

C. E. LARRABEE.
WORKMAN'S TIME RECORDER.

APPLICATION FILED JULY 19, 1902.

NO MODEL.

3 SHEETS—SHEET 2.

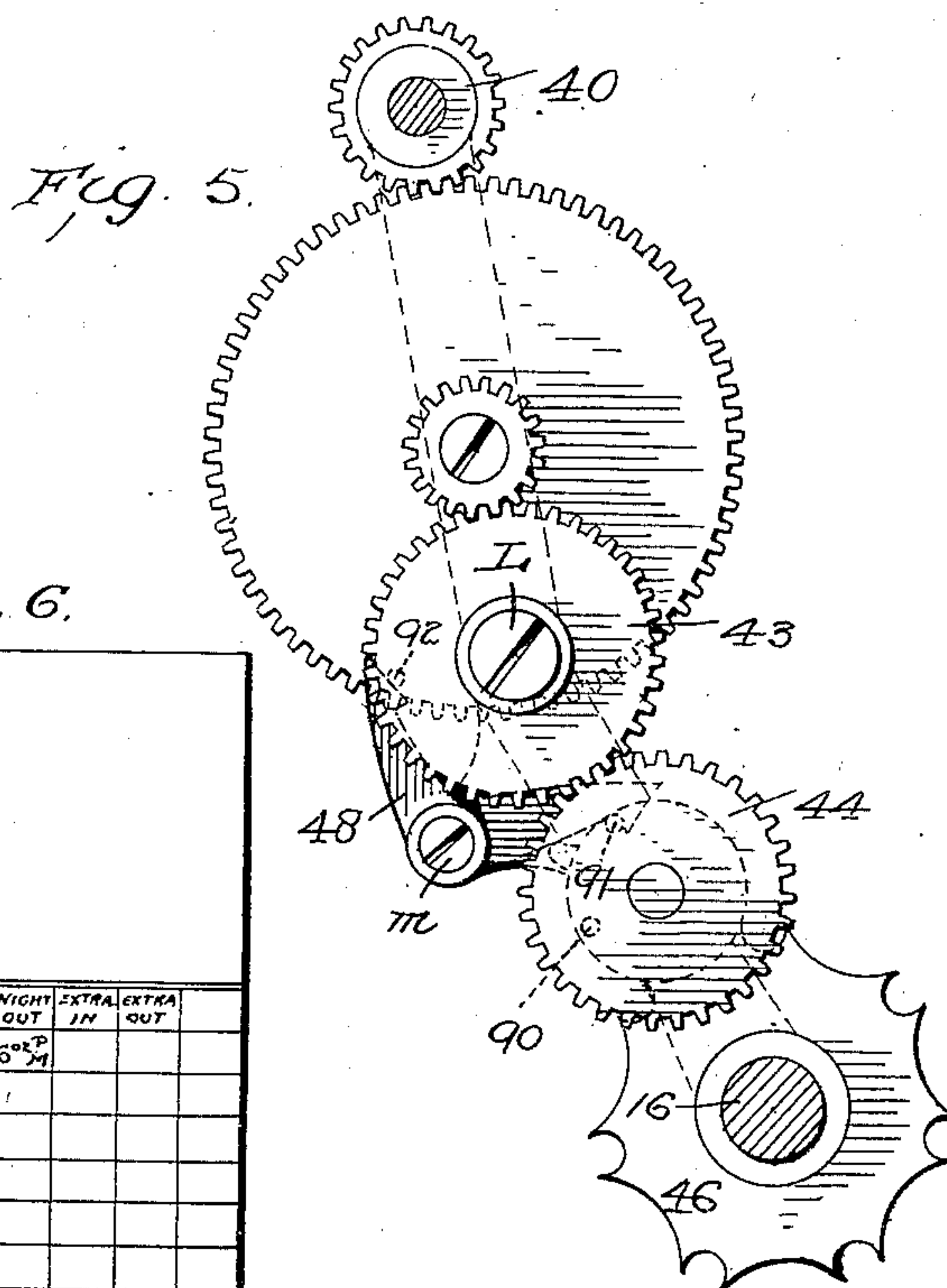
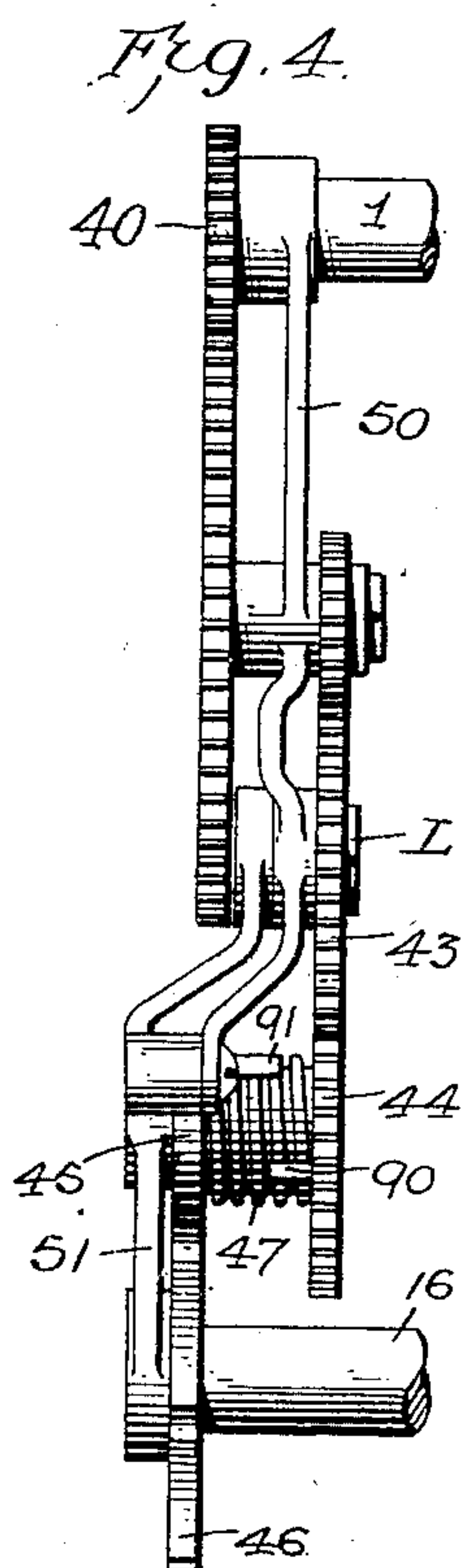
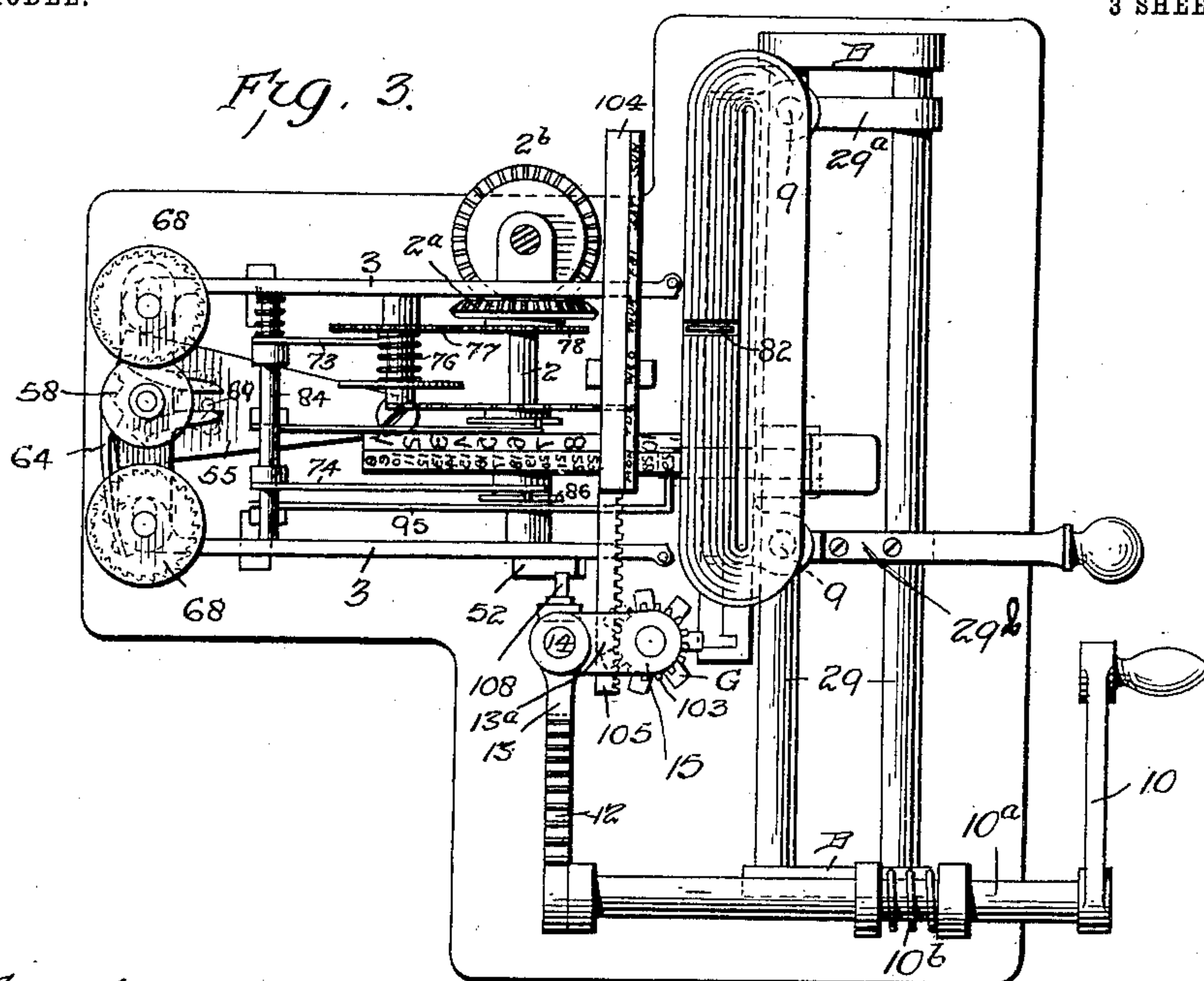


