United States Patent [19]

Majorino

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[45] **Jan. 29, 1974**

[54] **ELAPSED TIME RECORDER**

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[52] **U.S. Cl.** **346/95,** 346/83, 346/88

[51] **Int. Cl.** **G07c 1/02**

[58] **Field of Search** 346/82–86, 88, 346/90, 92, 95, 96, 98, 99, 104, 59, 60

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Attorney, Agent, or Firm—Frederick J. Haesche

[57] **ABSTRACT**

An elapsed time recorder having a card receiver for supporting a record card in a first position and in a second position displaced from the first position. A pair of rotable printing dies spaced apart in the direction of and at a distance substantially equal to the displacement of the card rotate in accordance with passage of time. The face of one of the dies has an annular series of time graduations thereon, whereas the other die face bears a reference mark. Means is provided to bring at least one of the die faces into printing engagement with the card in its first position and at least the other of the die faces into printing engagement with the card in its second position so that the resulting imprints on the card are in overlapping registry with each other. The elapsed time interval between dies may be read directly from the resulting composite imprint on the card. The recorder also includes means for recording the time at the beginning and end of the interval.

12 Claims, 10 Drawing Figures

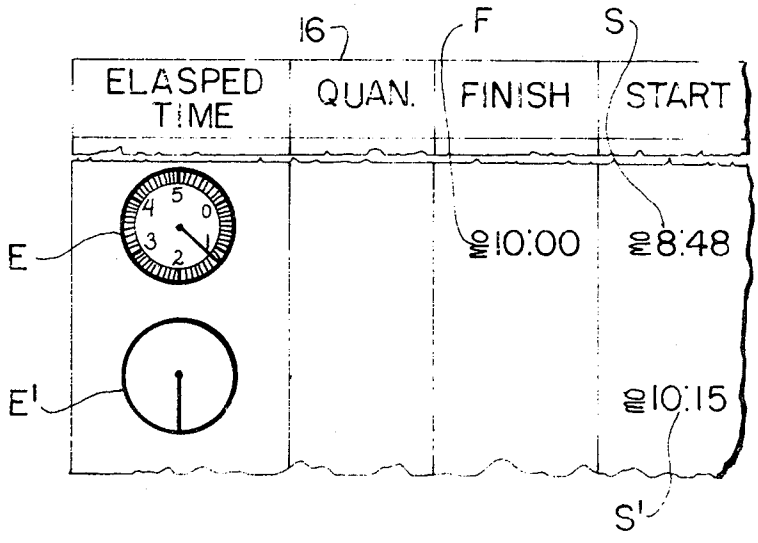


FIG. 1

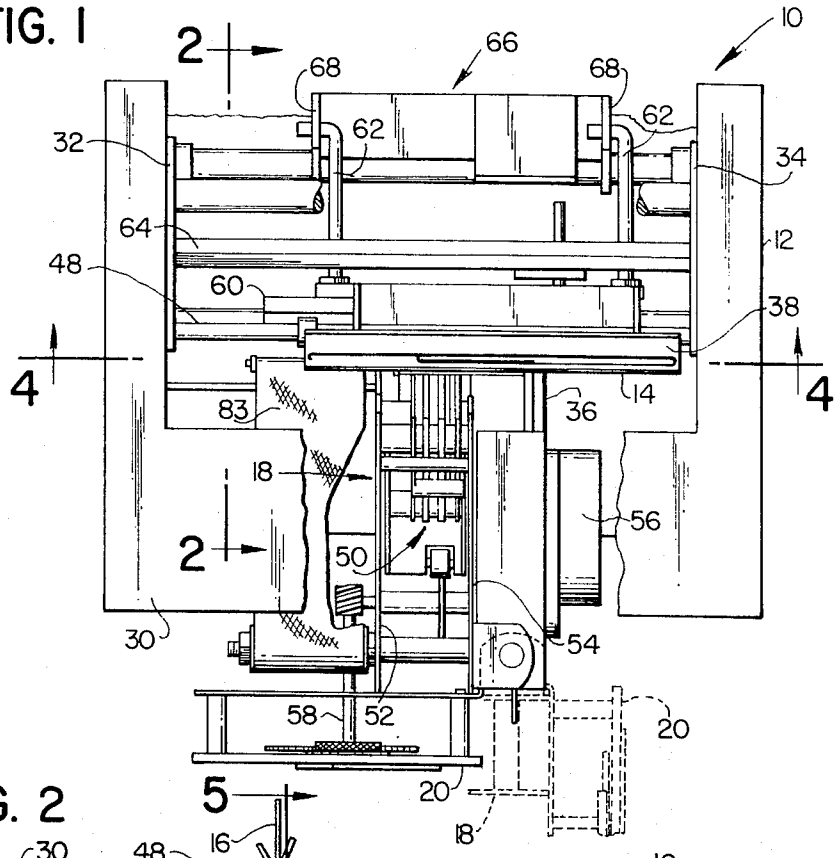


FIG. 2

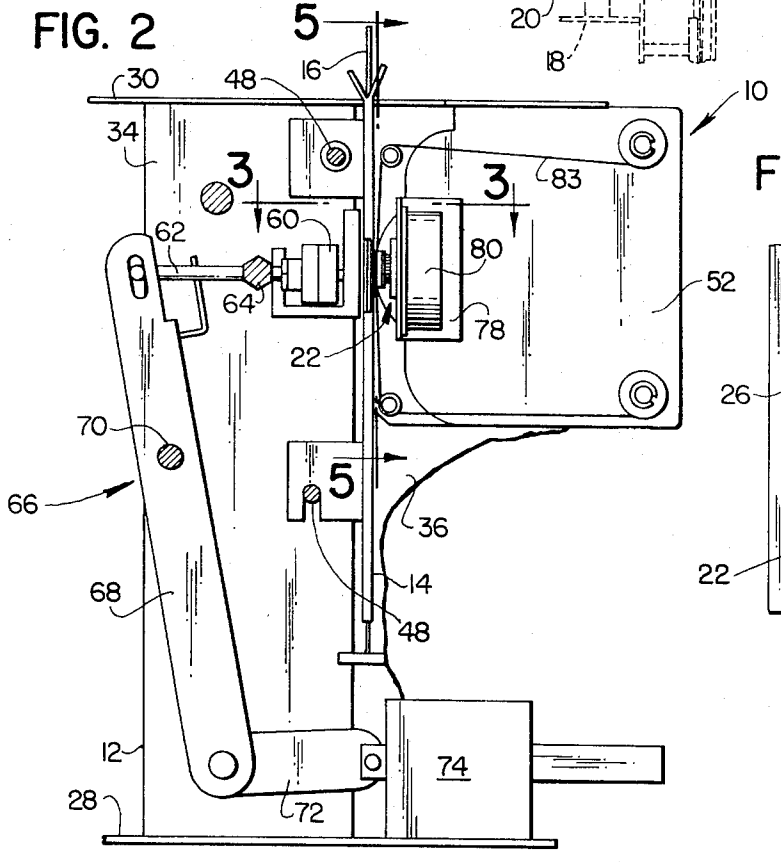


FIG. 3

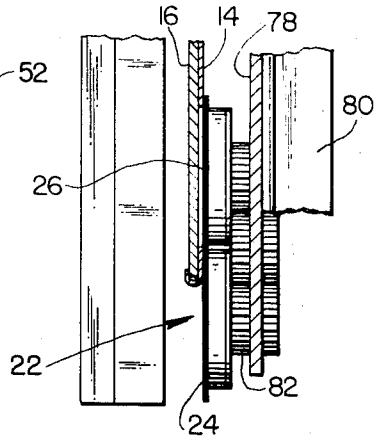


FIG. 4

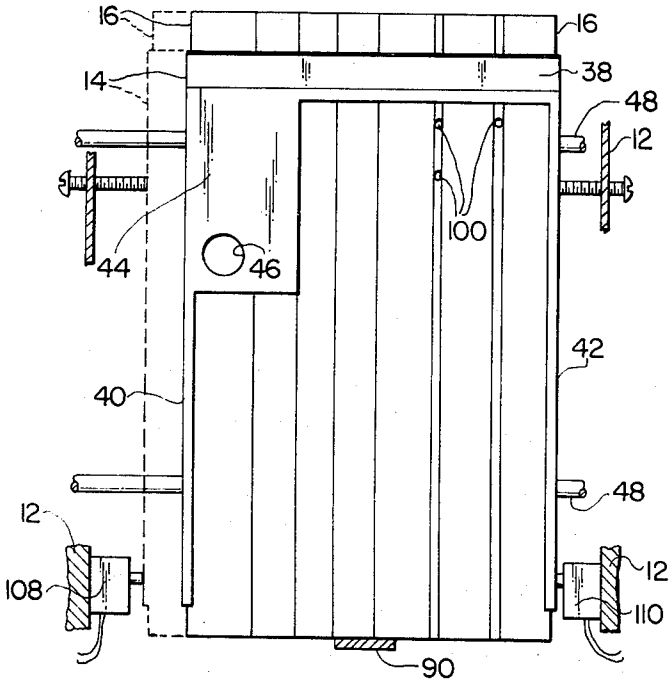


FIG. 5

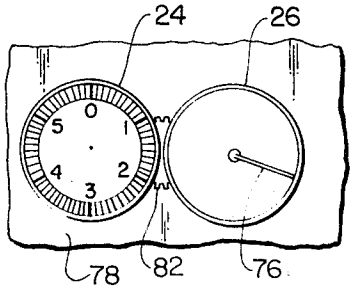


FIG. 6

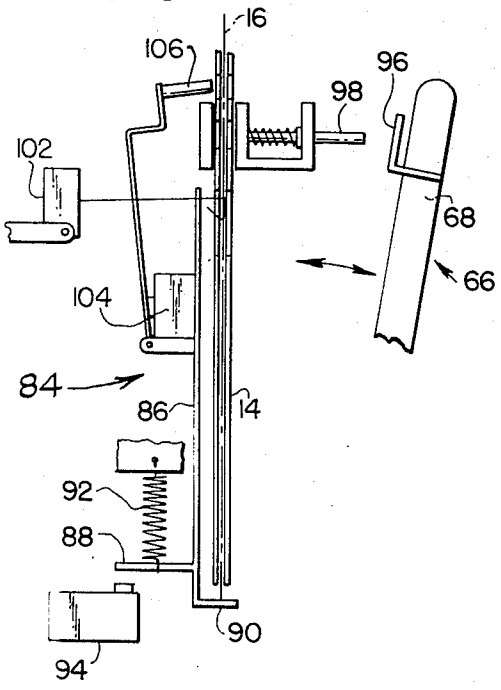


FIG. 7

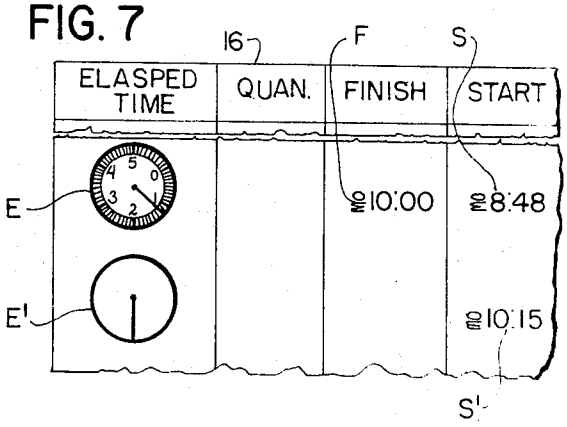


FIG. 8

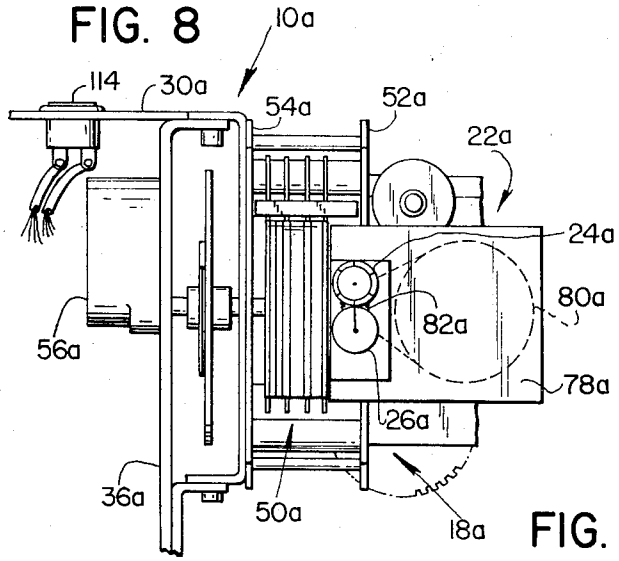


FIG. 9

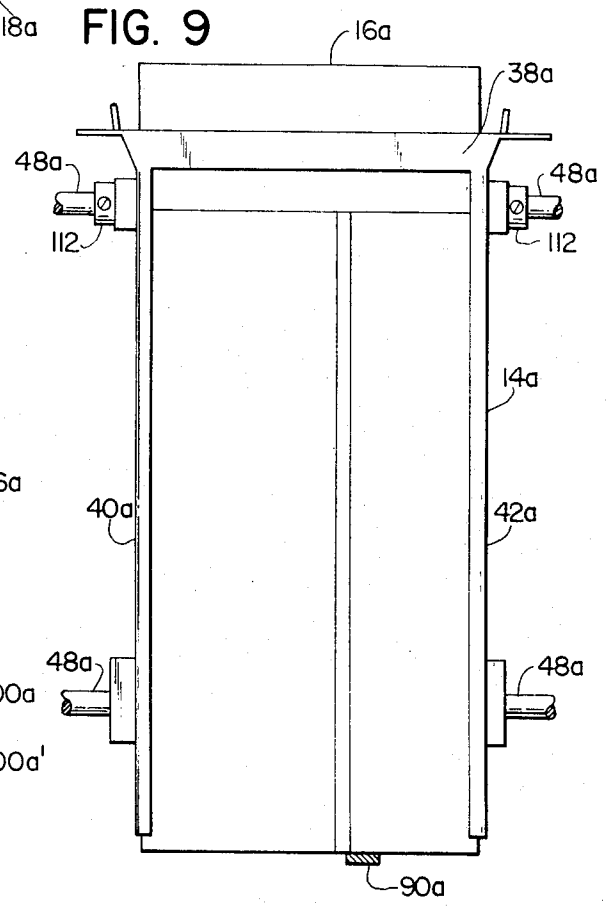
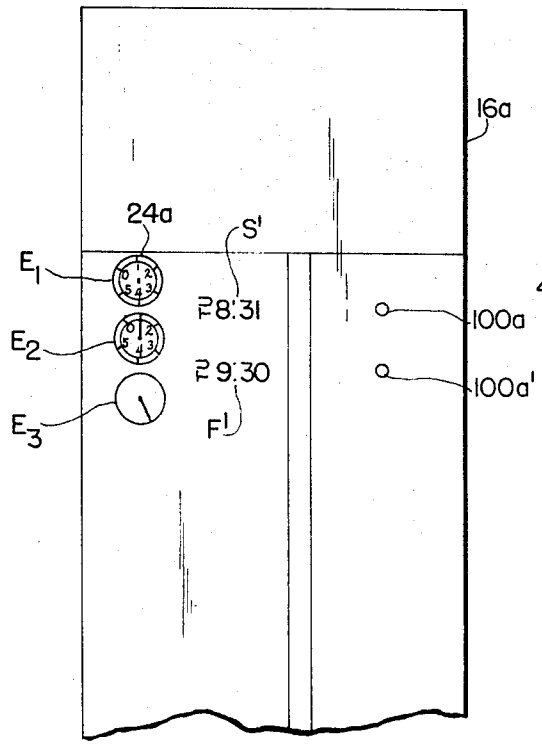


