

No. 843,170.

PATENTED FEB. 5, 1907.

A. N. PALMER & W. W. KIMBALL.

TIME RECORDER.

APPLICATION FILED DEC. 22, 1903.

4 SHEETS-SHEET 1.

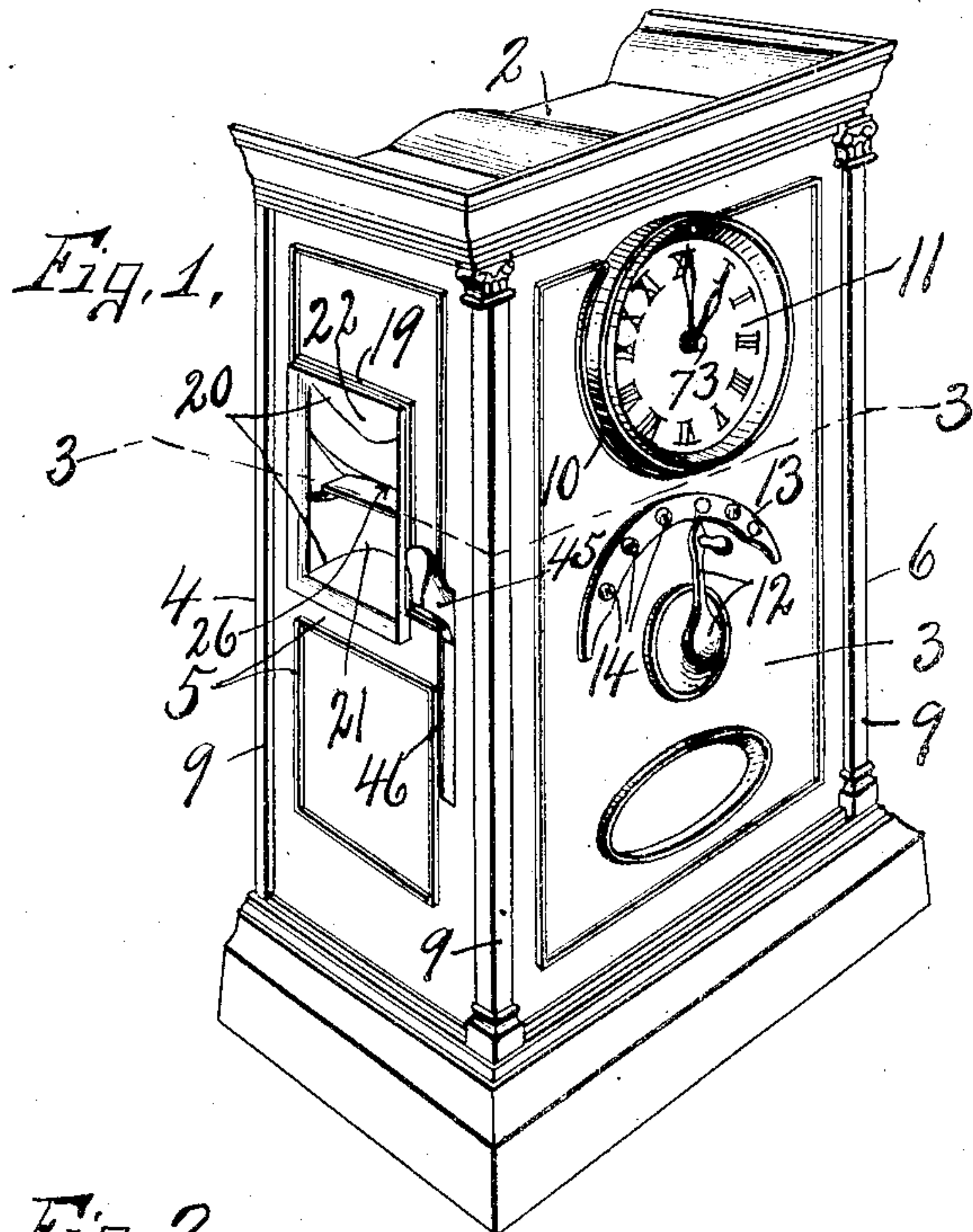
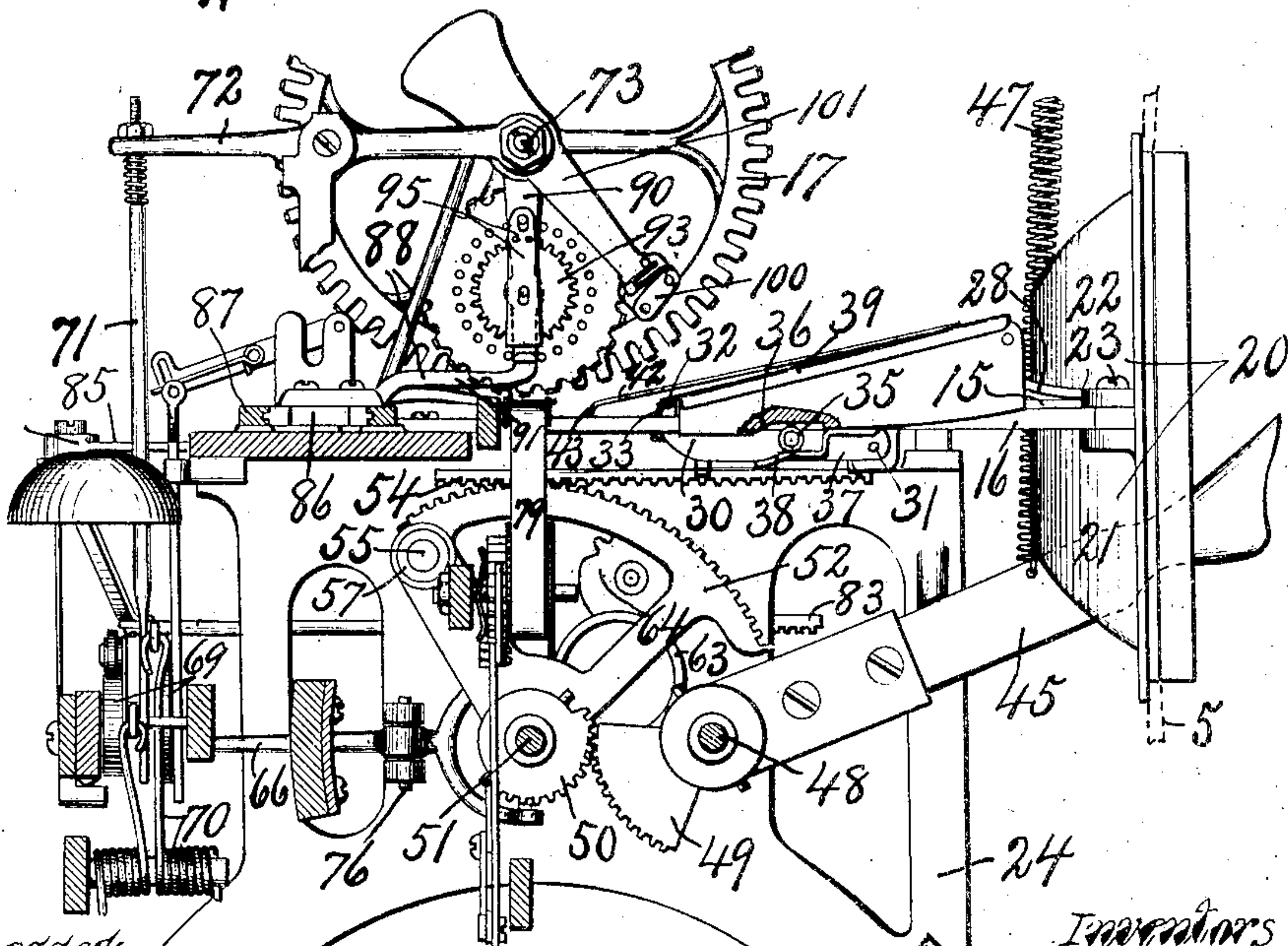


