No. 633,126. Patented Sept. 19, 1899.

J. W. DEÜBNER.

WORKMAN'S TIME RECORDER.

(Application filed Oct. 8, 1897.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 2.

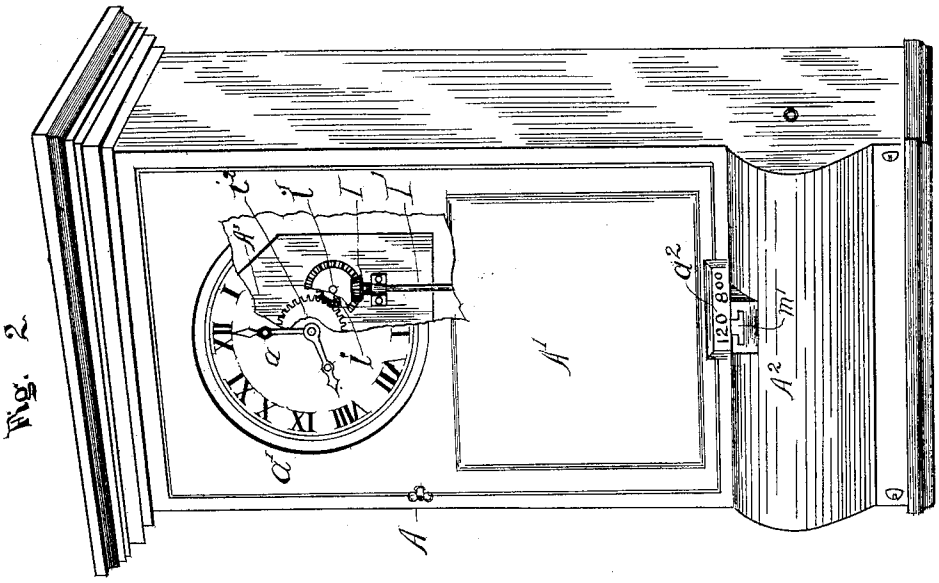
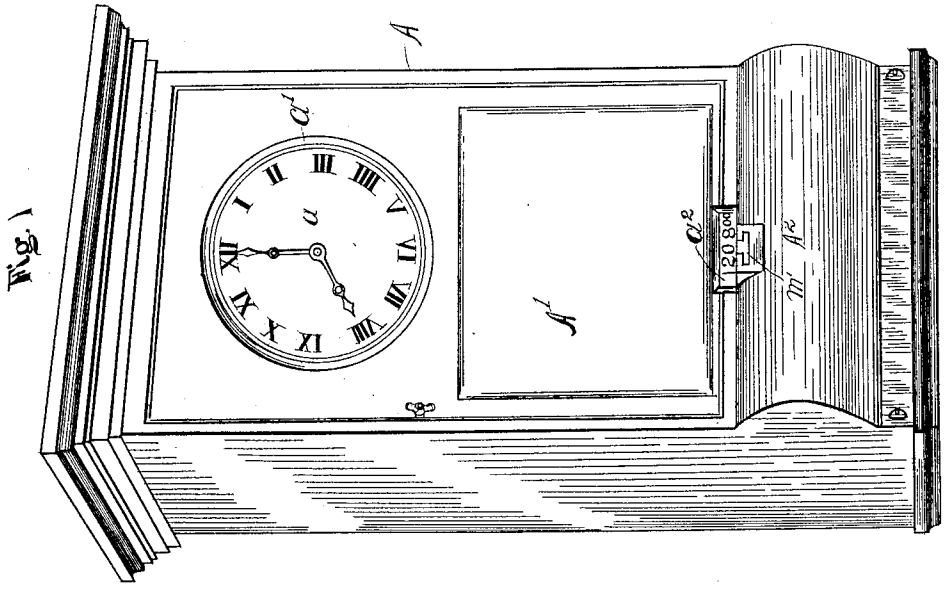


Fig. 1.



Witnesses.
S. S. Noble
Ralph Pinkerton.

Inventor.
John W. Deübner,
By Carter & Graves.
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 633,126. Patented Sept. 19, 1899.

