J. I. LINER.

ELAPSED TIME RECORDER.

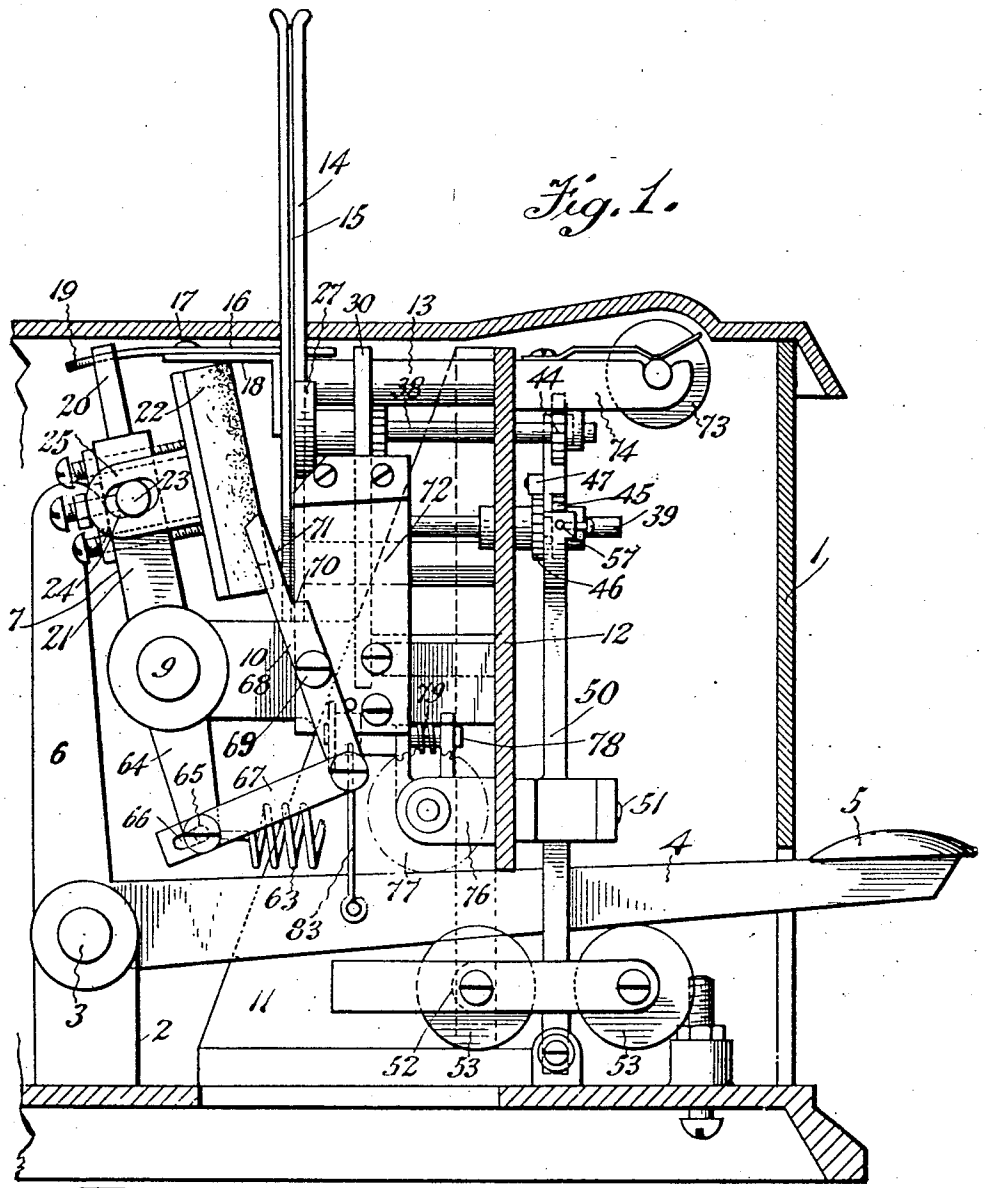
APPLICATION FILED AUG. 12, 1916.

1,332,907.

Patented Mar. 9, 1920.

3 SHEETS—SHEET 1.

Fig. 1.



