

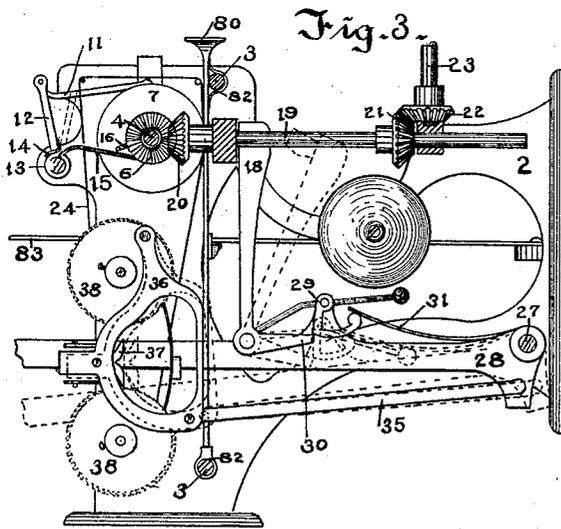
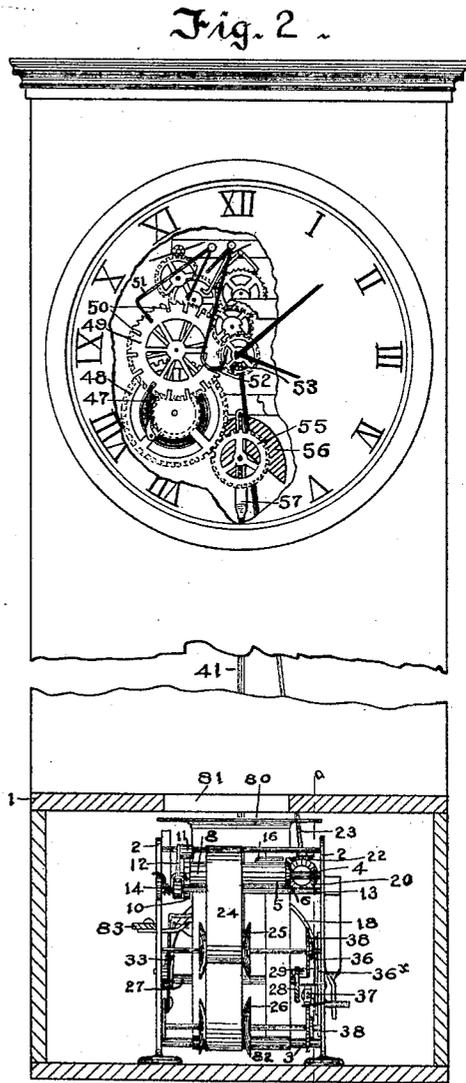
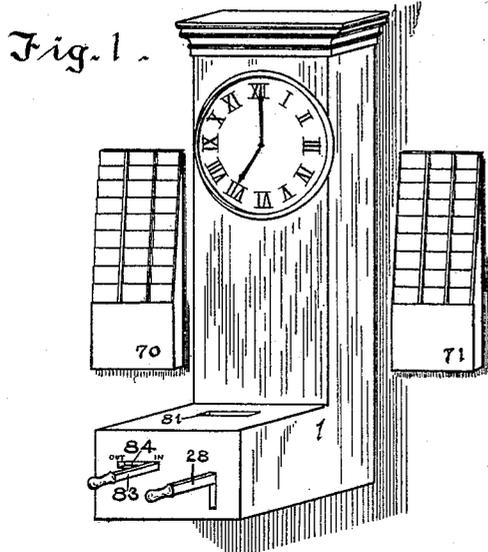
(No Model.)

3 Sheets—Sheet 1.

D. M. COOPER.
WORKMAN'S TIME RECORDER.

No. 528,223.

Patented Oct. 30, 1894.



