C. E. TOMLINSON.

TIME RECORDER.

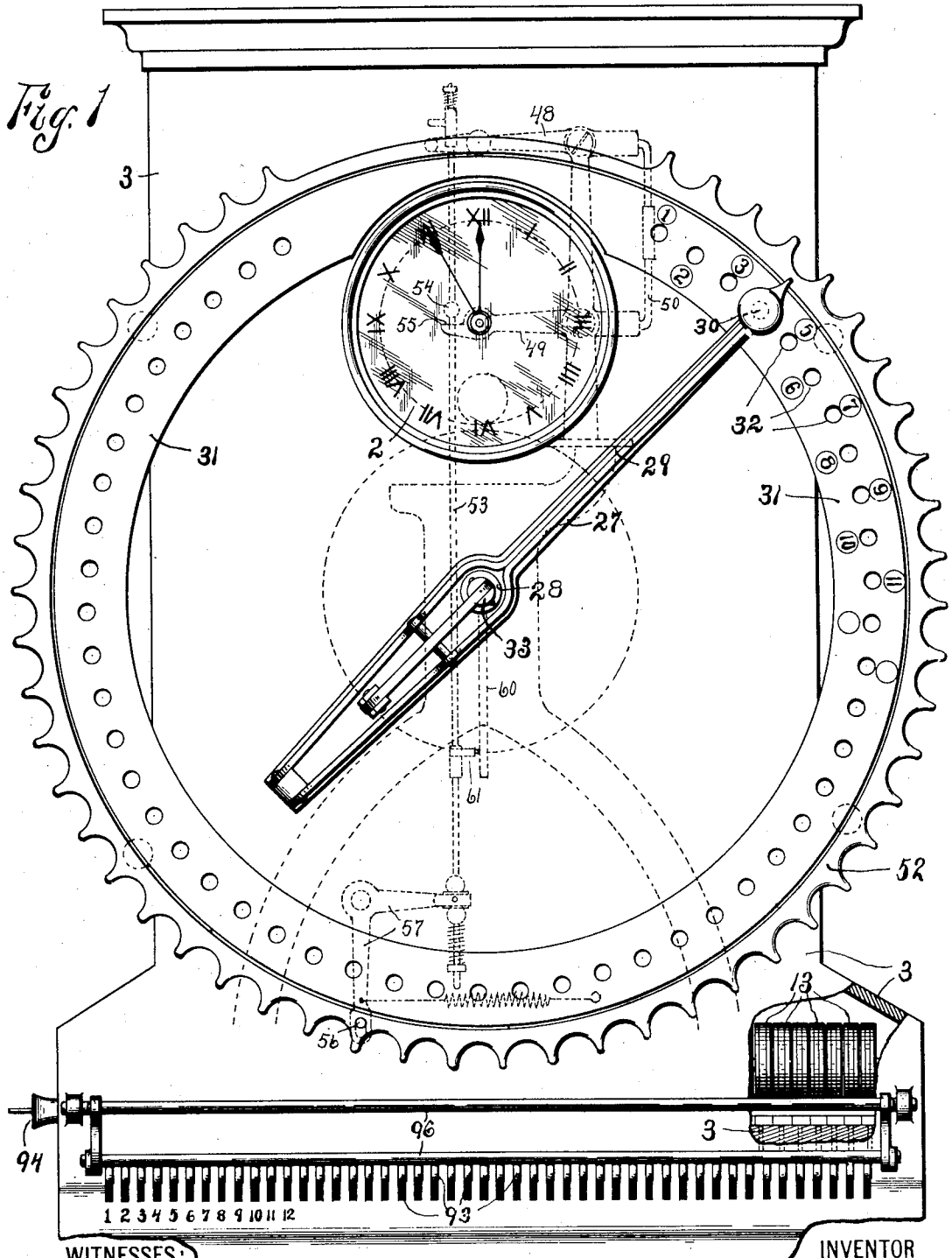
APPLICATION FILED FEB. 20, 1912.

1,078,012.

Patented Nov. 11, 1913.

5 SHEETS—SHEET 1.

Fig. 1



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TIME RECORDER.

