No. 898,042. PATENTED SEPT. 8, 1908.

H. C. FORD.

REGISTRATION CONTROLLER FOR TIME RECORDERS.

APPLICATION FILED APR. 19, 1906. RENEWED JUNE 30, 1908.

2 SHEETS—SHEET 1.

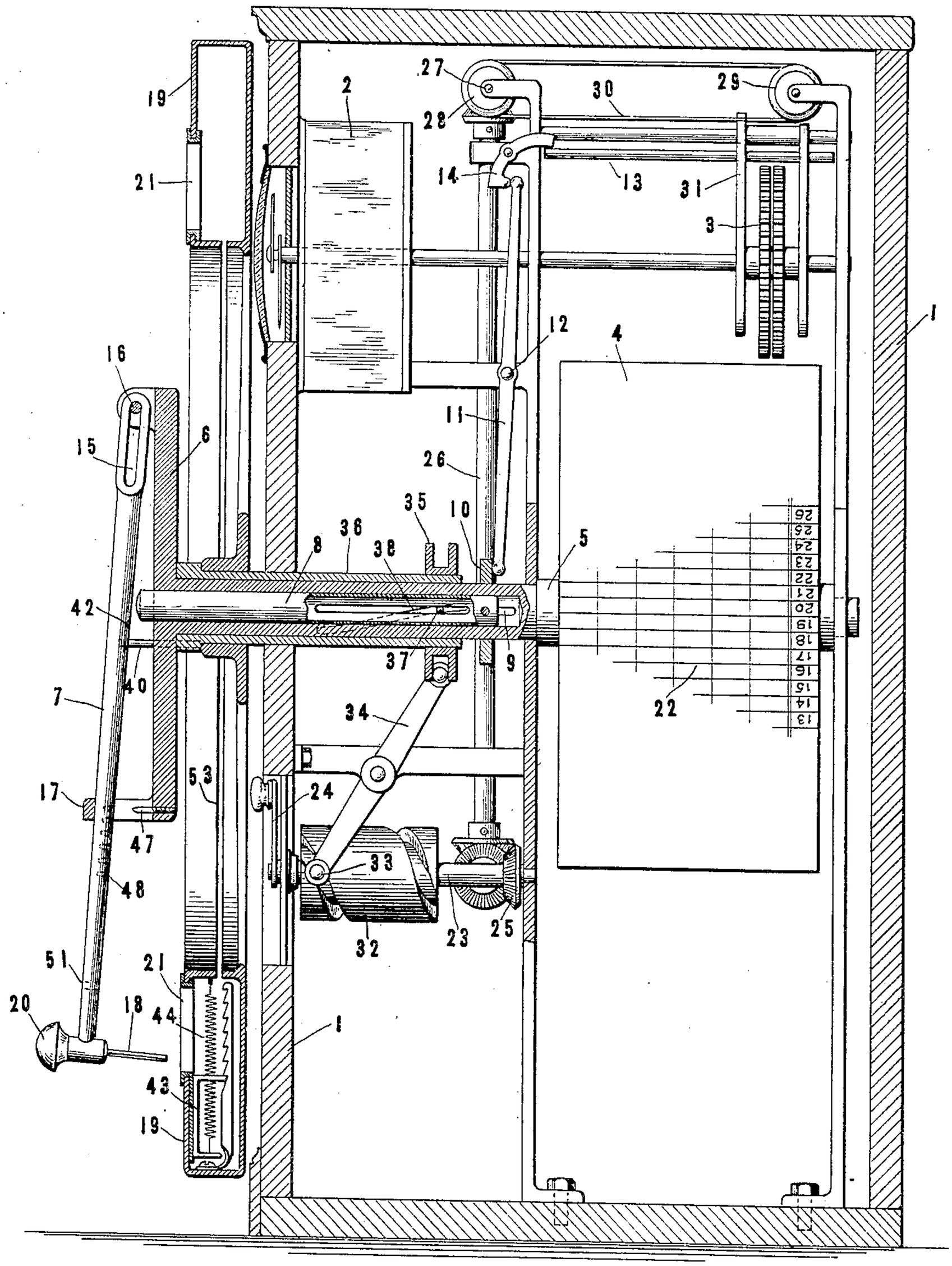

Fig. 1.

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2 SHEETS—SHEET 2.