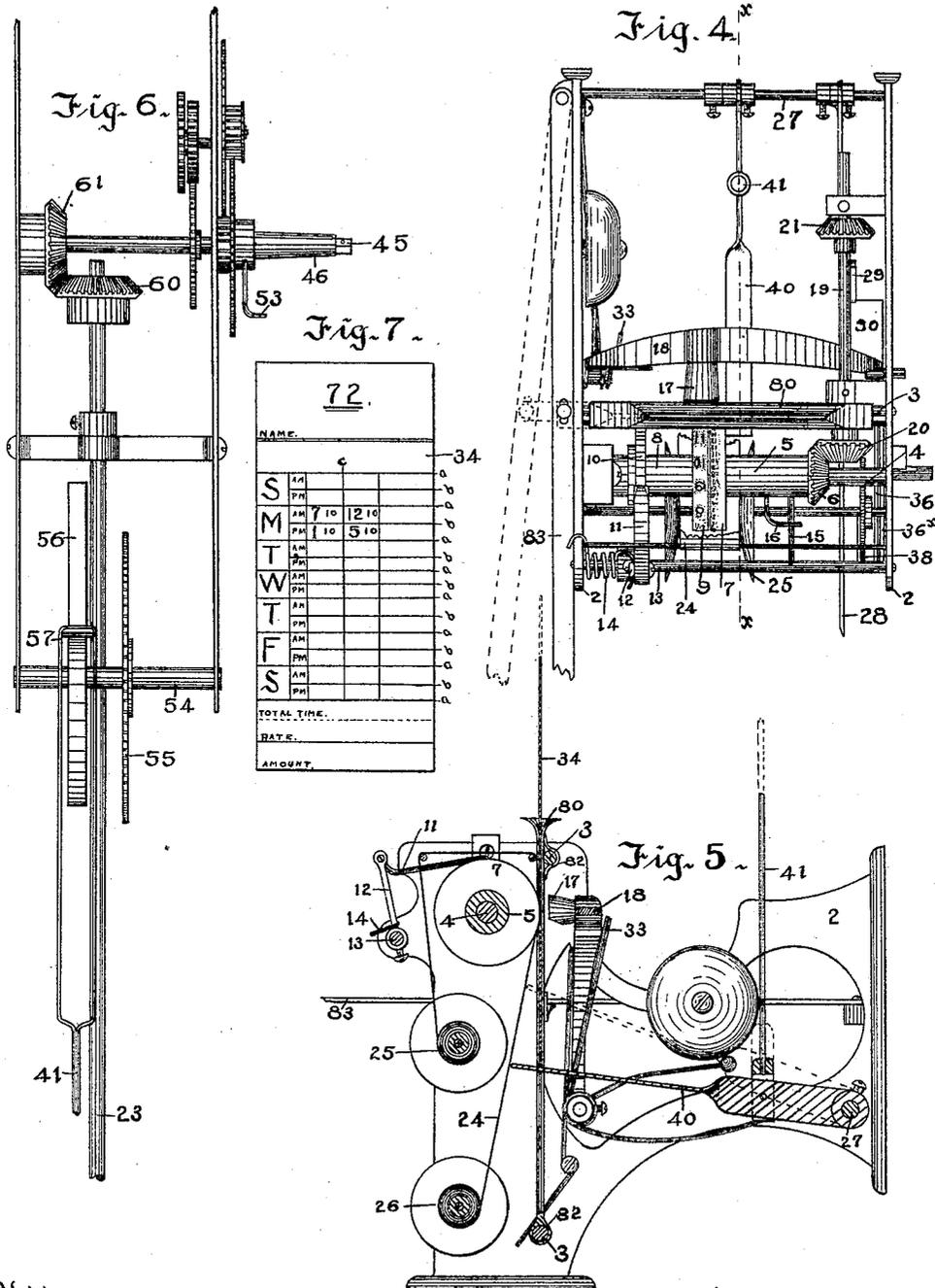
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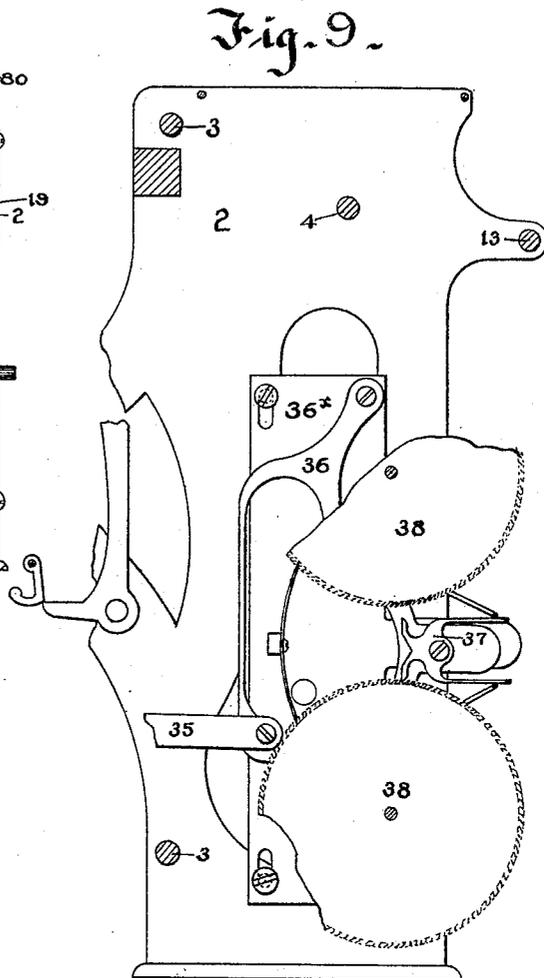
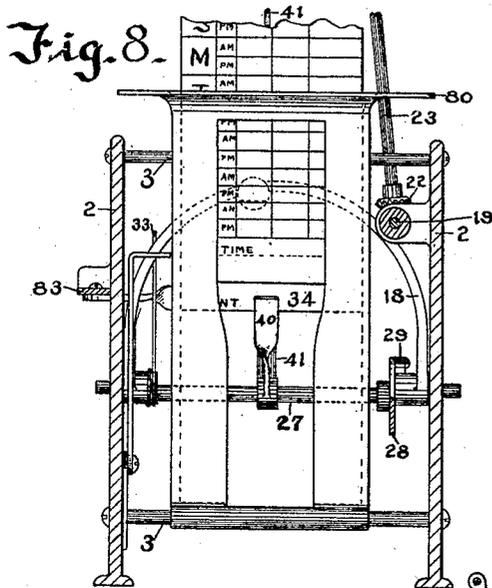
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3 Sheets—Sheet 3.