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

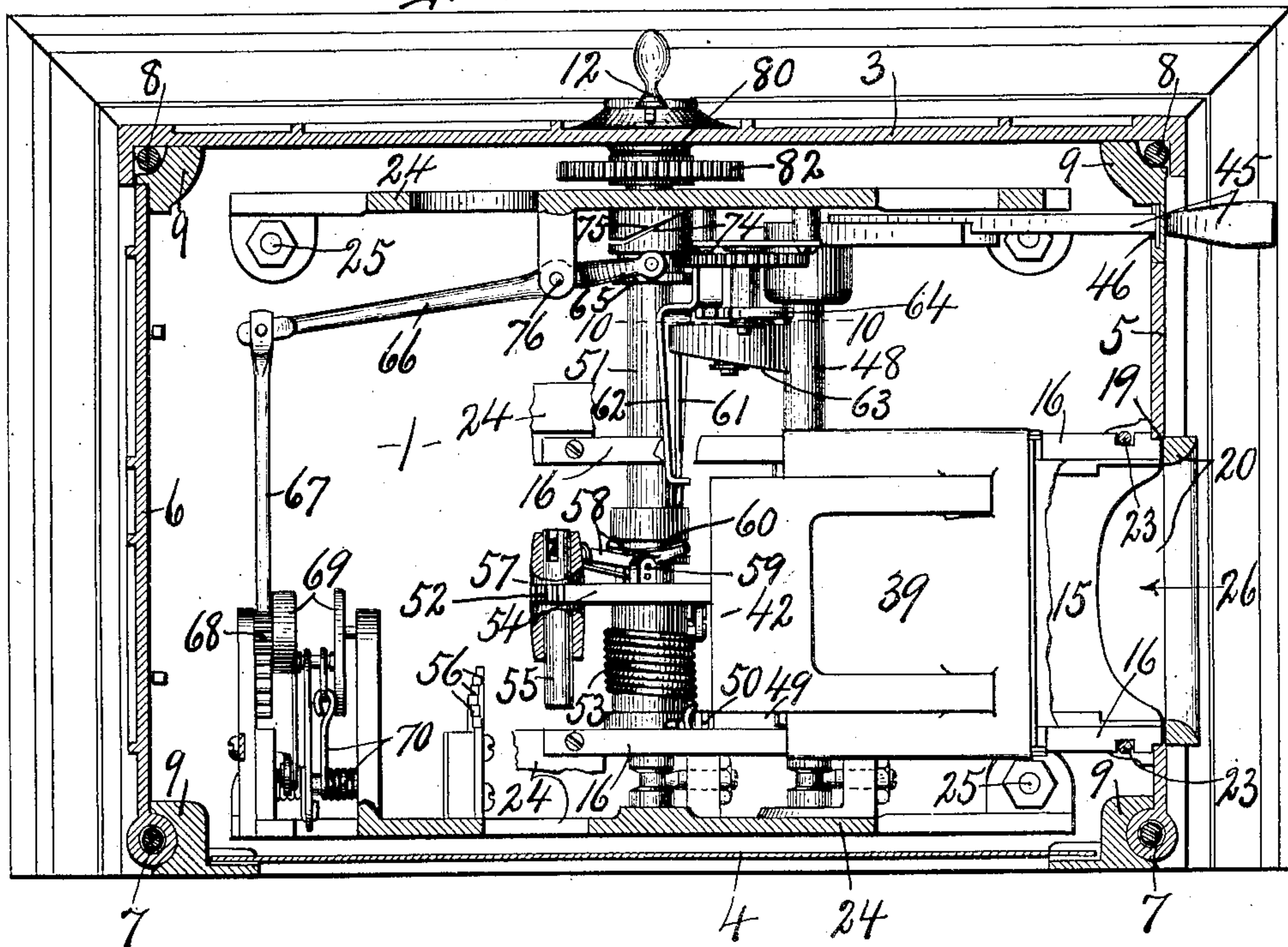
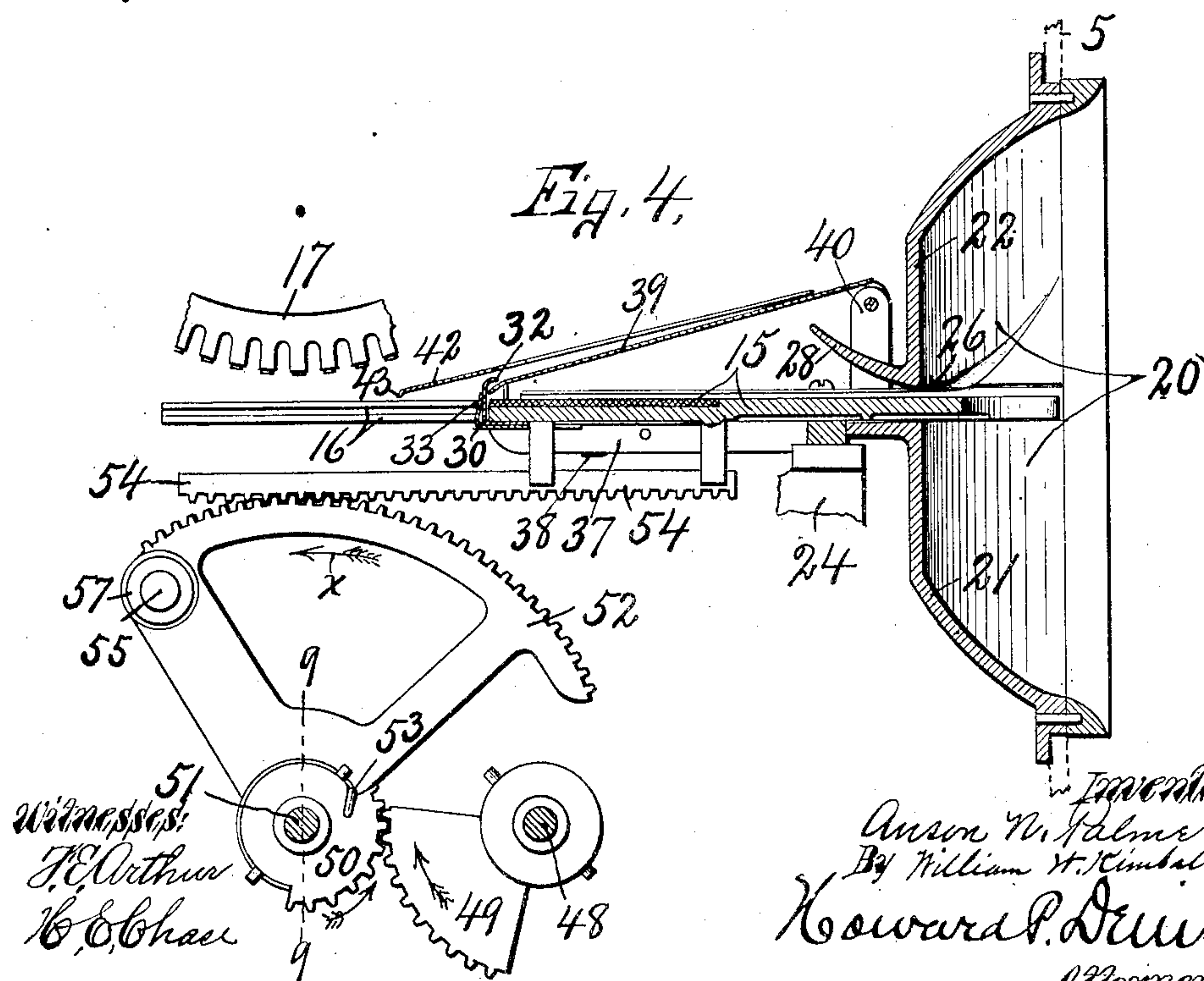


Fig. 4.



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4 SHEETS—SHEET 3.

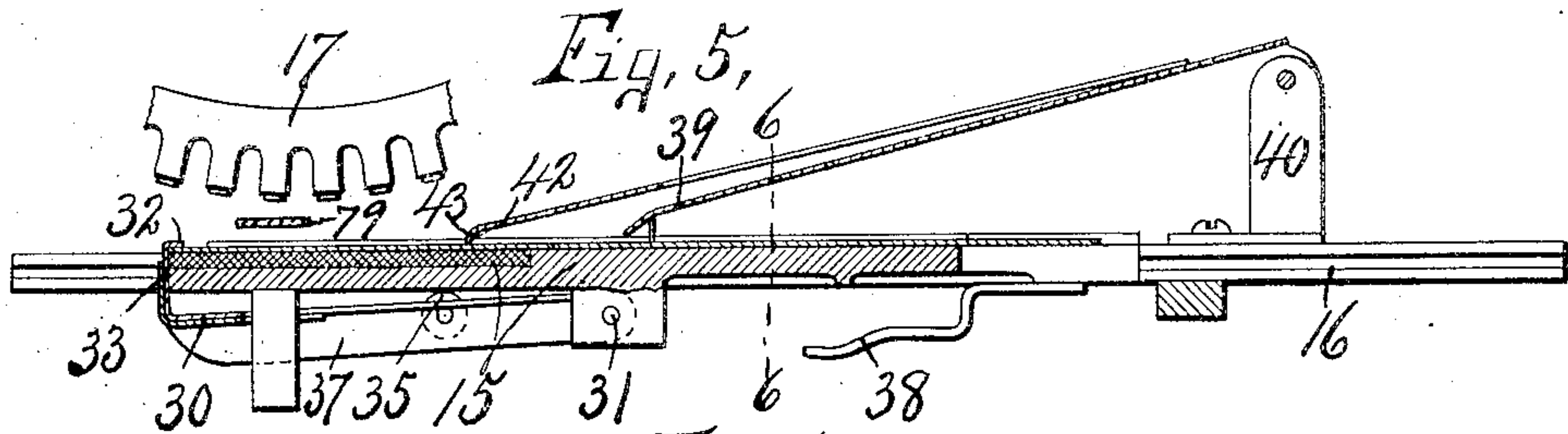


Fig. 6.

