

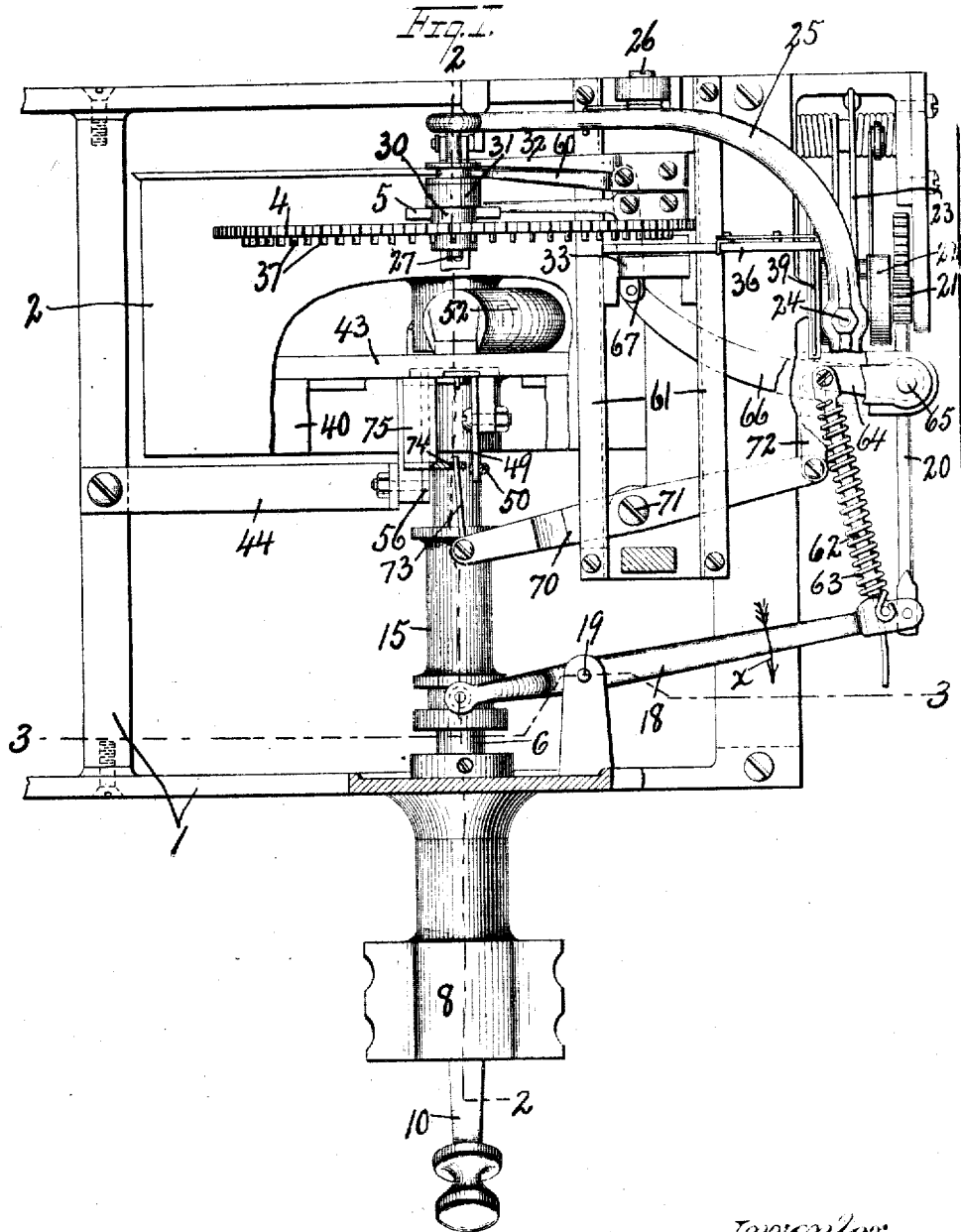
J. F. KIELY.
TIME RECORDER.

APPLICATION FILED MAY 10, 1904.

Patented July 27, 1909.

4 SHEETS—SHEET 1.

929,227.



Witnesses:
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B. E. Robinson.