D. M. COOPER.
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UNITED STATES PATENT OFFICE.

DANIEL M. COOPER, OF ROCHESTER, NEW YORK.

WORKMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 528,223, dated October 30, 1894.

Application filed May 14, 1894. Serial No. 511,223. (No model.)

To all whom it may concern:

Be it known that I, DANIEL M. COOPER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Workmen's Time-Recorders; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to machines known as workmen's time recorders, and it has for its object to produce a form of apparatus by means of which a workman personally records upon his individual card or time check the time when he enters or leaves the factory, or both; and said card being adapted to receive marks indicating the exact number of hours he was present at the factory during a given period, say one week, the amount of wages due him at the end of this time can be readily computed without the necessity heretofore existing, of transcribing from a continuous strip of paper several entries in order to compute the amount of wages.

In carrying out the invention I provide a time stamp embodying a suitable printing mechanism and adapted to print upon a suitable check or card the exact time of the operation of the stamp, and the relative positions of the marks made upon the card by the stamp indicating whether the workman is entering or leaving the factory and also the day and which portion of the day, that is, whether in the forenoon or in the afternoon, and it consists in certain improvements in construction and combinations of parts, all as will be hereinafter described and the novel features pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a view of my recorder contained in a suitable case showing also two receptacles for the cards arranged in proximity thereto, one adapted to contain a card while the workman is in and the other while he is out of the factory; Fig. 2, a front elevation of the apparatus with portions of the casing broken away to show the construction of the parts; Fig. 3, a side view of the marking stamp with one side of the frame removed; Fig. 4, a plan view of the marking stamp;

Fig. 5, a sectional view on the line $x-x$ of Fig. 4; Fig. 6, a side view of a portion of the clock movement showing the means for transmitting motion to the marking apparatus below; Fig. 7, a view of one of the cards used in connection with my improved apparatus; Fig. 8, a cross-sectional view of the time stamp; Fig. 9, a section on the line $a-b$ of Fig. 2.

Similar reference-numerals in the several figures indicate similar parts.

Inasmuch as the principal portion of my invention is directed to the time printing apparatus, I will first describe this, and then the means I have shown for causing the various operations and movements, the mechanism for causing these movements being capable of wide variation. This time stamp is located preferably in the lower portion of the casing 1 and embodies a suitable frame having sides 2 connected by suitable cross rods 3. Also extending across said frame is a stationary arbor 4 upon which is loosely mounted a sleeve 5 having a beveled gear at one end and also a marking wheel 7 having numbers on its periphery from 1 to 59, and indicating the minutes of the hour. Also mounted upon the arbor 4 is a sleeve 8 having a marking wheel 9 with raised figures thereon indicating the hours from one to twelve and having a ratchet wheel 10 adapted to be operated by a pawl 11 connected to an arm 12 on a rock-shaft 13, which latter is moved in one direction by a spring 14 and in the other by an arm 15 actuated by an arm 16 connected to the sleeve 5. At each rotation of the sleeve 5, the arm 16 thereon will, through the parts just described, cause the movement of the hour-marking wheel 9 to bring the next number thereon to the printing position, that is, opposite an elastic faced hammer 17 carried by a pivoted frame 18 journaled on suitable pivots on the sides of the frame.