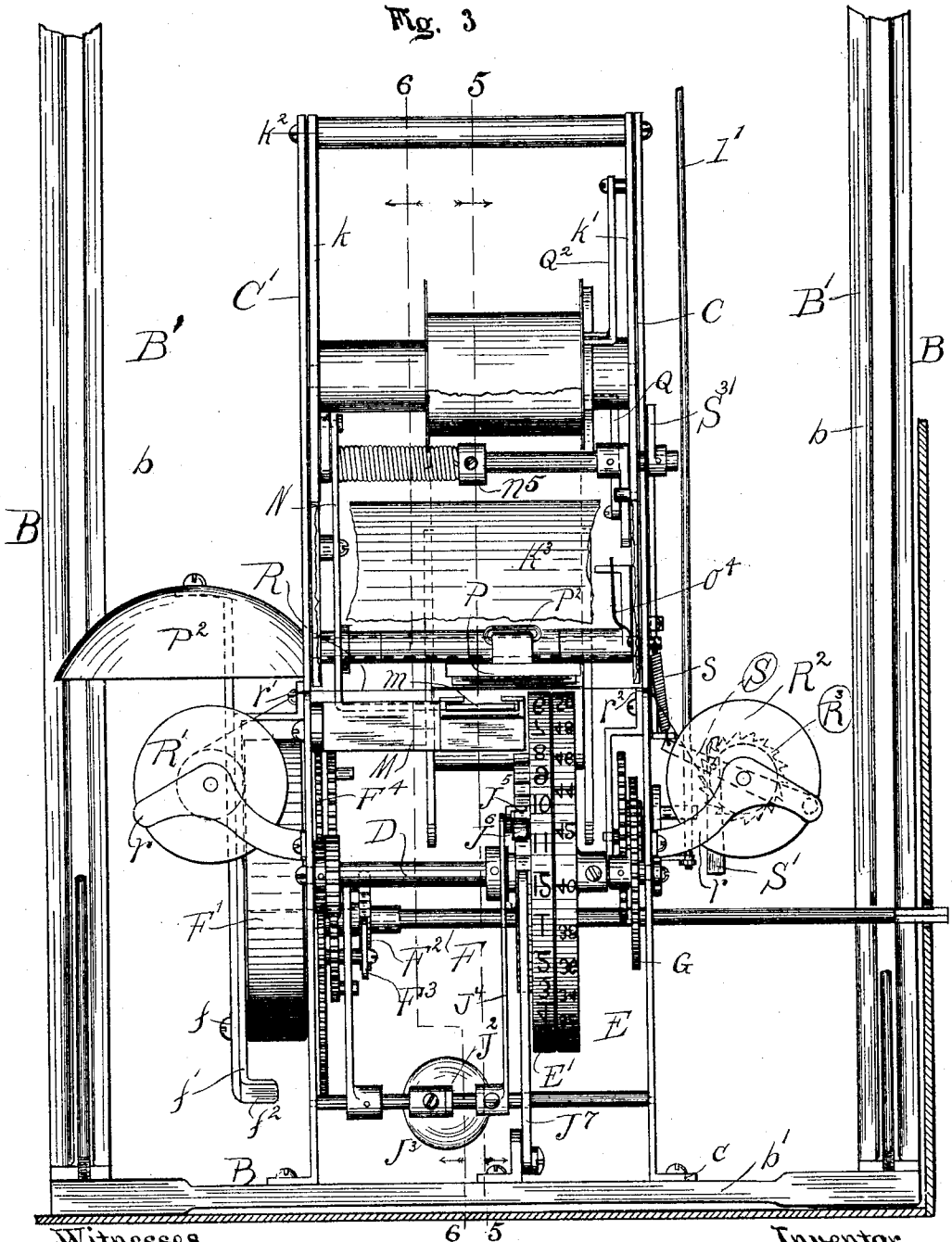
J. W. DEÜBNER.

WORKMAN'S TIME RECORDER.

(Application filed Oct. 8, 1897.)

(No Model.) 5 Sheets—Sheet 2.

Fig. 3



Witnesses

G. S. Noble

Ralph Pinkerton.

Inventor.

John W. Deübner,

By Carter & Graves

Att'ys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 633,126. Patented Sept. 19, 1899.

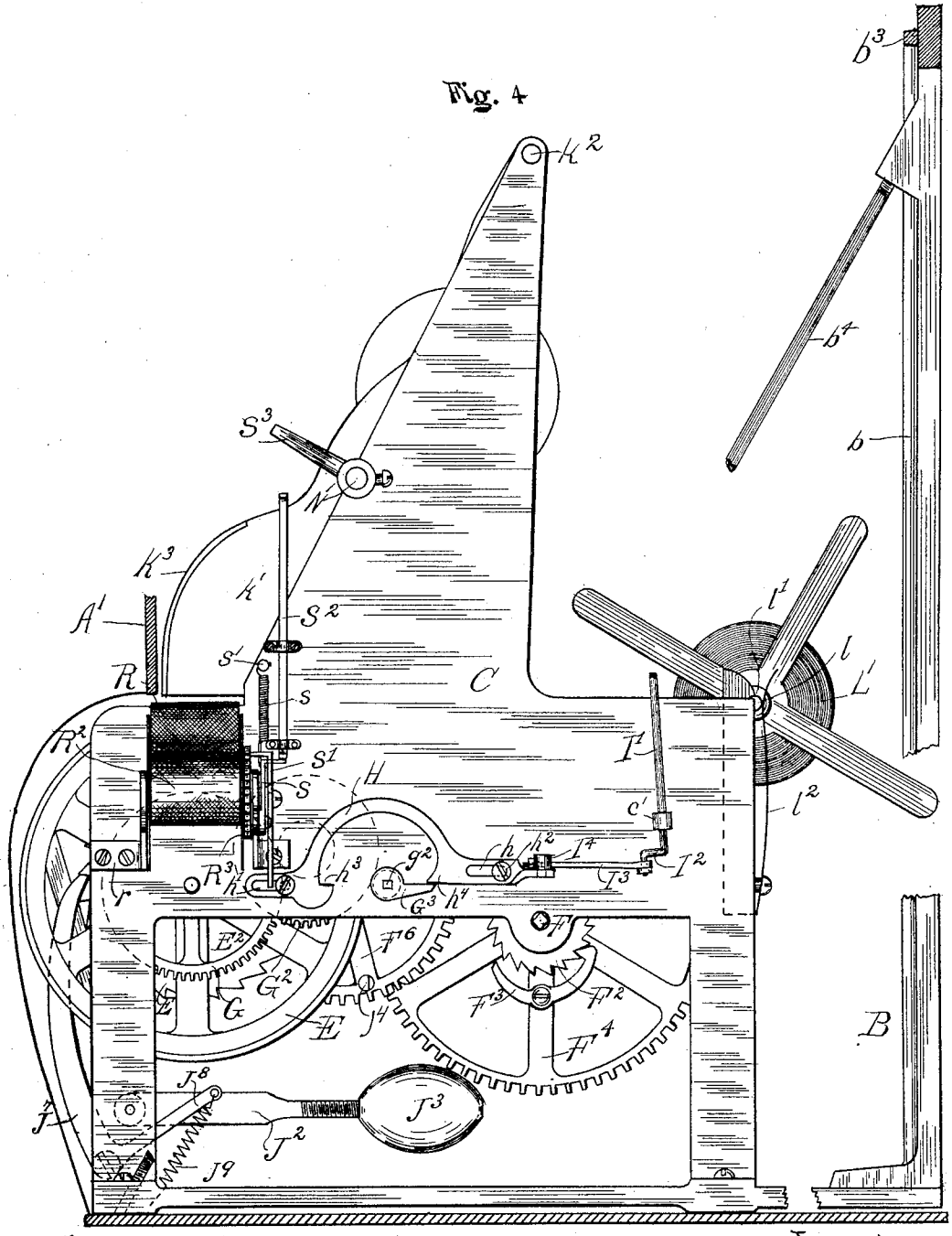
J. W. DEÜBNER.

