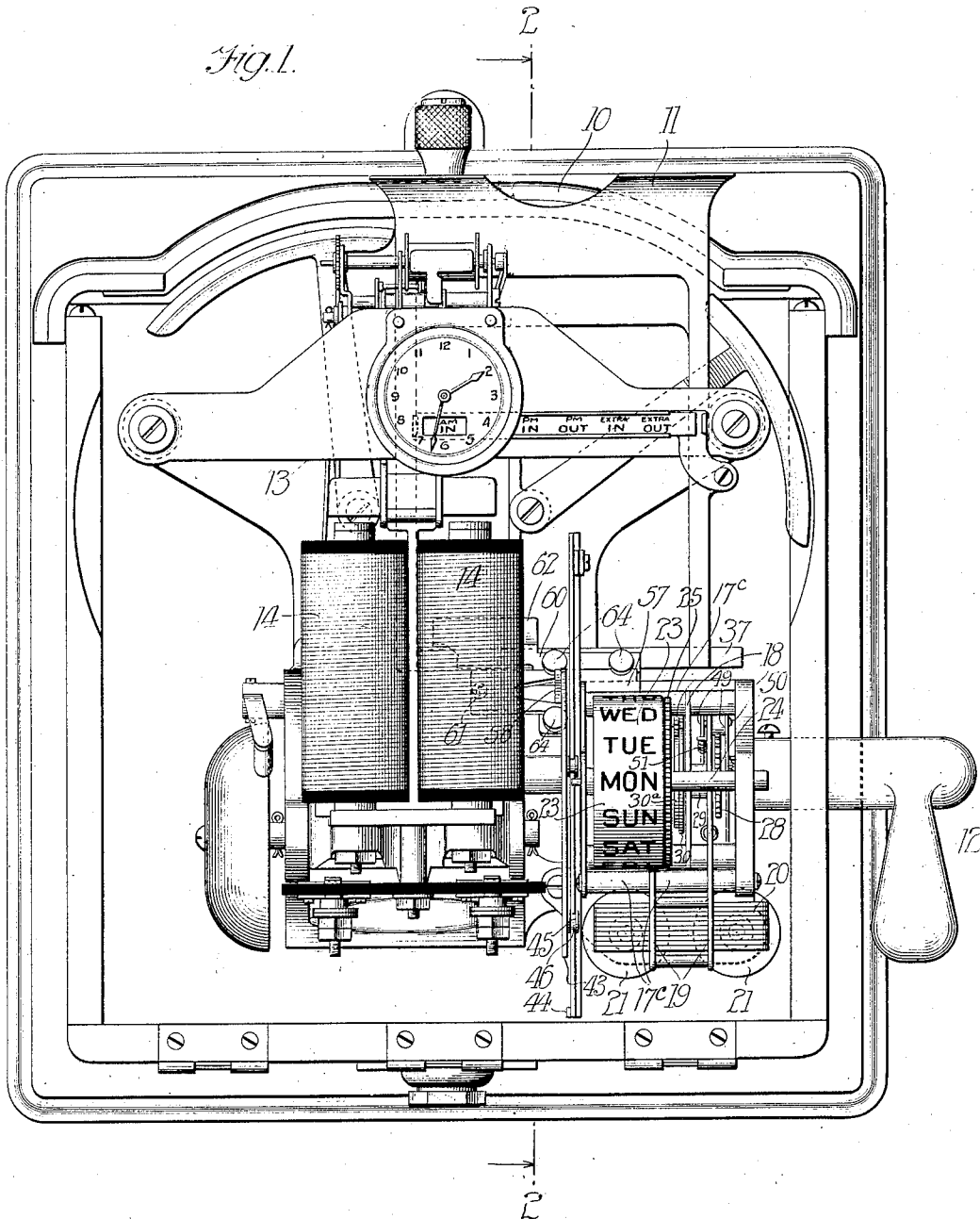


C. M. CROOK.
CARD ELEVATING MECHANISM FOR TIME RECORDERS.
APPLICATION FILED JUNE 20, 1911.

1,064,054.

Patented June 10, 1913.