Fig. 6.

DAY	MORNING IN	AFTERNOON OUT	NIGHT IN	NIGHT OUT	EXTRA IN	EXTRA OUT
MON	6:30 A	12:00 P	12:00 P	6:00 P		
TUE						
WED						
THUR						
FRI						
SAT						
SUN						

Attest:
H. A. Farnham
L. B. Middleton

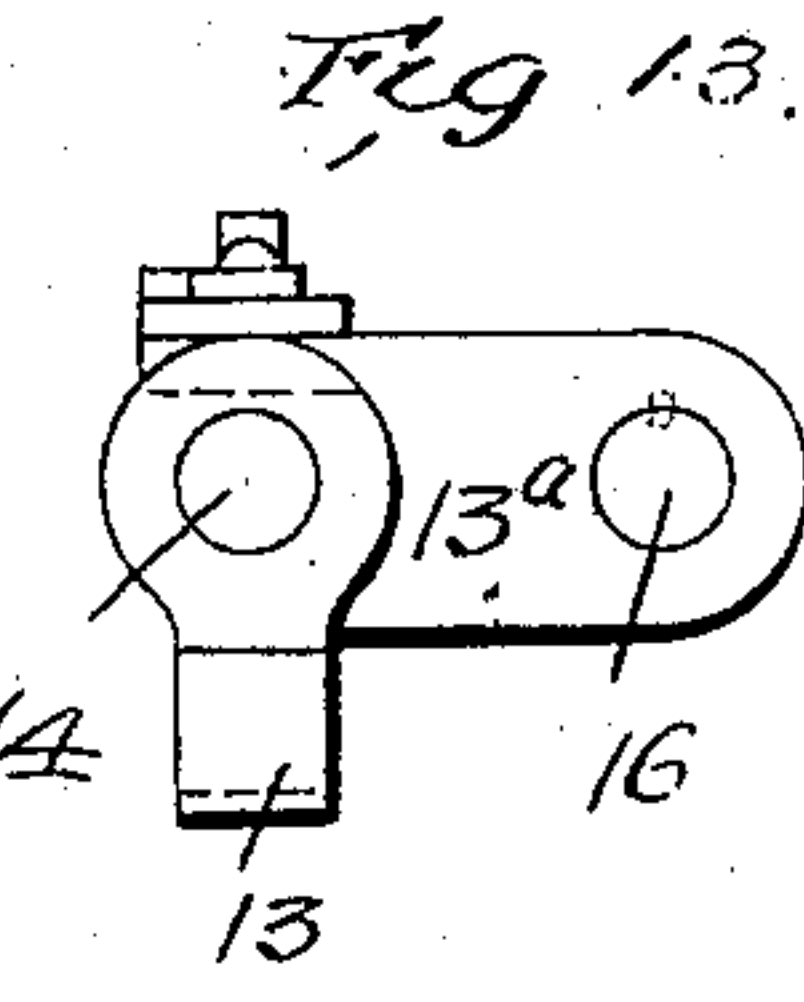
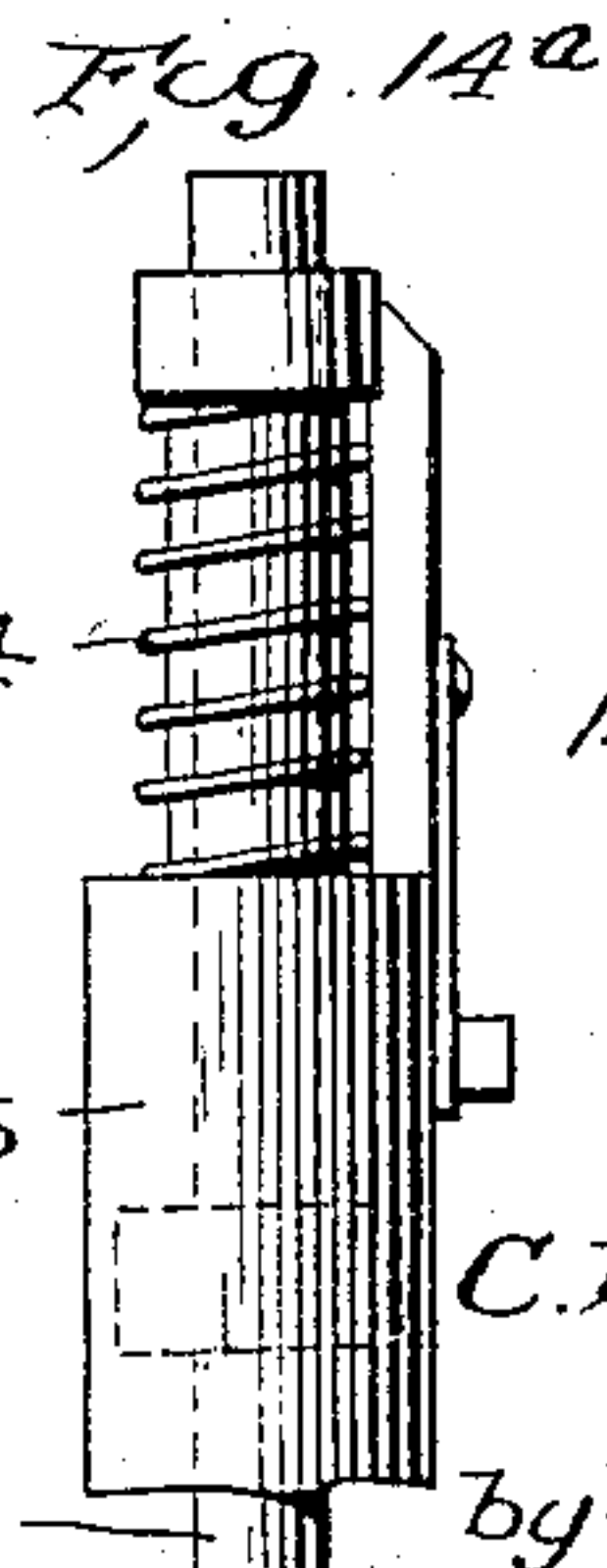