WORKMAN'S TIME RECORDER.

(Application filed Oct. 8, 1897.)

(No Model.) 5 Sheets—Sheet 3.

Fig. 4



Witnesses:
S. S. Noble
Ralph Pinkerton

Inventor,
John W. Deübner,
By Carter & Evarts,
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 633,126. Patented Sept. 19, 1899.

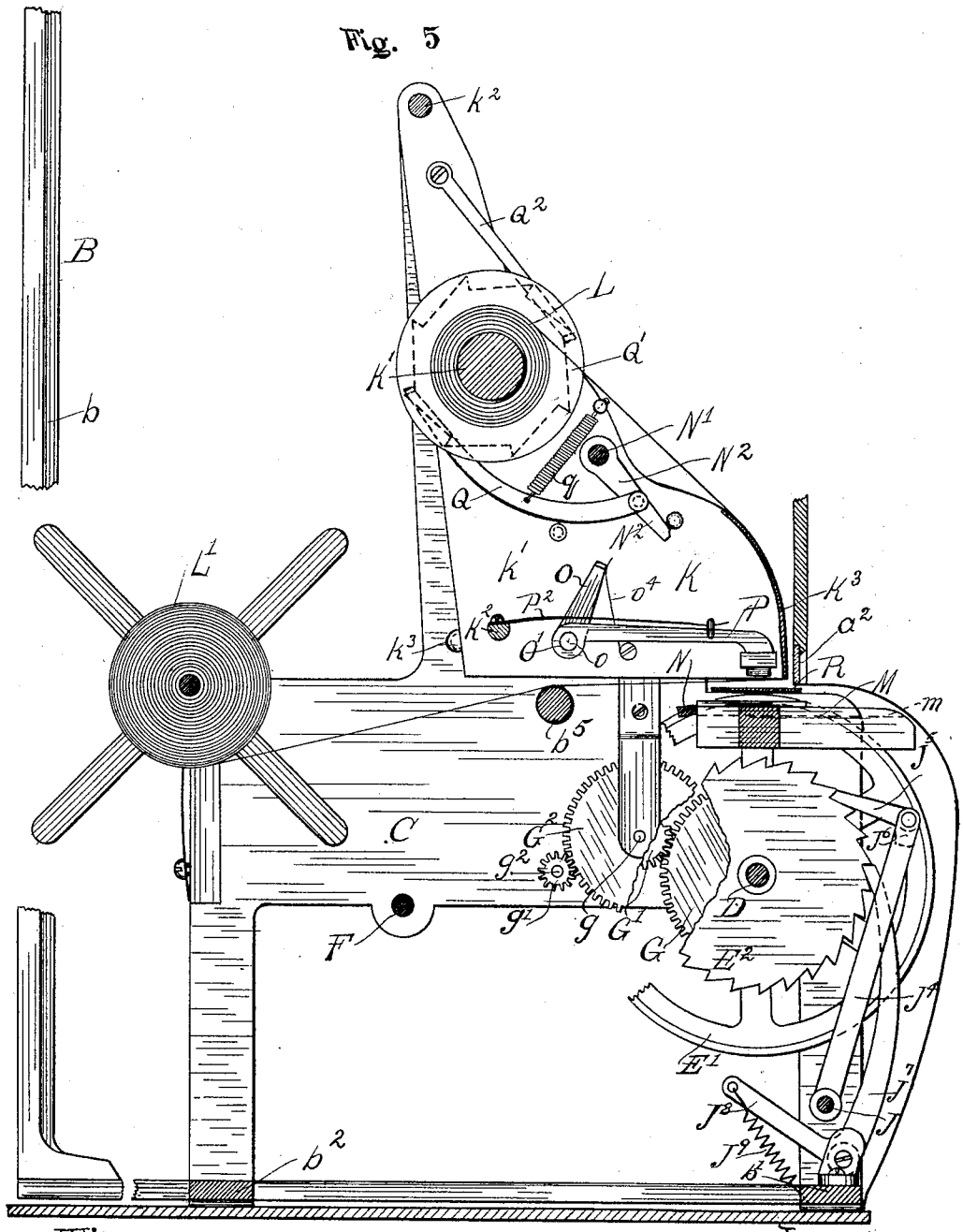
J. W. DEÜBNER.

WORKMAN'S TIME RECORDER.

(Application filed Oct. 8, 1897.)

(No Model.) 5 Sheets—Sheet 4.

Fig. 5



Witnesses:
S. S. Noble
Ralph Pinkerton.

Inventor.
John W. Deübner
By Carter & Crane,
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 633,126. Patented Sept. 19, 1899.

J. W. DEÜBNER.

WORKMAN'S TIME RECORDER.

(Application filed Oct. 8, 1897.)

(No Model.) 5 Sheets—Sheet 5.

Fig. 8.

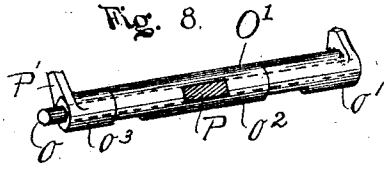


Fig. 7.

