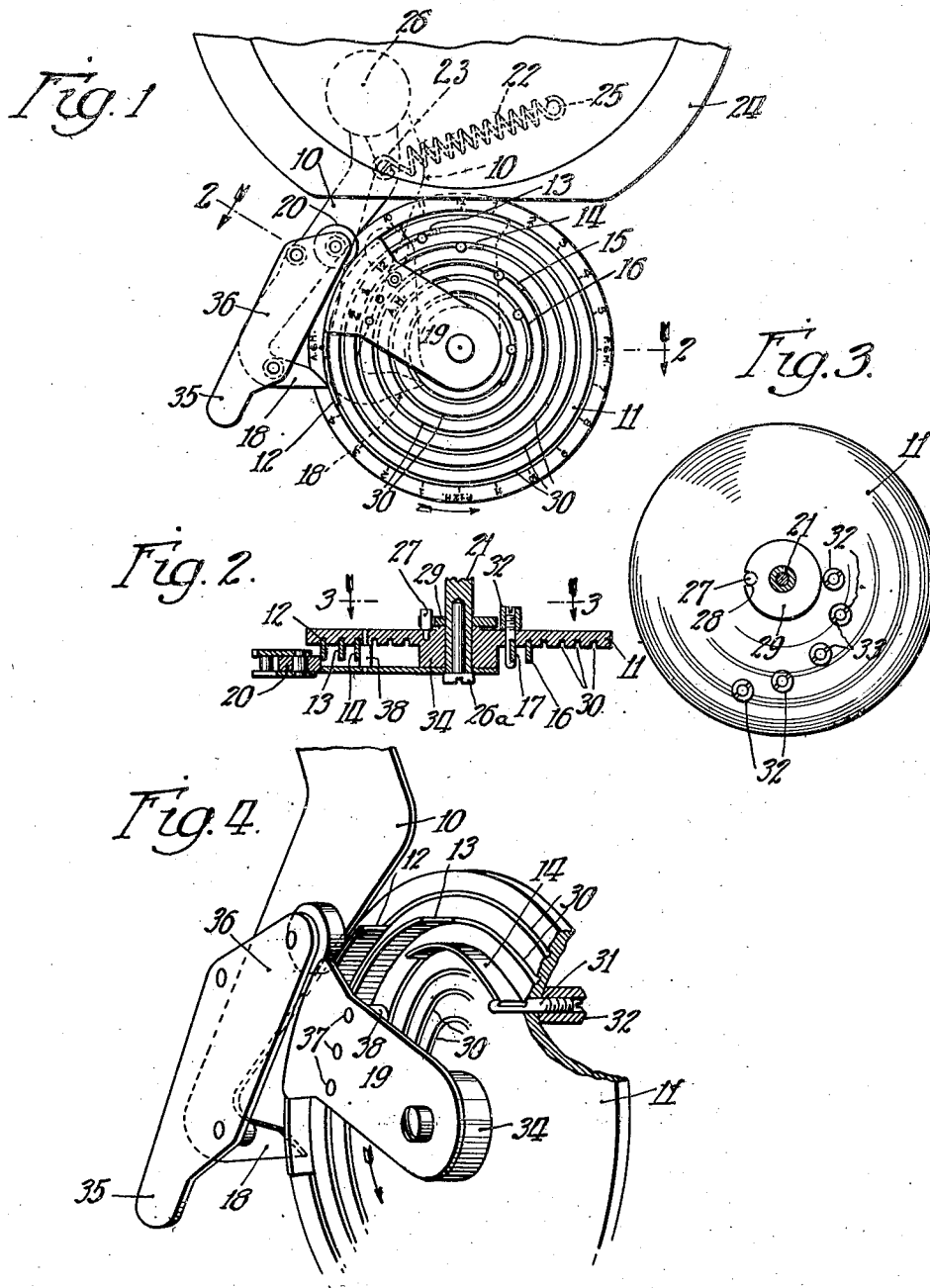


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TIME CONTROLLED MECHANISM

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TIME-CONTROLLED MECHANISM,

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Our invention relates to time controlled mechanism, and more specifically to time controlled mechanism for controlling a member which is movable back and forth, to cause this
5 movable member to be given a step-by-step movement in one direction and to be returned to its original position.

Such a construction is useful in various relations, one of them being in connection with
10 a workman's time recorder, for determining in what position on the card the record will be made. For instance, it may be desirable that on the first day of the week, all of the records will be made in the first column; that on the
15 second day of the week all the records will be made in the second column; and so forth; and that at the end of the week, the mechanism will be returned to its original position, so that the cards will again be printed in the
20 first column.