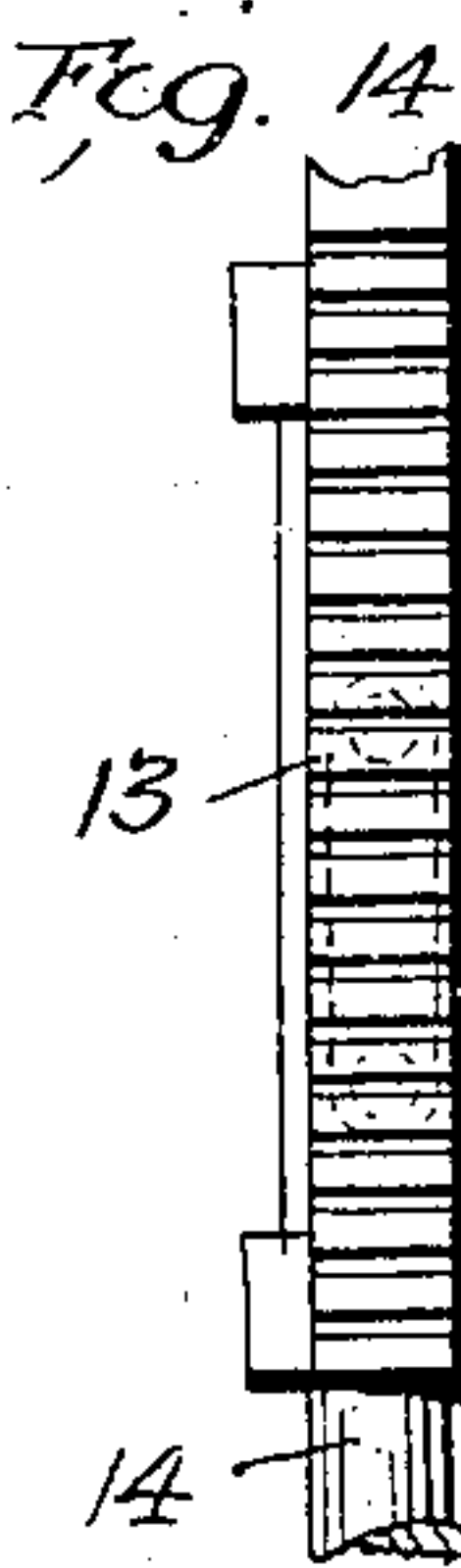
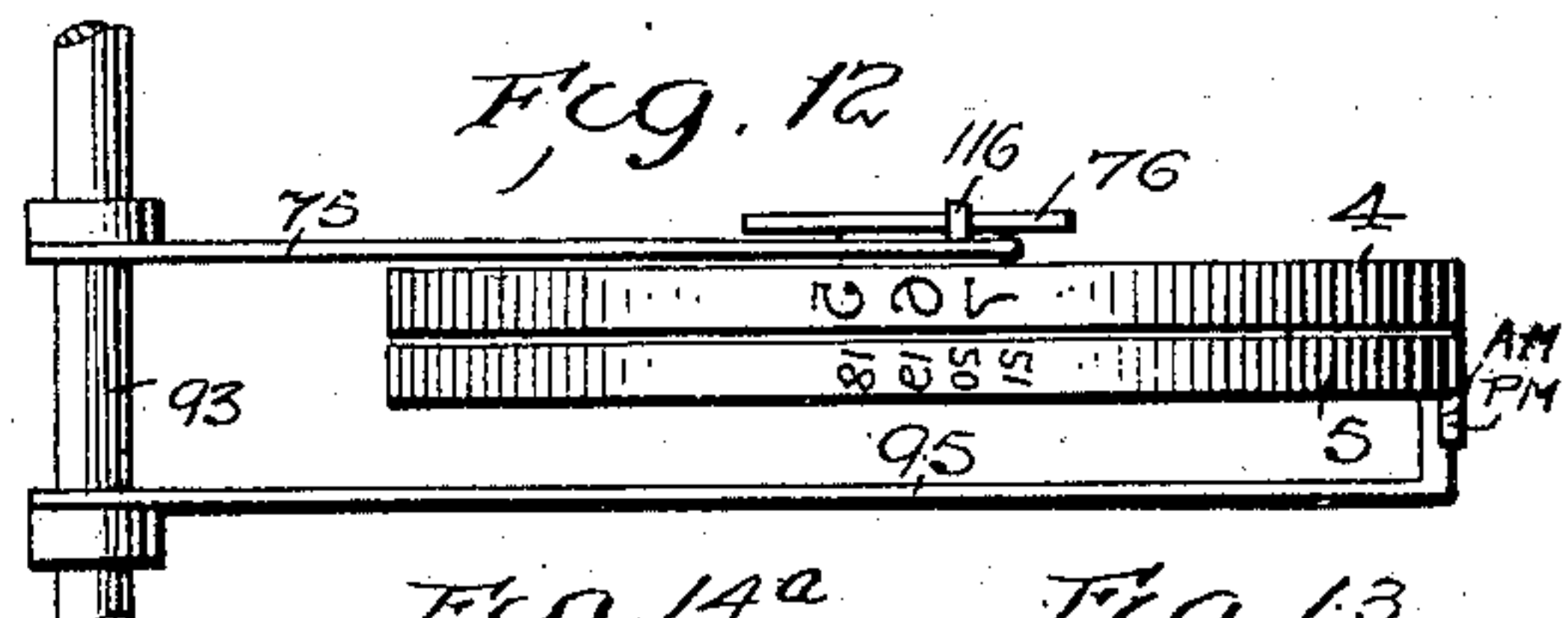
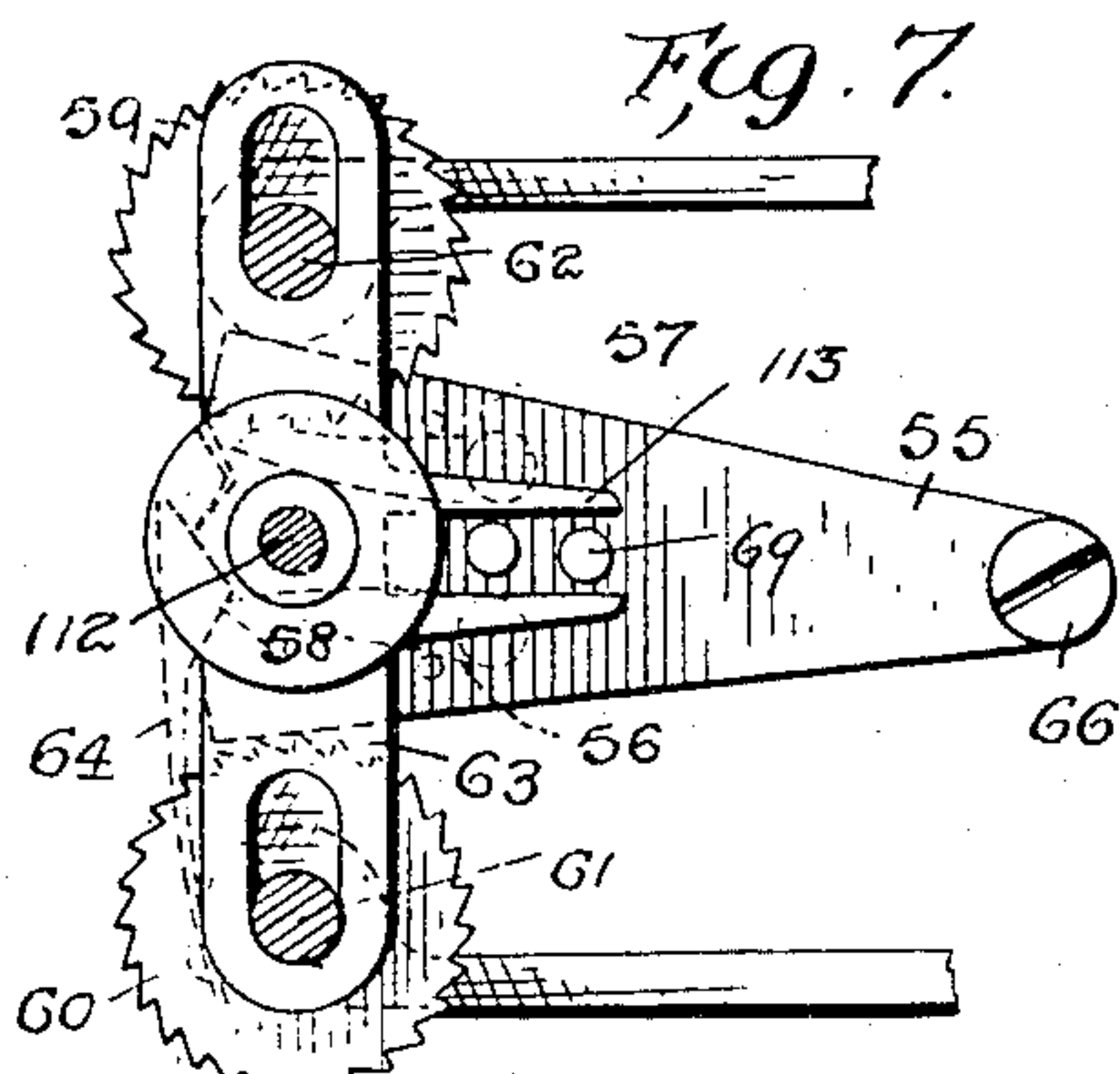
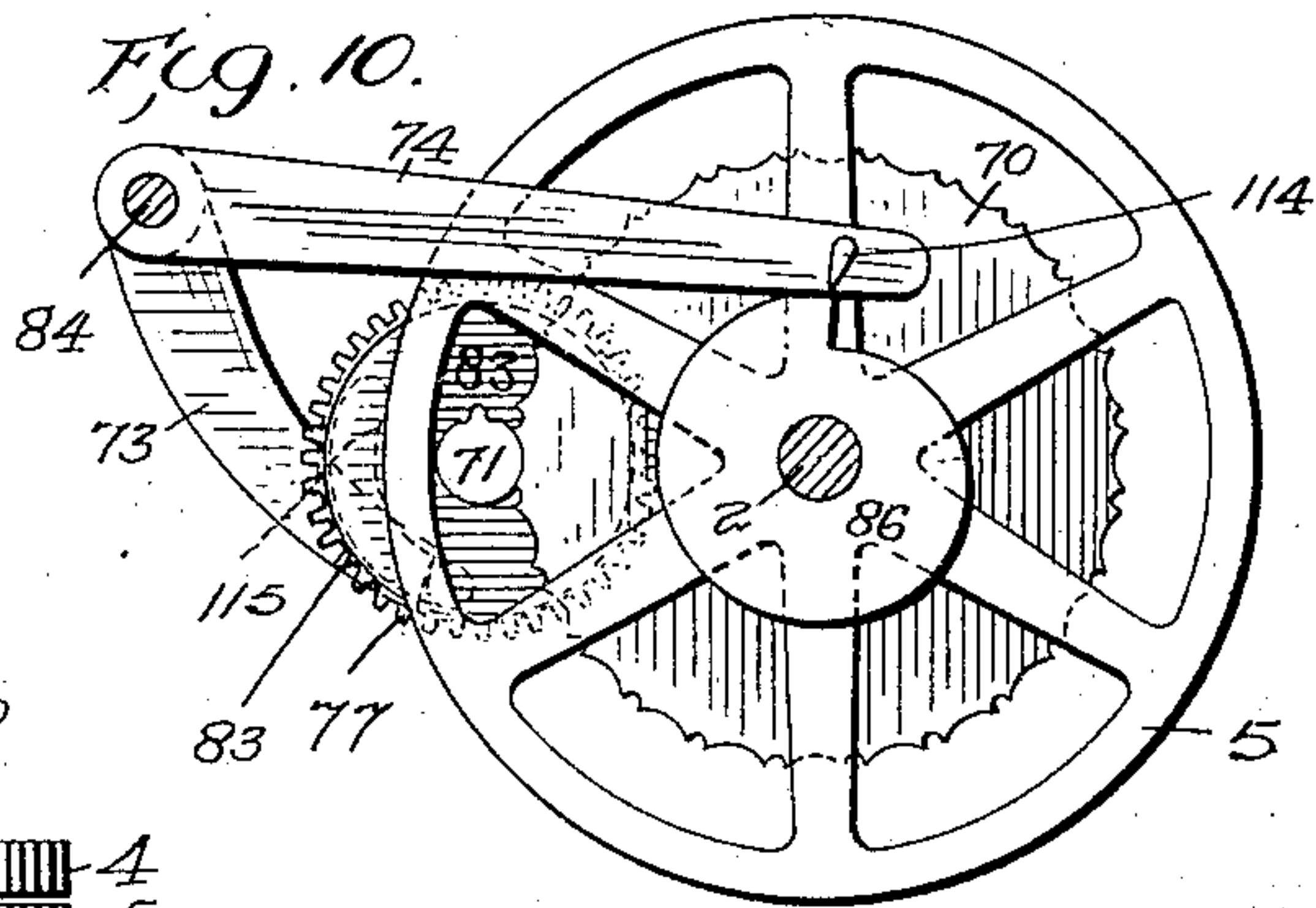