FIG. 10



ELAPSED TIME RECORDER

BACKGROUND OF THE INVENTION

This invention relates in general to time recorders and deals more particularly with an improved time recorder for providing a printed record of elapsed time for direct read out.

Most conventional attendance time recorders provide a record of time at the beginning and end of a time interval. Time recording devices of the latter type are commonly employed in parking facilities, industrial plants and the like where the data ultimately desired is a function of elapsed time computed at an hourly rate. The need for practical apparatus for directly recording elapsed time to simplify computation of hourly cost is well recognized in the art. Apparatus heretofore provided for recording elapsed time has usually included a pair of operating handles or the like one of which must be operated at the start of a time interval and the other of which must be operated at the end of the interval. Such apparatus may introduce possible operational error and is unduly complex and expensive to manufacture and service.

The general aim of the present invention is to provide an improved elapsed time recording apparatus which is simple to operate and may be manufactured and serviced at low cost. A further aim of the invention is to provide an improved unitary elapsed time recording mechanism compatible with various existing attendance time recording apparatus lacking a direct elapsed time recording feature and which may be readily incorporated in such recording apparatus without substantial change in the design of the recording apparatus.

SUMMARY OF THE INVENTION

In accordance with the present invention an improved elapsed time recorder is provided which comprises a card receiver for supporting a record card in one position and in another position displaced from said one position and a pair of rotable printing dies driven in accordance with passage of time an spaced apart in the direction of and at a distance substantially equal to card displacement. One of the dies has time graduations thereon and the other includes a reference mark. The recorder also has means for printing indicia from at least one of the dies when the card is in one of its positions and for imprinting indicia from at least the other of the dies when the card is in its other position, so that the resulting imprints are in registry and provide a composite imprint which indicates elapsed time between imprints for direct read out.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a time recorder embodying the invention and shown with the cover removed therefrom.

FIG. 2 is a fragmentary side elevational view of the time recorder of FIG. 1, shown with a record card positioned therein, the clock portion of the recorder not being shown.

FIG. 3 is a somewhat enlarged fragmentary sectional view taken along the line 3—3 of FIG. 2.

FIG. 4 is a fragmentary sectional view taken along the line 4—4 of FIG. 1 and shows the card receiver with a card positioned therein.

FIG. 5 is a somewhat enlarged fragmentary sectional view taken along the line 5—5 of FIG. 2.

FIG. 6 is a somewhat schematic right side elevational view of the machine of FIG. 1 and shows a mechanism for controlling sequential positioning of a card in the card receiver.

FIG. 7 is a somewhat enlarged fragmentary view of a record card which has received imprints in the time recorder.

FIG. 8 is a fragmentary left side elevational view of another time recorder embodying the invention, the time recording mechanism being shown pivoted to an open position corresponding to the broken line position of the time recording mechanism in FIG. 1.

FIG. 9 is generally similar to FIG. 4, but shows the card receiver of the recorder of FIG. 8 with a record card positioned therein.

FIG. 10 is a somewhat enlarged view of a record card used with the recorder of FIG. 8, shown with imprints recorded thereon.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Turning now to the drawings, a preferred embodiment of the invention is illustrated and described with reference to a time recorder or time clock designated generally by the reference numeral **10** and shown with the cover removed therefrom. The illustrated recorder **10** is an attendance time recorder of a type manufactured by Lathem Time Recorder Company, Atlanta, Georgia, designated 8800 Series, particularly adapted to provide a printed record of time at the beginning and end of a time interval, as for example, times of arrival and departure, and modified to embody the invention.