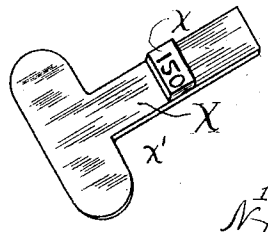


Fig. 6

Witnesses:

G. S. Noble

Ralph Pinkerton.

Inventor

John W. Deübner,

By Carter & Graves

Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN W. DEÜBNER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE CHICAGO TIME REGISTER COMPANY, OF SAME PLACE.

WORKMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 633,126, dated September 19, 1899.

Application filed October 8, 1897. Serial No. 654,489. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. DEÜBNER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Workmen's Time-Recorders, of which the following is a specification.

This invention relates to improvements in time-recorders for recording the time of workmen and analogous purposes, and relates more specifically to improvements in machines of that class commonly designated as "key-machines," in the use of which each workman is provided with an individual key bearing identifying characters, and which keys are used to effect the printing of the individual time-records of the several workmen and the identification of the same.

A principal object of the present invention is to provide a machine of such construction that when the workman has operated the machine by means of his key the time-record thus printed, together with the identification-marks of his individual key, will immediately be exposed to view through a sight-opening, so that the workman may verify the accuracy of the record at a glance and without waste of time.

Other objects of the invention are to provide such a construction that the operation of recording and bringing the printed record to view will be accomplished by simply pushing a key directly into the keyhole of the machine and instantly withdrawing it, no time being lost in turning the key, in waiting for recording mechanism to act within the casing, or otherwise, and to provide a machine having relatively few parts and of generally simplified and improved construction which is at the same time durable and reliable, of compact form, and extremely convenient in use.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view showing the outward appearance of a machine embodying my invention. Fig. 2 is a similar view, parts of the front of the casing being broken away to show the operative connections between the clock mechanism and recording mechanism. Fig. 3 is a front elevation of the recording mechanism with the front casing removed. Fig. 4 is a side elevation of the same with the side casing removed. Figs. 5 and 6 are transverse vertical sectional views taken on lines 5 5 and 6 6, respectively, of Fig. 3 and looking in the directions of the arrows. Fig. 7 is a perspective view of one of the keys. Fig. 8 is a perspective view of the sectional rock-bar.

Referring to said drawings, A designates as a whole the casing of the machine, herein shown as having the general form of an ordinary clock-case, the front upper portion of said casing being made in the form of a door A′, adapted to swing open in the usual manner, and the lower outwardly-curved part A^2 of said front being also made removable in order to afford access when desired to the recording mechanism located therein.

In the upper part of the casing is arranged a clock-movement, (designated as a whole by A^3,) which may be of any suitable or usual construction so far as its general features are concerned, and the dial a of which is exposed through a suitable glass-covered opening a' in the front of the casing.

The recording mechanism proper is located in the lower part of the casing, being for convenience of removal and in order to facilitate its attachment to the case mounted upon an independent framework, (designated as a whole by B.) Said framework, as shown, consists of two L-shaped side frame members B′, arranged at a suitable distance apart parallel with each other and with the upright portions thereof b resting against the rear wall of the casing and secured rigidly together by means of front and rear lower cross members b' b^2, respectively, and an upper cross member b^3. In order to render the framework thus formed more rigid, so that it may be removed from the clock-casing bodily, together with the recording mechanism mounted thereon, brace-rods b^4 are arranged to extend diagonally downward and forwardly from the upper part of each side frame member B′ to the front end

of the lower horizontal portion thereof. Upon the frame thus constructed is mounted the framework of the recording mechanism proper, consisting of two side frame-plates C C', arranged parallel with each other and rigidly secured to the cross frame members b' b^2 conveniently by means of screws inserted through horizontal outturned feet c.

D designates the main shaft, upon which is mounted the recording type-wheels E E', respectively, said shaft being mounted in suitable bearings, so as to extend horizontally and transversely between the side frame-plates, near the front portions of the latter. The minute-wheel E is keyed or otherwise made rigid with the shaft D, and in order to impart movement to the latter a spring-motor is provided, consisting in the present instance of a motor-shaft F, arranged to extend transversely through suitable bearings in the side frame-plates parallel with the main shaft D, but some distance in rear of the latter, a spiral steel spring F', mounted upon the outside of the frame-plate C' concentrically with the motor-shaft F and arranged to act upon the latter, and a train of gears communicating motion from the motor-shaft to the main shaft D. As shown in the present instance, the motor-shaft is extended through the side frame-plate C', the motor-spring arranged concentrically thereof and attached at its inner end to the shaft, while the outer end of said spring is secured to a suitable stud f, (see Fig. 6,) mounted upon the side frame-plate. In order to prevent the motor-spring from unwinding or uncoiling beyond a certain extent, a guard-bar f', provided with inturned ends f^2, is mounted upon the side frame, so as to overlie said spring, the inturned ends thereof acting to limit the expansion of the spring beyond a certain point. The opposite end of the motor-shaft is extended out through the side frame-plate C and through the side wall of the casing and provided with a suitably-squared shank end adapted to be engaged by a winding-key.

F^2 designates a ratchet-wheel rigidly secured upon the motor-shaft, and F^3 a pawl mounted upon a gear-wheel F^4 in such position as to engage the ratchet-wheel and impart the motion of the motor-shaft in one direction to said gear-wheel, said gear-wheel being mounted loosely upon the shaft. The gear F^4 is arranged to intermesh with a pinion F^5, mounted upon a stub-shaft f^3, projecting inwardly from the side frame-plate. (See Fig. 6.) F^6 designates a second large gear secured rigidly to the pinion F^5 concentrically with the latter, which gear intermeshes with and in turn communicates motion to a second pinion F^7, mounted rigidly upon the main shaft D.

