

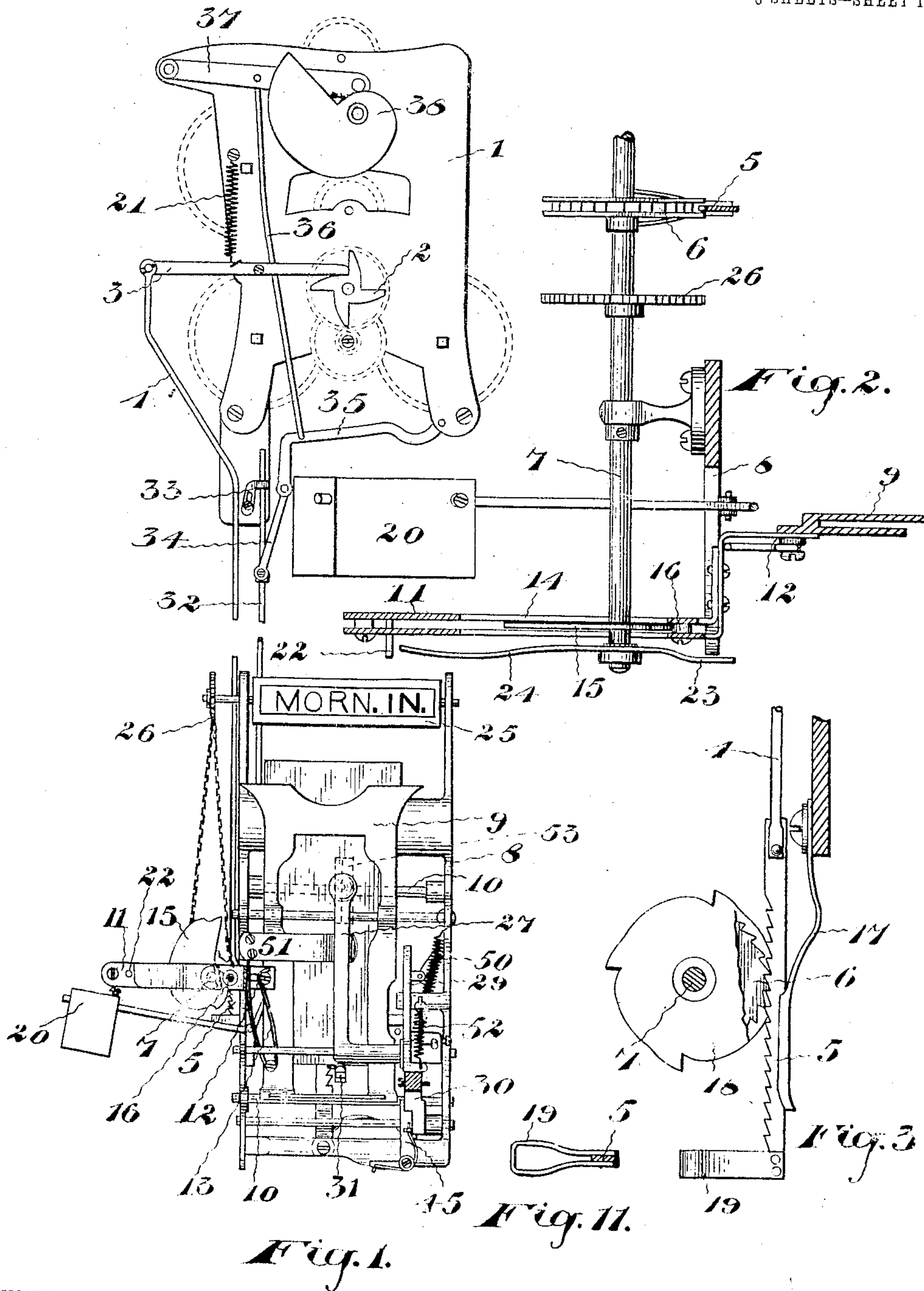
No. 840,495.

PATENTED JAN. 8, 1907.

A. L. JAYNES.
TIME RECORDER.

APPLICATION FILED JAN. 10, 1906.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

