

(No Model.)

5 Sheets—Sheet 1.

F. S. COX.
TIME RECORDER.

No. 554,581.

Patented Feb. 11, 1896.

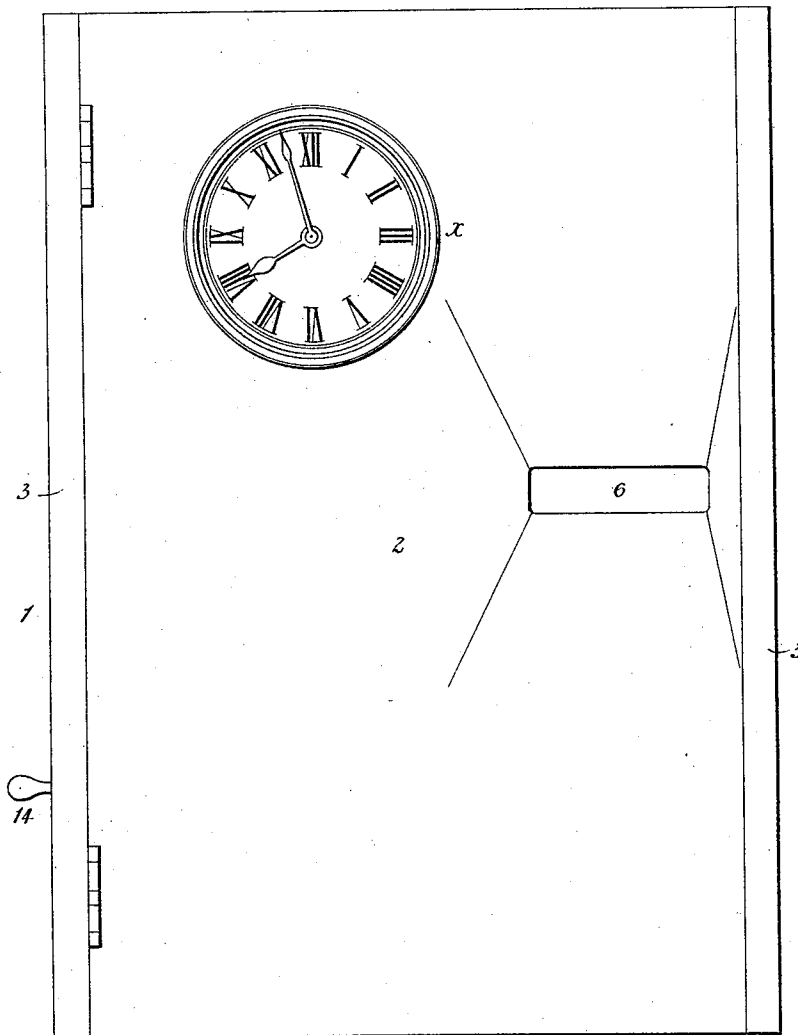


Fig. 1.

Witnesses

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Ben Temple Webster

Inventor

Frank S. Cox

By M. W. Dudley & Co.
his Attorneys

(No Model.)

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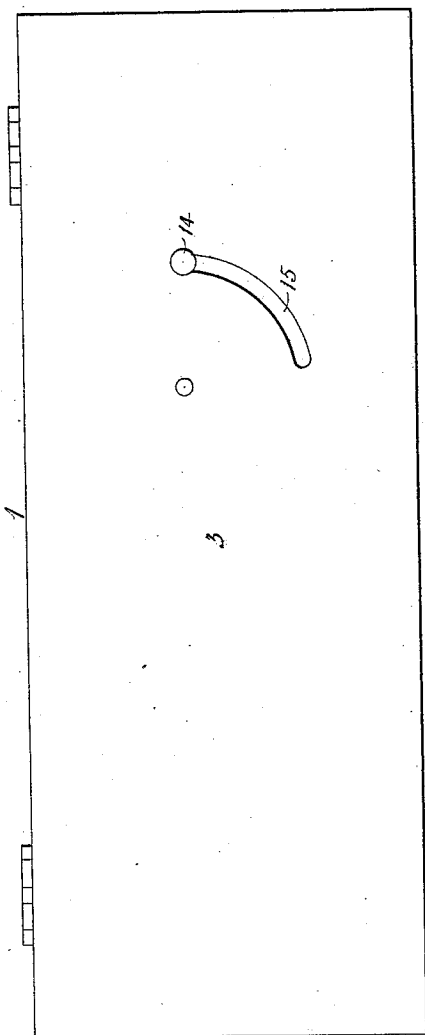


Fig. 2.