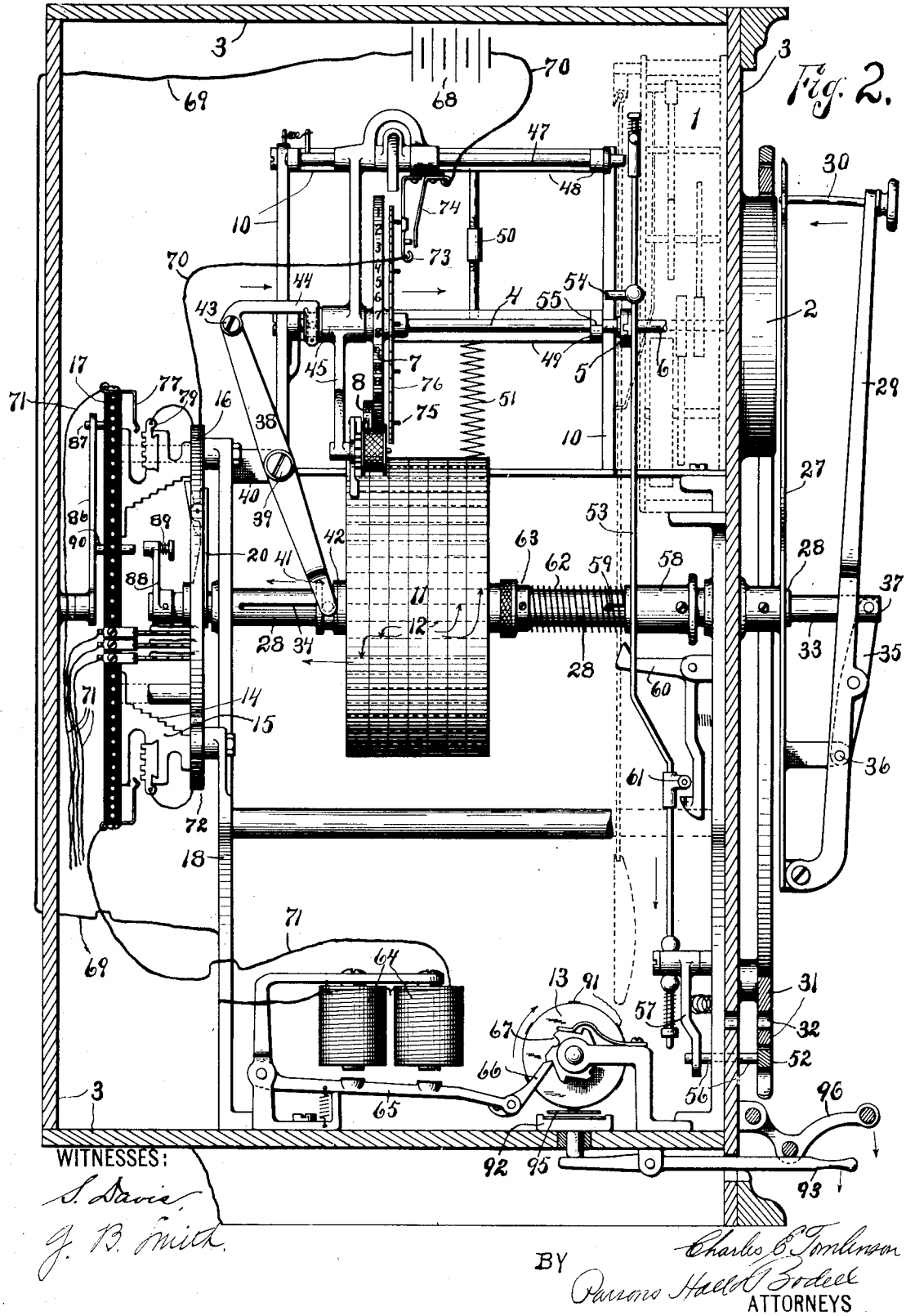
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5 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

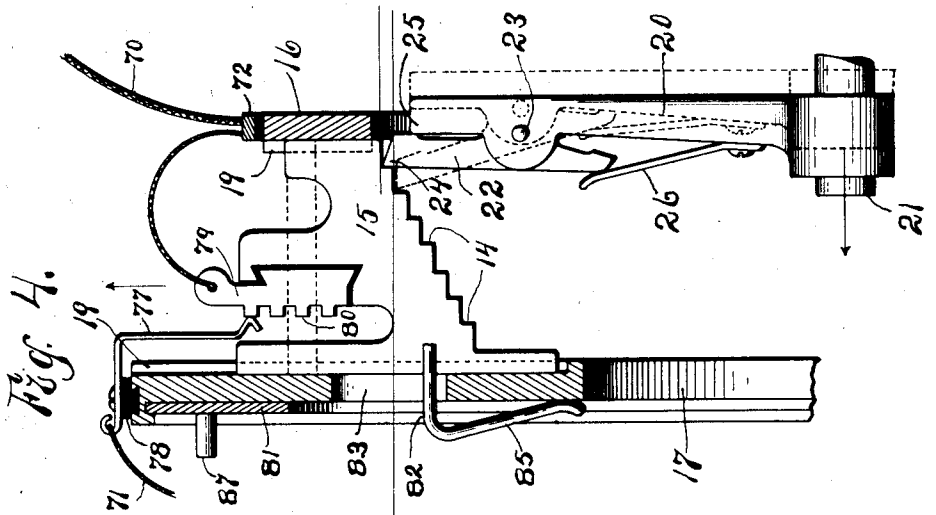


Fig. 4.

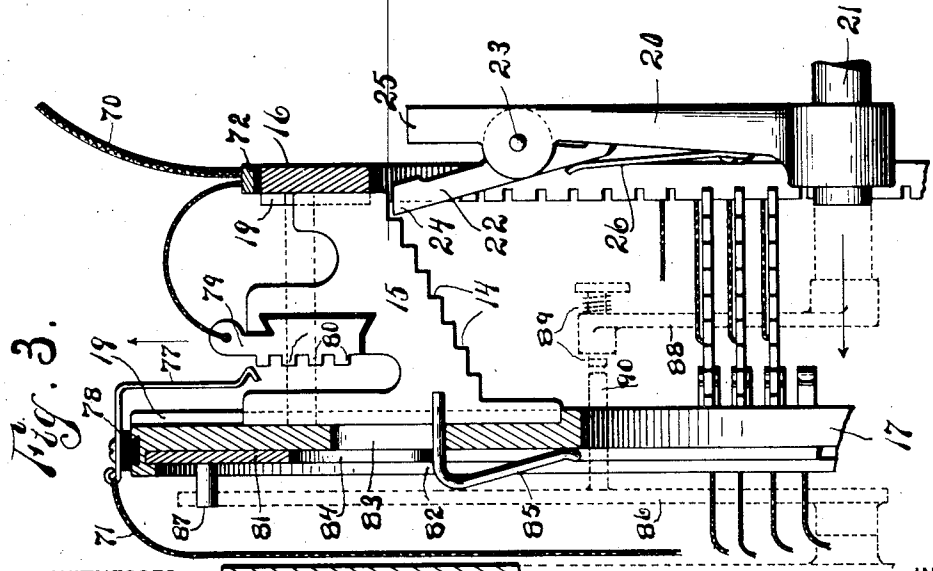


Fig. 3.

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1,078,012.

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5 SHEETS—SHEET 4.

