

(No Model.)

3 Sheets—Sheet 1.

E. W. MORTON.
TIME REGISTERING STAMP.

No. 445,570.

Patented Feb. 3, 1891.

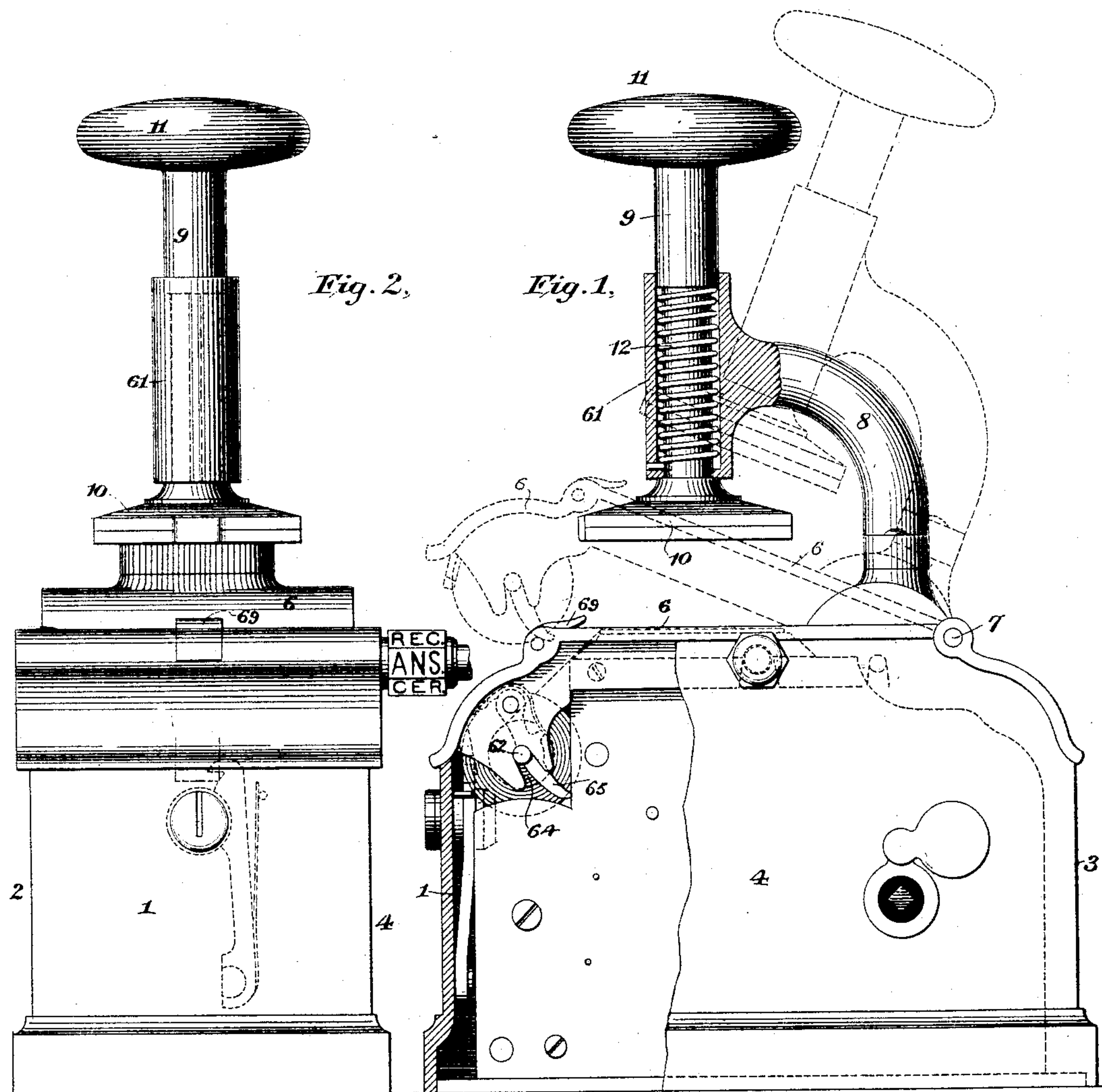
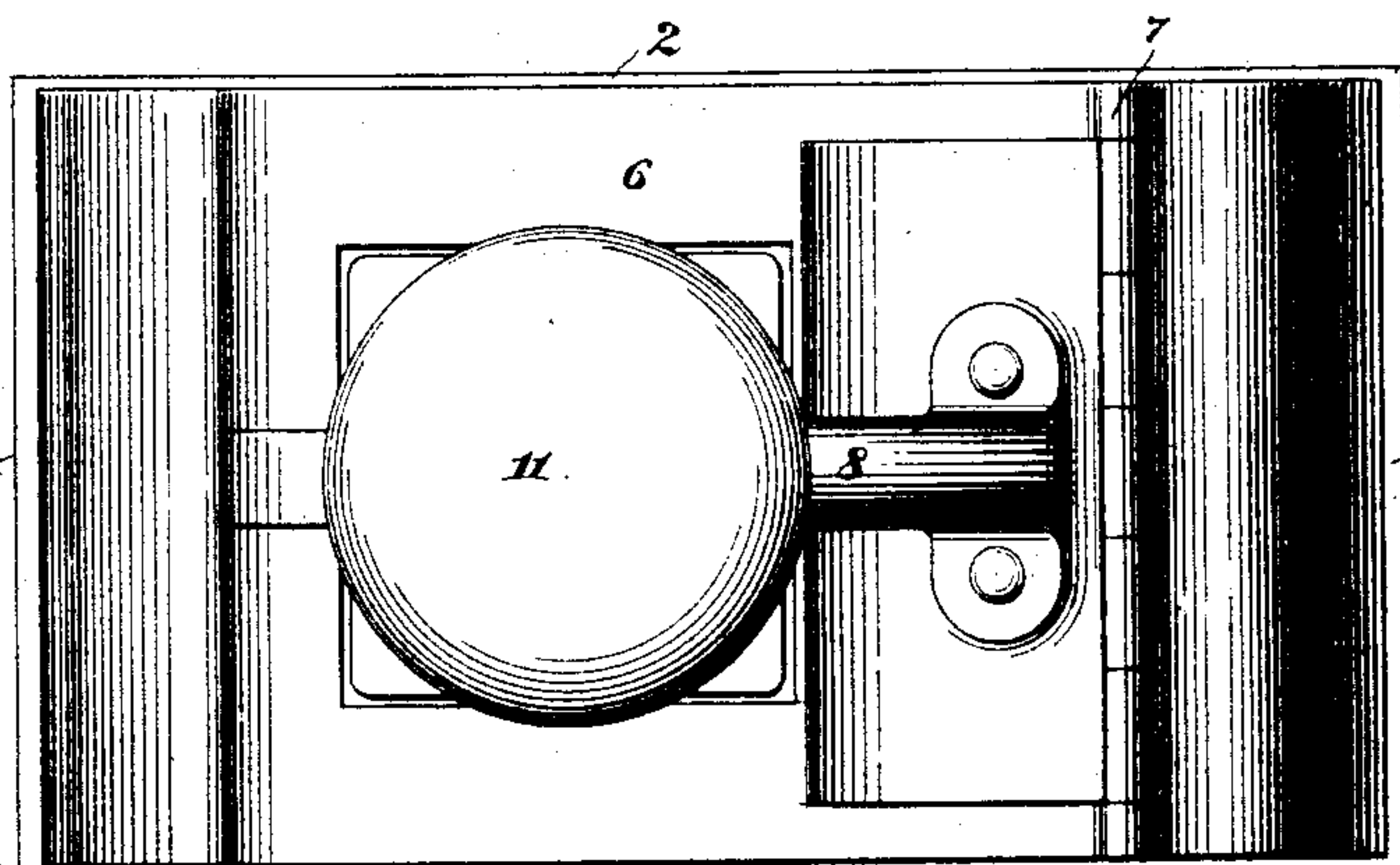


Fig. 3.



2 Witnesses
Geo. W. Deek
Edward Thorpe.

Edwin W. Morton
Inventor

By his Attorneys

Price & Stewart

(No Model.)

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Fig. 11.

