A. RYDQUIST.

TIME RECORDER.

APPLICATION FILED MAR. 5, 1910.

1,067,442.

Patented July 15, 1913.

4 SHEETS—SHEET 1.

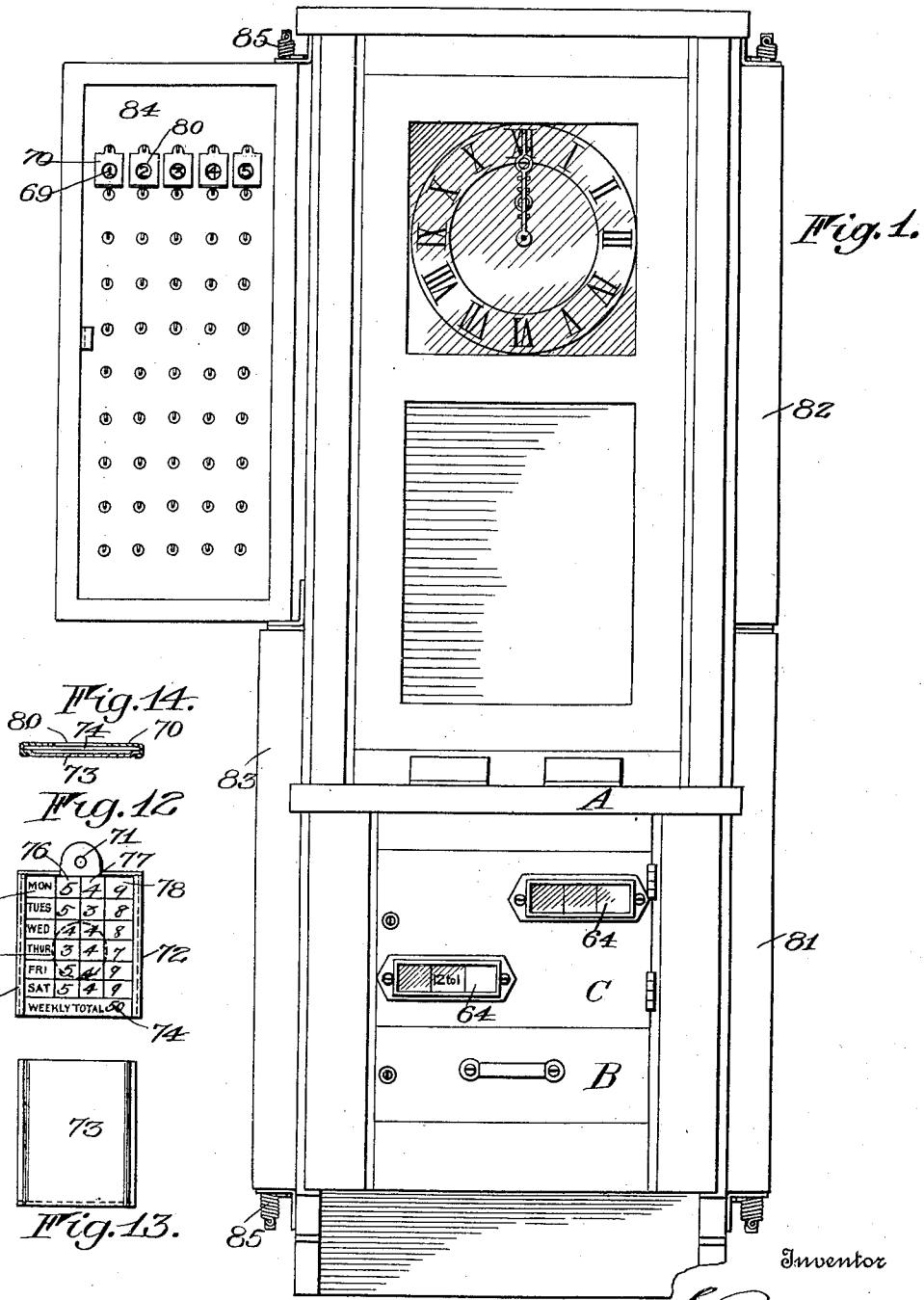


Fig. 1.

Fig. 14.

Fig. 12

Fig. 13.

Witnesses

Walter R. Payne

H. R. Simms

Inventor

Adolph Rydquist

By Church & Flick

his Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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4 SHEETS—SHEET 2.

Fig. 2.