Again, it may be desired that during a certain portion of the day, the records shall be made on the cards in the first column; during a succeeding portion of the day in the second
25 column; during still another succeeding portion of the day in the third column, etc., and that at the end of the day the mechanism be again reset to its original position, so that on the following day during the first part of the
30 day the records will be made in the first column.

The mechanism is also useful in various other relations.

In the drawings in which an embodiment of
35 our invention is shown—

Fig. 1 is a front view of a controlled member and the controlling mechanism therefor;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 2;
40 and

Fig. 4 is a perspective view of certain parts of the mechanism shown in Fig. 1.

Referring now to the drawings in detail, the construction shown therein comprises a
45 pivoted controlled member 10, movable back and forth, and controlling mechanism therefor.

In the construction shown, means are provided whereby this pivoted controlled member 10 is moved in one direction with a step-by-step movement, and then returned to its original position, by a single continuous movement. This construction may be used to control the shifting back and forth of a type
55 carriage such as shown in the co-pending ap-

plication of Crook, #609,573, filed December 29, 1922, or it may be used to control a shiftable card holder, or any other shiftable device which it is desired to be shifted back and forth.

Such a device might be used for controlling the shifting of a printing mechanism laterally of the cards, to print in different columns thereon. The shifting might be so controlled
60 that the printing mechanism would be shifted once every day (say at midnight) and would remain in each position to which it was shifted for a complete day, and at the end of the week, would be, in a few hours, returned to its original position, ready to start the suc-
65 ceeding week in the first column.

The mechanism for controlling the pivoted controlled member comprises a circular cam-carrying disc 11, rotating as indicated by the arrows in Figs. 1 and 4, a plurality of inde-
70 pendently adjustable arcuate concentric cam members 12, 13, 14, 15, 16 and 17, cooperating with the follower portion 18 of the controlled member, and an adjustable return cam 19 which cooperates with a roller 20, mounted on
75 the pivoted actuated member.

The cam-carrying disc 11 is mounted on a rotating time controlled arbor 21. Any suitable means not shown for giving a uniform rate of movement to this time-controlled
80 member may be provided.

A coil tension spring 22 is provided to hold the pivoted controlled member 10 in operative relation with respect to the arcuate cam members and the return cam. This spring has one
85 end secured to the pivoted arm at 23, and the other end is secured to some fixed part of the frame 24 at 25. The controlled member 10 is pivoted to the frame at 26.

The cam-carrying disc 11 is held in place on the arbor 21 by means of a screw 26^a, and is positioned and caused to rotate with the arbor by means of a pin 27 secured to the cam-carrying disc which engages in a notch 28 in the plate 29 secured to the arbor 21.
95

The arcuate cam members may be arranged so in overlapped relation that as the point or follower portion 18 of the pivoted arm drops off the rear portion of one arcuate cam piece, it will drop onto the next succeeding cam portion. The pivoted controlled arm 10 is thus given a time controlled step-by-step movement, remaining in fixed position during the travel of each cam underneath the follower portion 18, and dropping off abrupt-
100 105 110

ly under the action of the spring 22, at the moment that the cam piece on which it was resting passes out from underneath the follower portion.

5 As intimated above, each of the arcuate cam portions is adjustable independently of the others about a common axis, the arcuate cam pieces being slidable in concentric circular grooves 30 in the cam-carrying disc 11.

10 In order to hold the arcuate cam pieces in any position to which they may be adjusted, clamping hooks 31 are provided, one for each of the arcuate cam pieces, each of these clamping hooks having a hook portion engaging the outer edge of the arcuate cam piece and having a threaded shank extending through a hole in the circular cam-carrying disc 11, a nut 32 being provided for this screw-threaded shank, whereby the hook portion of the clamping hook may be drawn inwardly to force the arcuate cam piece firmly into the circular groove in which it slides and in which it is seated. These tightening nuts 32 may be provided with grooves 33 for engagement with a screw driver.

25 It will be seen that the length of time which the pivoted controlled member remains in any one position is dependent upon the speed at which the time controlled cam-carrying disc 11 is driven, and also upon the amount of the arcuate cam piece which is exposed in position to be engaged by the point or follower portion 18 of the pivoted controlled member. Thus by sliding any one of the arcuate cam portions in one direction or the other, the length of time which the follower portion will remain in contact with this particular cam piece may be lengthened or shortened.

30 The cam-carrying disc 11 may be provided with a central circular boss 34 onto which the point 18 of the controlled member may drop when it passes off the rear end of the innermost one 17 of the arcuate cam pieces, or any other suitable means may be provided for limiting the final movement of the pivoted controlled member.

35 An extension or thumb piece 35 is provided on the bracket 36 on which the roller 20 is mounted, this thumb piece serving as a handle to move the pivoted controlled member 10 out of the way when it is desired to lift the cam-carrying disc 11 off from its arbor 21 for purposes of adjustment, etc.