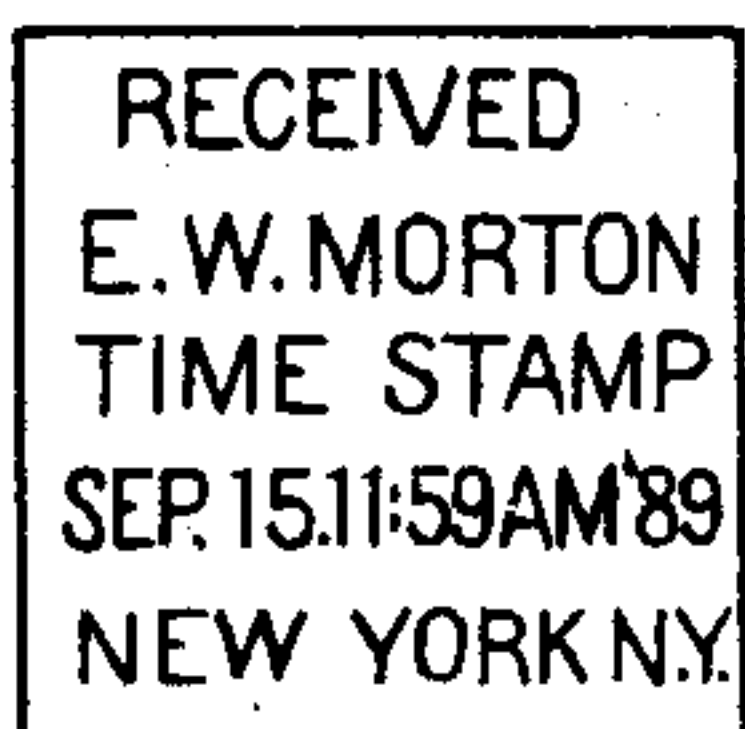


Fig. 10.

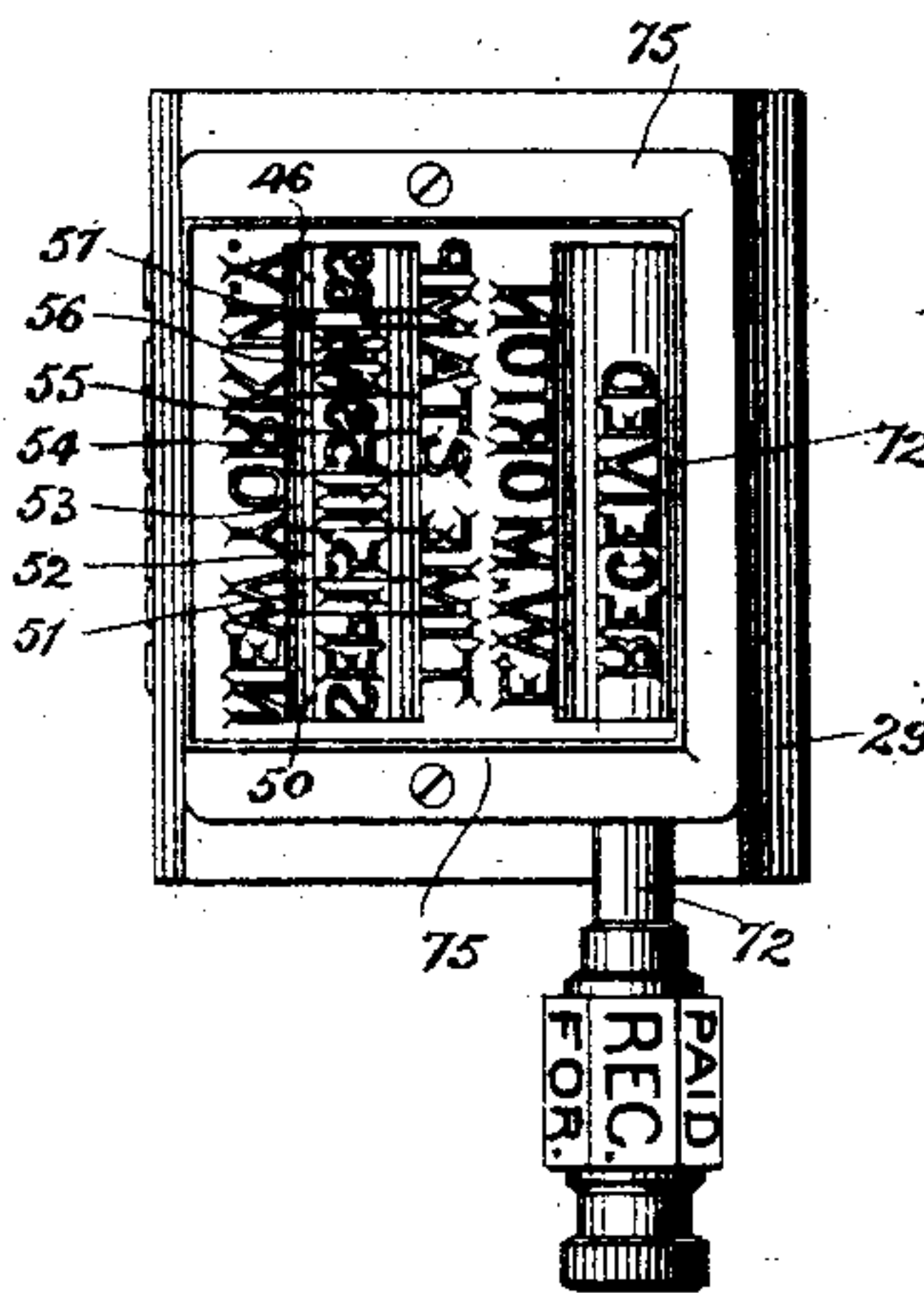


Fig. 5.

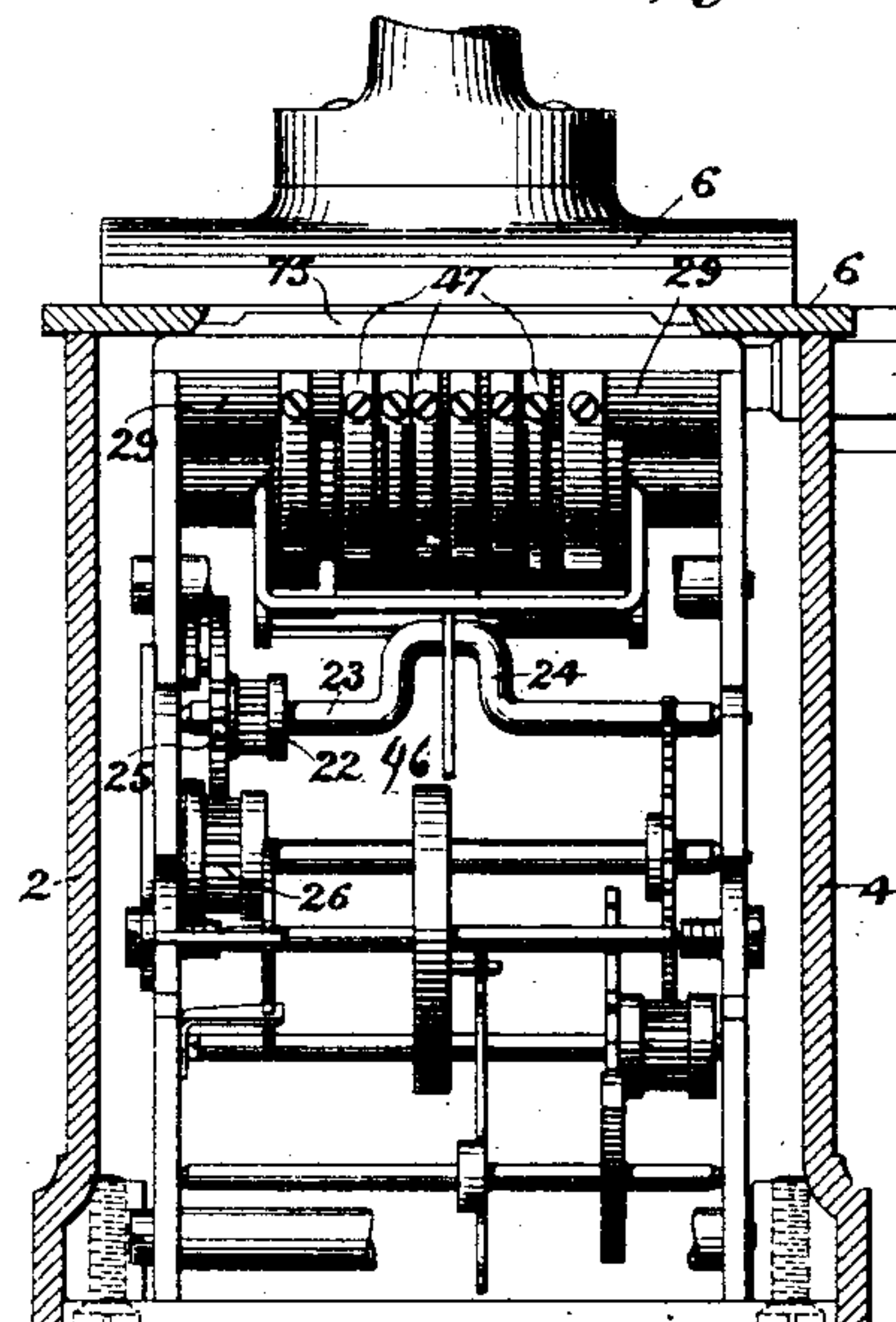


Fig. 4.