In order to hold the main shaft and type-wheels mounted thereon from rotation under the action of the frame-motor, except when permitted at suitable regular intervals, an escapement operated or controlled by the clock-movement is provided, arranged as follows:

G designates a gear secured rigidly to the main shaft D, adjacent to the side frame-plate C and intermeshing with a pinion G', (see Fig. 5,) mounted upon a suitable stub-shaft g, carried by the side frame-plate at a point in rear of the main shaft. With this pinion G' is rigidly connected a larger gear G^2, which in turn meshes with a pinion g', mounted upon a short shaft g^2, which extends through the side frame-plate and carries at its outer end a trip arm or detent G^3, (see Fig. 4,) made rigid with the shaft.

H designates an escapement-bar suitably slotted at each end, as indicated at h h', and mounted upon fixed studs h^2 on the frame-plate, so as to reciprocate adjacent to the trip-arm, said escapement-bar being arranged in the same plane with the plane of movement of the trip-arm and being curved to avoid interference with the latter, except as to those parts which form the stops of the escapement, as now to be described. At one end, in this instance the front end, the escapement-bar is provided with a shoulder h^3, which is so arranged as to project within the path of the end of the trip-arm when the escapement-bar is shifted to its rearmost position and at its opposite end located at a point in a right line passing from the shoulder h^3 through the pivotal axis of the trip-arm, and is provided with a second projection or shoulder h^4, which is carried into the path of the end of the trip-arm when the escapement-bar is shifted to its forward limit, or that indicated in the drawings, the faces of the shoulders h^3 h^4 being oppositely disposed, so as to engage the front side of the trip-arm as the latter is rotated. The intermediate gearing between the main shaft, which carries the minute-wheel, and the shaft upon which the trip-arm is mounted is such that the type-wheel will be carried forward one-thirtieth of a revolution for each half-revolution of the trip-arm, or a distance corresponding to two minutes.

In order to operate the escapement-bar so as to permit the trip-arm to make a half-revolution at the end of each two minutes, the clock-movement is provided with a pair of gears i i', (see Fig. 2,) the first member of which, i, intermeshes with a gear i^2, mounted upon the minute-shaft of the movement, while the latter, i', communicates motion to a bevel-gear I, mounted upon the upper end of a rod I', which extends downwardly from the clock-movement through a suitable bearing c', mounted upon the side frame-plate C in rear of the escapement-bar and provided with a crank portion I^2. With the crank I^2 is connected a pitman I^3, which is suitably connected at its opposite end by means of a flexible joint I^4 with the rear end of the escapement-bar. The relative sizes of the several gears of the train which communicate motion

from the minute-shaft of the clock-movement to the rod I′ are such that said rod will perform a revolution once in four minutes, thus permitting the minute-wheel to be moved forward by the spring-motor a step at the end of each two minutes and to perform a complete revolution once each hour.

In order to move the hour-wheel E′, which is mounted loosely upon the main shaft D adjacent to the minute-wheel, forward a step at the end of each hour, means are provided, arranged, and constructed in the present instance as follows:

Referring to Figs. 3, 4, 5, and 6, J designates a rock-shaft mounted in suitable bearings in the side frame-plates, so as to extend transversely of the machine beneath the type-wheels, and provided near one end with a rigid arm or wiper J′, which projects upwardly adjacent to the gear F^6 in position to be acted upon and oscillated by a series of studs *j*, mounted upon said gear at equidistant intervals apart, said series comprising in the present instance three, the gear F^6 being three times as large as the pinion F^7, mounted upon the main shaft, so that one stud will be carried past the end of the arm J′ upon each revolution of the main shaft. J^2 designates a second arm rigidly connected with the rock-shaft J, arranged to project horizontally therefrom and provided with an adjustable weight J^3, which tends to hold the free end of the arm J′ projected into the path of the studs *j* and oscillates the rock-shaft suddenly a limited distance each time one of the studs passes the end of the wiper-arm. The extent of the oscillation of the rock-shaft is determined in the present instance by means of a stop J^6, as hereinafter described. J^4 (see Figs. 3 and 5) designates a pawl-arm mounted rigidly upon the rock-shaft J, arranged to project upwardly adjacent to a ratchet-wheel E^2, which is secured to the hour-wheel E′ concentrically with the latter, the upper end of the pawl-arm being provided with a pawl J^5, pivoted thereto and arranged to engage said ratchet-wheel and push it forward a notch upon each oscillation of the rock-shaft J. In order that the hour-wheel may not be carried too far by the momentum imparted thereto by the sudden thrust of the push-pawl, the upper end of the pawl-arm is provided with a rigid projection J^6, suitably formed and located to engage with the teeth of the ratchet-wheel and arrest the latter as the pawl-arm reaches the forward limit of its stroke. In order that the hour-wheel may be held immovable during the retraction of the push-pawl, a spring-pawl J^7 is arranged to act upon said ratchet-wheel, said pawl or detent being in the present instance pivotally mounted upon a suitable bracket on the lower front cross-frame member and provided with an angular arm J^8, which is acted upon by a coiled spring J^9 to hold the detent in yielding engagement with the ratchet-wheel.

To next describe the paper-carriage and the paper feeding and printing devices, whereby impressions are taken from the type-wheels upon a continuous ribbon of paper, K designates as a whole a swinging carriage consisting of two side frame-plates *k k′*, respectively, in the present instance of substantially triangular form and connected by means of cross-bars K′ K^2 and a front plate K^3. The frame K as a whole is of suitable width to fit easily between two upward extensions of the side frame-plates C C′ and is pivotally connected so as to swing between the latter by means of a pivot-rod k^2, extending through the upper angles of its side plates and engaging the side frame-plates C C′. The carriage K is free to swing forwardly, but is limited in its backward movement and held in a position with its front part vertically above the axis of the type-wheels and with its lower side substantially horizontal by means of stop-studs k^3, mounted in the side frame-plates C C′.