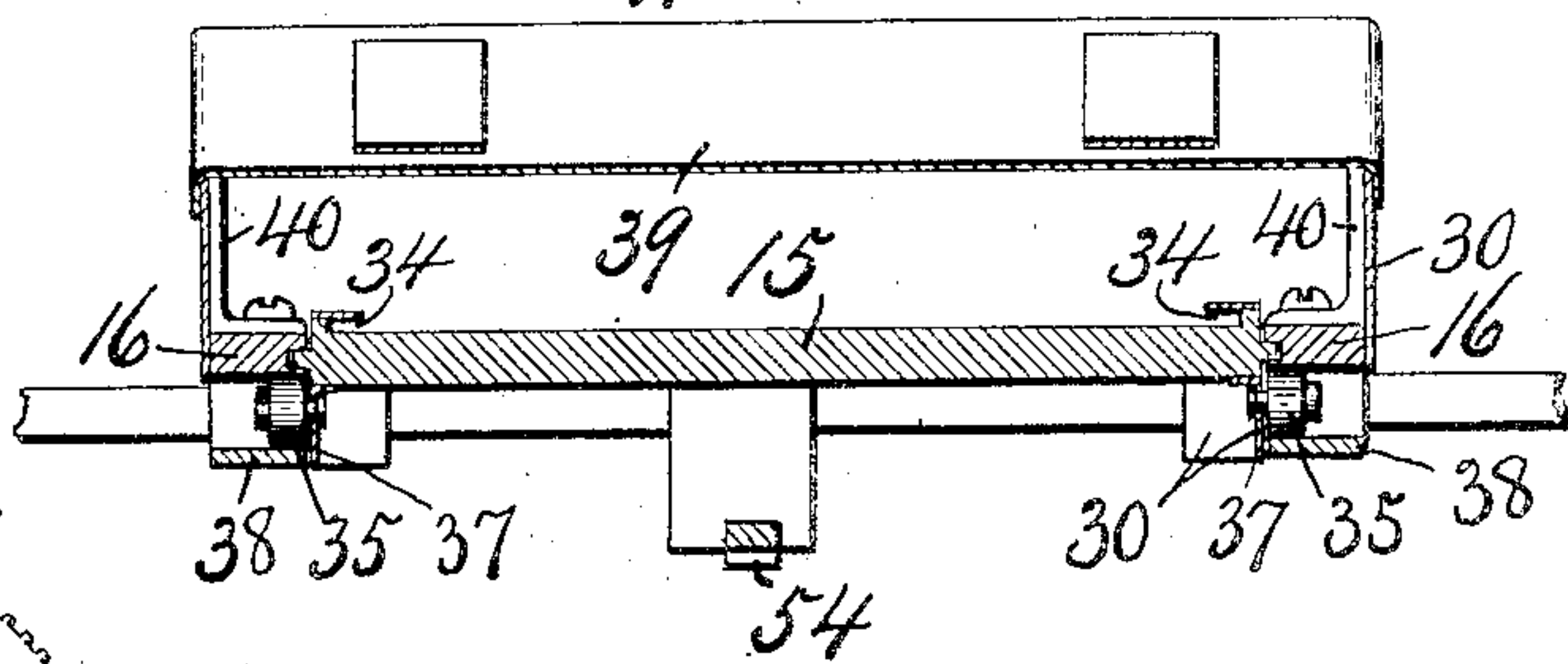


Fig. 10.

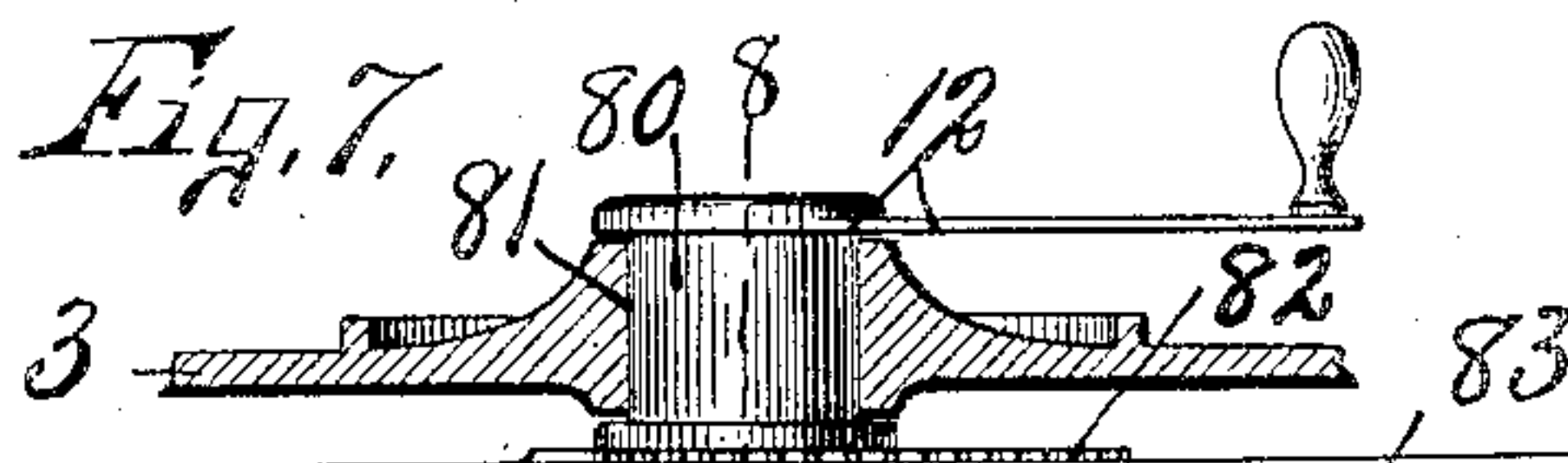


Fig. 7.