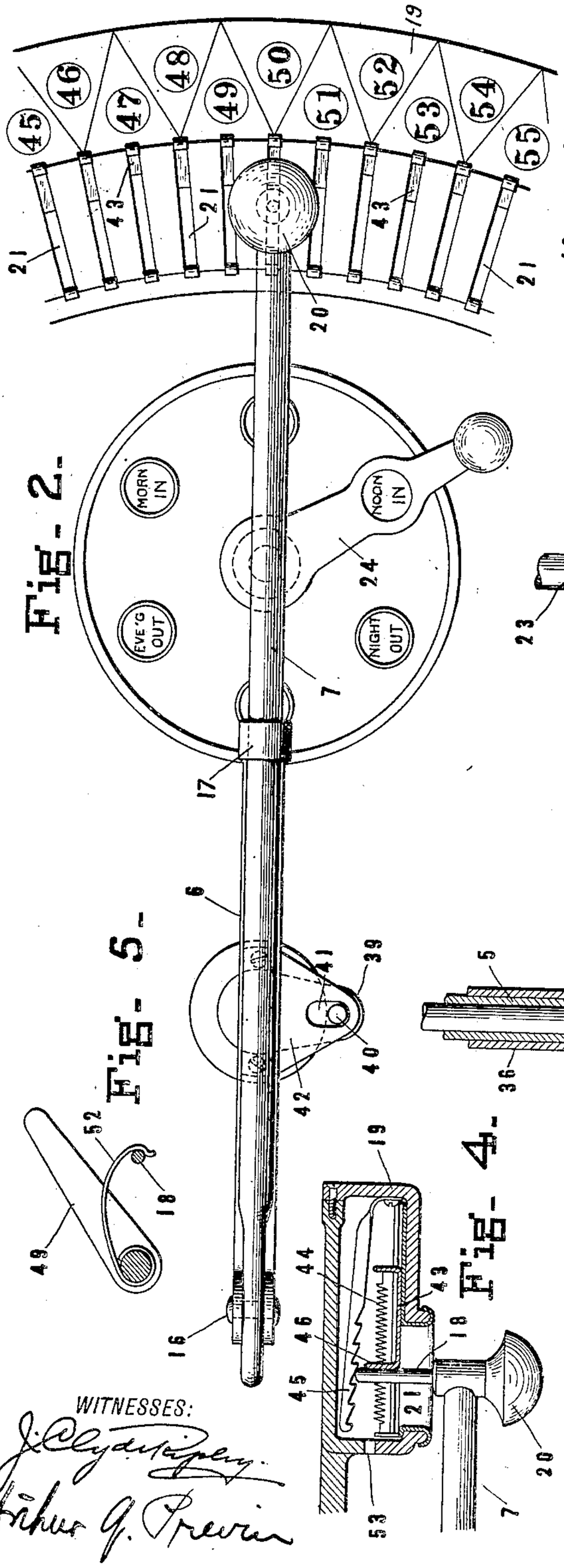

Fig. 2.