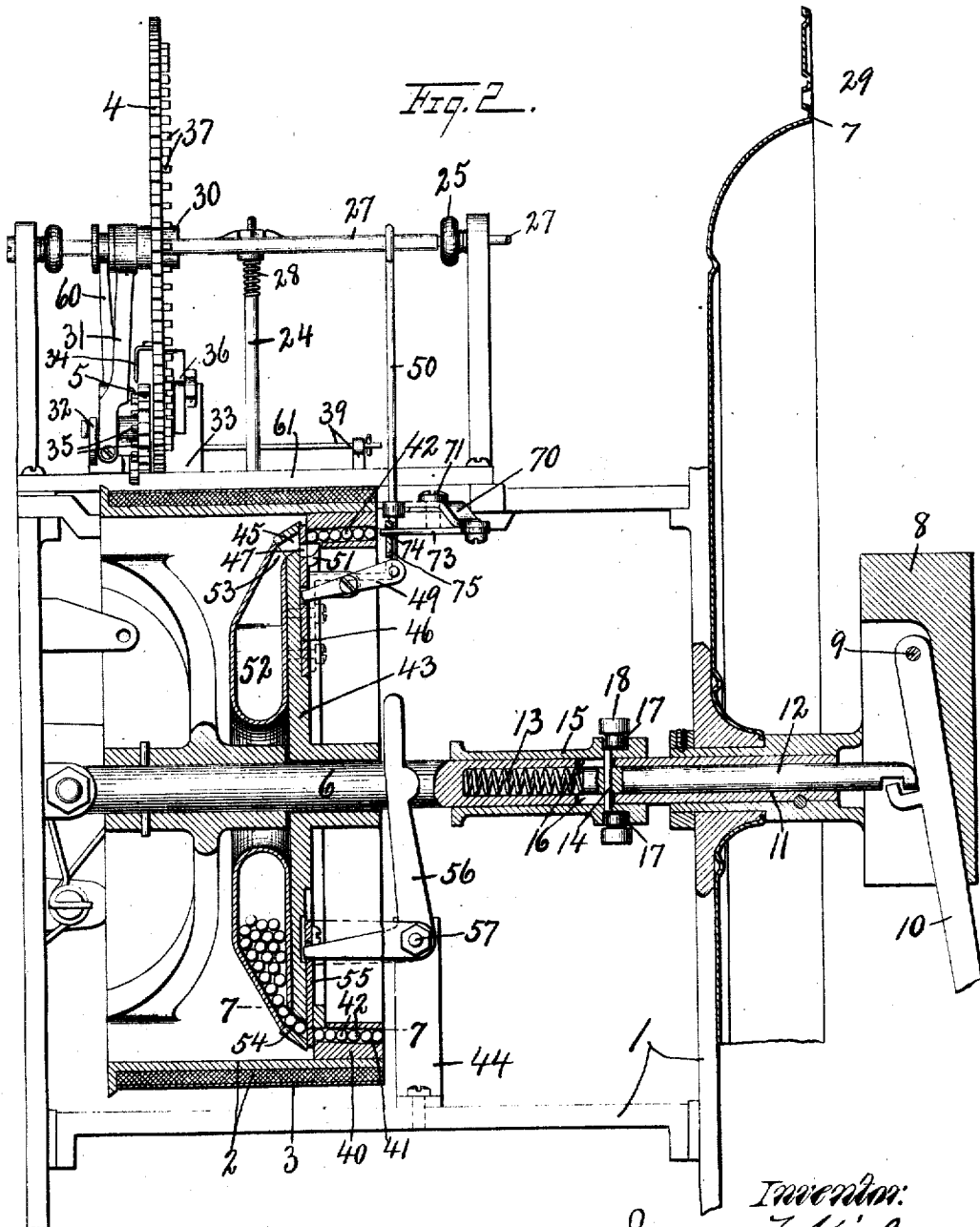
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4 SHEETS—SHEET 2.



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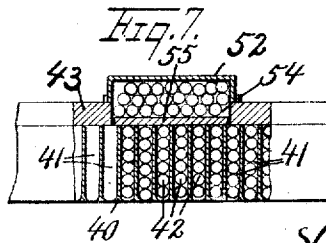
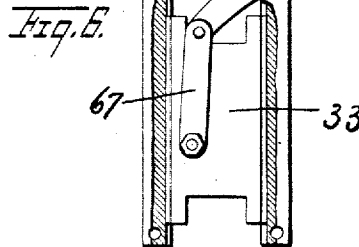
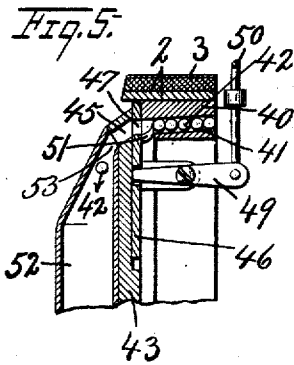
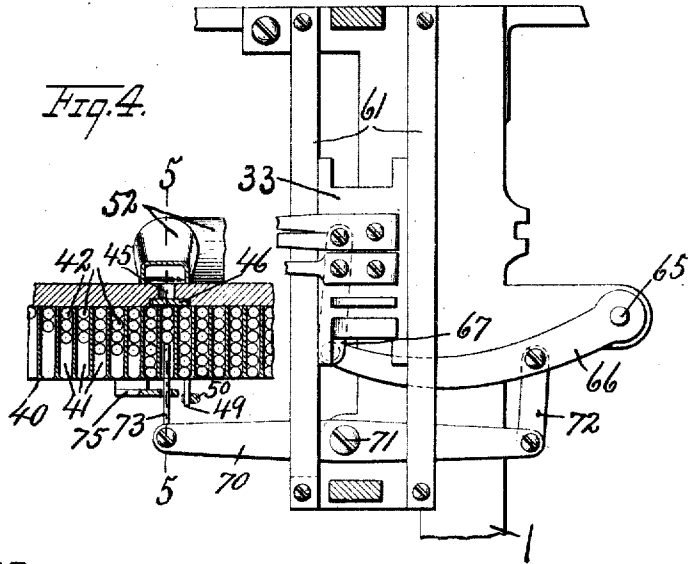
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