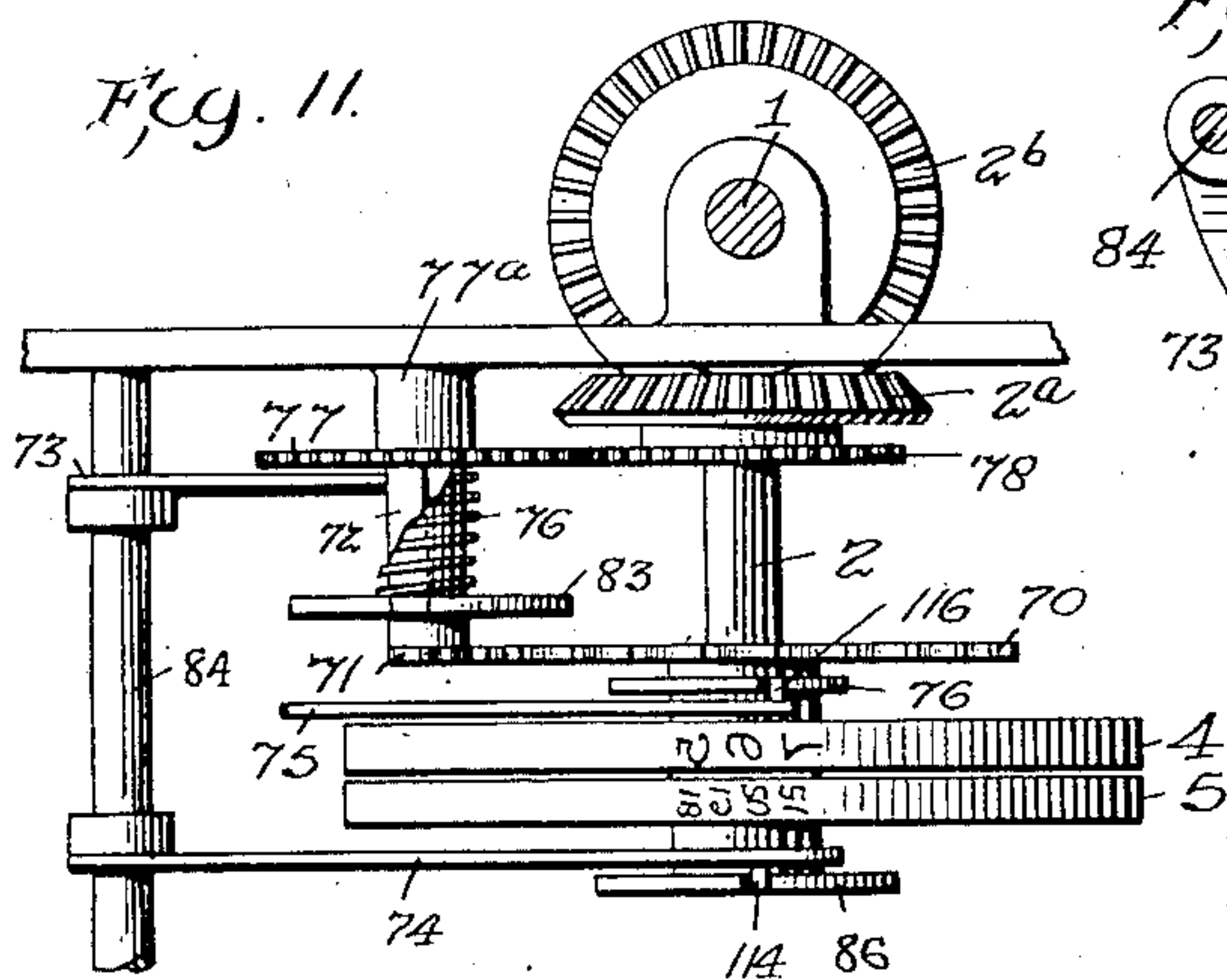
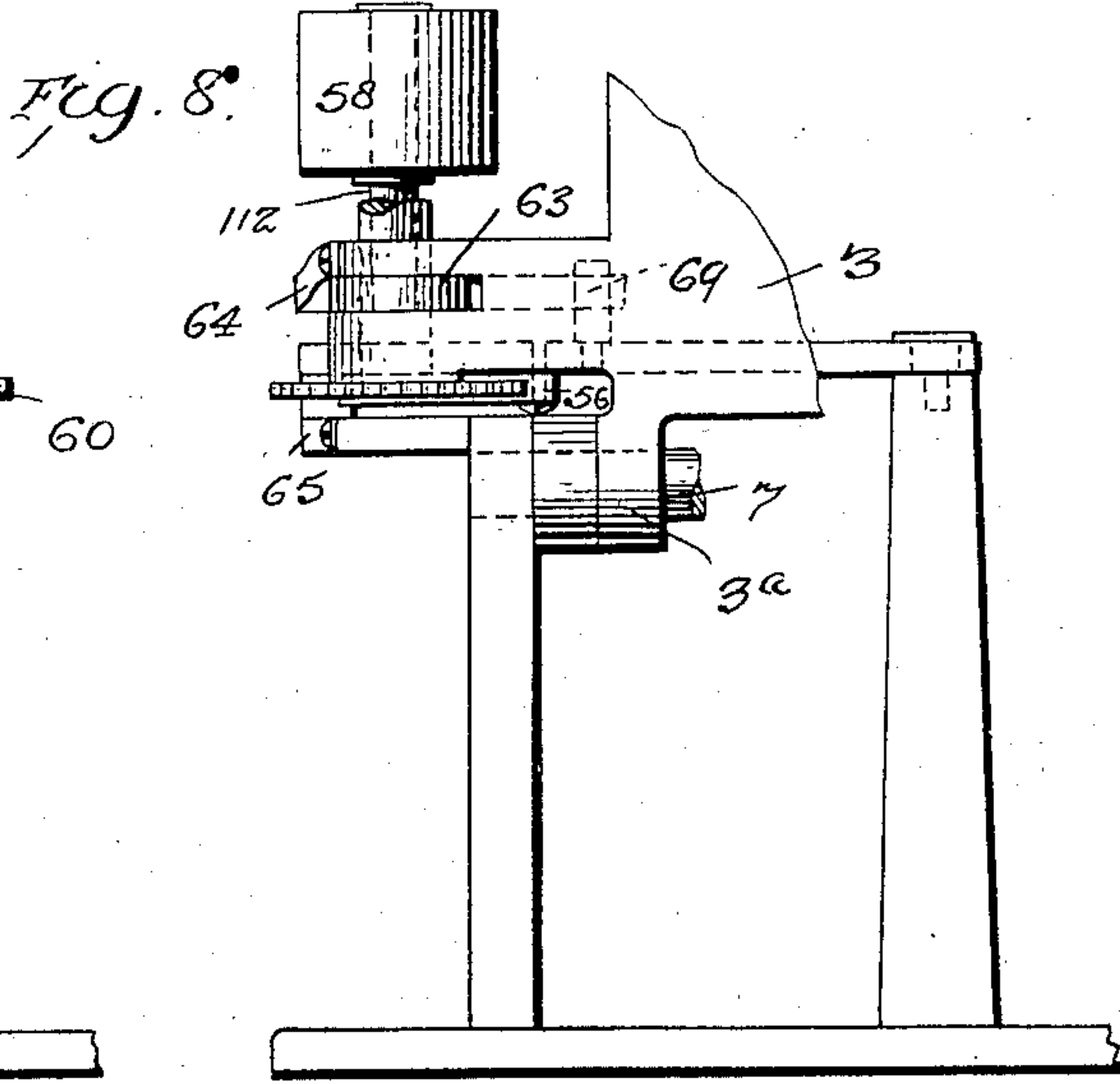
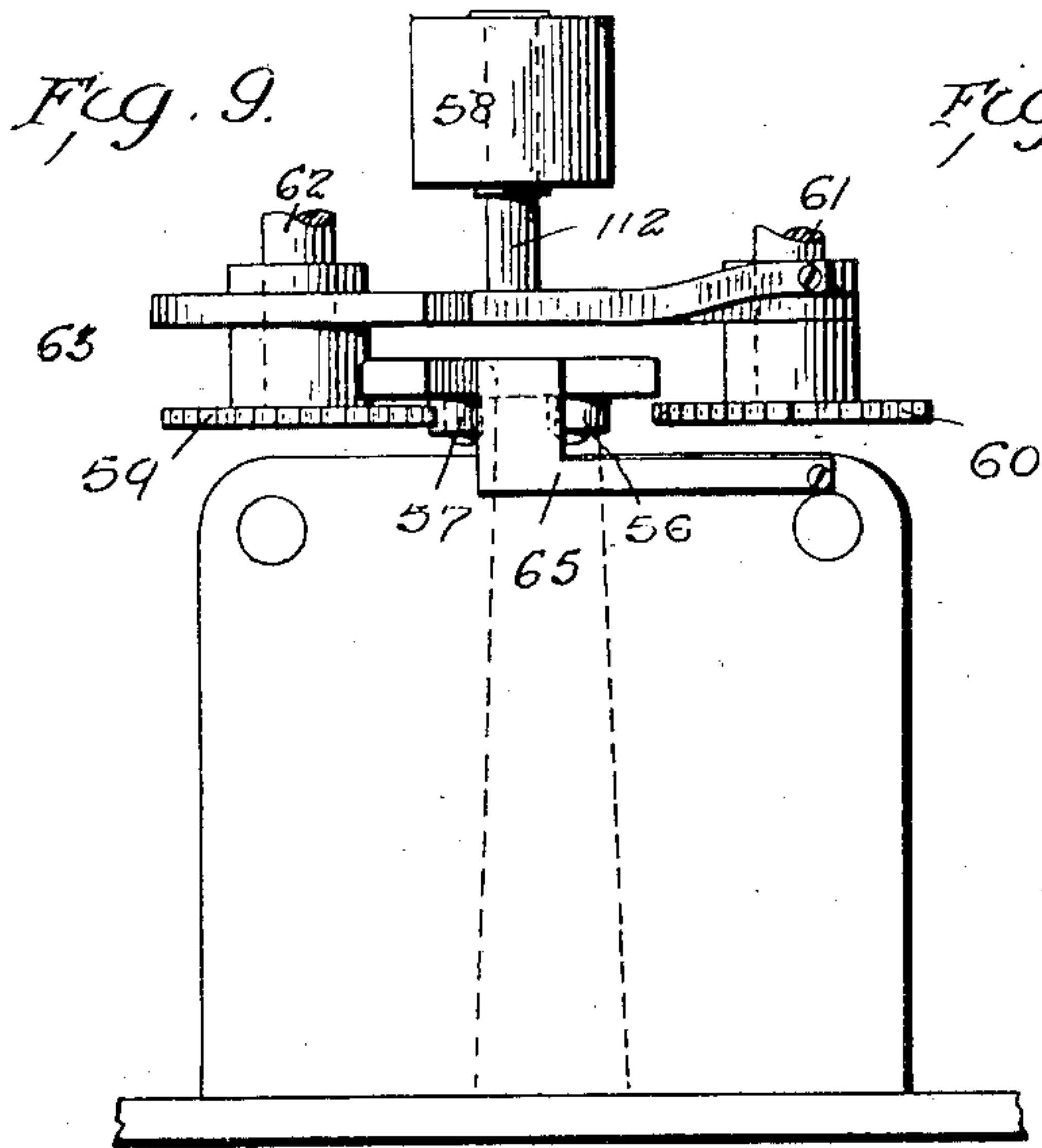
Inventor
C. E. Larrabee.