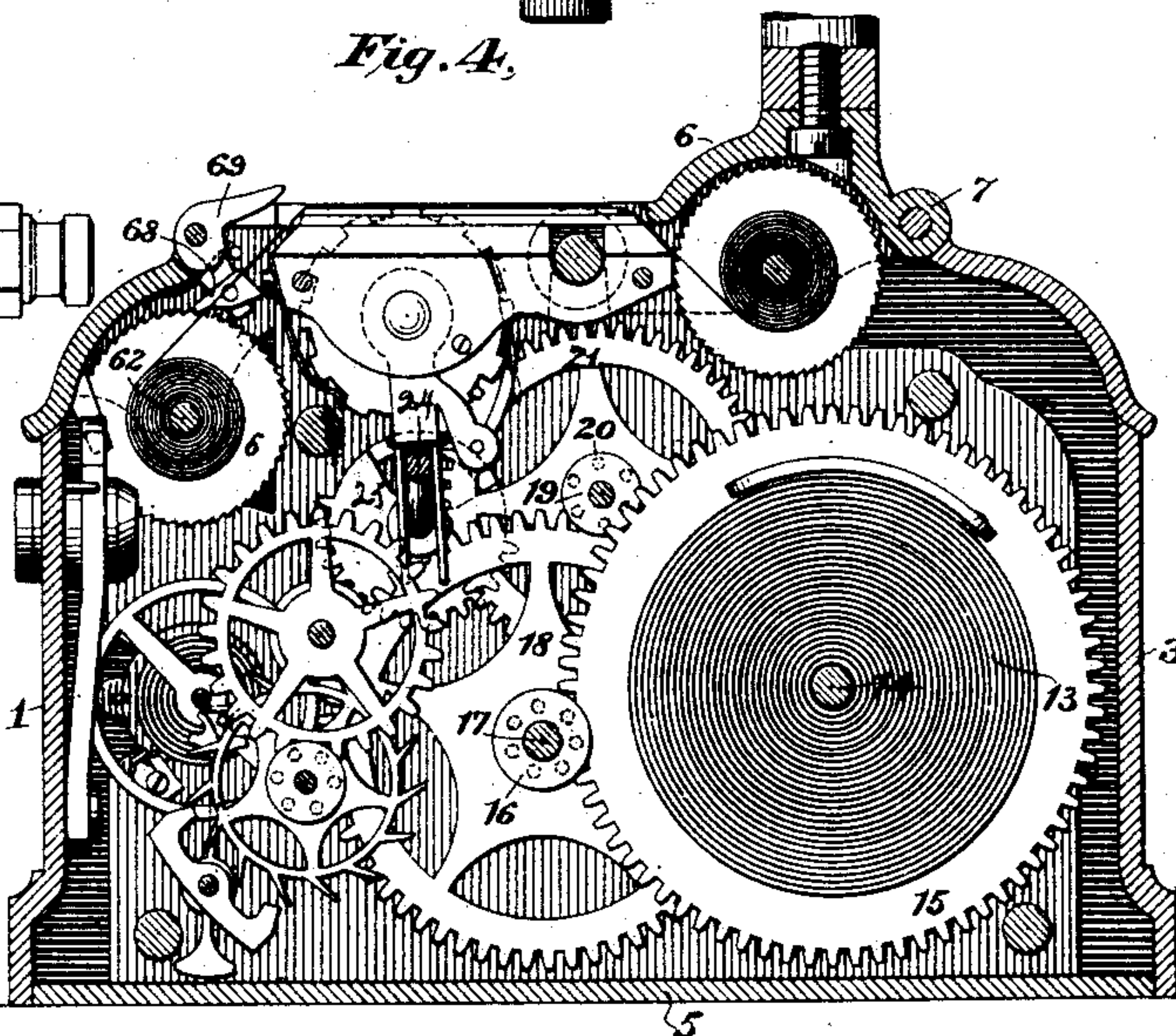


Fig. 6.

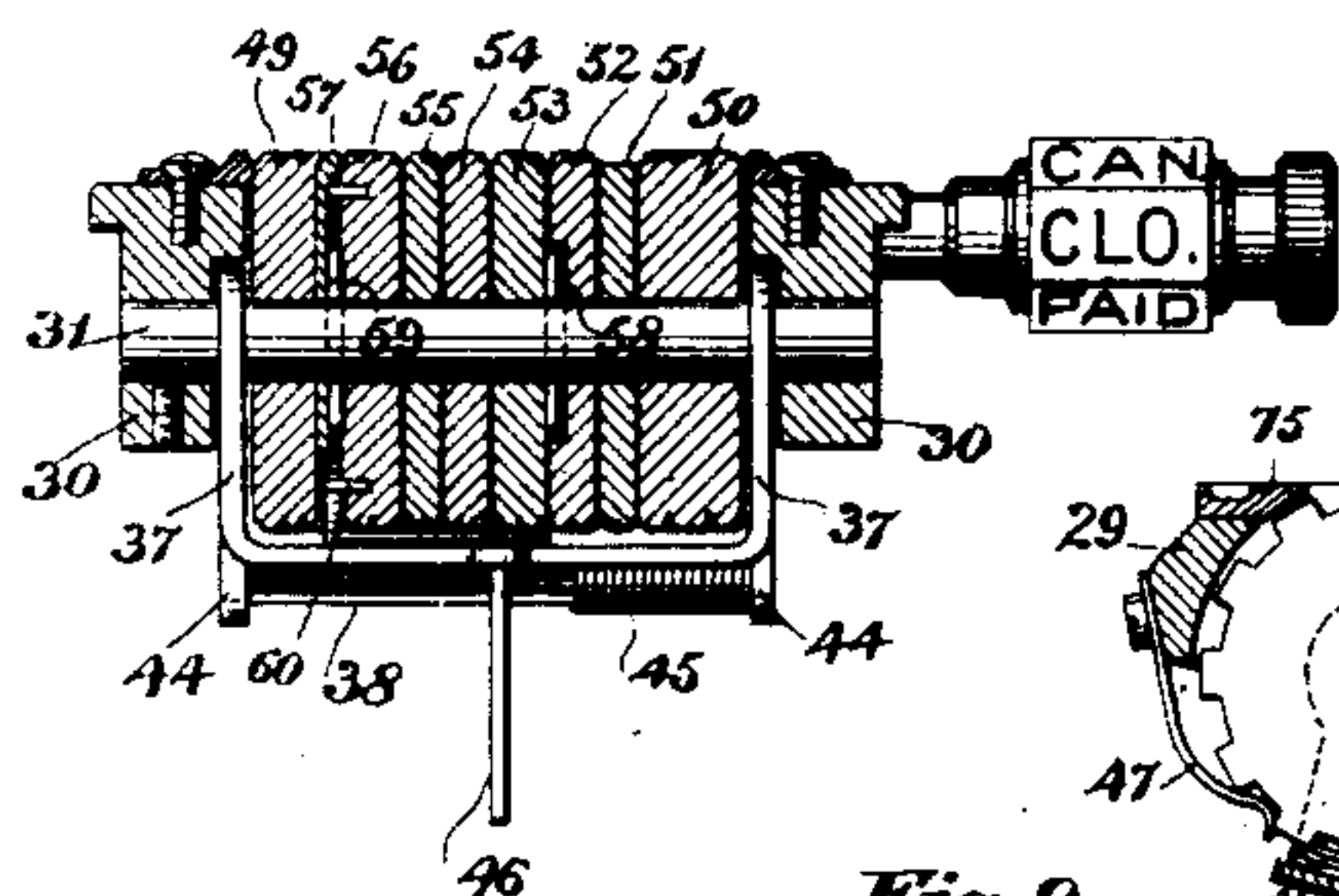


Fig. 7.

