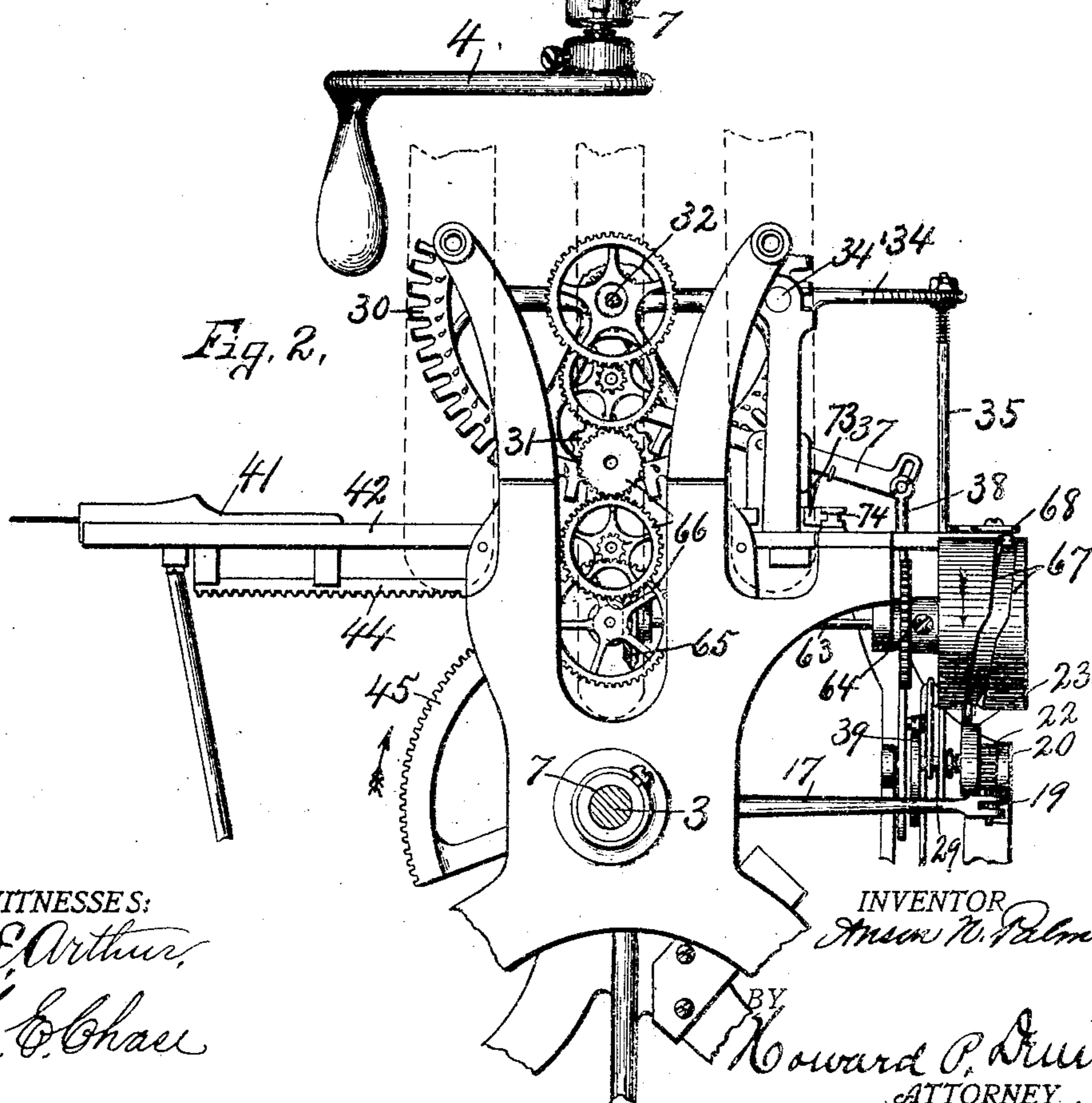
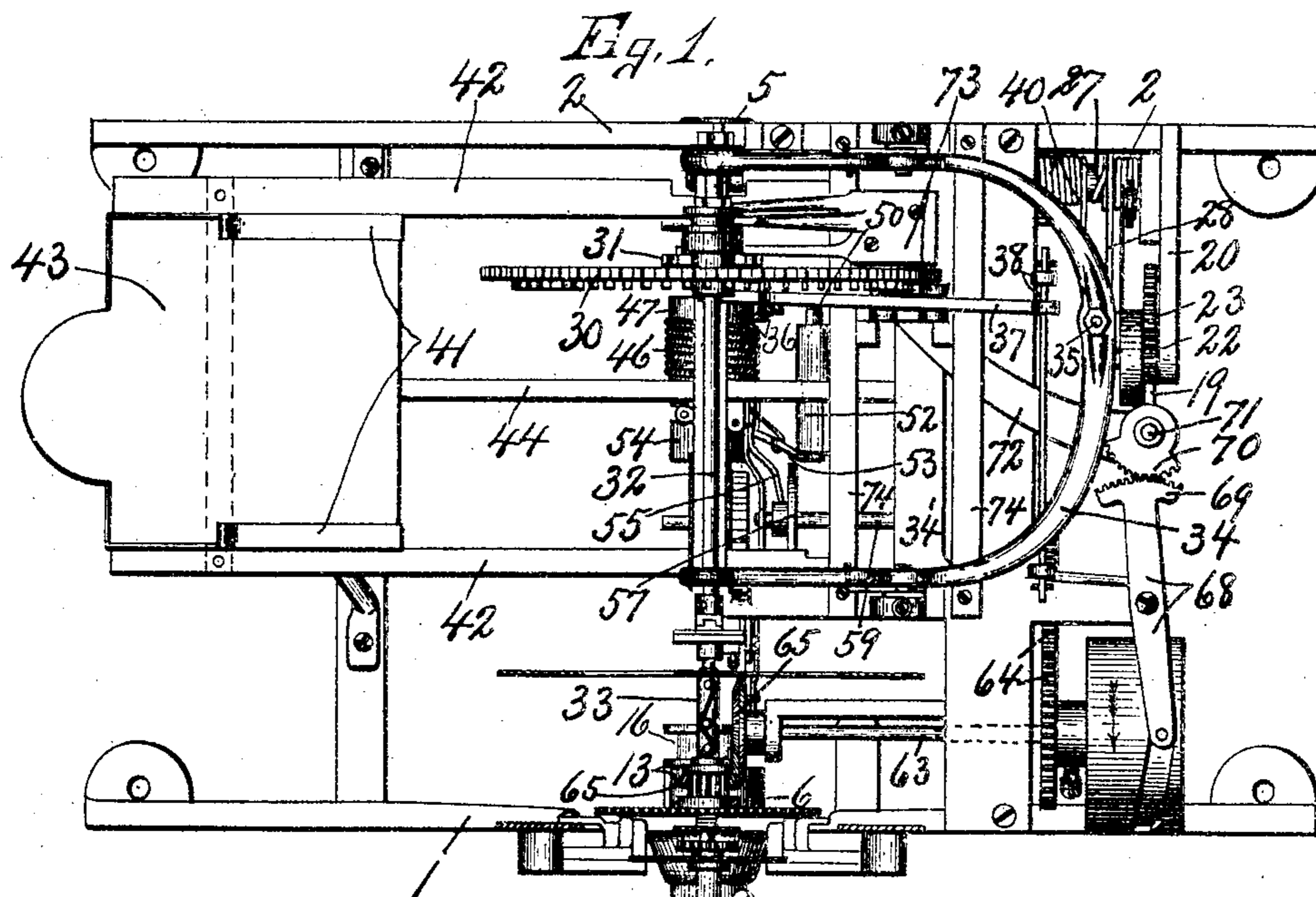