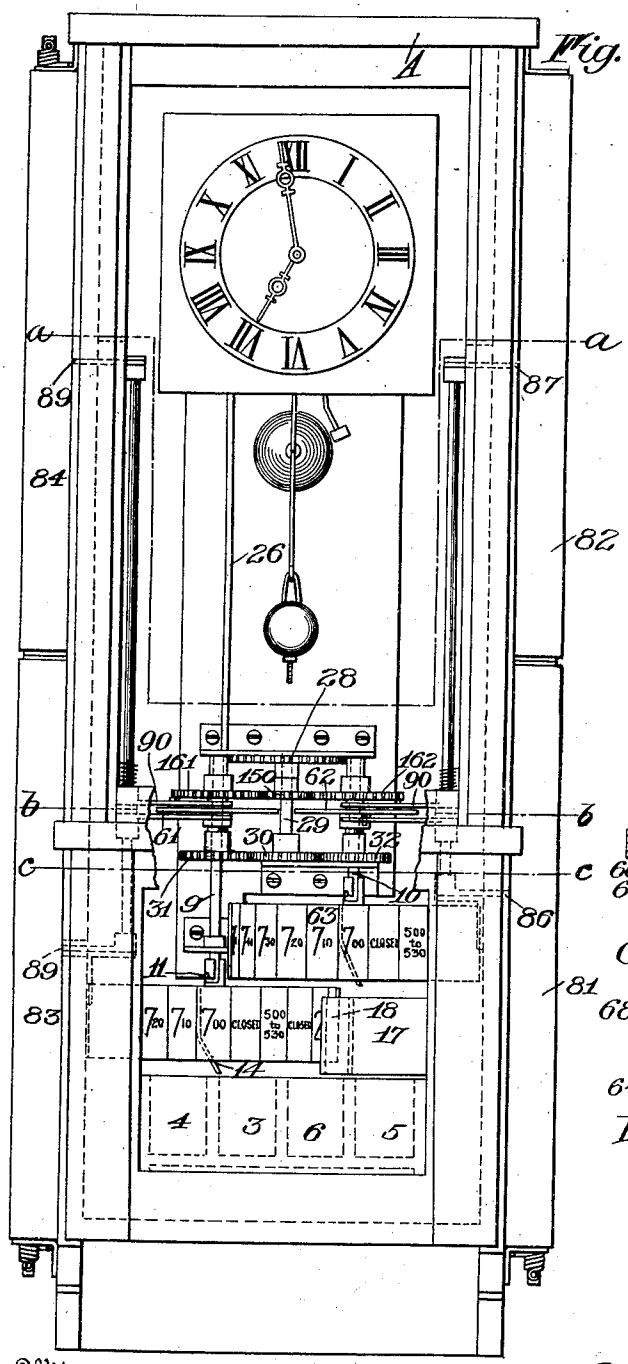
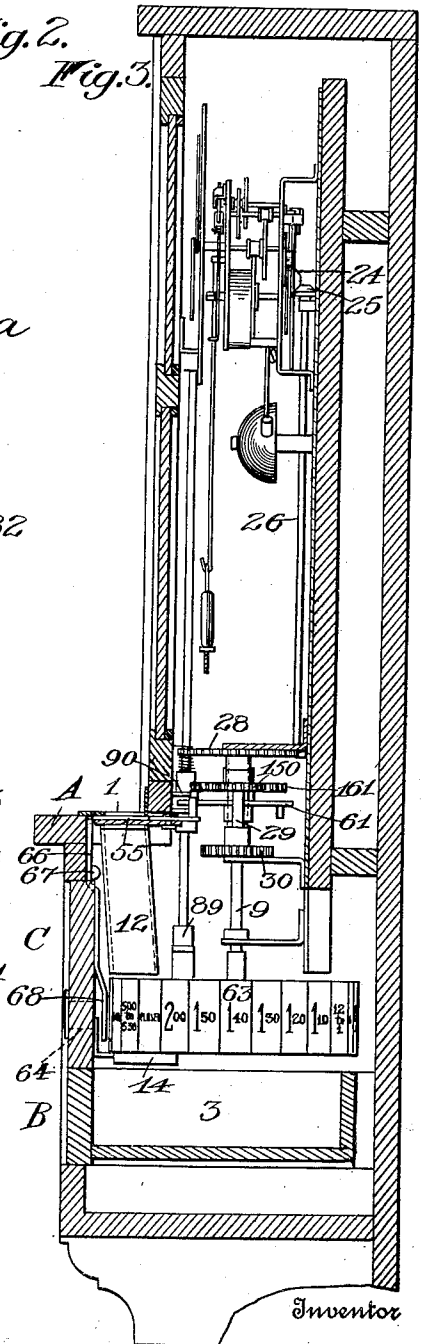


Fig. 3.



Witnesses

Walter B. Payne

H. W. Simms

Inventor

Adolph Rydquist

By Church & Rick

his Attorneys

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4 SHEETS—SHEET 3.

Fig. 4.

