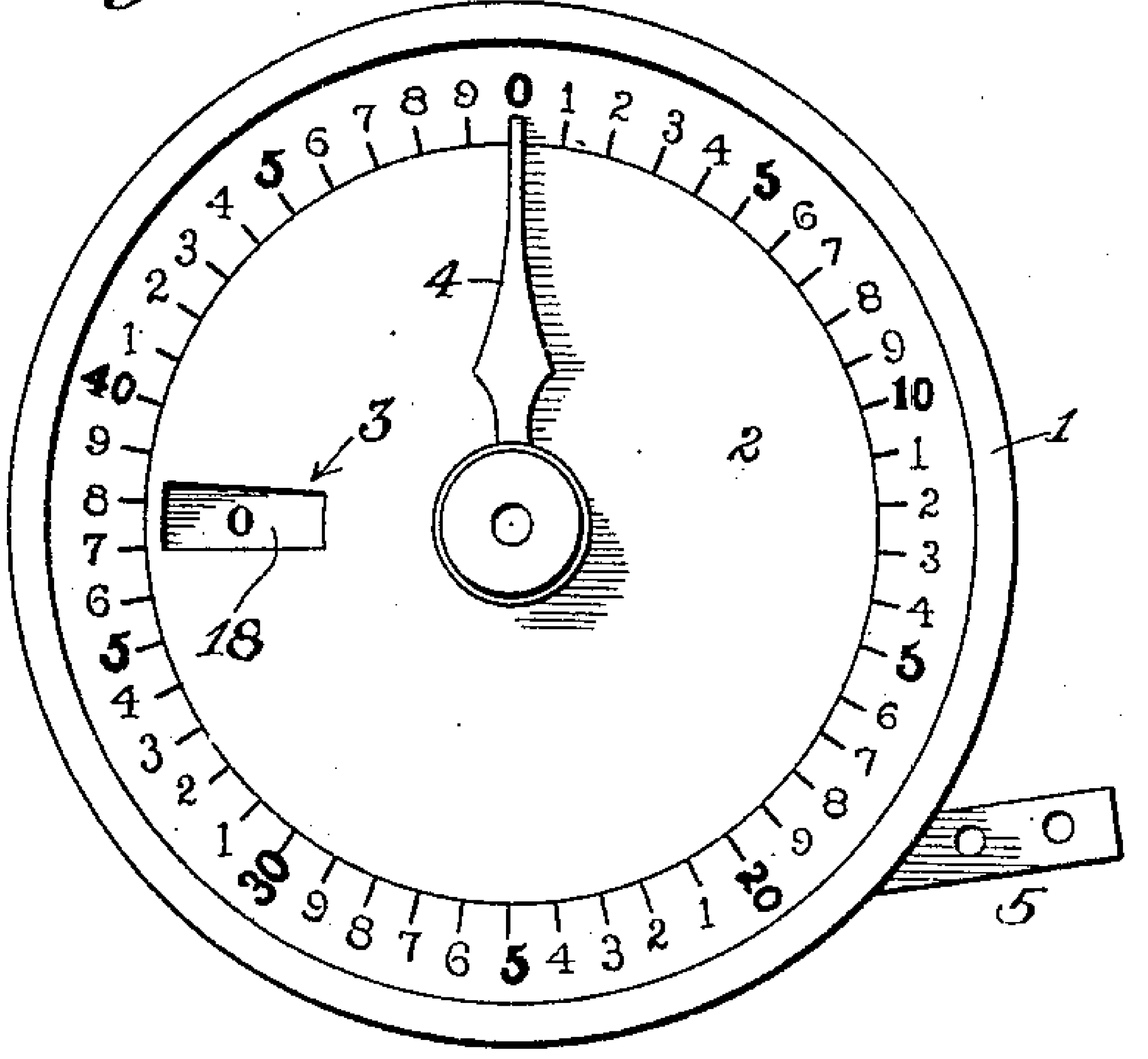


Fig. 2.