19 indicates a shaft or arbor journaled in bearings in the frame and having at one end a beveled pinion 20 meshing with the pinion 6 and also having a beveled pinion 21 meshing with a corresponding pinion 22 on a vertically extending shaft 23, which is rotated continuously from the clock movement, causing a complete revolution of the minute printing wheel once every hour and through the

means described rotating the hour wheel 9 the distance of the space between two of the characters on its periphery at each complete rotation.

5 24 indicates a suitable inking ribbon connected at opposite ends to spools 25 and 26 passing over the faces of the printing wheels 7 and 9 and between them and the hammer 17. Pivoted loosely upon a shaft 27 at the rear of the casing is a lever 28 extending out through the casing of the device, as shown in Fig. 1, and provided with a suitable handle, and pivoted upon the lever is a pawl or trip 29 adapted to engage with an arm or heel 30 on the pivoted hammer frame 18 when said lever is moved downward, being held in position by the spring 31, but permitted to slip by said arm 30 when the lever is raised until said pawl engages the top of the arm 30, as shown in Fig. 3, when the downward movement of the lever will cause the hammer frame 18 to be moved to the position shown in dotted lines in Fig. 3, and as it reaches the lower end of its movement said frame 18 will be released and projected forward by the spring 33 causing the time, indicated by the printing wheels, to be marked upon the card 34 inserted between the ribbon and the hammer 17.

30 Connected to the extension of the lever 28 is a rod 35 pivoted to the lower end of the frame 36 which serves to cause the feed of the ink ribbon through a suitable double pawl 37 at each oscillation of the lever 28. This frame 36 is mounted on a plate 36^x capable of being shifted up or down to cause the ends of the pawl to engage with one or the other of ratchet wheels 38 which are secured to the arbors of the spools carrying the inking ribbon, as shown in Fig. 9, causing the feed of the ribbon in opposite directions, but the construction of this ribbon-reversing and actuating device may be changed as desired, and forms no part of my present invention.

45 80 indicates the card-holder composed of sheet metal having an open mouth accessible through a suitable aperture 81 in the casing 1 and engaging the card at the sides only, being open at front and back. Said holder is connected by straps 82 to the guides 3, 3, as in Fig. 5, and is adapted to slide laterally upon them, being connected to a lever 83 pivoted to the frame 2 and extending through a slot 84 in the casing 1, the casing on opposite ends of the slot being marked at the left with the word "Out" and on the right with the word "In."

A description of the card on which the time is to be marked now will enable the construction of the parts to be more readily understood.

60 The card 34 is shown in Fig. 7, and is adapted to be marked with the number and name of the workman and is ruled or divided by horizontal lines *a* into the days of the week commencing with Sunday at the top and ending with Saturday at the bottom, and

each of these daily divisions is divided into two horizontal sections by a line *b* indicating a. m. or p. m., and all of the divisions are divided into two sections by a vertical line *c*, the one at the left for containing the mark or hour indicating when the workman enters the factory, and the one on the right when he leaves it. A column is also provided at the extreme right for containing the total number of hours the employé is at work during the forenoon and afternoon, and the amount due him per hour can be indicated on the card so that the total number of hours and the amount due him at the end of the week can be readily computed without transcribing anything to separate books or accounts, the card containing a full record. Thus on the card shown, the workman entered the factory on Monday at 7.10 a. m., left at 12.10 p. m., entered again at 1.10 p. m., and left for the day at 5.10 p. m., having worked nine hours, and if his wages are to be fifty cents per hour he is entitled to four dollars and fifty cents for his day's work. It will be understood that the other days are marked correspondingly.

To return to the card-holder, it will be noted that as shown in Figs. 5 and 8, it is not provided with a stationary bottom for engaging the end of the card when inserted, but in lieu thereof a movable abutment is employed for limiting the distance the card can be inserted, and in the present embodiment this is formed by a lever 40 pivoted loosely on the arbor 27 and having a vertically extending lifting rod 41 by means of which it is raised every twelve hours an amount equal to the distance between the centers of the horizontal spaces on the card, that is, at half-past twelve, the abutment 40 is raised permitting the introduction of the card in the holder only far enough to bring the center of the next horizontal space below the one previously marked, in line with the marking wheels of the time stamp.