A. N. PALMER.
TIME RECORDER.

APPLICATION FILED JAN. 26, 1903.

4 SHEETS—SHEET 1.



WITNESSES:
J. E. Arthur,
H. C. Chase

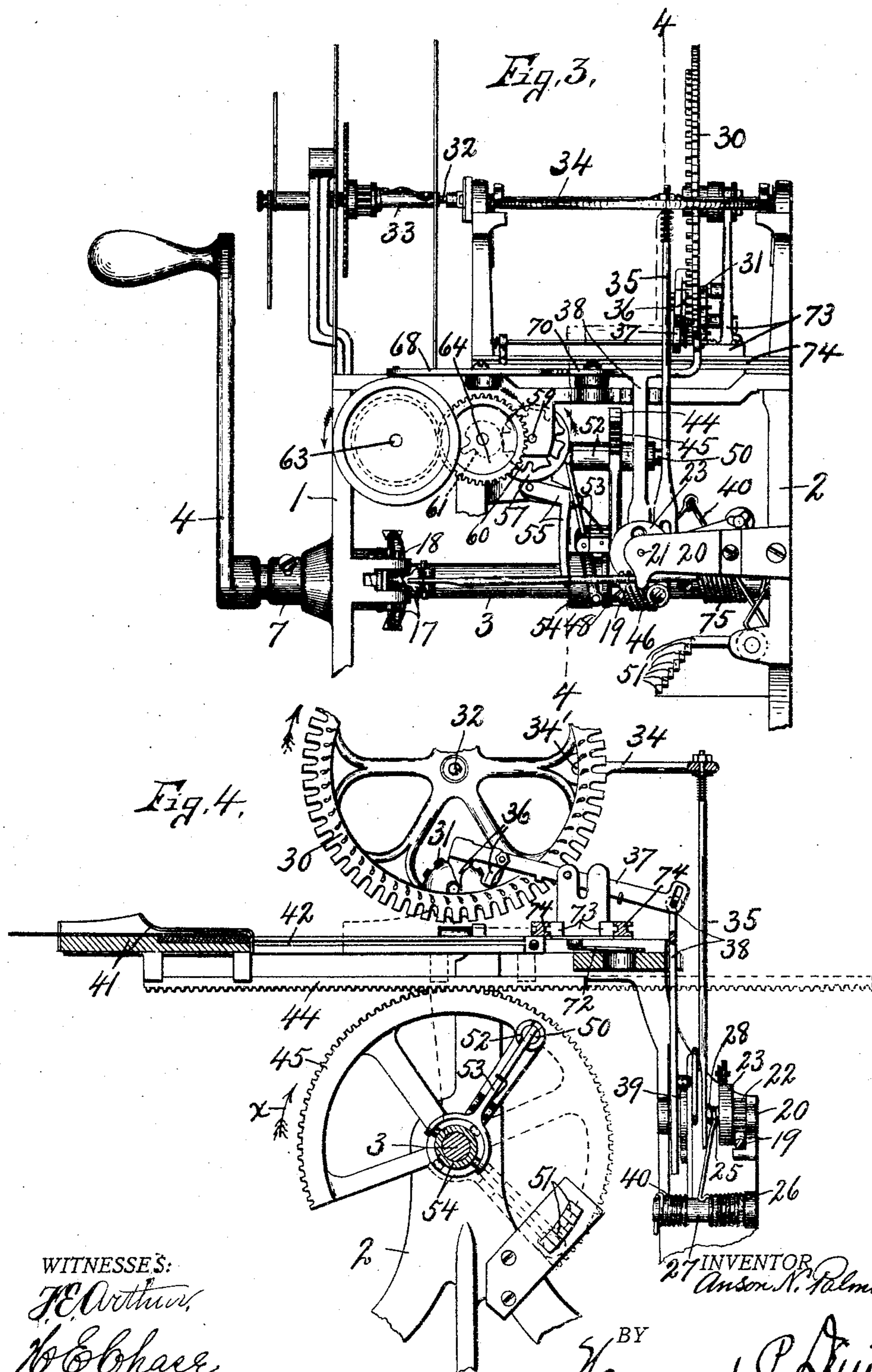
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A. N. PALMER.
TIME RECORDER.

APPLICATION FILED JAN. 26, 1903.

