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SHŪICHI AMANO ET AL

3,453,643

TIME RECORDER

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Fig. 1

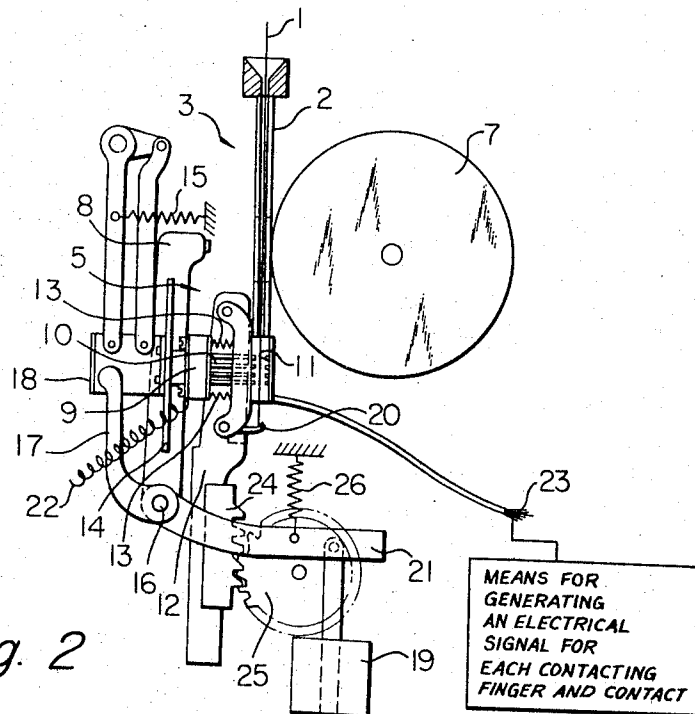


Fig. 2

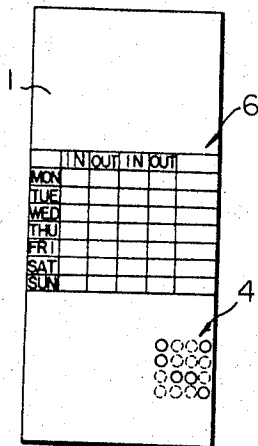
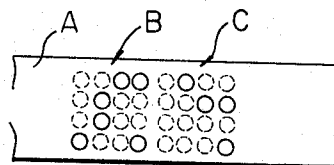


Fig. 3



INVENTOR.

Shūichi Amano  
BY Tetsuya Kozuma  
Kyotaka Kozuma  
Attorney

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3,453,643

## TIME RECORDER

Shuichi Amano, Yokohama-shi, Tetsujiro Ozono, Tokyo, and Kiyotaka Koizumi, Yokosuga-shi, Japan, assignors to Amano Corporation, Kanagawa-ken, Japan

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U.S. Cl. 346—17

1 Claim

### ABSTRACT OF THE DISCLOSURE

A time recorder which has on its outside a guide duct which is provided with a time typing mechanism. The latter types the prevailing time on a time card and includes a reading mechanism which reads this time. Also, an identification punch code is prepunched upon the time card.

The present invention relates to a time recorder or a time recording device.

It is an object of the present invention to provide a novel time recorder.

With these and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawing, in which:

FIGURE 1 is a side elevation of an embodiment of the device in accordance with the present invention;

FIG. 2 is a front view of a card; and

FIG. 3 is a front view of an example of a punched tape.

Referring now to the drawing, and in particular to FIG. 1, an embodiment of the time recorder of the present invention comprises a time typing mechanism 3 which types a time on a time card 1 and a read mechanism 5 which reads an identification punch code 4 (FIG. 2) prepunched on the card 1, both mechanisms being provided on the outside of a guide channel 2.

The card 1, for example, as shown in FIG. 2, is employed, which has on its upper part a time typing column 6 and on its lower part the identification punch code 4 for each employee. The code, for example, represents numbers from 1 to 9999 by providing a set of four columns, each column composed of four punch positions corresponding to the numerical values of 1, 2, 4 and 8. Thus, the individual identification code for each employee may be selected and punched.

The illustrated card identifies No. 1689 for one of the employees.