JAMES F. KIRBY, OF SYRACUSE, NEW YORK.

TIME-RECORDER.

No. 929,227.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed May 10, 1904. Serial No. 207,258.

To all whom it may concern:

Be it known that I, JAMES F. KIRBY, 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.

This invention relates to improvements in time recorders of the class set forth in Patent No. 738,454 to Kimball and Palmer, dated September 8th, 1903, in which a time printing element is brought into printing action by a suitable workmen's manual, and is also shiftable with reference to the impression receiving element whereby successive records, representing times of arrival and departure of the same workman, are caused to be printed upon different parts of the impression receiving element. In the patent referred to—is shown a shifting manual separate from the printing manual whereby two distinct operations are necessary, one by the printing manual to cause the record to be made upon the record-sheet and the other to shift the printing mechanism for the next printing operation of the same workman. In another patent No. 738,350, issued Sept. 8th, 1903 to the same inventors, is shown an automatic or clock actuated means for shifting the printing device whereby successive impressions produced by the operation of the printing manual are caused to be made on different parts of the record-sheet.

The object of my present invention is to shift one of the elements by which the record is made by means of the same workmen's manual which effects such record so that the times of arrival and departure of the same workman may be recorded by him, side by side in close proximity to each other upon the record-sheet by a single operation of the printing manual. The advantage of this is that the successive impressions, representing the times of arrival and departure may be made in different positions and close to each other on the record-sheet for the shortest intervals of time intervening between the arrival and departure. This enables the workman to make a greater number of records upon a comparatively narrow record-sheet

or strip than would be possible in either of the devices shown in the patents above referred to.

It is well known that in many manufacturing and department stores, as well as in plumbing establishments—many of the employees are "in" and "out" at irregular and short intervals of time, and that in many factories some of the workmen are sent from one department to another and receive different wages in different departments, although the time of employment in each department may be short; and a further object of my invention, therefore, is to provide means whereby the records of arrival and departure of such workmen or employees may be accurately kept.

A still further object is to prevent fraudulent or inaccurate registrations.

Other objects and uses will appear in the following description.

In the drawings—Figure 1 is a top plan of a portion of a workmen's time recorder similar to that seen in the first patent above referred to, but with my improvements incorporated and showing particularly the printing and shifting mechanisms. Fig. 2 is a vertical sectional view taken on line 2—2, Fig. 1, except that the time printing wheels and their supports are shown in elevation. Fig. 3 is a sectional view taken on line 3—3, Fig. 1 showing the bearings of the shifting mechanism in section. Fig. 4 is a top plan, partly in section, of a portion of the shifting or spacing mechanism including the sliding cross-head and the ball holding elements, which latter are shown in section. Fig. 5 is a sectional view taken on line 5—5, Fig. 4. Fig. 6 is an inverted plan of the sliding cross-head and its ways and operating levers. Fig. 7 is a sectional view taken on line 7—7, Fig. 2.

Similar reference characters indicate corresponding parts in all the views.

In order to demonstrate the practicability and utility of my present invention, I have shown a portion of a time recorder similar to that set forth in Patent No. 738,454, previously referred to and comprises essentially a supporting frame —1—; a platen —2— carrying a record-sheet —3—; and a suitable

printing mechanism involving clock actuated type-wheels —4— and —5— and means for operating the printing mechanism to produce an impression or record upon the record-strip —3—.

The platen —2— is shown as mounted upon a revoluble shaft —6— which is journaled in the frame —1— and projects through the front wall, as a dial-plate —7—, the outer end of said shaft being provided with a head —8— to which is pivoted at —9— an operating lever —10—, the pivot or fulcrum —9— being located at one side of the axis or shaft and the lever extending some distance beyond the opposite side of said axis. This end of the shaft is formed with a lengthwise socket —11— extending inwardly from its outer end and in this socket is reciprocally movable a plunger 12— against the action of a spring 13—. The plunger 12— is actuated against the action of the spring 13— by the lever 10— and is connected by a pin 14— to a sliding sleeve 15— which encircles the shaft —6— at one end of the platen —2—, the walls of the socket —11— being provided with slots —16— for receiving the pin 14— and permitting the longitudinal movement of the plunger and sleeve.