6 SHEETS—SHEET 1



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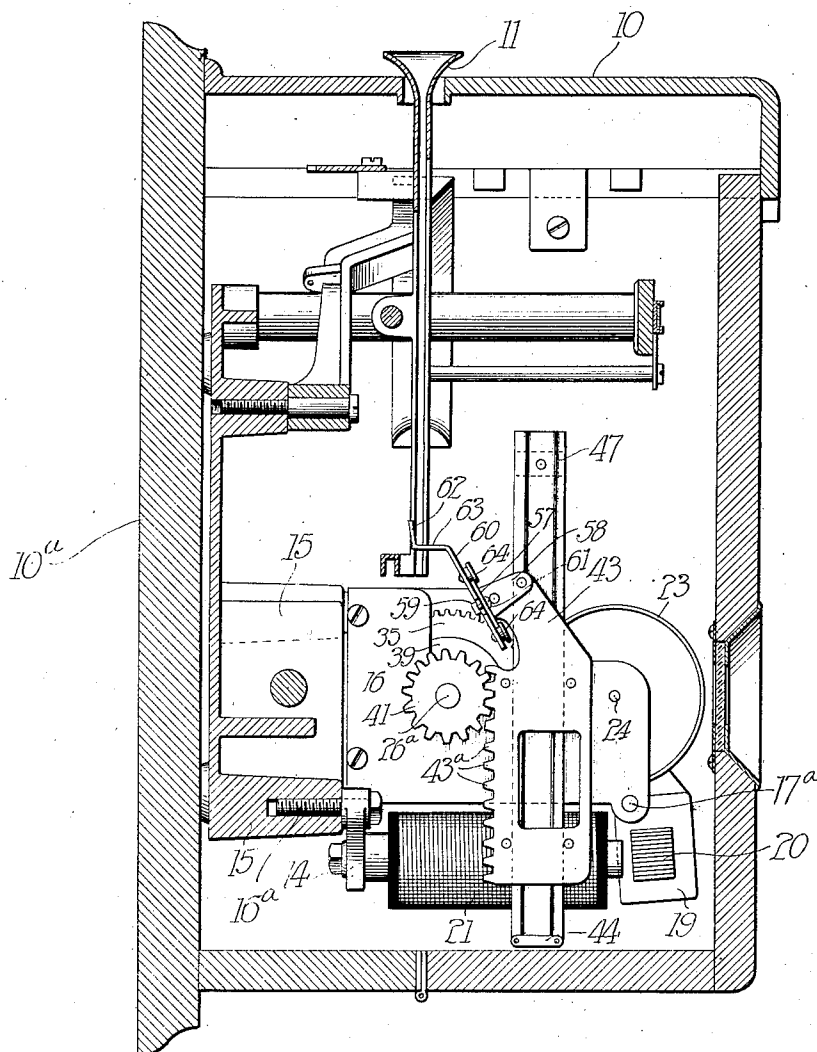
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Fig. 2.