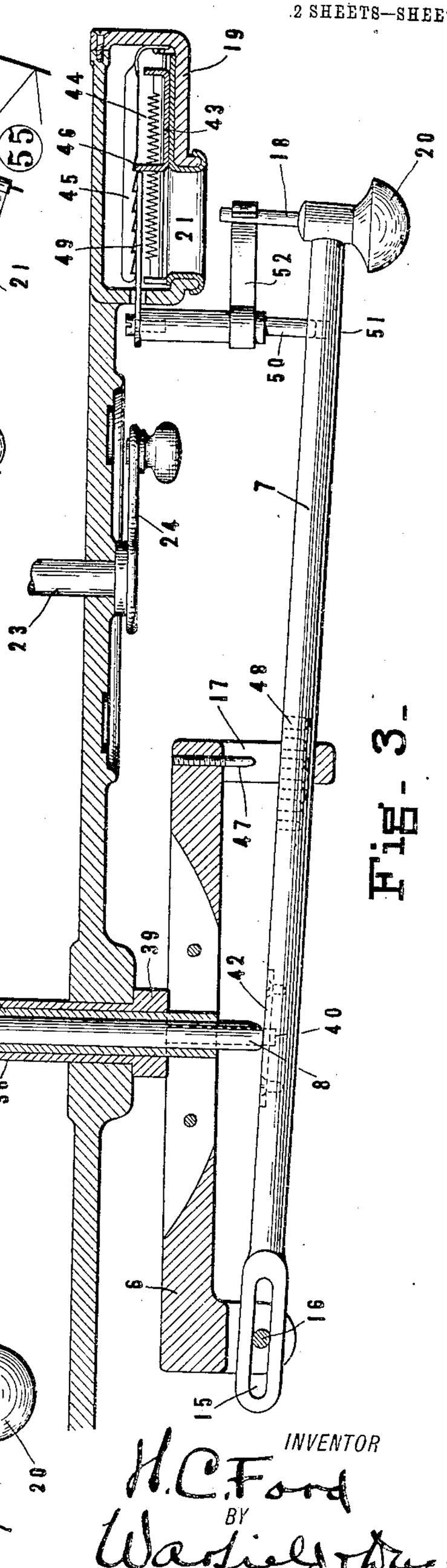

Fig. 3.

Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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REGISTRATION-CONTROLLER FOR TIME-RECORDERS.

No. 898,042. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed April 19, 1906, Serial No. 312,543. Renewed June 30, 1908. Serial No. 441,245.

To all whom it may concern:

Be it known that I, HANNIBAL C. FORD, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Registration-Controllers for Time-Recorders, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to time recorders and the like. One of the objects thereof is to provide practical and efficient means adapted to control the formation of records in instruments of the above nature in such manner as to prevent the superposition of one record upon another.

Another object is to provide means adapted for use in connection with workmen's time recorders to insure the chronological disposition of the several impressions forming the daily record of the individual workman.

Another object is to provide means of the types above mentioned adapted to be set in inoperative condition by means beyond the control of the user of the instrument to prevent repetition of a completed record.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the embodiment thereof hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of the various possible embodiments of my invention,—Figure 1 is a longitudinal section through a recorder embodying my invention, certain parts being broken away to show the apparatus more clearly. Fig. 2 is a detail elevation of the manually controlled actuating mechanism. Fig. 3 is a sectional view of the parts shown in Fig. 2, taken along the line x—x. Fig. 4 is a similar view of certain of the parts shown in Fig. 3, showing the same in a different position. Fig. 5 is a detail plan view of a spring-controlled key for restoring the mechanism to its normal condition.

Similar reference characters refer to similar parts throughout the several views of the drawings.

In order that this invention may be most readily grasped it may here be noted that in recording apparatus in general the records are likely to become superimposed, thus rendering unintelligible the two or more impressions so related. This is peculiarly the case in connection with workmen's time recording apparatus, from the tendency to use the same quickly and carelessly by the workmen or, in some cases, on account of the desire to deliberately falsify or obliterate the records. The above and other defects are remedied in constructions of the nature of that hereinafter described.

Referring now to the accompanying drawings, in which is set forth an embodiment of my invention showing the same in relation to a time recorder of the well-known "dial" type, there is shown a casing 1 provided with clock-work 2 and time-controlled printing wheels 3. The printing wheels are mounted so as to be movable in a vertical direction in the well-known manner, and are adapted to be forced downwardly into engagement with a cylindrically disposed record-receiving member 4. The latter part is positioned upon a drum mounted upon a shaft 5 upon the outer or front end of which is disposed a cross-arm 6 having thereon an actuating lever 7. Within the hollow forward end of shaft 5 is disposed a rod 8 connected through the longitudinal slot 9 with a collar 10 adapted to engage a lever 11 fulcrumed on the frame of the instrument at 12. The upper end of this lever is adapted to actuate a lever 13 through a curved lever 14, and thus force the printing wheels 3 into engagement with the record sheet. These parts, forming in themselves no part of the present invention and performing in general functions which should be largely obvious, are shown in a somewhat diagrammatic form.

Actuating lever 7 is provided with a slot 15 through which passes a pin 16 on the cross-arm 6 and rests within a guide 17 upon the opposite end of the cross-arm. The outer end of lever 7 is provided with a pin 18 adapted to enter openings disposed about the dial 19 upon its being forced by the hand-grip 20 toward the instrument. This action forces the rod 8 inwardly and by the means above described forms a record upon the sheet 4.

In the use of this instrument, as is common with the well-known type of dial recorder, the pin 18 is brought opposite the number upon

the dial, best shown in Fig. 2, corresponding to the workman whose record is to be formed, and is forced toward the instrument, thus causing the pin to enter the opening, in this case slot, 21 disposed adjacent the number. By the above rotary movement the record-receiving member is turned so as to bring the proper transverse column formed thereon by the lines 22 into operative relation to the printing wheels 3, and the depressing action results in the formation of a record within this column which corresponds to the daily record of the corresponding workman. The precise space within this column in which the record is formed is determined by the following means.