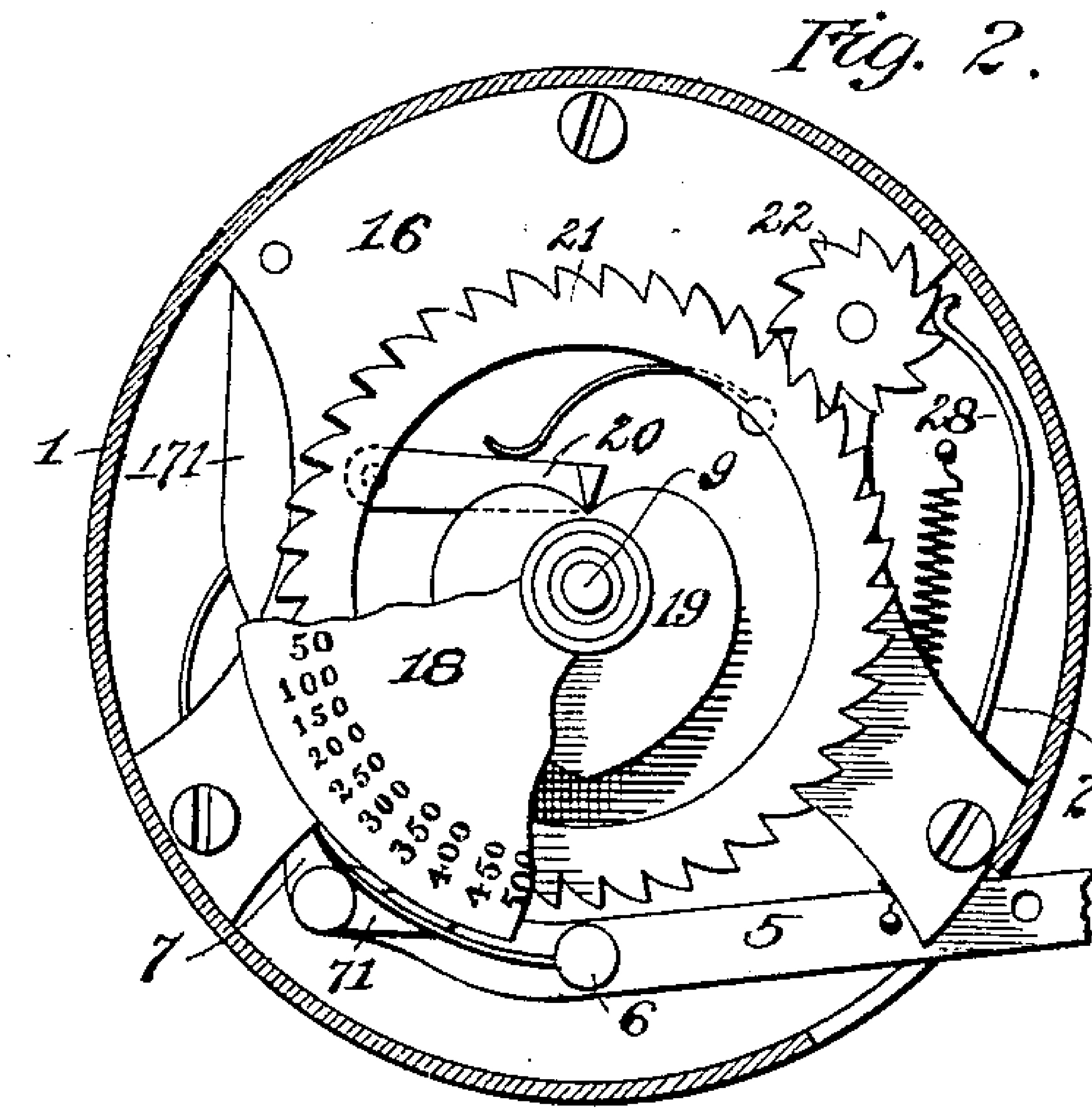


Fig. 3.