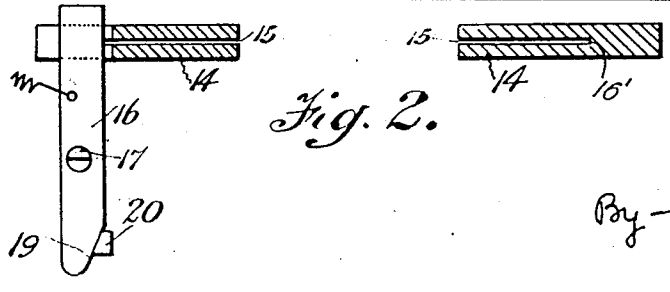


Fig. 2.

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3 SHEETS—SHEET 2.

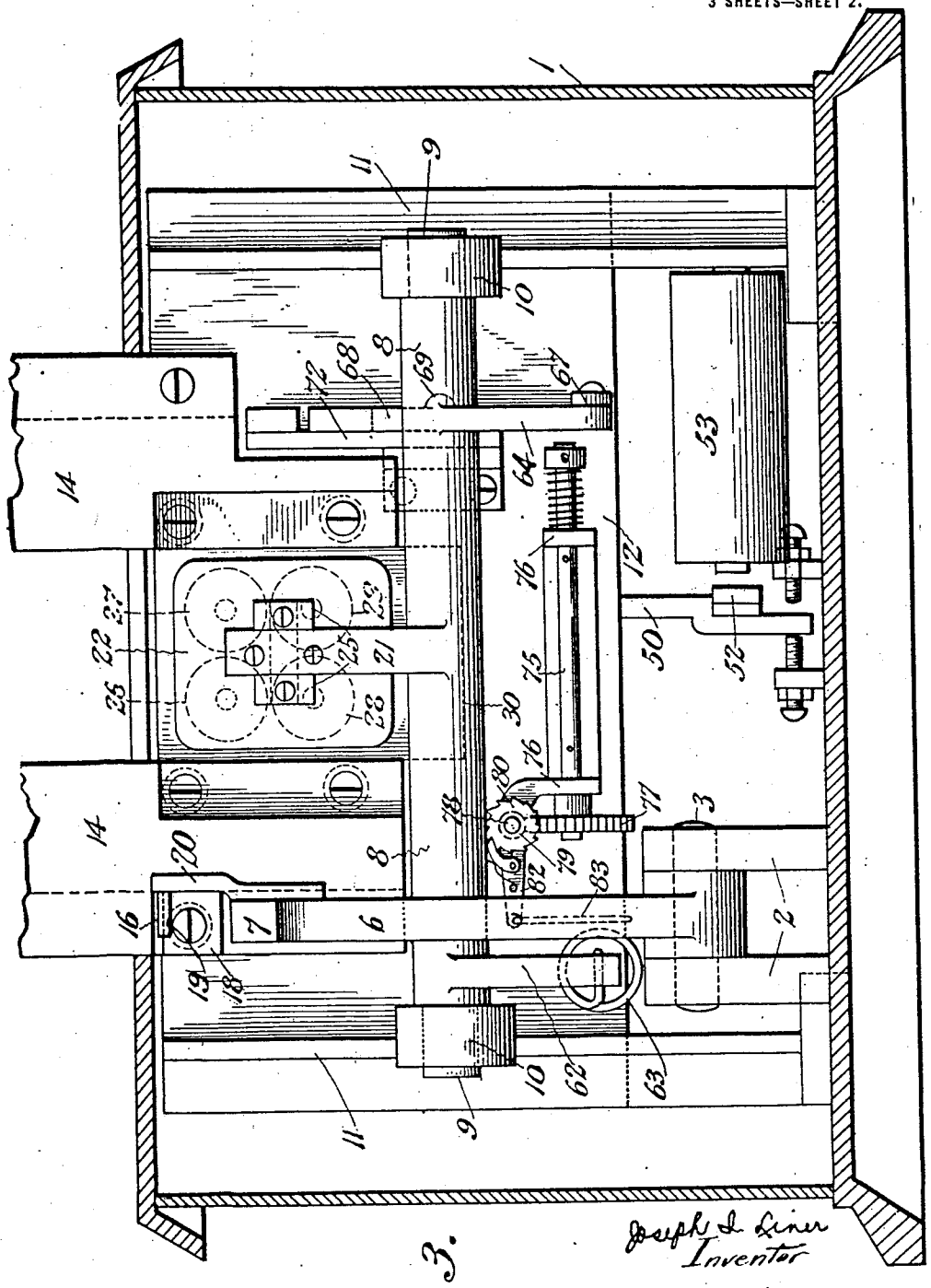


Fig. 3.