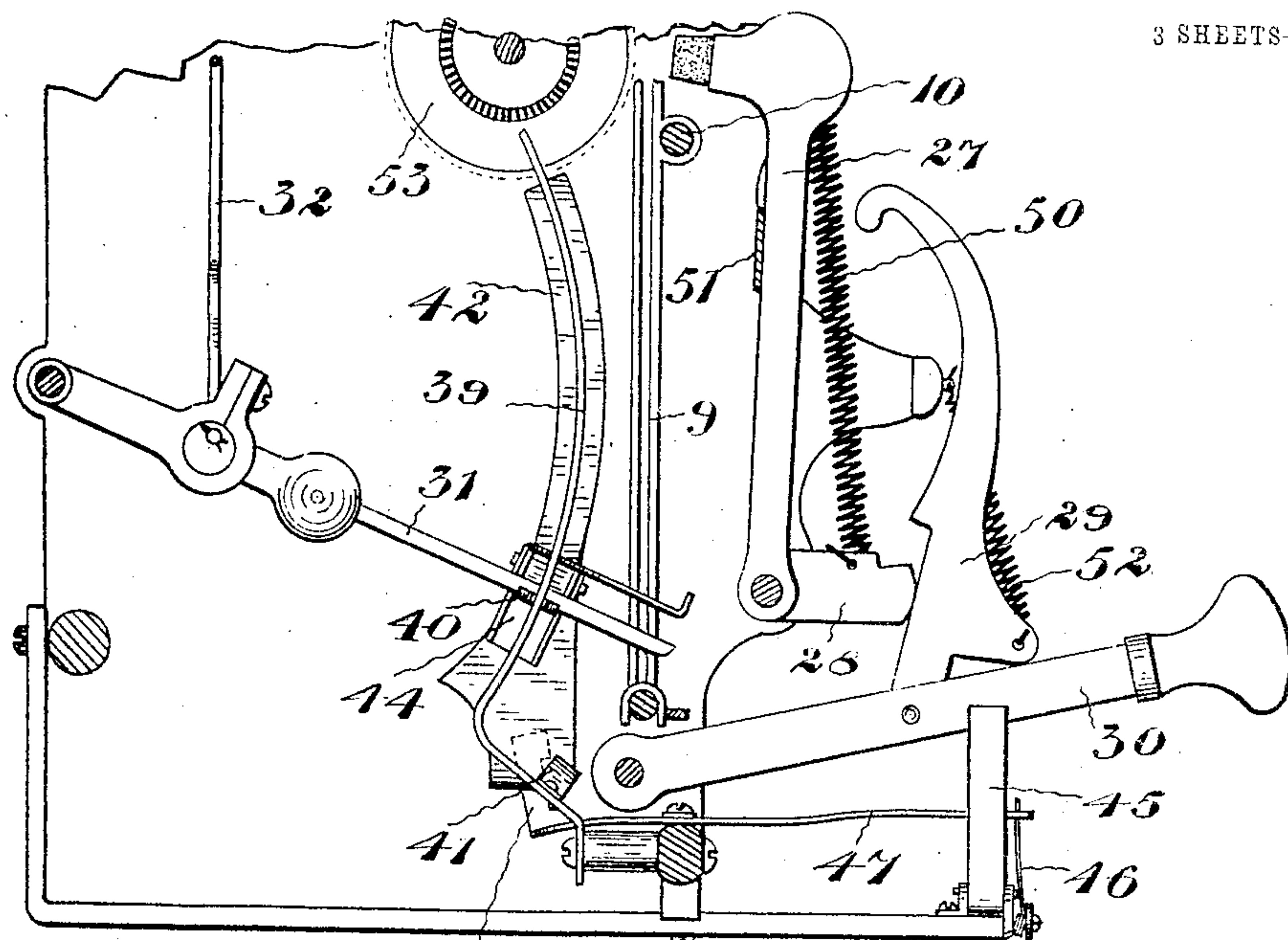


Fig. 5.