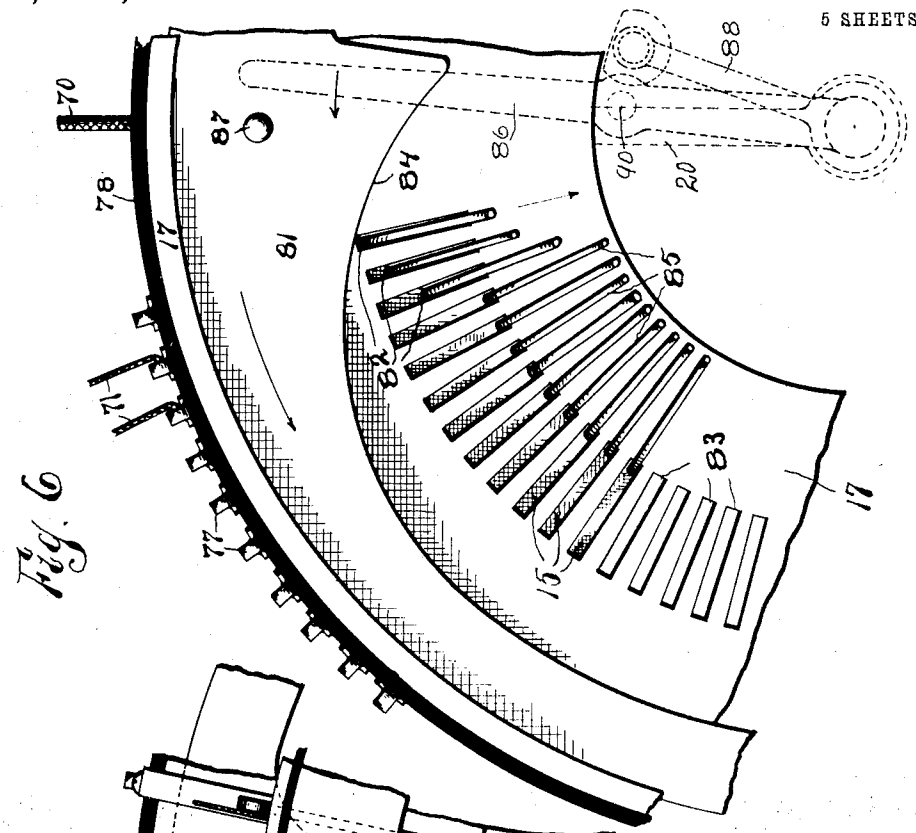


Fig. 6.

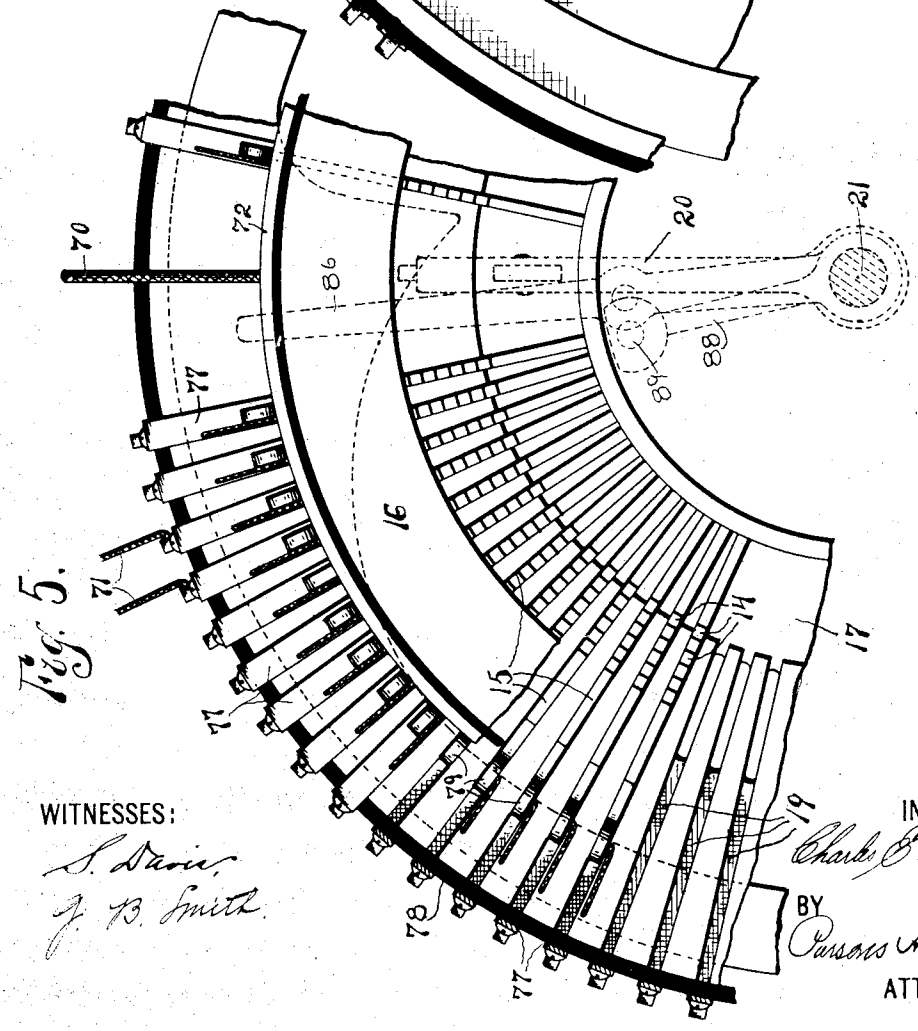


Fig. 5.

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1,078,012.

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5 SHEETS—SHEET 5.