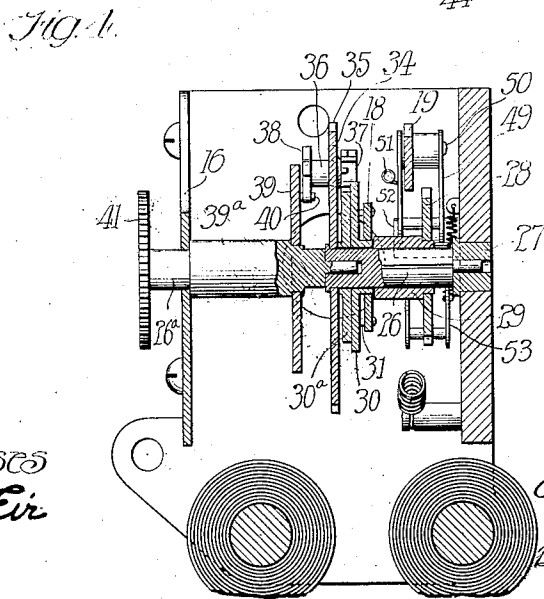
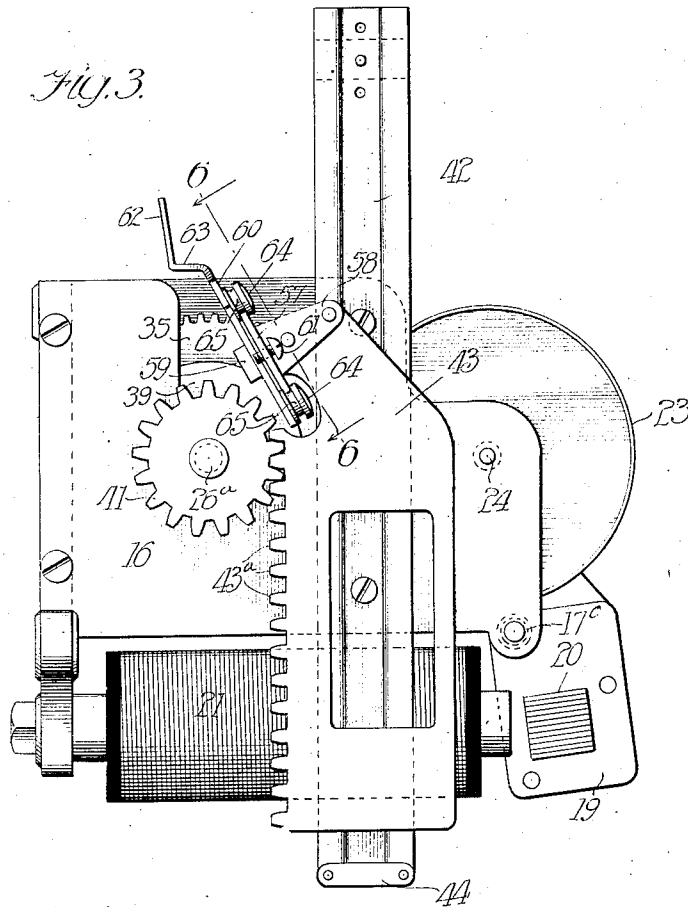
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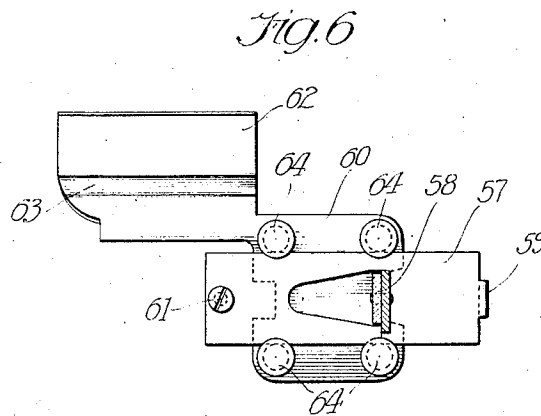
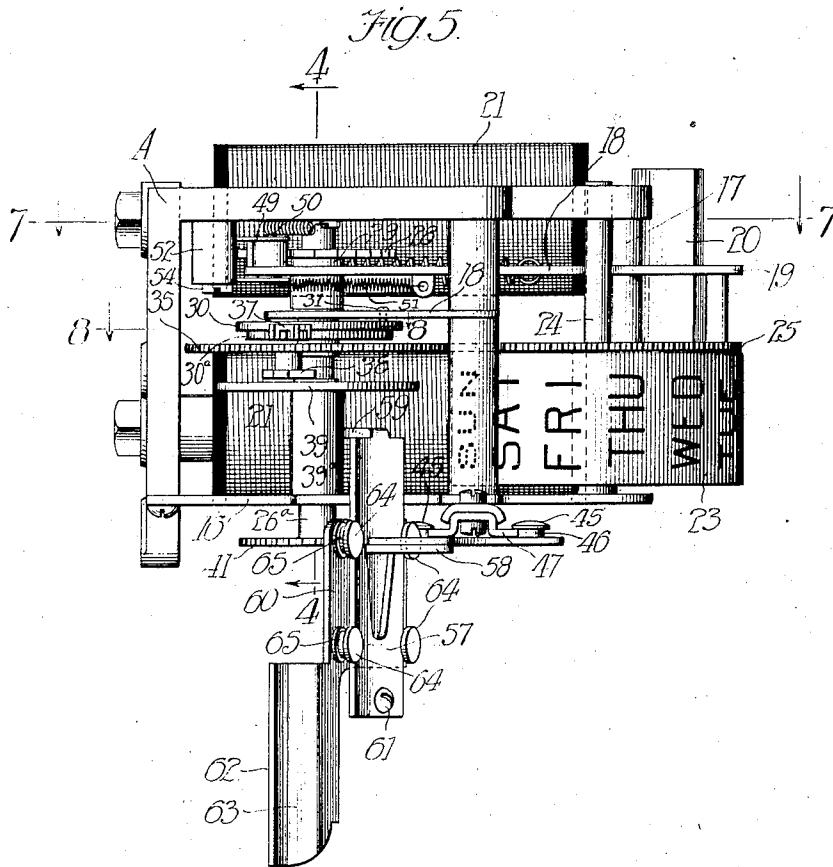


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APPLICATION FILED JUNE 20, 1911.