The sleeve 15— is provided with an annular groove for receiving shoulders 17— on the bifurcated end of the lever 18— which is pivoted at —19— to a portion of the frame —1— (see Fig. 1), so that as the plunger 12— and sleeve 15— are operated by the lever 10— and spring 13— the lever 18— is rocked on its fulcrum 19—. The free end of the lever 18— is pivotally connected to one end of a sliding toothed rack —20— which meshes with a pinion —21—, and therefore, the oscillation of the lever 18— reciprocates the toothed rack —20— and thereby rotates the pinion —21—. This pinion is connected by a suitable clutch, not necessary to herein illustrate or describe, to a revolving element, as a disk —22— which is on the same spindle with the pinion 21—, but whereby the disk —22— is rotated positively in one direction by the pinion —21— substantially half a revolution against the action of a spring motor —23— which serves to complete the revolution of the disk —22— independently of the pinion —21—. This operation of the disk —22— is similar to that set forth in Patent No. 738,454, previously referred to, and since it forms no part of my present invention, it is unnecessary to further illustrate or describe its operation further than to state that any suitable mechanism may be employed which will tension a spring motor and then release itself to permit the spring motor to continue the operation of the printing mechanism independently of the manual 10—. This disk 22— is eccentrically connected to one end

of a vertically reciprocating rod —24—, the other end of which is connected to a rocking support —25— pivoted at —26— upon a part of the supporting frame and carrying at its other end a clock actuated spindle —27— upon which is mounted type-wheels —4— and —5—. The clock mechanism for actuating the spindle —27— is not shown, but is substantially the same as that shown in the patents above referred to, and since this spindle and the means for driving it do not constitute any part of my present invention it is believed to be unnecessary to illustrate or describe the same.

A spring buffer —28— is interposed between the rod —24— and adjacent end of the rocking support —25— to relieve the jar upon the type-wheels during the operation of printing and also to accommodate itself to varying thicknesses of paper which may be used for the record-sheets.

The platen —2— consists of a circular drum keyed to the shaft —6— and adapted to be rotated therewith as the operating lever —10— is moved around the dial plate —7— to register with any one of a series of apertures —29— which are distinguished by different numerals representing different employees.

The lever 10— is provided with the usual spur, not shown, but which is arranged to enter the particular aperture of the employee operating the lever so as to hold the shaft and pattern from movement during the operation of printing, it being understood that the record-sheet —3— is provided with a column of numerals corresponding to the numbers and apertures upon the dial —7—.

The minute type-wheel —4— is secured to a sleeve —30— which is feathered upon a spindle —27— and, therefore, rotates with it, but is free to slide axially on said spindle.

The type-wheel —5— is journaled upon a spindle on the lower end of an arm —31— having its upper end loosely mounted upon the sleeve —30—, but the lower end of this arm is held from oscillating by a bracket —32— which projects from a sliding cross-head —33— and interlocked with the projecting end of the spindle or shaft of the hour-wheel —5—.

The spindle —27— represents the minute spindle of a clock, not shown, and the type-wheel —4— is, therefore, rotated continuously and is provided with a series of type on its periphery representing minutes.

The hour wheel —5— is provided with a series of peripheral type representing hours and is rotated one step or type space at each revolution of and by the minute-wheel —4—, which for this purpose is provided with a shoulder —34— cooperating with one of a series of shoulders —35— on the

type-wheel to move the latter one type-space at each revolution of the minute-wheel. This means of transmitting motion from the minute-wheel to the hour-wheel is also disclosed in the patent previously referred to, and does not constitute any part of my present invention.

It is now apparent that the printing mechanism is brought into action by the operating lever —10— to print upon the record-sheet —3—, that is—the inward or rocking movement of the manual 10— by the employee forces the plunger inwardly against the action of the spring 13— and thereby rocks the lever 18— and reciprocates the toothed rack —20—, which in turn, rotates the pinion —21— and disk —22— substantially half a revolution, and thus tensions the spring motor —23— whereupon the connection between the pinion —21— and disk 22— is automatically broken and the spring motor —23— continues the operation of the disk independently of the rack and pinion to force the rod —24— upwardly, and thereby rock the support —25— to bring the type-wheels to the printing position to make an impression upon the record-sheet, this impression being transmitted to the record-sheet through the medium of an ink ribbon 35, Fig. 3. During this printing operation a holding pawl —36— is brought into action to engage shoulders —37— upon the type-wheel —4— to center and hold the type-wheel from vibration, said pawl —36— being brought into action by a second disk —38— which is connected to the disk —22— and rocks the pawl —36— through the medium of a link —39—.

I have thus far briefly described the printing mechanism and its operating means, as the manual 10—, for the purpose of showing the co-action with my present invention, which I will now proceed to describe.