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3 SHEETS—SHEET 3.

Fig 5

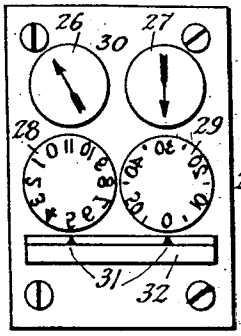


Fig. 4.

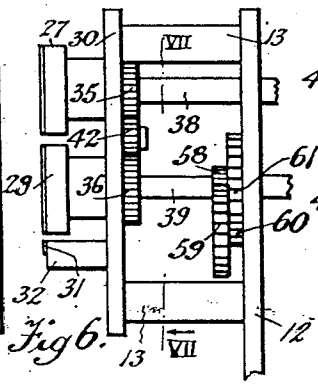


Fig 6.

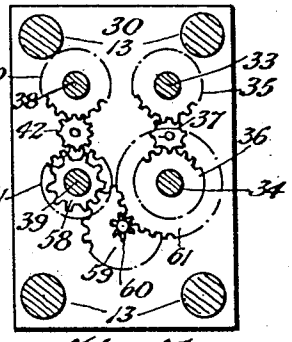


Fig. 7.

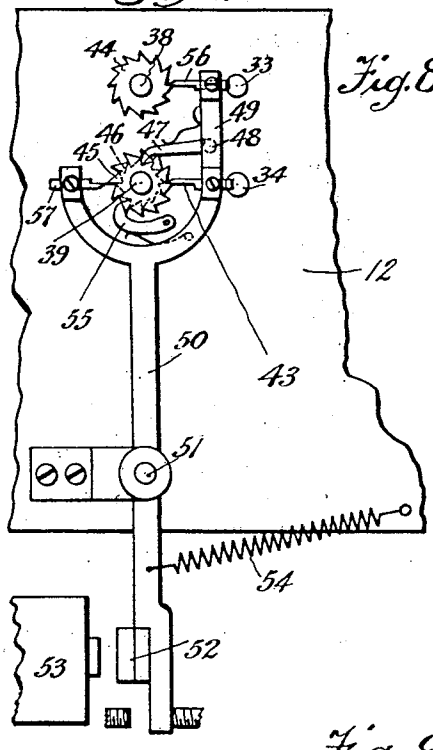
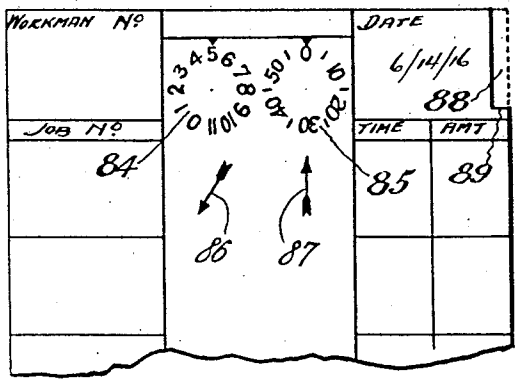
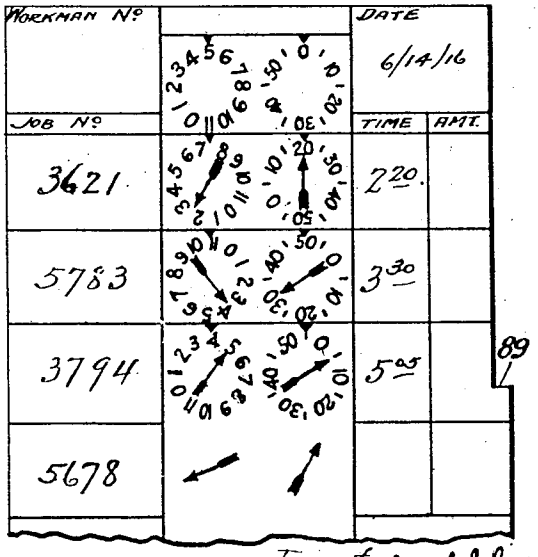


Fig. 9.

Fig. 8.





Inventor Joseph I. Liner

By Fenwick & Hall

his Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH I. LINER, OF DEMAREST, NEW JERSEY, ASSIGNOR TO THE COSTIMETER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ELAPSED-TIME RECORDER.

1,332,907. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed August 12, 1916. Serial No. 114,579.