5 SHEETS—SHEET 4.



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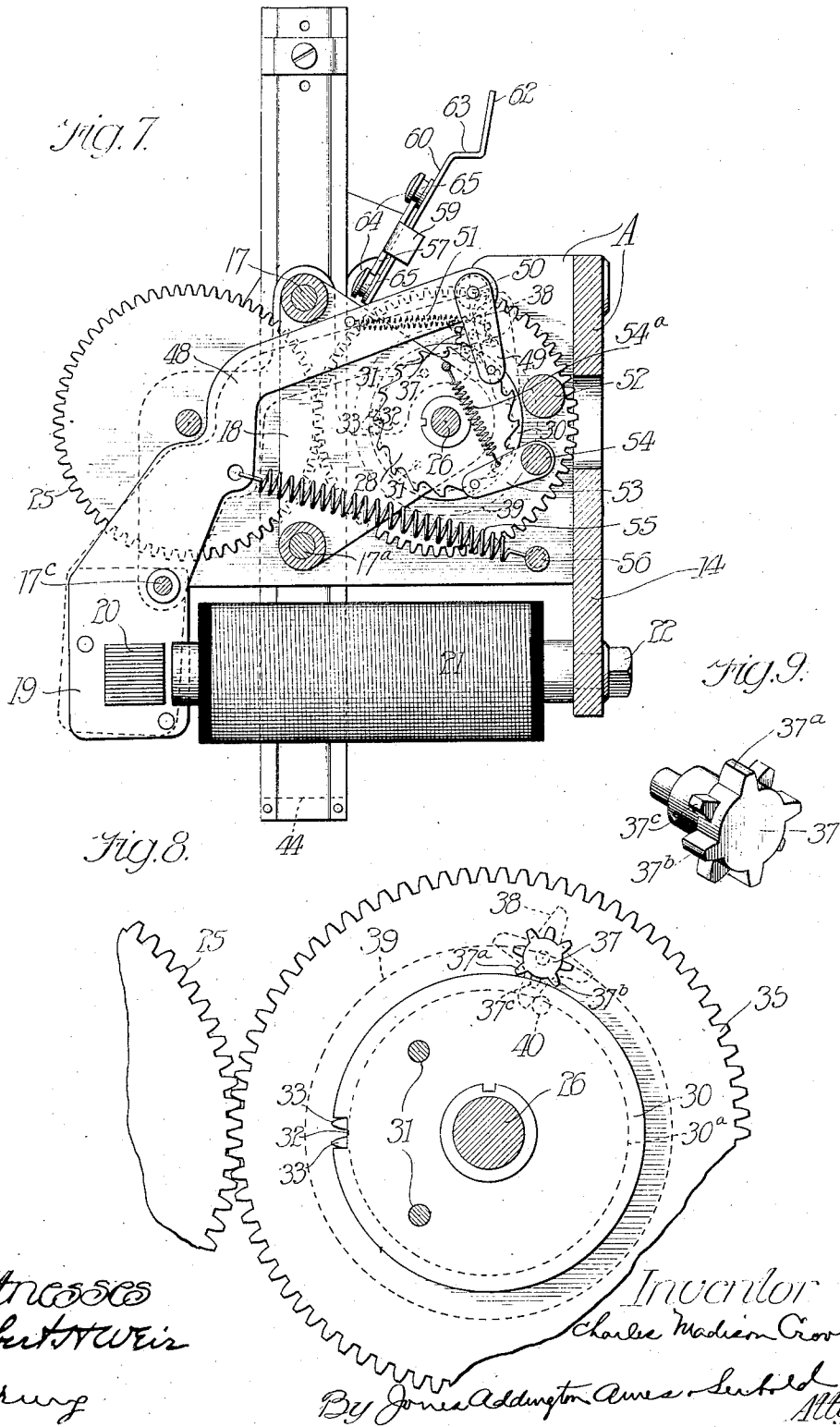
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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CARD-ELEVATING MECHANISM FOR TIME-RECORDERS.