A metal ring —40— is rigidly secured in one end of the platen —2— and is provided with a circular row of apertures 41— arranged side by side and extending there-through from end to end and corresponding in number to the number of apertures —29— in the dial —7—, and also to the number of employee designating characters on the record-sheet. This ring and its circular row of apertures are concentric with the axis of the shaft —6— and drum —2— and the ring is adapted to be rotated with the drum, each aperture containing a series of balls —42—, but the outer ends of the apertures are of slightly less diameter than the balls to prevent them from rolling out at this end while the remaining portions of the apertures incline inwardly toward the axis of the shaft —6— and are of sufficient diameter to permit the balls to roll freely from the front end of the ring toward the

rear end at the upper side of the ring while at the lower side these balls roll freely from the rear toward the front, but are prevented from escaping by the contracted front ends of the apertures.

At the rear of the ring —40— and encircling the shaft is a fixed non-rotatable disk —43— which is held from rotation by suitable brackets or braces —44— forming a part of the frame —1— (see Figs. 1, 2 and 3). The upper part of the disk —43— is provided with a rearwardly and downwardly inclined aperture —45— with which one of the apertures —41— is brought into registration during the printing operation by each of the employees, the aperture —45— being of substantially the same diameter as the adjacent end of one of the apertures —41—. A vertically sliding gate —46— is mounted in suitable ways in the front face of the disk —43— and is provided with an aperture —47— which is movable into and out of registration with the aperture —45—. This gate —46— is interposed between the adjacent ends of the apertures 41— and 45—, and therefore, constitutes a cut-off for normally preventing the escape of the balls —42— into the aperture —45—. The aperture —47— in the gate —46— is brought into registration with the apertures —45— and the aligned aperture 41— during the printing operation by means of a lever —49— and a link —50— which connects said lever with the spindle —27— so that when the spindle is depressed in the operation of printing the rear end of the lever 49— which engages the gate —46— is elevated, and thereby elevates the gate to bring the aperture —47— into registration with the aperture 45— and the aperture 41— which may be registered therewith. This opens the passage and permits the adjacent ball —42— to pass through the apertures —47— and —45—, but the remaining balls are prevented from advancing toward the aperture —45— by a detent 51— on the gate —46—, (see Fig. 2) said detent and the slot in the part 43 in which the detent operates being narrower than the ball guide and therefore prevents the passage of the balls through said slot. At the rear end of the plate —43— is a ball receptacle 52— which is also fixed from rotation to the plate —43— and its upper end is provided with an inlet opening 53— to receive the balls which enter the aperture —45—, said balls thus falling into the chute settle toward the bottom, which is open, and somewhat broader than the opening —53— to cover a larger number of apertures 41— in the bottom of the ring —40—. The bottom of the plate —43— is also formed with a broad aperture —54— which receives the balls from the lower end of the chute —52— whereby the apertures —41— may be refilled by simply rotating the platen. A second cut-off gate —55— is re-

reciprocally mounted in the front face of the plate —43— to prevent the exit of the balls from the opening —54— into the apertures —41— except when it is desired to refill said openings. The plate —43— covers the rear ends of the openings 41— except where the gates —46— and —55— are used, and together with said gates, prevent the discharge of the balls from the rear ends of the apertures 41—. The gate —55— is operable manually by means of a lever —56— which is pivoted at —57— to a portion of the frame —4— and has one arm engaged with the sliding gate —55— while its other arm projects upwardly into the path of the rear end of the sleeve 15—. Sufficient space is left between the adjacent ends of the sleeve 15— and plate —43— to permit the upper arm of the lever to be rocked forwardly when the sleeve 15— and manual 10— are in their normal positions so that the gate —55— may be moved upwardly to permit the balls to roll from the base of the chute —52— into the aperture 54—, and thence into the apertures 41—.

It is now apparent that by rotating the platen —2— and its ring —10— the apertures —41— may be successively brought into registration with the discharge end of an opening 54— to receive the balls, and owing to the fact that the opening 54— is wide enough to take in a number of openings 41—, as seen in Fig. 7, and that the apertures 41— at the lower side of the ring incline downwardly and forwardly from the opening 54— the openings —41— are rapidly filled and after all of the apertures —41— are thus filled the upper arm of the lever 56— is rocked rearwardly by hand to close the gate —55— and thereby cut off further communication between the openings 54 and 41—. If, however, the attendant should fail to close the gate —55— this would be accomplished by the first operation of the manual 10— which would force the sleeve 15— inwardly into engagement with the upper arm of the lever 56— and thus close the gate —55—.

