W. J. CARROLL.

TIME RECORDER.

APPLICATION FILED DEC. 5, 1918.

1,354,801. **Patented Oct. 5, 1920.**

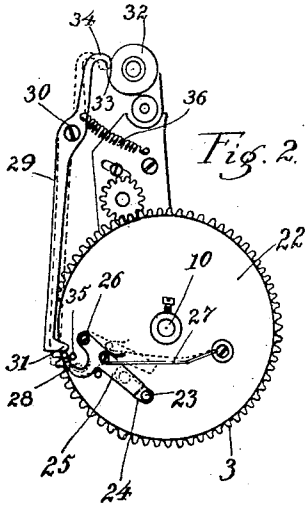


Fig. 2.

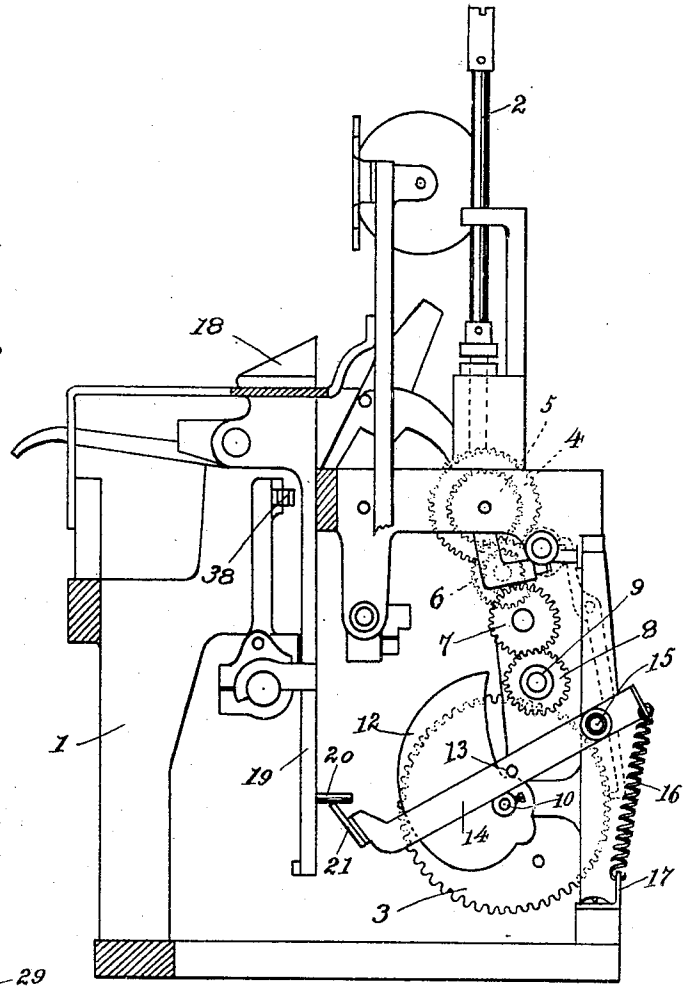


Fig. 1.

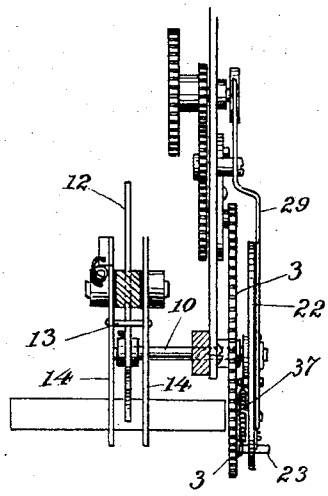


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM J. CARROLL, OF CINCINNATI, OHIO, ASSIGNOR TO THE CINCINNATI TIME RECORDER COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

TIME-RECORDER.

1,354,801. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed December 5, 1918. Serial No. 265,328.

To whom it may concern:

Be it known that I, WILLIAM J. CARROLL, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Time-Recorders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

My invention relates to time recorders of the type in which a card is inserted into a card receiver and presented to a time-controlled printing mechanism in order to have the time of insertion printed on the card, and particularly to that type in which the card is shifted automatically under clock control for the "in" and "out" points of registration and so that the two registrations will not by any chance come on top of each other or so close together as to be illegible.

In this type of machine it is usual to provide for a shifting movement of the card or card receiver once each day either by manual operation or under clock control, so that the different days of the week may be indicated and printed in the proper space on the card, and at the same time to provide for an automatic movement under clock control at right angles to the other movement to shift the card for "in" and "out" registrations.

It has also been customary to provide for this "in" and "out" movement of the card, a continuously or intermittently moving cam under clock control to shift the card or card tray or abutment against which the card rests continously during the hours in which "in" and "out" registrations are expected to be made and to hold the card without shifting during the hours when there would be no registrations in the usual course.