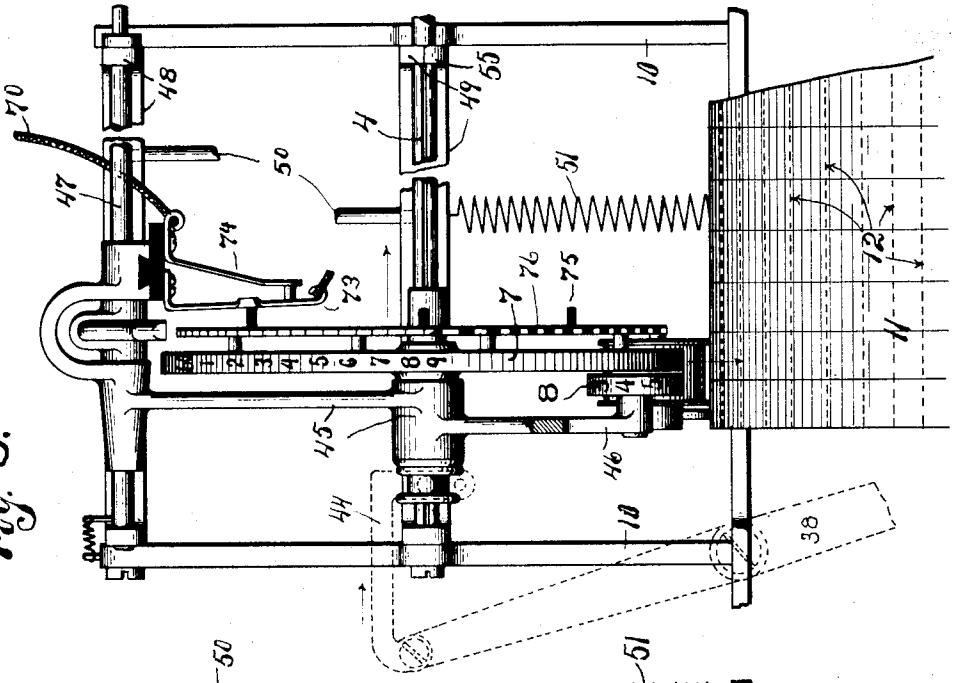


Fig. 8.

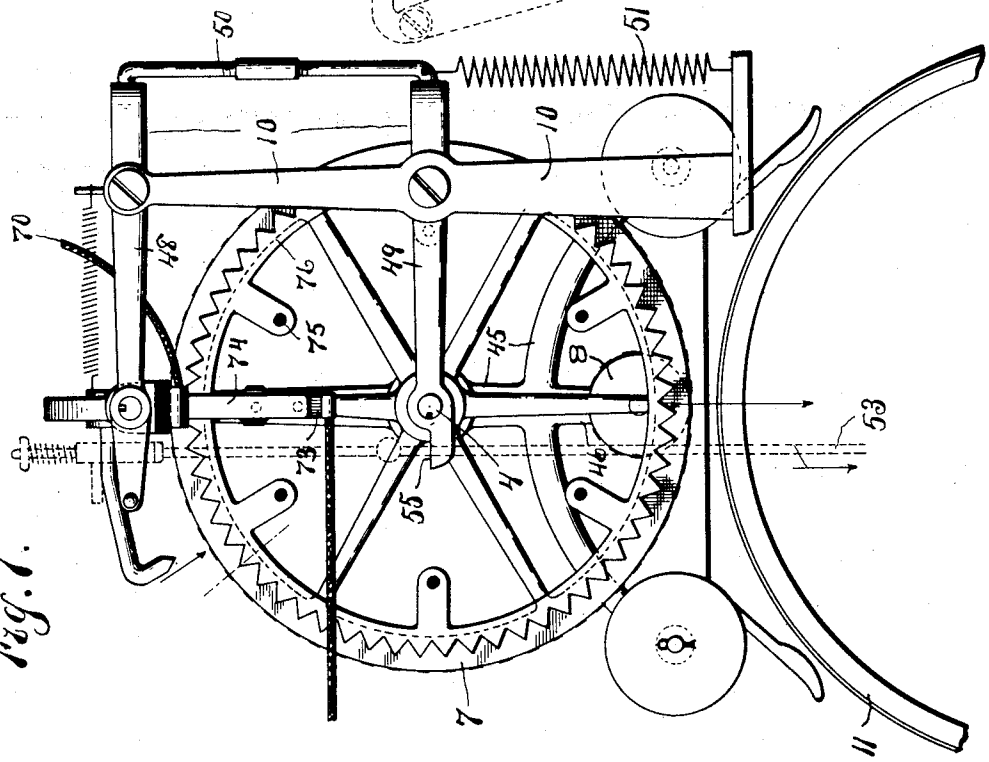


Fig. 7.

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UNITED STATES PATENT OFFICE.

CHARLES E. TOMLINSON, OF SYRACUSE, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INTERNATIONAL TIME RECORDING COMPANY OF NEW YORK, OF ENDICOTT, NEW YORK, A CORPORATION OF NEW YORK.

TIME-RECORDER.

1,078,012. Specification of Letters Patent. Patented Nov. 11, 1913.

Application filed February 20, 1912. Serial No. 678,824.

To all whom it may concern:

Be it known that I, CHARLES E. TOMLINSON, of Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Time-Recorder, of which the following is a specification.

This invention has for its object the production of an elapsed time recorder, which is particularly simple in construction and highly efficient in use.

It further has for its object a time recorder which not only records the times the workmen enter or leave the place of employment or of the time they begin and finish various jobs, but also computes the time the workmen are at work; and the invention consists in the combinations and constructions hereinafter set forth and claimed.

In describing this invention reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a front elevation, partly broken away, of one type of time recorder embodying my invention. Fig. 2 is a vertical sectional view of the machine shown in Fig. 1. Figs. 3 and 4 are enlarged fragmentary views of mechanism shown in Fig. 2. Fig. 5 is an elevation looking to the left in Fig. 3, parts being omitted. Fig. 6 is a rear elevation of parts seen in Fig. 5. Figs. 7 and 8 are, respectively, elevations taken at a right angle to each other of the printing couple and contiguous parts.

