

W. BERESFORD.
TIME RECORDER.
APPLICATION FILED MAY 19, 1908.

931,254.

Patented Aug. 17, 1909.
3 SHEETS—SHEET 1.

Fig. 1.

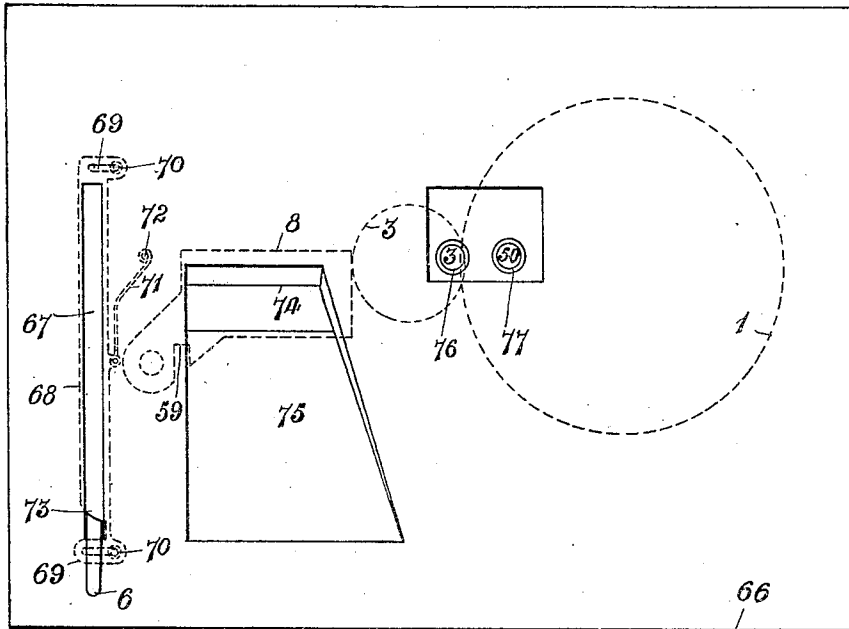
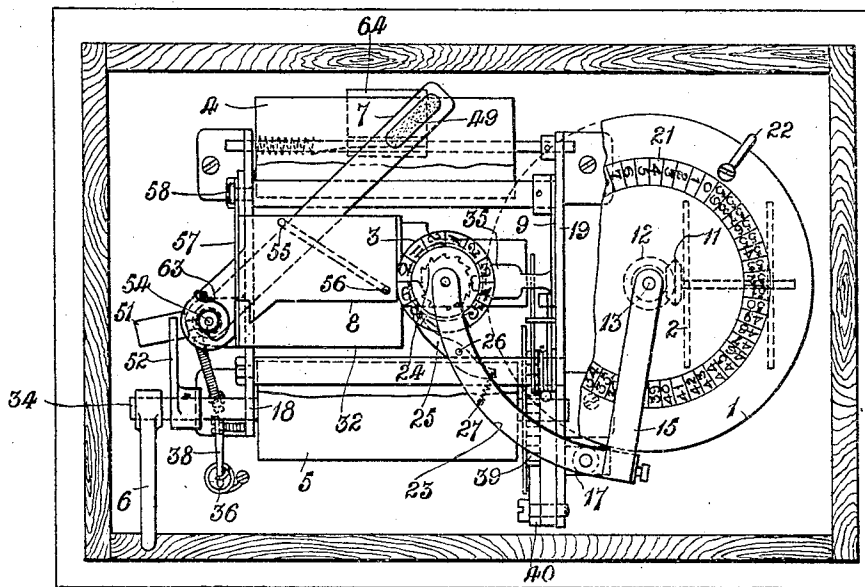


Fig. 2.



WITNESSES

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Fig. 3.

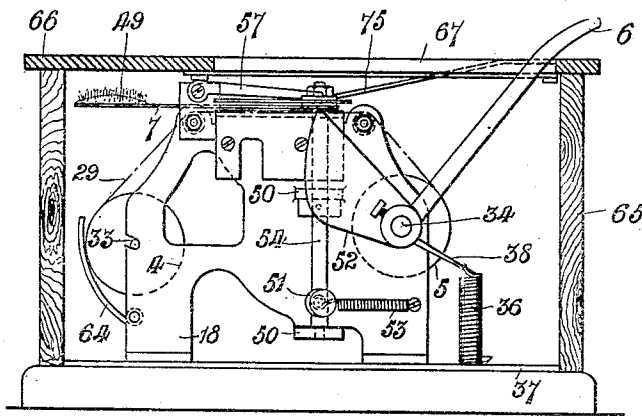


Fig. 4.



Fig. 5.