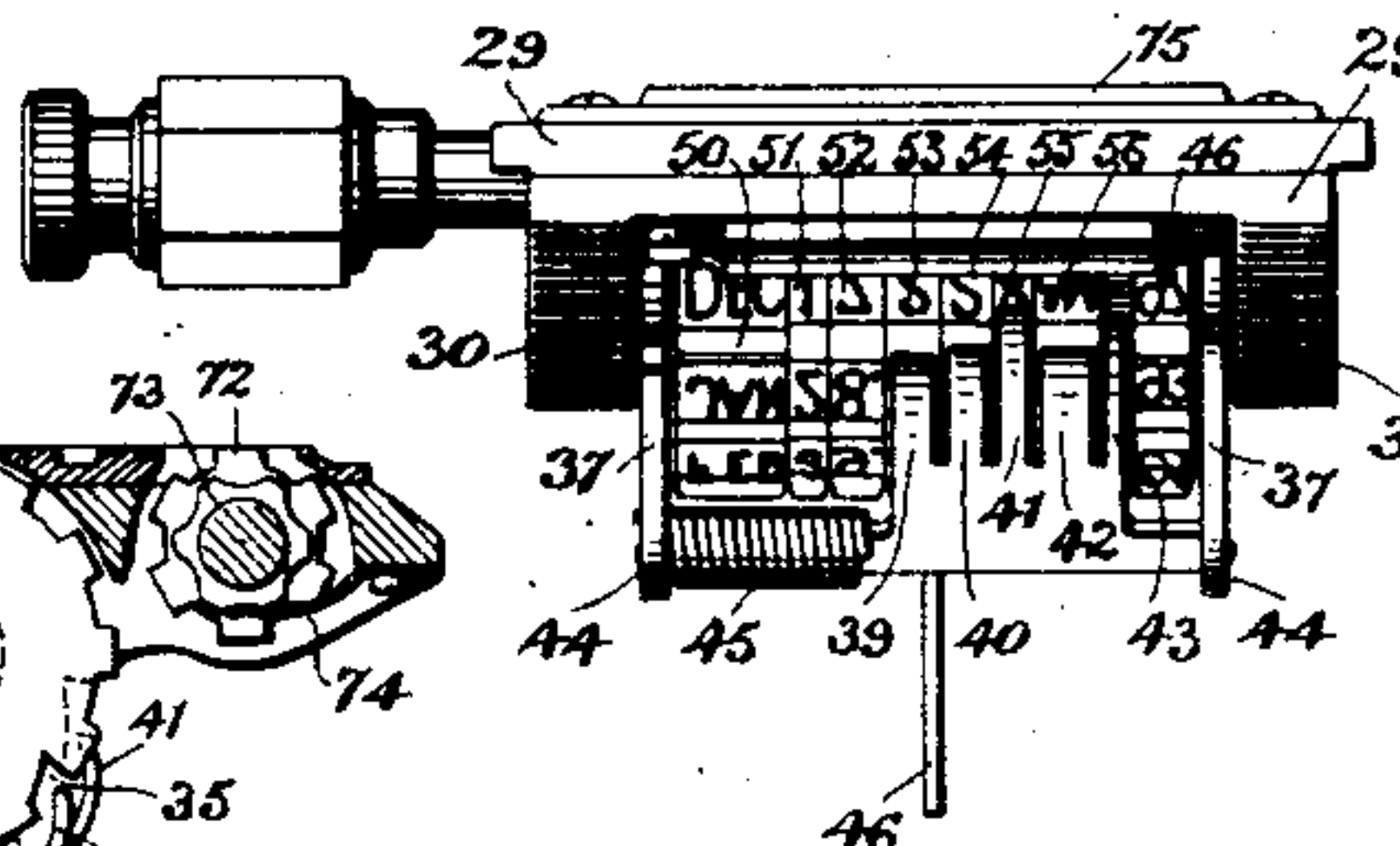


Fig. 8.

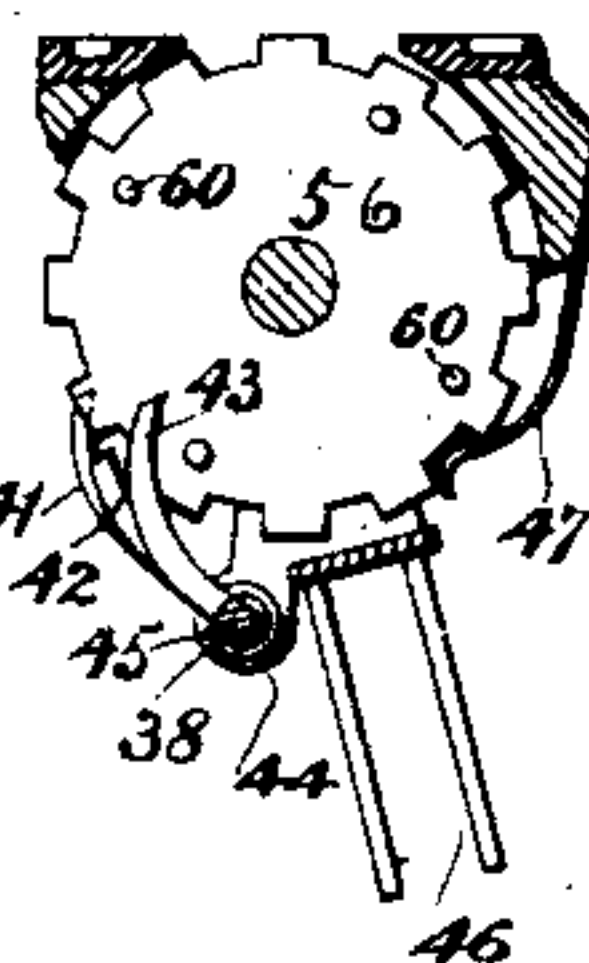
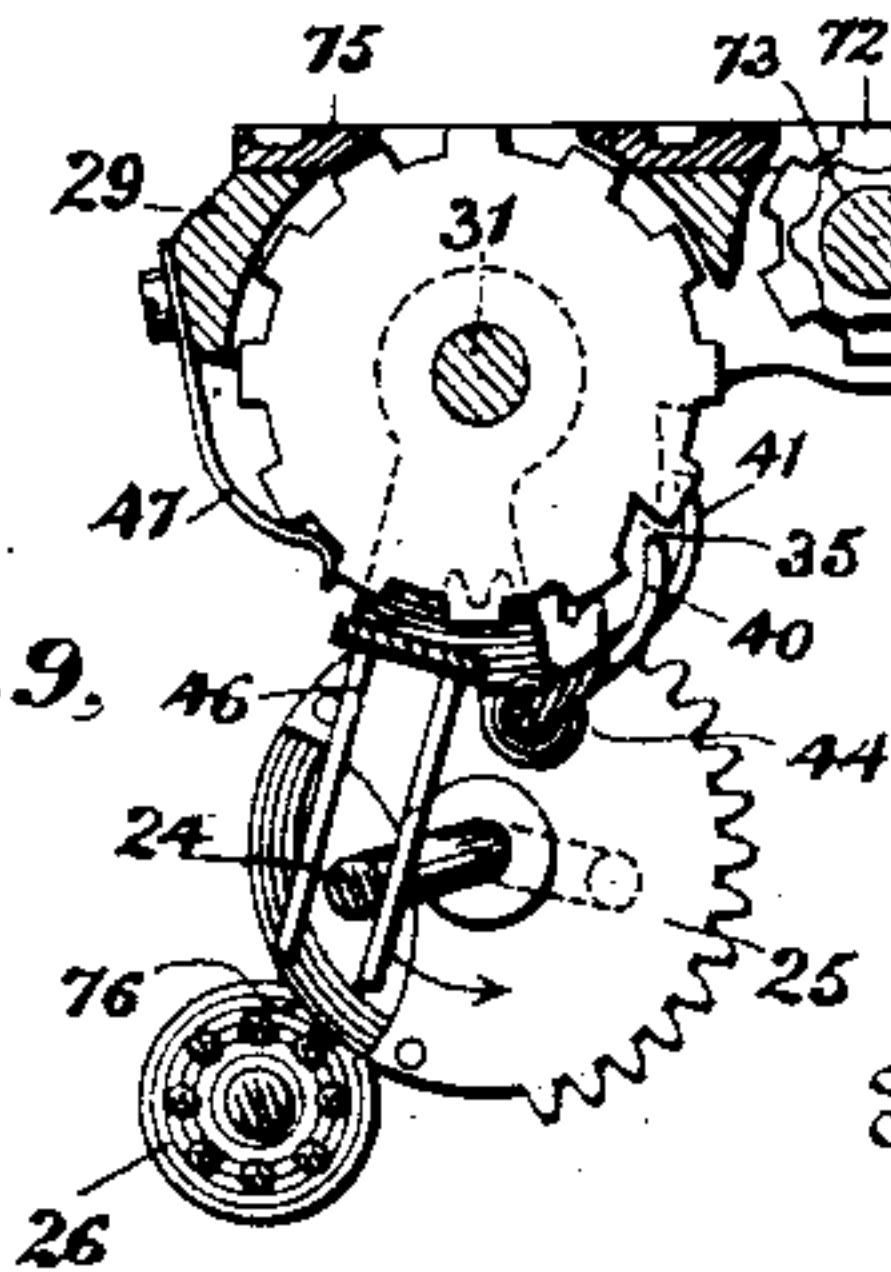


Fig. 9.