The cross-bar K′ of the carriage is made to serve as a bearing, upon which is mounted a spool or receiving-roll L.

L′ designates a supply-roll mounted upon a suitable spindle *l*, journaled in the side frame-plates adjacent to the rear upper angles of the latter, said spindle being conveniently made removable from its bearings by forming the latter open at their rear sides, as indicated at *l′*, and arranging plate-springs l^2 to bear against the trunnion portions of the spindle and hold the same within its bearings, as indicated clearly in Figs. 4 and 6. From the supply-roll the paper ribbon passes forwardly over a cross-bar b^5, thence between the upper peripheries of the recording-wheels and the lower side of the carriage, around the lower front angle of the latter, and up over the front plate K^3 to the receiving-roll L, said front plate K^3 being curved at its upper portion, so as to facilitate the passage of the paper over the same, but arranged to stand in a vertical plane throughout its lower half, so as to hold that part of the recording-strip resting thereon upright opposite a sight-aperture a^2, formed in the front wall of the casing.

M designates a guide-bar rigidly secured to the side frame-plate C′ and arranged to project horizontally across the machine and terminate at its free end adjacent to the side face of the hour-wheel, the upper edge of said guide-bar being approximately on a level with the upper periphery of said type-wheel.

m designates a keyway cut transversely in the upper portion of said guide-bar adjacent to the hour-wheel and in alinement with a corresponding keyhole *m′*, formed through the outer casing, said keyhole and keyway being in the present instance of rectangular form and adapted to receive a flat rectangular key X—such, for instance, as that illustrated in Fig. 7. Each individual key is provided upon one side at a distance from its end with a series of raised characters *x*, arranged

transversely of the key and adapted to be brought into the same plane and in transverse alinement with the characters of the two type-wheels presented at the printing-point vertically above the axis of said type-wheels when the key is inserted within the keyway to the full extent permitted by the shoulder x' at the inner end of its shank.

N designates an oscillatory lever suitably pivoted at a point between its ends, as at n, to the inner surface of the side frame-plate C', (see Fig. 6,) one end n' of the said lever being bent at right angles to the main portion thereof and arranged to extend horizontally across the machine immediately in rear of the keyway m in position to be engaged by the inner end of the key and swung backwardly as the key is inserted through the keyway.

N' designates a rock-bar mounted in suitable bearings in the side plates of the carriage, so as to extend transversely of the latter and adjacent to the upper end of the oscillatory lever N. The rock-bar N' is provided with a rigid arm n^2, having at its outer end a wrist-pin n^3, which engages an elongated slot n^4, formed in the upper end of the oscillatory lever. The rock-bar is normally held in a position to carry the lower end of the oscillatory lever forwardly as far as permitted by means of a coiled spring mounted upon said rock-shaft, one end of which is connected with a fixed collar n^5, while the opposite end is connected with a suitable stud n^6 upon the side frame-plate k. N^2 designates a second arm rigidly connected with the rock-shaft N', (see Fig. 5,) so as to project downwardly therefrom in position to engage with its lower end the upstanding end of a trip-arm O, mounted upon a rock-shaft O', extending between the side frame-plates of the carriage parallel with the rock-shaft N' and below the latter. Said rock-shaft O' is of tubular form, consisting of three separate sections mounted upon a fixed rod o, one of said sections o' carrying the trip-arm O, made rigid therewith, the next section o^2 (see detail Fig. 8) carrying a printing-hammer P, and the third section o^3 carrying a bell-hammer P'. (See Fig. 6.) The connections between the several sections o' o^2 o^3 are in the form of couplings which permit a certain amount of lost motion between each of the connections, but cause them to move positively together when oscillated beyond a certain extent. To this end the meeting ends are formed so as to overlap each other, and the width of said overlapping portions measured circumferentially is less than the full circumference of the rock-shaft, so as to provide the lost motion referred to, as indicated clearly in detail Fig. 8. By means of this construction when the arm N^2 engages the upper end of the trip-arm O the printing-hammer will be lifted positively until the said arm N^2 is carried entirely past and out of engagement with the trip-arm, whereupon the printing-hammer will be thrown down forcibly by means of a plate-spring P^2, one end of which is secured to the cross-bar K^2 and the opposite end of which bears upon the printing-hammer at a point adjacent to its free end. When, however, the swinging arm N^2 returns, it will engage and sweep past the trip-arm O without oscillating the printing-hammer in the opposite direction, this movement being permitted by the lost motion in the coupling between said parts. In order to hold said trip-arm upright in position to be reëngaged by the swinging arm, a spring is mounted upon the side frame-plate k' and arranged to bear at its free end against the front side of said trip-arm near the free end of the latter. At the same time that the printing-hammer is being lifted by the swinging arm the bell-hammer P' will be swung downwardly and upon the sudden release of the trip-hammer will be thrown upwardly, its momentum carrying it beyond its normal position and causing it to strike and ring the bell P^2, which latter is mounted upon an extension of the guard-bar f', this movement being permitted by the lost motion provided in the coupling between the printing-hammer section and bell-hammer section, as hereinbefore described.