Journaled within the frame of the instrument is a shaft 23 the outer or front end of which is provided with a crank 24 adapted to co-act with certain data upon a dial adjacent thereto to determine the precise position of the shaft and the parts connected therewith. Upon shaft 23 is a bevel pinion 25 connected through suitable bevel gearing with a vertical shaft 26 which is in turn connected with a shaft 27. Upon the latter part is mounted a pulley 28 supporting in conjunction with an idle pulley 29 an endless band 30 connected with a portion 31 of the carriage within which the printing wheels 3 are mounted. This carriage is movable not only toward the record-receiving member but also in a lateral direction, the latter movement being brought about through the parts immediately above-described upon a rotary movement being given the crank 24. It will thus be seen that upon the latter part being rotated the position of the printing wheels 3 with respect to the record-receiving member 4 will be changed in a transverse or lateral direction, as this direction or its equivalent may be termed, and the records for a single day as "Morn in," "Noon out" and the like are suitably spaced. It is unnecessary to describe the precise details of the above mechanism, inasmuch as the same in itself forms no part of the present invention.

Upon the shaft 23 is mounted a cam 32, herein shown in cylindrical form, adapted to co-act with a roller 33 formed upon a lever 34 pivoted to the frame of the instrument. The upper end of this lever rests within and controls in position a collar 35 slidable upon a sleeve 36 loosely mounted upon the shaft 5. Collar 35 is provided with an inwardly directed pin 37 passing through a spiral slot 38 cut in the sleeve 36 and taking into the above-described longitudinal slot 9 in the inner shaft 5. It will thus be seen that upon the crank 24 being turned, the longitudinal position of the collar 35 upon the sleeve 36 will be changed and, due to the action of the pin 37, a relatively rotary movement of sleeve 36 and shaft 5 will take place.

Upon the outer end of sleeve 36 is formed a crank 39 see Fig. 2 provided with a pin 40 taking into a slot 41 in a plate 42 upon the actuating arm or lever 7. It will thus be seen that upon the sleeve 36 being rotated with respect to shaft 5 the pin 40 will be swung in one or the other direction, such movement being permitted by the slotted connection of the actuating lever with the pin 16. This movement will result in an increase or decrease of what may be termed the "effective length" of the actuating lever, which, in this case, is the distance from the pin 18 to the axis of the shaft 5.

Each of the openings 21 is provided with a shutter 43 adapted to slide in suitable guides and normally pressed as by a spring 44 toward the center of the dial. These shutters are retained in retracted position by spring racks 45 adapted to co-act with teeth 46 formed thereon. Upon the pin 18 being pressed inwardly, however, as in the case of the actuation of the instrument, the corresponding rack 45 is forced from the tooth as shown in Fig. 4, and as the pin is withdrawn permits the same to snap forward to again engage the shutter with its next lower tooth. By a proper disposition and conformation of the rack teeth the shutters will upon the pin 18 being removed assume such position as to prevent the reëntry thereof in the same path. It will thus be seen that upon the record being formed at a given space upon the receiving member 4 the superposition of another record upon this space is absolutely prevented by reason of the fact that in order to accomplish such result the pin 18 must first be placed within the corresponding opening in order to operate the printing wheels. In order to render operative the mechanism for forming another record for the workman in question it will be necessary either to retract the shutter or shorten the arm. The former operation is performed, as hereinafter described, only at the end of the day and thus the alternative of shortening the arm must be employed. This is brought about by means of the crank 24, acting as above, which will however move the printing wheels laterally with respect to the record-receiving member in such manner as to bring the same opposite an unused space. The adjustment of the lever 7 and type wheels takes place simultaneously and is made after a complete set of records of a certain type has been completed, that is, after all of the records for "Noon in" or "Noon out", etc., have been completed.

In order to insure accuracy of action in the means for varying the effective length of the actuating arm an alinement device is preferably provided, the same being here shown as a pin 47 upon the cross-arm 6 adapted to co-act with a series of perforations 48 upon the inner surface of the arm 7.