Witnesses
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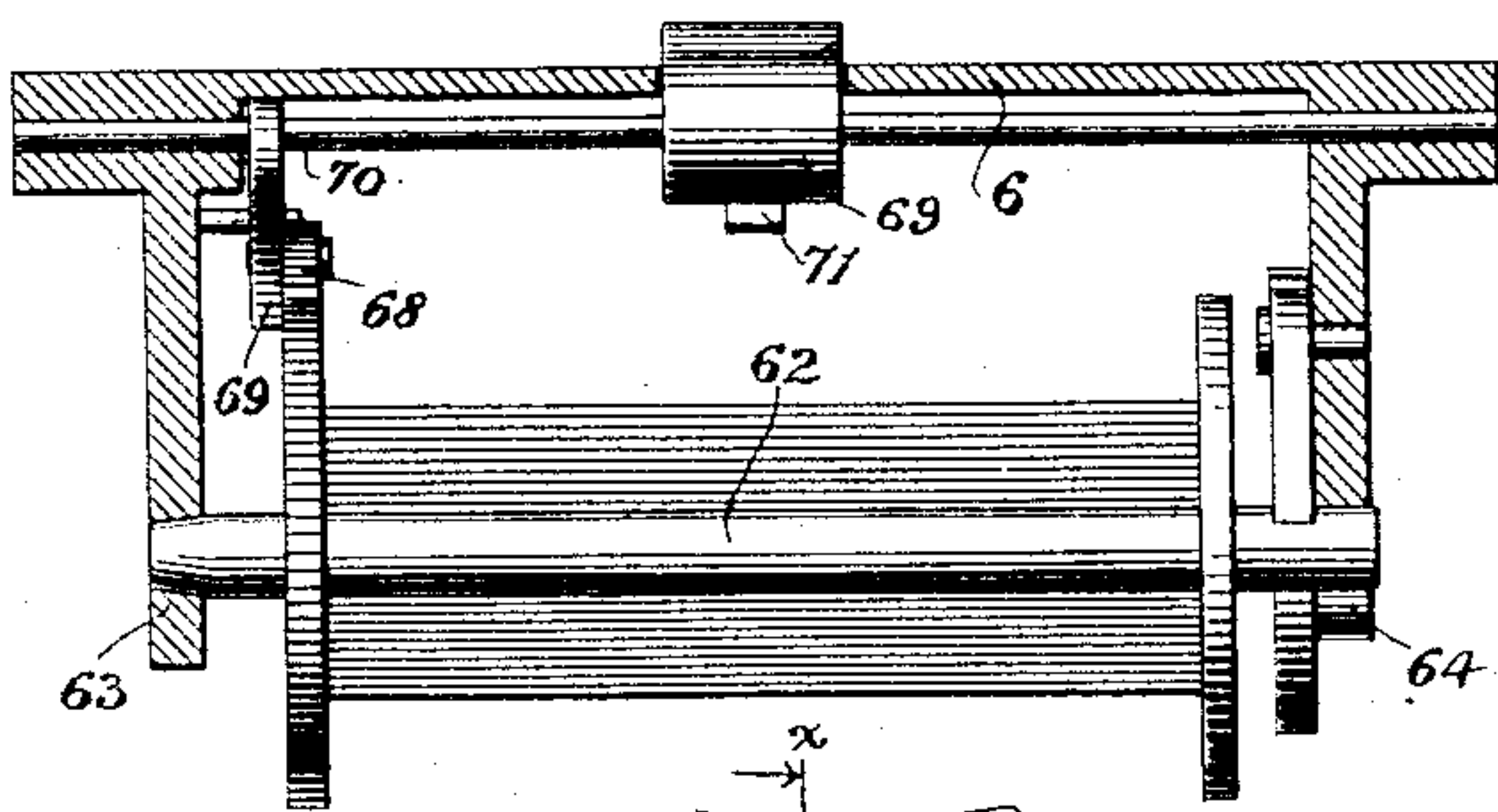