The recorder **10**, as provided by the manufacturer, includes a frame **12** which has a movable card receiver **14** mounted thereon for receiving and supporting a record or time card **16** inserted thereinto. The recorder **10** also includes an exact time recording mechanism indicated generally at **18** for printing exact time in standard units on the card **16** at the beginning and end of the time interval to be recorded. The card holder **14** is adapted to hold the record card in first and second positions and is supported on the frame **12** for horizontal movement relative to the recording mechanism **18** between the latter two positions. A clock **20** positioned at the front of the recorder, as it appears in FIG. **1**, has a dial which is visible through an opening in the front of the cover (not shown).

In accordance with the present invention, the recorder **10** also includes an elapsed time recording mechanism indicated generally at **22** which comprises a pair of rotatable printing dies respectively designated by the numerals **24** and **26** which rotate in accordance with passage of time. The die **24** has indicia of time thereon. The other die **26** includes indicia of time reference. The dies **24** and **26** are spaced apart in the direction of card displacement a distance substantially equal to the distance between the first and second positions of the card **16**. At least one of the dies is adapted to form an imprint on the card in its first position and at least the other of the dies is adapted to form a second imprint on the card in its second position. Since the distance between the dies **24** and **26** as measured in the direction of card movement is substantially equal to the distance between the first and second positions of the card it will be evident that the resulting die imprints on the card will be in registry. The composite imprint

formed by the two dies provides a printed record of elapsed time for direct read out.

The time card **16** is particularly adapted to receive time imprints in adjacent vertical columns designated "Start" and "Finish" and composite imprints of elapsed time in another vertical column headed "Elapsed Time." Additional columns may be provided on the card to receive other information to be filled in by the user as, for example, the quantity of items manufactured during a given time interval. A typical time card **16** is shown in FIG. **7** as it appears after it has been inserted into the recorder **10** a plurality of times. Start and finish time imprints are respectively designated as S and F. A composite imprint of the dies **24** and **26** is designated by the letter E and indicates the elapsed time interval between times S and F. At E' an imprint of the reference die **24** is shown which has been formed on the card **16** at the start of the next time interval to be recorded.

Considering now the recorder **10** in further detail, the frame **12** is formed from a plurality of plates welded together in assembly. More specifically, the frame includes a base plate **28,** a top plate **30,** and a pair of transversely spaced vertically disposed side plates **32** and **34** which connect the base and top plates. Another vertically disposed plate **36** positioned forwardly of the side plates further connects the base and top plates.

The card receiver may take various forms but preferably, and as best shown in FIG. **4,** the receiver **14** includes a bell-mouthed upper end portion **38** which defines a card receiving slot. A pair of opposing vertically disposed channels **40** and **42** depend from the upper portion **38** to receive and compliment associated marginal edge portions of the card **16** and guide it along a predetermined vertical path when it is inserted into the card receiver. The card receiver **14** also has a thin mask or shield **44** mounted at the upper left side thereof which covers an associated portion of the face of the card **16** received therein. A circular opening **46** formed in the mask **44** exposes an associated portion of the card face. Rods **48, 48** extend transversely between the plates **32** and **34** rearwardly of the card receiver **14** to support it for horizontal sliding movement relative to the frame **12** between first and second positions respectfully indicated by full and broken lines in FIG. **4** respectively corresponding to the first and second positions of the card **16.**

Considering now the time recorder mechanism in further detail, the exact time recording mechanism **18** comprises a type wheel assembly indicated generally at **50.** It includes a plurality of type wheels journalled in adjacent relationship for rotation about a horizontal axis parallel to the face of the card **16** between a pair of connected plates **52** and **54.** The plate **54** is hinged at the forward end of the plate **36** to pivot about a vertical axis so that the type wheel assembly **50** may be pivoted to an open position clear of the top plate **28,** as indicated by broken lines in FIG. **1** and removed from the frame **12,** if desired, for convenient servicing. A synchronous motor **56,** operably connected to the type wheel assembly **50** by a clutch mechanism when the type wheel assembly is in its operating position on the frame, indexes the type wheels in accordance with passage of time in a manner well known in the art. The motor **56** also drives the clock **20** which is connected thereto by a shaft **58** and an associated gear train. Each of the type wheels has a circumaxial series of time graduations on the peripheral surface thereof which are disposed in close proximity to the face of the card **16** when it is positioned within the card receiver. A ribbon feed mechanism of conventional type, which for clarity of illustration is not shown, cooperates with the type wheels to apply ink imprints to the face of the card.

The recording mechanism also includes horizontally elongated platen **60** which cooperates with both the exact time recording mechanism **18** and the elapsed time recording mechanism **22** to form imprints on the card **16.** The platen **60** is supported rearwardly of the card receiver **14** in alignment with the type wheels, at a point where the type wheels are generally tangent to the card **16** for movement generally toward and away from the type wheels. More specifically, the platen **60** comprises an elongated bar mounted on a pair of horizontal rods **62, 62** which are supported for sliding movement by and extend through a support member **64** which extends transversely between the plates **32** and **34.** A lever assembly indicated generally at **66** includes a pair of levers **68, 68** connected together to pivot in unison about a support rod **70** which extends transversely between the plates **32** and **34.** Each lever **68** has a slot formed in its upper end which receives a bent end portion of an associated rod **62.** The lower ends of the lever assembly **66** is connected by a linkage **72** to the armature of an electric motor or solenoid **74** mounted on the base **28.** Operation of the solenoid as hereinafter further described pivots the lever assembly **66** to move the platen **60** into striking engagement with the rear surface of the card **16** to cause the type wheels and dies to form an imprint on the front surface of the card.