The specific construction of the mechanism shown for operating the time-stamp and the movable abutment 40 is not essential, but I have shown one form of device that I find is well adapted to the purpose.

The operating devices shown are those employed in ordinary striking clocks, that is to say, embodying two springs and gear trains, one for operating the time movement proper and the other the striking mechanism, which form I prefer to employ, inasmuch as part of the apparatus (the movable abutment 40) requires to be operated intermittently, thus obviating the necessity of requiring a great amount of work of the spring operating the time movement proper. In Fig. 2 I have not shown the whole of the time movement and it is sufficient that 45 indicates the arbor carrying the minute hand, and 46 the tubular arbor or sleeve carrying the hour hand, suitable gearing being provided from the actuating spring (not shown) and between these arbors, as in Fig. 6. 47 indicates the spring ordinarily op-

erating the striking mechanism, 48 the gear connected thereto and 49 the wheel operated mediately therefrom, having notches 50 in its periphery equal distances apart and into
 5 which the end of the striking train controlling arm 51 is adapted to drop. These recesses instead of being unequal distances apart, as when a bell striking mechanism is employed are spaced regularly, so that each
 10 time the train is released, the gear 48 moves the same distance. The train releasing mechanism is of the usual description embodying an arm 52 adapted to be actuated by an arm 53 on the arbor 46 of the hour wheel, causing
 15 the release and operation of the train when the hour hand indicates half-past twelve.

Supported in suitable bearings, preferably beneath the clock movement, is an arbor 54 having secured to it a gear 55 meshing with
 20 the gear 48 and adapted to be rotated thereby. Also secured to said arbor is a cam 56 co-operating with the top of a yoke 57 which rests upon it, said yoke being formed upon or secured to the rod 41 moving the abutment 40
 25 in the card holder. Motion is communicated to the minute-wheel 7 of the marking stamp, below the clock, through the vertical shaft 23 which is provided at its upper end with a bevel gear 60 meshing with a corresponding
 30 gear 61 on the arbor carrying the minute hand.

The connections and relative arrangements of the parts between the arbor 54 carrying the cam and the time mechanism are such that the cam 56 will be given a complete rotation once a week and at half-past twelve
 35 o'clock Saturday night, the end of the yoke 57 will drop from the highest part of the cam to the lowest, causing the abutment 40 to return to the lowermost part of the card receiver or holder. These connections are also
 40 so arranged that the rotation of the cam by the release of the train every twelve hours, will cause the abutment 40 to move upward in the card receiver the distance between the
 45 centers of two of the horizontal spaces on the card, thereby decreasing the depth of the card receiver, every twelve hours, or half day, until Saturday night and then on Sunday morning leaving it of maximum depth so that the
 50 card may be inserted nearly its full length, in position to print on the top line of the card shown in Fig. 7.

In practical use the apparatus just described is placed at the entrance to the factory and two card racks are used as in Fig. 1,
 55 one on the left indicated by 70 being adapted to contain the workmen's cards while they are out of the factory, and the one 71 on the right, while they are in the factory. When
 60 the workman enters the factory in the morning, he takes his time card from the rack 70, inserts it in the card receptacle of the stamp, the abutment 40 at the bottom being at such an elevation that the horizontal division of
 65 the card indicating the forenoon of the proper day is in line with the centers of the mark-

ing wheels and opposite the hammer, and he then moves the lever 83 to the right or toward the word "In," bringing the vertical column
 at the left in line with the hammer, and then
 70 moves the lever 28 upward causing the pawl 29 to slip over the arm 30 of the hammer frame and as the lever is moved down, said frame will be drawn back and then released stamping the time on the card and ringing the bell or
 75 alarm. The card is then removed and placed in the rack 71. When the workman goes out at noon, he removes his card from the rack 71, inserts it in the card receiver, pulls the lever 83 to the left, toward "Out," and operating
 80 the lever 28 stamps the time on the card, as before, and then places the card in rack 70. The mechanism actuating the abutment 40 is operated at half-past twelve, and said abutment raising brings the "p. m." space on the
 85 card, in line with the marking wheels so that when the workman returns he removes his card from the rack 70, stamps the time thereon, as described, and places it in the rack 71, and at night, when he leaves the fac-
 90 tory, he stamps his card and returns it to rack 71, leaving behind him an accurate record of the time he has been at work, which may be transferred to a record book if desired at the end of the day or at the end of the week,
 95 and the card will indicate the full number of hours he has worked and the amount of wages due him may be at once computed and paid him upon presenting his card to the cashier.