By- F. L. Middleton
Att'y

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3 SHEETS—SHEET 3.



Attest:
H. A. Fernham
L. B. Middleton

Inventor:
C. E. Larrabee.
by J. L. Middleton
ATK

UNITED STATES PATENT OFFICE.

CLINTON E. LARRABEE, OF BINGHAMTON, NEW YORK.

WORKMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 726,546, dated April 28, 1903.

Application filed July 19, 1902. Serial No. 116,278. (No model.)

To all whom it may concern:

Be it known that I, CLINTON E. LARRABEE, a citizen of the United States, residing at No. 262 Oak street, city of Binghamton, New York, have invented certain new and useful Improvements in Workmen's Time-Recorders, of which the following is a specification.

My invention relates to improvements in workmen's time-recorders.

10 The object of the invention is to provide a simple, economical, and durable form of recorder in which the hours of arrival and departure of the workmen may be printed upon a suitable card. I have also aimed to provide a card receiver or holder which is movable for each day of the week and in which the card will be locked against removal or displacement during the printing operation.

I have illustrated the invention in the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a side view. Fig. 3 is a plan view. Fig. 4 is a detail view in side elevation, showing the gearing connecting shafts 1 and 16. Fig. 5 is a plan view of the same. Fig. 6 is a view of the workman's card to be used with the machine. Fig. 7 is a detail plan view of the ribbon-shifting mechanism. Fig. 8 is a side elevation of the same. Fig. 9 is a front view thereof. Fig. 10 is a detail plan view of the connections for operating hour and minute type wheels. Fig. 11 is a detail view of the same in elevation. Fig. 12 is a detail view of the "A. M." and "P. M." type mechanism; and Figs. 13, 14, and 14^a are detail views of the connections between the rack and date-changing cylinder.

Referring to the drawings by letters and figures, A indicates a suitable base upon which the working parts are mounted. Upon this base are located two brackets B, between which extend parallel guide-rods 29. Slides 29^a are perforated to receive the rods 29, so as to be slidably held thereon, and these slides carry vertical posts 9. A card-receiver 8 carries a cross-bar 96 and lugs 96^a, which have openings for the passage of the rods, whereby the card-receiver is vertically movable on said rods. It is normally held in an elevated position by means of springs 9^a, encircling the rods beneath the lugs 96^a. The card-receiver consists simply of a rectangu-

lar frame which is adapted to receive the workman's time-card and hold it in proper position while the date of arrival or departure is being printed thereon, the printing being accomplished by time-controlled type mechanism, as hereinafter described. It will be observed from an examination of Fig. 6 that the time-card is ruled vertically and horizontally, the horizontal rows indicating the days of the week and the vertical rows the time of arrival and departure. The card receiver and holder is movable vertically in the manner before explained to allow the card to be brought into position for the type to print opposite the appropriate days of the week, and the distance which the receiver can be depressed is automatically controlled by the time mechanism in the manner hereinafter described. The card-receiver is also movable horizontally at the will of the operator by means of a handle 29^b to permit the horizontal spaces to be successively brought opposite the type. In order to provide means for depressing the card-receiver, I provide a crank 10 on a spindle 10^a, held in normal position by a spring 10^b. This shaft carries a segment 12, which meshes with a rack 13, guided on a vertical rod 14. A vertical shaft 16 is located near the rod 14, and on this is splined a cylinder or drum 15, so as to be capable of vertical reciprocating movement thereon. This cylinder carries a plurality of pins G G', &c., corresponding in number to the number of days of the week indicated on the workman's card. The pins are helically arranged upon the cylinder and their distance one above the other in a vertical line corresponds to the horizontal rows for the days of the week on the workman's card. The rack 13 is provided with an arm 13^a, which extends over to and has a sliding engagement with a sleeve projecting up from the cylinder on the rod 16, and a spring 24 encircles the sleeve between the cylinder and arm 13^a. The cylinder is rotated by suitable time mechanism, so that it makes one complete rotation each week. Supposing the day on which the workman's card is inserted in the receiver to be the first day of the week, the lowest pin G on the cylinder would lie in the path or in line with a stop 100 on the card-receiver and the operation of the handle 10 would result

100

in the depression of the cylinder, and with it the card-receiver, to the full extent, at which time the card-receiver would be in proper position for the type mechanism to print on the top row of spaces.

In order to hold the card in the receiver during the printing operation, I provide a pivoted lever 80, which is adapted to be swung on its pivot by the contact of the pins on the cylinder. This lever is connected by a link 81 with a pivoted hook 82, whereby the hook will be swung in over the upper edge of the card, preventing its removal until the card-receiver is raised to normal position.

The shaft 16 is rotated by any suitable clock mechanism in the manner hereinafter described and, as before stated, is designed to cause the cylinder to make one complete rotation each week.