To all whom it may concern:

Be it known that I, JOSEPH I. LINER, formerly a subject of the Emperor of Austria-Hungary, (having declared my intention of becoming a citizen of the United States of America,) residing at Demarest, county of Bergen, and State of New Jersey, have invented certain new and useful Improvements in Elapsed-Time Recorders, of which the following is a full and clear specification.

The main general object of the present invention is to provide a simple and effective time recording mechanism, whereby a series of consecutive elapsed time records can be made upon a single card, so that a workman occupied upon a number of jobs during the working day can conveniently record the time expended on each of the jobs and hand in a complete time record showing the proper allotment of his day's time, from which the office record can be made up.

One of the objects of the present invention is to provide improved means for accurately registering different cards with respect to the time recording mechanism even though said cards may vary in width and thickness.

Another object is to provide an improved construction, combination and arrangement of parts in a time recording mechanism.

Other and further objects will appear in the specification and be pointed out in the claims, reference being had to the accompanying drawings.

In carrying out my object, I have arranged a series of time operated stamps in complementary pairs and provided suitable ticket positioning devices for presenting a time check or ticket in successive printing positions with reference to said time stamps, so that the manually produced impressions will be superimposed one upon another to give upon each of the combined impressions the visual record of the time elapsed between the two superimposed impressions which were made, for instance, at the start and finish of the particular operation to be timed. With this arrangement, each impression of the time stamps gives with one complementary part of each pair of dies, the time of starting the operation, and with the other complementary part of each pair of dies, the time of finishing the operation. Each impression made for recording the finish of an operation, automatically records the time of starting of the succeeding operation, on the assumption that the next operation commences immediately. In a case in which there is an idle period, or a period of work not associated with the card record in question, the starting time of the job next to be recorded upon the card in question, will, of course, have to be recorded by a new impression upon the card. This new impression will show the time which has elapsed since the completion of the next preceding job, which can be noted upon the card as idle time or as connected with some other matter according as circumstances may dictate.

The preferred form of ticket positioning device, comprises a ticket guideway leading to a position between time controlled dies or stamps and the coöperating impression platen and a ticket cutting knife arranged to be operated simultaneously with the printing platen for severing a part of the ticket at one edge as each impression is made. The stop for limiting the insertion of the ticket in the machine is preferably in the form of a heel projecting at right angles to the cutting edge of an oscillating knife. By this means the ticket having the first impression of the dies upon it, will also have portions of the edge cut away to form a new gaging edge or shoulder separated from the original gaging edge (or bottom of the original ticket), the same distance that separates the printing dies. By this means the ticket when presented in the machine for a second impression will have its new engaging edge brought in contact with the limited stop to make sure that the parts of the first and second impressions of the dies will be accurately superimposed.

It will be understood that the complementary printing dies are operated by suitable time mechanisms through an arrangement of gears to cause them to rotate in unison. The preferred arrangement for operating the dies is an electromagnetic step by step mechanism under the control of a master clock.

In the drawings which show a simple and efficient embodiment of my invention,—

Figure 1 is a side elevation of the working parts of a time recorder constructed in

accordance with the principles of the present invention, parts being broken away and the housing shown in section;

Fig. 2 is a transverse section of the oppositely arranged guides of the card chute, parts being shown in plan;

Fig. 3 is a rear elevation of the mechanism shown in Fig. 1, parts being broken away and the housing shown in section;

Fig. 4 is a front elevation of the periodically operated driving mechanism, parts being broken away;

Fig. 5 is a front elevation of the time recording dies;

Fig. 6 is a side elevation of the same, parts being broken away;

Fig. 7 is a rear elevation of the gearing;

Fig. 8 shows a time card after the first impression; and

Fig. 9 shows a time card after a number of successive impressions have been made.