This time recorder comprises, generally, a time actuated element and elapsed computing means comprising members individual to the workman, and means for selecting the elapsed time computing members of any one workman and connecting the same into or out of operative relation with the time actuated element. The time recorder shown in the illustrated embodiment of my invention includes a time movement, an element actuated by the time movement, calculating elements corresponding in number to the number of workmen registering on the machine, there being one element for each workman, independently operable actuating members for the calculating elements respectively, means controlled in its operation by the time actuated element for controlling the operation of said actuating members for the calculating elements, and manual means operable to connect any one of the members into, or disconnect the same out of, operative relation with the time actuated element during successive operations of the manual means by the same workman.

In the illustrated embodiment of my invention the elapsed time mechanism is shown as embodied in a time recorder having a printing couple including a time stamp, and a record sheet support, the members of the couple having relative positioning movements into longitudinal and successive transverse positions, the successive transverse positions being automatically determined by shiftable parts, one of which is movable during each transverse positioning movement of the elements of the couple; and such parts are utilized to effect the connecting of the actuating members into, or the disconnecting of the same out of, operative relation with the time actuated element, and the manual means is the prime mover for positioning the members of the printing couple in longitudinal and transverse positions and for connecting and disconnecting the actuating members for the calculating elements into and out of operative relation with the time actuated element. However the printing couple may, if desired, be omitted.

I have here illustrated my invention as embodied in a time recorder of the dial type having means for automatically determining successive transverse relative positions of the members of the printing couple, the elapsed time mechanism being controlled in its operation by said means.

1 is the time movement which may be of any desirable form, size and construction, the movement having a face or dial 2 exposed on the outside of the case 3.

4 is a time actuated element, as a shaft, suitably connected by a coupling 5 to the minute hand shaft 6 of the time movement, the coupling 5 permitting the shaft 4 to move up and down relatively to the shaft 6, and 7, 8 are the type wheels of a time stamp forming part of the printing couple, these wheels being the minute and hour wheels. The minute wheel 7 is mounted on and rotatable with, the shaft 4, which is carried by a swinging frame 10, and the hour wheel is mounted eccentric to the minute wheel 7 and is actuated from the minute wheel in any

suitable manner. The other member of the printing couple is here shown as a drum 11 upon the periphery of which a record sheet is supported, said drum being rotatable for carrying its periphery longitudinally relatively to the printing line and thereby bringing different longitudinal spaces as 12 on the record sheet into printing position, which spaces are assigned respectively to the workmen. The drum and type wheels have relative movement transversely for positioning the successive records in any longitudinal space 12, side by side. The transverse relative movement of the members is, in the recorder here illustrated, effected by moving both the type wheels and the drum axially in reverse directions at the same time, such movement being effected by manual means to be hereinafter described.

13 are calculating or computing elements corresponding in number to the number of longitudinal spaces 12 on the record sheet of the drum, and the means for controlling the operation of the calculating elements, comprises means for also determining the transverse positions of the members of the printing couple when said members are in any of their relative longitudinal positions. In the illustrated embodiment of my invention this means comprises two members or sections, one section being movable with the drum 11 and the other being fixed from movement with the drum, and one section comprising a plurality of sets of successively effective stops, the sets being paired with the calculating elements 13, and the other section comprising a single stop member common to all the sets of stops for coacting therewith to move the stops of each set out of effective position during successive coactions of each set and the single stop, the moving of the stops of each set serving to connect its companion calculating element 13 into, or disconnect the same out of, operative relation with the time actuated element.

Preferably the single stop member is movable with the drum 11, and the sets of stops are successively arranged shoulders 14 formed on abutments on parts 15 which are arranged in circular series about the axis of the drum 11 and which are shiftable radially step by step for moving one stop or shoulder out of operative relation with the single stop and exposing the next stop into operative relation therewith.

The parts 15 are here shown as supported by annular frame elements 16, 17 suitably supported by the main frame 18 at the rear of the case, the frame elements 16 and 17 being provided with radially extending grooves 19 in their opposing faces, in which the parts 15 slide.

The single stop member is in the form of an arm 20 mounted on a rotatable shaft section 21 extending coaxially of the drum and suitably connected thereto to rotate therewith, the arm 20 having a shifting lever 22 pivoted at 23 thereto, the lever having its pivot 23 and engaging end 24 so relatively arranged that during axial movement of the shaft 21 carrying the arm 20 and lever 22 toward the parts 15, the end 24 of the lever will move in an arc progressing away from the axis of the shaft when engaged with the first effective stop, and will hence shift the corresponding part 15 outwardly until the lever 22 is limited in its pivotal movement by the end 25 of the arm 20. Such shifting of the part 15 exposes the next shoulder 14 to the action of the lever 22, during the next coöperation of such part 15 and the lever 22. The lever 22 is held in its normal position by a spring 26. It will be understood that my invention is not limited to the illustrated arrangement of successively effective stops.

The shaft 21 forms part of the manual means which means includes in addition, a pointer lever 27 mounted upon the outer end of a rotatable hollow shaft or sleeve 28 which is journaled in the main frame and extends through the front wall of the case 3, a hand lever 29 pivoted to the pointer lever 27 at one end and having a pin 30 at its other end which moves over the face of the dial 31 formed with holes 32 for receiving the pin, an end-wisely movable shaft section 33 movable within the sleeve 28 and connected to the stop 20 to rotate and move the same axially, and means connecting the lever 29 and the shaft 33.

The drum is rotatable with the sleeve 28 and is slidable axially thereon, and is here shown as keyed to the shaft section 21 through a suitable lengthwise slot 34 in the sleeve. The holes 32 of the dial correspond in number to, and are paired with, the parts 15 as will be understood by those skilled in the art.

The lever 29 is connected to the shaft 33 by means of a link 35 pivoted at one end at 36 to the lever 27 and at its other end at 37 to the shaft 33 and intermediate of its ends to the handle lever 29.

