

No. 757,150.

PATENTED APR. 12, 1904.

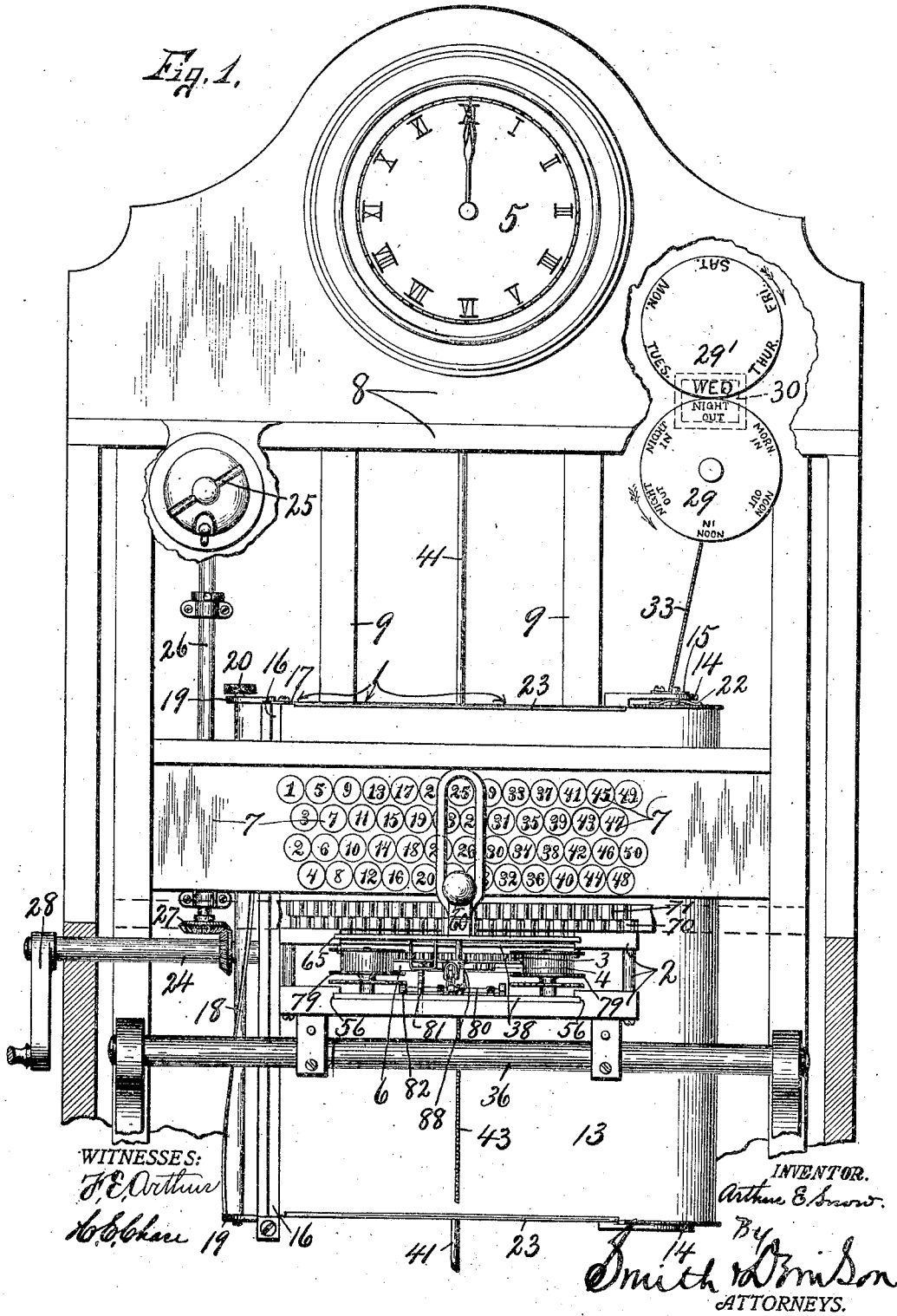
A. E. SNOW.
TIME RECORDER.

APPLICATION FILED JAN. 30, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.



No. 757,150.

PATENTED APR. 12, 1904.