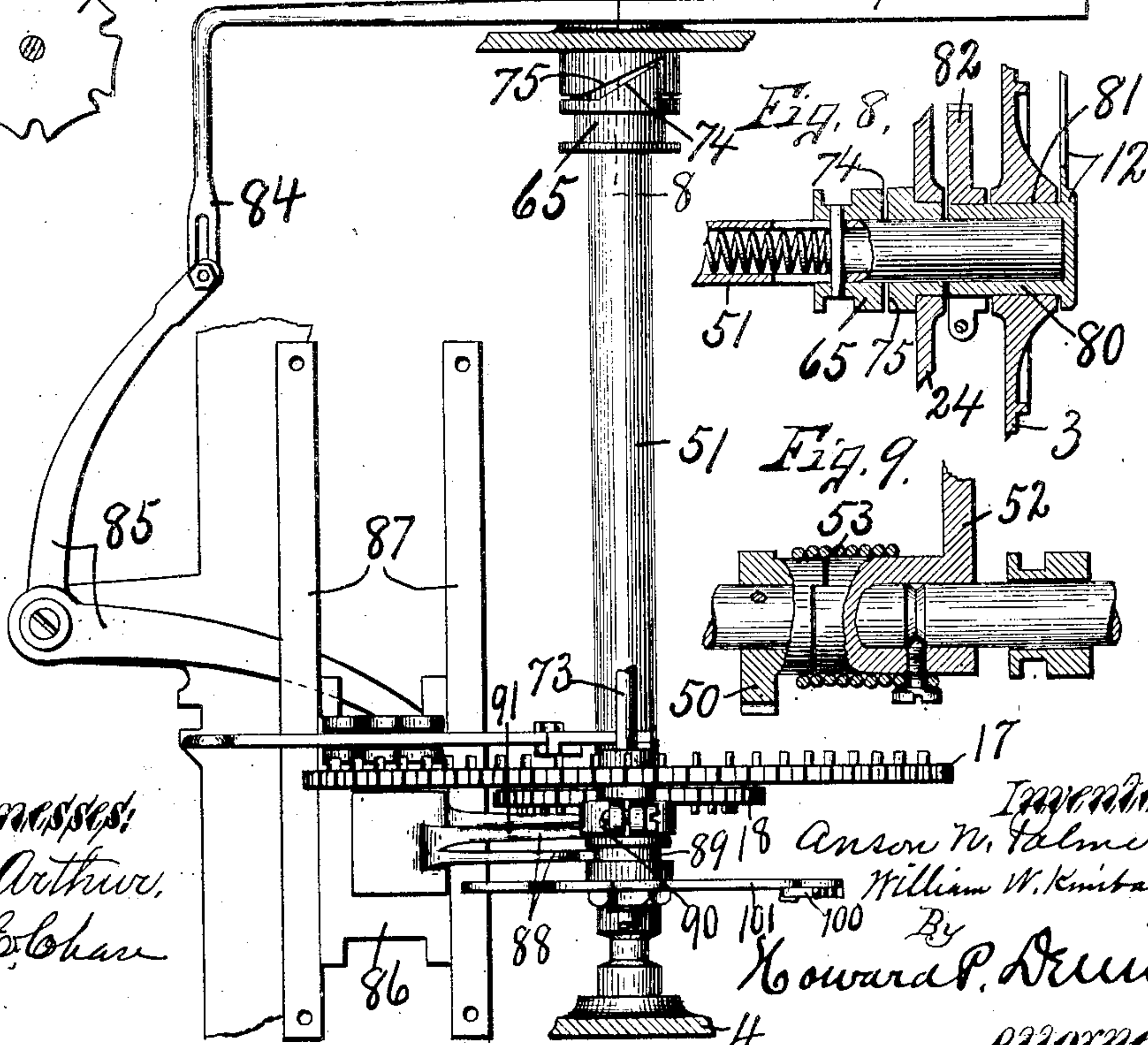
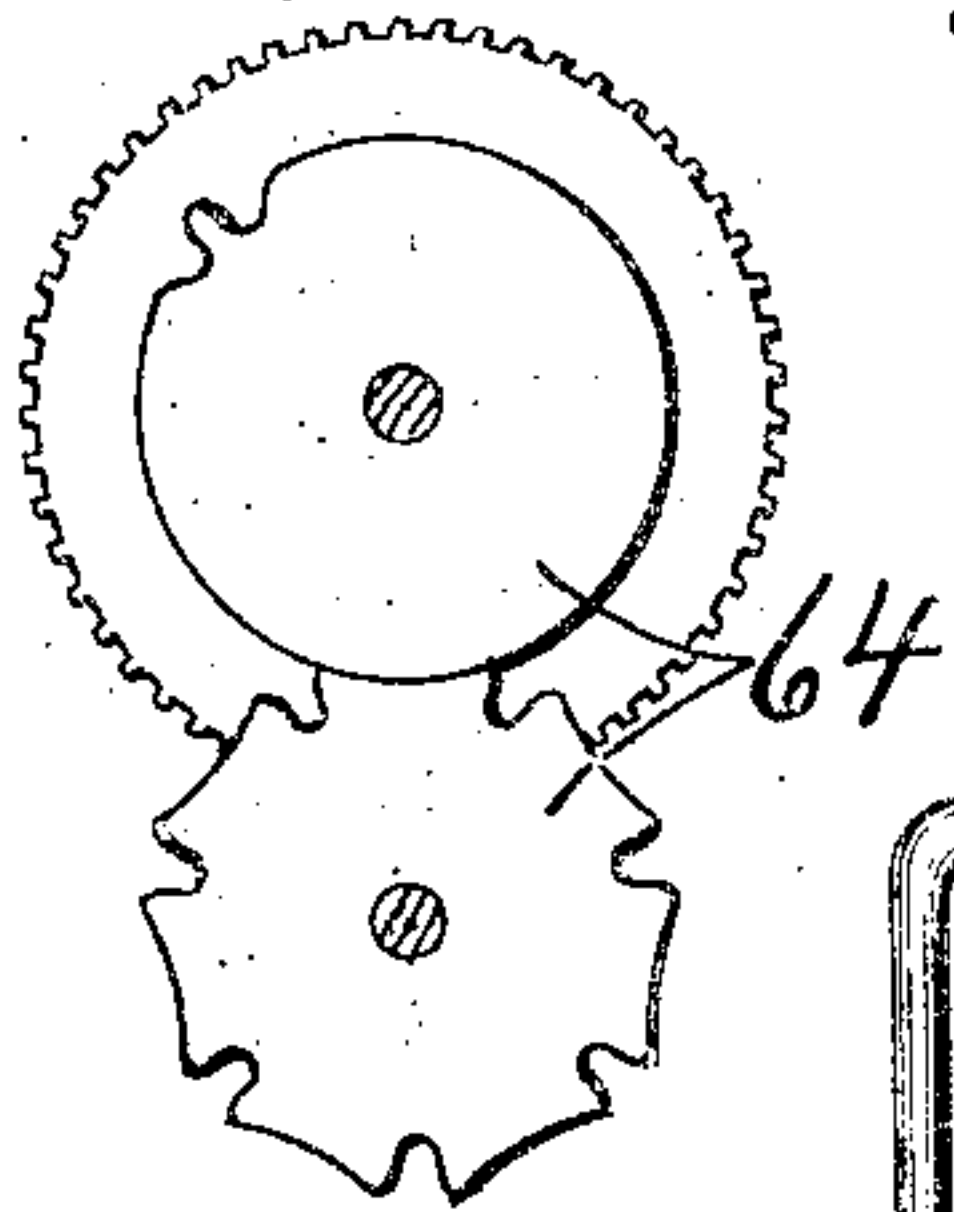


Fig. 8.

Fig. 9.

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TIME RECORDER.

APPLICATION FILED DEC. 22, 1903.