Upon the records being completed for the

entire day, the shutters of all used openings will of course be in their extreme innermost position, and it is necessary to retract the same in order to permit use of the instrument for the following day. In this embodiment of my invention this result is accomplished by means of what may be termed a "key" 49, shown in detail in Fig. 5 of the drawings. This key is detachably interlocked with the outer end of the arm 7 as by means of a pin 50, entering a perforation 51, and a spring 52 resting about the pin 18. The blade of the key is adapted to enter the outer portion of the dial as through an opening 53 and upon a single rotation of the arm 7 will retract each shutter to its outermost position. The key may be of any desired form and it may be noted that by the term "key" is meant any separate device having peculiarities adapting it for use in releasing or retracting any parts of the instrument.

It will be noted that each of the racks 45 is formed with the teeth corresponding in number to the number of different records to be made in sequence during a working day. The racks in the present instance are formed with six teeth corresponding to "Morn in"; "Noon out"; "Noon in"; "Evening out"; "Night in"; and "Night out"; and these teeth successively engage the shutters to hold the same in position to prevent repetition of a record already made by an operator but hold the shutter in position to permit the proper record to be made. For instance, if the shutter is held by the third tooth, corresponding to "Noon in", the record can be made in the different spaces alloted to "Noon in" but no record can be made for preceding records, that is, for "Morn in" and "Noon out".

The operation of the above-described embodiment of my invention has been already set forth somewhat fully, but it may be noted in brief that upon the several shutters being retracted as above described, records may freely be formed by each workman and that one record only can be formed upon each space upon the record-receiving member. Irrespective of whether the transverse relative movement of the printing mechanism and record sheet is automatic or manually actuated, the release or retraction of the shutter is beyond control of the workman, and the entire mechanism is proof against either accidental or deliberate misuse.

It will thus be seen that I have provided means well adapted to perform the several objects of my invention, and that the same are of simple, efficient and compact construction and eminently adapted for practical use.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I desire it also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

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

1. In a mechanism of the class described, in combination, record forming means, movable means to actuate the same, means movable within the path of movement of said actuating means to prevent repetition of a completed record, and means independent of said preventing means to restore the actuating means to operative condition without affecting the movement or changing the position of said preventing means.

2. In a mechanism of the class described, in combination, time record forming means, means to move a record receiving member into operative relation to the record forming means, means to render said moving means inoperative to repeat a completed record, means to cause relative lateral movement between said record forming means and the record receiving member, and means to restore said moving means to operative condition to form a different record from that completed, said means for rendering the movement means inoperative being independent of and unaffected by the action of said restoring means.

3. In mechanism of the class described, in combination, record-forming means, means for placing the same into operative relation to a record-receiving member, means adapted upon the actuation of said placing means to render the same inoperative, and means adapted to cause a relative lateral movement of said record forming means and the record-receiving member in two directions and upon movement in one of said directions to restore said placing means to operative condition and upon movement in the opposite direction to maintain said placing means in operative condition.

4. In mechanism of the class described, in combination, record-forming means, means adapted to place the same into operative relation to a record-receiving member, means adapted upon the actuation of said placing means to render the same inoperative, and means adapted to cause a relative lateral movement of said record forming means and the record-receiving member in two directions and upon movement in one of said directions to restore said placing means to operative condition and upon movement in the

other direction to maintain said placing means in operative condition, said placing means being independent of and unaffected by the action of said last-mentioned means.

5. In mechanism of the class described, in combination, time record-forming means, means adapted to place a record-receiving member in operative relation thereto, manually-controlled means adapted to cause a relative movement of said first means and a record-receiving member in a predetermined direction, and means associated with said placing means adapted automatically to insure the chronological order of records formed in said direction.

6. In mechanism of the class described, in combination, time recording means, means adapted to place a record-receiving member in operative relation thereto, manually-controlled means adapted to cause a relative movement of said time recording means and a record-receiving member in a predetermined direction, means acting automatically to insure the chronological order of records formed in said direction, and means adapted at the end of a predetermined number of operations to render inoperative said last-mentioned means.

7. In mechanism of the class described, in combination, time recording means, means adapted to place a record-receiving member in operative relation thereto, manually-controlled means adapted to cause a relative movement of said time recording means and a record-receiving member in a predetermined direction, means acting automatically to insure the chronological order of records formed in said direction, and key-controlled means adapted at the end of a given period to render inoperative said last-mentioned means.

8. In mechanism of the class described, in combination, record-forming means, means adapted to place a record-receiving member in operative relation thereto, means adapted upon actuation of said placing means to render the same inoperative with said record forming means and the record-receiving member in the relative positions in which said actuation is made, means adapted upon relative movement of said record forming means and the record-receiving member in a predetermined lateral direction to restore said placing means to operative condition, said third means being independent of and unaffected by said movement, and means adapted to render said third means inoperative irrespective of the relative position of said record forming means and the record-receiving member.