Fig. 13, a

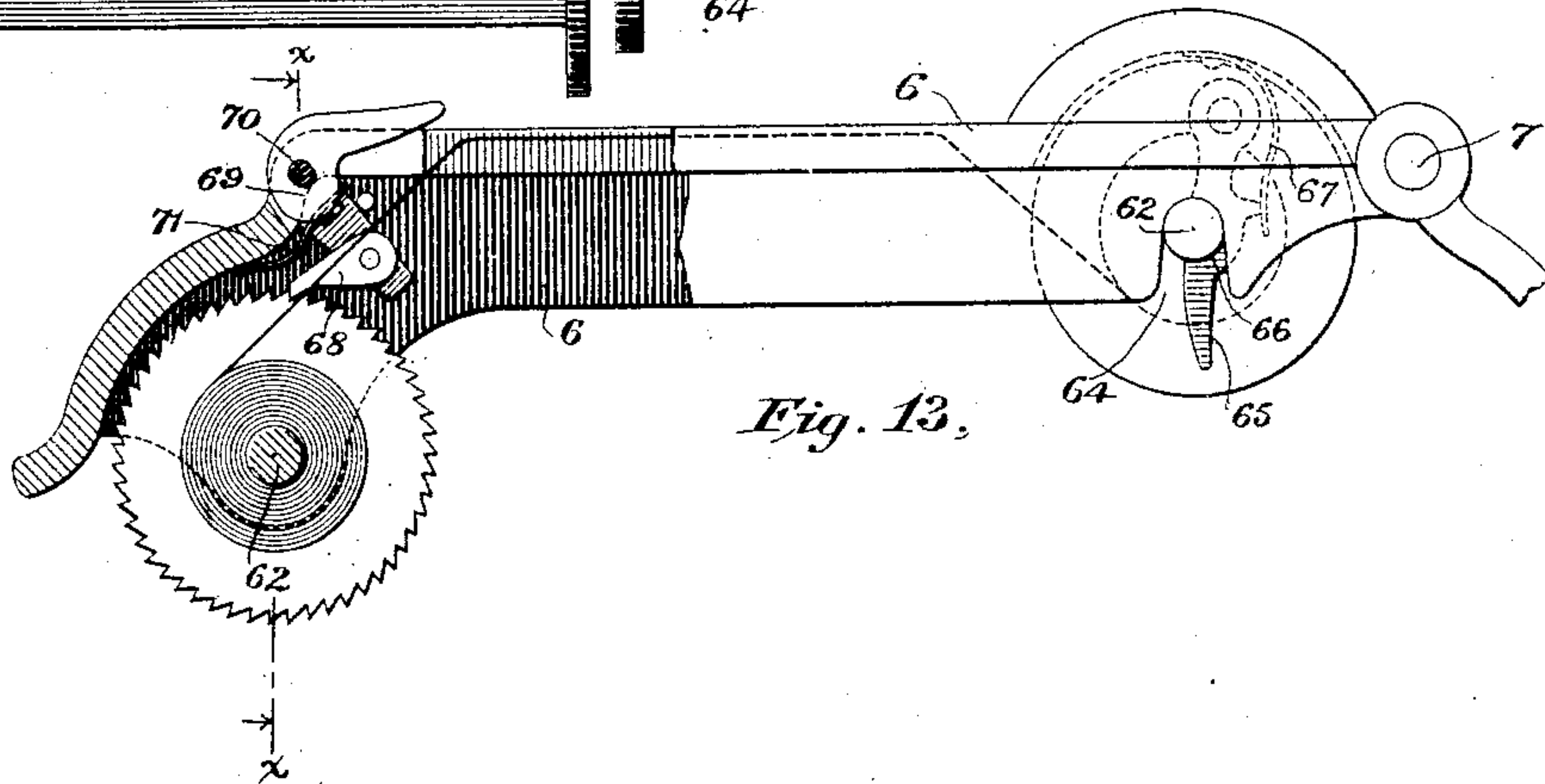


Fig. 13,

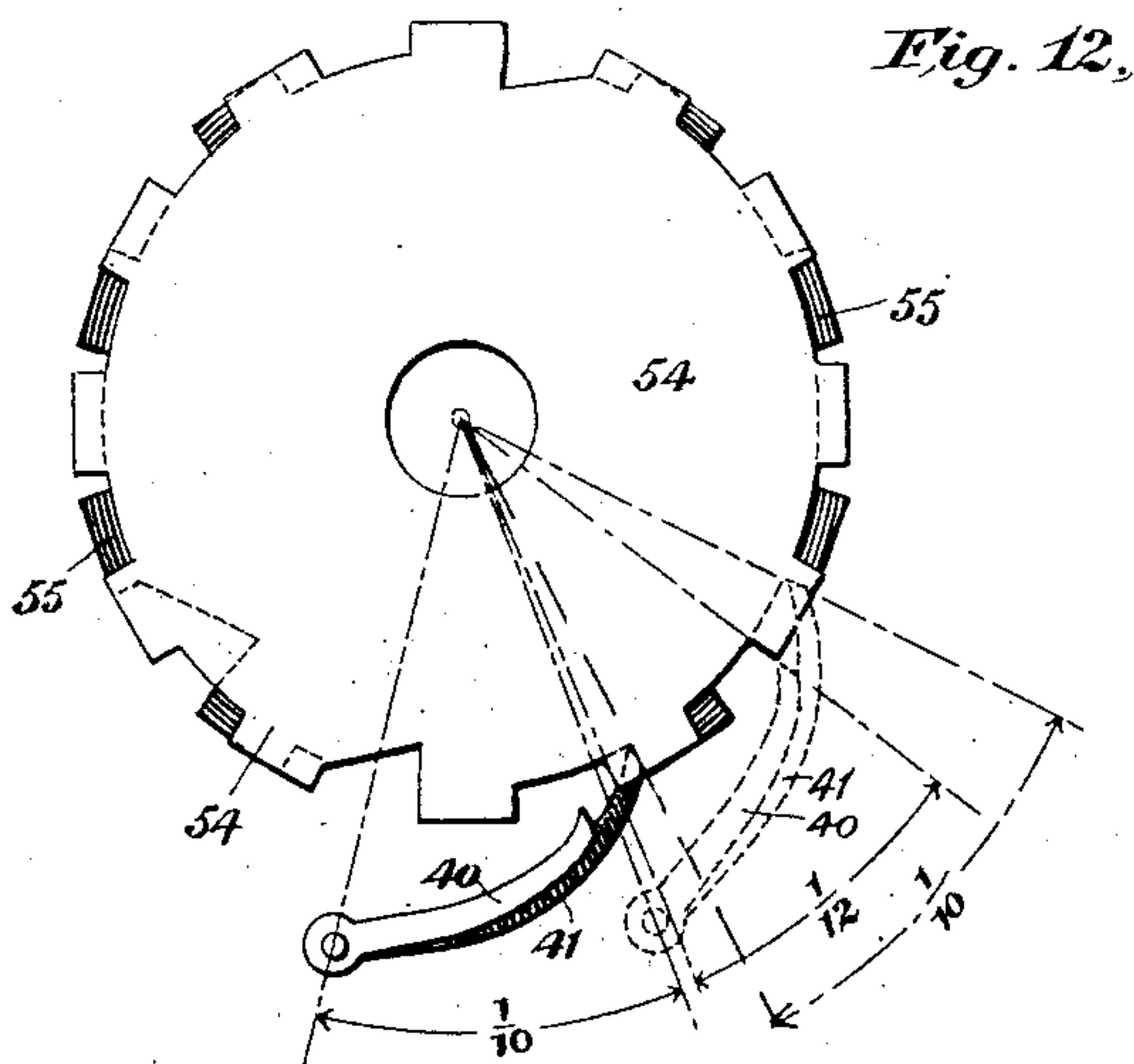
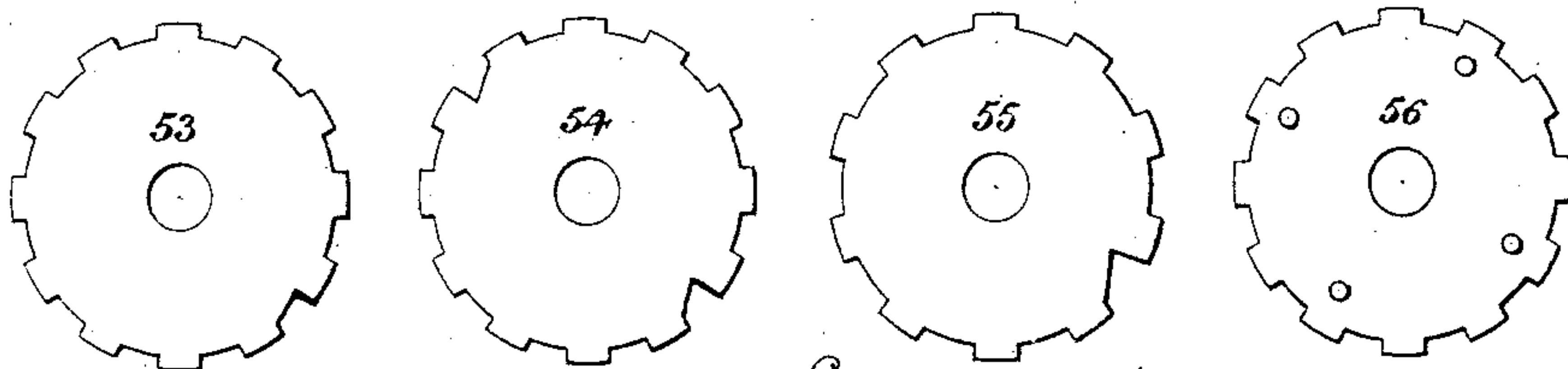


Fig. 12,

Fig. 14,



Witnesses

Geo. W. Breck.

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UNITED STATES PATENT OFFICE.

EDWIN W. MORTON, OF WHITE PLAINS, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO JOHN H. ALLEN, OF NEW YORK, N. Y.

TIME-REGISTERING STAMP.

SPECIFICATION forming part of Letters Patent No. 445,570, dated February 3, 1891.

Application filed September 21, 1889. Serial No. 324,702. (No model.)

To all whom it may concern:

Be it known that I, EDWIN W. MORTON, a citizen of the United States, and a resident of White Plains, Westchester county, New York, have invented a new and useful Improvement in Time-Registering Stamps, of which the following is a specification.

My invention relates to improvements in registering devices to be used in combination with a time or other mechanism and is usually applied to a time-stamp. The object of my improvement is to provide a mechanism that will record the year, month, day, hour, minute, the ante-meridian, meridian, and post-meridian, or any other matter which may be desired to record. I attain these objects by the mechanism illustrated in the accompanying drawings, in which the same numbers refer to the same parts throughout.

Figure 1 shows a side elevation of the stamp, with the hammer-holder in section and part of the casing of the stamp and time mechanism broken away. Fig. 2 shows a front elevation of stamp. Fig. 3 is a plan view of same. Fig. 4 is a side elevation of the stamp and time mechanism with one side of casing and also one side of frame of the device removed. Fig. 5 shows a front elevation of the stamp with the front of casing removed and also the ribbon-roller. Fig. 6 shows a vertical section of type-wheels and showing swinging frame in full. Fig. 7 shows a side elevation of registering mechanism. Fig. 8 is an end elevation of type-wheels, showing frame and adjacent parts in section. Fig. 9 is a side elevation of type-wheels and adjacent parts of registering mechanism, the frame being in section. Fig. 10 is a plan view of the stamp-field. Fig. 11 is a view of stamp-impression. Fig. 12 is a side elevation of two type-wheels, showing the relative position of notches and type with adjacent parts and mechanism. Fig. 13 is a detailed view, with part of casing broken away, of the ribbon and operating mechanism therefor. Fig. 13^a is a front elevation of the same. Fig. 14 shows an elevation of each of the type-wheels.