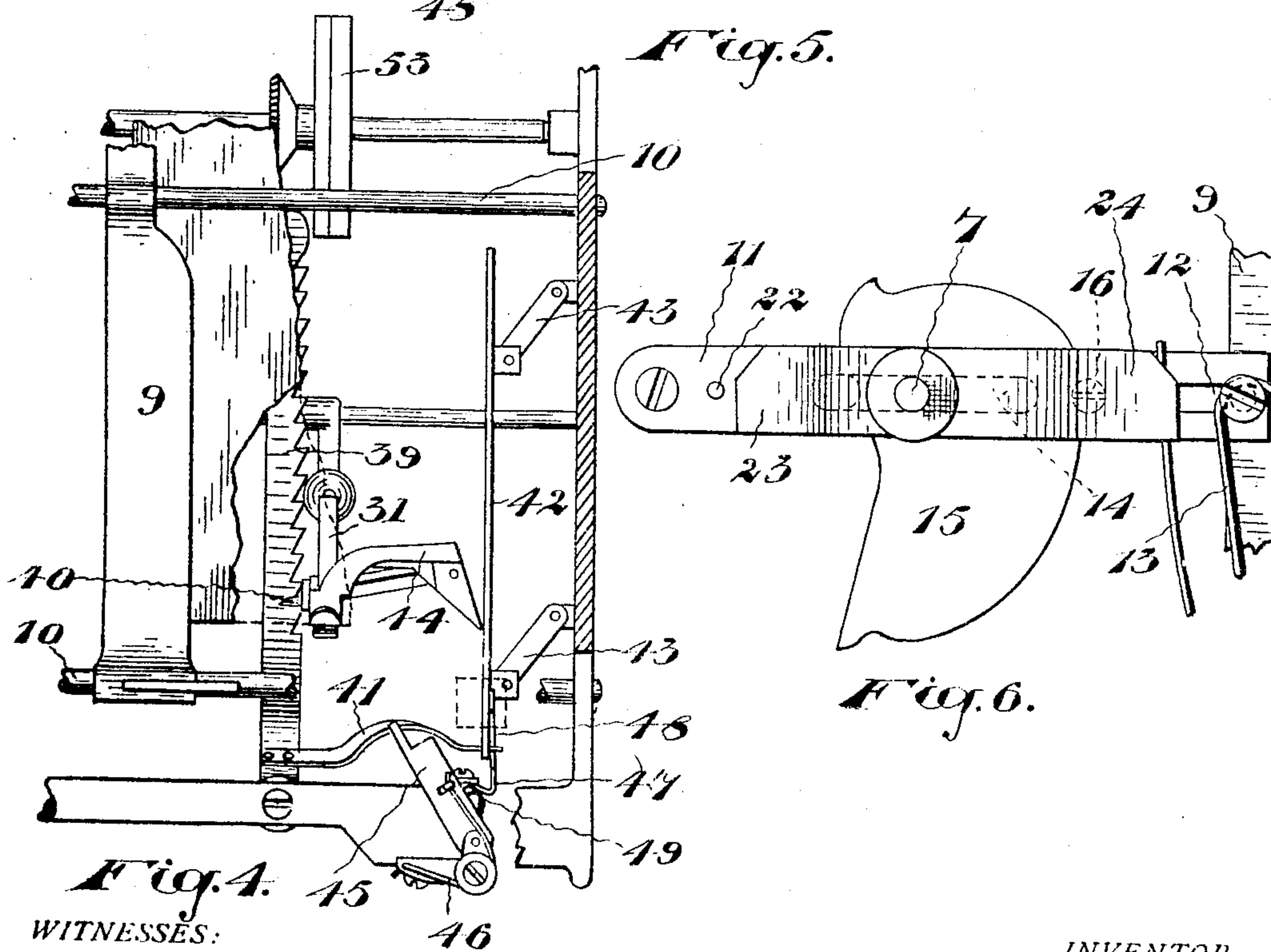


Fig. 4.

Fig. 6.