4 SHEETS—SHEET 2.



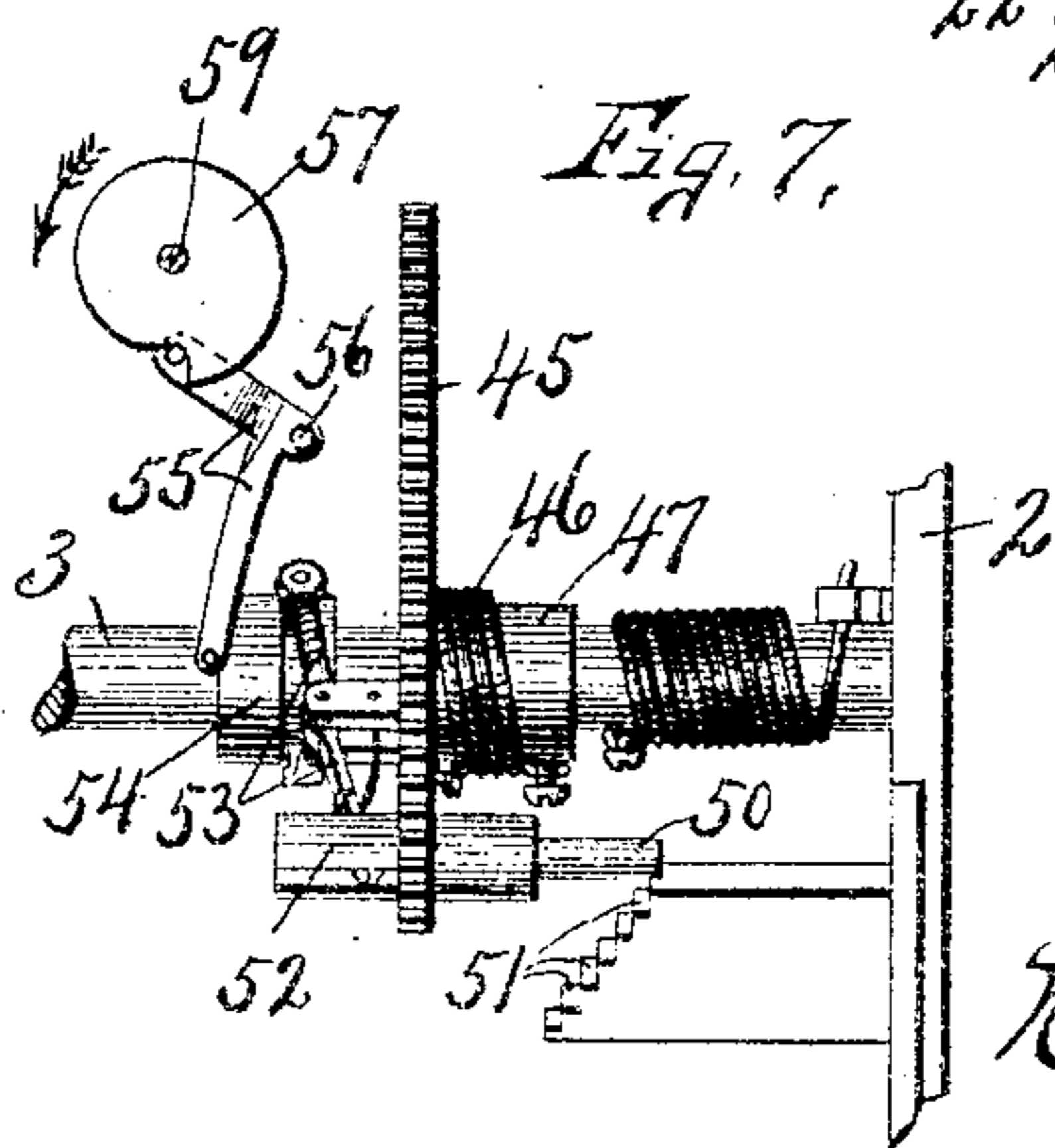
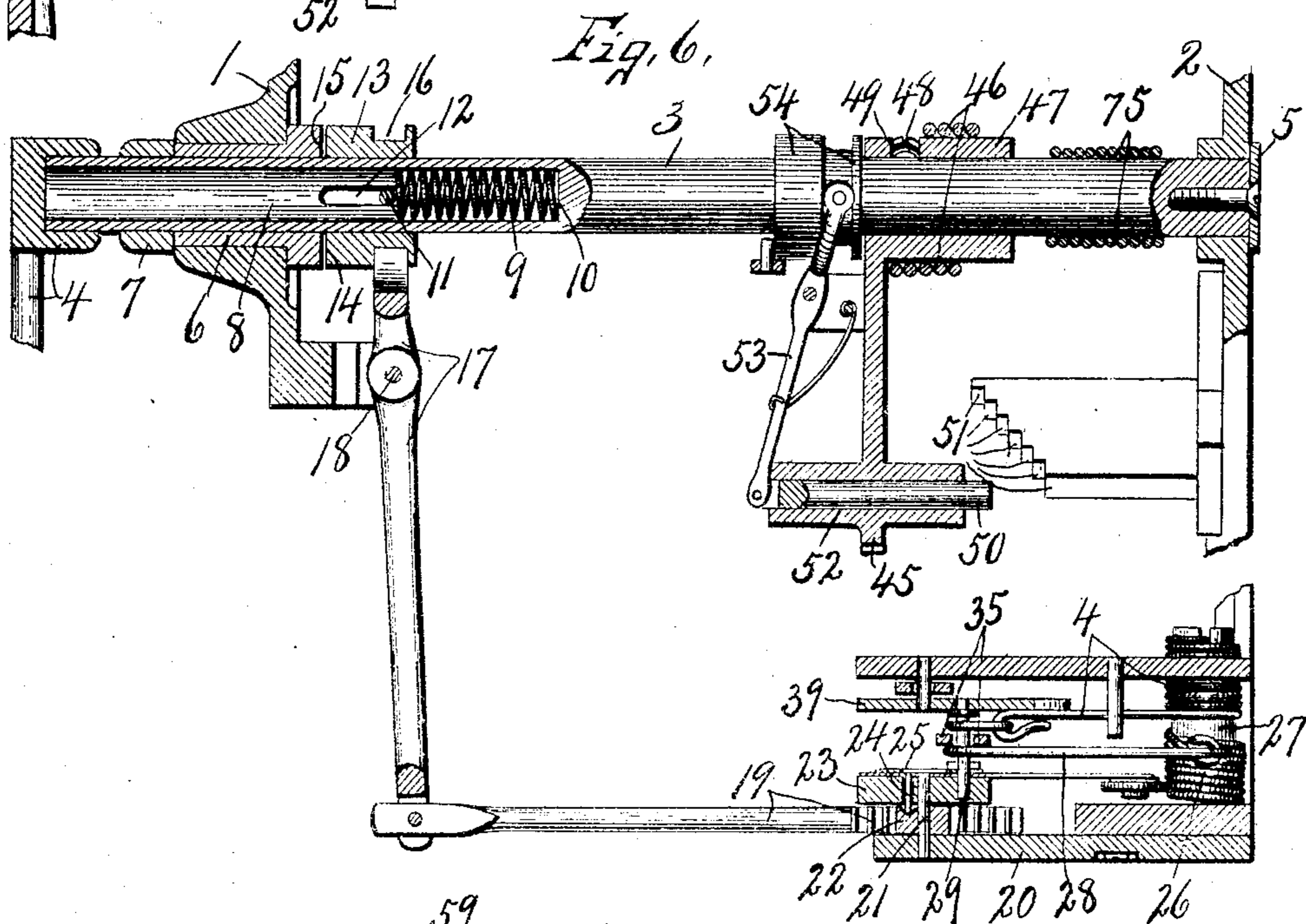