4 SHEETS—SHEET 4.

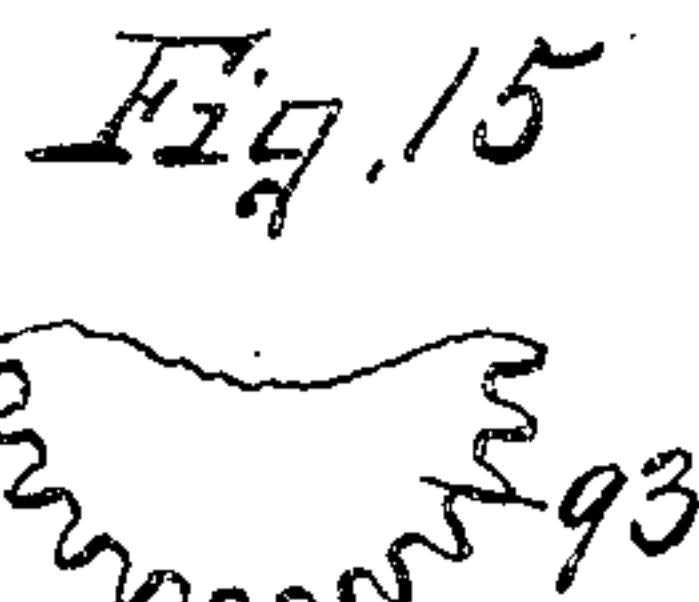
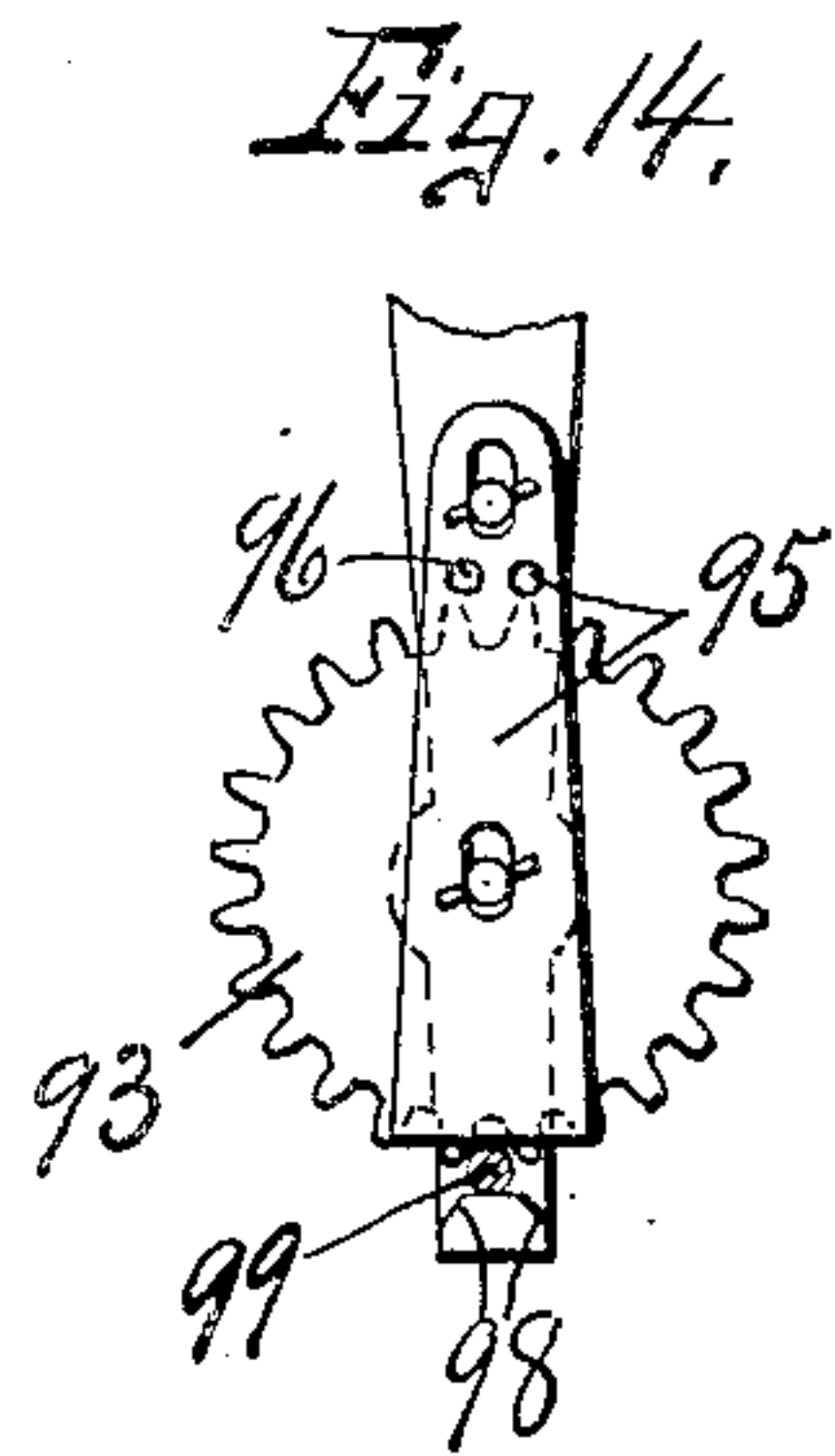
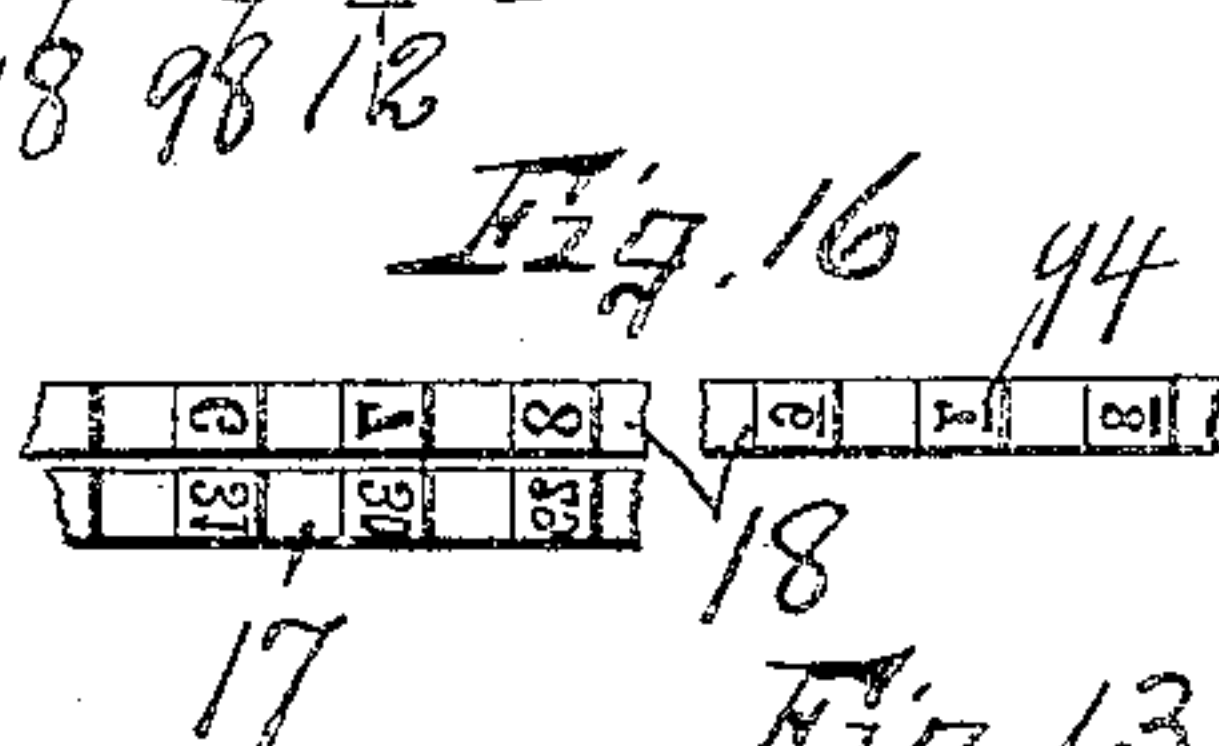
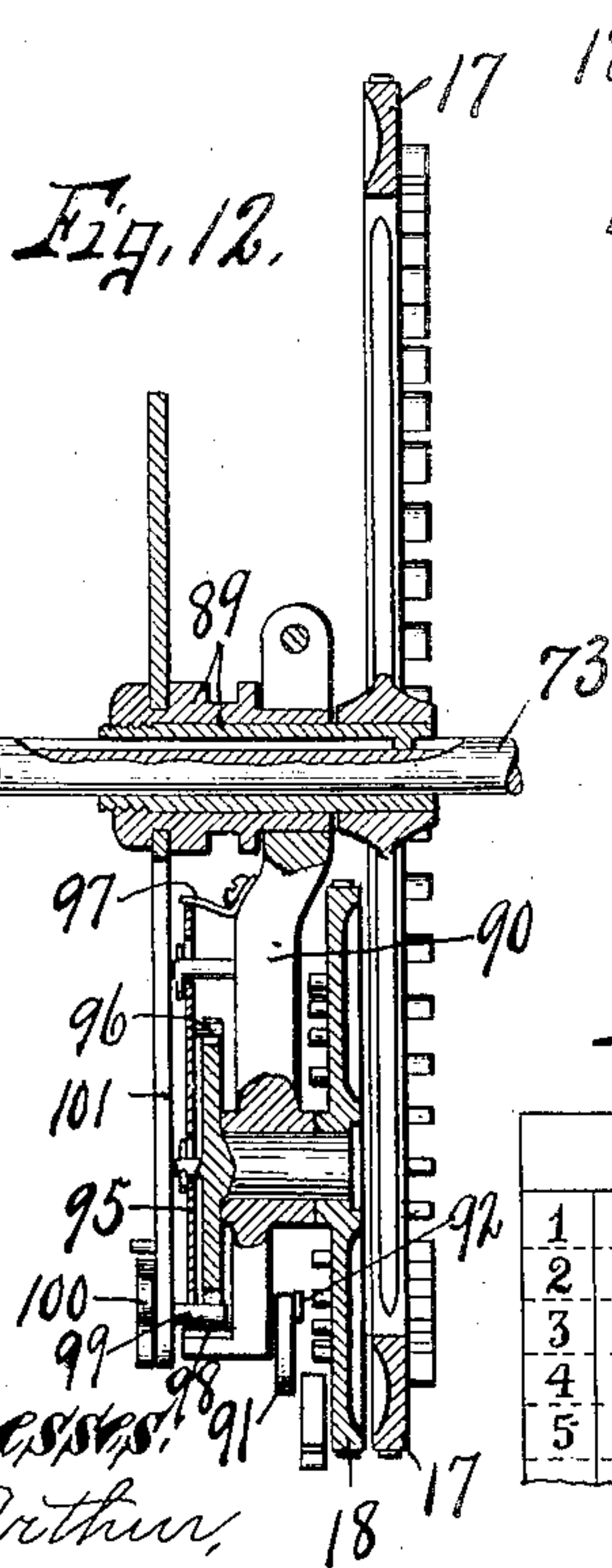
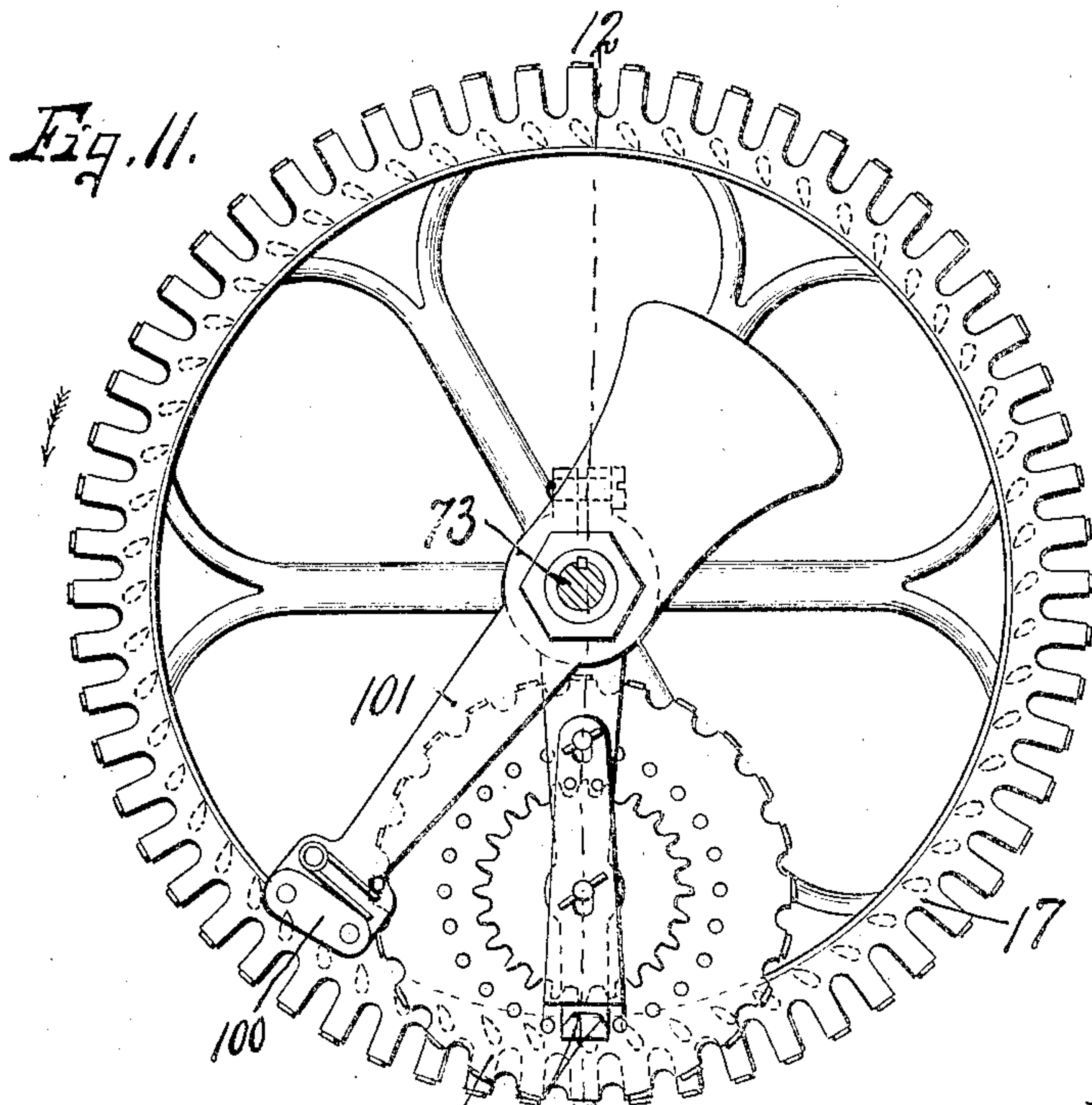


Fig. 17.