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3 SHEETS—SHEET 3

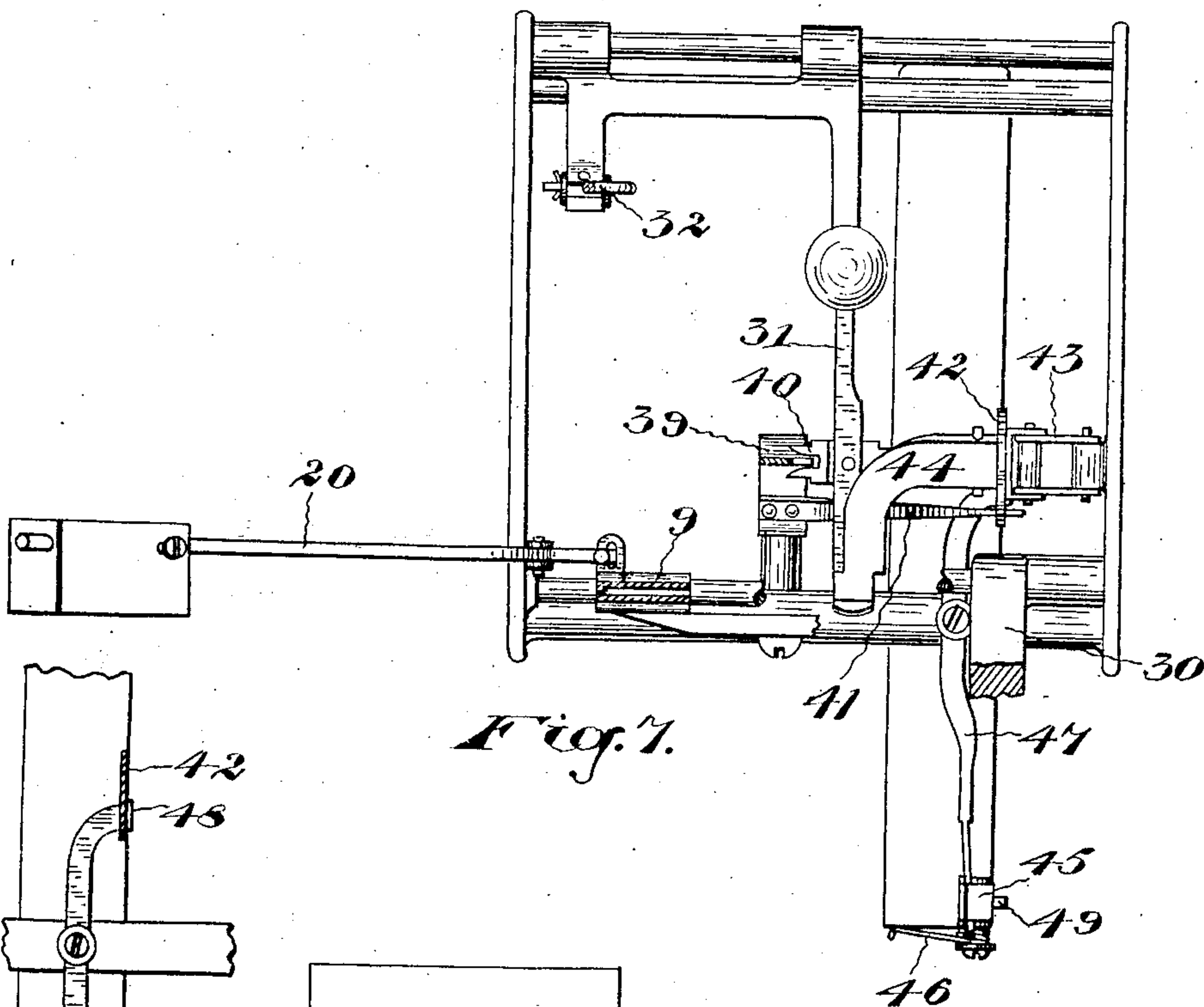


Fig. 7.

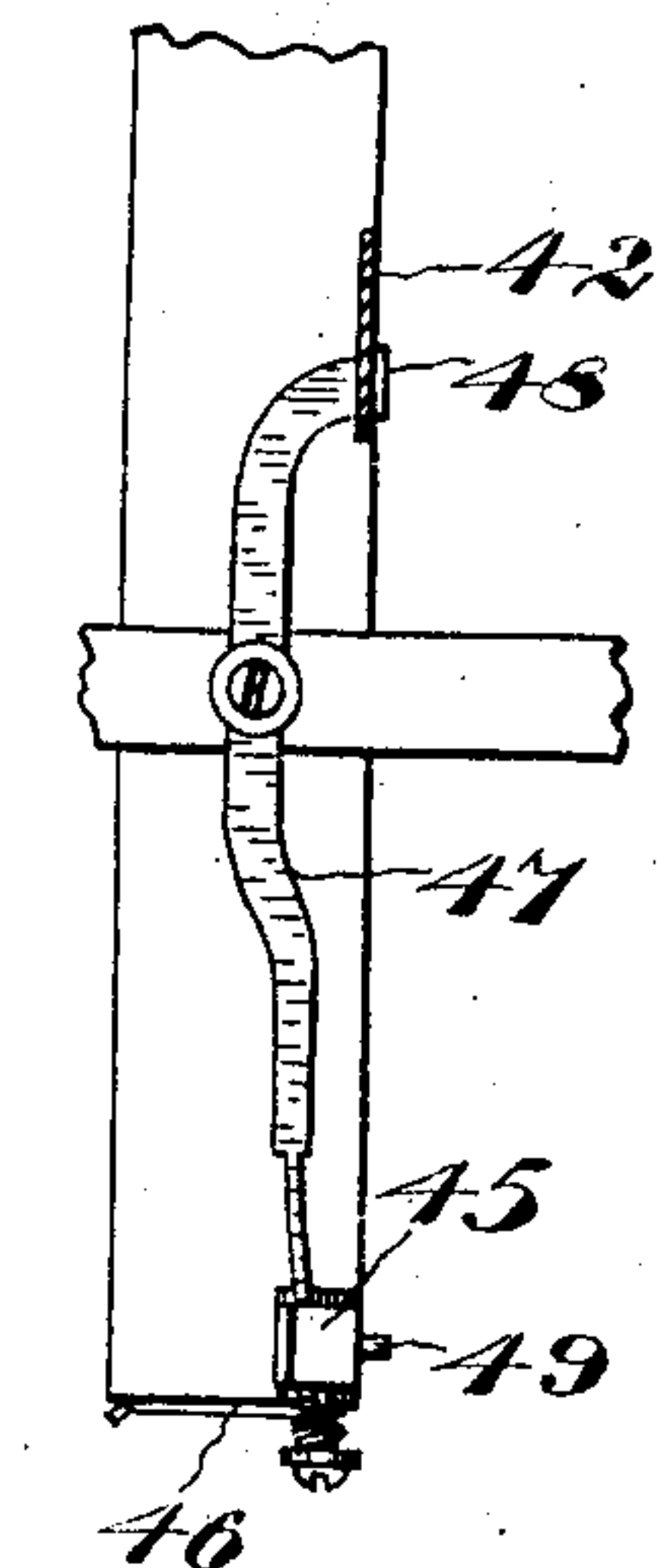


Fig. 6.

[illegible]

Fig. 9.