1,064,054.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed June 20, 1911. Serial No. 634,304.

To all whom it may concern:

Be it known that I, CHARLES MADISON CROOK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Card-Elevating Mechanism for Time-Recorders; of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in time-recording devices, such as are used in shops, factories and offices, for the purpose of keeping a record of the arrival and departure of employees.

This application covers an improvement over the invention disclosed and claimed in my application Serial No. 561,152, filed May 12th, 1910, and has for its specific object the provision of electrically operated means whereby the position of the card within the holder may be shifted periodically, say every twenty-four hours and covering a period of from seven to fourteen days, or, in fact, any desired period.

A further object is the provision of improved adjustable means for holding any sized card in place.

These and such other objects as may be hereinafter set forth are illustrated in the accompanying drawings, in which—

Figure 1 represents an elevation of my device with the front of the outer casing removed; Fig. 2 represents a sectional view on the line 2—2 of Fig. 1 looking in the direction indicated by the arrows; Fig. 3 represents an enlarged elevation of the card-lifting mechanism; Fig. 4 represents a sectional view on the line 4—4 of Fig. 5 looking in the direction indicated by the arrows; Fig. 5 represents a top plan view of Fig. 3; Fig. 6 represents a sectional view on the line 6—6 of Fig. 3, looking in the direction indicated by the arrows; Fig. 7 represents a sectional view on the line 7—7 of Fig. 5 looking in the direction indicated by the arrows; Fig. 8 represents an enlarged sectional view on the line 8—8 of Fig. 5 looking in the direction indicated by the arrows; and Fig. 9 represents a perspective view of the star pinion.

Like numerals of reference indicate like parts in the several figures of the drawings.

In the embodiment illustrated in the ac-

companying drawings, I provide a box or casing 10 adapted to be set against or secured to the wall, or to a suitable support, against which the rear 10^a is supposed to rest. All of the mechanism is completely inclosed within the casing where it is secure from molestation or tampering.

Generally described, my invention comprises means whereby the time card of a workman can be placed face outward within a frame or carrier 11, and the workman, by turning a crank 12, causes suitable impression means positioned in front of the card and operated by the armature 13 of the magnet 14, to print the desired information on the card. The impression mechanism is provided with a plurality of impression wheels adapted to print the minutes, hours or any other information required, and while any suitable mechanism may be utilized, I prefer to use, and have illustrated, the form shown and described in my pending application Serial No. 466,486, filed December 8th, 1908. With respect to the auxiliary mechanism employed to print upon the card and to vary the lateral position, I prefer to use and have illustrated the form of mechanism shown and described in my pending application, Serial No. 561,152, filed May 13th, 1910. Hence, so far as the description of these portions of my invention are concerned, I have not considered it necessary or advisable to repeat such descriptions in the present case, but for such details refer to the above applications and confine the description in this case to the mechanism forming the subject-matter of my present invention which covers electrically actuated means for changing the elevation of the card and improved adjustable supporting means for the card itself.

In order to form a support for my improved mechanism, I provide an angular L-shaped casting A, the back of which, 14, is secured to supporting posts or lugs 15 projecting inwardly from the rear of the casting. On the end of the back 14 is mounted a supporting plate 16 fastened to the back by means of a pair of screws 16^a and at its outer end the plate is supported by a pair of pins or shafts 17, 17^a, the opposite ends of which are mounted in the side piece 14^a of the casting A. On these pins or shafts are mounted separating sleeves or spreaders 17^c. On the upper shaft 17 is mounted a central supporting plate 18 and on the lower

shaft 17^a is swingingly mounted a pair of armature plates 19 supporting an armature 20, the magnets 21 of which are secured to the back 14 in any desired manner, as, for instance, by screw-bolts 22.

The day wheel 23 is journaled on a shaft 24 mounted on the supporting frame A and bears on its outer face the names of the days of the week (repeated, if intended for a period of two weeks' use) and having a ratchet wheel 25 rigidly secured at its side through the medium of which the wheel is revolved, as will be hereinafter set forth.

Mounted in bearings within the supporting frame and parallel with the shaft 24 are a pair of shafts or spindles 26, 26^a, in line with each other, one end of the spindle 26 being mounted in the bearing 27 in the frame and passing through and supported by the plate 18. Rigidly mounted on the spindle 26 is a ratchet wheel 28 separated from the plate 18 by an integral collar or spreader 29.