In the use of such time recorders in factories, where a large number of workmen are employed, it is usual to have a fixed time when the workmen can enter without being late. This may be in the morning, say at 7.30, for "in"; 12 for "out"; before 12.30 for "in" and after 5, for example, for "out."

Now when the workman enters or leaves about the proper time and the card is under continuous movement, it is necessary in sorting the cards to examine the time imprint to determine whether the workman was late either in entering, or too early in leaving.

It is the object of my invention to provide a construction for such time recorders that this information can be shown at a glance, and I accomplish this by providing time cards in which a line is printed on the card and by that novel construction and arrangement of mechanical parts for the time recorder so that while normally the card shall be under continuous movement for a space of some minutes immediately prior to the usual time of entrance or leaving, the card shall remain stationary, and the moment the fixed time arrives an instantaneous movement shall be given the card, shifting it an appreciable distance, so that all imprints on one side or the other of the line will show at a glance, without attempting to read the exact imprint of the time whether the workman was late in entering or too early in leaving. These objects I accomplish by that certain construction and arrangement of parts to be hereinafter specifically pointed out and claimed.

In the drawing which embodies one construction to which my invention is applied, I have selected a type of time recorder in which the card is shifted by an abutment under the action of a continuously operated cam under clock control.

In this drawing, Figure 1 is a side elevation of the machine with many of the parts of the mechanism removed to show more clearly my invention.

Fig. 2 is a detail of the card abutment actuating mechanism.

Fig. 3 is a similar detail in front elevation.

The framework of the machine is indicated by 1; extending vertically upward from it and mounted therein rotatably is a clock-controlled vertical shaft 2. This clock-controlled shaft has operative connection with the large gear 3 through train of gearing 4, 5, 6, 7, 8 and 9, the train of gears being so timed in the construction illustrated that the gear 3 shall be rotated once for each day. This gear 3 is loosely mounted on shaft 10 in the construction as illustrated, and drives the cam 12 through a mechanism to be hereinafter described. The cam 12 is arranged to contact with a pin 13 for actuating the card abutment for shifting the card for "in" and "out" registrations. The pin 13 is mounted in parallel arms 14 which are pivoted near one end on

a stud 15 in the frame, the end of the arms being secured to a coiled spring 16, secured at the other end on a lug 17 on the frame, so as to counterbalance the weight which must be supported by the arms at the other end. The card receiver of the machine is indicated at 18, and is provided with a slot for the reception of a card, and the card receiver is provided with depending guides 19 for guiding and holding the card, which guides are slotted to hold a sliding plate upon which the card rests, and this sliding plate has a projecting pin 20 which rests on a yoke 21, carried by and fixed upon the inner end of the arms 14.

As the cam 12 is rotated, the cam bears against the pin 13 on the framework and raises the card abutment to shift the card. The surfaces of the cam are formed so that the card abutment is given a progressive and continual movement during the periods of time that there are likely to be registrations that come in quick succession, while for the remainder of the time the cam is so formed with its periphery on a fixed radius that the card abutment will remain stationary.

If it were not desired to temporarily suspend the movement of the card at some fixed time for "out" and "in," in order to indicate registrations that are made too late for entering, or too early for leaving, the cam 12 could be mounted in fixed relation with the gear 3, as has been done heretofore in this art. To control the movement of the cam for these definite periods, however, the cam is not driven by a connection fixed at all times with the clock driven gears. The cam 12 is mounted on the shaft 10, and this shaft also carries, fixed thereon, a disk plate 22, which is mounted close to and parallel with the operating gear 3. The gear 3 carries a pin 23, which projects through a slot 24 in the disk plate 22. Bearing against this pin 23 is a dog 25 which is pivoted at 26 on the plate. Normally the dog 25 is held by the spring 27 in alinement between the pin 23 and the pivot 26, so that as the gear 3 is rotated by the clock movement the disk 22, shaft 10 and cam 12 are continuously rotated.

In order to permit the continuous movement of the gear 3 without actuating the disk plate 22 and the cam 12 at certain definite points of time, I provide the dog 25 with an arm 28 which extends into the pathway of an arm 29 pivoted at 30 on the frame and provided with a foot 31 to contact with the end of the arm 28. Upon one of the shafts of the train of gears through which the gear 3 is driven by the clock movement, I also secure a cam disk 32, provided with a notch 33, while the upper end of the arm 29 above the pivot point 30 is curved over at 34 to engage the cam 32. The foot 31 of the arm 29 is normally held by the cam 32, so that the toe of the foot shall lie in the pathway of a pin 35 projecting from the face of the disk 22. The arm is under spring tension of the coiled spring 36 attached between the arm and the frame, and when the notch 33 on the cam 32 reaches the proper point, the cam being driven counterclockwise, the arm will be oscillated into the position shown in full lines in Fig. 2, removing the toe of the foot portion from contact with the pin 35, but allowing it to contact with the end of the arm 28 on the dog. The end of the arm 28 is so located that immediately prior to the pin 35 coming in contact with the foot 31 the end of the arm will press down on the arm 28 and the dog 25 will be thereupon rocked inwardly at its inner end so as to free the pin 23, and the plate 22 being held by the pin 35 coming in contact with the foot 31 the disk 22 will remain stationary and together with it the shaft 10 and cam 12, the pin 23 traveling in the slot 24. The cam 32 with its notch 33 then releases the arm 29 and its foot 31 from contact with the pin 35, and a coiled spring 37 which is connected between the disk plate 22 and the gear 3 at once presses forward the disk 22 and the cam so that the pin 23 will lie in the end of the slot 24 in its normal position, and the effect of this clock movement of the disk plate 22 and cam is to raise the cam a sufficient distance to raise the card abutment and the card the distance required, so that the time imprint of the platen, indicated at 38 in Fig. 1, will come below the previously printed line on the card.