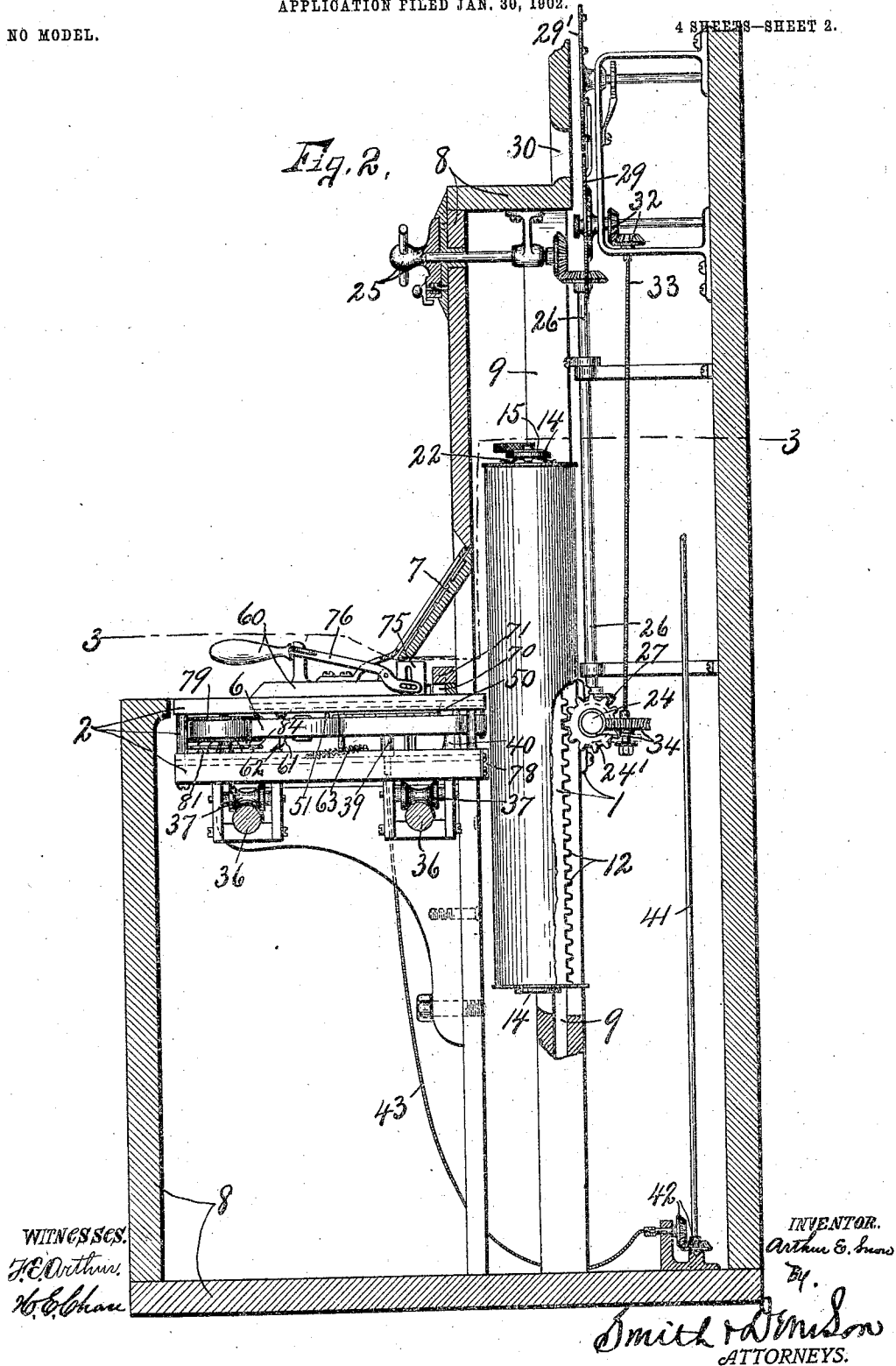
A. E. SNOW.
TIME RECORDER.

APPLICATION FILED JAN. 30, 1902.

NO MODEL.

4 SHEETS—SHEET 2.

Fig. 2.



No. 757,150.