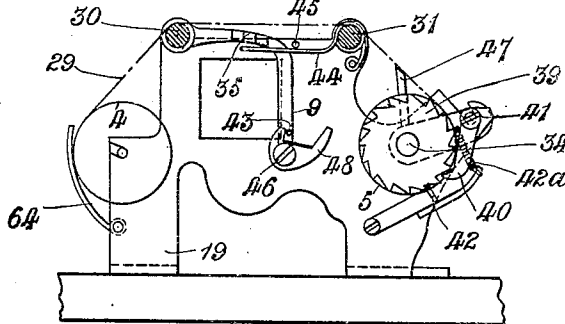
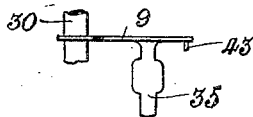


Fig. 6.



WITNESSES

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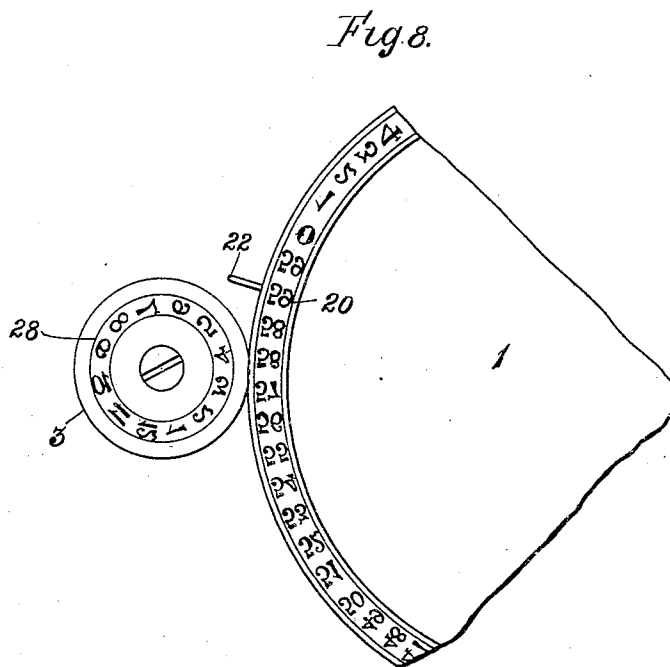
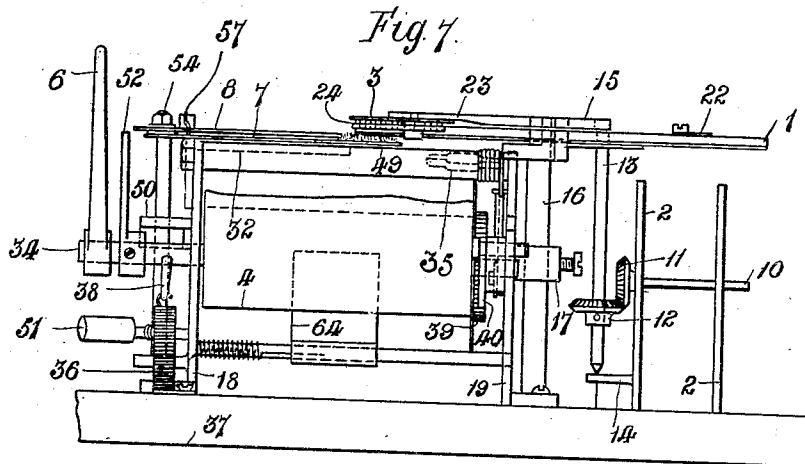
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3 SHEETS—SHEET 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER BERESFORD, OF LIVERPOOL, ENGLAND.

TIME-RECORDER.

No. 931,254.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed May 19, 1908. Serial No. 433,727.

To all whom it may concern:

Be it known that I, WALTER BERESFORD, a subject of the King of Great Britain and Ireland, residing at Lace street, Liverpool, in the county of Lancaster, England, have invented new and useful Improvements in Time-Registers, of which the following is a specification.

This invention relates to improvements in time recorders of the class in which a recording strip mounted on rollers is exposed for marking through an opening in the case the strip being advanced and printed by actuating a rocking shaft and the type wheels being rotated by a clock movement.

The object of this invention is to provide a simple, cheap, compact and efficient apparatus.

In the drawing attached hereunto, Figure 1 represents a plan of the top or cover of the casing; Fig. 2 a plan with the casing removed; Fig. 3 a cross section through the casing showing the mechanism in end elevation from the left hand end; Fig. 4 is a detail view. Fig. 5 is an end elevation of the mechanism, looking from the left. Fig. 6 is a detail view. Fig. 7 is a front elevation of the mechanism, and Fig. 8 is a detail view.