1	7.30	7.30
2		9.4
3		
4		
5		

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UNITED STATES PATENT OFFICE.

ANSON N. PALMER AND WILLIAM W. KIMBALL, OF SYRACUSE, NEW YORK,
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TIME-RECORDER.

No. 843,170.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed December 22, 1903. Serial No. 186,168.

To all whom it may concern:

Be it known that we, ANSON N. PALMER and WILLIAM W. KIMBALL, both of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Time-Recorders, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in workmen's time-recorders of the class commonly known as "card-machines," in which each workman is provided with a card bearing a particular character by which he is designated, each workman inserting his card into the machine on his arrival and departure from work and printing thereon such periods of time, the card being, of course, withdrawn after each operation and is placed and retained in a suitable rack provided therefor, it being understood that these records on each card may be made for a definite period of time—such, for instance, as one week of the six working days or for a full week, if desired.

One of the most essential objects of this invention is to provide means operating automatically to grip or clamp the advance end of the card, whereby the card is drawn into operative position for receiving the print from the printing device.

Another object is to provide means for straightening or smoothing the card while in transit to and from the printing position, so as to make it impossible for a crumpled or mutilated card to become clogged or in any manner interfere with the successful operation of the machine.

Other objects pertaining to the card-holder and mechanism cooperating therewith will be brought out in the subsequent description.

A further object is to provide means under the control of the operator for shifting the printing-wheels axially, so as to print the successive "ins" and "outs" in different positions, but in the same line upon the card.

In this class of machines it is desirable to make some distinction in the printed records for different divisions, such as "A. M." and "P. M." of the day of twenty-four hours without using these abbreviations—for instance, in distinguishing certain hours, as 7 A. M. from a like hour, as 7 P. M. To accomplish this, the hour-printing wheel is pro-

vided with twenty-four printing characters, which are divided into two distinct sets of consecutively-arranged numbers from "1" to "12," inclusive, one set following the other circumferentially on the periphery of the wheel. The type of one set is distinguished from those of the other set by some special mark or style of type or by a different size of type, one set representing the hours of one half of the day, as A. M., while the other set represents the hours of the other half of the day, as P. M., and therefore another object is to produce impressions upon the card or sheet which will enable the timekeeper to readily ascertain whether the impression was made in the forenoon or afternoon.

In the drawings, Figure 1 is a perspective view of a workman's time-recorder embodying the features of our invention. Fig. 2 is an end elevation of a portion of the interior mechanism, showing particularly the card-receiver and its operating mechanism and other parts pertaining thereto in conjunction with a portion of the printing mechanism. Fig. 3 is a horizontal sectional view taken on line 3 3, Fig. 1. Fig. 4 is an enlarged sectional view through the movable card-receiver and its fixed guide, showing the means for moving the card-receiver to its printing position. Fig. 5 is an enlarged sectional view similar to Fig. 4, showing the card-receiver as moved forwardly beneath the type-wheels and in position to receive the print or impression. Fig. 6 is a sectional view taken on line 6 6, Fig. 5. Fig. 7 is a top plan of the printing-wheels and means for shifting the same axially. Figs. 8, 9, and 10 are detail sectional views taken, respectively, on lines 8 8, Fig. 7, 9 9, Fig. 4, and 10 10, Fig. 3, the latter showing particularly the clock-actuated gears of the stop mechanism for the card-receiver. Fig. 11 is an end elevation of the printing-wheels, showing the means for intermittently rotating the hour-wheel one step at each revolution of the minute-wheel. Fig. 12 is a sectional view taken on line 12 12, Fig. 11, except that the operating member on the minute-wheel spindle is shown in the position assumed when moving the hour-wheel one step. Figs. 13, 14, and 15 are detail views of portions of the hour-wheel-actuating mechanism in different positions, the holding-detent being shown in Fig. 14. Fig.

16 is a face view of portions of the printing-wheels, showing more particularly the different printing characters on the hour-wheel. Fig. 17 is a face view of a portion of a time-card, showing the different impressions made by the printing-wheels.

The greater part of the mechanism involved in this time-recorder is mounted in a suitable inclosing case consisting of bottom and top walls 1 and 2, front and rear walls 3 and 4, and side walls 5 and 6, said side walls being hinged at their rear edges to upright rods 7, which serve to tie the upper and lower walls of the case together, similar rods 8 being employed at the front of the case for the same purpose, and the upper and lower walls are held in separate relation by corner columns or standards 9.

The upper portion of the front wall is provided with an opening 10 for receiving the face portion of a pendulum-clock 11, and just below this opening is a revoluble handpiece 12 and a concentric index-plate 13, the handpiece being operatively connected in a manner hereinafter described to shift the type-wheels axially and is provided with a suitable pointer movable along the index-plate 13, which is provided with a series of stop-points 14, indicated from left to right respectively, as "Morning in," "Noon out," "Noon in," "Evening out," "Night in," and "Night out," to indicate the times of arrival and departure to and from work.

The card-receiver comprises a horizontal movable bed-plate or platen 15, having its opposite edges mounted in opposite parallel ways 16 of sufficient length to permit the platen 15, upon which the card rests, to be moved beneath the type-printing wheels, as 17 and 18. These ways extend inwardly from the side wall 5 of the case and are aligned with an opening 19 in said side wall 5. Mounted in this opening 19 is a card-centering guide 20, composed of lower and upper sections 21 and 22, which are secured by suitable fastening means, as screws 23, to the outer ends of the tracks or ways 16, the adjacent portions of the edges of which are cut away to receive the clamping-screws 23, thereby partially locking the guide-sections 21 and 22 to the tracks or ways 16. These tracks or ways are mounted upon or secured to a supporting-frame 24, which in turn is fastened to the base or bottom 1 by clamping-bolts 25, and it therefore follows that the ways or tracks 16 and guide 20 are fixed with reference to the inclosing case.

The ends of the sections 21 and 22 are provided with marginal flanges abutting against the outer face of the side wall 5, so as to surround the opening 19 and afford additional means for securing the centering-guide 20 to said side wall 5.

The centering-guide 20 is provided with a substantially central transverse slot or open-

ing 26 for receiving the card, said slot being formed by slightly separating the meeting edges of the sections 21 and 22, and the bottom and top walls of these sections preferably incline inwardly toward the slot to facilitate the centering of the card when being inserted into the slot 26, said slot being of sufficient depth vertically to receive the adjacent end of the platen 15 with the card upon its upper face, so that when the platen is in its normal position its outer end projects beyond the inner wall of the centering-guide 20 to permit the card to rest thereon while being inserted inwardly along and upon the upper face of the platen. The upper wall of the slot 26, or rather the lower edge of the section 22, is formed with an inwardly-projecting flange 28, which is deflected upwardly from the upper surface of the platen to prevent the rear edge of the card or any mutilated part thereof from becoming caught when the receiver returns to its normal position after being moved to the printing-point, the object of this upturned flange being to straighten out or flatten the card upon the platen upon its return and to thereby prevent its further mutilation in the machine, which might interfere with its successful operation.

A clamping-plate 30 is hinged at its rear end at 31 to the lower side of the platen 15, and its front end is bent upwardly and rearwardly at the front end of the platen and in close proximity thereto for forming a nib or shoulder 32, which is moved toward and away from the upper face of the platen as the clamping-plate is rocked upon its pivot 31, the object of this nib or shoulder 32 being to clamp the front end of the card against the top face of the platen and to thereby draw the card under the type-wheels as the platen is moved forwardly. The upwardly-projecting portion of the clamping-plate 30 at the end of the plate 15 forms a stop 33 for limiting the forward movement of the card into the card-receiver while in its normal position. These cards are of uniform width, and the opposite edges of the platen are provided with guide grooves or ways 34, which receive the edges of the card and retain it against upward displacement.