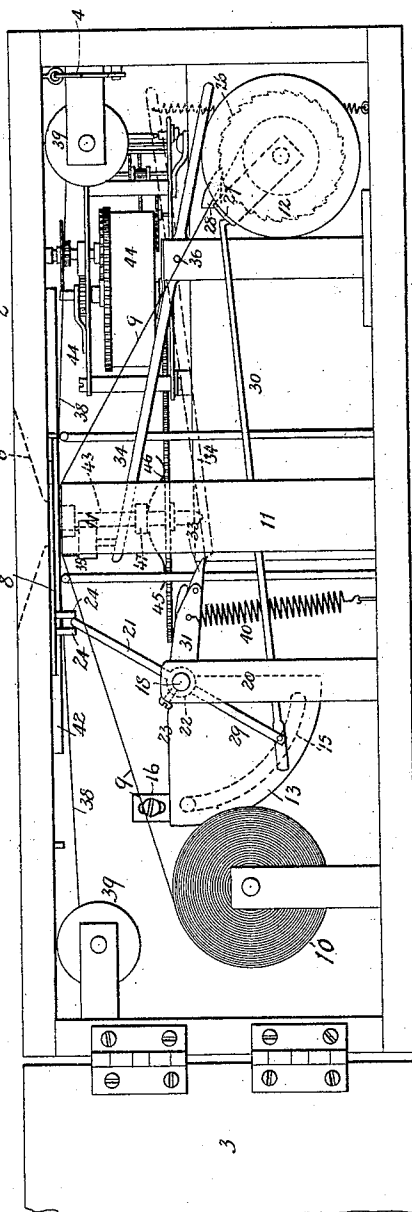


Fig. 4.

Witnesses

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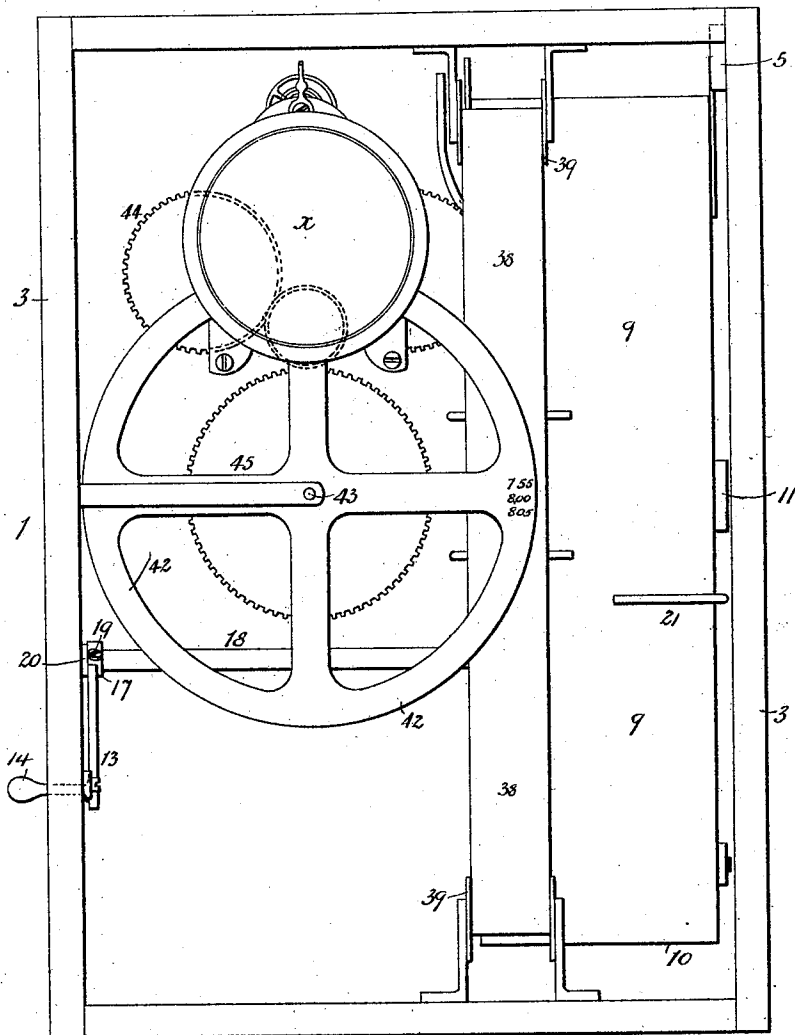


Fig. 3.