I thus provide at a fixed and determined point of time for a stopping of the movement of the card and a retention of the card in that position for a certain interval of time and an instantaneous movement of the card and card abutment to the position it would have occupied had it remained under the continuous shifting of the cam.

I have illustrated in the drawing only one of these pin and dog connections between the driving gear 3 and the disk 22 and cam, but it will be obvious that as many of such devices can be applied as may be desired. The location of the cams and timing of the clock movement is so arranged that, say ten, fifteen or twenty minutes before the fixed time, say 7.30 in the morning, the pin 35 on the disk shall come in contact with the foot 31 on the arm 29, and the disk will be held in fixed position while the clock movement drives the gearing continuously, the pin 23 traveling in the slot 24. At exactly 7.30 in the morning, for example, the movement will be so timed that the cam 32 will release the arm 29 with its foot 31 and the spring 37 will give a quick instantaneous movement to the disk plate 22 to the extent of the

travel of the pin 23 in the slot 24. The further movement of the parts allows the foot 31 to pass the arm 28 of the locking dog 25 and the spring 27 returns the locking dog to its normal position, locking the gear 3, disk plate 22 and cam 12 together. If it is desired to provide for this same clock movement of the card at other points of time, a similar construction is provided at another point on the disk plate 22.

It will be understood from the foregoing description, that my invention is not to be confined to the particular mechanism illustrated nor to the specific type of time recorder. The invention can readily be applied to other constructions of time recording machines in which provision is made for the continuous movement of the card supported under clock control, without departing from the spirit of my invention as recited in the claims which follow.

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

1. In a time recorder, a train of gearing under clock control, a card receiver, card shifting means to shift the card continuously in one direction for "in" and "out" registrations, and mechanism intermediate the gear train and card shifting means whereby the card shifting means shall be stopped periodically for short intervals and thereafter instantly propelled to the position it would have occupied had it not been stopped.

2. In a time recorder, a card guide, an abutment in said guide to regulate the position of the card in said guide, and means directly coupled to the clock of said recorder and under continuous movement therefrom to control the position of said abutment, together with mechanism to automatically disconnect and recouple said means at predetermined intervals.

3. In a time recorder, a card guide, an abutment in said guide to regulate the position of the card in said guide, and clock-controlled means continuously operated for giving an intermittent continuous movement to said abutment, together with mechanism to automatically disconnect and recouple said means at predetermined intervals during the continuous movement of said abutment.

4. In a time recorder, a train of gearing under clock control, a card guide, an abutment in said guide to regulate the position of the card therein, a cam connected with said gear train to shift the card continuously for "in" and "out" registrations, and means for automatically disconnecting and recoupling said cam and gear connection at predetermined intervals.

5. In a time recorder, a train of gearing under continuous clock control, a card receiving element, an element to contact with the card upon insertion into the receiving element, a cam element to impart intermittent continuous movement to the contact element, and intermediate connection between said cam element and said gear train whereby said connection may be automatically released and renewed at predetermined intervals, with a spring to instantly shift the cam element to its normal position upon renewal of the connection.

6. In a time recorder, the combination of a train of gearing under continuous clock control, a card receiving element, an element to contact with the card upon insertion into the receiving element, a cam element to impart intermittent continuous movement to the contact element, and mechanism to control the movement of the cam element during the continuous movement of the gear train comprising a pin and slot connection intermediate the cam element and gear train, with pivoted dog on the cam element normally locking the cam element and gear train together and a time controlled lever arm to release the dog and block the movement of the cam element at predetermined periods.

7. In a time recorder, the combination of a train of gearing under continuous clock control, a card receiving element, an element to contact with the card upon insertion into the receiving element, a cam element to impart intermittent continuous movement to the contact element, and mechanism to control the movement of the cam element during the continuous movement of the gear train comprising a pin and slot connection intermediate the cam element and gear train, with pivoted dog on the cam element normally locking the cam element and gear train together and a time controlled lever arm to release the dog and block the movement of the cam element at predetermined periods, with a spring connecting the cam element and gear train to return the parts to normal position.

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