Loosely mounted on the opposite side of the supporting plate 18 are a pair of locking disks 30, 30^a, secured together and to the plate 18 by means of pins 31. The disk 30 is provided with a single notch 32 and the disk 30^a, which is of slightly less diameter than the disk 30, is provided with a pair of stops 33 on either side of the notch 32 in the disk 30 and separated from each other by a space equal to the width of the notch 32, the space and notch forming a continuous groove or channel.

Rigidly mounted on the inner end of the spindle 26 is a gear wheel 34, the teeth 35 of which engage the teeth of the day wheel. A pin 36 passes through the wheel 34 near its outer periphery and on the inside is journaled a star pinion 37 shown in perspective in Fig. 9. On the outer face of the gear wheel 34 and journaled on the pin 36 is a pinion 38, the purpose of which will be explained later.

Rigidly mounted on the inner end of the spindle 26^a is a locking disk 39 from the inner face of which near its outer periphery projects a pin 40 so placed as to strike the pinion 38 once during its revolution. The disk 39 is provided with an integral sleeve or spreader 39^a adapted to bear against the inner face of the supporting plate 16. The spindle 26^a passes through the supporting plate 16 and on its outer end is mounted a ratchet wheel or pinion 41 adapted to operate the card-elevating mechanism, as will be explained later.

On the outer face of the plate 16 is mounted a vertical guiding member 42 on which is slidably mounted a rack bar 43, the teeth 43^a of which are adapted to engage the teeth of the pinion 41. The rack bar is slidably held by means of oppositely disposed pairs of guiding pins 45 provided with grooves 46

within which the edges of the guiding bar fit. The downward movement of the rack bar 43 is limited by means of a stop 44 mounted on the bottom of the guiding member 42. A stop or plate 47 is mounted on the upper end of the rear of the guiding bar to prevent the rack bar from sliding off the end in the event that it is thrown out of engagement with the pinion 41.

Referring now to the means by which the several gear wheels are actuated; extending upwardly from the armature support 19, and in fact formed from an extension of one of the supporting sides, is an arm 48 forming with the armature supporting member a bell crank lever with the spindle 17^c as a pivot. On the extreme end of this arm and over the top of the gear wheel 28 is an actuating dog 49 swingingly mounted on a pivot 50 in the end of the arm. A spring 51 normally under tension is attached to the actuating dog and the arm for the purpose of pulling the dog 49 into engagement with the teeth of the ratchet 28 when the arm is swung backwardly by the movement of the armature. A stop or post 52 is mounted on the frame adjacent the end of the actuating dog and so placed as to be engaged thereby at the end of the stroke of the dog, serving to prevent an overthrow. A locking dog 53 is mounted on the post 54 below the actuating dog and held normally against the teeth of the ratchet wheel by means of a spring 54^a. When the actuating dog forces the ratchet wheel forward the dog 53 slides over the end of the tooth against the tension of the spring and is pulled backwardly by the spring to engage the next tooth and thus lock the wheel in place. The lever 48 also has a comparatively heavy spring 55 secured thereto and to a post 56 on the frame, the spring normally tending to hold the armature out of engagement with the magnet 21. It is evident, therefore, that as the magnet is energized periodically the lower arm of the bell crank lever or armature support, is pulled forwardly, raising the arm 48 against the tension of the spring 55 and pulling the actuating dog over a tooth. As the magnet becomes deenergized the spring 55 pulls the arm forwardly and forces the ratchet ahead one tooth. The gear wheel 34 on the opposite side of the supporting frame 18 being rigidly mounted on the shaft or spindle 26 also revolves with the ratchet 28, carrying with it the star pinion 37 which slides over the outer periphery of the disks 30, 30^a. By referring to the perspective view of the star pinion, as shown in Fig. 9 and also in Fig. 10, it will be noted that as the disks 30, 30^a revolve the opposite faces of two adjacent full teeth 37^a, 37^b, slide on the outer periphery of the disk 30, and the intermediate half tooth 37^c being carried over the outer periphery of the disk 30^a. When, during the