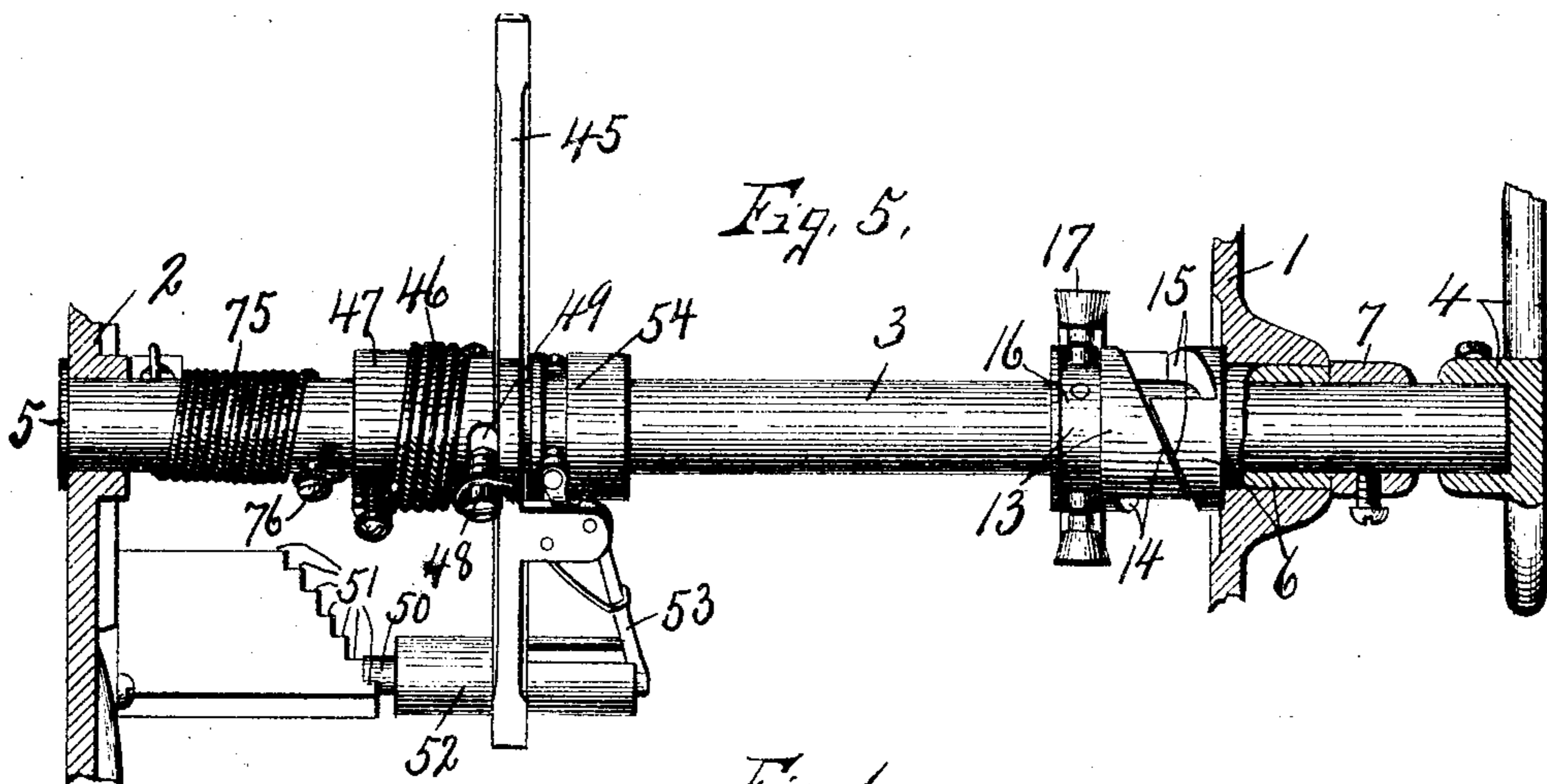
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TIME RECORDER.