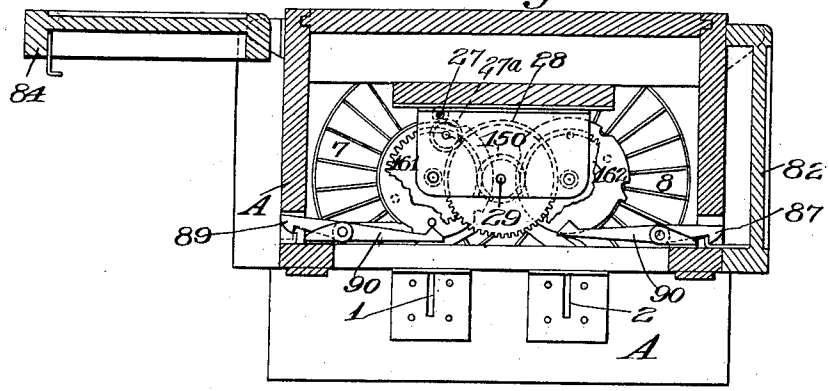


Fig. 5.

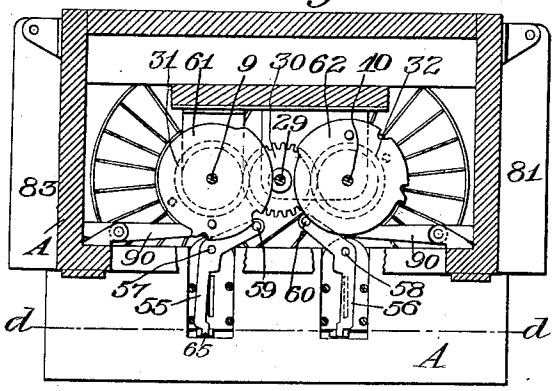


Fig. 7.

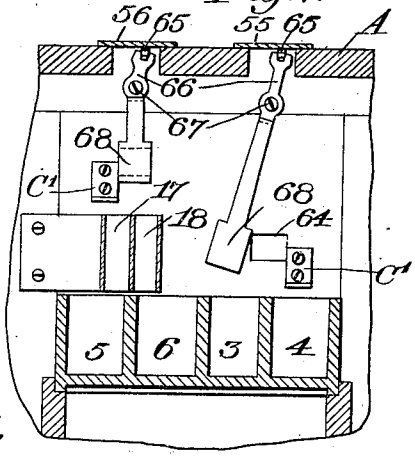


Fig. 8.

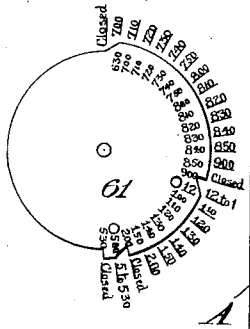
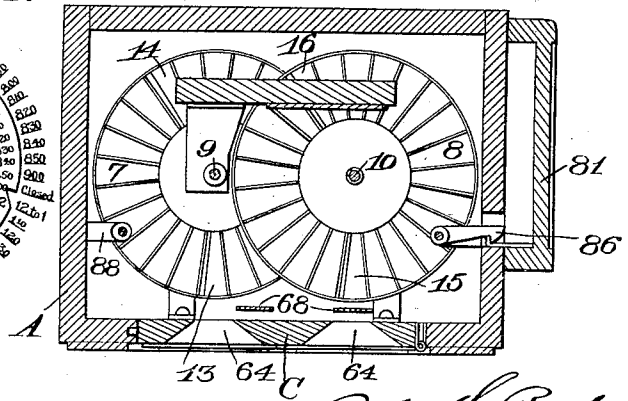


Fig. 6.



Witnesses

Walter B. Payne.

H. H. Simms

Inventor

Adolph Rydquist

By Munn & Rick

his Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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4 SHEETS—SHEET 4.

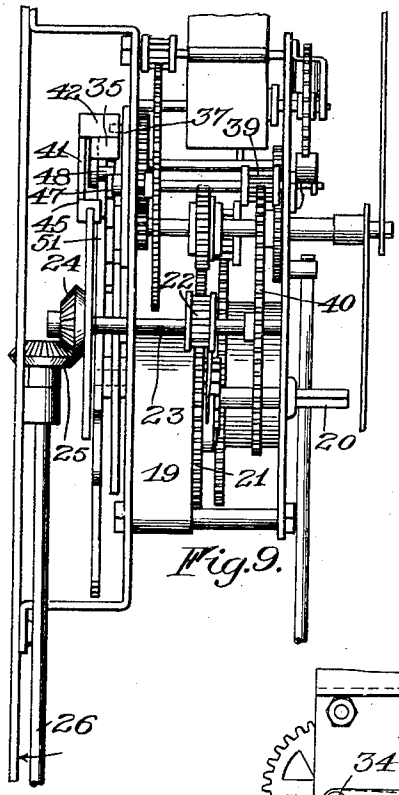


Fig. 9.