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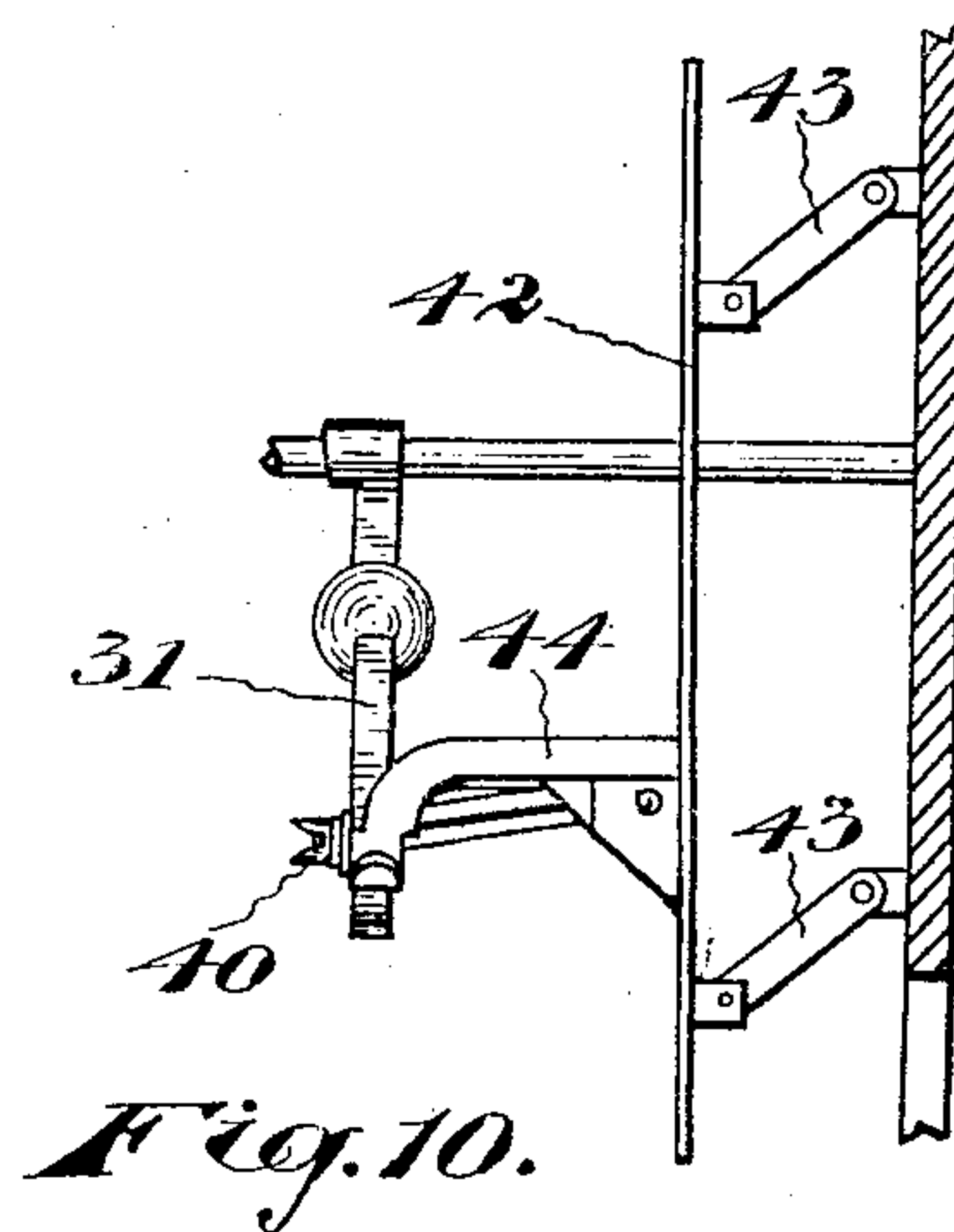


Fig. 10.

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ALFONSO L. JAYNES, OF TORONTO, ONTARIO, CANADA.

TIME-RECORDER.

No. 840,495.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed January 10, 1906. Serial No. 295,459.

To all whom it may concern:

Be it known that I, ALFONSO L. JAYNES, of the city of Toronto, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Time-Recorders, of which the following is a specification.

This invention relates to time-recorders of the type in which the times at which a workman passes in to work in the morning, out for lunch, in after lunch, and out at night are recorded for a given number of days on a ticket in parallel vertical columns. Such recorders register the times on the ticket by means of clock-driven type-wheels and a striking-hammer, and it is necessary to shift the card-holder laterally four times during the twelve hours to bring the proper column under the hammer, and also to shift longitudinally the abutment for the card end for each of the given number of days. Heretofore the lateral shift has been effected by hand, which method is open to many objections. For instance, it demands the personal attention of an attendant, who may be neglectful, and also leaves the way open for fraud.

My present invention makes the lateral shift entirely automatic. While the movement of the abutment has always been automatic, it has nevertheless been possible to make records on the cards on the space intended for other days than that on which the record was actually made. My invention overcomes this difficulty by making it impossible to effect registration unless the card is pressed fully home; and it consists, essentially, in the constructions hereinafter more specifically described and then definitely claimed.