course of the revolution of the gear 34, the half tooth 37 strikes the projecting lug 33 on the disk 30^a the full tooth is in position to enter the notch 32 in the disk 30 and the corresponding space between the lugs 33 on the disk 30^a, and as the gear 34 advances another notch the star pinion is revolved one notch, turning out of engagement with the pin, and again commences to travel over the outer periphery of the disk. As heretofore explained, on the opposite end of the short spindle 36, on which the star pinion is mounted, is also mounted a pinion 38 adapted to engage the stop 40 on the disk 39 journaled on the shaft 26^a and on the end of which is mounted the rack-engaging pinion 41. It is, therefore, evident that so long as the pinion 38 is engaged by the stop 40 the continued revolution of the gear 34 will revolve the pinion 41, raising the rack 43 within the guide 42. The card-engaging mechanism is adjustably mounted on the upper end of the rack, as will be fully explained later, and consequently, as the rack is raised, the card is raised a corresponding distance. When, however, the rack has reached its upward limit of movement the star pinion is in position to enter the notch 32 in the disk and at the next actuation is revolved, at the same time turning the pinion 38 one notch and releasing the stop 40. As soon as the stop 40 is released the rack and card-holding means, by reason of its own weight, slides downwardly along the guide in position to be again raised when the stop 40 is again brought into engagement with the pinion 38. By adjusting the number of teeth of the various wheels and the position of the stop the mechanism may be set for any number of days required. In the machine illustrated, the card-raising mechanism is arranged to be actuated once in twenty-four hours; hence, while the impression mechanism and the ink-ribbon mechanism moves every minute, the only movement of the card-elevating means takes place once in twenty-four hours, when the card is raised a sufficient distance to permit the printing, indicating the time, to occupy a line higher than formerly.

Referring now to the specific mechanism for holding the card in position to be raised, this is best shown in Figs. 3, 5 and 6. A supporting plate 57 is secured to the top of the rack 43, preferably by having a portion of its center punched out, forming an ear 58, turned at right angles to the plate and secured to the top of the rack. A stop 59, preferably formed integral with the plate, in the shape of a turned over lug or ear, is also provided in order to keep the sliding member 60 from passing out of engagement with the plate. A similar stop illustrated in the form of a screw 61 is inserted in the front of the plate to keep the movable mem-

ber from sliding off the plate. This sliding member is formed with an upwardly projecting ear 62 having a shelf 63 upon which the card rests, when placed within the card guide. This sliding member is preferably formed from a single strip of metal and is bent into position, as shown in Fig. 6. On the outer face of the main body of the sliding member are provided four guiding pins 64, similar to those shown at 45, grooved at 65 and adapted to hold the edges of the fixed supporting plate 57, thus permitting the card rest to slide along the entire length of the plate 57.

It will thus be seen that I have devised a simple and inexpensive means for holding the card in place and at the same time made the actual holding means laterally movable in order to accommodate cards of different widths.

I have thus fully described my invention so far as I consider it necessary with relation to the specific subject-matter to be claimed and do not limit myself to the specific mechanism employed.

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

1. In a time recorder, the combination with a card-holder, of card-elevating mechanism associated therewith, electrically operated means for periodically raising said elevating mechanism a predetermined distance, and means for returning said mechanism to its initial position after it has reached a predetermined point, said means comprising a plurality of connecting gear and ratchet wheels, an electro-magnet, an armature, an arm adapted to be swung by the movement of said armature, and a dog mounted on said arm and adapted to engage the first of said ratchet wheels.

2. In a time recorder, the combination with a card-holder, of card-elevating mechanism associated therewith, electrically operated means for periodically raising said elevating mechanism a predetermined distance, means for returning said mechanism to its initial position after it has reached a predetermined point, said means comprising a plurality of connecting gear and ratchet wheels, an electro-magnet, an armature, an arm adapted to be swung by the movement of said armature, and a dog mounted on said arm and adapted to engage the first of said ratchet wheels, and means for breaking the mechanical engagement between said gear and ratchet wheels at a predetermined time.

3. In a time recorder, the combination of a card holder, of card elevating mechanism including a rack, electrically operated means for moving said mechanism comprising a magnet, an armature, a shaft, a ratchet mounted on said shaft, means for transmit-

ting the movement of said armature to said
ratchet, said means including a notched disk
rigid on said shaft, and means for permit-
ting said rack to resume its initial position
5 after a predetermined number of upward
movements.

In witness whereof, I have hereunto sub-

scribed my name in the presence of two
witnesses.

CHARLES MADISON CROOK.

Witnesses:

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F. H. DRURY.