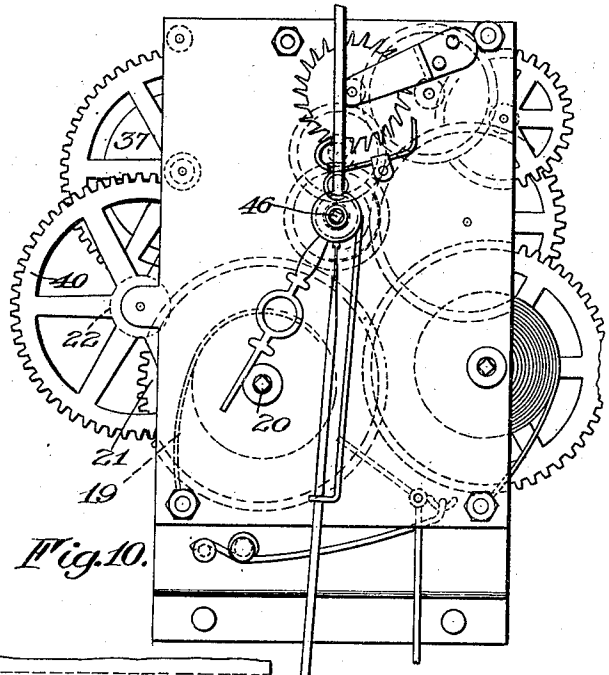


Fig. 10.

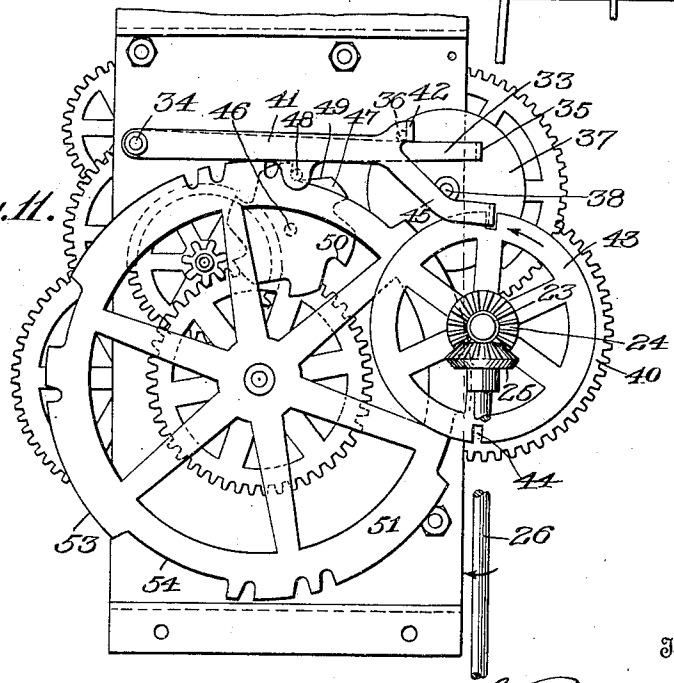


Fig. 11.

Witnesses

Walter B. Payne

H. W. Simms

Inventor

Adolph Rydquist

By Church & Church

his Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ADOLPH RYDQUIST, OF ROCHESTER, NEW YORK.

TIME-RECORDER.

1,067,442. Specification of Letters Patent. Patented July 15, 1913.

Application filed March 5, 1910. Serial No. 547,433.

To all whom it may concern:

Be it known that I, ADOLPH RYDQUIST, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in 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.

The present invention relates to time recorders for workmen and it has for an object to provide a construction in which the labor of collecting the time of workmen is reduced to a minimum and it is impossible for one workman to record accidentally the time of another.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a front view of the time recorder constructed in accordance with this invention, showing one of the check holders in open position; Fig. 2 is also a front view of the time recorder with parts of the front wall removed and broken away for the purpose of illustrating interior parts; Fig. 3 is a vertical section through the time recorder; Fig. 4 is a horizontal section on the line *a*—*a* of Fig. 2; Fig. 5 is a horizontal section on the line *b*—*b* of Fig. 1; Fig. 6 is a horizontal section on the line *c*—*c* of Fig. 1; Fig. 7 is a detail vertical section on the line *d*—*d* of Fig. 5; Fig. 8 is a diagram of the disks or cams which control the check inlets to the machine, both cams being the same in this instance; Fig. 9 is a side view of the time mechanism the motor, and the control for the latter; Figs. 10 and 11 are respectively front and rear views of the same parts; Fig. 12 is a view of the check showing one of its members removed for the purpose of exposing the record; Fig. 13 is a detail view of the removed member, and Fig. 14 is a transverse section of the check.

In the embodiment of the invention herein illustrated, there is employed a time mechanism of any suitable construction, that herein illustrated being known and forming no part of the present invention, so it will not be specifically described. Combined with the time mechanism is a plurality of check receivers or compartments to which the checks of the workmen are to be delivered, the receiver or compartment for the check being determined by the time mechanism in any desired manner.