The time typing mechanism 3 is composed of a typing wheel 7 which rotates as the time runs and a typing hammer 8. A read mechanism 5 comprises a number of fingers or contact pins 10 which are set up on a base plate 9 facing the position of a punch code 4 of an inserted time card 1 and a number of contacts 11 facing the contact pins, which are supported by a support frame 12. The contact pins 10 are usually kept at a rear position by springs 13, 13 with a sufficient gap between the pins and the contacts so that a card may be inserted. This position is maintained by a push plate 14 located at the back of the base plate 9. The push plate 14 normally kept in a retreated position, against the action of a spring 15 by means of a lever 17 incorporated with a shaft 16 of the typing hammer 8. The lever 17 engages a member 18 projecting from the push plate 14. A magnet 19 is mechanically connected to the shaft 16 through a lever 21 and is magnetized by closing a switch 20 upon the insertion of a card 1.

A common input terminal 22 is connected to each contact pin 10, and an output terminal 23 is connected to each contact 11, respectively. A rack 24 is mounted at the lower part of a support frame 12 which causes the support frame 12 to move upward once a day by interlocking with a gear 25. A spring 26 is provided for returning the lever 21 to the place.

The operation of the device is as follows:

When a card 1 is inserted into the guide channel 2, the switch 20 located at the bottom thereof is closed, thereby energizing the magnet 19 causing the present time to be typed by rotating the typing hammer 8 via the lever 21. Simultaneously, the engagement between the projecting member 18 and the lever is released, and a forward movement against the action of springs 13, 13 is given to the contact pin 10 by the spring 15, so that only those contact pins 10 which can pass through the punched code 4 of the card 1 come into contact with the corresponding opposite contacts causing an electric conduction state to be established therewith. Each output terminal 23 is not illustrated, but the identification punch code 4 is transformed into an electric signal by a means for generating an electrical signal for each contacting finger and contact, by successively scanning the corresponding contacts and a read is completed. Then, the initial state is restored by the action of a spring 26.

Further, an electric signal is caused to act upon a tape punching machine on the input side of an independent electronic computer, and as shown in FIG. 3 the identification code B is punched on the tape A and also the time punch code C is punched on the tape immediately adjacent to the code B by the time signal from the separately prepared time signal generator. Thus, the control of the working hours of the employees using an electronic computer may be carried into effect.

In accordance with the present invention, by providing a typing mechanism 3 which types the present time upon the card 1 and a read mechanism which reads the identification punch code 4 pre-punched upon the card 1, there is provided a device capable of reading the identification punch code 4 at the same time the time is typed upon the card 1, so that not only the control of the working hours of the employees using an electronic computer is made possible but also the effect of enabling one to know the working condition of the employees as merely by checking the card per se.

While we have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only, and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

We claim:

1. A time recording system comprising
  - a plurality of time cards each having a time marking portion and spaced therefrom at least one punched hole defining thereon an identification code,
  - a means for aligning one of said time cards,
  - means for marking the current time legibly on said time card at said marking portion thereof, when said time card is inserted in said alignment means, and
  - means for sensing said identification code and generating an electrical signal indicative of said identification code,
- said sensing and generating means comprises,
  - a plurality of contacts disposed at one side of said time card adjacent said punched identification code when said time card is inserted in said alignment means,
  - a corresponding plurality of movable fingers disposed at the other side of said time card adjacent said

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punched identification code and aligned with said plurality of contacts, respectively,  
 said fingers having a cross-section smaller than said punched holes of said identification code,  
 means for advancing said plurality of movable fingers 5  
 towards said time card and said plurality of contacts to selectively engage those contacts corresponding to said punched identification code by passing corresponding movable fingers therethrough,  
 electrical means for generating a signal for each contacting finger and contact, 10  
 said sensing means further comprises,  
 a movable base plate on which said fingers are secured on the front side thereof,  
 first spring means for biasing said base plate in a position 15  
 where said fingers and contacts are spaced from each other,  
 a push plate disposed at the back of said base plate, second spring means for operatively biasing said push plate forwardly to tend to push said base plate and said fingers towards said contacts and having a greater force than that of said first spring means, 20  
 lever means for retaining said push plate in a rear

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position against the force of said second spring means,  
 magnetic means coupled to said lever means for releasing said lever means upon insertion of said time card into said apparatus, and  
 means connecting said marking means with said lever means for substantially joint operation of said sensing means and said marking means upon actuation of said magnetic means.

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RICHARD B. WILKINSON, *Primary Examiner.*20 JOSEPH W. HARTARY, *Assistant Examiner.*

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