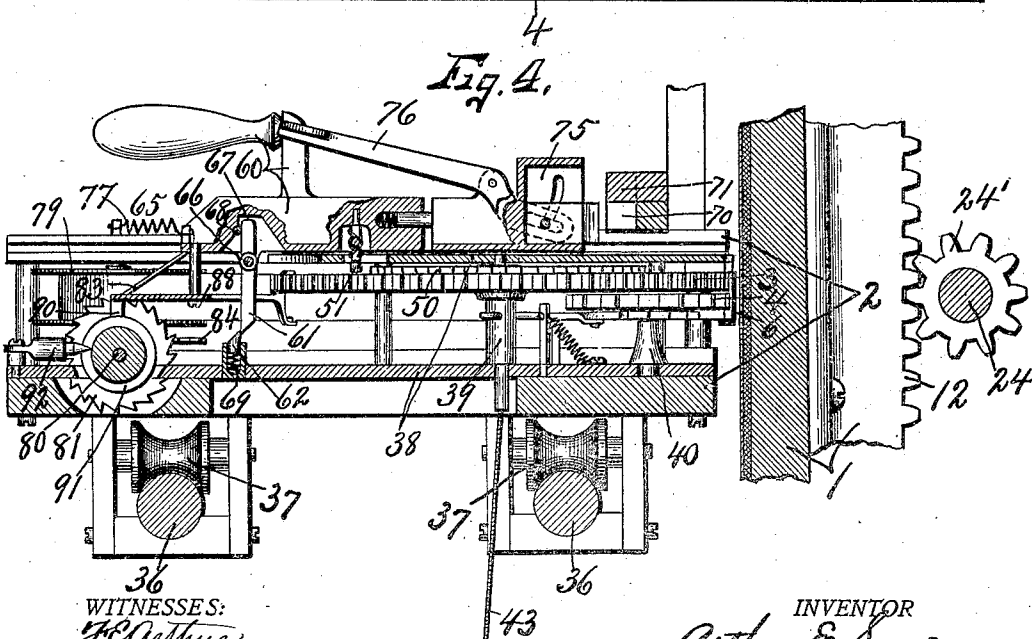
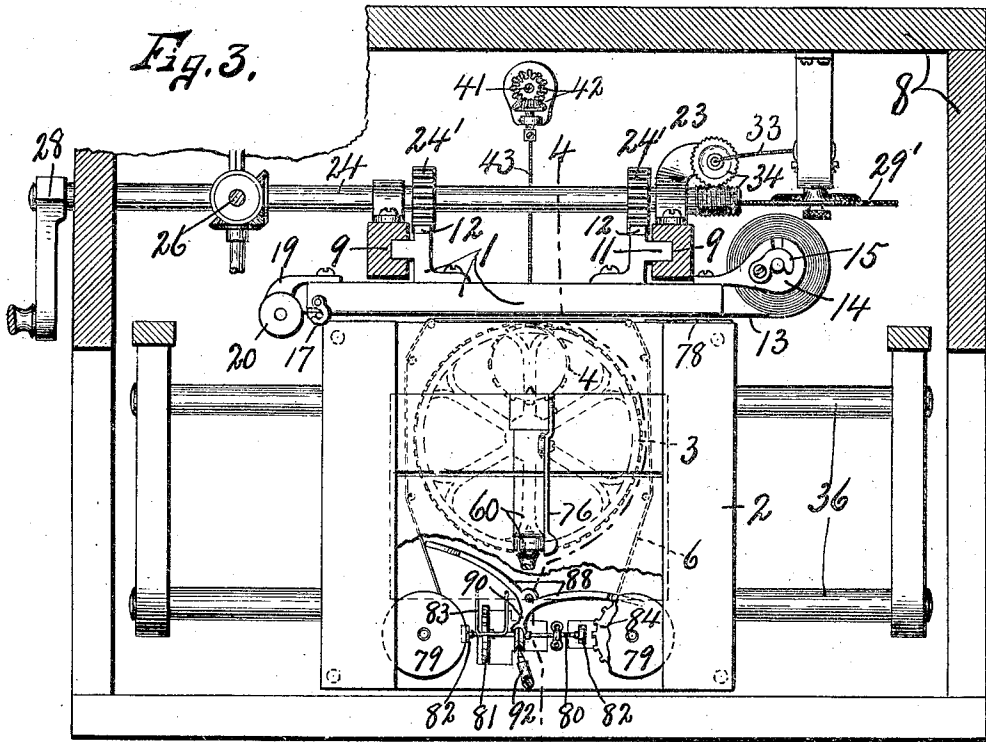
PATENTED APR. 12, 1904.

A. E. SNOW.
TIME RECORDER.

APPLICATION FILED JAN. 30, 1902.

NO MODEL.

4 SHEETS—SHEET 3.



WITNESSES:
J. C. Arthur.
W. C. Chan

INVENTOR
Arthur E. Snow
 BY
Smith & Benson
 ATTORNEYS.

No. 757,150.

PATENTED APR. 12, 1904.

A. E. SNOW.
TIME RECORDER.

APPLICATION FILED JAN. 30, 1902.

NO MODEL.

4 SHEETS—SHEET 4.

Fig. 5.

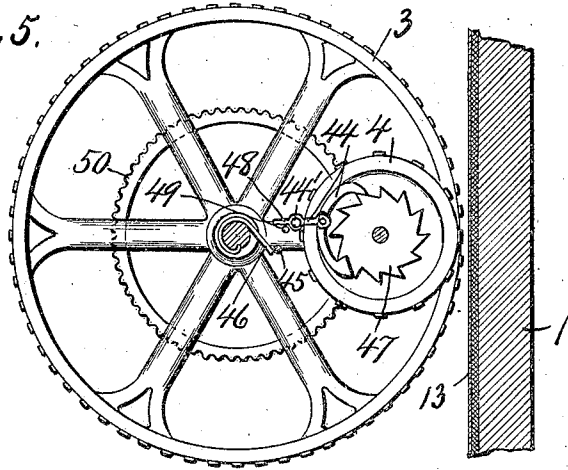


Fig. 7.

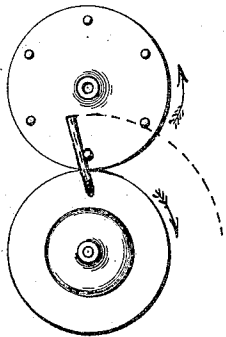
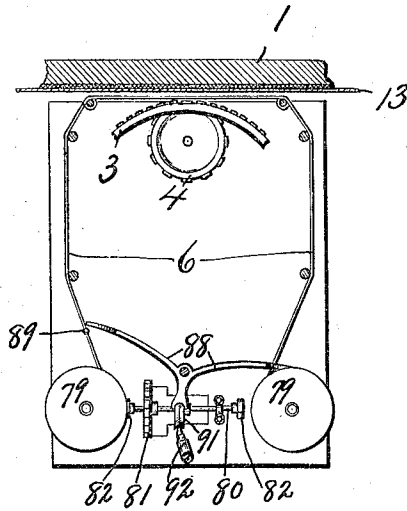


Fig. 6.



WITNESSES:

J. O. Arthur.
W. C. Chan

INVENTOR

Arthur E. Snow.