APPLICATION FILED JAN. 26, 1903.

4 SHEETS—SHEET 3.



WITNESSES:

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No. 780,012.

PATENTED JAN. 10, 1905.

A. N. PALMER.
TIME RECORDER.

APPLICATION FILED JAN. 26, 1903.

4 SHEETS—SHEET 4.

Fig. 8,

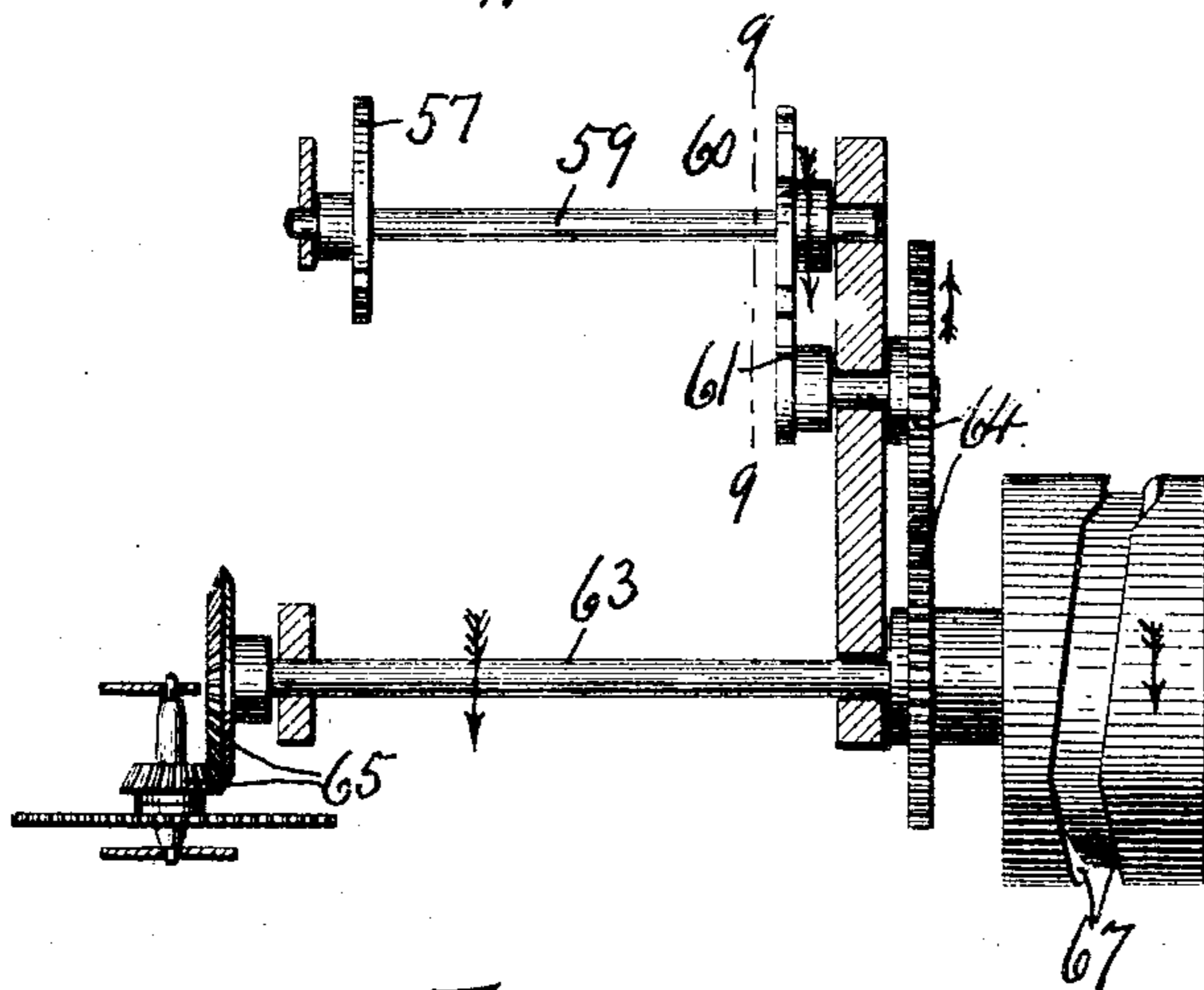


Fig. 9,

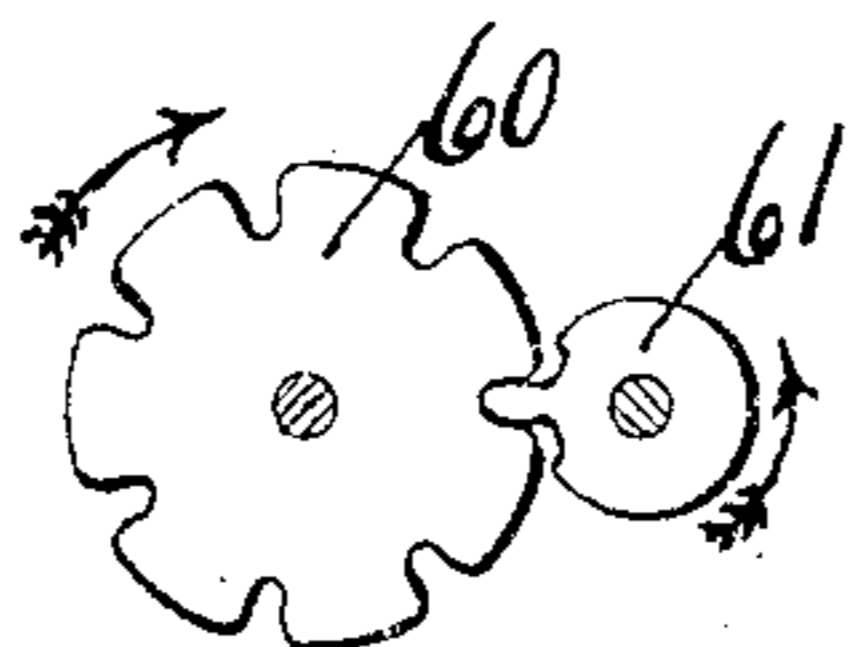


Fig. 10,

M	7:00	12:00	1:00	5:00
T	8:00	12:00		
W	7:00	12:00	1:30	5:30
T	8:00	12:00	1:00	
F	9:20	11:00		5:00
S	7:00			
S		12:00		6:00
WEEK ENDING.....		TOTAL TIME.....		
No.				
NAME				

No. 24

WITNESSES:

J. E. Arthur,
H. E. Chase

INVENTOR

Anson N. Palmer

BY

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UNITED STATES PATENT OFFICE.

ANSON N. PALMER, OF SYRACUSE, NEW YORK.

TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 780,012, dated January 10, 1905.

Application filed January 26, 1903. Serial No. 140,602.

To all whom it may concern:

Be it known that I, ANSON N. PALMER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and
5 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
10 time-recorders, and refers more particularly to the class commonly known as "card-machines," in which a clock-actuated printing mechanism and a card-holder are employed, each being movable relatively to the other for
15 printing the workmen's time in different positions upon the card, it being understood that each employee is designated by a numeral or similar character and is provided with a card having a similar numeral or other designating
20 character printed thereon. These cards are usually held in suitable racks provided therefor in proximity to the recording device, the numerals of each card being clearly exposed, so that the employee may readily select his
25 card and insert it in the card-holder of the machine and then operate the printing mechanism and card-holder to imprint his time of arrival and departure to and from work.

The primary object of the several improve-
30 ments hereinafter described is to simplify the structure and operation of the machine, whereby the operator may print his time of arrival and departure at any period of the day or any day of the week by moving a single op-
35 erating member in one direction only.