Next describing the means whereby the recording-strip is fed forward a step each time a key is inserted and an impression thereby effected, Q designates a pawl pivotally attached to the swinging arm N^2 at one end and held in yielding engagement with a ratchet-wheel Q', mounted upon one end of the receiving-roll L by means of a coiled contractile spring q, the arrangement being such that as the swinging arm is oscillated rearwardly by the insertion of a key the pawl will be carried over the periphery of the ratchet-wheel a distance sufficient to cause it to engage a succeeding notch, and upon the return movement of the swinging arm as the key is withdrawn the receiving-roll will be rotated one step, thereby carrying the impression, which has just been made during the insertion of the key, up upon the front face of the plate or apron K^3 into position to be viewed through the sight-aperture of the outer casing. In order to hold the receiving-roll from movement during the travel of the pawl Q over the ratchet-wheel, a gravity-detent Q^2 is pivotally mounted to the side frame-plate k' above the ratchet-wheel and arranged to act upon the latter, as best indicated in Fig. 5.

R designates an inking-ribbon which is arranged to travel transversely across the machine between the upper peripheries of the type-wheels and the recording-sheet immediately beneath the printing-hammer, a supply roll or spool R' being mounted in suitable brackets r upon the outside of the frame-plate C' and a similar receiving-roll R^2 similarly mounted upon the frame-plate C in position to permit the inking-ribbon to pass readily over guide-shoulders r' r^2, formed in the said frame-plates C' C, respectively. In

order that the ribbon may be automatically fed forward a step each time an impression is taken, a pawl-carrying arm S is pivotally mounted to the outer end of one of the brackets r of the receiving-roll R^2 and provided with a gravity-pawl S', arranged to act upon a ratchet-wheel R^3, mounted upon the proximate end of the said spool R^2. The free end of the pawl-carrying arm S is arranged to project obliquely upward and toward the frame-plate C in position to be acted upon by the lower end of a plunger-rod S^2, (see Fig. 4,) which is in turn acted upon by an arm S^3, mounted upon the outer end of the rock-bar N', which is extended through the said frame-plate for this purpose. A coiled spring s, connected at one end with the free end of the arm S and at its opposite end with a stud s' upon the frame-plate, serves to return the pawl-arm and plunger S^2 to their normal position when permitted by the return of the arm S^3.

The operation of the machine has been already indicated in connection with the description of the several features of mechanism, but may be briefly recounted as follows: Both the clock-movement proper and the recording mechanism having been properly wound and the latter mechanism set as to present at the printing-point the time of day indicated by the clock, the recording mechanism will thereafter move synchronously with the clock-movement, presenting at the end of each two minutes a new set of characters at the printing-point. The machine being thus in operation and the recording-strip properly adjusted, the workman passing in to his work simply inserts his key in the keyhole with the identifying characters thereon uppermost and pushes the key inwardly as far as permitted. As the key reaches the inward limit of its movement the printing-hammer will be tripped and an impression thereby taken of the combination of characters presented by the two type-wheels and the identifying characters upon the key. Upon the withdrawal of the key from the machine the oscillatory lever will be permitted to resume its normal position under the action, the coiled spring acting upon the rock-bar N', and simultaneously therewith the recording-strip will be fed forward a step, so as to bring the impression just made up over the front side of the plate K^3 in position to be viewed through the sight-aperture in the front of the casing. It will thus be seen that one workman after another can make their records by simply pushing in their individual key, instantly withdrawing it, and passing on, meantime glancing at the record made in order to verify its accuracy. Upon the return of the workman in passing out from his work he will simply repeat the recording operation, and inasmuch as each workman's record of time also contains the identifying characters of his key the length of time worked by each individual workman may be readily ascertained from the strip.

The swinging forwardly of the carriage K, as hereinbefore described, enables the receiving-roll to be placed therein and the recording-strip arranged to pass around the front of the carriage and beneath the same back to the supply-roll with great facility and without interfering with the ink-ribbon or soiling the hands of the operator by the same, while the readiness with which the spindle of the supply-roll may be inserted or removed from its bearings enables said roll to be adjusted most readily.

From the foregoing description it will be seen that I have provided a machine which is at once simple in construction and effective in operation. Owing to the time required for workmen to write their names and in many cases their inability to do this, the present machine is much more expeditious than an autograph-machine, while the records made by the several workmen are each properly identified. At the same time the distrust with which key-machines of this type have heretofore been regarded is entirely obviated, since each workman is enabled to see his record as soon as made, and thus to determine to a certainty that the correct time properly identified has been printed upon the recording-sheet, thus leaving nothing to the uncertainties of the operation of the machine. If the record made be not correct, the workman will detect it instantly and may call the attention of the proper authority thereto and have it corrected.

The construction of the machine which provides for the operation of the printing and sheet-feeding mechanisms by force directly applied through the key is of importance both because it requires less mechanism than when these operations are performed by a motor and is more positive, and, further, because the recording operation can be effected more rapidly.

While I have herein shown a practical and, what I deem, a preferred construction, yet it will be obvious that the details of construction may be varied without departing from the spirit of the invention and without involving more than ordinary mechanical skill.

I claim as my invention—

1. In a time-recorder, the combination with a casing provided with a sight-opening, of a clock-controlled record-printing mechanism within the casing, sheet-feeding mechanism adapted to feed forward a normally stationary recording-sheet, a manually-operable key provided with an identification character and adapted to operate the record-printing mechanism and sheet-feeding mechanism to effect the taking of an impression upon the recording-sheet from both the clock-controlled printing mechanism and identification character of the key and the feeding forward of the recording-sheet into position to bring the im-

pression thus made opposite the sight-opening, whereby the individual registering is enabled to inspect for verification the record which he has made through the medium of the key.

2. In a time-recorder, the combination with a casing, and a clock-controlled printing mechanism adapted to print upon a recording-sheet therein, of a spring-pressed printing-hammer, a sheet-feeding mechanism, a push-key, key-operable mechanism whereby the printing-hammer will be operated upon the insertion of the key and key-controlled mechanism whereby the sheet-feeding mechanism will be operated upon the withdrawal of the key whereby the record last made is immediately moved forward to a position where it may be inspected.