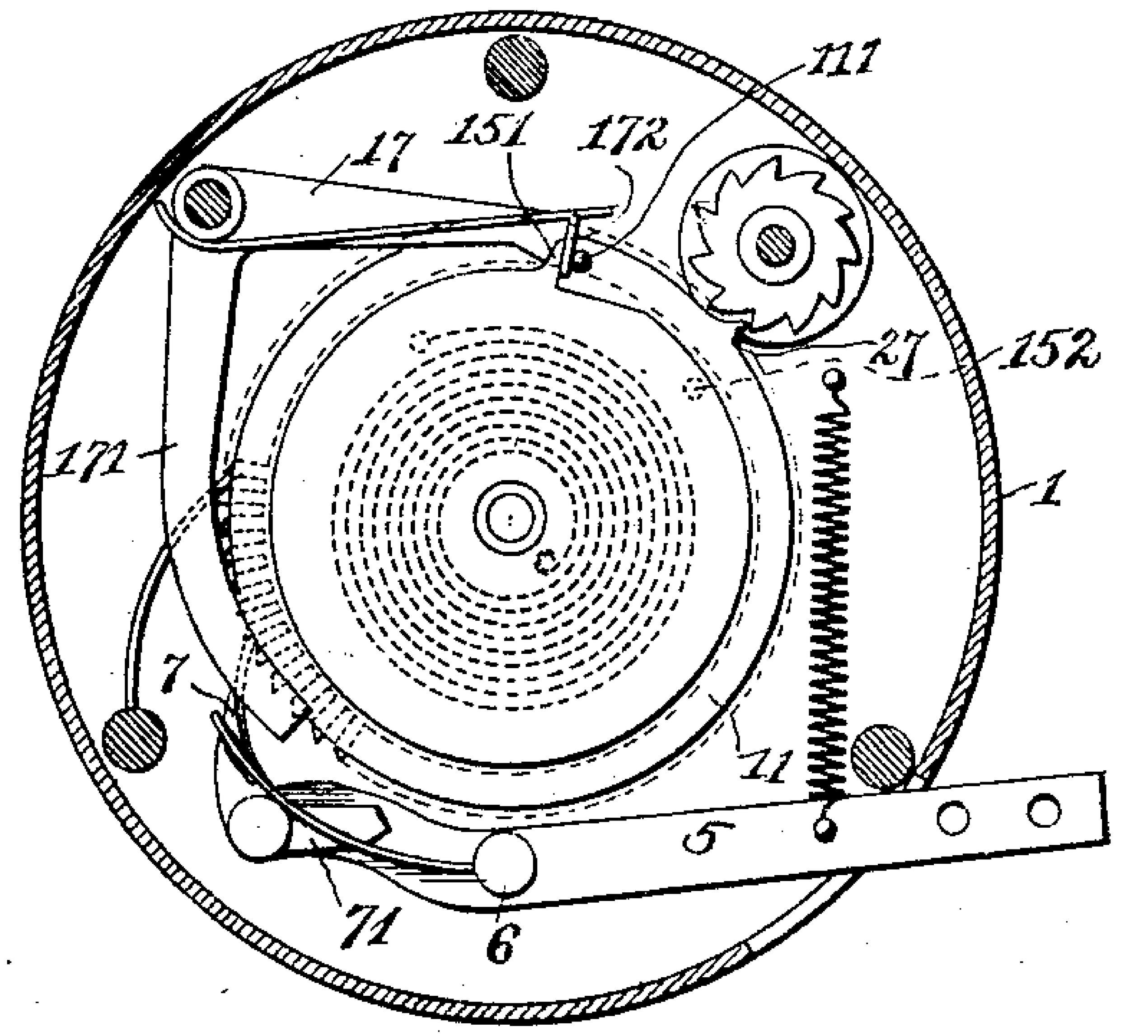


Fig. 4.