Figure 1 is a front elevation, partly broken away, of a time-recorder provided with my improvements. Fig. 2 is an enlarged plan view of a part of the same, showing particularly the shifting means for the card-holder. Fig. 3 is a side elevation, partly broken away, showing the means for rotating the shaft of the card-holder-shifting device. Fig. 4 is an enlarged front elevation, partly broken away, showing the means for preventing records being made upon tickets other than in the proper place. Fig. 5 is a side elevation of the same parts. Fig. 6 is a detail in front elevation of the snail shown in Figs. 1 and 2. Fig. 7 is a plan view of the parts shown in Figs. 4 and 5, showing also the means tending to return the card-holder to its initial position. Fig. 8 is a plan view of the lever operating

the detent of the operating-lever. Fig. 9 is a face view of one of the record-cards, showing its ruling. Fig. 10 is a front elevation of the abutment-lever and bent lever in their normal positions. Fig. 11 is a plan view of the detent of the ratchet-rack.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

In its main features the recorder is of a well-known type. Referring particularly to Fig. 1, 1 is a time-clock of any suitable construction. On its center arbor is secured a four-pointed star-wheel 2. On the frame of the clock is pivoted a lever 3, its inner end being adapted to be rocked by the star-wheel as the latter revolves. The other end of this lever is pivotally connected with the upper end of a vertical rod 4. The lower end of this rod is provided with a ratchet-rack 5, which is adapted to engage a ratchet-wheel 6, fast on the shaft 7, suitably journaled on the frame of the registering part 8 of the recorder.

The recording mechanism may be of any ordinary type and is provided with a card-holder 9, which is shaped as a flat open tube and is laterally movable on the cross-guides 10.

An arm 11 is secured to the holder by means of a slot-and-pin connection 12, whereby the card-holder has a limited movement relative to the arm. The holder is normally extended relative to the arm by means of a bent spring 13, one arm of which engages the arm while the other end engages the pin or other part connected with the holder. This arm 11, it will be noticed, is jogged forward and then extends outwardly again parallel to its original direction. It is also doubled and provided with the slots 14, through which extends the shaft 7. The slots are of sufficient length to permit of the desired lateral movement of the card-holder. On the shaft between the parts of the arm is secured a four-step snail 15. This snail engages the pin or projection 16, fast on the arm. At each step the snail is slightly notched, so as to prevent backward movement of the snail when the notches are engaged with the pin.

The shaft is rotated by the lifting of the rack 15. The rack, it will be noticed, is held in engagement with the wheel by means of a bent spring 17, which is secured to a stationary part and engages the back of the rack.

On each side of the ratchet-wheel 7 is a notched wheel 18. These wheels serve as a

guide for the rack, and its notches also serve by engagement with the finger 19 of the rack to arrest the rotary movement of the ratchet-wheel and shaft as soon as the finger has been drawn up sufficiently far to engage one of them.

A bent lever 20 is fulcrumed on the frame of the machine, and its inner arm engages the card-holder 9, as shown particularly in Fig. 7, thus tending to draw the card-holder to its initial position—that is, at the left-hand side, as shown in Fig. 1.

The operation of the parts above described is as follows: As the center arbor of the clock revolves once in twelve hours and as the star-wheel 2 is provided with four points, the lever 3 is gradually raised and then suddenly released every three hours. A coil-spring 21, secured to the frame of the clock and to the lever, yieldingly maintains the end of the lever in contact with the star-wheel. Thus by operation of the star-wheel the rack 5 is gradually lowered, its teeth slipping past the teeth of the ratchet-wheel 6. As soon, however, as the end of the lever 3 slips off a point of the star-wheel the rack is suddenly raised, and the parts are so proportioned that the latter is rotated one-quarter turn, moving the snail one step. This partial rotation of the snail pushes the pin 16 toward the right in Fig. 1, and so, through the medium of the arm 11, pushes the card-holder to the right. After the lapse of three hours the same movement is repeated, and so on until the last step of the snail is reached. The next movement of the parts brings the drop in the snail opposite the pin, and the card-holder is promptly returned by the weighted lever 20 to its initial position.

In order to prevent the card-holder being moved forward by hand, I provide the arm 11 with a pin 22. This pin is spaced from the pin 16 a distance substantially equal to the greatest diameter of the snail, so that when the greatest diameter of the snail is horizontal the arm 11 cannot be drawn forward, so that it is impossible by hand to move the card-holder to a position ahead of that corresponding to the position of the cam.

To provide a similar lock in intermediate positions of the cam, I secure on the shaft stop-arms 23 and 24. The short arm, it will be seen on reference to Fig. 6, is in a position to engage the end of the pin 22 when the third step of the snail is in engagement with the pin 16 and the longer arm 24 in position to engage the pin 16 when the first step of the snail is in engagement with the pin 16. An efficient lock is thus provided for all positions of the snail.

A reference to Fig. 9 will show that the time-card is provided for each day with four time-columns, the first for a record of the time at which the workman enters the factory, the second for the time at which he

leaves for lunch, the third for the time of his return, and the last for his exit at the close of the day's work.