Witnesses

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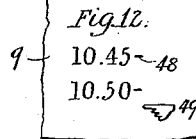
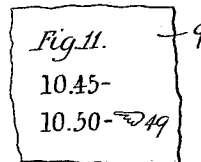
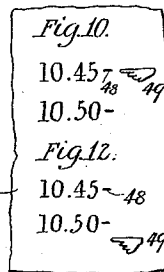
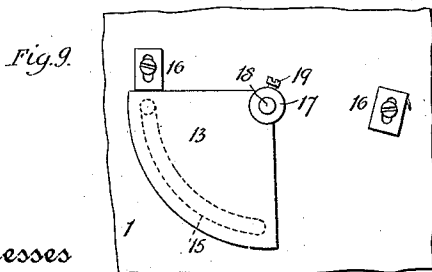
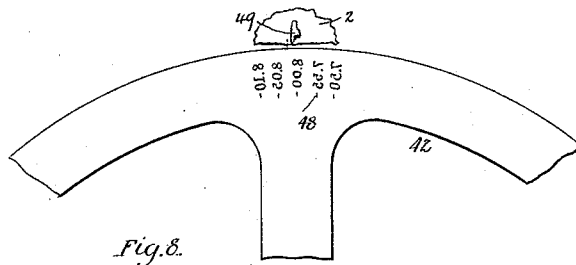
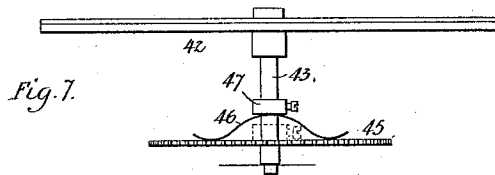
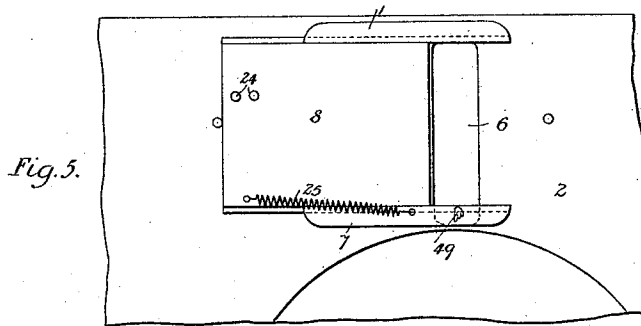
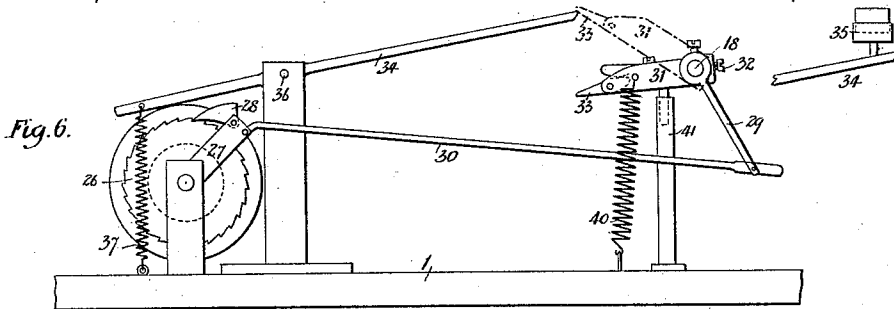
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Witnesses

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(No Model.)