The casing of the stamp, as shown in Figs. 1, 2, and 3, is constructed of four walls and a bottom 1, 2, 3, 4, and 5, united firmly together

or cast in one piece. The top 6 is made of one piece and is hinged to the casing at 7, resting on the side walls of the casing 2 and 4. To this top or table is firmly fastened an arm 8. The end of this arm is provided with a sleeve, in which is fitted a reciprocating rod 9, provided at the lower end with a platen 10, usually shod with rubber, and at the other end having a knob 11. A spiral spring 12 surrounds the rod 9 and is incased within the sleeve 61, the bottom of said spring bearing upon an interior offset at the bottom of the sleeve and a shoulder upon the rod resting upon the top of the spring. The platen will thus be maintained at its point of highest elevation.

The clock mechanism I usually prefer to mount in an independent frame in which the arbors have their bearings; but this frame may be dispensed with and the walls of the casing perforated to form bearings for the arbors.

By reference to Figs. 4 and 5 it will be seen that the time mechanism consists of the usual power-gear and an escapement, these two being united by a mutilated gear, which operates a crank. In this movement 13 represents the driving-spring, and 14 the arbor, to which it is attached at one end. The ratchet device by which the power is applied to the train is not shown.

15 is a gear keyed to the shaft 14 and meshing with the lantern-pinion 16, which is keyed to the shaft 17. To said shaft is also keyed the gear 18, which meshes with the lantern-pinion 19, keyed to shaft 20, to which is also keyed the gear 21, which meshes with the lantern-pinion 22, keyed to the arbor 23. In said arbor a crank 24 is bent. Upon the arbor 23 is keyed the mutilated gear 25, the teeth of which mesh with the lantern-pinion 26 of the escapement-train, which is of the usual form used in clocks.

In the structure being described in this specification the time-stamp is designed to register differences of one minute. It is hence necessary to move the minute-type wheel every minute. The structure, which will be hereinafter described, by which the minute-wheel, together with the other type-wheels, is

moved is operated by the crank 24. Hence
 said crank must make one complete throw
 every minute. It will be seen that during
 one half of the revolution of gear 25 it is
 5 controlled by the escapement, while during
 the other half it moves under the direct ac-
 tion of the spring without control; hence in-
 stantaneously. Thus the arbor 23 must be
 so geared that if wheel 25 had a full set of
 10 teeth it would revolve once in two minutes;
 but as half of said teeth are removed the ar-
 bor 23 and the crank 24 make one complete
 revolution in one minute and operate the
 type-wheel, as desired—that is to say, the pe-
 15 riod during which the teeth of the mutilated
 gear engage the lantern-pinion of the escape-
 ment is fifty-nine and a fraction seconds,
 while the second half of the revolution of the
 arbor 23 takes place in the remaining fraction
 20 of a second.

The registering device is shown in Figs. 6
 to 11, and consists of a frame 29 or any de-
 sired support, which is usually cast in one
 piece. It is provided with brackets 30 30, be-
 25 tween which is fixed a type-wheel shaft 31.
 On this shaft is journaled a series of wheels
 of an even diameter, varying in width as the
 type on the face thereof may require, as
 shown in Figs. 10 and 11. The peripheries
 30 of these wheels are faced with type of an ar-
 rangement to meet the requirements of the
 registry. Between the type are depressions
 35 of varying depth. These operate as ratchet-
 teeth and are engaged by the pawls of the
 swinging frame and stationary brake-springs
 on opposite sides of the wheels hereinafter
 described.

A rocking frame constructed as shown in
 Figs. 6 to 9 is made in the form of a fork, the
 40 ends 37 and 37 being journaled to the shaft
 31 outside of the type-wheels. On the rear
 end of said fork are the brackets 44 and 44,
 which project from it and in which is jour-
 naled the rock-shaft 38, to which are secured
 45 the pawls 39, 40, 41, 42, and 43, and engaging
 the type-wheels, as hereinafter more fully de-
 scribed. Encircling the shaft 38 is a spiral
 spring 45, which is secured to said shaft at
 one end and the bracket 44 at the other, and
 50 by a torsional strain presses the pawls upon
 the type-wheels. To the rear end of the fork
 is secured a slotted arm 46, which may be
 made of two bars or pins, as shown in Figs.
 8 and 9. The crank 24 engages the slot in
 55 said arm and moves it and the fork and pawls
 back and forth. The pawls 39 40 41 42 43
 are rigidly secured to the shaft 38. They are
 usually of different lengths and are bent so
 as to be in different planes. Pawl 41, which
 60 moves the wheel indicating the units of min-
 utes, is the lowest; 40, which moves the wheel
 indicating the tens of minutes, is next above
 the unit-pawl; 39, which moves the wheel indi-
 cating hours, is the next above the tens-of-
 65 minutes pawl; pawl 42, which moves the type-
 wheel indicating the post and ante meridian,
 is the highest pawl, and pawl 43 drops en-

tirely below the level of the face of the type-
 wheels and also the other pawls, and engages
 with the pins 60 60 on the side of a wheel in- 70
 dicating the meridian. The same result may
 be accomplished by making the pawls of dif-
 ferent lengths as well as of different eleva-
 tion.

Secured to the frame of the registering 75
 mechanism on the side of the type-wheels op-
 posite to that on which they are engaged by
 the pawls are the spring-brakes 47 47, &c.
 They are equal in number with the type-wheels
 and bear upon the surface thereof, and en- 80
 gage notches in the surface of said wheels,
 and hold the wheels stationary. The notches
 with which these spring-brakes or check-stops
 engage are so located that the type-wheels
 will be held in such position in the field of the 85
 stamp as to present a perfect line of type for
 printing.

The construction of the registering devices
 as applied to a time-stamp is as follows: Figs.
 6, 7, 8, 9, and 10 show the various views of the 90
 type-wheels. In Fig. 6 the wheels are shown
 in section, journaled on the shaft 31, and are
 numbered as follows: Wheels 50, 51, 52, 53, 54,
 55, 56, 57, and 49, indicate, respectively, as
 shown in Fig. 10, the month, the tens of the 95
 days of the month, the units of the days of
 the month, the hour of the day, the tens of
 minutes, the units of minutes, the ante-me-
 ridian, meridian, and post-meridian, the three
 latter all on one wheel, a comma, and the 100
 year. Several of the wheels in the mechanism
 illustrated in this application are arranged to
 be turned automatically, while others must
 be turned by hand or with a suitable instru-
 105 ment by hand. The wheels of the latter class
 are 49 50 51 52 57, while the remainder 53
 54 55 56 are operated automatically by the
 time mechanism. By reference to Fig. 6 it
 will be seen that pins 58 59 are passed through
 the shaft 31 on the outside of the wheels 53, 110
 54, 55, and 56, thus separating them from the
 adjoining wheels, so as to avoid the danger
 of the latter wheels being moved when the
 former are turned by the clock mechanism.
 The motion of the wheels 49, 50, 51, and 52 115
 has been described and need not be further
 mentioned. Those moved by the clock mech-
 anism will now be described. Wheel 55 is
 used to indicate units of minutes, and has on
 its surface ten type-surfaces, being numerals 120
 from 1 to 9 and zero. Between the type-faces
 are indentations, all of which are of equal
 depth with the exception of that between the
 type-faces 2 and 3, which is deeper than the
 others. Wheel 54 is the next adjoining one 125
 on the left, as shown in Figs. 6 and 7, and is
 used to indicate tens of minutes. This wheel
 has twelve type-faces on its surface and in-
 dentations between said type-faces, all of
 which are of equal depth with the excep- 130
 tion of two, which are on opposite sides
 of the wheel. The numerals on this wheel
 are 1 2 3 4 5 0—1 2 3 4 5 0, and the indenta-
 tions are between the figures 3 and 4 on each

side of the wheel. Wheel 53 is used to represent hours, and has upon its surface twelve type-faces, from 1 to 12, inclusive. Between said type-faces are indentations, all of them of equal depth except one—that between the types 3 and 4, so located in consequence of the relation between the pawls and the printing-line of the type-wheels. Wheel 56 is located on the left of wheel 55 in Fig. 6, and is used to indicate the ante-meridian and post-meridian. The relative motions of these wheels will now be described. They are all moved by the pawls 39, 40, 41, 42, and 43, which are rigidly secured together, and, as above described, are so bent as to stand one below the other. The deep notches in the various type-wheels above mentioned are of unequal depth in the various wheels. That in wheel 55 is the deepest, those in wheel 54 next, those in wheel 53 next, and those in wheel 56 next. The wheel 56 has on its side four pins 60, which project therefrom, and which are engaged by the downwardly-bent pawl 43. When the pawls are operated, the pawl 41, resting upon the periphery of wheel 55 and being the lowest pawl of a series, will retain all the others in an elevated position above their various wheels and out of engagement with their several indentations, until said pawl falls into the deep notch of wheel 55. This will cause pawl 40 to engage all indentations of the wheel 54, and as the pawls are moved will turn said wheel forward one step. If it should happen that the indentation below the pawl 40 in wheel 54 should be one of the deep indentations in said wheel, the pawl will sink low enough in said indentation to allow the pawl 39 to engage one of the indentations in the wheel 53, so that said wheel may be moved forward one step by the motion of the pawl. If it should happen that the indentation into which the pawl 39 falls is the deep indentation of wheel 53, then pawl 42, which is the next highest one, will fall upon and engage an indentation in the wheel 56 and move said wheel forward when the pawls are moved. The indentations in the wheel 56 are so arranged in relation to the pins 60 on the side of said wheel that they will stand with three indentations in said wheel between each two pins.