In order to indicate the day of the week, I provide a slide 104, bearing the days of the week and designed to display them successively through a suitable opening 106 in the cover or top wall 106^a of the casing. This slide is operated by a rack 105, engaging a gear 103 on the upper end of the shaft 16. The gear is of such size that the rack will travel its full length on one rotation of the gear, and on the completion of the rotation of the gear 103 the rack is allowed to be automatically returned to initial position by a suitable spring by reason of the mutilated portion of the gear 103.

The type mechanism for printing the hours is mounted upon horizontal guide rails or rods 7 and comprises hour and minute printing wheels and shiftable printing-type for printing "A. M." or "P. M." The printing mechanism is carried in a suitable frame 3, having depending lugs 3^a sliding on the rod 7, the frame being held normally retracted by helical springs 3^b, surrounding the rails or rods. Upon a shaft 2, secured in this frame, are journaled the hour and minute printing wheels in the manner hereinafter more fully described. This shaft 2 is driven by beveled gears 2^a 2^b from a vertical shaft 1, which is driven by flexible shafting from any suitable clock mechanism. (Not shown.)

Supposing the type-carrying parts to be in proper position for printing the requisite time of day and the card to have been inserted, as hereinbefore described, the printing is effected on the downward movement of the rack and card-receiver, as follows: As rack 13 moves downward roller 108, carried thereby, comes in contact with an incline 52 on the frame, thus carrying the reciprocating frame forward, which in turn brings a roller 53 on arm 54 (which is fastened to frame) in contact with an arm 25. This arm 25 is connected with the hammer 26, pivotally mounted on rod 29, and moves the printing-hammer forward against the card, thus making the impression. As the roller 108 passes the lowest point of incline 52 the reciprocating frame is released and is returned to its original po-

sition by the springs 3^b. When the handle 10 is released, it is returned to its original position by means of a spring 10^b. As segment 12 is fastened to shaft 10^a and meshes with rack 13, they both return with handle bringing day-change cylinder 15 to its original positions.

The type carrying and changing mechanism is illustrated more in detail in Figs. 10 to 13, inclusive. The minute-printing disk is indicated at 5, and the hour-printing disk at 4, the former being fast on shaft 2 and the latter loose thereon. Shaft 2 is driven at a suitable rate of speed from shaft 1 by bevel-gears 2^a and 2^b.

In order to get a reduced motion for the hour-printing wheel or disk, I provide a train of gearing. (Shown more clearly in Figs. 10 and 11.)

The shaft 2 carries a gear-wheel 78, which meshes with a gear 77, journaled on a stud 77^a.

To one side of gear 77 is fastened one end of a spring 76, the other end of which is fastened to a disk 83, journaled on the same stud.

86 is a cam fastened securely to type-disk 5, on which cam rides a pin 114, carried by lever 74. Lever 73 is fastened to rock-shaft 84, with lever 74, and comes in contact with a pin 72, which is fastened to disk 83. This pin moves in a slot 115 in gear 77, Fig. 10. As the gear 78 moves forward or rotates with shaft 2 it turns the gear 77, which having one end of spring 76 (the other end of which is fastened to disk 83) fastened to it it rotates disk 83 until pin 72, which is fastened to disk 83, comes in contact with end of lever 73, which causes the disk 83 to stop, and gear 77 continuing in its rotating or turning movement it puts a tension on spring 76, until as pin 114 drops off cam 86, carrying with it lever 73, pin 72 is released and moves until it strikes end of slot 115 in gear 77.

71 is an intermittent pinion fastened securely to disk 83. As disk 83 is released and turns it moves pinion 71 part of a revolution or enough to cause it to move intermittent gear 70 one space. The "A. M." and "P. M." type changing mechanism is shown in Fig. 12, the "A. M." and "P. M." type being indicated by said letters on the drawings and being carried by a lever 95.

A cam 76 is fastened securely to hour-type wheel 4. Levers 75 and 95 are fastened securely to shaft 93. A spur-pin 116, which is fastened to lever 75, rides on the cam 76, and when it is on the high part of cam 76 it places the "P. M." in printing position, while when it is on the low part of cam it places the "A. M." in position. The change is made from one to the other as the hour changes from eleven to twelve at noon and midnight.

An inking-ribbon X is provided, having its ends wound upon suitable ribbon-spools 68 and its intermediate portion guided across the face of the type in line with the hammer, as indicated in Fig. 2. The details of the

ribbon mechanism are shown more clearly in Figs. 7, 8, and 9. These spools are rotatably mounted on posts 61 and 62, carried by the reciprocating frame. At their lower ends they are provided with ratchet-wheels 59 and 60, designed to be engaged alternately by pawls 57 and 56, pivoted to a plate 55, which in turn is pivotally supported by a stationary post 66. As the reciprocating frame moves forward it carries ratchets 59 and 60 forward, and as it returns the ratchet-dog which at that time is in operation, as shown at 57, Fig. 7, engages ratchet 59 and moves it part of a revolution, thus feeding the ribbon. Plate 55 is changed from one side to the other by means of a slide 63, which is operated by a roller 58, mounted on a stud 112, which roller comes in contact with the ink-ribbon as it is wound upon the ribbon-spools 68, Fig. 2. As the ribbon winds on the spool it forces roller 58 to one side or toward the center, bringing spring-dog 64 over the center or point between the V-slots in the slides 63. As dog 64 passes over the center between the V-recesses the slide 63 is carried to the opposite side by force of the spring-dog 64, and the arm 113 on slide 63 coming in contact with pin 69 on plate 55 moves plate 55 to the opposite side, thus bringing ratchet-dog 56 in position to engage ratchet-wheel 60, as shown in Fig. 7.

The day-changing cylinder is intermittently operated from shaft 1, which in turn is driven, as before stated, by any suitable clock mechanism. (Not shown.) The gearing by which this is accomplished is shown more in detail in Figs. 4 and 5. A gear 40 is fastened securely to shaft 1 at its lower end. Links 50 and 51, Fig. 4, are pivoted to each other at point L. One end of link 50 is held in position by the lower end of shaft 1, and the opposite end of link 51 is held in position by the lower end of shaft 16. An intermittent gear 46 is securely fastened to end of shaft 16 under the abutment 18, Fig. 2. The train is geared "1" to "24" from gear 40 to gear 43. Gear 44 is the same size as 43.

92 is a pin fastened on the under side of gear 43, which comes in contact with the end of dog 48.

91 is a pin on the intermittent pinion 45, and this pin catches on the hook-shaped end of dog 48, which dog is pivoted at *m*.

90 is another pin fastened to the under side of gear 44 and which acts as a stop for the intermittent pinion 45 by pin 91 striking it after it is released by dog 48.

47 is a spring, one end of which is fastened to gear 44, the other end to intermittent pinion 45. As shaft 1 revolves the motion is transmitted by the train of gears (one to twenty-four ratio) to gear 44, thus making gear 44 make one revolution in twenty-four hours. When the train starts to move, pin 91 on intermittent pinion 45 catches in end of dog 48, thus stopping intermittent pinion 45, and as the train continues to revolve it puts a tension on spring 47, and as pin 92 on gear 43

strikes or comes in contact with end of dog 48 it forces it out and releases pin 91, which allows intermittent pinion 45 to make part of a revolution or allows it to revolve until pin 91 on intermittent pinion 45 comes in contact with pin 90 on gear 44, at which time intermittent pinion 45 has passed around and moved intermittent gear 46 one space.

Having thus described my invention, what I claim is—

1. In a workman's time-recorder, a vertically-movable card-receiver, time-controlled mechanism for limiting the movement thereof, and time-controlled printing mechanism for printing on a card held within said receiver, substantially as described.

2. In combination, a vertically and horizontally movable card-receiver with means for operating it, time-controlled means for limiting the amount of vertical movement of said receiver, and time-controlled mechanism for printing on a card held within said receiver, substantially as described.