Referring more particularly to the drawings, in the embodiment shown therein, the housing 1 includes a bottom wall which constitutes a base plate for carrying the spaced bearing blocks 2 within which is journaled an oscillatory shaft 3, to which is keyed a bent operating lever comprising a forwardly extending arm 4 carrying a handle 5 and an upwardly extending arm 6 which bears on a lever arm 7, carried by a transverse shaft 8 provided with reduced ends 9 journaled in bearing brackets 10, which project rearwardly from the laterally spaced standards 11 which are mounted on the base plate or bottom wall of housing 1. Secured to the standards 11, according to the present embodiment of my invention, is a plate 12. Spaced from the plate 12 and rigidly connected thereto by brackets 13 are the laterally spaced guides 14 provided with grooves 15 in their inwardly presented edges so as to form chutes for cards which are to have time records printed thereon. The innermost wall 16' of the slot in the right hand guide 14 according to Figs. 2 and 3, forms a surface for gaging the position of a card in the chute while the left hand guide is slotted into the groove 15 to accommodate one arm of a vibratory lever 16 which is pivoted at 17 on a bracket 18. The other arm of said lever is provided with a cam surface 19, (see Figs. 1 and 2) which is engaged by a cam bar 20, carried by the lever arm 7. It will be understood from this description that whenever the handle 5 is depressed, the inward movement of cam bar 20 oscillates lever 16 so that a card which has been deposited in the chute 14, will be moved toward the right according to Fig. 2 to gage it against the inner wall 16' of the right hand slot 15. Referring now to Figs. 1 and 2, a lever arm 21 which is carried by the transverse shaft 8 is adjustably connected to an impression pad 22 by means of a pin 23 movable in slots 24 formed in bearing lugs 25, which are rigid with the pad 22. The impression pad 22 cooperates with the dies 26, 27, 28 and 29, which are journaled in bearings rigid with a plate 30. Dies 26 and 27, for convenience, may be termed indicators and in distinction thereto, dies 28 and 29 may be termed dials, the die 28 being provided with numbers representing hours, while the die 29 is provided with numbers representing minutes. As these dials rotate, the numbers thereon are successively brought opposite to indicator marks 31 on a fixed bracket 32, thus indicating the time of day which is recorded on the card at each impression. According to Fig. 4, the dial dies rotate in a clockwise direction, the arrow dies also rotating in a clockwise direction. Keyed to the shafts 33 and 34 which carry dies 26 and 28, are gears 35 and 36 which mesh with an interposed idler 37. Dies 27 and 29 are carried by shafts 38 and 39 which also carry gears 40 and 41, which mesh with an interposed idler 42. As shown in Figs. 4 and 6, shafts 38 and 39 extend through a forward plate 12 and have keyed thereto the ratchet gears 44 and 45 by means of which the dials may be positively locked in position at each operation. Between the ratchet 45 and plate 12, is another ratchet 46 which is operatably engaged by a spring-pressed pawl 47, which is pivoted at 48 to an extension 49 carried by one arm of the forked upper end of a vibratory lever 50 which is pivoted at 51. The lower arm of said lever 50 is provided with an armature 52 to adapt said lever to be positively moved in one direction by a magnet 53 which may be periodically energized by a master controlled time system. This movement, however, is the ineffective or return movement, the effective movement being produced by a spring 54 so that in case the magnet 53 is energized at some instant during an impression operation, the pawl 47 will be properly positioned for action as soon as the dies are relieved from the impression pressure. A dog 55 pivoted to plate 12, locks the ratchet against retrogression. The extension 49 also carries a locking dog 56 which periodically comes into engagement with a tooth of the ratchet 44 at about the end of each tooth movement produced by pawl 47. Other locking dogs 43 and 57 carried by opposite branches of the upper end of lever 50 are alternately moved into engagement with the teeth of ratchet 45 during the oscillations of lever 50. This mechanism constitutes improved means for eliminating the effects of backlash in the geared connections and also prevents overtravel due to inertia of the parts. Shaft 39 is connected by suitable gears 58, 59, 60 and 61 to shaft 34 for rotating shaft 34, once for every twelve revolutions of the dial 28. An arm 62 depending from shaft 8, is acted upon by a spring 63

and tends to hold the impression pad 22 away from the dies. Another arm is connected by a lost motion pin 65, and slot 66 connected to one end of a link 67, the other end of said link being connected to one arm of a shearing lever 68 which is pivoted on a stud 69 and provided with a shoulder 70 which intercepts the lowermost edge of one corner or the shoulder formed by a cut out recess of a card which has been introduced into the card chute. This means coöperates with the oscillatory lever 16 in registering the card within the chute. The upper arm of lever 68 is formed with a shear edge 71 which coöperates with a fixed shear blade 72 for cutting away successive portions of one edge of the card and thereby forming shoulders at successively different points on said card. A ribbon holding spool or drum 73 may be journaled in brackets 74 and the ribbon is passed by suitable guides over the faces of the dies 26, 27, 28 and 29, a feeding movement being imparted thereto by a spool or holder 75 journaled in the spaced arms 76 of a bracket, said spool being provided with a worm gear 77 keyed thereto driven by a worm 78 on a shaft 79. Keyed to the worm shaft 79 is also a ratchet 80 which is periodically operated by a pawl 81 mounted on an oscillatory lever 82, which is connected by a link 83 to the operating lever 4. The operation of the machine will now be readily understood.

