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TIME RECORDER MECHANISM

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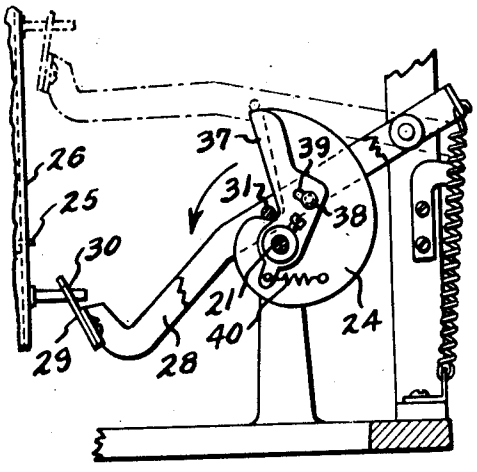


FIG. 2.

FIG. 1.

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TIME RECORDER MECHANISM

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6 Claims. (Cl. 74—55)

My invention relates to time recorders, and more particularly to that part of the mechanism thereof which has to do with changing the position in which a card rests in the card tray at different times. In machines of this type, an abutment is usually provided which is slidably mounted in guides in the card tray, and mechanism is provided for shifting the position of the abutment, either periodically or continuously. It has been deemed desirable in recent years, that such an abutment should shift downwardly, so that in a succession of recordings, the figures would be in a normal position for subtraction, i. e. the first recording is at the bottom of the card, the next above it, and so forth.

Mechanisms of this general type have been provided in the past. In U. S. Letters Patent No. 1,253,185, dated January 8, 1918, to H. M. Lawton, there is shown an abutment of the type which I have in mind, which is actuated by a clock driven cam. However, the cam is placed in the normal position, considering the direction of rotation of the shaft upon which it is mounted, with the result that the card abutment shifts from the bottom of the card tray upwardly, whereby the successive recordings are in a reversed position for subtraction. Another step forward in the art is shown in the patent in my name, No. 1,800,414, dated April 14, 1931. Here the card abutment is made to move downwardly by means of a cam such as is shown in the Lawton patent, which however is mounted on its shaft in a reverse position. In order that this apparently erroneous mechanical construction might be operative, and that there might be no binding of the mechanism at the point where the cam rider would have to make the substantially vertical rise, means were provided whereby the cam rider was normally completely out of contact with the cam, and was only brought into contact therewith at each recording operation.

As an advance of substantial importance, it is an object of my present invention to provide an improved mechanism for operating a movable abutment which will move continuously downwardly from the top of the card tray, i. e. of the type by which recordings upon a time card may be made in succession from the bottom to the top of the card, and in which the abutment operating mechanism is continuously with its cam.

It is thus an object of my invention to provide means as above described, which will be actuated by a clock driven cam, which cam, for the purposes described, will be mounted in a reverse position upon its shaft, and will be in continuous contact with its rider.

With the last mentioned object in mind, it is a further object of my invention to provide means whereby the rider is enabled to surmount the abrupt rise in the cam which results from its reversed position, and to cause these means to be actuated by mechanisms which are already found on many recorders.

These and other objects of my invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe a preferred embodiment. Reference is now made to the drawing which forms a part hereof, and in which:

Figure 1 is a side elevation of a recorder embodying my invention, parts being broken away to more clearly show the construction.

Fig. 2 is a detail view of my novel cam plate as seen from the same direction as Fig. 1.

Briefly, in the practice of my invention, I provide a time recorder of rather conventional form, having a card tray shifting mechanism such as that disclosed and claimed in U. S. Patent No. 1,689,905, dated October 30, 1928, in the name of J. W. Yates. I have shown more or less diagrammatically at 1 a magnetic clock of well known construction, having an armature 2, adapted to actuate a pawl 3 and thereby turn a ratchet wheel 4. The rotation of the ratchet 4 is transmitted to the vertical shaft 8 through the shaft 5 and the gears 6 and 7. The gears 9, 10 and 11 transmit the rotation of the shaft 8 to a dummy clock 12. At the lower end of the shaft 8, motion is transmitted through the gears 13, 14, 15, 16, 17, 18, 19, 20 to the shaft 21, which drives the card tray shift cam 22, which is fully described in the patent to Yates, supra, and which I may hereinafter call the positive cam, since it is positioned for normal rotation. The lever 23 and the remaining mechanism for shifting the card tray has been indicated only diagrammatically, since a full disclosure thereof has been made in the Yates patent, and I shall therefore not describe it in further detail.

Also mounted on the shaft 21 is my novel cam 24, which I shall describe in more detail later, and to which I may refer as a negative cam, having a negative rise, and a negative fall. A card abutment 25 is slidably mounted in the card tray 26, and is provided with a pin 27. A lever 28, pivoted to the frame of the recorder at 28a, bears a plate 29, having a slot 30 to accommodate the pin 27 on the card abutment 25. Thus as the lever 28 swings upwardly or downwardly, it carries with it the card abutment 25, and the pin and slot connection 27—30 permits of lateral shifting of the card tray for different days of the week. The lever 28 is substantially of the construction shown in the Lawton patent mentioned above, and is provided with a pin or roller 31, which is adapted to ride upon the cam 24, so that the

position of the card abutment in the card tray depends upon the position of the cam **24**. A spring **32** connecting the rear end of the lever **28** with the frame, serves to counter-balance the card abutment.