The cross-head —33— is connected to a sleeve 30— by a bracket —60— so that as the cross-head is moved back and forth along its ways 61— similar motion is transmitted to the type-wheels —4— and —5— which are therefore moved across the face of the platen —2—. This transverse movement of the cross-head and type-wheels is effected primarily by the manual 10— through the medium of the sleeve 15— and lever 18—, the latter being connected by a link 62— and spring 63— to one arm 64— of a rock-shaft 65—, said rock-shaft being provided with a second arm —66— which is connected by a link 67— to the cross-head 33. The free end of the lever 18— has a sliding connection with the link 62—, but is rigidly

secured to one end of the coil-spring —63— which encircles the link —62— and has its other end secured thereto near its connection with the arm 64— so that when the lever 18— is rocked in the direction indicated by arrow *x*, Fig. 1, in the operation of printing, the tendency is to draw the cross-head and type-wheels transversely of the platen toward the front of the machine—this being accomplished through the medium of the spring 63—.

A lever 70— is fulcrumed at —71— upon a portion of the frame —1— and has one arm connected by a link —72— to the arm —66— while the other arm of the lever 70— is provided with a plunger —73— guided in an aperture 74— of a bracket 75 which is secured to the plate —43—, as best seen in Figs. 1, 2, and 3. The plunger —73— is alined with the aperture —45— of the plate —43— and is disposed at the front side of the ring —10— so that when one of the apertures —41— is brought into registration with the aperture —45— the plunger —73— is caused to enter the restricted opening 41— and to strike against the front ball in said aperture.

It is apparent from the foregoing description that the same spring 13— which operates to force and hold the plunger 12— and manual 10— in their normal positions also exerts a similar influence upon the cross-head —33— through the medium of the sleeve 15—, lever 18— and its connections with said cross-head, therefore, the type-wheels are normally held at the rear end of the platen, which is termed the starting position. Now, assuming that the apertures 41— are entirely filled with balls; then when an employee desires to record his time of arrival he brings the manual 10— into registration with his aperture —29— in the dial —7— and thus bring a corresponding part of the record-sheet to the printing position, after which the manual 10— is pressed inwardly or rearwardly, which in turn rocks the lever 18— and operates the rack and pinion 20 and 21— to tension the spring motor —23—, which brings the printing mechanism into action to record the workman's time upon the record-sheet —3—. During the descent of the type-wheel spindle the lever —49— is actuated to elevate the gate —46— bringing the aperture —47— into registration with the aperture —45— and permitting the rear ball in the aperture 41— which is registered with the aperture —45— to roll through the aperture —47— into the aperture —45—, and thence into the chute —52—. At the same time that the gate —46— is elevated the detent —51— is interposed in the path of the remaining balls and prevents their escape through the apertures —47— and —45—. During this operation the plunger —73— is brought into en-

gagement with the adjacent ball in the aligned aperture—41—, and the balls, therefore, form a rigid abutment against which the ends of the plunger strikes and prevents the rocking of the lever—66— and consequent movement of the cross-head 33— and type-wheels—4— and —5—. It is now apparent that while the cross-head is prevented from movement the operating means for the printing mechanism is free to act by reason of the elasticity of the spring—63—, which under such condition is extended. As soon as the manual 10 is permitted to return by the operator, the parts effected thereby are restored to their normal positions, but it will be remembered that one ball in one of the apertures—41— has been permitted to escape into the chute—52—, and the remaining balls, therefore, advance rearwardly the distance of one ball space so that when the same employee again registers, as for instance—his time of departure—even though the interval since his arrival is short—it is apparent that the plunger—73— will be permitted to enter into the aligned aperture—41— a distance equal to the diameter of one ball, and therefore, the cross-head—33— and type-wheels will be correspondingly moved toward the front of the machine—this movement taking place just before the type-wheels are depressed by the spring motor—23—. In the second operation of the manual by the same employee it is apparent that two balls have been deposited in the chute—52— and that as soon as the manual is released the remaining balls in that particular aperture advance rearwardly the space of two balls so that when the next operation takes place by the same employee the plunger—73— is free to enter the aligned aperture—41— a distance equal to the space of two balls, thus moving the cross-head and type-wheels two spaces toward the front of the machine, it being understood that after each printing operation the type-wheels are immediately returned to the normal starting position. This operation of the employee may be repeated until all of the balls in his particular pocket are exhausted and as each ball is removed from his particular opening or aperture—41— the type-wheels are advanced toward the front of the machine one type space at a time. The operation is the same for each employee, and it is thought that the construction and operation of my invention has been fully described in such clear terms as to enable any one skilled in the art to make and construct the same.

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

1. In a workman's time recorder, the combination with a time printing mechanism comprising an impression-making element,

and an impression receiving element of manually operated means for bringing one element toward the other to make an impression on the receiving element, and mechanism brought into action by said means whereby one element is shifted after the first registration and succeeding impressions representing the arrival and departure of the same workman are recorded in different places on the receiving element.