BY

Smith & Robinson
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ARTHUR E. SNOW, OF SYRACUSE, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SYRACUSE TIME RECORDER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 757,150, dated April 12, 1904.

Application filed January 30, 1902. Serial No. 91,910. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR E. SNOW, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Time-Recorders, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in time-recorders, and particularly to that class in which the workman's time may be printed upon a suitable record-sheet which is ruled and provided with employee and time designating characters.

One of the specific objects of this invention is to provide suitable carriages movable in planes at an angle to each other, one being adapted to support laterally-movable record-sheet and an upright flat platen and the other being arranged to carry the time-printing wheels and inking device, in which the printing-wheels are arranged in substantially a horizontal position and are mounted upon a support movable independently of the type-wheel carriage toward and away from the record-sheet and platen.

A further object is to provide a plurality of rows of employee-designating characters and a plurality of toothed racks, the teeth of which are arranged in staggered relation to each other and cooperate with a suitable holding-dog in such manner that the teeth of one of the racks correspond with two or more rows of said employee-designating characters, thereby economizing in the space occupied by said characters.

A still further object is to provide automatic means controlled by a suitable operating member for moving the printing-type to the printing-point with a uniform pressure or force.

Another object is to provide means mounted upon the type-wheel carriage for intermittently shifting the position of the ribbon at each printing operation of the type-wheel support and also to provide additional means for automatically reversing the movement of

the ribbon as it approaches the limit of its movement in one direction.

An additional object is to provide an indicator which is actuated automatically by the movement of the platen and record-sheet carriage for indicating the position of the record-sheet relatively to the printing-point of the type-wheel and also to indicate the successive days of the week.

Another object is to provide a suitable cutter mounted upon the platen-carriage, which is adapted to sever the individual record-sheets from a continuous series of sheets.

To this end the invention consists in the combination, construction, and arrangement of the parts of a time-recorder, as hereinafter fully described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a front elevation, partly broken away and partly in section, of the upper portion of my improved time-recorder, showing the general construction and arrangement of the various parts in connection with the master-clock, the base being broken away. Fig. 2 is a transverse vertical sectional view from front to rear through the casing, showing in elevation the carriages, indicators, and connections between the master-clock and type-wheels, the master-clock being omitted. Fig. 3 is an enlarged horizontal sectional view taken on line 33, Fig. 2. Fig. 4 is an enlarged sectional view taken on line 44, Fig. 3. Fig. 5 is an inverted face view of the type-wheels, showing the means on the minute-wheel for intermittently moving the hour-wheel one space at each revolution of the minute-wheel. Fig. 6 is a rear face view of the indicating-disks for indicating the day of the week and the successive periods of the day for beginning and ending work, illustrating more particularly the means for transmitting intermittent motion from one disk to the other. Fig. 7 is an enlarged top plan view of the detached ribbon-shifting mechanism.

Similar reference characters indicate corresponding parts in all the views.

As seen in the drawings, my invention con-

sists, essentially, of a vertically-moving carriage 1 and means to move the same step by step or continuously, as may be desired, a horizontal movable carriage 2 and means to shift the same transversely of the carriage 1, type-wheels 3 and 4, mounted upon the horizontal moving carriage and movable independently thereof, means to effect said independent movement of the type-wheels, a master-clock 5, and connections between the master-clock and type-wheels to rotate the same in synchrony with the master-clock, an inking-ribbon 6, and mechanism to feed said ribbon and also to reverse its direction of movement, mechanism for locking the horizontal moving carriage 2 during the act of printing, an indicator-plate 7 having a series of rows of employee-designating characters corresponding with similar characters upon the record-sheet, presently described, an additional indicating device actuated by the vertically-moving carriage 1 to indicate the position of said carriage relatively to the printing-wheels—as, for instance, at the beginning and ending of work—and also to indicate the day of the week.

The invention also consists in certain details of construction, operation, and arrangement hereinafter described, all of which parts are suitably mounted upon and inclosed within a suitable frame or casing 8.

The vertically-movable carriage 1 is guided upon upright ways 9, which are fixed to the frame in any desired manner, said carriage consisting of a suitable back piece or platen 10, to which is secured brackets or guides 11, having toothed racks 12, the guides 11 being arranged to ride in the ways 9 for holding the carriage in its operative position.

Mounted upon the vertically-moving carriage 1 and movable therewith are a series of continuous record-sheets 13, arranged in the form of a roll, which is mounted upon suitable open-sided bearings 14 and held in its operative position by hooks or catches 15. This roll is preferably supported at one of the vertical sides or edges of the carriage, and the free end of said roll is drawn across the face of the platen 10 adjacent to the inner face of the horizontal moving carriage 2 in proximity to the inner printing-face of the type-wheels, said free end of the roll of record-sheets being secured to the printing-face of the platen in proximity to its opposite vertical edge by a clamping plate or bar 16, one end of which is hinged or otherwise flexibly connected to the carriage, and the other end is movable and is held in position by a suitable hook or catch 17, it being understood that the free end of the paper or record-sheet is inserted between the clamping-plate and the adjacent face of the platen and is firmly held in position by said clamping-plate and holding member 17. Owing to the fact that these record-sheets are arranged in continuous series, it is necessary to sever the individual record-sheets at

the proper time, and for this purpose I provide a rotary cutter 18, which is journaled at its opposite ends in bearings 19, fastened to the carriage, said cutter being provided with spiral blades adapted to shear with the adjacent longitudinal edge of the clamping-plate 16. This cutter is provided with a handpiece 20 for rotating the same to sever the individual record-sheets one from the other.