Preferably the casing A, which incloses the time mechanism, is provided with two check inlets 1 and 2, the first for a night force of workmen and the second for a day force. The casing may also inclose stationary compartments or other receivers 3, 4, 5 and 6 and two movable and preferably rotatable carriers, each containing a series of compartments or receivers 7 and 8, respectively. The compartments 3, 4, 5 and 6 are preferably formed in a drawer B removable from the casing while the carriers preferably rotate in different horizontal planes above the drawer and are detachably supported on shafts 9 and 10, respectively, by bayonet slot connections 11 or other suitable means. A door C permits access to the compartments 7 and 8 and carries stops C′ which lie below the carriers and prevent their being removed from their shafts when the drawer B is opened. The compartments 7 are movable or rotatable so as to be brought successively beneath the chute 12 of the coin inlet 1, while the compartments 8 may be successively brought beneath the chute 12 of the coin inlet 2. In addition to the compartments 7 and 8 the rotary carriers each may carry one or more chutes, the first of said carriers being in this instance provided with chutes 13 and 14 discharging checks received from the chute 12 into the compartments 3 and 4, respectively, while the second carrier has chutes 15 and 16 discharging checks received from the other chute 12 into the stationary compartments 5 and 6, respectively, the stationary chutes 17 and 18 being provided, if desirable, between the chutes 15 and 16 and their respective receptacles 5 and 6. The receptacles 3, 4, 5 and 6 are preferably larger than the receptacles 7 and 8 so that they are adapted to receive the bulk of the checks, receptacle 5 receiving checks deposited by those workmen who are on time at the beginning of the work day; receptacle 6 receiving the checks of those workmen on time

after noon or lunch hour; receptacle 3 receiving checks of those workmen on time at the beginning of the night work, and receptacle 4 receiving checks of those workmen on time after the midnight meal hour. The receptacles 7 and 8 are successively presented to the check inlets 12 every ten minutes after the commencement of the working hours and for an hour or two, in this instance two hours after each starting hour and for one hour after each meal hour.

To the end of effecting the movement of the receptacles there is employed a motor of any particular type. In this instance the frame carrying the time mechanism also carries a spring motor comprising a spring 19 secured at one end to the frame of the time mechanism and at the other end to the shaft 20 journaled in said frame and carrying a gear wheel 21 meshing with a pinion 22 on the shaft 23. The latter carries a beveled wheel 24 meshing with a beveled wheel 25 on the vertical shaft 26 extending downwardly in the casing A and provided at its lower end with a pinion 27. This pinion 27 meshes with an idler gear 27^a which in turn meshes with a large gear wheel 28 horizontally disposed within the casing A on a shaft 29 which also carries a gear 30 meshing with gears 31 and 32 arranged respectively on the shafts 9 and 10 that support respectively the carriers for the compartments 7 and 8.

The mechanism for controlling the motor that drives the carriers is preferably in the form of a main stop 33, in this instance pivoted at 34 to the frame of the time mechanism and having a nose or shoulder 35 movable into and out of the path of the projection 36 on a disk 37 which is mounted on the shaft 38 connected by a pinion 39 to the gear wheel 40 on the shaft 23. Also cooperating with the projection 36 is an auxiliary stop 41, preferably pivoted at 34, and connected with the stop 33 in such a manner that when the latter is moved into the path of the projection 36 the shoulder 42 on the stop 41 will be moved out of the path of said projection 36. This connection is such that the stop 33 may then move out of the path of the projection and the stop 41 also may be maintained out of the path of the projection so that the motor may operate a predetermined amount. In this instance this amount is determined by a controlling device or wheel 43 carried by the shaft 23 and provided at diametrically opposite points with notches 44. The controlling wheel 43 may be engaged by an arm 45 rigid with the stop 41 and when the arm 45 enters a notch 44 the stop shoulder 42 moves into the path of the projection 36 but when the arm coöperates with the periphery of the wheel between the notches 44 the stop shoulder 42 is held out of the path of the projection 36. It is apparent that, if the stop shoulder 35 be moved into the path of the projection 36, the latter will be freed from the stop shoulder 42 and the projection will then move until it engages the stop shoulder 35. Of course, when the stop shoulder 42 is moved, the arm 45 is moved out of the notch 44 and the controlling wheel 43 also moves so that the arm 45 engages the periphery of the controlling wheel to one side of a notch 44, preventing the return movement of the stop shoulder 42 into the path of the projection 36 until a notch 44 is reached, when the motor will be stopped for the reason that the projection 36 will engage the stop shoulder 42.