Considering now the elapsed time mechanism **22** in further detail, in accordance with the invention, the dies **24** and **26** comprise a pair of disks of substantially equal size as best shown in FIG. **5.** The disk **24** has an annular series of time graduations on the face thereof. As shown, the disk **24** has uniformally spaced numerical graduations from 0 to 5, each numerical graduation representing 1 hour of elapsed time. The angular space between adjacent numerical graduations is divided into equal parts, each part representing a 6 minute interval of elapsed time. Thus, in the illustrated recorder **10,** the disk **24** is adapted to make one complete revolution every 6 hours, however, it should be understood that other arrangements of time graduations may be provided and are contemplated within the scope of the invention. The disk **26** has a radially disposed time reference mark **76** on the face thereof, and is arranged to rotate in unison with the disk **24** in the same direction and at the same rate. The disks **24** and **26** are journalled for rotation about parallel axes normal to the face of the card **16** and are carried by a bracket **78** mounted on the plate **52.** The faces of the disks are disposed in substantially the same plane and in close proximity to the face of the card **16** when it is positioned in the card receiver. The disks **24** and **26** may, if desired, be driven by the motor **56,** however, preferably and as shown, an individual synchronous drive motor **80** is provided which drives the disks through an associated gear train **82** as best shown in FIG. **3.** Thus, the elapsed time recording time mechanism **22** comprises a unitary structure which may be installed on any compatible time recorder and may be readily removed therefrom for servicing or replacement. The elapsed time recording mechanism **22** also includes an associated ribbon feed mechanism which has an inked ribbon **83,** a por-

tion of which is disposed between the face of the disks **24** and **26** and the card receiver **14.** A ratchet and pawl mechanism (not shown) advances a ribbon **83** each time the recorder operates, in a manner well known in the art. The illustrated recorder **10** has separate ribbon feed mechanisms for the exact time recording mechanism **18** and the elapsed time recording mechanism **22.** However, it should be noted that a single ribbon feed mechanism may be provided which cooperates with both time recording mechanisms and such arrangement is contemplated.

The apparatus **10** is adapted to provide a record of a plurality of time intervals printed in vertical sequence on the card **16,** as shown in FIG. **8** and for this purpose the recorder **10** includes a vertical indexing mechanism. The indexing mechanism, shown somewhat schematically in FIG. **6** and indicated generally by the numeral **84** includes a contact making lever **86** which is supported for vertical movement relative to the frame and carries a contact arm **88.** The contact making lever **86** has an abutment **90** disposed below the card receiver **14** and in the path of the inserted card and is biased upwardly relative to the frame of the recorder by a light spring such as indicated at **92.** It is arranged to be moved downwardly by the continued advance of an inserted card **16.** When the card **16** is initially inserted in the card receiver **14,** continued advance of the card causes the lower edge thereof to engage the abutment **90** thereby moving the contact arm **88** ito engagement with a switch **94** which energizes the solenoid **74** to operate the printing mechanism, as aforedescribed. A striker **96,** carried by the lever assembly **66** operably engages a punch **98** which forms a perforation in the card **16** as indicated at **100** in FIG. **4.** The indexing mechanism **84** also includes a sensing switch **102** for detecting the presence of a card in the card receiver. When the card is next inserted in the card receiver, the sensing switch **102** energizes another solenoid **104** which pivots a locating finger **106** into engagement with the front surface of the card **16** in vertical alignment with the punch. When the locating finger, which is carried by the contact making lever **86,** finds the perforation **100** formed in the previous printing operation, the finger enters the perforation whereupon continued advance of the card causes downward movement of the locating finger **106,** the contact making lever **86** and the contact arm **88** to energize the solenoid **74** and simultaneously print the next time registration and form the next perforation in the card. Upon completion of the printing cycle, a relay circuit or the like (not shown) associated with the solenoid **104** attains open circuit condition permitting the locating finger **106** to be biased to a normal position out of engagement with the card, whereupon the card may be removed from the card receiver.

Indexing mechanisms of the type generally aforedescribed are well known in the art. Disclosure of such a mechanism, suitable for use with the elapsed time recording mechanism of the present application, is found in U. S. Pat. No. 2,645,551, issued to Sprecker, July 14, 1953, for Time Recording Machine.