When it is desired to sever the record-sheet from the continuous series, the clamp 16 is released and the record-sheet is then drawn across the face of the platen past the cutter until the end of the next adjacent record-sheet is alined with the shearing edges of the cutter and the clamping-piece, whereupon said cutter is rotated to sever said sheet at the same time the succeeding sheet is clamped in position ready for use.

In order to prevent any slack in the record-sheet lying across the face of the platen, I usually provide a friction-piece 22, which is interposed between one of the bearings for the roll and the adjacent face of the reel which supports said roll. I also provide the carriage, or rather the platen 10, with guides 23 at its upper and lower edges, which serve to guide the paper or record-sheet in its transverse movement across the platen and to hold the same from displacement during the operation of printing.

The means for moving the carriage vertically step by step preferably consists of a horizontal shaft 24, having pinions 24' meshing with the toothed racks 12, said shaft being rotated by a handpiece 25, which is connected to rotate an upright shaft 26, having a gear 27 meshing with a similar gear upon the shaft 24. (See Figs. 1 and 3.) This means of moving the carriage 1 vertically is found to be convenient for a step-by-step movement—that is, for shifting the position of the carriage from the time of beginning to the time of ending work; but it is necessary when resetting the carriage to its normal position to move the same with greater speed, and I therefore extend the shaft 24 through one of the side walls of the casing or frame 8 and provide the same with a hand-crank 28, whereby the shaft may be rotated to return the carriage to its normal up position quickly and with but a minimum power.

The means for indicating the position of the carriage 1 relative to the type-wheels preferably consists of a revolving disk 29, Figs. 1 and 2, having a series of characters printed or stamped upon its face indicating the periods of beginning and closing work—such as “Night Out,” “Morning In,” “Noon Out,” “Noon In,” &c.—these characters being successively presented or registered with a suitable sight-opening 30 in the front wall of the upper portion of the case 8. This disk 29 is mounted to rotate in bearings provided upon the frame 8 and is connected by gears 32 to a

flexible shaft 33, the lower end of which is connected by worm-gears 34 to the shaft 24, said shaft 24 being mounted in suitable brackets 9', one of which is provided with a bearing for supporting the worm-gear 34, the worm being preferably secured to the shaft 23 and operating to rotate the disk 29 through the flexible shaft 33. I preferably provide this disk with a series of six time-designating characters—such as "Night Out," "Morning In," &c.—which are found to be sufficient for the ordinary purposes of a time-recorder, which characters indicate the several periods of beginning and leaving work for twenty-four hours or one complete day, and in order to indicate the successive days of the week I provide a second disk 29', the days of the week from Monday to Saturday, inclusive, being stamped or printed upon its face and are successively presented or registered with the sight-opening 30 at each complete revolution of the disk 29. In order to render the operation of the disk 29' automatic, I preferably actuate the same by the disk 29, which is provided with a finger or arm 34, Fig. 6, adapted to successively engage pins or studs 35 upon the disk 29', Fig. 6, in such manner as to move the disk 29' one-sixth of a revolution at each complete revolution of the disk 29 for successively presenting or registering the day-indicating characters, as "Monday," &c., to the sight-opening 30.

It is thus apparent from the foregoing description that when one of the day-indicating characters is registered with the sight-opening the characters upon the disk 29 are each successively registered with said opening, so that the characters on both of the disks, one indicating the day of the week and the other the period of the day, appear at the opening at the same time, and that each of said characters upon the disk 29 are successively presented to the opening each day. For example, as seen in Fig. 1, the last period of leaving time, "Night Out," for the day appears simultaneously with the character indicating "Thursday" and that this is the last period of the day for Thursday, and the arm 34 is on the point of shifting the disk 29', so that the characters indicating "Tuesday" will appear at the opening at the same time that "Morning In," succeeding the "Night Out," appears at said opening, it being apparent that with this construction the operation of the disks is self-adjusting and automatic without any further attention from the operator.

The horizontal movable carriage 2 is mounted upon suitable guides or ways 36, which are mounted upon the frame 8 and extend transversely between the side walls of said frame in front of the carriage 1, said carriage 2 being provided with rollers 37, which ride upon the guides or ways 36 to reduce the friction and facilitate the transverse movement of the carriage.

The time-printing wheels 3 and 4 are mounted upon the horizontal moving carriage 2 and preferably upon a sliding support 38, which is movable toward and away from the record-sheet and platen independently of the movement of the carriage 2. These type-wheels 3 and 4 are journaled upon independent bearings 39 and 40, secured to the sliding support 38, the minute-printing wheel 3 being rotated by and in synchrony with the master-clock 5 through the medium of an upright shaft 41, gears 42, and a flexible shaft 43, as seen in Figs. 1, 2, 3, and 4, the object of this flexible shaft or connection 43 being to permit the transverse movement of the horizontal movable carriage 2 without in any way interfering with the harmonious operation of the type-wheel 3 or clock mechanism.