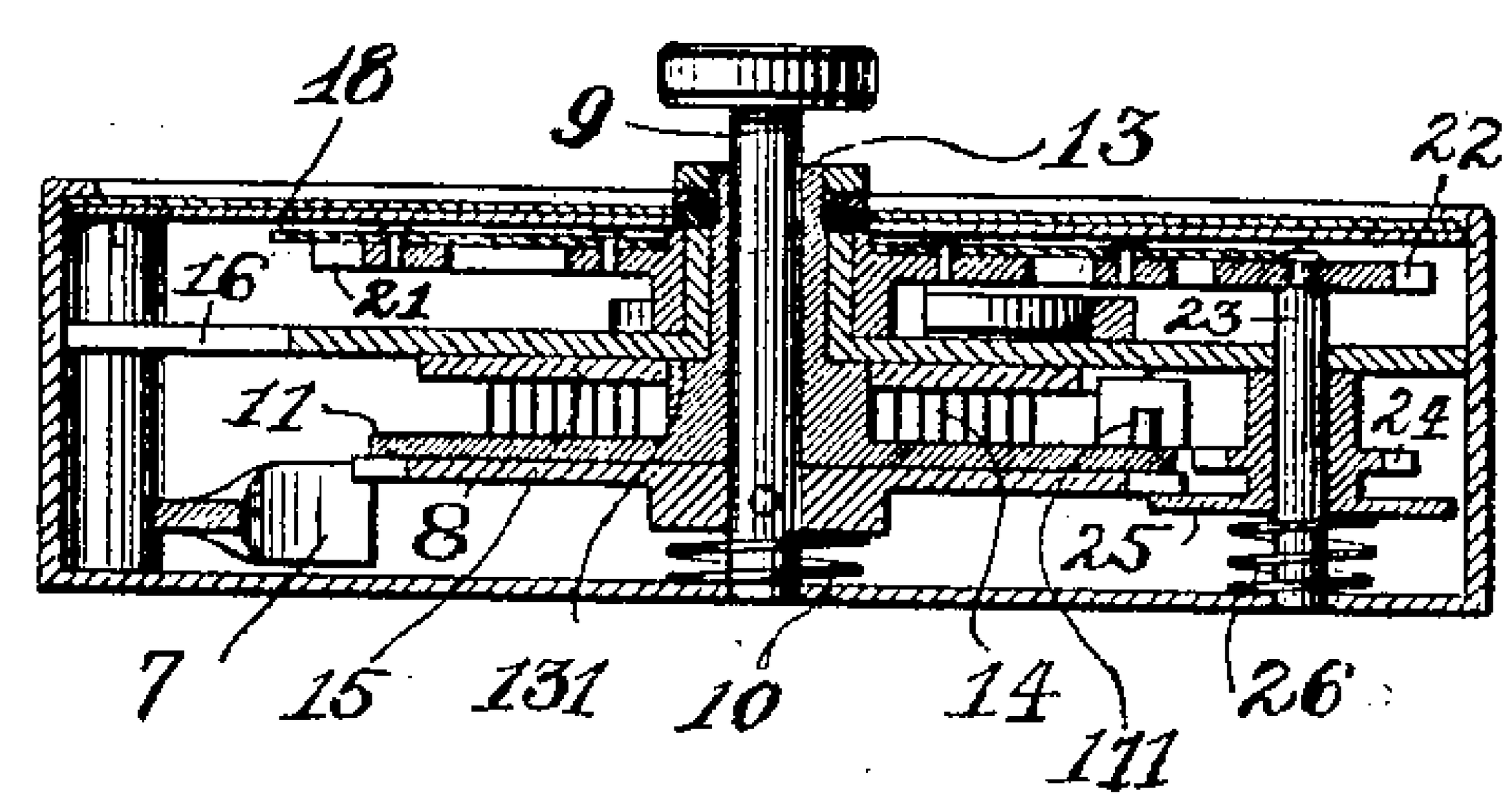
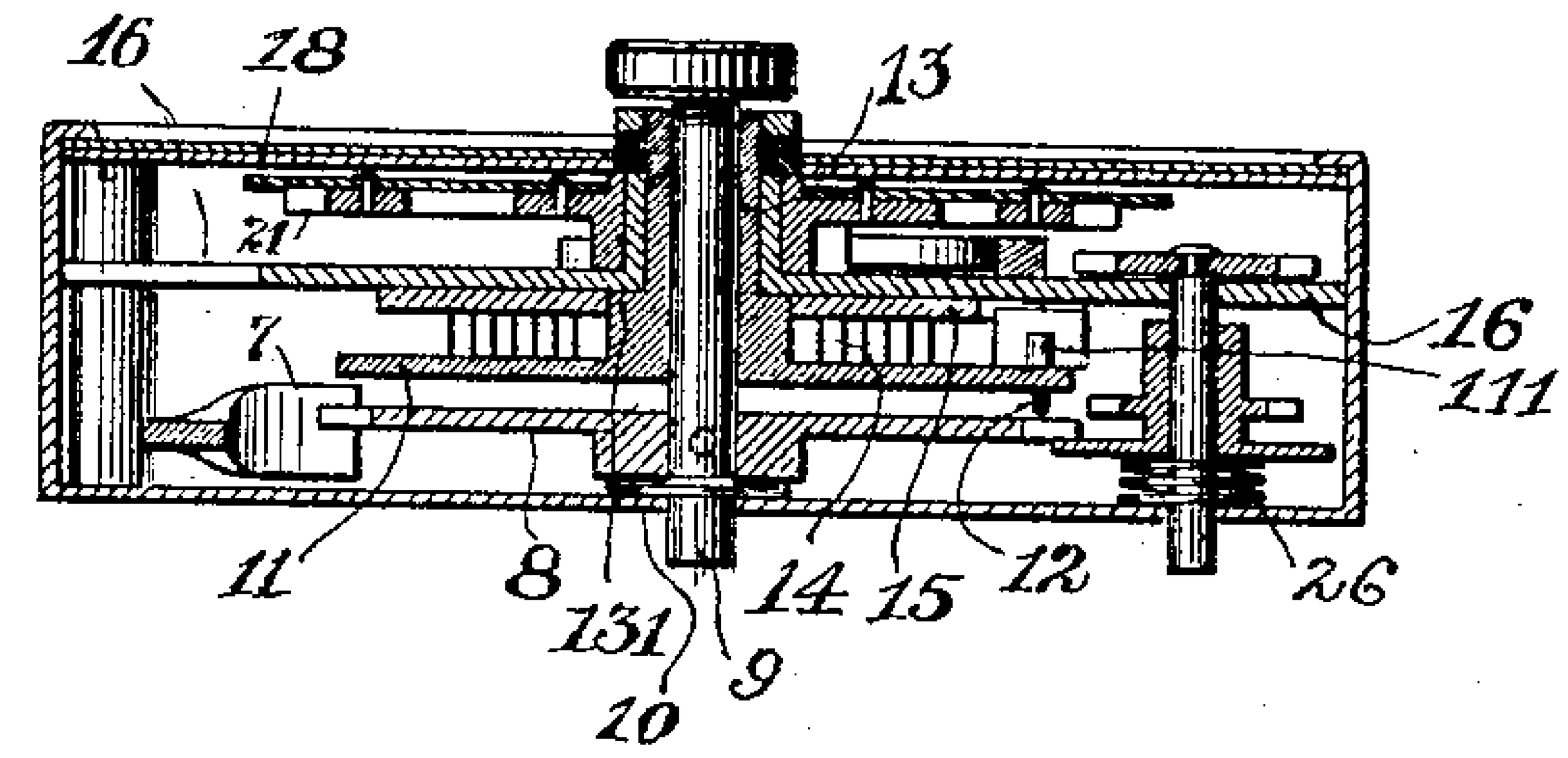