Other objects will appear in the subsequent description.

Referring to the drawings, Figure 1 is a top plan of a time-recorder embodying the
40 various features of my invention. Figs. 2 and 3 are respectively front and side elevations, partly broken away, of the machine seen in Fig. 1. Fig. 4 is a transverse vertical section taken on line 4 4, Fig. 3, showing particularly the relative arrangement of the
45 printing mechanism and card-holder and their actuating devices. Fig. 5 is an enlarged elevation of the main central rock-shaft and the mechanisms carried thereby, showing particu-
50 larly the means for stopping the card-holder

in different positions to print in different posi-
tions upon the card and also showing the cams
for operating the printing mechanism. Fig.
6 is a horizontal section through the central
rock-shaft, which is partly in elevation, show- 55
ing particularly the means for actuating the
printing mechanism and also the means for
stopping the card-holder in different posi-
tions relative to the printing-point. Fig. 7
is a detail view of a portion of the central 60
rock-shaft and the means for controlling the
card-holder stop mechanism. Fig. 8 is a top
plan of the detached mechanism for auto-
matically shifting the position of the card-
holder from day to day. Fig. 9 is a sectional 65
view taken on line 9 9, Fig. 8, showing the
portion of the day-shift for the card-holder.
Fig. 10 is a face view of one of the cards used
in connection with my improved machine.

Similar reference characters indicate cor- 70
responding parts in all the views.

In carrying out the objects of this invention I provide a suitable supporting-frame, which includes front and rear upright standards 1 and 2, upon which is journaled a substantially 75
central rock-shaft 3, having its front end pro-
vided with a crank-arm or handpiece 4, lo-
cated in front of the front wall. The rear
end of this shaft is journaled in a suitable bear-
ing in the rear standard 2 and is held from 80
endwise movement by a cap or washer 5, while
the front end is journaled in a sleeve 6, which
is fixed in the front wall 1, usually by a tight
fit or by a key, if necessary, said front end
of the shaft being provided with a collar 7, 85
which engages the front end of the sleeve 6
or adjacent face of the frame and prevents
rearward endwise movement of the shaft, the
operating member or handpiece 4 being also
secured to this end of the shaft. It is thus 90
seen that while the shaft may rock freely in
its bearings it is held from endwise movement
by the members 5 and 7.

The printing mechanism is controlled by the
rocking movement of the shaft, and for this 95
purpose the front end of the shaft is provided
with a lengthwise socket 8, in which is lo-
cated a coil-spring 9, one end abutting against
the end wall 10 of the socket, and the other is
engaged by a pin or shoulder 11, which ex- 100

tends through slots 12 in the side walls of the socket 8 and is secured to a sliding collar 13 upon the shaft 3. This collar is provided with a cam-face 14, Fig. 5, which engages a similar cam-face 15 upon the inner end of the fixed sleeve 6, and is also provided with an annular groove 16, which receives one end of a lever 17, whereby as the shaft 3 is rocked in its bearing by the hand-lever 4 the collar is similarly rocked, and at the same time the cam-faces 14 and 15 operate to slide the collar endwise to rock the lever 17 against the action of the spring 9. This lever 17 is centrally fulcrumed at 18, and its outer end is pivotally connected to a sliding rack 19, which is guided upon an arm 20, projecting inwardly from the rear upright standard 2. Secured to this arm 20 is a stud or bearing 21, upon which is journaled a pinion 22 and a rotary disk 23, the pinion 22 meshing with the rack 19 and is provided with ratchet-teeth on its inner face, while the disk 23 is provided with a sliding pawl 24, which is normally forced into engagement with the ratchet-teeth 22 by the spring 25, so that when the pinion is rotated in one direction by the rack 19 the disk 23 is similarly rotated, the disk being free to continue its rotation in the same direction independently of the pinion, or the pinion may rotate in the opposite direction independently of the disk in the usual manner for pawl-and-ratchet operation.

The arrangement and construction of the rack, pinion, and disk just described is for the particular purpose of tensioning a spring-motor 26, which actually serves to move the printing mechanism to the printing-point independently of these parts, so that a uniform force is always applied to the printing mechanism in the act of making an impression upon the card, no matter what the degree of power or force applied to the operating member 4 may be. In order to accomplish this independent uniform action of the printing mechanism, the spring-motor 26 is coiled with a suitable number of convolutions upon a fixed stud 27, one end of which spring is fastened to the frame and the other end is connected to a link 28, which in turn is attached to a pin 29, eccentrically secured to the disk 23, so that when the disk is rotated from its normal position substantially half a revolution, during which the spring is tensioned, the control of the disk by the pinion is lost and the spring immediately operates to continue the rotation of the disk in the same direction to its normal starting position for the purpose of operating the printing mechanism.

The printing mechanism preferably consists of type-wheels 30 and 31, the type-wheel 30 being feathered upon a clock-rotated spindle 32, which is driven by the minute-hand spindle 33 of the clock, and the type-wheel 31 is rotated one type-space at each revolution of the type-wheel 30 by means of a suitable

shoulder upon the minute type-wheel successively engaging pins upon the hour type-wheel 31; but inasmuch as this printing mechanism is substantially the same as set forth in my pending application, Serial No. 75,023, filed September 11, 1901, it is not necessary to further illustrate or describe the same, it being sufficient to state that the spindle 32 is journaled upon the arms of a bifurcated lever 34, which is fulcrumed at 34'. The outer end of the lever 33 is provided with a depending rod 35, the lower end of which is bifurcated and receives the eccentric-pin 29 of the disk 23, whereby when the disk is rotated by a spring 26 independently of the pinion 22 the eccentric-pin 29 forcibly engages the upper end wall of the bifurcation in the lower end of the rod 35, thereby elevating the rod, which in turn rocks the lever 33 upon its fulcrum and forces the type-wheels 30 and 31 downwardly to make an impression upon the card. Simultaneously with this operation the type-wheel 30 is held from vibratory movement by pawls 36, which are mounted upon a rock-lever 37, said rock-lever being actuated by a vertically-movable rod 38, which bears upon the periphery of a cam 39. This cam is rotated upon the same axis as the disk 23 and is connected thereto by the pin 29, so that both are rotated together either by the rack and pinion 22 or by the spring 26 and a supplemental spring 40, which is also substantially the same as that set forth in my pending application above referred to and is unnecessary to further illustrate or describe. The essential feature of this printing and holding mechanism is that the springs 26 and 40 are tensioned by means of the rack and pinion 19 and 22 and operate independently of the rack and pinion to force the type-wheels to the printing position, and the pawls hold said type-wheels from vibration during the operation of printing, so that no matter how rapidly or forcibly the hand-lever 4 may be operated the stroke of the type-wheels is always uniform.