It is essential to the proper operation of the elapsed time recording mechanism that the disks **24** and **26** imprint on the card in overlapping registration to assure accurate indication of elapsed time. Accordingly, a means is preferably provided to disable the operating mechanism except when the card **16** is in one of its record receiving positions. In the illustrated embodiment **10,** the disabling means comprising a pair of micro switches **108** and **110** mounted on the frame **12** in the path of the card receiver **14** as shown in FIG. **4.** The switches **108** and **110** are each electrically interlocked with the operating switch **94** so that the latter switch cannot energize the solenoid **74** unless the card receiver is in either of its imprint receiving positions.

Considering now the operation of the recorder **10,** at the start of a time interval to be recorded the card receiver **14** is shifted to its first position or full line position of FIG. **4.** In the latter position the die **26** is aligned with the opening **46.** When the card **16** is inserted into the card receiver the lower edge of the card engages the abutment **90.** Further advance of the card causes the contact arm **88** to actuate the switch **94** whereupon an imprint of the time reference die **26** is formed on the face of the card in the column headed "Elapsed Time" as shown in FIG. **7.** The exact time recording mechanism **18** simultaneously imprints the exact starting time of interval indicating the day and the time in standard hours and minutes in the column headed "Start." At the end of the time interval to be recorded, as for example, upon completion of a job, the card receiver **14** is shifted to its second position whereupon the printing mechanism is again automatically actuated by insertion of the card as previously described. The die **24** is now aligned with the opening **46** and forms an imprint on the card **16** in overlapping registration with the imprint previously formed by the time reference die **26.** The exact time of the finish of the interval is simultaneously imprinted on the card in the "Finish" column in horizontal alignment with the imprint of the starting time. Thus, with reference to FIG. **7,** it will be noted that the first recorded interval, which appears near the top of the card **16,** started at 8:48 and ended at 10:10 o'clock. The position of the reference mark **76** in the column indicated "Elapsed Time" shows an elapsed time of 1 hour and 12 minutes. Perforations (not shown in FIG. **7**) have been formed in the card during each of the latter recording operations. Thus, when the card **16** is next inserted in the card receiver, the indexing mechanism **84** previously described operates to locate the card so that the next imprint of the time reference die **26** is positioned below the previously formed composite imprint, as indicated at E′ and S′ in FIG. **7.**

Refering now particularly to FIGS. **8** and **9,** another time recorder embodying the invention is indicated generally by the reference numeral **10***a*. The recorder **10***a* is similar in most respects to the recorder **10,** previously described and parts which correspond to parts previously described bear the same reference numerals as the previously described parts and will not be hereinafter further discussed. The recorder **10***a* includes a modified form of unitary elapsed time recording mechanism **22***a*, and in this respect it differs from the recorder previously described. The construction and arrangement of the card receiver **14***a*, shown in FIG. **9,** also differs somewhat from the card receiver **14** of the previously described recorder **10.** The recording mechanism **22***a* is particularly adapted for use with a vertical print recorder wherein sequential records of time are imprinted in vertical series on a record card such as indicated at **16***a*.

The unitary elapsed time recording mechanism **22***a* is similar to the mechanism **22** previously described in that it includes a mounting bracket **78***a* supporting a

pair of rotable dies **24***a* and **26**a, a drive motor **80***a* and a gear train **82***a* providing driving connection between the motor and the dies. However, it will be noted that the dies **24***a* and **26***a* are mounted in vertically spaced relation to each other. The dies **24***a* and **26***a* are supported in axially normal relation to the plane of the card receiver **14***a* with the faces thereof disposed in substantially the same plane and in substantially the same relation to the card receiver as in the previously described embodiment **10.** The bracket **78***a* is releasably secured to the plate **52***a* by suitable fasteners to facilitate removal for servicing.

Referring now to FIG. **9** and considering the card receiver **14***a* it will be noted that it is generally similar to the card receiver previously described, but does not include a shield. The receiver **14***a* is mounted in a fixed position relative to the frame by a pair of collars **112, 112** secured to the upper rod **48***a*. Thus, the receiver **14***a* defines a predetermined vertical path of travel for the card **16***a*.

The recorder **10***a* includes a vertical indexing mechanism identical to the indexing mechanism **84** shown in FIG. **6.** However, the vertical spacing between the punch **98** and the locating finger **106** is substantially equal to the vertical spacing of the dies **24***a* and **26***a* so that sequential imprints of the dies will be in registry.

It is also desirable that the recorder **10***a* include a disabling mechanism to prevent the printing mechanism from operating to form an imprint on the card except when the card is in one of its printing positions. A manual operating button **114** is provided and interlocked with the switch **94** associated with the vertical indexing mechanism **84** for this purpose. More specifically, the latter interlocking arangement is such that the card **16***a* must be inserted into the card receiver **14***a* to actuate the switch **94***a* before the operating button **114** can be actuated to operate the printing mechanism.

The printing mechanism is substantially identical to the printing mechanism of the previously described recorder **10,** however, the area of the platen may be somewhat enlarged in the vicinity of the dies **24***a* and **26***a* to assure full printing cooperation therewith.