Fig. 5.



Witnesses

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No. 707,751. Patented Aug. 26, 1902.

J. ALEXANDER.

REGISTER.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 6.

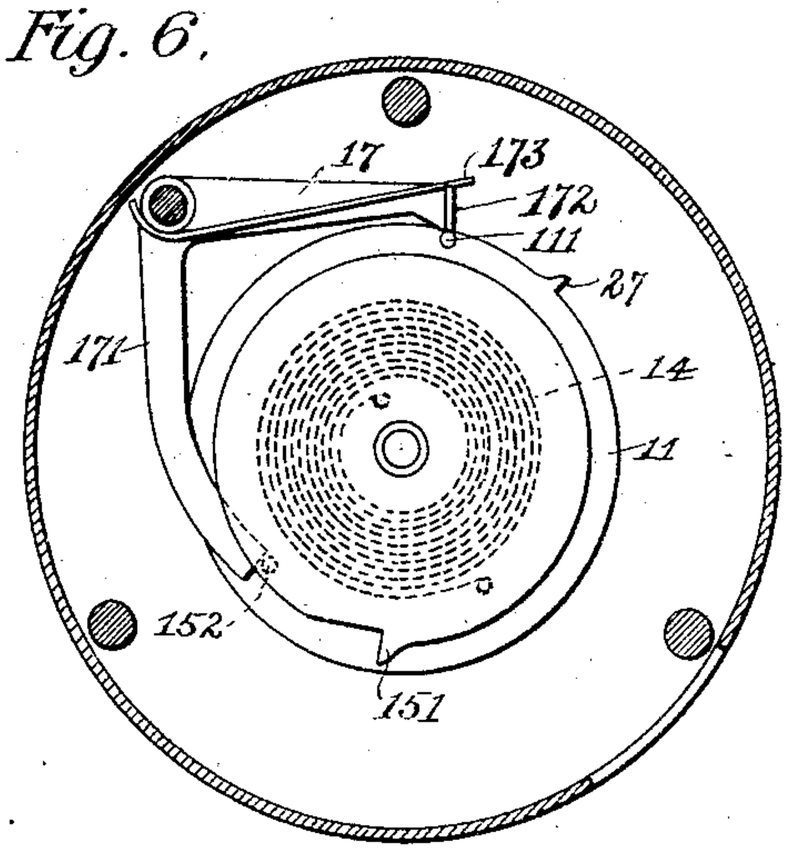


Fig. 7.

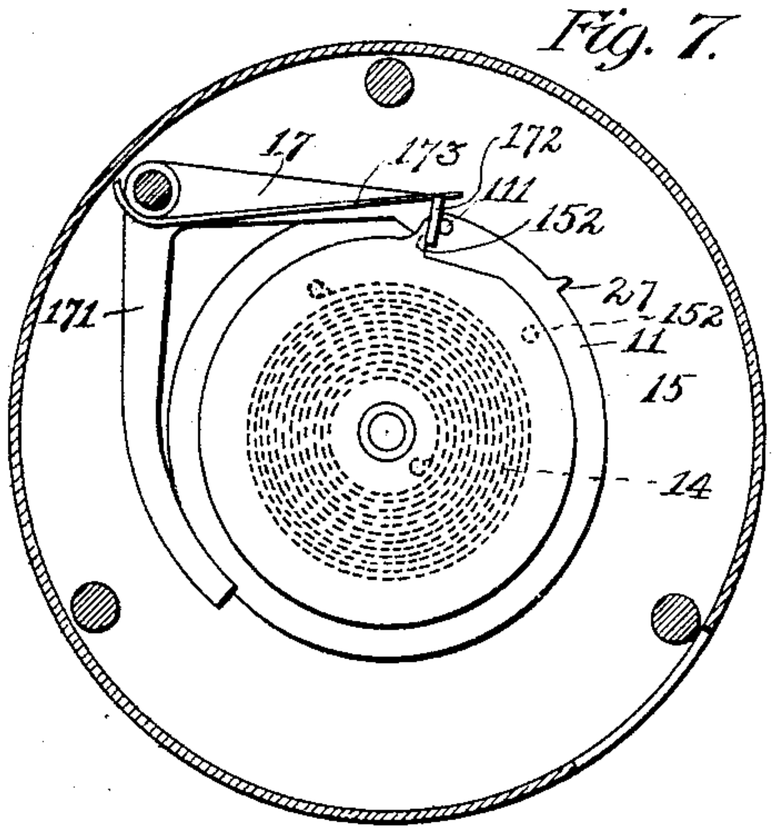


Fig. 8.