The apparatus illustrated in the drawing is shown with a common clock movement of the wheel escapement type, set in the vertical position, which position is also applicable for a pendulum movement. When using the former type of movement, the latter may be set in a horizontal position that is to say with the arbor of the minute hand in a vertical axis in which case the apparatus is slightly simplified.

My improved apparatus comprises chiefly a dial plate 1, hereinafter termed "minute plate" which is provided with a ring of type numerals on the lower side and corresponding numerals printed upon the front side arranged in the form of a ring from 0 to 59; this plate being driven by the minute arbor of a clock movement 2 at the same speed; a similar dial 3, hereinafter termed "hour plate" independently mounted in practically the same plane, and divided into twelve or twenty four divisions and moved one division for every revolution of the minute plate; a roll of paper carried by rollers 4 and 5 a short distance apart and passing under the adjacent type numerals of both plates

or dials, the paper, being advanced by a handle 6; an inking pad carrier 7, adapted to wipe the type each time the handle 6 is actuated; a shutter 8 normally covering the paper where it is exposed for marking and actuated also by the said handle, and a striking device 9 actuated also by the handle 6 for pressing the paper into contact with the type from beneath.

In the drawing, the arbor 10 of the clock movement represented by the frame 2, has a bevel wheel 11 fixed at one end thereof and this gears into another bevel wheel 12 of the same number of teeth fixed upon the vertical spindle 13 of the minute plate 1, the spindle being pivoted at its ends into a footstep bearing 14 at the base and into an arm 15 supported by the pillar 16. The pillar is secured in a lug 17 formed on one of the standards 18 and 19. The type characters 20 of the minute plate 1 indicated in Fig. 8 are formed on the edge margin. The printed characters 21 upon the top of the plate are comprised within a smaller circle.

At 22 is fixed to the plate 1 a finger by which the hour plate is moved a unit at the end of each revolution of the minute plate. The hour plate 3 is pivoted freely to an arm 23 carried by the standard 19, and as shown it slightly overlaps the minute plate. Underneath the hour plate is fixed a detent wheel 24 having twelve preferably inclined or ratchet teeth as shown, a pawl 25 pivoted to the arm 23 at 26, engaging with the teeth being pressed into contact by the spring 27, thus providing an escapement and preventing the plate from being moved backward. The finger 22 (see Fig. 2) engages with one of these teeth at the end of each revolution of the minute hand and turns the hour plate one twelfth of a revolution. The face of the type 28 of the hour plate 3 is in the same plane as that of the minute plate.

The roll of paper 29 is wound off the roller 4 on to the roller 5. It is passed over the bars 30 and 31 and under the plates 1 and 3, before being connected to the roller 5. Beneath the paper is a slight flat support 32 Figs. 2 and 7, to serve as a rigid base for writing upon. The roller 4 is detachably mounted in the open bearings 33 and the roller 5 is loosely mounted upon the shaft 34 which passes through holes in the standards 18 and 19. This shaft is provided with a

lever handle 6 which is normally held in the position shown in Fig. 3 by means of the spring 36 which is secured to the base 37 at one end and to an arm 38 fixed to the said shaft. The roller 5 is turned so as to wind on the paper by means of the ratchet wheel 39 fixed on the end of the roller and a pawl 40 Fig. 5, carried by an arm 41 fixed to the shaft. A holding pawl such as 42 and a spring such as 42^a keeping the pawl in contact with the teeth of the wheel is preferably used. Beneath the paper and immediately under the type of the hour and minute plates is mounted a striker for forcibly bringing the paper into contact with the type. This striker may consist of an arm such as 9, which is shown pivoted on the bar 30, the head 35, Figs. 2, 5 and 6, of which may be faced with indiarubber, leather or the like. The end of this arm projects downward and is provided with a stud or a stop, such as 43. Normally the head rests a short distance from the paper upon a spring such as 44 of steel wire wound around the bar 31 and fixed to the standard by one end. This spring is prevented from flying upward to its full extent by a stop 45. To the lower end of the arm is pivoted a weighted finger such as 46 having a nose which bears against the stud 43. As the shaft 34 is turned by the handle 6, a finger 47 Fig. 5 fixed to the shaft bears against the end 48 of the finger 46 and depresses the striker 9 against the spring 44 until it rides out of contact with the finger 47 when the striker is suddenly released and by the reaction of the spring causes an impression to be made on the paper by the adjacent type of both hour and minute plates. The finger 46 moves out of the way as the finger 47 returns and assumes its normal position by gravity. The inking pad carrier 7 consists preferably of a thin flat spring arm, the ink pad 49 which may alternatively be in the form of a roller being secured at one end thereof. The arm is fixed upon a vertical spindle 54 pivoted in the bearings 50 Fig. 3, and is actuated by means of a short radial arm 51 fixed to the spindle and an edge cam 52 fixed to the shaft 34 Fig. 3. It is held in its normal position, seen in Fig. 2 by means of the tension spring 53. The shutter 8 which normally covers that part of the paper to be written upon when the apparatus is being used, is freely mounted upon the spindle 54 and held in its normal position by the stop 55, bearing against the arm 7, Fig. 2. Another stop 56 is fixed in the shutter some distance away and allows the arm 7 a certain free movement while preventing it from getting displaced.