It now appears that each workman who desires to record his time of arrival or departure to or from work inserts his particular card in the slot 26 and upon the upper surface of the platen 15 in the guides 34 until the front end engages the limiting-stop 33. The card-receiver is then moved forwardly to the printing-wheels by mechanism under the control of the operator, and just at the beginning of the forward movement of the platen, with the card thereon toward the printing-point, the nib or shoulder 32 is forcibly depressed by means of rollers 35 and fixed cams 36 to firmly clamp the front end of the card against

the upper face of the adjacent end of the platen, and the clamping-plate is held in its depressed position during the balance of its forward movement and during the act of printing and also during its return movement until the rollers 35 pass the cams 36.

The rollers 35 are mounted upon flanges 37, depending from the opposite longitudinal edges of the clamping-plate 30, while the cams 36 are formed upon the lower face of the tracks or ways 16 and engage rollers 35 to depress the clamping-plate 30 as the card-receiver is moved forward; but upon the return movement of the card-receiver the clamping-plate is elevated by additional cams 38, which are secured to the tracks 16, thereby raising the nib or shoulder 32 from the upper face of the platen to permit the front end of the card to be freely moved against the stop 33 between the nib and adjacent face of the platen.

It sometimes happens that the front end of the card will be crumpled or mutilated, which might interfere with its freedom of movement beneath the nib and against the stop 33, and in order to obviate this we provide a spring deflector-plate 39, which is secured to suitable brackets 40, rising from the rear ends of the ways 16, said deflector-plate extending forwardly and downwardly with its front end beneath the nib 32 when the platen is in its normal position, and it is now apparent that when the card is inserted along and upon the upper face of the platen, even though its front end may be slightly mutilated or crumpled, the front end of the deflector-plate 39 presses the front end of the card flat upon the platen, and therefore permits it to pass under the nib 32 and against the stop 33. Now, although this deflector-plate tends to facilitate the entrance of the front end of the card under the nib or shoulder 32, it is not intended to and does not press upon the card sufficiently to hold it from being carried forward by the platen, and the clamping-plate is operated almost the same instant that the platen begins to move forwardly, so as to instantly grip the front end of the card and draw it forwardly under the free end of the deflector-plate 39 and to the printing mechanism.

The position of the card-receiver varies each day of the week, so as to present different lines of the card to the printing-point each day or other period of time, and in order to prevent any fraudulent registration by the workman by only partially inserting his card, or, in other words, holding it back, so that the front end of the card is some distance from the stop 33—as, for instance, when the workman may wish to make a fraudulent record for some previous day in the week—we provide a spring catch or detent 42, having its rear end secured to the deflector-plate 39 and its front end free to swing vertically and extend-

ing in advance of the free end of the plate 39 in the path of the nib or shoulder 32, said free end of the detent 42 being bent downwardly, so as to form an abrupt shoulder 43, which is arranged to ride upon the surface of the platen or card as it is moved forwardly to the printing position for receiving the print, and if the front edge of the card is for any reason not engaged with the stop 33, so that it cannot be engaged by the nib 32, the shoulder 43 will engage the front end of the card and hold it from being moved forwardly to the printing-wheels, although the platen may continue to move to its extreme position, and therefore any attempt at fraudulent registration would be prevented.

A hand-lever 45 extends from the interior of the case outwardly through a slot 46 in the side wall 5 to be engaged and depressed by the operator against the action of a suitable spring 47 and is operatively connected to move the card-receiver to and from the position beneath the type-wheels and is also operatively connected to control the movement of the type-wheels to and from the printing position for printing the card. This lever is rigidly secured to a rock-shaft 48, which is journaled in the standards 24 of the supporting-frame, and upon this rock-shaft is secured a toothed segment 49, which meshes with a similar segment 50 on a second rock-shaft 51, to which the latter segment is rigidly secured. Loosely mounted upon this rock-shaft 51 is a larger toothed segment 52, which is yieldingly locked to the segment 50 by a coil-spring 53, having one end attached to the hub of the segment 52 and its other end secured to the segment 50, said segment 52 meshing with a straight-toothed rack 54, which is secured to the central portion of the platen 15. It is now apparent that by depressing the lever 45 motion is transmitted therefrom to the card-receiver or platen 15, which is carried under the type-wheels to a definite position relative thereto as determined by a stop 55 and a series of fixed abutments 56, Fig. 3.

The stop 55 is mounted in a tubular bearing 57 on the segment 52 and is movable at predetermined intervals in said bearing parallel with the shaft 51, such movement being controlled by suitable mechanism actuated by the clock 11.

A lever 58 is fulcrumed at 59 to the toothed segment 52, one end of said lever being pivotally connected to one end of the stop 55, and its other end is engaged by a grooved collar 60, which is feathered upon the rock-shaft 51. A sliding rod 61 is guided in a bracket 62, and one end bears against the adjacent face or end of the collar 60, and its other end is engaged with a rotating cam 63, which is actuated intermittently by mutilated gears 64, the latter being operatively connected to and driven by the clock mechanism.

anism in any desired manner, not necessary to herein illustrate or describe, as a similar mechanism for moving the stop 55 endwise is shown in former application of A. N. Palmer, Serial No. 140,602, filed January 26, 1903, Patent No. 780,012, of January 10, 1905, in the same class of machines. The stepped or fixed abutments 56 also form a part of the application above referred to, and it is believed to be unnecessary to further illustrate or describe the same further than to state that these fixed abutments are located in the path of movement of the stop 55 and are successively engaged thereby as the card-receiver is moved to the printing position to stop the receiver in different positions.

We have previously stated that the lever 45 is also connected to control the operation of the printing mechanism. This printing mechanism consists of a minute-printing wheel 17 and the hour-wheel 18, which are mounted and operated in very much the same manner as described in the aforesaid application, the essential difference being in the connections between the lever 45 and rock-shaft 51, which we have already described.

The means for transmitting motion from the rock-shaft 51 to the type-wheels to move the latter into and out of printing engagement with the card consists, briefly, of a collar 65, a toothed bar 67, and a pinion 68, said pinion being operatively connected to rotate an eccentric 69, to which is connected one arm of a spring 70. This eccentric is connected by an upright bar 71 to a lever 72, upon which is mounted a clock-actuated spindle 73, the type-wheel 17 being feathered upon this spindle. The collar 65 is also feathered upon the shaft 51 and is provided with a cam-face 74, which engages a similar fixed cam-face 75 upon one of the standards 24, and the lever 66 is fulcrumed at 76 and has one end operatively connected to the collar 65, and its other end is pivotally connected to the sliding rack 67, so that when the shaft 51 is rotated in the direction indicated by arrow *x*, Fig. 4, by means of the lever 45 and segments 49 and 50 the card-receiver is not only carried forwardly beneath the type-wheels until the stop 55 engages one of the fixed abutments 56, but the cam-face of the collar 65 is rotated against the fixed cam-face 75, which moves said collar endwise, and thereby rocks the lever 66 to draw the rack 67 endwise, which in turn rotates the eccentric 69 against the action of the spring 70 until the eccentric makes substantially half a revolution, whereupon the spring 70 completes the revolution of the disk 69 independently of the rack 67 and pinion 68 and causes the type-wheels to move downwardly into engagement with the card to make an impression thereon, a suitable inking-ribbon 79 being interposed between the printing-wheels and card for this purpose.

It is now apparent that although the move-

ment of the card-receiver is limited by the engagement of the stop 55 with one of the abutments 56 yet the lever continues to move downwardly to effect the tensioning of the spring-motor 70, which in turn causes the type-wheels to print upon the card, the spring 53 being sufficiently stiff to transmit motion from the segment 50 to the larger segment 52, but is sufficiently resilient to permit the continued movement of the segment 50 to rock the shaft 51 and effect the operation of the printing mechanism after the card-receiver reaches the limit of its movement, it being understood that the pinion 68 is connected by a suitable clutch to the eccentric 69 to permit the latter to be moved independently of said pinion by the spring 70.

The handpiece 12, which is operatively connected to move the type-wheels axially on the spindle 73, is best seen in Fig. 7, said hand-piece being secured to a hub 80, which is journaled in an opening 81 in the front wall 3 of the case concentric with the axis of the shaft 51 and preferably encircles the outer end of said shaft to form a bearing therefor, but is moved independently of the shaft. Secured to the inner end of this hub is a toothed segment 82, which meshes with a toothed rack 83, said rack being suitably guided on the frame 24, and is provided at one end with an offset 84, which is connected to one arm of a bell-crank lever 85, the other arm being connected to a cross-head 86, which is movable parallel with the spindle upon ways or guides 87. Secured to this cross-head are one or more brackets 88, one of which engages a grooved collar or sleeve 89 on the spindle 73, to which the printing-wheel 17 is secured. In the operation of this part of our device the handpiece 12 is first set to the stop-point 14 at the extreme left of the index-plate 13, Fig. 1, which indicates "Morning in," and when it is desired to print upon a different portion of the card in the same line—as, for instance, "Noon out"—the handpiece 12 is moved by the operator to the right one point, which in turn shifts the type-wheels 17 and 18 axially on the spindle 73 a limited distance through the medium of the parts 82, 83, 84, 85, 86, and 88. In like manner the further movement of the handpiece to another point on the index-plate again shifts the type-wheels for printing "Noon in" time in the same line on the card, and each change in the position of the handpiece produces a similar change in the position of the type-wheels for different periods of the day or night.