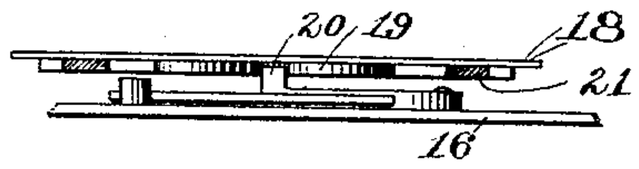
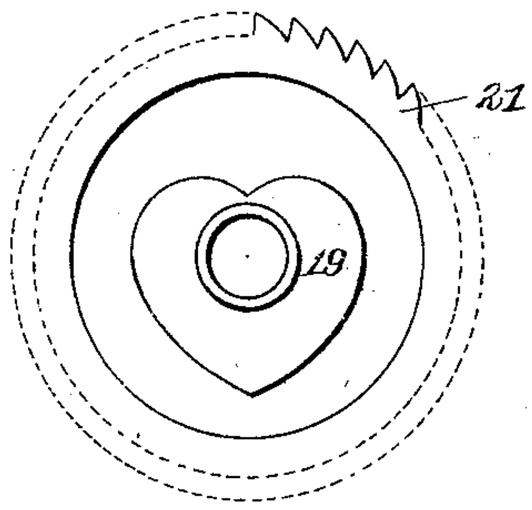


Fig. 9.



Witnesses
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UNITED STATES PATENT OFFICE.

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REGISTER.

SPECIFICATION forming part of Letters Patent No. 707,751, dated August 26, 1902.

Application filed December 20, 1901. Serial No. 86,626. (No model.)

To all whom it may concern:

Be it known that I, JESSE ALEXANDER, a citizen of the United States, residing at the borough of Brooklyn, New York city, New York, have invented certain new and useful Improvements in Registering Apparatus, of which the following is a full, clear, and exact description.

My invention relates to registering devices. The object of my invention is to provide a simple, economical, durable, and effective construction. The device is useful wherever it is desired to keep a consecutive count. For example, it can be used to advantage in connection with a type-writer, whereby each word written upon the type-writer may be registered.

The preferred form of the apparatus is shown in the accompanying drawings, in which—

Figure 1 is a front elevation of my register. Fig. 2 is a transverse sectional view through the casing and showing some of the internal parts in elevation. Fig. 3 is a similar view taken upon a different plane from that of Fig. 2. Fig. 4 is a cross-section taken through the center of the apparatus, showing the parts in one position. Fig. 5 is a similar view showing the parts in another position. Figs. 6, 7, 8, and 9 are elevations of details of construction.

1 is a shell or casing.

2 is a dial having suitable graduations around its face registering the desired number of units. Within the dial-face 2 is an opening 3, constituting a window past which pass numerals or other units borne by an internal disk or dial located underneath the dial 2 and provided to indicate certain multiples of the units marked upon the dial 2.

4 is a pointer centrally mounted relatively to the dial 2 and rotated in the manner hereinafter described to traverse successively the units indicated thereon. In the particular form shown numerals are arranged around the periphery of the disk 2 to register "50." When the pointer 4 has completed the circle of the dial 2, the interior dial bearing the multiple-numbers is advanced one step. Conveniently placed is a means whereby the registering mechanism may be cast off, so that the pointer and interior dial will return to zero. The operating means comprise a controlling lever or handle 5, pivoted at 6 and carrying a pawl having two arms 7 and 71.