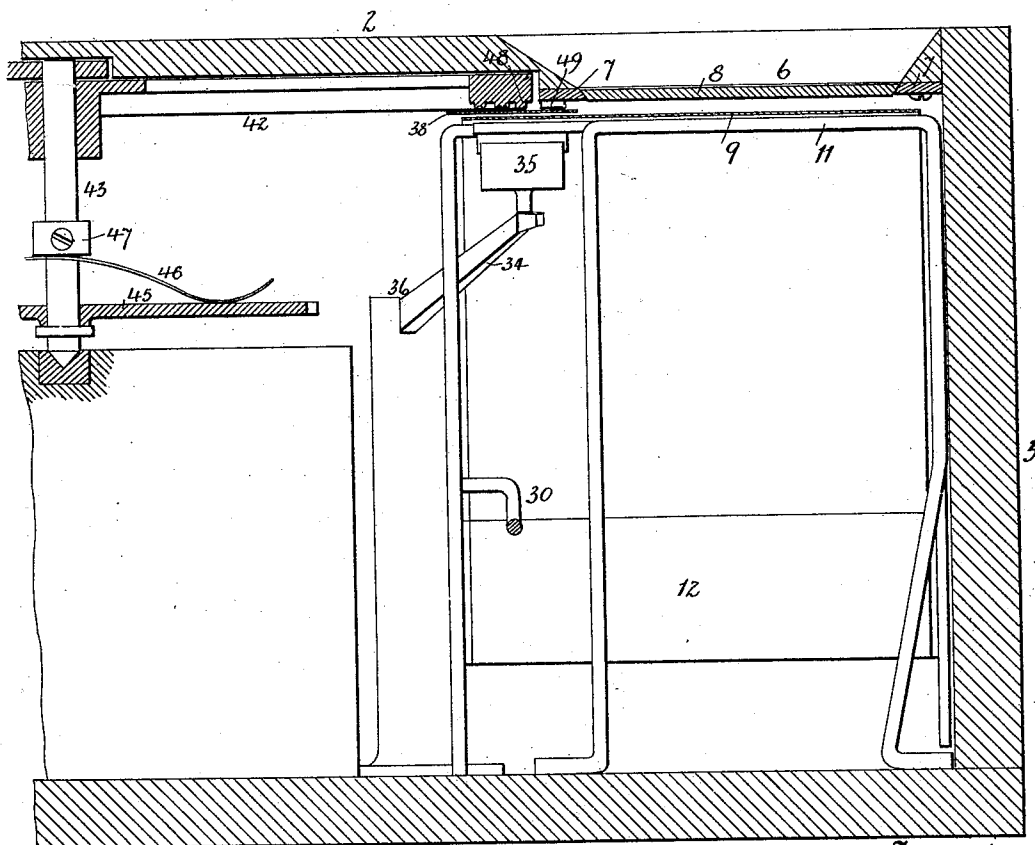
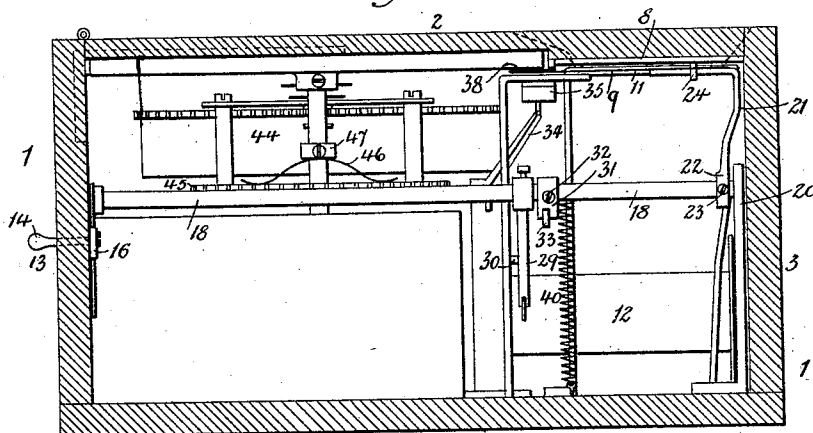
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Fig. 13.



Witnesses

S. E. Zimmerman
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Fig. 14.

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his Attorneys

UNITED STATES PATENT OFFICE.

FRANK S. COX, OF BINGHAMTON, NEW YORK, ASSIGNOR OF TWO-THIRDS
TO GEORGE E. GREEN, OF SAME PLACE, AND HERBERT J. TRUESDELL,
OF MONTCLAIR, NEW JERSEY.

TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 554,581, dated February 11, 1896.

Application filed August 27, 1895. Serial No. 560,656. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. COX, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Time-Recorders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-
10 pertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention is directed to improvements
15 in time recorders or registers, and has for its object the production of a comparatively simple and effective machine of this character possessing advantages in point of precision of operation and accuracy of results and du-
20 rability.