The card is inserted head down in the chute and at the first operation performed thereon, the scale dials 84 and 85 are recorded to show the time of day (five o'clock in the present instance) according to Figs. 8 and 9. At the same time the arrows 86 and 87 are recorded in such a position that at the next operation, the meanwhile rotating dials will superimpose a dial impression which will give the elapsed time as shown in the second row of Fig. 9. At each operation, a recess 88 is cut equal in length to the distance between the center lines of arrows and dials in Fig. 5. Fig. 9 shows the result of four complete operations, the shoulder 89 *et seq.* being adapted at each successive operation to rest on the shoulder 70 on lever 68. The features which differentiate this machine from that at present well known art, are set forth in the claims.

I claim:—

1. In a time printing mechanism, a plurality of time recording instrumentalities arranged to operate on a card, and means for successively positioning said card to bring one and the same portion thereof into recording positions with respect to said instrumentalities at different times.

2. In a time printing mechanism, a plurality of time recording instrumentalities arranged to operate on a card, and means for successively positioning said card to bring one and the same portion thereof into positions to receive impressions from said instrumentalities respectively at different times, said instrumentalities being adapted to record on said card portion the beginning and ending of a period of time.

3. In a machine of the character described, time-recording mechanism comprising spaced instrumentalities for recording the beginning and ending respectively of time periods, and means for successively positioning a card to bring one and the same portion thereof into recording positions with respect to said instrumentalities.

4. In a machine of the character described, time-recording mechanism comprising spaced instrumentalities for recording the beginning and ending respectively of time periods, and means for successively positioning a card to bring one and the same portion thereof into recording positions with respect to said instrumentalities, said instrumentalities being simultaneously operated on different portions of said card.

5. In a time printing mechanism, a plurality of time recording instrumentalities arranged to simultaneously operate on different portions of a card, and means for successively positioning said card to bring a given portion thereof into positions to receive impressions from said instrumentalities at different times.

6. In a machine of the character described, a card receptacle, means for cutting successive portions from a card inserted into said receptacle, recording instrumentalities arranged to print superposed records on said card in its different positions and means for rotating said instrumentalities.

7. In a machine of the character described, time recording means adapted at one operation to record the beginning of one time period and the ending of a prior time period, said recording means being also adapted at another operation to record the ending of the first mentioned time period, said time recording means including a periodically movable die holder, and dies carried by said die holder for simultaneously recording upon a time card the beginning and ending of different periods of time.

8. In a machine of the character described, time recording means adapted at one operation to make separate records corresponding respectively to the beginning of one time period and the ending of a prior time period, said recording means being also adapted at another operation to record the ending of the first mentioned time period, said time recording means including a periodically movable die holder, and dies carried by said die holder for simultaneously recording upon a time card the beginning and ending of different periods of time, and

means actuated at each operation of the machine for controlling the position of a time card for another operation.

9. In a machine of the character described, periodically operated stamping dies including dial-stamps and indicator stamps rotatable on different axes, means for engaging a shoulder on a card for holding said card in operative position with respect to said stamping dies, and means for cutting successive portions from said card to change the location of said shoulder on the card to locate one and the same portion of said card with respect to different stamping dies at successive operations.

10. In a machine of the character described, instrumentalities rotatable about spaced axes and adapted to make complementary impressions which together record a lapse of time, and means for differently positioning a card at successive operations of said machine to arrange one and the same portion of said card in recording positions with respect to said instrumentalities respectively.

11. In a machine of the character described, hour and minute dials rotatable about spaced axes, hour and minute pointers rotatable about spaced axes which are also spaced from the rotary axes of said dials, and means for positioning a card to arrange one and the same portion thereof in positions to be recorded upon by a dial and pointer successively.

12. In a machine of the character described, hour and minute dials rotatable about spaced axes, hour and minute pointers, rotatable about spaced axes which are also spaced from the rotary axes of said dials, and means for positioning a card to arrange one and the same portion thereof in positions to be recorded upon by a dial and pointer successively, said pointers rotating relatively to said dials.

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