Wheel 56 is provided with twelve type-faces A. M., M., and P. M., successively, in four groups. Whenever the pawl of the wheel 53 falls into the deep indentation in said wheel and permits the pawl of wheel 56 to engage its indentations and move it forward and exposes the symbol M., then the pawl 43 will engage one of the pins 60, and the next motion of the pawls, which will take place with the next minute, will move the meridian-wheel forward and bring the symbol P. M. into the printing-field.

An examination of Fig. 9 and of the foregoing description of the type-wheels will disclose the fact that several of the wheels are provided with twelve type-faces, while wheel 55 has but 10. This would cause confusion

in the printing but for the arrangement hereinafter described.

The unit of minute-wheel must revolve one-tenth of a revolution at each throw of the pawls, and the tens-of-minutes and hour wheels must make one-twelfth of a revolution at each throw of the pawl. The accord of these wheels is accomplished by the device shown in Fig. 12. The indentations of the wheels 53 and 54 are made shorter than those of wheel 55, and so located that the pawls, which actually travel at each throw a distance sufficient to turn the wheels one-tenth of a revolution, will, when they fall into their notches, engage and begin to turn the wheel 55 before they engage the notches of the other wheels, and will then take up the other wheels and move them the remainder of the throw of the pawls, the lead of the notch in 55 being the difference between the one-twelfth section of the type-wheel and one-tenth section. It will be readily seen that this method of synchronizing the motion of the type-wheels might be employed, no matter what difference there might be between the number of types on the wheels.

The inking mechanism consists of a ribbon wound upon spools 62, journaled in brackets 63 of the cover 6, as shown in Fig. 13, and held in said journal by a device which will now be described.

The bracket 63 is provided with notches 64 on either end, into which the shafts of the reels fit. Pivoted to each of said brackets above the bottom of the notches 64 are fingers 65, in one side of which a semicircular notch 66 is cut, which fits upon and holds the shaft of the reel in the notches 64.

67 is a spring bearing upon the back of the finger 65 and holding it in engagement with the shaft 66. When it is desired to insert the spools 62, they may be pressed into the notches 64 and will be caught and held there by the fingers 65.

The periphery of one end of each spool is cut with ratchet-teeth, and a pawl 68 engages them, which is pivoted to one end of the bell-crank lever 69, which is pivoted in the cover 6 at 70, the other arm of said bell-crank lever standing a little above the level of the printing-table, and in such position that it will be struck by the platen when it descends, and as it is moved downward will operate the ratchets and turn the spool, thus drawing off a fresh portion of ribbon. The bell-crank lever is held up to its point of highest elevation by a spring 71, secured to it and bearing against the interior of the cover. When the ribbon has been completely wound upon one reel, the reels may be removed and reversed, and the same winding device will unwind what was formerly wound and rewind it upon the empty reel.

Within the frame of the registering mechanism 29 is journaled a shaft 72 with type-faces, and any word or words that it may be desired to record in addition to the printed

matter of the field of the stamp. This shaft is provided with a knob projecting beyond the casing of the stamp, said knob being provided with faces of type thereon, indicating the character of the type or word upon the corresponding faces of the shaft. It is also provided within the registering-frame of the stamp with the ratchets 73, engaged by a check-stop 74. On the surface of the frame of the registering device 29 is securely fastened a plate or die 75, having words in type raised thereon and spaces in which the letters upon the registering device and also upon the shaft 72 may stand. All the types must be arranged in the same horizontal plane.

Referring to Fig. 9, the lantern-pinion 26 is provided with a concave depression 76 on its periphery of radius equal to the mutilated gear 25, and of such relation to the mutilated gear that when the last tooth of the gear leaves the pinion and the half-ring which is riveted to the under side of said mutilated gear, and which has a plane surface on its periphery, it will come in contact with said depression and stop the motion of the pinion 26 and hold it stationary until a tooth of the mutilated gear comes in contact with said pinion. The depression 76 is so located upon the periphery of the pinion 26 that when said depression is caught by the semicircular segment on the under side of the mutilated gear 25 and held stationary thereby while said gear is making a half-revolution the bars of said pinion will be in proper position to be engaged by the first tooth of the mutilated gear succeeding the blank space in said gear.

I have not claimed in this application the bottom principle of the registering device, but only its application to a time mechanism. This principle is the subject of another application filed herewith.

What I claim, and desire to secure by Letters Patent, is—

1. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its periphery with indentations of varying depth, and type or other device for registering or indicating, with a rocking or reciprocating frame provided with a series of pawls suitably mounted to engage the indentations in the wheels and arranged so that one or more of said pawls may engage the indentations of one or more wheels while the others are out of engagement, with a time mechanism consisting of a time-train and an escapement, one of the gears of which is mutilated, and the arbor upon which said gear is mounted being provided with a crank which engages the rocking frame of the registering device and operates it at predetermined intervals, substantially as described.

2. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its periphery with indentations which vary in depth, and type or other device for register-

ing or indicating, with a rocking or reciprocating frame provided with a series of pawls suitably mounted to engage the indentations in the wheels and arranged so that one or more of said pawls may engage the indentations while the others are out of engagement, with a time mechanism consisting of a time-train and an escapement connected by a mutilated gear, the teeth of which form a segment of a circle and which meshes with a pinion of the escapement, and the arbor upon which said gear is mounted being provided with a pinion engaging the time-train, and a crank which engages and operates the rocking pawl-frame, substantially as described.

3. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its periphery with indentations which vary in depth, and type or other device for registering or indicating, with a rocking or reciprocating frame provided with a series of pawls suitably mounted to engage the indentations in the wheels and arranged so that one or more of said pawls may engage the indentations while the others are out of engagement, with a time-train and an escapement connected by a mutilated gear, the teeth of which form a segment of a circle and which meshes with a pinion of the escapement, and the arbor upon which said gear is mounted being provided with a pinion engaging the time-train, and a crank which engages and operates the rocking pawl-frame, and the time-train being so geared to the mutilated gear that the period during which the teeth of the gear engage the escapement shall be fifty-nine and a fraction seconds, substantially as described.

4. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its face with indentations of varying depth and length and registering type, several of said wheels having twelve indentations and one of said wheels having ten indentations, the indentations in the wheel having ten being considerably longer on the face of the wheel than those in the wheel having twelve, with a rocking frame and a series of pawls mounted pivotally therein engaging the indentations in said wheel, said pawls being rigidly secured together and varying in elevation, and a means for imparting motion to said pawls of an extent equal to one-tenth of a revolution of the type-wheel, the pawls which engage the type-wheel having ten notches and those having twelve notches falling into said notches at the same time, but that pawl engaging the wheel having ten notches biting upon said notch in such a manner as to move the wheel forward some time before the pawl falling into the notch of the wheel having twelve notches engages the end of said notch and moves said wheel, the difference in the length of said notches being equal to the difference between one-tenth and one-twelfth of the circumference of the type-wheel.

5. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its face with indentations of varying depths and registering type, said wheels bearing unequal numbers of registering types, and the spaces between the types in different wheels being of different lengths, with a rocking frame and a series of pawls mounted pivotally therein engaging the indentations in said wheel, said pawls being rigidly secured together and varying in elevation, and means for imparting motion to said pawls to an extent equal to

the portion of a complete revolution of the type-wheels which is equal to the distance between the centers of the types upon the wheel having the smallest number of types, substantially as described. 15

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 11th day of September, 1889. 20

EDWIN W. MORTON.

Witnesses:

JAMES L. STEUART,
WM. H. CARR.