The nature of the invention will become apparent from a reading of the following description when taken in connection with the accompanying drawings, in which—

25 Figure 1 is a plan view of the machine. Fig. 2 is a side elevation looking toward the right and showing the actuating-handle. Fig. 3 is a plan view of the machine in an open condition to show the working parts. Fig. 4 is
30 a side elevation of the machine looking toward the left, the side wall of the casing being opened. Fig. 5 is a detail view of the slide-plate. Fig. 6 is a detail view showing the means for actuating the impression-ham-
35 mer and intermittently advancing the record-strip. Fig. 7 is a detail sectional view showing the type-wheel and the means for connecting same with the clock-train. Fig. 8 is a detail view of a portion of the type-wheel in-
40 vented to show the record-type. Fig. 9 is a detail view showing the operating-shaft and the means for actuating same. Figs. 10, 11, and 12 are detail views showing the means employed for minutely dividing the recorded
45 time. Fig. 13 is a transverse sectional view of the entire machine; and Fig. 14 is a transverse sectional view, enlarged, of a portion of the machine, taken on a line through the type-wheel and signature-slot.

Referring to the said drawings, 1 denotes 50 the casing, which is in general form rectangular and which incloses all of the working parts. This casing is preferably so formed as that the top or cover 2 may be raised to give access to the interior when necessary, 55 and one of the side walls 3 is also preferably movable for convenience in removing and inserting the record-strips. The cover 2 is fastened in place by a hook-and-eye connection 4, or other suitable fastening means, and 5 is a lock on the side wall 3 to preclude access to the working parts by unauthorized persons.

In the cover 2 is formed a rectangular slot 6, and on the under side of the cover at each side of the slot are guides 7 7, in which 65 is mounted a slide-plate 8 adapted to normally cover the slot from the interior, but which may be moved in a manner presently to be described to uncover said slot and expose a portion of the record-strip 9 to permit of the 70 writing of a signature or other matter on such exposed portion by the person whose time is to be recorded. This record-strip is of paper or other suitable material and is advanced from a roll 10 over a plate 11 arranged in ver- 75 tical alignment with the slot in order to form a proper backing for the strip when receiving the signature. From the plate 11 the strip passes around a feeding-spool 12 or between feeding-rollers, and said spool or rollers are 80 operated coincident with the movement of the slide, in order that each uncovering of the slot will present a fresh portion of the strip.

All of the working parts of the machine, with the exception of the type-wheel and 85 clock mechanism, are operated from without the machine by the exposed portion of a handle 13 at one side of the casing. Said exposed portion is preferably in the nature of a knob 14, which passes through and extends beyond 90 a slot 15 on the side sufficiently to afford a ready hand-hold. The lever portion of the handle is within the casing and is in the form of a segment, as shown, in order to normally cover the slot and thereby prevent the inser- 95 tion from without of devices for disarranging or destroying any of the parts. At each side of the handle is an adjustable stop 16 for reg-

ulating the throw of the handle, said stops being preferably slotted plates held by set-screws or other convenient means. The inner end of the handle is provided with a collar 17, which receives the operating-shaft 18, and 19 is a set-screw in said collar for relatively adjusting the shaft and handle. Said collar may also be provided with means for insuring permanent adjustment. This operating-shaft extends across the machine and is mounted in bearings 20 20 at each end thereof, and said shaft carries the means for operating the slide, the strip-advancing mechanism, and the hammer-trip.

The means for operating the slide consists of an arm 21, the inner end of which is adjustably connected to the shaft by means of a collar 22 and set-screw 23, and a permanent adjusting means, and the outer end of the arm is bent at right angles and finds lodgment, when the cover is lowered, between two pins 24 24, projecting from the slide-plate, as best shown in Fig. 4. The movement of the handle 13 partially rotates the shaft and thereby moves the arm 21, which in turn carries the plate rearward and uncovers the slot. The slide-plate will, when the shaft is restored, be carried to its normal position through the arm 21; but to accelerate its restoration the slide is provided with a spring 25, which also operates to preserve the normal position of the slide when the cover is raised, and consequently to insure the proper engagement of the arm and pins when the cover is lowered.