I will now proceed to describe the essential feature of this invention, which consists of a sliding card-holder 41, guided in horizontal ways 42 and movable back and forth relatively to the printing-point and beneath the type-wheels 30 and 31 for the purpose of printing in different positions upon a card, as 43, which is removably mounted in the holder 41. Secured to this card-holder beneath the guideways 42 and parallel therewith is a toothed rack 44, which meshes with a toothed segment 45, loosely mounted upon the rock-shaft 3 in such manner that as the shaft, is rocked by the hand-piece 4 the card-holder is reciprocated back and forth along the guideways 42. Although this toothed segment 45 is loosely mounted upon the shaft it is yieldingly secured thereto by a spring 46, coiled around the hub 47 of the segment, one end of the spring being secured to a stud or screw

48, which is secured to the shaft 3 and projects through a slot 49 in said hub, and the other end is attached to the hub of the toothed segment in such manner that when the shaft is rocked from its normal position of rest, as seen in the drawings, Figs. 1, 2, and 4, the segment 45 is also similarly rocked to carry the card-holder to the printing-point.

In order to print in different positions, or rather in successive lines upon the card, I provide means for limiting the forward movement of the card-holder at different positions relatively to the printing-point, and inasmuch as the rocking of the shaft 3 is utilized to bring the card-holder to the printing-point and also to actuate the printing mechanism, it becomes necessary to provide means whereby the shaft may continue to rock when the card-holder is held from further movement, and I therefore provide the elongated slot 49, through which the stud or screw 48 projects, this stud serving not only to hold the toothed segment from endwise movement upon the shaft, but also determines the normal position of the card-holder relatively to the printing-point by reason of the engagement of the screw or stud with the end wall of the slot, the spring 46 serving to normally hold this stud against said end wall of the slot.

The means for limiting the movement of the card-holder, so as to print in different positions upon the card, preferably consists of an adjustable stop 50 and a series of stepped fixed abutments 51, secured to the rear frame-standard 2, the stop 50 being mounted in a guide 52 upon the advance end of the toothed segment 45, parallel with the shaft 3, and the stepped abutments 51 are arranged concentrically with the shaft in the path of the stop 50, the first approached abutment being the most remote from the segment and the last abutment being nearest to said segment, there being seven of these abutments, one for each day of the week: The stop 50 is first set to engage the first abutment and is then automatically and successively moved axially the space of one abutment at the end of each twenty-four hours, or one day, so as to permit the advance movement of the card-holder for one line-space every twenty-four hours. This automatic endwise movement of the stop 50 is effected by means of a lever 53, which rotates with this toothed segment, one arm of which is operatively connected to the stop 50, and the other arm is bifurcated and engaged with a sliding collar 54 upon the shaft 3. Bearing against the end face of this collar is one arm of a bell-crank lever 55, which is fulcrumed at 56, Fig. 7, the other arm being provided with a pin or stud engaged by a clock-actuated cam 57, said cam being mounted upon a spindle 59, which is driven by intermittent gears 60 and 61, the gear 61 being provided with a single tooth and is rotated one complete revolution in

twenty-four hours, while the gear 60 is provided with a series of seven notches, which are successively engaged by the tooth of the gear 61 and rotated one-seventh of a revolution at each complete rotation of the gear 61. The spindle to which the gear 61 is secured is connected to another spindle, 63, by gears 64, the spindle 63 being connected to the clock mechanism by bevel-gears 65 and by additional gears 66, connected in train directly to the clock mechanism, so as to give proper direction and speed of rotation to the spindle 63.

In order to print the times of arrival and departure of the employee each day, it becomes necessary to shift the position of the printing-wheels transversely relatively to the movement of the card-holder, this transverse movement being effected automatically by means of rotary cams 67, which engage one arm of the lever 68, the other arm being provided with a toothed rack 69, which engages a toothed segment 70, this toothed segment being journaled at 71 and is secured to a rock-arm 72, the rock-arm being in turn connected to a sliding cross-head 73, which is movable parallel with the access of the shaft 3 upon guideways 74. The cams 65 are secured to the spindle 63, and are therefore automatically rotated by the clock mechanism, being so arranged as to make one complete revolution every twenty-four hours and during each half of this period, or twelve hours, moves the type-wheels, which are connected to the cross-head 73, from the extreme normal position to the other extreme position, or rather a distance equal to substantially the width of the card, the rotation of the cams during the remaining twelve hours serving to return the type-wheels to their normal starting positions. After each operation of the card-holder and printing mechanism by means of the crank-arm 4 and rock-shaft 3 the operating parts are returned to their normal position by means of a spring 75, which is coiled upon the rear end of the shaft, one end being connected to the frame of the machine, and the other end is connected to a stud or screw 76 upon the shaft.

In the operation of the essential feature of my invention the operator first selects his card from the case or rack and then inserts it in the card-holder, after which he engages the handpiece 4 and rocks the shaft 3 in the direction indicated by arrow *x*, Fig. 4, thereby rocking the segment 45 and forcing the card-holder beneath the type-wheels until the stop 50 engages one of the abutments 51 which may be first in its path, whereupon the movement of the card-holder ceases; but the operator continues to rock the shaft against the action of the spring 46, as well as the spring 75, which latter continued movement of the handpiece 4 causes the operation of the printing mechanism, through the medium of the cams 14 and 15, lever 17, rack and pinion 19 and 22,

disk 23, and spring 28, in the manner previously described.

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

1. In a time-recorder, a time-printing device and a card-holder each movable relatively to the other, said card-holder carrying a card having a number of line-spaces corresponding to the days of the week, in combination with means to move the card-holder and a series of fixed abutments to stop the holder in different positions to present each line-space of the card to the printing-point, said means having operating connection with the printing device to effect its operation.

2. In a time-recorder, a time-printing device and a card-holder carrying a card having a number of line-spaces corresponding to the days of the week, means to move the printing device lengthwise of the spaces, and an operating member operatively connected to shift the card-holder from one line-space to another and also connected to control the operation of the printing device to and from the card.