9. In mechanism of the class described, in combination, record-forming means, means adapted to place a record-receiving member in operative relation thereto, means adapted upon actuation of said placing means to render the same inoperative with said record forming means and the record-receiving member in the same relative positions in which said actuation is made, means adapted upon relative movement of said record forming means and the record-receiving member in a predetermined lateral direction to restore said placing means to operative condition, said means for rendering said placing means inoperative being independent of and unaffected by said movement, and key-controlled means adapted to render inoperative said means for rendering the placing means inoperative irrespective of the relative position of said first means and the record-receiving member.

10. In mechanism of the class described, in combination, time-controlled means adapted to form a record upon a receiving surface, means adapted automatically to prevent the formation of a second record upon the same portion of said surface, and key-controlled means adapted to restore said second means to condition permitting operation of said time controlled means.

11. In a dial time recorder, in combination, an actuating arm, means adapted to vary the effective length thereof, and a shutter adapted upon actuation of said arm automatically to move into the path thereof and prevent a second actuation thereof.

12. In a dial time recorder, in combination, an actuating arm, record-forming means connected with said actuating arm, means adapted to bring said record-forming means in operative relation to a record-receiving member, means adapted to shift said record-forming means laterally with respect to said record-receiving member, means controlled by said last-mentioned means adapted to vary the effective length of said actuating arm, and a shutter adapted upon actuation of said arm to move into the path of movement of said arm and prevent a second actuation thereof.

13. In a dial time recorder, in combination, an actuating arm, record-forming means, means connected with said actuating arm adapted to bring said record-forming means in operative relation to a record-receiving member, means adapted to shift said record forming means laterally with respect to said record-receiving member, means controlled by said shifting means adapted to vary the effective length of said actuating arm, a shutter adapted upon actuation of said arm to move into the path of movement thereof and prevent a second actuation thereof, and key-controlled means adapted to retract said shutter.

14. In a dial time recorder, in combination, a dial provided with a plurality of elongated openings, an actuating arm provided with a member adapted to enter said openings, a shutter in each of said openings,

means adapted upon said arm being actuated to throw the corresponding shutter into the path in which said member has been moved, and means adapted to vary the effective length of said arm.

15. In a dial time recorder, in combination, a dial provided with a plurality of elongated openings, an actuating arm provided with a member adapted to enter said openings, a shutter in each of said openings, means adapted upon said arm being actuated to throw the corresponding shutter into the path in which said member has been moved, means adapted to vary the effective length of said arm, and means adapted to simultaneously retract said shutters.

16. In a dial time recorder, in combination, a dial provided with a plurality of elongated openings, an actuating arm provided with a member adapted to enter said openings, a shutter in each of said openings, means adapted upon said arm being actuated to throw the corresponding shutter into the path in which said member has traveled in actuation, record-forming means, means adapted to hold a record-receiving member, means adapted to cause a relative lateral movement between said record-receiving member and said record-forming means, and means controlled by said moving means to vary the effective length of said arm.

17. In a dial time recorder, in combination, a dial provided with a plurality of elongated openings, an actuating arm provided with a member adapted to enter said openings, a shutter in each of said openings, means adapted upon said arm being actuated to throw the corresponding shutter into the path in which said member has traveled in actuation, record-forming means, means adapted to hold a record-receiving member, means adapted to cause a relative movement between said record-receiving member and said record-forming means, means controlled by said last-mentioned means adapted to vary the effective length of said arm, and means adapted to simultaneously retract said shutters.

18. In a dial time recorder, in combination, an actuating arm, means adapted to vary the effective length thereof, a dial provided with an elongated opening, means upon said arm adapted to enter said opening, a spring-pressed shutter within said opening, and means comprising a toothed member adapted to hold said shutter in retracted position and upon said arm being actuated to release said shutter and permit the same to move into the path in which said member has traveled during actuation.

19. In a dial time recorder, in combination, a dial provided with a plurality of elongated openings, an actuating arm provided with a member adapted to enter said openings, means adapted to vary the effective length of said arm, a shutter in each of said openings, a spring tending to move said shutter in a radial direction with respect to said dial, and means comprising racks adapted to hold said shutters in retracted positions and upon said member entering said openings to permit said shutters to move into the path in which said member has traveled during actuation.