The movement of the handle 29 about the axis of the sleeve 28 moves the pointer lever 27 about its axis for rotating the drum 11, and also rotates the shaft section 21 causing the stop arm 20 to select a predetermined member or part 15, and the inward movement of the lever moves the pin 30 into a predetermined hole 32, shifts the drum 11 and shaft section 21 axially, and carries the stop arm 20 and the shifting lever 21 into coaction with the part 15 previously selected.

As before stated the transverse positioning of the elements of the printing couple is effected by the relative movements of the drum 11 and type wheels 7, 8 and the movements of the drum 11 are transmitted to the

type wheels 7, 8, and reversed, by suitable means here shown as a lever 38 pivoted between its ends at 39 to a lug 40 on the main frame, and connected by a yoke 41 to the hub 42 of the drum 11, the lever 38 being pivoted at 43 at its other end to a link 44 which is connected to a carriage 45 having a hub slidable along the time actuated shaft 4, and an arm 46 supporting the hour wheel 8. The carriage 45 is also formed with an arm engaging the cross bar or rod 47 forming part of the swinging frame 10.

As here illustrated, Figs. 7 and 8, the frame 10 consists of levers 48 and 49 in the form of yokes pivoted one above the other, the yokes 48, 49 being connected to, and supporting respectively the shafts 47 and 4. These levers 48, 49 are connected by an adjustable link 50 so that they will move in unison. The movement of the frame 10 about the pivot points of its levers carries the type wheels 7, 8 toward and from the drum 11 to effect the making of a record, and the movement in one direction is against the action of a returning spring 51. Any other suitable means may, however, be provided for supporting the time stamp.

The means for effecting the movement of the frame 10, is in this embodiment of time recorder, shown as an annular handle 52 mounted on the periphery of the dial 31 and rotatable thereon through a small arc, and power-transmitting means between the handle and the frame 10. The power-transmitting means, as seen in Fig. 2, comprises an endwisely movable link or rod 53 having means as a shoulder 54 for engaging a shoulder 55 on the lever 49 of the frame 10, a pin 56 extending rearwardly from the handle 52 through the front wall of the case 3 and a bell crank lever 57 having one arm coacting with the shoulder 55 and its other arm connected to the link or rod 53.

The link or rod 53 is here shown as normally out of position to engage its shoulder 54 with the shoulder 55 of the frame 10, and is shiftable into such position by a collar 58 slidable on the sleeve 28 and keyed to the shaft 33 through a slot 59 in the sleeve 28, the collar operating to engage the link or rod 53 during the inward movement of said collar and shaft, to carry the link or rod into such position that its shoulder 54 will be in position to engage the shoulder 55 of the frame 10 during downward movement of the link.

A suitable latching or locking means 60 is provided for engaging the collar 58 when it is pressed inwardly to the limit of its movement and holding the collar 58 and associated parts from return movement until the link or rod 53 is moved downwardly by the operation of the annular handle 52. Said lock or latch 60 is moved out of operative position by any suitable means as a shoulder 61 provided on the link or rod 53 and movable to engage the latch 60 at the end of the downward movement of the link or rod 53.

The manual means and parts operated thereby are returned to their initial position after each operation thereof by a spring 62 interposed between the collar 58 on the sleeve 28 and another collar 63 keyed to the shaft 28.

The construction of the manual operating means *per se* and associated parts forms no part of this invention and it is therefore thought that further description is unnecessary.

The elapsed time computing mechanism is preferably electrically operated and comprises actuating members for the calculating elements, an electric circuit having branches connected respectively to said members to operate the same; circuit opening and closing devices in the branches respectively, the devices being operated by the means for automatically determining successive transverse relative positions of the members of the printing couple, and a time controlled circuit closer located in the main line of the circuit, and arranged to be closed periodically by time actuated means.

64 are actuating members for the calculating or computing elements 13, the actuating members 64 being paired respectively, with the parts 15. The actuating members 64 usually comprise electromagnets, which operate armatures as 65 having pawls 66 coacting with ratchet wheels 67 associated with the calculating or computing elements 13. The members 64 are shown in Fig. 2 enlarged relatively to the other mechanism.

Each computing element 13 may include any number of parts or wheels and may be of any desirable form, size and construction and provided with any suitable carrying over mechanism. The calculating elements *per se* form no part of this invention.

The electric circuit includes a suitable source of supply as a battery 68, shown diagrammatically, Fig. 2, one side of which is grounded to the main frame 18 by a conductor 69 and the other side of which is connected by a main line 70 to the electromagnets 64, the line 70 having branches 71 connected respectively to the windings of the members 64. Said windings are also grounded to the main frame 18. The main line 70 includes an annular insulated ring 72 mounted on the annular frame element 16, and the line is branched from this ring 72.

As seen in Figs. 2 and 8, the time controlled circuit closer is a normally open switch comprising two normally separated spring arms 73, 74 carried by the type wheel carriage 45 and arranged in position to be engaged periodically by insulated cams 75

arranged at equal intervals on means as a ring 76 mounted on and rotatable with the minute wheel 7 of the time stamp, the ring 76 and also the switch arms 73, 74 being movable axially with the time stamp wheels 7 and 8. As here illustrated the switch arms are carried by a hub provided on the type wheel carriage 45 and slidable along the rod 47.

The circuit opening and closing means in each of the branches 71 comprises a spring arm 77 mounted on a ring of insulation 78 carried on the periphery of the annular frame element 17, and a conducting block 79 carried by each part 15 and insulated therefrom and having a plurality of contact points 80 spaced apart so that the circuit through the branch is closed when a contact point 80 engages the arm 77 and is open when the space between two of the contact points 80 is opposed to the contact end of the arm 77. The contact points of each block 79 and the spaces between the same, are the same in number as the number of stops or shoulders 14 on the members 15. The electric circuit and switches therein constitute means for connecting the actuating members for the computing elements into, or disconnecting the same out of operative relation with the time movement.