A typical record card **16***a* is shown in FIG. **10,** as it appears after having received one complete imprint of elapsed time formed by two printing cycles of the recorder **10***a*. Initial full insertion of the card **16***a* into the receiver **14***a* causes the dies **24***a* and **26***a* to imprint thereon as respectively indicated at E_1 and E_2. An imprint of starting time is also formed on the card at S_1 and an indexing hole **100***a* is simultaneously punched in the card. When the card **16***a* is again inserted into the receiver the finger **106** enters the hole **100***a* to position the card for further printing, so that the next imprint of the die **24***a* occurs at E_2 in overlapping registry with the imprint of of the die **26***a* formed by the previous printing cycle. Thus a composite imprint of the dies **24***a* and **26***a* occurs at E_2 to provide direct indication of elapsed time. Another imprint of the die **26***a* is simultaneously formed therebelow at E_3. An imprint of finish time is also made on the card at F_1 and another indexing hole **100***a'* is also simultaneously punched in the card **16***a* for cooperation with the indexing mechanism to position the card to receive the next imprint.

It will now be evident that the recorded time F', FIG. **10,** which designates the finish time of elapsed time interval E_2 also designates the starting time of the next interval E_3. Thus the time recorder **10***a* provide an uninterrupted record of time.

I claim:

1. In a time recording apparatus the combination comprising a card holder for receiving and supporting a record card inserted thereinto and movable in one and an opposite direction along a predetermined path between one and another position respectively corresponding to one and another position of the record card, a printing mechanism including a pair of rotatable printing dies, said dies including a time recording die having indicia of time thereon and a reference die having indicia of time reference thereon, said dies spaced apart in the direction of said path a distance substantially equal to the distance between said one and said other position of the record card, means for rotating said dies in accordance with passage of time, means for operating said printing mechanism to imprint said indicia from one of said dies on the record card when it is in said one position and to imprint said indicia from the other of said dies on the record card when it is in said other position to form a composite imprint of said one and said other die on the record card, and a shield forming a part of said card holder for masking said other die to prevent it from imprinting on the record card when said card holder is in said one position and for masking said one die to prevent it from imprinting on the record card when said card holder is in said other position.

2. The combination as set forth in claim **2** including means for disabling said operation means when the card is held in any position except said one position and said other position by said card holder.

3. The combination as set forth in claim **1** wherein said operating means is further characterized as means for operating said printing mechanism in response to insertion of the record card into said card holder.

4. In a time recording apparatus the combination comprising card holder for receiving and supporting a record card inserted thereinto and movable in one and an opposite direction between one and another position, a printing mechanism including a pair of rotatable printing dies, said dies including a time recording die having indicia of time thereon and a reference die having indicia of time reference thereon, said dies spaced apart in the direction of said path a distance substantially equal to the distance between said one and said other position of the card, means for rotating said dies in accordance with passage of time, means for operating said printing mechanism to imprint said indicia from at least one of said dies on the card when it is in said one position and to imprint said indicia from at least the other of said dies on the card when it is in said other position whereby to form a composite imprint of said one and said other die on the card, and means for disabling said operating means when said card holder is in any position except said one position and said other position.

5. The combination set forth in claim **4** wherein said printing dies comprise a pair of disks supported for rotation about parallel axes, said indicia of time comprises an annular series of time graduations concentrically disposed about the face of said time recording disk, and said indicia of reference comprises a reference mark radially disposed on the face of said reference disk.

6. The combination as set forth in claim 4 including means for preventing said other die from imprinting on the card when it is in said one position and for preventing said one die from imprinting on said card when it is in said other position.

7. The combination as set forth in claim 6 wherein said preventing means comprises a shield carried by said card receiver for masking said one die when said card is in one of its positions and masking said other die when said card is in the other of its positions.

8. The combination as set forth in claim 6 wherein said preventing means comprises a part of said card receiver.

9. The combination as set forth in claim 4 wherein said disabling means comprises one switch actuated by said card holder when it is in said one position and another switch actuated by said card holder when it is in said other position.

10. The combination as set forth in claim 4 wherein said operating means comprises means for operating said printing mechanism in response to insertion of the record card into said card holder.

11. The combination as set forth in claim 10 including indexing means for locating the card in an imprint receiving position relative to said card holder.

12. The combination as set forth in claim 11 wherein said disabling means includes said indexing means and said disabling means is operable to disable said operating means except when the card is located in an imprint receiving position relative to said card holder by said indexing means.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,789,424 Dated January 29, 1974

Inventor(s) Vincent Majorino

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 2, line 10, "mechanism" should be deleted and --mechanisms-- substituted.

Col. 6, line 2, "comprising" should be --comprises--.

Col. 6, line 36, "10:10 o'clock" should be --10:00 o'clock--.

Col. 8, line 31, "in claim 2" should be --in claim 1--.

Col. 8, line 40, "comprising card" should be --comprising a card--.

Signed and sealed this 17th day of September 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

C-1050 (10-69)

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