20. In a dial time recorder, in combination, a dial provided with a plurality of elongated radially disposed openings, an actuating arm provided with a member adapted to enter said openings, means adapted to vary the effective length of said arm, a shutter in each of said openings spring-pressed in a radial direction with respect to said dial, and means comprising a spring-pressed rack extending within the path of said member and adapted to hold said shutter in retracted position, said last means being adapted upon actuation of said arm to release the corresponding shutter and permit the same to close the corresponding opening to an extent preventing the reëntry of said member at the same distance from the center of the dial.

21. In a dial time recorder, in combination, a dial provided with a plurality of elongated radially disposed openings, an actuating arm provided with a member adapted to enter said openings, means adapted to vary the effective length of said arm, a shutter in each of said openings spring-pressed in a radial direction with respect to said dial, means comprising a spring-pressed rack extending within the path of said member and adapted to hold said shutter in retracted position, said last means being adapted upon actuation of said arm to release the corresponding shutter and permit the same to close the corresponding opening to an extent preventing the reëntry of said member at the same distance from the center of the dial, and key-controlled means adapted simultaneously to retract said shutters.

22. In a dial time recorder, in combination, printing means, means adapted to cause a relative lateral movement of the printing and record-receiving means, an actuating arm adjustable in effective length, a shaft, a sleeve engaging said shaft, relatively inclined slots in said shaft and said sleeve, a collar provided with a pin passing through said slots, means controlled by said second means adapted to reciprocate said collar and rotate said sleeve relative to said shaft, and a connection between said sleeve and said actuating arm adapted upon said relative rotary movement taking place to vary the effective length of said arm.

23. In a dial time recorder, in combination, printing means, means adapted to cause a relative lateral movement of the printing and record-receiving means, an actuating

arm adjustable in effective length, a shaft, a sleeve engaging said shaft, relatively inclined slots in said shaft and said sleeve, a collar provided with a pin passing through said slots, means controlled by said second means adapted to reciprocate said collar and rotate said sleeve relative to said shaft, a connection between said sleeve and said actuating arm adapted upon said relative rotary movement taking place to vary the effective length of said arm, a plurality of elongated openings about the dial of the instrument, a spring-pressed shutter in each of said openings, and means adapted upon said arm being actuated with respect to one of said openings to cause the corresponding shutter to move into the path of travel thereof and prevent a second actuation in the same position.

24 In a dial time recorder, in combination, printing means, actuating means adapted to cause a relative lateral movement of the printing and record-receiving means, an actuating arm adjustable in effective length, a shaft, a sleeve engaging said shaft, relatively inclined slots in said shaft and said sleeve, a collar provided with a pin passing through said slots, means controlled by said actuating means adapted to reciprocate said collar and rotate said sleeve relative to said shaft, a connection between said sleeve and said actuating arm adapted upon said relative rotary movement taking place to vary the effective length of said arm, a plurality of elongated openings about the dial of the instrument, a spring-pressed shutter in each of said openings, means adapted upon said arm being actuated with respect to one of said openings to cause the corresponding shutter to move into the path of travel of said arm and prevent a second actuation in the same position, and key-controlled means adapted to retract said shutters.

25. In a dial time recorder, in combination, time record forming means, a dial having an opening, a movably mounted actuating element movable to enter said opening at a plurality of points corresponding to records to be made, and means to prevent said element from entering said opening at a determined point or points.

26. In a dial time recorder, in combination, time record forming means, a dial having an opening, a movably mounted actuating element movable to enter said opening at a plurality of points corresponding to records to be made, and automatically operated means to prevent said element from entering said opening at a determined point or points.

27. In a dial time recorder, in combination, time record forming means, a dial having an opening, a movably mounted actuating element movable to enter said opening at a plurality of points corresponding to records to be made, and automatically operated means set in operation by the actuating element in making a record, to prevent the said element from entering said opening at a point or points corresponding to a completed record or completed records.

28. In a dial time recorder, in combination, time record forming means, a dial having an opening, a movably mounted actuating element movable to enter said opening at a plurality of points corresponding to records to be made, means to prevent said element from entering said opening at a determined point or points, and means to enable said element to enter said opening at a point or points different from that corresponding to a completed record.

In testimony whereof I affix my signature, in the presence of two witnesses.

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Witnesses:

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CURTIS C. MYERS.