8 is a toothed wheel rigidly mounted upon a central arbor 9. The arbor 9 has suitable bearings in the frame or casing 2 and may be moved up and down therein, as illustrated in the different positions, Figs. 4 and 5. A spring 10 serves to normally keep the upper end of the arbor 9 in the elevated position. When the operating-handle 5 is moved, the arm 7 of the pawl engages with the toothed wheel 8 and pushes it ahead. The movement of the operating-handle 5 causes the arm 71 of said pawl to move toward said wheel 8 until it engages with the same, so as to check its movement and prevent its overrunning, as might happen should a sharp quick blow be imparted to the handle 5. This permits the accurate registering of a single number at each stroke or operation of the handle 5. The teeth in the wheel 8 are preferably deeply notched, as best shown in dotted lines, Fig. 3. Directly above the wheel 8 is a disk 11, and 12, Fig. 5, is a pin carried by said disk, which projects downwardly and may enter the deep notch between any two of the teeth upon the wheel 8. Consequently, when the parts are in the position shown in Fig. 4, if motion is imparted to the toothed wheel 8 similar movement will be imparted to the disk 11. When the toothed wheel 8 is depressed, as shown in Fig. 5, it will be freed from the pin 12, so that the said toothed wheel and the plate 11 are entirely free and independent of one another. In order to permit the depression of the toothed wheel 8 without disengaging it from pawl 7, the bill or point of the pawl 7 is preferably broadened, as shown in Fig. 5. The rotation of wheel 8 when the parts are in the position shown in Fig. 4 rotates the disk 11, which in turn causes the pointer 4 to pass around the dial. The rotation of the plate 11 in a forward direction winds up spring 14, which spring is secured at one end to said disk and at the other end to a circular plate 15, loosely mounted upon the sleeve 13 or a portion thereof. The plate 15 will be termed herein the "tension-disk." The sleeve 13 is

provided with a shoulder 131, which bears against a stationary partition or bridge 16 of the frame, and the distance between said shoulder and the upper side of the disk 11 affords sufficient space for free action of the spring 14. A bell-crank lever having arms 17 171 is pivoted in the frame 16. The arm 17 may carry a stop-shoulder 172.

111 is a pin carried by the disk 11 and adapted when the plate returns to its normal position to bear against the stop 172, as best shown in Figs. 3 and 7. When the operating-handle 5 is worked, the disk 11 is revolved step by step, thus taking the pin 111 away from the shoulder-stop 172 step by step. Just before the disk 11 has completed one rotation it will be seen that the pin 111 will contact with an incline on the under side of the arm 17 and will push said arm away in such manner as to free the stop 172 from a projection 151 on the tension-disk 15. This tilting of the lever-arm 17 causes the other arm 171 to project into the path of movement of pin 152 on the under side of tension-disk 15. It will be seen that the advance rotation of the disk 11 increases the tension on spring 14, which tension reaches its highest point at about the moment the said disk has completed one revolution. At this moment the stop 172 is retracted, freeing the disk 15, which under the influence of the spring 14 turns approximately half-way around and is then checked by the stop or pin 152 engaging with the end of the lever 171, which is temporarily held in position by means of the pin 111, carried by disk 11. The parts are shown in this position in Fig. 6. This movement partially lets down the tension of the spring 14. The next movement of the operating-handle 5 moves the disk 11 and frees the pin 111 from the lever 17, whereupon the latter is returned to its normal position—for example, by a spring 173. This movement returns the stop 172 to its original position at the same moment the arm 171 is moved away from the pin 152, and the tension-disk 15 is released and completes its revolution, returning to the position shown in Figs. 3 and 7. This mechanism is provided to let down the tension of the spring 14, so that the pointer may be revolved as many times as desired. If the tension of the spring were let down in one step, the shock might be so great as to loosen or otherwise impair parts of the apparatus. To that end, therefore, I prefer to let the spring down by two or more steps.

From the description thus far it will be seen how the apparatus may be operated to register by means of the pointer 4 and how a spring tension will always be afforded to yieldingly oppose the advance of the parts and to consequently afford a means for returning the parts to their original position when they are released. To release the parts, as before suggested, the upper end of the arbor 9 is depressed, freeing the wheel 8 from the disk 11, whereupon the said disk 11 is released and returns to its normal position, bringing the pointer to zero.

In the particular construction shown the pointer 4 registers units from "1" to "50" and then repeats. Should it be desirable to register more than "50," the internal dial previously referred to registers step by step at each complete circuit of the pointer 4. This step-by-step rotation of the internal dial is effected as follows:

18 is the internal dial. The dial is loosely mounted upon a sleeve or bearing carried by the stationary part 16. The hub of the dial 18 bears a heart-shaped cam 19.

20 is a spring-pressed pivoted arm the free end of which bears yieldingly against the outer edge of the cam 19, so as to impart to said dial 18 the normal tendency to return to the zero position, the heart-cam being so placed that the low point will cause the zero-mark upon the dial 18 to come opposite the window in the dial 2, as shown in Fig. 1. Any suitable spring-pressure may be provided to cause the end of the arm 20 to bear against the said heart-cam 19.

21 is a toothed wheel secured underneath the internal dial 18. Meshing with this wheel 21 is another toothed wheel 22, carried on a spindle 23, having suitable bearings in the frame.

24 is another toothed wheel carried by the spindle 23, the teeth of which will project close to the periphery of the disk 11 when the parts are in their normal position.