In order to move the carriers, containing the check receivers, at the desired intervals so as to present different receivers or compartments to the check inlets at the stated times, provision must be made to release the motor periodically so as to actuate these parts, and to this end there is mounted on the minute shaft 46, of the time mechanism, a cam or notched wheel 47 which is arranged to engage a laterally extending projection 48 on the stop 33. The cam wheel 47, in the present embodiment, is provided with six projections and corresponding notches, each projection representing a one-sixth portion of an hour, so that under operative conditions the motor is released every ten minutes, such action continuing until the parts are locked in a manner which will presently be made clear. The inclined walls 49 of the cam wheel raise the stop 33, and also stop 41 by reason of its engagement with stop 33, thus causing the shoulder 42 to be moved out of the path of the projection 36, and when the projection 48 reaches the limit of one of the teeth on the cam wheel, it drops into the respective notch 50, whereby the stops 33 and 41 are moved to their original positions, and the motor is locked.

The carriers for the compartments or receivers are moved only during certain portions of the day, as already pointed out, the mechanism being locked during the remaining working hours, and suitable means are provided for locking the motor after it has operated for the necessary hour or two subsequent to the beginning of the working periods, until the carriers are to be moved again. To accomplish this purpose, there may be provided a cam wheel 51 geared to the minute shaft 46, the connecting gear wheels 52 being so proportioned that the cam wheel 51 makes one revolution in every twenty-four hours. This cam wheel controls the operating periods of the motor, and to this end is provided with projecting surfaces 53 and depressed surfaces 54. The projection 48 on stop 41 is arranged to be received within the depressed surfaces 54, and when thus lowered, the stop 33 is free

to be actuated by cam wheel 47, but when the projection 48 is engaged by one of the projecting surfaces 53, stop 33 is raised above the cam wheel 47 and cannot be actuated thereby until it is again lowered into cooperating position when one of the depressed surfaces 54 reaches the projection 48. The surfaces on the cam wheel 51 may be so arranged and proportioned as to permit operation of the motor and resulting intermittent actuation of the check receivers during any desired intervals of the day or night.

It is desirable to close the coin inlets at certain times and with this end in view there is provided for the coin inlets shutters or closures 55 and 56, respectively, these shutters in this instance being carried by levers pivoted at 57 and 58, respectively, and having their respective ends 59 and 60 coöperating with cams 61 and 62 arranged to turn on the shafts 9 and 10 and carried by sleeves which carry gears 161 and 162, respectively, meshing with a pinion 150 on shaft 29 so that the cams will be controlled by the time mechanism of the receiver. Of course, these cams may be shaped to effect the closing of the coin inlets at any desired time. In this instance both cams operate in the manner illustrated in the diagram in Fig. 8, one for the day force and the other for the night force, the inner series of characters indicating the time the disk is shifted.

To the end that the workman, when he deposits his check, may ascertain the time which will be recorded, there is employed an indicating means comprising in this instance characters 63 arranged on the peripheries of the rotary carriers of compartments 7 and 8. This indicating means is visible from the exterior of the casing and the latter for this purpose is provided with windows 64 each arranged in proximity to one of the carriers to expose the indicating portion thereof. Preferably these windows are also closed with the shutters 55 and 56 and to this end the latter are each provided with projections 65 for coöperation with the notched end of levers 66 pivoted at 67 within the casing A and having shutters 68 at their ends to coöperate with and close the windows 64.

The checks deposited in this machine should each have means thereon for indicating the workman, such as numbers 69. It is also desirable that these checks should contain a complete record of the workman's time for a stated period, such as one week, for by such an arrangement the workman knows from day to day the time for which he is to be paid and if, for any reason, he desires to register an objection to the record he can do so immediately instead of waiting until the end of the week. This check also has the advantage that it enables the time clerk to make up the time with less labor at the last part of the week, it being customary at the present time for factories and other places employing a great number of help to devote two and sometimes three days in making up a record of the time of its workmen and computing their wages. This invention not only permits the time to be computed daily but the workman is advised from day to day the hours for which he is to be paid.

In the embodiment herein illustrated the check comprises a body portion or member 70 having an eye 71 or other means at one end permitting its being suspended from the check and having laterally turned flanges or guides 72 with which coöperate a plate or member 73 to retain a time card 74 between them. The time card has suitable designations for the several days of the week and columns 76, 77 and 78, respectively, for the hours worked for the first half of the day and the second half of the day and a total for the whole day. This time card also has on its rear face the suitable number 69 visible through an opening 80 in the body portion 70.

The checks are preferably arranged on holders or racks 81, 82, 83 and 84, the holder 81 supporting the hooks for the checks used by the day force of workmen at the beginning of the first half of the day; the holder 82 those used by the same force at the beginning of the second half of the day; the rack 83 those used by the night force at the beginning of the first half of the night, and the rack 84 those used by the latter force at the beginning of the second half of the night. These holders or racks are preferably mounted on the opposite side walls of the casing, one above another, and for this purpose are pivoted near the rear of the casing and adapted to swing into engagement with the side walls thereof to cause the said casing to close them. Preferably they are normally held in opened positions by springs 85 and are held in closed positions by locking devices such as latches 86, 87, 88 and 89 normally moving to locking positions under the influence of springs 90^a.