The sleeve 89 is feathered upon the spindle 73, and upon this sleeve is journaled the upper end of an arm 90, so that the sleeve is free to rotate while the arm 90 remains stationary and is held in its stationary position by a detent 91, which engages a pin 92 on the lower end of the arm.

The hour-printing wheel 18 is journaled on

the arm 90 below the spindle 73 and is provided on its periphery with two sets of type, as numerals, each set being numbered from "1" to "12," inclusive; but those of one set are distinguished from those of the other set by different size or style of type and is further distinguished by some arbitrary character—as a dash (—), or underscore-line (—), as 94, Figs. 16 and 17. It is now apparent that this hour-wheel has twenty-four type on its periphery, twelve of which constitute one set for one half-day, as for forenoon, while the other twelve constitute another set, which are distinguished by some mark or style from those of the former set and represent the hour of the afternoon, one set following the other circumferentially on the periphery of the wheel. This hour-wheel is rotated step by step one type-space at a time, so as to bring one of the type in transverse alinement with one of the type of the minute-printing wheel at the printing-point, whereby both wheels print at the same time upon the card in the manner previously described. The spindle upon which the hour-wheel is mounted is provided with a toothed wheel 93, having a number of notches in its periphery corresponding to the number of type on the periphery of the wheel 18. A vertically-sliding detent 95 is provided with one or more pins 96, which are normally seated in the notches in the periphery of the wheel 93 to hold the hour-wheel from rotation, said detent being held in its operative position by the spring 97. The lower end of the arm 90 projects laterally under the toothed wheel 93 and is provided with cam-faces 98, which are engaged by a pin 99, said pin being mounted upon a rock-arm 100, which in turn is secured to an arm 101 on the spindle 73.

The arm 101 rotates with the spindle 73, thereby carrying a pin 99 against the cam-face 98, which cam-face forces the pin upwardly into one of the notches in the periphery of the wheel 93, thereby rotating said wheel and at the same time elevating the detent 96 out of the upper notches, so as to release the wheel 93, whereupon the continued rotation of the arm 101 causes the pin 99 to rotate the wheel 93 one type-space, the cam-surface 98 being of just sufficient length circumferentially to permit this step-by-step movement at each rotation of the minute-wheel, and as soon as the pin 99 passes the cam 98 the spring 97 forces the detent 96 into engagement with the next succeeding notch in the wheel 93. It is now evident that when the type-wheels are moved to make an impression upon the card the hour-wheel is held from rotary movement by the detents 96, while the minute-wheel is also held from rotary movement by a suitable centering device shown in Fig. 2, but not necessary to herein further describe, as this centering device forms no part of our present invention.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a time-recorder, the combination with a clock-actuated printing-wheel, of a card-gripping device engaging the end of the card nearest the printing-point, means to move said gripping device across the face of the printing-wheel and connections between said means and printing-wheel for moving the latter transversely of its axis to make an impression upon the card.

2. In a time-recorder, the combination with a clock-actuated printing-wheel, a card-gripping device movable relatively to the wheel to bring the card into position to receive an impression, means to actuate the gripping device toward and from the printing-point, additional means to close and open the gripping device as it is moved to and from the printing-point, and further means actuated by the first-named means to move the wheel transversely of its axis to make an impression upon the card.

3. In a time-recorder, an axially-movable time-printing wheel movable transversely of its axis to make an impression, a card-gripping device movable relatively to the printing-point to bring the card into a position to receive such impression, and a manual for actuating the gripping device and moving the printing-wheel transversely of its axis.

4. In a time-recorder, the combination with a printing device, of a card-receiver movable to and from the printing device, a limiting-stop for the card moving with the receiver, means to actuate the receiver and stop, and a catch operating to engage and prevent the forward movement of the card when not engaged with the limiting-stop.

5. In a time-recorder, the combination with a printing device, of a card-receiver and means to move it to and from the printing device, a gripper brought into action by the forward movement of the receiver to draw the card forward and a catch engaging and holding the card from forward movement when not engaged by the gripper.

6. In a time-recorder, the combination with a printing device, a card-receiver and means to move it to bring the card into position to receive an impression, of a limiting-stop for the card movable with the receiver, a gripping mechanism brought into action by the forward movement of the receiver to draw the card forward, a presser-piece bearing on the card, and a catch operating to engage and hold the card from forward movement when not engaged by the gripper mechanism.

7. In a time-recorder, the combination with a printing mechanism and a card-holder movable to bring the card into position to receive an impression, of a lever actuated by the workman and operatively connected to

actuate the card-holder and printing mechanism successively, and means brought into action by the forward movement of the card-holder to grip the end of the card nearest the printing-point and draw it forwardly.

8. In a time-recorder, the combination with a printing mechanism and a card-holder movable to bring the card into position to receive an impression, of means to limit the forward movement of the card-holder, a lever operatively connected to actuate the card-holder and printing mechanism successively by its continued movement in the same direction, a card-limiting stop carried by the holder, and means to prevent the forward movement of the card when not engaged with said stop.

9. In a time-recorder, the combination with a printing mechanism and a card-holder movable to bring the card into position to receive an impression, of means to limit the forward movement of the card-holder, a lever operatively connected to actuate the card-holder and printing mechanism successively by its continued movement in the same direction, and a presser-piece bearing on the card to straighten it out while moving to the printing mechanism.

10. In a time-recorder, the combination with a printing mechanism and a card-holder movable to bring the card into position to receive an impression, of means to limit the forward movement of the card-holder, a lever operatively connected to actuate the card-holder and printing mechanism successively by its continued movement in the same direction, a card-limiting stop carried by the holder, and a gripping device brought into action by the forward movement of the card-holder to engage the end of the card nearest the printing-point and draw it to said printing-point.

11. In a time-recorder, the combination with a printing mechanism and a card-holder movable to bring the card into position to receive an impression, of means to limit the forward movement of the card-holder, a lever operatively connected to actuate the card-holder and printing mechanism successively by its continued movement in the same direction, and a presser-piece bearing on the card to straighten it out while moving to the printing mechanism, and automatic means brought into action by the forward movement of the card-holder to grip and draw the card forwardly.

12. In a time-recorder, the combination with a printing device, of a card-receiver and means to move it to and from the printing device, of a card-guide opening into the receiver and a deflector or flange overhanging the card to straighten out the latter upon its return from the printing device.

13. In a time-recorder, the combination with a card-holder and a clock-rotated spin-

dle each movable relatively to the other, of a lever operatively connected to control such relative movements, a type-wheel feathered on the spindle, and manually-operated means operatively connected to slide the type-wheel axially on the spindle.

14. In a time-recorder, the combination of a slidable platen carrying a card, a clock-rotated spindle having independent movement toward and from the platen, a spring-motor connected to move the spindle toward the platen, a type-wheel feathered on the spindle, a hand-lever connected to slide the platen and to tension the spring-motor, and means controlled by the operator and operatively connected to move the type-wheel axially on the spindle.

15. In a time-recorder, the combination of a slidable platen carrying a card, a fixed abutment and a stop operatively connected to limit the movement of the platen, said stop being movable and clock-actuated to vary its position relatively to the fixed abutment, a clock-rotated spindle having independent movement toward and from the platen, a type-wheel feathered on the spindle, a spring-motor operatively connected to move the spindle and type-wheel toward the platen to make an impression on the card, a hand-piece operatively connected to actuate the platen and to tension the spring-motor at the same time, automatic means to break the connection between the hand-piece and motor when the platen is in position to receive the impression, and a second hand-piece operatively connected to slide the type-wheel on the spindle.

16. In a time-recorder, the combination of a clock-actuated printing-wheel, movable transversely of its axis to make an impression, a card-gripping device movable relatively to the printing-point to bring the card into position to receive such impression, a manual for effecting such movement of the printing-wheel and gripping device, and means to close and open the gripping device as the card is moved to and from the printing-point.

17. In a time-recorder, the combination of a time-stamp, a card-receiver movable to and from the printing-point, and means to clamp the front end of the card in the receiver, and means to prevent the movement of the card when not engaged by the clamping means.

18. In a time-recorder, the combination with a clock-rotated minute-wheel and its supporting-spindle, an hour-printing wheel rotatable step by step, a sliding detent operatively connected to hold the hour-wheel from rotation, an arm rotating with the spindle and provided with means operatively connected to move the hour-wheel one step and to simultaneously release the detent.

19. In a time-recorder, the combination

with a clock-rotated minute-spindle, an hour-printing wheel rotatable step by step, a toothed wheel connected to rotate the hour-wheel, a cam and means rotating with the spindle and actuated by the cam into en-
5 gagement with the toothed wheel to rotate the hour-wheel one step at each revolution of the minute-spindle and a detent normally engaged with the teeth of said wheel and ac-

tuated by said means at each revolution of the spindle to release the hour-wheel.

In witness whereof we have hereunto set our hands this 19th day of December, 1903.

ANSON N. PALMER.

WILLIAM W. KIMBALL.

Witnesses:

MILDRED M. NOTT,

HOWARD P. DENISON.