An extension **33** is fastened to the lever **23** of the card tray operator, as at **33***a*, at the end of which is pivoted the slotted link **34**. A headed pin **35** on the lever **28** of the abutment operator is adapted to ride in the slot **36** in the link **34**. The cam **24**, which I have heretofore mentioned, carries, as best seen in Fig. 2, a lip section **37**. The lip **37** is pivoted to the shaft **21**, and has rotational movement with respect to the cam **24**, which is limited by the pin **38** riding in the slot **39**, and it is maintained in the position shown in Fig. 2 by the tension of a small spring 40.

The operation of my device is as follows: The two cams are set on the shaft **21**, so that the cam **24** occupies the position shown in Fig. 2 when the cam **22** is in a position where its rider **23***a* is ready to return to the base of the rise under the influence of the spring **23***b*. As the lever **23**, under the influence of the spring **23***b*, snaps in a counter-clockwise direction, it carries with it the slotted link **34**, which rises in a substantially vertical direction. As the link **34** rises rapidly, the lower extremity of the slot **36** abuts the pin **35**, and with the aid of the counter-balancing spring **32**, kicks the lever **28** upwardly. During this upward motion of the lever **28**, the pin or roller **31** causes the lip section **37** to rock in a clockwise direction until the said pin or roller pin **31** passes the end of said lip section, when, under the influence of the spring **40**, the lip returns to its normal position. At this time the lever **28** will occupy the position shown in dotted lines in Fig. 2, with the roller or pin **31** resting on the upper side of the lip **37**, which is curved to form a continuation of the face of the cam at this point. From this point the rotation of the cam **24** continues in the direction of the arrow, and the card abutment will gradually be lowered as previously described.

Depending, of course, upon the gearing between the clock mechanism and the shaft **21**, the above described mechanism may be caused to operate at any desired frequency, although for most purposes it will be preferable to provide for such an action once every twenty-four hours. In this way a new column on the card will be utilized each day, and the recordings in each column will be interspaced from the bottom toward the top of the card.

It is to be understood that, except as mentioned in the claims that follow, the type of machine to which my invention is applied forms no limitation upon my invention, and that different forms of my preferred embodiment may be made without departing from the scope of my invention.

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

1. In a device comprising a driving means and an actuated means, a mechanism for causing said actuated means to move gradually over a given distance and then to move abruptly back to its starting point for cyclic operation, said mechanism comprising a cam driven by said driving means and a follower riding on said cam and controlling the position of said actuated means, said cam being placed with respect to its direction of rotation, in a reversed position, and means for lifting said follower over the rise of said cam.

2. In a device comprising a driving means and an actuated means, a mechanism for causing said actuated means to move gradually over a given distance and then to move abruptly back to its starting point for cyclic operation, said mechanism comprising a cam driven by said driving means and a follower continuously riding on said cam and controlling the position of said actuated means, said cam being placed with respect to its direction of rotation, in a reversed position, and means for lifting said follower over the rise of said cam.

3. In a device comprising a driving means and an actuated means, a mechanism for causing said actuated means to move gradually over a given distance and then to move abruptly back to its starting point for cyclic operation, said mechanism comprising a cam driven by said driving means and a follower riding on said cam and controlling the position of said actuated means, said cam being placed with respect to its direction of rotation, in a reversed position, and means for lifting said follower over the rise of said cam, said last named means comprising a second cam and follower, said second cam being normally positioned with respect to its direction of rotation, so that its follower is at its highest point when said first follower is at its lowest point, and a connection between said followers whereby as said second follower falls at the end of its rise, it raises said first follower over the rise of said first cam.

4. In a device comprising a driving means and an actuated means, a mechanism for causing said actuated means to move gradually over a given distance and then to move abruptly back to its starting point for cyclic operation, said mechanism comprising a cam driven by said driving means and a follower riding on said cam and controlling the position of said actuated means, said cam being placed with respect to its direction of rotation, in a reversed position, means for lifting said follower over the rise of said cam, and means to maintain said follower in its raised position, comprising a forwardly urged projecting lip on said cam which is adapted to yield to the passage of the follower, and then snap forwardly under the follower when the latter has passed the end of said lip.

5. In an actuating mechanism comprising an actuating cam and follower, said cam being disposed, with respect to its direction of rotation, in a reversed position, an auxiliary cam and follower, said auxiliary cam being disposed, with respect to its direction of rotation in a normal position, and a connection between said followers whereby the fall of said second follower serves to lift the first follower over the rise of said first cam.

6. In an actuating mechanism comprising an actuating cam and follower, said cam being disposed, with respect to its direction of rotation, in a reversed position, an auxiliary cam and follower, said auxiliary cam being disposed, with respect to its direction of rotation in a normal position, and a connection between said followers whereby the fall of said second follower serves to lift the first follower over the rise of said first cam, and a spring controlled depressible latch on said actuating cam adapted to engage and maintain said follower when so raised.

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