25 is a circular plate carried by the spindle 23, said plate projecting underneath the toothed wheel 8. The spindle 23 is capable of being depressed at the same time as the spindle 9. A spring 26 normally holds the spindle 23 and its associate parts in the normal position (shown in Fig. 4) in which the wheel 24 stands adjacent the edge of the disk 11. When the spindle 9 is depressed, it will engage with the plate 25 and cause the depression of the spindle 23 and the associated parts, including the toothed wheel 24, so that the parts will assume approximately the position indicated in Fig. 5, in which the toothed wheel 24 is below the plane of the disk 11.

27 is a tooth or projection upon the perimeter of disk 11, which once in each revolution engages with the toothed wheel 24 and causes the partial rotation of said wheel and the associated parts. This partial rotation imparts to the toothed wheel 22 a similar movement, which in turn imparts to the internal dial 18 rotary movement sufficient to move the said dial one step.

28 is a spring which yieldingly bears against the toothed wheel 22 with sufficient force to prevent its turning loosely. The tooth or projection 27 on the disk 11 is so placed that when the pointer 4 has about completed one circuit the said tooth will engage the wheel 24 and cause the advance of the internal dial one step to indicate the total of the number of units in one revolution of the pointer 4.

For example, the number next following the zero-mark upon the internal dial 18 would be "50" in the particular form shown, the next mark "100," and so on. In this way a consecutive count is maintained. At any time the user may return both the pointer 4 and the dial 18 to the zero position by simply depressing the spindle 9. The depression of this spindle frees the plate 11, which rotates under the influence of the spring 14 and brings the pointer 4 back to the zero position, as before described. The same movement depresses the plate 25 and the spindle 23, thereby freeing the wheel 22 from the toothed wheel 21, whereupon by the action of the heart-shaped cam 19 the internal dial 18 is brought back to the zero position.

I claim—

1. In a registering apparatus, a pointer adapted to traverse a series of unit graduations, a disk having a sleeve extended therefrom and revolubly mounted upon a central arbor said pointer being carried by said sleeve, a toothed wheel lying adjacent to said disk, and means intermediate of the disk and the wheel for engaging said parts when said parts are close to each other, and means for moving one of said parts away from the other to disengage the same, and a lever for actuating said toothed wheel, and a pawl between the said lever and said toothed wheel, said pawl having a forward extension for actuating and advancing said wheel, and a rearward extension for checking said wheel to prevent its overrunning.

2. In a registering apparatus, a stationary units-dial, and graduations thereon, a rotatable internal dial below said stationary dial, and multiples of said units thereon, an opening in the stationary dial directly above the multiple graduations on the inner dial, a central arbor carrying a toothed wheel, a disk above said toothed wheel and loosely mounted on said central arbor, a sleeve carried by said disk and extended to a point above the stationary dial, a shoulder on said sleeve, a stationary internal frame, a tension-frame loosely mounted upon said sleeve and a spring between said tension-frame and said disk one end of said spring being fastened to said tension-frame and the other end to said disk, and means for letting down the tension of said spring step by step.

3. In a registering apparatus, a stationary dial having a window therein and a rotatable dial beneath the same, a central arbor, a sleeve revolubly mounted thereon, an index-hand or pointer on said sleeve, reversing devices for said sleeve and dial, movable connections between the same, a toothed wheel connected to the arbor and means for rotating said toothed wheel step by step to increase the tension of the reversing device, and means for disconnecting said wheel from said tension devices, substantially as described.

4. In a registering device, a dial, a sleeve centrally mounted relatively thereto, a pointer carried thereby, a shoulder on said sleeve bearing against the under side of a stationary part, a disk at the lower end of said sleeve, a tension frame and spring between the stationary part and said disk, a toothed wheel loosely mounted on said sleeve, an internal dial carried by said toothed wheel, a central spindle loosely projecting through said sleeve and bearing a toothed wheel at its lower end, and means for detachably engaging said toothed wheel with said lower disk, an operating-lever and a two-armed pawl for actuating and checking the movement of the lower toothed wheel and its associated parts, and a counter-shaft bearing a gear in engagement with the toothed wheel on the internal dial, and another toothed wheel arranged adjacent to the lower disk when in normal position, and a tooth on said lower disk, all arranged substantially as and for the purpose described.

5. In a registering apparatus, a stationary dial bearing units-marks, a movable dial bearing marks indicating multiples of said units, a pointer and means for causing the same to traverse the stationary dial, and means for causing the internal dial to advance one step at each complete revolution of the pointer, a tension-frame and spring-actuated means to turn all of said parts back to the zero position, and means to separate the parts adjacent to said springs to afford freedom of action.

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Witnesses:
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