By the mechanism described the card-holder is shifted at the proper times of the day to bring the various columns under the hammer by which the impression is made. It sometimes happens that a workman may wish to record his entry after the card-holder has been shifted to an exit position. This limited backward movement is provided by the slot-and-pin connection 12, hereinbefore described. In order that the workman may clearly see whether the instrument is set to record his entrance or an exit, I journal above the card-holder a rotary indicator 25, driven by suitable gearing 26 from the shaft 7. (See Figs. 1 and 2.)

As the ribbon moving and holding mechanism of the recorder are all old, they have not been shown in the drawings.

While for purposes of clearness I have indicated the position of the type-wheels 53, the mechanism for driving them being all old is not shown. I have shown, however, the hammer 27, which gives the blow by which the impressions are made. The tail 28 of this hammer is engaged by the dog 29, pivoted on the operating-lever 30, which is pivoted on the frame of the machine. A coil-spring 50, connected with the hammer and with a stationary part, normally holds the hammer 27 against a flat spring 51, secured to the frame of the apparatus. A coil-spring 52, connected with the dog 29 and with a stationary part, holds the dog in contact with the tail of the hammer.

Time-recorders of the type to which my improvements are applied are provided with a vertically-movable abutment, which is moved by the time-clock, so that the card may be pushed into the card-holder sufficiently far to bring the proper day of the week in line with the hammer. This abutment is formed as a pivoted lever 31. (See particularly Figs. 5 and 7.) On the lever is pivoted the lower end of the connecting-rod 32. The other end of this connecting-rod is movable in a stationary guide 33. A pivoted link 34 connects the rod with a lever 35, fulcrumed on the frame of the clock. A pivoted link 36 connects the lever 35 with a lever 37, pivoted on the frame of the clock and adapted at one end to engage a snail 38. This snail is connected to an arbor of the clock, which revolves once during the period during which records are to be made on a particular card. From this description it follows that the abutment-lever 31 is moved from the bottom to the top and then dropped to the bottom again to recommence its upward movement; but these parts are all old in the art.

It has been found in practice that the abutment-lever, owing to its length and the length

of its connections, may be sprung more or less by the pressure of a card and records thus made in the wrong place. I overcome this difficulty by providing a vertical rack 39 and providing means whereby the abutment may be locked to the rack while a record is being made.

The rack is pivoted at its lower end and it passes between lugs 40, formed on or secured to the abutment. The rack, it will be noted, is formed on the arc of a circle struck with the pivot of the abutment-lever as a center. From the lower end of the rack extends an arm 41. This arm is engaged with a vertical bar 42 by having its end pass through a hole in the bar. This bar is carried by parallel equal pivoted links 43, pivoted on the frame of the machine, so that while maintaining its vertical position it is free to move simultaneously both laterally and vertically.

On the abutment is pivoted a bent lever 44, the vertical portion of which is adapted to engage the bar 42. This bar 42, it will be noticed, is curved on the arc of a circle struck from the pivoted abutment-lever as a center, so that it is always in position to be engaged by the lever 44 in any position of the abutment-lever. The free end of the abutment-lever passes through the central space in the card-holder 9, so that it is always in position to be engaged by the card when the latter is pressed down into the holder.

From the construction thus described it follows that when the lever 44 is pressed down by the contact of a card the vertical bar 42 is swung laterally and downwardly and the rack thus rocked to bring its teeth into engagement with the side of the abutment-lever, which is suitably shaped to engage the ratchet-teeth of the rack. (See Figs. 4 and 7.) The abutment is thus solidly supported, so that pressure on the card cannot force it down out of position.

Another way in which with the older type of machine records may be made on the card in the wrong position is by inserting the card only part way and then pressing down the operating-lever 30 to make the record. I obviate this difficulty by providing a pivoted detent 45, which is notched at its upper end to engage the under side of the lever 30. This detent is maintained in its normal position, engaging the lever by means of the bent spring 46, which is engaged with the detent and with a stationary part. With this detent engages a lever 47, which is centrally pivoted and engages the detent by having its end pass through a hole therein. The other end of this lever is provided with an upwardly-bent portion 48, which engages the rear side of the vertical bar 42. (See Figs. 4, 5, and 8.)

The spring 46 is sufficiently strong to maintain all the parts in the position shown

in Figs. 5, 7, and 10. As soon, however, as a card is pressed down in contact with the lever 44 not only is the abutment-lever locked to the rack, as already described, but the lateral movement of the vertical bar rocks the lever 47 and moves the detent to the position shown in Fig. 4, when the operating-lever 30 is free to be pressed down to make the record, as already described.

In case an attempt is made to cheat the machine by lifting up the card after the operating-lever has been pressed down sufficiently far to prevent the detent resuming its normal position I provide the latter with a pin or projection 49, which will catch the operating-lever and prevent it being forced down to its limit and the record thus made. By thus constructing the detent so that it will engage the operating-lever in two different positions I absolutely prevent any cheating of the machine in the manner described.

From the above description it will be seen that I have devised a machine which automatically insures that the card will be in its proper position both laterally and vertically at the time at which a record is made upon it.