In operation when the workman enters or leaves the place of employment or begins or finishes a job, he turns the lever 29 until the pin 30 thereof is opposite the hole 32 on the dial 31 bearing the same number as the number assigned to the workman, this movement bringing the proper longitudinal space 12 on the record sheet to the printing line, such turning of the lever also moving the stop arm 20 and shifting lever 22 carried thereby, into alinement with the proper abutment or part 15. The workman then moves the lever 29 inwardly moving the shafts 21 and 33, and thereby positioning the drum 11 and time stamp in transverse relation and also causing the shifting lever 22 to shift the selected part or abutment 15, one step, causing one of the contact points 80 to engage the contact end of the switch member 77, thus connecting the magnet 64 in operative relation to the time actuated element 4. As the time actuated element 4 rotates, the cams or points 75 are successively carried, say at intervals of ten or fifteen minutes, into engagement with the switch arm 73 of the normally open switch, thus closing the switch, so that the magnet 64 is energized at regular intervals, and the armature 65 thereof attracted and the corresponding calculating element 13 advanced.

When the workman leaves the place of employment, or finishes a job, he repeats the foregoing operation causing the proper part 15 to shift outwardly until a space between two contact points 80 is opposite the contact end of the switch arm 77 so that the corresponding magnet 64 is out of operative relation with the time controlled element 4. Therefore while the workman is at work, the calculating element 13 corresponding to his position on the time recorder is being actuated at regular intervals.

The parts 15 may be reset in their starting positions at any predetermined period, as at night after the place of employment is idle or at any other time desired, by means of a cam ring 81 mounted on the rear face of the annular frame element 17 and engaging with shoulders 82, Figs. 3, 4 and 6, which project through slots 83 in the frame element 17 in position to be engaged by the cam surface 84 on said ring 81. The shoulders 82 terminate in springs 85 which frictionally engage the rear face of the frame element 17 and prevent overthrow of the parts 15.

The ring 81 may be actuated in any suitable manner either by hand or automatically, and I have here shown means for operating the same by turning the handle 29, such means comprising a rock arm 86, Fig. 2, mounted on the rear wall of the case 3 coaxially with the drum 11 and engaging a pin 87 projecting inwardly from the ring 81, and means for coupling the rock arm 86 to the shaft 21.

The coupling means here shown comprises, in general, a rock arm 88 on the shaft 21, Figs. 2 and 3, having a coupling pin 89 movable into and out of the path of a pin 90 projecting from the arm 86. The coupling pin 89 may be moved by hand or automatically by any suitable means into and out of operative position, but as such resetting means for the parts 15 forms no part of this invention and in no way effect the essential operation of the same, but forms the subject matter of another application, further description is thought to be unnecessary.

My time recorder is also preferably provided with means for printing the computed time, and as here shown, the calculating wheels 13 are provided with type 91 on their peripheries which coact with movable platens 92, Fig. 2, there being one platen for each wheel, and these platens are movable toward and from the type wheels 13 by individual hand levers 93 projecting through the front wall of the frame at the base thereof. The frame is also provided with a card receiver having its mouth 94 open at one side of the frame into which the card can be inserted between the platens 92 and an inking ribbon 95 contiguous to the peripheries of the calculating elements 13. However the card receiver may open at the front of the machine or any other suitable place. The machine is also provided with

an operating lever 96 common to all the individual levers 93 for taking a record of the computed time on all the calculating wheels 13 at one operation.

My time recorder is particularly advantageous in that the elapsed time mechanism is simple in construction, economical of manufacture, and easily repaired if it should get out of order as the seat of the trouble can be easily found. It is further advantageous in that records of the time any workman enters or leaves or begins or finishes a job, and also records of the elapsed time can be taken and the elapsed time mechanism can be easily applied to types of time recorders with which the public are familiar.

What I claim is:

1. In a time recorder, the combination of a time actuated element, elapsed time computing means comprising members individual to the workmen, and means for selecting and connecting the member of any one workman into and out of operative relation with the time actuated element, the last-mentioned means comprising a circular series of parts paired respectively with said members, and means arranged coaxially with said parts for selecting and shifting the same, substantially as and for the purpose described.

2. In a time recorder, the combination of a time actuated element, elapsed time computing means comprising members individual to the workmen, and controlled by the first-mentioned element, parts arranged in circular series and paired with said members and operable to connect said members into, or disconnect the same out of, operative relation with the time actuated element, said parts being shiftable radially relatively to their axis, and means arranged coaxially with said series of parts and being rotatable and shiftable axially to select and operate a predetermined part, substantially as and for the purpose specified.

3. In a time recorder, the combination of a time actuated element, an elapsed time computing means comprising electrically operated members individual to each workman, an electric circuit having branches connected respectively to the electrically operated members, circuit opening and closing devices in the branches respectively, means common to all of said devices for selecting a predetermined device and opening or closing the same, substantially as and for the purpose set forth.

4. In a time recorder, the combination of an elapsed time computing means comprising electrically operated members individual to each workman, an electric circuit having branches connected respectively to the electrically operated members, circuit opening and closing devices in the branches respectively, means for opening and closing said devices, and a time operated circuit closer in the main line of such circuit, substantially as and for the purpose described.

5. In a time recorder, the combination of an elapsed time computing means comprising electrically operated members individual to the workman, an electric circuit having branches connected respectively to the electrically operated members, circuit opening and closing devices located in the branches respectively and arranged in circular series, and means arranged concentric with the circular series of devices and movable about its axis to select a predetermined device and movable axially to open or close the selected device, substantially as and for the purpose set forth.

6. The combination with a time recorder including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple when in any of their relative longitudinal positions, of elapsed time computing means controlled in its operation by the first-mentioned means, substantially as and for the purpose specified.