2. In a workman's time recorder, the combination with a time marking mechanism operable to record the times of arrival and departure of the same workman at different printing points, of a manual and connections for shifting the marking mechanism after the first registration by the same workman and for moving the marking mechanism to its printing position by the same operation of the manual by the same workman.

3. In a workman's time recorder, a time printing mechanism and a shifting mechanism therefor, in combination with a workman's manual connected to actuate both mechanisms in the same operation.

4. In a workman's time recorder, a time printing device and operating means therefor, in combination with mechanism brought into action by said means at each successive printing operation by the same workman after the first registration to shift the printing device and thereby cause successive impressions by the same workman to be made at different points.

5. In a workman's time recorder, the combination of a workman's manual and a time printing device brought into printing action and also shifted by said manual by each successive printing operation by the same workman.

6. In a workman's time recorder, a time printing device and a record sheet support, one of the parts being shiftable to cause successive records for the same workman to be printed in different positions, and a workman's manual operatively connected to effect by a single movement the printing and shifting operation.

7. In a workman's time recorder, a printing mechanism, and operating means therefor, in combination with means brought into action by said operating means at each successive printing operation by the same workman after the first registration for shifting the printing mechanism different distances.

8. In a workman's time recorder, a time marking device and operating means therefor, in combination with means brought into action by said operating means just before each successive printing operation to shift the marking device to a different printing position.

9. In a workman's time recorder, the combination with time printing elements, of

separate means brought into action by the first named means at each successive operation after the first registration by the same workman to shift one of the elements whereby successive impressions for the same workman are made side by side upon the record sheet.

10. In a workman's time recorder, a platen, a time stamp operable toward and from and transversely of the platen, and an operating manual operatively connected to effect such movements in a single operation.

11. In a workman's time recorder, a clock rotated printing wheel and a rotary platen, one of the parts being movable axially, a manual and connections for moving one part toward the other to make an impression and for effecting said axial movement by the same movement of the manual.

12. In a workman's time recorder, a time printing element and its operating mechanism including a manual and means actuated by said manual to shift the printing element at each printing operation by the same workman after the first registration.

13. In a time recorder, the combination with a printing element and its operating means including a manual, of means brought into action by said manual to shift said element to a different position at each printing operation by the same workman after the first registration.

14. In a time recorder, the combination with a time printing element and its operating means, including a manual, of means brought into action by said manual to shift said element to a different position at each printing operation by the same workman after the first registration, and further means for returning the printing element to its starting position after each printing operation.

15. In a time recorder, a clock rotated printing wheel having axial movement, and operating means therefor to cause an impression to be made on the record strip, and means brought into action by said operating means to shift the wheel axially at each printing operation by the same workman after the first registration.

16. In a time recorder, an impression making element and an impression receiving element, a manual connected to move one element to make an impression on the receiving element, means brought into action by the manual to shift one of the elements at each printing operation by the same workman after the first registration and means to stop the shifted element in different positions after the first printing operation.

17. In combination with a time printing wheel movable axially, a manual controlling the printing operation and connected to shift the wheel axially, and means brought into action by the manual to stop the axial move-

ment at different positions at each successive printing operation by the same workman after the first registration.

18. In a time recorder, a time printing device and its operating mechanism connected to shift said device, of a shift-limiting stop movable step by step at each successive printing operation by the same workman after the first registration and controlled by said operating mechanism, the printing operation and shift being effected by a single operation of said mechanism.

19. In a time recorder, a time printing device and its operating mechanism, means brought into action by the operating mechanism to shift said device, and additional means also brought into action by said operating mechanism to limit the shifting movement of the printing device to different positions at each printing operation by the same workman after the first registration.

20. In a time recorder, a printing device and its operating mechanism, connections between said mechanism and printing device for shifting the latter, and movable means also brought into action by said mechanism for engaging one of said connections and limiting the shifting movement of the printing device to different positions at each printing operation by the same workman after the first registration.

21. In a time recorder, a printing device and its operating mechanism, a guide and spacing members movable therein, means brought into action by the operating mechanism to advance said members one at a time at each printing operation by the same workman after the first registration, and a shifting mechanism for said device brought into action by said operating mechanism and co-acting with one of said members to limit the shifting movement to different positions.

22. In a workman's time recorder a printing element, and an impression receiving element, in combination with manually operated means for shifting one of the elements different distances at each successive printing operation by the same workman after the first registration.

23. In a workman's time recorder a support carrying a record sheet having a series of employee designating characters thereon, a time printing device, one of the parts being shiftable relatively to the other to permit a plurality of impressions to be made in line with each character, a manual and connections for shifting the shiftable part and making an impression in the same operation.

24. In a workman's time recorder a rotary platen and a time printing wheel, one of the parts being movable axially, a manual and means actuated thereby to move one part toward the other to make an impression, and additional means actuated by said manual to shift the axially movable part endwise.