As before stated, the record-strip is fed from a roll over a plate beneath the slot, and thence to an actuating spool or roll, the latter being designated by 12. This actuating-spool is provided at one side with a fixed ratchet-wheel 26, and 27 is an arm loose on the spool or roller-spindle and carrying a pawl 28, which engages said ratchet-wheel. The movement of the arm is obtained through a second arm 29, adjustably secured to the operating-shaft, and an interposed connecting-rod 30. By this arrangement as the slide is moved backward to uncover the slot the record-strip is advanced, with the result that a fresh portion of the strip is exposed at every movement of the handle.

Referring now to the means for operating the hammer, 31 is a trip adjustably secured to the operating-shaft by a set-screw 32, and carrying at its other end a spring-controlled pawl 33, which yields in one direction. This pawl is arranged to move in the path and to slightly lap the end of a lever 34, which carries the hammer 35, said lever being pivoted at 36 and having its opposite end normally depressed by the action of a coil-spring 37. The hammer occupies a position immediately to one side of the slot, and consequently is directly beneath that portion of the type-wheel occupied by the type and that portion of the record-strip beyond the space for the signatures. The rotation of the shaft carries the

trip to a point beyond the end of lever 34, the pawl yielding sufficiently, by reason of its flexibility, in one direction to pass said end, and on the restoration of the parts the pawl, being rigid in the other direction, depresses the hammer end of the lever against the action of the spring until its disengagement, when said spring causes the hammer to move forcibly against the strip and type-wheel. For making the impression from the type an inked ribbon 38 is interposed between the strip and type-wheel.

39 39 are the spools or rolls which carry the ribbon, and any suitable means may be employed to advance said ribbon before or after each impression.

The operating-shaft, as before stated, is moved by hand in one direction, and to restore its position a spring 40 is employed, which is preferably connected to the trip and to an eye secured to the casing. To relieve the shock occasioned by a too sudden restoration of the position of the parts, a buffer-spring 41 is exposed in the path of the trip, as shown.

The type-wheel is shown at 42 and consists of a circular disk partly cut away to reduce the weight and fixedly mounted in a horizontal position on a vertical shaft 43. The type for indicating the time is arranged on the under side of the wheel at or near the periphery and directly in the path of the hammer and in vertical alignment with the interposed ink-ribbon and record-strip. The type consists of numerals which indicate the hour and five-minute intervals; but by the employment of means presently to be described the five-minute intervals are divided in such a manner as that the record will show the exact time at which the signature or other matter was written on the strip. For convenience in adjusting the type-wheel to accord with the time indicated by the clock the figures are duplicated on the upper side, as shown. The type-wheel is actuated by clock mechanism 44 through a gear 45, which meshes with said mechanism and is mounted on the type-wheel shaft.

In order to permit of the type-wheel being moved independently of the clock mechanism for time adjustment, a friction-clutch is employed to connect the gear and the shaft, said clutch consisting of a bow-spring 46, which is confined between said gear and an adjustable collar 47 on the shaft, or in lieu of this clutch gear may be provided with a collar and set-screw connection with the shaft. In order to bring the record-strip the minimum distance from the hand of the writer the cover is cut away to accommodate the clock-face and type-wheel, as shown.

If desired, a portion of the cover beyond the slot may be cut away and a glass inserted in order to permit an inspection of that portion of the strip which contains the signatures.

The clock-dial is shown at *a*.

By reference to Figs. 10, 11 and 12 the means for dividing the five-minute intervals will be understood. Beyond each set of fig-

ures on the type-wheel a dash 48 is formed, and in practice the space between two adjacent dashes indicates five minutes of time. These figures and dashes move constantly with the clock mechanism, and in order to indicate at what point between the dashes the signature was made a fixed pointer 49 is employed, and for convenience this pointer is arranged on the under side of the cover and is of sufficient depth to extend, when the cover is lowered, to a line coincident with the line of the type on the type-wheel. By this arrangement the pointer, which, as shown, may be in the nature of a human hand, is impressed on the record-strip with the figures on the type-wheel, and as the relation of the figures and the pointer constantly changes it is an easy matter to compute the exact time from the location of the pointer impression. For instance, in Fig. 10, the pointer being opposite to the figures "10.45," said figures fix the time of the signature as 10.45; in Fig. 11, the pointer being three-fifths of the distance between "10.45" and "10.50," the time indicated is 10.48, and in Fig. 12, the pointer being one-fifth of a distance beyond "10.50," the hour is 10.51. By this arrangement it is possible to divide even minutes of time, as the type-wheel may be formed with dashes or division-marks of any number between the figures denoting the five-minute spaces of time.