What I claim as my invention is—

1. In a time-recorder the combination of a card-holder laterally movable; means for automatically moving said card-holder in one direction at predetermined intervals; means for automatically returning the card-holder to its original position at a predetermined time; and means for locking said card-holder in each position; said means permitting a limited backward movement of the card-holder from each position other than the first, substantially as described.

2. In a time-recorder the combination of a card-holder laterally movable; an arm connected therewith and longitudinally slotted; a projection on said arm; a shaft transverse to the arm, and passing through the slot therein; means controlled by a time-clock for partially rotating the shaft at predetermined intervals; a snail connected to the shaft, and adapted to engage the projection on the arm; and yielding means tending to hold the projection in contact with the snail, substantially as described.

3. In a time-recorder the combination of a card-holder laterally movable; an arm connected therewith, a projection on said arm; a shaft transverse to the arm; means controlled by a time-clock for partially rotating the shaft at predetermined intervals; a snail connected to the shaft, and adapted to engage the projection on the arm; a pin on the arm for engagement by the snail, spaced from the projection a distance substantially equal to the greatest diameter of the snail; and arms secured to the snail substantially at right angles to its greatest diameter, and adapted to engage the pin to prevent forward move-

ment of the arm when the snail is in intermediate positions, substantially as described.

4. In a time-recorder the combination of a card-holder laterally movable; an arm connected therewith, a projection on said arm; a shaft transverse to the arm; means controlled by a time-clock for partially rotating the shaft at predetermined intervals; a snail connected to the shaft, and adapted to engage the projection on the arm; and a pin on the arm for engagement by the snail, spaced from the projection a distance substantially equal to the greatest diameter of the snail, substantially as described.

5. In a time-recorder the combination of a card-holder laterally movable; an arm connected to the card-holder by a pin-and-slot connection; means engaging the arm for yieldingly pressing forward the card-holder; means for automatically moving forward the arm at predetermined intervals; and means for returning it to its original position at a predetermined time, substantially as described.

6. In a time-recorder the combination of a card-holder laterally movable; an arm connected therewith; a projection on said arm; a shaft transverse to the arm; a ratchet-wheel on the shaft; a spring-held ratchet-rack engaging the ratchet-wheel; clock-controlled means for operating said rack; a detent carried by the rack; a notched wheel secured to the shaft and adapted to be engaged by the detent when the rack is at the forward end of its stroke; and means preventing backward movement of the shaft, substantially as described.

7. In a time-recorder the combination of an abutment for a card; an operating-lever for recording mechanism; a detent normally preventing the movement of the operating-lever; a lever pivoted on the abutment in position for engagement by a card; and connections between the lever and the detent whereby the latter is disengaged from the operating-lever when the abutment-lever is pressed down by a card, substantially as described.

8. In a time-recorder the combination of a clock-driven vertically-reciprocating abutment for a card; a bell-crank lever pivoted on the abutment with one arm in position for engagement by a card; a vertical bar in position for engagement by the other arm of the bell-crank lever; parallel equal pivoted links connecting the bar with a stationary part; a lever having one end in operative engagement with the bar; a detent engaged by the other end of the lever; an operating-lever for recording mechanism normally engaged by the detent; and yielding means retaining the

parts in the normal position, substantially as described.

9. In a time-recorder the combination of an abutment for a card; an operating-lever for recording mechanism; a detent for engagement with the operating-lever at two different positions of the latter and normally engaging the lever when the latter is in its normal position; a lever pivoted on the abutment in position for engagement by a card; and connections between the lever and the detent whereby the latter is disengaged from the operating-lever when the abutment-lever is pressed down by a card, substantially as described.

10. In a time-recorder the combination of a clock-driven vertically-reciprocating abutment for a card; a laterally-movable vertical rack with which the abutment is adapted to engage; yielding means normally maintaining the rack out of engagement with the abutment; means carried by the abutment adapted, when pressed by a card, to move the rack into engagement with the abutment, substantially as described.

11. In a time-recorder the combination of a clock-driven vertically-reciprocating abutment for a card; a vertical rack; means for engaging the abutment and the rack; means carried by the abutment adapted, when pressed by a card, to effect an engagement between the rack and the abutment; and yielding means normally maintaining the rack and abutment out of engagement, substantially as described.

12. In a time-recorder the combination of a clock-driven vertically-reciprocating abutment for a card; a bell-crank lever pivoted on the abutment with one arm in position for engagement by a card; a vertical bar in position for engagement by the other arm of the bell-crank lever; parallel equal pivoted links connecting the bar with a stationary part; a lever having one end in operative engagement with the bar; a detent engaged by the other end of the lever; an operating-lever for recording mechanism normally engaged by the detent; a laterally-movable vertical rack with which the abutment is adapted to engage; an arm extending from the rack and engaging the vertical bar; and yielding means normally maintaining all the parts in their normal positions, substantially as described.

Toronto, Ontario, January 6, 1906.

ALFONSO L. JAYNES.

In presence of—

J. EDW. MAYBEE,

A. S. BALK.