3. In a time-recorder, a time-stamp and a card-holder, each movable relatively to the other to print upon the card, in combination with a movable handpiece operatively connected to actuate the time-stamp and card-holder, and a fixed abutment to stop the card-holder irrespective of the handpiece.

4. In a time-recorder, a time-stamp and a platen each movable relatively to the other to make an impression, in combination with a movable member operatively connected to both of the parts and moving a limited distance in one direction to actuate the platen and having a further movement in the same direction to effect the operation of the time-stamp.

5. A time-recorder comprising a platen and printing device, each movable relatively to the other to make an impression, and a single operating member operatively connected to control the action of both of said parts, a fixed abutment, and means moving with the platen to engage said abutment and limit the movement of the platen irrespective of the operating member.

6. A time-recorder comprising a printing device and a card-holder each movable relatively to the other to print upon the card, a rock-shaft connected to operate the card-holder, a sliding member on the shaft connected to effect the operation of the printing device, and means for sliding said member as the shaft is rocked.

7. In a time-recorder, the combination with a printing device and a card-holder each movable relatively to the other, an operating member movable in one direction to actuate the card-holder, means to limit the movement of the card-holder and additional means brought into action by the further movement of the

operating member in the same direction for actuating the printing device.

8. In a time-recorder the combination with a movable platen, a printing device movable toward and from the platen to make an impression, a rock-shaft connected to move the platen and to rock independently thereof, and means to rock the shaft, means to limit the movement of the platen, and additional means brought into action by the continued rocking of the shaft to effect the operation of the printing device.

9. In a time-recorder, a printing device and a card-holder each movable relatively to the other to make an impression upon the card, in combination with a rock-shaft and operating means therefor, connections between the rock-shaft and card-holder for moving the card-holder, a fixed abutment, means on the rock-shaft to engage said abutment, and additional connections between the rock-shaft and printing mechanism for effecting the operation of said printing mechanism.

10. In a time-recorder, the combination with a card-holder and a printing mechanism, each movable relatively to the other to print upon the card, in combination with a rock-shaft connected to actuate the card-holder, means to rock the shaft, a sliding member on the shaft having operative connection with the printing mechanism to effect the operation of said printing mechanism, and means brought into action by the rocking of the shaft to actuate the sliding member.

11. In a time-recorder, a printing device and operating means therefor, in combination with a card-holder movable relatively to the printing-point, means to actuate the card-holder, a fixed abutment and means movable with the card-holder and engaging said abutments to limit the movement of the card-holder.

12. In a time-recorder, a printing device and operating means therefor, a card-holder movable relatively to the printing-point, the card being provided with a number of line-spaces corresponding to the days of the week, means to actuate the card-holder, fixed abutments, and means movable with the card-holder and engaging said abutments to stop the card-holder at different positions to print in the different line-spaces on the card.

13. In a time-recorder, in combination with a printing device and operating means therefor, of a card-holder movable relatively to the printing-point, means to actuate the card-holder, a series of fixed stepped abutments, and means coacting with said abutments to stop the card-holder in different positions relatively to the printing-point.

14. In a time-recorder, a printing device and operating means therefor, in combination with a card-holder movable relatively to the printing-point, means to actuate the card-holder, a series of fixed stepped abutments, and auto-

atically-operated means coacting with the abutments to stop the card-holder in different positions relatively to the printing-point.

15. In a time-recorder, a printing device and
5 operating means therefor, in combination with a card-holder and means to move it relatively to the printing-point, the card having a series of line-spaces corresponding to the days of the week, and means including a series of fixed
10 abutments to stop the card-holder at different positions with reference to the printing-point so as to register the line-spaces successively with the printing-point.

16. A time-recorder comprising a card-
15 holder and a printing mechanism, each movable relatively to the other to make an impression upon the card, means to actuate the printing mechanism and card-holder, and additional means to stop the card-holder in different po-
20 sitions relatively to the printing-point.

17. A time-recorder comprising a printing device and a card-holder each movable rela-
tively to the other to print upon the card, a single operating member movable in one di-
25 rection and connected to operate the printing device and card-holder, and means separate from the operating member to limit the move-
ment of the card-holder.

18. A time-recorder comprising a printing
30 device and a card-holder each movable relatively to the other, a single operating member movable in one direction to actuate the print-
ing device and the card-holder, and additional means separate from the operating member
35 to stop the card-holder in different positions relatively to the printing-point.

19. In a time-recorder, the combination with a printing device and a card-holder each
movable relatively to the other to print upon
40 the card, a single operating member connect-
ed to actuate the card-holder and printing de-
vice, and means separate from the operating
member to stop the card-holder in different
positions relatively to the printing-point prior
45 to the operation of the printing device.

20. In a time-recorder, a platen and a print-
ing device in combination with a non-rotating
member and a rocking member, one of said
members having a cam-face coöperating with
the other to move one member endwise, and
50 means actuated by said endwise movement for
effecting the operation of the printing de-
vice.

21. In a time-recorder, a time-stamp and a
card-holder in combination with a rock-shaft
55 operatively connected to move the card-holder
to the printing-point and to effect the opera-
tion of the time-stamp to make an impression
on the card, and means to rock the shaft and
separate means to limit the movement of the
60 card-holder irrespective of the rock-shaft, and
its operating means.

22. In a time-recorder, the combination
with a platen and a time-stamp, of a rock-shaft
and operating means therefor and a sliding
65 member actuated by the rocking of the shaft
and connected to effect the operation of the
time-stamp to make an impression.

23. A time-recorder comprising time-stamp
and a platen each movable relatively to the
70 other to make an impression, a rock-shaft and
separate connections actuated by the rocking
of the shaft in one direction for bringing the
platen and time-stamp into action.

24. In a time-recorder, a printing device and
75 a card-holder movable to and from the print-
ing-point, in combination with a series of
stepped abutments and a stop coacting with
the abutments to stop the holder in different
positions relatively to the printing-point
80 whereby two or more impressions may be
made on the card in different lines.

In witness whereof I have hereunto set my
hand this 15th day of January, 1903.

ANSON N. PALMER.

Witnesses:

H. E. CHASE,
MILDRED M. NOTT.