The type-wheel 4 is arranged to print the hours upon the record-sheet, and this movement is synchronized with the movement of the type-wheel 3 in such manner that each successive type of the wheel 4 is presented to the printing-point at each complete revolution of the type-wheel 3.

The means for effecting this step by step rotation of the type-wheel 4 preferably consists of an escapement-pawl 44, pivotally supported at 44', a fixed stop or pin 45, and a spring arm or motor 46. The pawl 44 is adapted to operate upon the teeth of a ratchet-wheel 47, secured to rotate with the type-wheel 4, said pawl being provided with an arm 48 extending beyond the pivot 44 and normally resting against a stop 49, and the spring-motor 46 is secured to rotate with the type-wheel 3 and is so relatively arranged that when the free end of the spring-motor 46 approaches the extension 48 it engages the stop-pin 45 and is thereby sprung backwardly against its own tension, and when sufficiently tensioned it leaves the stop-pin 45 with sufficient force to engage the extension 48 and rock the pawl 44 upon its pivot to rotate the ratchet-wheel 47 one tooth, and thereby to actuate the type-wheel 4, connected to said ratchet-wheel, one type-space in order to present the type successively at the printing-point at each revolution of the minute-wheel.

Although I have described a specific form of actuating means for moving the hour-wheel step by step at each revolution of the minute-wheel, it is evident that other similar means may be employed without departing from the spirit of this invention.

In machines of this character it is desirable to stop the printing-wheel from vibration as each successive type is presented to the printing-point, and I therefore provide a circular toothed rack 50 and a holding device 51, which coöperates with the teeth of said rack in such manner as to hold the type-wheel from vibration when its type are registered with the printing point.

The sliding support for the type-wheels 3

and 4 is mounted in suitable ways 56, formed upon the carriage 2, said ways being so arranged as to hold the sliding support from displacement or undue movement and at the same time to permit said support to be moved toward and away from the platen. As previously stated, the type-wheel support is movable independently of the carriage 2 toward and away from the platen to effect the printing of the record upon the record-sheet. The means for carrying out this operation, Fig. 4, preferably consists of a manually-operated member 60, pawls 61 and 62, and a spring-motor 63, the operating member 60 being mounted in ways 65, provided on the carriage 2 above the ways 56, said member being movable substantially parallel with the sliding support 36.

The pawl or lever 61 is pivoted at its intermediate portion at 66 to the carriage 2, one end projecting into a recess 67 in the sliding member 60 and is adapted to be engaged by a shoulder 68, also provided on said sliding member, and its other end is arranged to engage the pawl 62. This pawl 62 is mounted upon a sliding support 38 and is held in its normal position by a suitable spring or equivalent device 69, which is arranged in a socket provided on said support, the pawl 62 being also movable in said socket.

It is apparent from the foregoing description and upon reference to Fig. 4 of the drawings that as the member 60 is moved rearwardly toward the platen the lower end of the lever 61 is rocked forwardly, and thereby operates to move the sliding support 38 forwardly or away from the platen. The engaging ends of the pawls 61 and 62 are so related that the continued rocking movement of the pawl 61 after moving the sliding support 38 forwardly disengages the ends of the pawls, and the spring 63 then operates to force the support 38 toward the platen and to thereby impinge the type of the printing-wheels against the inking-ribbon and record-sheet to make an impression upon said record-sheet.

It is evident from the foregoing description that the force or pressure of the type-wheels against the platen is always uniform, even though the operating member 60 may be moved with varying degrees of force.

Provided upon the front wall of the casing 8 is the plate 7, having a series of rows of employee-designating characters, as seen in Figs. 1 and 2, and also fixed to the frame of the machine are toothed racks 70 and 71, arranged one beneath the other with their teeth in staggered relation—that is, the teeth of the upper rack are directly over the spaces between the teeth of the lower rack, there being as many spaces in both of the racks combined as there are employee-designating characters upon the plate 7, and in this instance the spaces of each rack correspond to the employee-designating characters of two rows of the plate 7.

The rear end of the operating member 60 is movable vertically independently of the rear portion and is provided with a pointed rear extremity adapted to enter the spaces between the teeth of either of the racks 70 or 71 when the operating member is moved toward the platen for the purpose of holding the carriage 2 from transverse movement during the operation of printing. This independently-movable end of the operating member 60 is guided in its vertical movement in a bearing 75 and is normally registered with the lower rack, and in order to elevate said independently-movable end of the operating member to enter the recesses of the upper rack for holding the carriage from movement when printing in alinement with the characters of the corresponding rows on the plate 7 I provide a lever 76, which is pivoted to the operating member 60 and is adapted to be depressed by the operator whose number corresponds with the recesses in said upper rack. This movement of the operating member 60 toward the platen being in advance of the movement of the type-wheels toward the platen, it is evident that the carriage 2 is held from lateral movement during the act of printing, and as soon as the operating member 60 is released by the operator it is returned to its normal position by a suitable spring or equivalent device 77, and the type-wheel support is returned to its normal position by a spring 78, which counteracts the tension of the spring 63, it being understood that when the spring 63 is tensioned in the manner hereinbefore described the momentum of the type-wheels and its support upon the release acts against the spring 78 sufficient to cause the type to make an impression upon the record-sheet.