7. The combination with a time recorder including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple when in any of their relative longitudinal positions, said means comprising a plurality of sets of successively effective stops, of elapsed time computing means comprising members paired with the sets of stops, and means operated by the sets of stops for controlling the operations of said members paired with the stops, substantially as and for the purpose set forth.

8. The combination with a time recorder including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, means for automatically determining the successive transverse postions of the members of the printing couple when in any of their relative longitudinal positions, said means comprising a plurality of sets of successive effective stops arranged in circular series, and manual means movable about an axis coincident with the axis of said series and also movable axially, of elapsed time computing means comprising members paired with the sets of stops and controlled in their operation by the movement of the stops, substantially as and for the purpose described.

9. The combination of a time recorder, including a printing couple the members of

which have relative movement into longitudinal and successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple when in any of their relative longitudinal positions, of elapsed time computing means comprising electrically operated members individual to the workmen, an electric circuit having branches connected to the electrically operated members, and circuit opening and closing devices located in the branches respectively, and arranged to be operated by the first-mentioned means, substantially as and for the purpose specified.

10. The combination of a time recorder including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple when in any of their relative longitudinal positions, of elapsed time computing means comprising electrically operated members individual to the workman, an electric circuit having branches connected respectively to the electrically operated members, circuit opening and closing devices located in the branches respectively, and arranged to be operated by the first-mentioned means, and a normally open time operated circuit closer in the main line of such circuit, substantially as and for the purpose set forth.

11. The combination of a time recorder including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple when in any of their relative longitudinal positions, said means comprising a plurality of sets of successive effective stops, of elapsed time computing means comprising electrically operated elements paired with the sets of stops, an electric circuit having branches connected respectively to the electrically operated members, circuit opening and closing devices located in the branches respectively and arranged to be operated by the sets of stops, and a normally open time operated circuit closer in the main line of such circuit, substantially as and for the purpose described.

12. The combination of a time recorder, including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple when in any of their relative longitudinal positions, said means comprising a series of shiftable stop members, of elapsed time computing means comprising electrically operated members paired with the stop members respectively, an electric circuit having branches connected respectively to the electrically operated members, circuit opening and closing devices located in the branches and arranged to be operated by successive movements of the stop members, and a normally open time operated circuit closer in the main line of such circuit, substantially as and for the purpose specified.

13. The combination with a time recorder including a printing couple comprising a time stamp and a rotatable drum, and means for automatically determining successive transverse positions of the members of the printing couple, of elapsed time computing means controlled in its operation by the first-mentioned means, substantially as and for the purpose set forth.

14. The combination with a time recorder including a printing couple comprising a time stamp and a rotatable drum, the members of the printing couple having relative movement into successive transverse positions, means for automatically determining successive transverse relative positions of the members of the printing couple comprising a plurality of sets of successive effective stops arranged in circular series concentric with the axis of the drum, of elapsed time computing means comprising members paired with the sets of stops, and means operated by the sets of stops during the operation thereof for controlling the operations of said members, substantially as and for the purpose described.

15. The combination of a time recorder including a printing couple comprising a time stamp and a rotatable drum, the members of the printing couple having relative movement into successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple, of elapsed time computing means controlled in its operation by the first-mentioned means and comprising electrically operated members individual to the workmen, an electric circuit having branches connected respectively to the electrically operated members, and circuit opening and closing devices in the branches respectively and arranged to be operated by the first-mentioned means, substantially as and for the purpose specified.

16. The combination of a time recorder including a printing couple comprising a time stamp, and a rotatable drum, the members of the printing couple having relative movement into successive transverse positions, and means for automatically determining the successive transverse positions of the members of the printing couple, said means comprising a plurality of sets of successively effective stops arranged in circular

series concentric with the axis of the drum, of elapsed time computing means comprising electrically operated members paired with the sets of stops, an electric circuit having branches connected respectively to the electrically operated members, circuit opening and closing devices located in each of the branches and arranged concentric with the axis of the drum in position to be operated respectively by the sets of stops, and a normally open time operated circuit closer in the main line of the circuit, substantially as and for the purpose set forth.

17. The combination with a time recorder of the dial type having means for automatically determining successive transverse relative positions of the members of the printing couple, of elapsed time computing means comprising individual calculating elements, a time controlled element for governing the operation of said elements, and means controlled by the first-mentioned means for controlling the operation of the calculating elements, substantially as and for the purpose specified.

18. The combination with a time recorder of the dial type having means for automatically determining successive transverse positions of the members of the printing couple, of elapsed time computing means comprising an electric circuit having branches for each workman, and circuit opening and closing devices in the branches, said devices being operated by the first-mentioned means, substantially as and for the purpose set forth.

19. The combination with a time recorder, including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, of elapsed time computing means comprising members individual to the workman, means for determining the successive transverse relative positions of the members of the printing couple when in any of their relative longitudinal positions, the last-mentioned means also serving to control the operation of the members of the computing means, and manual means for effecting the relative movement of the members of the printing couple and the operation of the second mentioned means, substantially as and for the purpose specified.

20. The combination with a time recorder including a printing couple the members of which have relative movement into longitudinal and successive transverse positions, elapsed time computing means comprising electrically operated members individual to the workmen, an electric circuit having branches connected respectively to the elapsed time computing members, circuit opening and closing devices in each of the branches, and a time controlled circuit closer in the main line of such circuit, means for determining the successive transverse relative positions of the members of the printing couple when in any of their longitudinal relative positions, the last-mentioned means also serving to operate said devices, and manual means for effecting the relative movement of the members of the printing couple and the operation of the second-mentioned means, substantially as and for the purpose set forth.

In testimony whereof, I have hereunto signed my name in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, and the State of New York, this 17 day of Feb. 1912.

CHARLES E. TOMLINSON.

Witnesses:
S. DAVIS,
L. M. DAVIS.