40 For lifting the point 18 of the pivoted controlled member from its innermost position in which it rests on the circular boss 34, to its outermost position in which it rests on the outermost arcuate cam piece 12, the return cam piece 19 is provided, which is so designed that it performs the return movement of the pivoted control member very quickly, during a very small part of a revolution of the cam-carrying disc 11. In some forms of our invention, this complete return movement of

the pivoted control member may be accomplished in less than 10 degrees of movement of the cam-carrying disc 11. Thus if the complete revolution of the cam-carrying disc requires a week for its completion, the return cam may be so designed that the complete return movement of the pivoted controlled member will be accomplished in four or five hours. For this purpose, the roller 20 mounted on the pivoted control member which co-operates with the return cam is mounted relatively close to the pivotal point of the pivoted control member, so that a relatively small movement of the axis of this roller will give a much greater movement of the point 18. If a still quicker return of the pivoted control member is desired, this may be accomplished by mounting the roller 20 still closer to the axis or pivot 26 of the controlled member.

45 It will be noted that the first point of engagement between the return cam 19 and the roller 20 (shown in dotted lines in Fig. 1) is substantially on the line between the axis of the pivoted control member and the axis of the rotatable cam-carrying disc, and that the side edge of the return cam 19 engages the roller 20 so that the return cam exerts a force on the roller substantially in the direction of the line of movement of the axis of the roller. The force exerted is thus very effective, because of the direction in which it is exerted.

50 The return cam 19 returns the controlled member 10 just far enough so that the outermost cam piece 12 can pass underneath the point 18 of the controlled member. In order to vary the time of return of the controlled member 10, the return cam 19 may be adjusted angularly about its axis. The return cam is shown as provided with means for holding it in three different positions, the return cam plate being provided with three openings 37, into any one of which the positioning pin 38 may enter. This pin 38 is mounted on the cam carrier 11; the return cam plate 19 is held in position on the cam-carrying disc 11 by means of the central screw 26.

55 After the rear edge of the return cam 19 passes from underneath the roller 20, the outermost cam piece 12 will continue to hold the control member in its outermost position until the point 18 drops off from the rear edge of the outermost cam piece 12 onto the next succeeding cam piece 13.

60 It will be noted that the cam pieces overlap each other so that there will always be a cam piece onto which the point 18 may drop.

In use and operation arcuate cam members 12 to 17, inclusive, are set to give the proper time intervals. As the cam carrying disc 11 slowly rotates, the follower 18 travels along the arcuate cam members dropping from one to the other successively and finally being

lifted from the inner cam member 17 back into the outer cam member 12 by means of the return cam 19.

Having thus described our invention, what we claim as new and desire to secure by United States Letters Patent, is:

1. A controlled member, movable back and forth, and means for controlling said member to cause it to be given a step-by-step movement in one direction, comprising a plurality of cam members having arcuate concentric cam portions of different radii, and a follower for successively engaging said arcuate cam portions, said cam members being adjustable independently of each other.

2. A controlled member, movable back and forth, and means for controlling said member to cause it to be given a step-by-step movement in one direction, comprising a plurality of cam members having arcuate concentric cam portions of different radii, and a follower for successively engaging said arcuate cam portions, said cam members being independently adjustable about their common axis.

3. A controlled member, movable back and forth, and means for controlling said member to cause it to be given a step-by-step movement in one direction, comprising a rotatable member having concentric grooves therein, and a plurality of arcuate cam members, one slidably mounted in each groove.

4. A controlled member comprising a pivoted member having a follower portion and a roller, and means for controlling said mem-

ber to cause it to be given a step-by-step movement in one direction, comprising a plurality of cam members having arcuate concentric cam portions of different radii, engaged by said follower portion, and a cam member for returning said pivoted controlled member, engageable with said roller.

5. Means for controlling a member to cause it to be given a step-by-step movement in one direction, comprising a rotatable member, and a sub-assembly readily attachable and detachable with respect to said rotatable member, comprising a rotatable cam carrier and a plurality of cam members mounted on said cam carrier for independent adjustment, whereby said sub-assembly may be readily detached from said rotatable member for adjusting said cam members.

6. Means for controlling a member to cause it to be given a step-by-step movement in one direction, comprising a rotatable member, and a sub-assembly readily attachable and detachable with respect to said rotatable member, comprising a rotatable cam carrier and a plurality of cam members mounted on said cam carrier for independent adjustment, whereby said sub-assembly may be readily detached from said rotatable member for adjusting said cam members, said cam members having arcuate concentric cam portions of different radii.

In witness whereof, we have hereunto subscribed our names.

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