The intermediate portion of the ribbon 6 is movable between the type of the wheels 3 and 4 and the adjacent face of the platen 10, and its opposite ends are mounted upon suitable reels 79, Figs. 1, 2, and 3, said reels being preferably mounted upon the sliding support 38 in proximity to its forward end.

The means for feeding the ribbon transversely of the platen preferably consists of a sliding shaft 80, having a ratchet-wheel 81 and pinions 82, and a pawl 83, secured to the operating member 60 in such manner that when the operating member is moved toward the platen the pawl 83 engages the teeth of the ratchet 81 and rotates the shaft 80 and the pinion mounted thereon, said pinion being normally in mesh with a gear 84, secured to each of the reels 79, it being understood that when one of the pinions is engaged to operate with one of the reels it is out of engagement with the other reel. The means for sliding this shaft endwise to reverse the movement of the ribbon preferably consists of a rocking lever 88, having oppositely-extending arms adapted to be engaged by shoulders or operating members 89, secured to the opposite

ends of the ribbon, said lever being arranged in the form of a bell-crank, and is provided with a bifurcated arm 90, arranged to engage an annular collar 91 upon the shaft, whereby
 5 as the lever is shifted from one position to the other by the shoulders 89 the shaft 80 is correspondingly moved endwise and is held in either of its adjusted positions by an oscillating member 92, also engaged with the collar
 10 91, said oscillating member having a yielding finger thereon to permit the member to move at opposite sides of a center line, and thereby forms a brace to hold the shaft in its adjusted position.

15 The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that some change may be made in the detail construction and
 20 arrangement of the parts without departing from the spirit thereof. Therefore I do not limit myself to the precise construction shown and described.

Having thus described my invention, what
 25 I claim, and desire to secure by Letters Patent, is—

1. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their
 30 respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen, time-printing wheels mounted on and movable with the horizontal
 35 carriage and having an independent movement toward and from the platen.

2. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their
 40 respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen, time-printing wheels mounted on and movable with the horizontal
 45 carriage and having an independent movement toward and from the platen and a single operating member connected to move the horizontal carriage laterally and to move the printing-wheels toward and from the platen.

3. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, an upright flat
 50 platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, and time-printing wheels movable
 55 toward and from the platen.

4. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, an upright flat
 60 platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of rec-

ord-sheets movable laterally across the face of
 65 the platen and horizontally-disposed time-printing wheels movable toward and from the platen.

5. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to
 70 move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of
 75 the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support and an ink-ribbon mounted on the support
 80 and extending between the type-wheels and platen.

6. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to
 85 move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of
 90 the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support, a spring normally forcing the support toward the platen, and means to move the support
 95 against the action of the spring.

7. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to
 100 move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of
 105 the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support, a spring normally forcing the support toward the platen and an operating member connected to move the support against the
 110 action of the spring and to automatically disconnect from the support when the spring is tensioned.

8. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to
 115 move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of
 120 the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support, a spring normally forcing the support toward the platen and an operating member connected to move the support against the
 125 action of the spring and to automatically dis-

connect from the support when the spring is tensioned and an ink-ribbon extending between the platen and printing-wheels.

9. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support mounted on the horizontal carriage and movable toward and from the platen, clock-actuated printing-wheels arranged horizontally on the support, and means to actuate the support.

10. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a rotary indicator-disk actuated by the vertical movement of the carriage, clock-actuated printing-wheels movable toward and from the platen and an ink-ribbon between the platen and printing-wheels.

11. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a rotary shaft connected to move the carriage vertically, a rotary indicator-disk connected to and actuated by the shaft and clock-actuated printing-wheels having independent movement toward and from the platen.

12. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, a vertical toothed rack on the carriage, a rotary shaft having a pinion meshing with the rack to raise and lower the carriage, a worm on the shaft, a rotary indicator-disk actuated by said worm to indicate the period of the day, a second rotary disk actuated by the former disk to indicate the day of the week, an upright platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable across the face of the platen, and clock-actuated printing-wheels movable toward and from the platen.

13. A time-recorder comprising a platen and a record-sheet support, a plate having a plurality of rows of numerals, a time-printing wheel movable toward and away from and lengthwise of the platen, separate rows of

shoulders, the shoulders of one row being staggered with the shoulders of the other row and corresponding to the numerals of said plate, and a centering and holding member adapted to engage the shoulders of either row as the type-wheel is moved toward the platen for the purpose specified.

14. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support mounted on the horizontal carriage and movable toward and from the platen, horizontally-arranged time-printing wheels mounted on the support, a master-clock and a flexible shaft connecting the clock to drive one of the printing-wheels which is connected to drive the other printing-wheel, and means to actuate the sliding support.

15. In a time-recorder, the combination with a master-clock, and an indicator-plate, of horizontally-arranged type-wheels; one being actuated by the master-clock and the other by the former wheel, a slidable support for said type-wheels movable lengthwise of said indicator-plate toward and from the platen, and means for centering and holding the printing-type at the printing-point.