3. In combination, a vertically-disposed depressible and horizontally-movable card-receiver, means for depressing the same, time-controlled mechanism for limiting the amount of depression of said receiver, and time-controlled printing mechanism for printing on a card within said receiver when the same is depressed.

4. In combination, a vertically-disposed depressible and horizontally-movable card-receiver, means for depressing the same, time-controlled means for limiting the amount of depression of said receiver, time-controlled printing mechanism for printing the time on a card held within said receiver, and means automatically operated on the depression of said receiver for causing said printing mechanism to print on said card, substantially as described.

5. In combination, a card-receiver comprising a frame adapted to hold a card by its edges, said receiver being vertically movable, time-controlled type mechanism located on one side of said receiver, a hammer located on the opposite side, means whereby said receiver with time-controlled connections for regulating the height of the receiver may be depressed to a determined extent, and means whereby said hammer is caused to force the card in said receiver into contact with the type, substantially as described.

6. In combination, a card-receiver adapted to hold a card by its edges, said receiver being vertically movable, means whereby said receiver may be depressed to a predetermined extent, time-printing mechanism on one side of said receiver and movable toward and from the same, a hammer on the opposite side of said receiver, and means operated automatically on the depression of the receiver for moving the printing mechanism forward and operating the hammer, substantially as described.

7. In combination, a vertically-movable

card-receiver having an open center, means for operating the same, a frame movable toward and from said card-receiver on one side, printing mechanism carried by said frame, a
 5 hammer on the opposite side of said receiver, means whereby on the downward movement of the receiver the frame is operated, said means comprising an incline on one of said parts cooperating with a projection on the
 10 other part, and means whereby the movement of said frame operates said hammer, substantially as described.

8. In combination, a vertically-movable card-receiver having an open center, means
 15 for operating the same, a frame movable toward and from said card-receiver on one side, printing mechanism carried by said frame, a hammer on the opposite side of said receiver, means whereby on the downward movement
 20 of the receiver the frame is operated, said means comprising an incline on one of said parts cooperating with a projection on the other part, and means whereby the movement of said frame operates said hammer,
 25 said means comprising a rigid arm on the frame and a swinging arm connected with the hammer, substantially as described.

9. In combination, a vertically-movable card-receiver, means for depressing the same
 30 to a predetermined extent, time-controlled printing mechanism adapted to print on a card held within said receiver when depressed, and locking means for holding the card within said receiver while it is depressed substan-
 35 tially as described.

10. In combination, a card-receiver capable of vertical movement, a vertical cylinder journaled in proximity thereto having a plu-
 40 rality of helically-arranged projections, said cylinder being capable of vertical movement, time-controlled mechanism for rotating said cylinder, an abutment on the receiver for contact with the projections of the cylinder,
 45 manually-operated means for depressing said cylinder, and printing mechanism for printing upon the card within said receiver when said receiver is depressed, substantially as de-
 scribed.

11. In combination, a card-receiver capa-
 50 ble of vertical movement, a vertical cylinder journaled in proximity thereto having a plurality of helically-arranged projections, said cylinder being capable of vertical movement, time-controlled mechanism for rotating said
 55 cylinder, an abutment on the receiver for contact with the projections of the cylinder, manually-operated means for depressing said cylinder, a locking-hook pivoted to said receiver and adapted to swing over the mouth
 60 thereof, a pawl pivoted to said receiver and adapted to be operated by the projections on the cylinder, a connection between said pawl and hook, and printing mechanism for printing upon the card within said receiver when
 65 said receiver is depressed, substantially as described.

12. In combination, a card-receiver capa-

ble of vertical movement, a vertically-mov-
 able and rotatable cylinder located in prox-
 imity thereto, a plurality of helically-ar- 70
 ranged projections on said cylinder adapted to be successively brought into operating relation to said receiver, time-controlled mechanism for rotating said cylinder, a ver-
 tically-movable rack having an operating 75
 connection with said cylinder, a pivoted segment engaging said rack with means for operating said segment, and printing mechanism for printing on a card within said receiver when depressed, substantially as described. 80

13. In combination, a card-receiver capa-
 ble of vertical movement, a vertical shaft journaled in proximity thereto, time-con-
 trolled means for rotating the same, a cylin-
 der splined to said shaft, a plurality of heli- 85
 cally-arranged projections on said cylinder, an abutment on the card-receiver for coact-
 ing with said projections, a vertically-mov-
 able rack having a yielding connection with
 said cylinder, a segment engaging said rack, 90
 means for operating said segment, and print-
 ing mechanism for printing on the card in the receiver when the latter is depressed, sub-
 stantially as described.

14. In combination, a suitable case, or sup- 95
 port, a horizontal guide, slides carried there-
 by, vertical rods supported by said slides, a
 card-receiver yieldingly supported by said
 guides, a ledge or abutment carried by said
 card-receiver, a rotating and vertically-mov- 100
 able cylinder, a plurality of helically-ar-
 ranged projections on said cylinder adapted
 for contact with said ledge, time-controlled
 means for rotating said cylinder, manually-
 operated means for depressing the cylinder 105
 and printing mechanism for printing on the
 card when depressed, substantially as de-
 scribed.

15. In combination, a suitable case or sup-
 port a pair of guide-rods carried thereby, 110
 slides guided on said rods, vertical rods car-
 ried by said slides, a card-receiver guided on
 said vertical rods, a vertically-movable and
 rotatable cylinder journaled in proximity to
 said receiver, a plurality of helically-ar- 115
 ranged projections on said cylinder, a ledge
 extending across the receiver in the path of
 the projection on the adjoining side of the
 cylinder, time-controlled means for rotating
 the cylinder, manually-controlled means for 120
 depressing it, and printing mechanism coop-
 erating with the receiver when depressed,
 substantially as described.

16. In combination, a suitable case or sup-
 port, a pair of guide-rods carried thereby, 125
 slides guided on said rods, vertical rods car-
 ried by said slides, a card-receiver guided on
 said rods and having a ledge across one side
 thereof, a vertical shaft in proximity to said
 card-receiver, time-controlled means for ro- 130
 tating said shaft, a cylinder splined to the
 shaft having a plurality of projections heli-
 cally arranged to cooperate with the ledge
 on the card-receiver, manually-controlled

means for depressing the cylinder, a gear on the upper end of the time-controlled shaft, a day-indicator slidable in the casing in line with an opening in said casing, a rack connected to said indicator and meshing with the gear, said gear having a mutilated portion and printing mechanism for printing on the card in the receiver, substantially as described.

10 17. In combination, a suitable casing, a vertically-movable card-receiver, a vertical shaft in proximity thereto, a cylinder splined on said shaft, a plurality of projections carried by said cylinder adapted to successively
15 engage a ledge on the card-receiver, a frame on one side of the card-receiver movable toward and from the same, printing mechanism carried by said frame, a vertical shaft journaled in the frame and operatively connected with the printing mechanism, time-
20 controlled mechanism for operating said shaft, a flexible gearing connecting said last-named shaft with the shaft carrying the cyl-

inder, a hammer on the opposite side of said card-receiver and means for moving the frame forward and operating the hammer on the depression of the card-receiver substantially as described. 25

18. The combination with a vertically-movable card-receiver and means for operating it, of a hammer located on one side of the receiver, a frame on the other movable toward and from the same, hour and minute type disks journaled in said frame, a lever pivoted in the frame carrying "A. M." and "P. M." type at its forward end, means for rotating said disks and oscillating said lever, and means for moving the frame forward and operating the hammer, substantially as described. 30 40

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

CLINTON E. LARRABEE.

Witnesses:

GEORGE D. NARSH,
GEORGE F. SMITH.