By the use of this apparatus the necessity, 100 heretofore existing, of transcribing a large number of figures from a tape to a book and the employment of a separate key for each workman is obviated and a single apparatus will serve for any reasonable number of employés, the record being such that there is no
 105 opportunity for dispute.

It will be noted that as the abutment in the card receiver moves progressively toward the
 110 mouth of the receiver and causes the stamp to mark at the top of the card first, there is no opportunity for a workman who has been absent a day to fraudulently stamp the card in the space devoted to the time he was absent, because the abutment prevents its
 115 insertion far enough to bring a previous marking space in line with the marking wheels.

As stated, it is immaterial as far as the broad features of the invention are concerned what particular kind of time stamp or what
 120 means for limiting the insertion of the card be employed and various modifications of the devices for causing the relative movements of the card and time stamp will readily occur to those skilled in the art.

It will be understood that the abutment 40 could be actuated away from, instead of toward, the stamping wheels and the cards could have the days of the week reversed from the position shown, but this would necessitate the employment of additional means
 130 to guard against the cards being fraudulently

marked after the abutment had moved to allow the appropriate subdivision on the card to pass the marking wheels.

Where the term "time stamp" is used in the claims it is to be understood in the absence of further limitations, to mean the hour and minute marking wheels and devices for marking an impression or imprint upon a card or slip placed between them.

The abutment constituting the bottom of the card receiver need only move relatively to the marking wheels, and it is immaterial whether or not it is movable relatively to the sides or edges of the card receiver or holder.

I claim as my invention—

1. In a time recorder, the combination with a time stamp, of a card guide or receiver adjustable relatively to the stamp in one direction, an actuating device for causing the stamp to mark a card in the receiver, an abutment for limiting the movement of a card relatively to the stamp, said abutment being independent of the stamp actuating device, and adjustable in a direction at an angle to the before-described movement of the guide, whereby the card may receive two or more marks in the same or different planes, substantially as described.

2. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver adjustable relatively to the stamp in one direction and a movable abutment or stop for engaging a card automatically movable relatively of the stamp in another direction, substantially as described.

3. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver, an abutment limiting the movement of the card relative to the time stamp and time mechanism actuating said abutment intermittingly, substantially as described.

4. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver, an abutment limiting the movement of the card relative to the time stamp, and intermittingly operated mechanism for actuating the abutment, substantially as described.

5. In a time recorder, the combination with a time stamp, and operating devices therefor, of a card guide or receiver, an abutment limiting the movement of the card relative to the time stamp, and intermittingly operated mechanism controlled by a time movement for actuating said abutment, substantially as described.

6. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver laterally adjustable of the stamp, an abutment limiting the movement of the card relative to the stamp,

and mechanism for moving said abutment, and a time movement controlling said mechanism and permitting it to cause the abutment to move a limited distance every twelve hours, substantially as described.

7. In a time recorder, the combination with the time stamp embodying marking wheels, and a time movement, of a card guide or receiver, an abutment limiting the movement of the card relative to the marking wheels, actuating mechanism for moving the abutment and controlled from the time movement of the stamp, substantially as described.

8. The combination with the time stamp embodying marking wheels, and a time movement, of a card guide or receiver, an abutment limiting the movement of the card relative to the marking wheels, a cam operating the abutment, and a motor for moving the cam, controlled by the time movement, substantially as described.

9. The combination with the time stamp embodying marking wheels and a time movement, of a card guide or receiver, an abutment limiting the movement of the card relative to the marking wheels, a rotary cam operating the abutment, and operating mechanism controlled by the time movement for intermittingly moving the cam at intervals of twelve hours each, substantially as described.

10. The combination with the time stamp embodying marking wheels, and a time movement operating them, of the card receiver open at front and rear, and movable relatively to the marking wheels, the movable abutment at the bottom of said receiver, actuating devices for moving said abutment intermittingly toward the marking wheels, a time mechanism for controlling it, a movable hammer cooperating with the marking wheels, and operating devices therefor, substantially as described.

11. The combination with the time stamp embodying marking wheels, a hammer and a time movement, of a vertically extending and laterally movable card receiver, an abutment at the bottom of said card receiver and operating devices controlled by the time movement for raising said abutment a certain distance at intervals of twelve hours, substantially as described.

12. In a time recorder, the combination with a time movement, a separate motor mechanism controlled thereby, a marking stamp operated by the time movement, and a movable abutment operated toward said marking stamp by the motor and serving to limit the insertion of a card in the stamp, substantially as described.

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Witnesses:

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