The machine, when constructed in accordance with the above description and accompanying drawings, is comparatively very simple in construction, has few parts, and is consequently durable and not liable to disorder with ordinary use. Moreover, provision has been made to prevent tampering and wrecking the machine by the employment of safeguards, such as the buffer, for relieving the shock of the spring-restored parts and the covering of the slot which exposes the actuating-handle. Provisions have been made for finely adjusting all of the moving parts, and record-strips and ink-ribbons are readily inserted and removed. The machine is very efficient and accurate in operation. Hence no attendance is necessary, except the occasional replacing of a strip-roll or ribbon and the possible correction of the time mechanism.

The means for operating the several parts render it impossible to commit a fraud, for the reason that while there is no direct connection between the said means all are necessarily operated by the movement of the handle, and it is consequently impossible that a signature can be placed on the strip without also obtaining thereon an impression of the exact time at which said signature was made.

I claim as my invention—

1. In combination with a revolving type-wheel having thereon figure-types representing intervals of time, a fixed pointer independent of said wheel but adjacent thereto and in alignment therewith, and an ink-rib-

bon covering the figure-types and pointer, whereby said intervals of time are divided, and printing mechanism, substantially as described.

2. The combination in a time-recorder, of a revolving type-wheel having on its under side figure-types representing intervals of time, and also having corresponding figures on its upper side, an immovable pointer independent of the wheel but adjacent thereto and thereby having a constantly-changing position relative to the figure-types, said pointer being in alignment with the printing-surface of the wheel, a record-strip to receive simultaneously the impressions of the figure-types and pointer, and an interposed ink-ribbon, and impression devices whereby said intervals of time are printed and divided, substantially as described.

3. In a time-recorder, a casing having a signature-slot a slide-plate located within the casing and normally covering the slot, a record-strip to receive the signatures and time impressions, a type-wheel operated by clock mechanism and carrying figure-types arranged to move in the path of the record-strip, an impression-hammer, an operating-shaft adapted to be actuated from without the casing, means connected with said shaft and with the slide-plate for moving the latter to uncover the slot, means connected with said shaft and with the record-strip for advancing same, and means connected with said shaft and with the hammer for actuating the latter, all substantially as and for the purposes set forth.

4. In a time-recorder, a casing provided with a cover having a signature-slot, a spring-controlled slide-plate arranged to move in guides on the under side of said cover and normally closing the slot, a record-strip to receive the signatures through the slot and the time impressions at one side thereof, a backing-plate beneath the slot and over which said strip passes, a horizontal type-wheel having on its under side type representing intervals of time, said wheel being actuated by clock mechanism, an inked ribbon interposed between the type-wheel and strip, an impression-hammer, an operating-shaft having an actuating-handle without the casing a trip carried by the shaft for operating said hammer, means substantially as described connected with said shaft and with the strip for advancing the latter, and a lever on said shaft having loose connection with the slide-plate for moving same to uncover the slot.

5. In a time-recorder, the combination with slide, strip, and hammer actuating mechanisms, an operating-shaft having separate connections with said mechanisms, a handle-crank fixed to said shaft within the casing and having a hand-hold projecting through and movable in a curved slot in the casing.

6. In a time-recorder, the combination with slide, strip, and hammer actuating mechan-

isms, an operating-shaft having separate connections with said mechanisms, a segmental crank carried by the shaft within the casing, having a hand - hold projecting through a curved slot in the casing, and adjustable stops in the paths of the crank for controlling its range of movement, the combination insuring the normal closure of the slot, and permitting the movement of the shaft from within out the casing.

7. In a time-recorder, the combination of a clock-actuated type-wheel having on its under side figure-types denoting regular intervals of time, dashes at each set of figure-types, and a fixed pointer independent of said wheel but adjacent thereto and in the same plane with said type, and printing mechanism

whereby divisions of said intervals of time are recorded.

8. In a time-recorder, the combination of a casing having a cover provided with a signature-slot, a spring-controlled slide-plate on the under side of said cover, and normally covering the slot, an operating-shaft controlled without the casing and carrying an arm adjustably secured, and a loose connection between the arm and slide-plate for moving the latter.

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

FRANK S. COX.

Witnesses:

L. C. HINMAN,
J. E. HINMAN.