3. In a time-recorder, the combination with a casing, and a clock-controlled printing mechanism adapted to print upon a recording-sheet therein, of a spring-pressed printing-hammer and a spring-actuated sheet-feeding mechanism, a push-key, and operative connections whereby both the spring of the printing-hammer and of the sheet-feeding mechanism are charged and hammer operated by the insertion of the key and means whereby the sheet-feeding mechanism is held from action until, and is caused to act upon, the withdrawal of the key.

4. In a time-recorder, the combination with a casing, and a clock-controlled printing mechanism adapted to print upon a recording-sheet therein, of a spring-actuated sheet-feeding mechanism, a printing-hammer provided with an independent actuating-spring, a key, and mechanism operable by the key and by means of which the insertion and withdrawal of the key charges the springs of both the sheet-feeding mechanism and printing-hammer and effects the release thereof, whereby the printing of a time-record and the feeding forward of the record-sheet are accomplished by the respective springs.

5. In a time-recorder, the combination with a casing and a clock-controlled printing mechanism adapted to print upon a recording-sheet therein, said casing being provided with a sight-aperture, of a spring-actuated sheet-feeding mechanism, a spring-actuated printing-hammer, a key and operative connections whereby the insertion and withdrawal of the key charges the springs of both the sheet-feeding mechanism and printing-hammer effects the printing of a time-record, and the feeding forward of the recording-sheet into position to expose the time-record last printed thereon through said sight-aperture.

6. In a time-recorder, the combination with a casing, clock-controlled type-wheels arranged therein and a key provided with a printing character, of a keyway formed through said casing so located as to permit the insertion of the key adjacent to the printing-point of the type-wheels, a movable member arranged in the path of the key so as to oppose the endwise movement of the latter through the keyway, a printing-hammer and sheet-feeding mechanism both operatively connected with the movable member, a spring acting upon said movable member in opposition to its movement by the key so as to be charged by the insertion of the latter and operative connections between the spring and the sheet-feeding mechanism whereby the latter is operated upon the withdrawal of the key.

7. In a time-recorder, the combination with the casing, and the clock-controlled type-wheels arranged therein, of a keyway formed through the casing, a guide-support adapted to support a key adjacent to the type-wheels, a rock-bar, an oscillatory lever operatively connected with said rock-bar and having one end arranged to depend within the path of the key in the endwise movement of the key through the keyway, a spring-pressed printing-hammer, a trip-arm carried by the rock-bar arranged to operate said hammer, a sheet-feeding mechanism, a spring arranged to act upon the rock-bar in opposition to its movement by the key, and operative connections between the rock-bar and sheet-feeding mechanism whereby the sheet is fed forward upon the withdrawal of the key.

8. In a time-recorder, the combination with the casing, and the clock-controlled type-wheels arranged therein, of a keyway formed through the casing, a guide-support adapted to support a key adjacent to the type-wheels, a rock-bar, an oscillatory lever operatively connected with said rock-bar and having one end arranged to depend within the path of the key in the endwise movement of the latter through the keyway, a spring-pressed printing-hammer, a trip-arm carried by the rock-bar arranged to operate said hammer, a sheet-feeding mechanism comprising a receiving-roll provided with a ratchet and a pawl operatively connected with the rock-bar and adapted to engage said ratchet, and a spring arranged to act upon the rock-bar in opposition to its movement by the key and adapted to effect the feeding forward of the recording-sheet upon the withdrawal of the key, said casing being provided with a sight-aperture arranged to permit the inspection of the time-record last printed when the recording-sheet has been feed forward upon the withdrawal of the key.

9. In a time-recorder, the combination, with the casing and the clock-controlled type-wheels arranged therein, of a keyway formed through the casing, a guide-support adapted to support a key adjacent to the type-wheels, a rock-bar, an oscillatory lever operatively connected with said rock-bar and having one end arranged to depend within the path of the key in the movement of the latter endwise through the keyway, a printing-hammer, a sheet-feeding mechanism, and inking-ribbon and feed mechanism for moving the latter, and operative connections between

said rock-bar and the printing-hammer, the sheet-feeding mechanism and the inking-ribbon-feeding mechanism, whereby all of said parts will be operated by the key, substantially as described.

10. In a time-recorder comprising a casing and clock-controlled recording mechanism therein, the combination with the frame of the recording mechanism, of a swinging frame of generally triangular form, suspended within said frame, and provided with a web-supporting plate over which the recording-web is drawn, a feed-roll, a spring-actuated paper-feeding mechanism and a spring-pressed printing-hammer mounted upon said swinging frame, said casing being provided with a sight-aperture opposite the web-supporting plate.

11. In a time-recorder, the combination with the clock-movement and the time-recording mechanism, of means for transmitting motion from the clock-movement to the recording mechanism, comprising a rotatable shaft, a gear upon said shaft intermeshing with one of the gears of the clock-movement, a crank carried by the shaft, and a pitman engaged with the crank and operatively connected with and arranged to control the movement of the recording mechanism.

12. In a time-recorder, the combination with the clock-movement and a motor-driven recording mechanism, of means for controlling the movement of the recording mechanism from the clock-movement, comprising a rotatable shaft, a gear upon said shaft intermeshing with one of the gears of the clock-movement, a crank carried by the shaft, a reciprocatory escapement forming a part of the recording mechanism, and a pitman operatively connecting said crank and escapement.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 25th day of September, A. D. 1897.

JOHN W. DEÜBNER.

Witnesses:
ROBERTA BUNNELL,
ALBERT H. GRAVES.