16. In a time-recorder, a supporting-frame, lower and upper rows of shoulders, the shoulders of one row being staggered with those of the other row, a platen and a record-sheet support, a carriage movable lengthwise of said rows of shoulders and carrying a type-wheel and a lever movable toward and from the platen, said lever having an independent movement for engaging the shoulders of either row independently of those of the other row.

17. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets, a sliding support movable toward and away from the platen, a spring normally forcing the support toward the platen, means to engage and move the support against the action of the spring and to disengage from the support when the spring is tensioned and clock-actuated printing-wheels mounted on the support.

18. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage, a record-sheet roller

65

70

75

80

85

90

95

100

105

110

115

120

125

mounted on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable toward and away from the platen, a spring normally forcing the support toward the platen, a single operating member mounted on the support for moving the same and for moving the horizontal carriage endwise, said operating member having an independent movement coaxing with centering-shoulders to hold the horizontal carriage from endwise movement, and clock-actuated printing-wheels mounted on the support.

19. In a time-recorder, the combination with a support for a continuous roll of record-sheets and printed mechanisms, of clamping means for securing the free end of the record-sheet to the support, and means for severing the end sheet from those remaining on the support.

20. In a time-recorder, a platen for supporting a continuous series of record-sheets and means to plant the sheet to the platen, in combination with means to sever each record-sheet from the rest, and clock-actuated printing-wheels to print upon the record-sheet as described, and means to move said wheels toward and from the platen.

21. In combination with a platen for supporting a continuous series of record-sheets adapted to be fed successively across the face of the platen, clock-actuated printing mechanism and means to move the same to print upon the record-sheet, and means for severing the record-sheets while in operative position on the platen.

22. In a time-recorder, a vertically-movable carriage, a platen and a reel mounted on the carriage, the reel being at one side of the platen, for supporting a roll of continuous record-sheets, a clamp at the other side of the platen to hold the free end of the record-sheet, and a cutter in proximity to the clamp to sever the record-sheets as they are drawn from the reel, and time-printing mechanism for the purpose set forth.

23. In a time-recorder, the combination with a record-sheet support, a platen and a carriage for the time-printing wheels, of a plurality of toothed racks, the teeth of one being staggered with the teeth of the other, a dog to engage the teeth of either rack independently of the others, and a plate having a plurality of rows of numerals for each rack substantially as set forth.

24. A holding device for movable carriages of time-recorders comprising a plurality of toothed racks each having its teeth staggered with those of the other rack, and a dog on the carriage to engage the teeth of each rack independently.

25. A time-recorder comprising a frame having upright and transverse ways, a car-

riage guided on the upright ways and provided with a platen and a reel, a series of connected record-sheets wound on the reel and having one end drawn across the platen, means to hold said end in position, a cutter mounted on the carriage to sever the record-sheets one from the other, means actuated by the carriage to indicate the position of the carriage, a day-indicating member adapted to be shifted one step at each cycle of movement of the former indicator, a second carriage movable on the transverse ways, an ink-ribbon, and clock-actuated type-wheels mounted on the second carriage and means to move the type-wheels toward and from the platen for the purpose set forth.

26. A time-recorder comprising a frame having upright and transverse ways, a carriage guided on the upright ways and provided with a platen and a reel, a series of connected record-sheets wound on the reel and having one end drawn across the platen, means to hold said end in position, a cutter mounted on the carriage to sever the record-sheets one from the other, means actuated by the carriage to indicate the position of the carriage, a day-indicating member adapted to be shifted one step at each cycle of movement of the former indicator, a second carriage movable on the transverse ways, a sliding support on the second carriage, time-printing wheels and ribbon-reels on the support, a feed mechanism actuated by the support and adapted to rotate the reels alternately to feed the ribbon in reverse directions, and means provided on the ribbon to shift the feed from one reel to the other.

27. A time-recorder comprising a frame having upright and transverse ways, a carriage guided on the upright ways and provided with a platen and a reel, a series of connected record-sheets wound on the reel and having one end drawn across the platen, means to hold said end in position, a cutter mounted on the carriage to sever the record-sheets one from the other, means actuated by the carriage to indicate the position of the carriage, a day-indicating member adapted to be shifted one step at each cycle of movement of the former indicator, a second carriage movable on the transverse ways, a sliding support on the second carriage, time-printing wheels and ribbon-reels on the support, a feed mechanism actuated by the support and adapted to rotate the reels alternately to feed the ribbon in reverse directions, and means provided on the ribbon to shift the feed from one reel to the other and additional means operating when the support is moved in the act of printing for locking the second carriage from movement.

28. In a time-recorder, a platen and record-sheet mounted thereon, a time-printing wheel and carriage therefor movable toward and

away from the platen, a spring for forcing the carriage toward the platen, and an operating member detachably connected to the carriage to draw the same away from the platen against
5 the action of the spring said operating member being released from the carriage by its continued movement.

In witness whereof I have hereunto set my hand this 25th day of January, 1902.

ARTHUR E. SNOW.

Witnesses:

H. E. CHASE,
MILDRED M. NOTT.