It is desirable to have the racks or check holders open automatically at certain definite times. For instance the holder 81 is opened in the present embodiment at 5 o'clock p. m. so that the workmen may remove their checks from the holder, take them home and bring them back when they again report to work. The holder 82 in this instance opens up at noon so that it is impossible for the workmen to leave early as they must obtain their checks before leaving. The cabinet 83 opens up at 5 o'clock the next morning, or when the night force is leaving, while the cabinet 84 opens up at midnight at the beginning of the meal hour of the night force. With this arrangement

it is impossible for one workman accidentally to make a record for the other. Each workman will remove his own check from the rack and if he does not find it in its proper place then a report should be made immediately and before an improper record is made.

In order to control the locking devices and release the check holders so that they may swing open under the action of their springs 85 each latch has connected thereto an arm 90 which extends in the path of one of the projections on one of the cams 61 or 62, each of which has a projection on each face thereof. These projections are so located that they engage the arms at such times that the check holders are opened in the order hereinbefore mentioned or in any other desired order.

In the embodiment of the invention herein illustrated, at 6.30 o'clock in the morning the parts assume the positions shown in Fig. 2, the employees on the preceding work day having obtained their individual checks. The great majority of these employees will arrive before the working hour and as a consequence upon depositing their checks in the check inlet 2, the check will strike the check chute 15 on the carrier of the pockets 8 and be discharged into the stationary compartment 5. Immediately upon the clock reaching the starting hour (7), the shoulder 35 will be moved out of the path of the projection 36 permitting the spring motor to rotate the carrier to present the compartment next following the chute so that the checks will now drop into the compartment marked 7:10. While in reality the employee is not ten minutes late, yet it is impracticable to calculate small fractions of an hour and an employee must as a penalty lose ten minutes if late less than this amount. After the receptacle 7:10 reaches the check inlet, the stop shoulder 42 drops into the path of the projection 36 and stops the motor. The cam wheel 47 now gradually moves the stop shoulder 35 into the path of the projection 36 and the stop shoulder 42 out of said path, so that when another ten minutes has passed the stop shoulder 35 may again release the motor for driving the carrier. This periodic release of the motor continues in this embodiment for two hours, after which the shutter 56 closes the coin inlet and the shutter 68 operating therewith closes the indicating means. The shutter 56 remains closed until 12 o'clock or noon when it again opens with the check holder 82, the employees now obtaining their checks for recording their return at the end of the noon hour. The carrier of compartments 8 does not shift until 1 o'clock when another compartment is moved into communication with the coin inlet 2 and successive compartments are then presented to the coin inlet every ten minutes until 2 o'clock when the machine again closes and remains closed until 5 o'clock when the check holder 81 is opened, the machine again closing at 5.30 for the compartments 6. At 6.30 p. m. the check inlet 1 opens and the machine operates in this instance for night work the same as during the day.

A time recorder constructed in accordance with this invention makes it unnecessary for a time clerk to examine all of the checks as the checks are separated by the machine and it is only necessary for the time clerk to note the receptacle in which the checks are found and then record on the checks, and also in the usual time book, the record of each employee. It is impossible for one employee accidentally to record the time for another and any collusion between them will immediately show up and cannot be blamed to mistakes as is customary with machines at present in use. This machine makes it possible to ascertain in a very short time the time records of the employees and will do away with the present custom of devoting two or three days at the end of a week for making out the pay roll, it being possible with this machine to bring the time record up to date in any one day.

I claim as my invention:

1. In a time recorder, the combination with a time mechanism, of a plurality of stationary check receivers, two independently movable sets of check receivers, a check inlet for each set of movable check receivers, and instrumentalities controlled by the time mechanism for determining the receiver into which a check passed through the check inlet is to be deposited.

2. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of stationary check receivers, a plurality of independently movable sets of check receivers, and instrumentalities controlled by the time mechanism for actuating the movable receivers to positions where they may receive checks passed through the check inlet.

3. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of stationary check receivers, a plurality of independently movable sets of check receivers, chutes carried by said movable receivers, and mechanism for moving the chutes to a position where they will cause the checks to be deposited in the different stationary receivers.

4. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of chutes, a plurality of movable compartments, a plurality of stationary compartments into which the checks are carried by the chutes, and mechanism controlled by the time mechanism for deter-

mining the chute or movable compartment which is to receive the check from the check inlet.

5. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of movable compartments, a movable chute, a stationary compartment for receiving checks from the chute, and mechanism controlled by the time mechanism for determining the chute or movable compartment which is to receive the checks from the check inlet.

6. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of stationary check receivers, a rotary carrier having a plurality of check receivers, and instrumentalities controlled by the time mechanism for rotating the carrier to present successive receivers to the check inlet.