25. In a workman's time recorder, a rotary device supporting a record sheet, and a rotary printing device, in combination with a manual and means actuated thereby to move one device to make an impression on the record sheet and further means actuated by the manual to shift one device axially during each printing operation by the same workman after the first registration.
26. In a workman's time recorder, the combination with a time printing wheel, of a manual, and means actuated thereby to move the printing wheel axially different distances at each successive operation by the same workman after the first registration.
27. In a workman's time recorder, the combination of a rotary impression receiving element and a rotary time printing element movable toward and from and transversely of the impression receiving element, and a manual controlling the printing operation and transverse shift of the printing element in the same operation after the first registration by the same workman.
28. In a workman's time recorder, a time printing device and a rotary element carrying a record sheet having a series of employee designating characters printed thereon, said rotary element being provided with a series of ball-races or guides, one for each employee designating character, a series of balls in a ball-race, a manual and means actuated thereby for engaging one of the balls and expelling one of them from its ball race at each operation of the manual whereby the printing device is shifted different distances across the rotary element at each operation of the manual by the same workman after the first registration.
29. In a workman's time recorder a rotary time printing wheel movable axially, a manual and means actuated thereby for shifting the printing wheel axially, in combination with a series of movable members, and means brought into action by the manual by the same workman after the first registration for advancing said members one member space at each operation of the manual and thereby controlling the shifting movement of the type wheel.
30. In a workman's time recorder a rotary platen, a support rotating with the platen and provided with a series of ball-races or guides one for each employee, a printing device movable across the face of the platen, means for actuating the printing device to make an impression, additional means actuated by the first named means for expelling one of the balls at each operation of said first named means whereby the printing device is shifted different distances across the platen at each operation by the same workman after the first registration and a receptacle receiving the expelled ball.
31. In a workman's time recorder, in combination, a rotary platen, a ring rotating with the platen and provided with a series of apertures one for each employee, said apertures being arranged in a circular row concentric with the axis of revolution of the platen, a series of movable members in each aperture, a receptacle fixed from rotation and provided with an inlet opening and an outlet, the inlet opening receiving the members from the apertures, and the outlet discharging said members into the apertures, separate gates controlling communication between said apertures and the inlet and outlet of the receptacle, a time printing device, a manual and means actuated thereby to operate the printing device to make an impression, additional means actuated by the manual to open the gate for the inlet of the receptacle during each printing operation, a plunger entering one of the apertures, connections between the plunger and manual whereby the plunger is forced into one of the apertures at each printing operation and connections between the manual and printing device for shifting the same across the face of the platen, the number of members in the aperture co-acting with the plunger to determine the degree of shifting movement of the printing device.
32. In a workman's time recorder a time printing device, a manual and connections for shifting the printing device, in combination with a plunger actuated by the shifting mechanism and movable members actuated by the plunger one member space at a time and limiting the shifting movement of the printing device.
33. In a workman's time recorder, a rotary time printing wheel, and a rotary platen, a plunger, a rotary element moving with the platen and having a series of apertures one for each employee adapted to be brought into registration with the plunger, a series of movable members in each aperture constituting a limiting stop for the plunger, a manual and connections for operating the printing wheel to make an impression, means for expelling a member from the aperture which is aligned with the plunger at each printing operation whereby the plunger is allowed to move different distances at each succeeding operation by the same workman and connections between said plunger and the printing mechanism for regulating the shifting movement of the printing wheel, and connections between the manual and printing wheel for shifting said wheel axially at each printing operation by the same workman after the first registration.
34. In a workman's time recorder, an impression receiving element and an impression making element, a manual and a connection for bringing said elements together for making an impression, and means brought into action by the manual after the

first impression is made by the same workman for shifting one of said elements and making a second impression in a different place upon the receiving element at the end of the shift, and means for automatically returning the shifting element to its starting position after the last impression has been made.

35. In a workman's time recorder, a time printing device comprising an axially movable rotary printing element, a manual and mechanism actuated by a single movement of the manual for moving said printing element axially and substantially at right angles to its axis after the first registration by the same workman.

36. In a workman's time recorder, a time printing device comprising a rotary platen, a clock rotated printing wheel movable axially, a manual for rotating the platen and having an independent movement, and mechanism actuated by such independent movement of the manual for moving the printing wheel axially and also for moving it at right angles to its axis after the first registration by the same workman.

37. In a workman's time recorder, a time printing device comprising a rotary impression receiving element and a rotary printing element, a manual and mechanism actuated by said manual for shifting one element axially and bringing both elements together to print successive registrations by the same workman at different points after the first registration.

In witness whereof I have hereunto set my hand this 4th day of May 1904.

JAMES E. KEELY.

Witnesses:

H. E. CHASE.

HOWARD P. DENISON.