7. In a time recorder, the combination with a time mechanism, of a motor controlled by the time mechanism, an upright shaft driven by the motor, a carrier detachably supported from the shaft and provided with a plurality of check receivers, a plurality of stationary check receivers arranged below the carrier, and a check inlet past which the carrier is moved.

8. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of stationary compartments, a movable carrier provided with a plurality of chutes directing checks from the check inlet to different compartments, and mechanism controlled by the time mechanism for moving the carrier to present the different chutes to the check inlet.

9. In a time recorder, the combination with a time mechanism, of a check inlet, a carrier having a plurality of check receivers coöperating with the check inlet, a plurality of stationary check receivers arranged below the carrier, a motor for driving the carrier, and a device periodically actuated by the time mechanism for causing operation of the motor.

10. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of stationary compartments, a carrier having a plurality of chutes, a motor for moving the carrier and a device periodically actuated by the time mechanism for controlling the operation of the motor.

11. In a time recorder, the combination with a time mechanism, of a plurality of check receivers and mechanism controlled by the time mechanism for determining the check receiver to receive the check comprising a motor, a device periodically actuated by the time mechanism for controlling the operation of the motor, and a device actuated by the time mechanism for preventing the operation of the motor by such periodically actuated device.

12. In a time recorder, the combination with a time mechanism, of a plurality of check receivers, and mechanism controlled by the time mechanism for determining the check receiver to receive the check comprising a motor, a stop for the motor, a cam actuated by the time mechanism, and periodically moving the stop to release the motor, and a cam also actuated by the time mechanism to prevent the release of the stop by the first named cam at certain intervals.

13. In a time recorder, the combination with a time mechanism, of a plurality of check receivers, and mechanism controlled by the time mechanism for determining the check receiver to receive the check comprising a motor, a stop for the motor, a cam actuated by the time mechanism and periodically moving the stop to release the motor, an auxiliary stop for stopping the motor after its release, connected to the first named stop to be moved from stopping position when the said first named stop is moved to stopping position, a cam actuated by the time mechanism to actuate the first named stop, a controller for the auxiliary stop preventing the movement of the latter to stopping position until the motor has moved a pre-determined time, and a cam coöperating with the first named stop to prevent its actuation by the first named cam at certain times.

14. In a time recorder, the combination with a time mechanism, of a check inlet, a rotary carrier having a plurality of compartments, mechanism controlled by the time mechanism for determining the compartment into which the check is to be deposited, a cam rotatable with the carrier and controlled by the time mechanism, and a closure for the check inlet actuated by the cam.

15. In a time recorder, the combination with a time mechanism, of a plurality of compartments, mechanism controlled by the time mechanism for determining the compartment into which the check is to be deposited, a rotary cam controlled by the time mechanism, and a lever pivoted intermediately of its ends and having one end cooperating with the cam and the other end acting as a closure for the check inlet.

16. In a time recorder, the combination with a time mechanism, of a motor controlled by the time mechanism, an upright shaft driven by the motor, a carrier on the shaft, having a plurality of compartments, a check inlet past which the compartments are moved, a cam on the upright shaft also driven by the motor, and a shutter for the coin inlet controlled by the cam.

17. In a time recorder, the combination with a time mechanism, of a check inlet, a plurality of compartments, mechanism controlled by the time mechanism for determin-

ing the compartment into which the check is to be deposited, an indicator controlled by said time mechanism, and a shutter for the indicator also controlled by the time mechanism.

18. In a time recorder, the combination with a time mechanism, of a check inlet, a rotary carrier having a plurality of compartments and movable so as to receive checks from the check inlet in any one of the compartments, mechanism controlled by the time mechanism for determining the compartment to receive a check, a rotary cam controlled by the time mechanism, a lever having one end moved by the cam and its other end acting as a shutter for the check inlet, indicating means on the rotary carrier, a casing inclosing the carrier provided with a window exposing the indicating means, and a shutter for the window actuated by the shutter of the check inlet.

19. In a time recorder, the combination with a time mechanism, of a check holder, and a locking device for the check holder controlled by the time mechanism and arranged to be released at successive intervals of time during the day.

20. In a time recorder, the combination with a time mechanism, of a rotary carrier having a plurality of check receivers, a motor for driving the carrier, controlling devices actuated by the time mechanism for causing operation of the motor periodically and instrumentalities also controlled by the time mechanism for preventing operation of said controlling devices.

21. In a time recorder, the combination with a time mechanism, of a motor controlled by the time mechanism, an upright shaft driven by the motor, a carrier arranged on the shaft and having a plurality of check receivers, a check inlet past which the receivers are moved, a disk rotatable on the shaft and provided with a projection, a latch controlled by said projection, and a check holder held closed by the latch.

ADOLPH RYDQUIST.

Witnesses:
RUSSELL B. GRIFFITH,
H. H. SIMMS,

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."