In order to prevent the shutter 8 from being moved without actuating the handle 4, a hooked pawl such as 57 Figs. 2, 3, and 6, is

hinged to the standard 18 at 58 and engages the front edge 59 of the shutter with the hooked part 60. The end of the pawl is formed with a swelling such as 61 adapted to come in contact with the front edge of the arm 7 which lifts it out of contact with the shutter, when the handle 6 is actuated, a spring 63 shown on Fig. 2 of the drawing, fixed at one end of the spindle 54 and at the other end to the shutter, causes the shutter to follow up the arm and clear the writing space.

A plate 64 pressing by spring pressure against the roll of paper on the roller 4 is used to obtain a drag upon the paper as it is drawn off the roller and maintain it stretched over the support 32.

A casing such as 65 is preferably detachably secured to the base 37 by any suitable catch arrangement, not shown on the drawing. The catches are arranged inside the casing so that they cannot be unfastened from the outside. The casing is provided with a cover such as 66 and this is preferably hinged at one side and provided with a lock and key at the other, not shown on the drawing. In the cover there is provided a slot 67 for the handle 6 to move in and this is provided preferably with a cover such as 68 Fig. 1, adapted to move out of the way against spring pressure as the handle 6 is actuated. The cover 68 shown in the drawing has a slot 69 formed in each end, through which passes a headed stud 70. A spring such as 71 fixed to the cover 66 at 72 is adapted to keep it normally in position covering the hole. The end 73 of the cover 68 is beveled off somewhat as shown so that the movement of the handle 6 displaces it as it is forced back. In the cover over the shutter 8 is formed an oblong hole 74 sufficiently large for the operator to write a signature through. This hole is preferably formed in an inclined depression such as 75 Figs. 1 and 3, so that this part of the cover 66 can lie as close to the paper as possible. Two holes such as 76 and 77 covered with transparent material such as glass are formed over the two dial plates 1 and 3 for the purpose of reading off the numbers in line which indicate the time by the clock.

In using the apparatus, the handle is pushed right back from its normal position of rest shown in the drawings, with the left hand which action first causes the inking pad carrier to move over the face of the paper and wipe over the type upon the underside of the dial plates, by means of the cam 52 coming in contact with the arm 51. As the latter arm moves it carries with it the arm 7 and the latter comes in contact with the swelling 62 of the pawl 57 and lifts it clear of the shutter 8 which now follows up the arm during its full stroke by means of the

spring 63 forcing it. While the arm is being pushed back, it raises the pawl 42 and depresses the arm 47 until it strikes the end 48 of the finger 46 of the striker 9 which it depresses and suddenly releases in passing. This action effected against the spring 44 causes the striker to fly up with some force by which the paper is pressed against the type characters in line of the two dial plates and thereby prints the time by the clock for instance 3—50. Immediately the handle 6 is allowed to return, the pawl 40 has engaged a tooth of the ratchet wheel 39 and commenced to move the roller 5 and draw the paper along with it. If the handle 6 is allowed to return without any further act by the operator, the time is registered against a blank portion of the paper. While the handle is pushed right back and the paper is exposed to view, the operator should while holding the handle 6 back with one hand write on the paper with the other hand. After letting go the handle 6, the parts assume their normal positions respectively, as shown on the drawings.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a time recorder actuated by a rocking shaft and in which a recording paper band is exposed for marking through an aperture in the case and is printed with the time record by a hammer striking the band against type wheels, the combination of a shutter loosely pivoted on a vertical shaft and adapted to normally cover the aperture in the case, an arm fixed to the vertical shaft and carrying an inking pad at its end, means actuated by the rocking shaft adapted to turn the vertical shaft and arm and a spring adapted to return them to their starting position, a spring adapted to turn the shutter so as to open the aperture, a catch adapted to retain the shutter in its closing position and to be released by the turning of the said arm by means of the rocking shaft, and a projection in the shutter adapted to be encountered by the arm and its return movement and turn the shutter so that the catch can engage and hold the same.

2. In a time recorder the combination of a clock movement, a large type wheel with type on its underside representing minutes and fixed on a vertical arbor driven by the clock movement, a small similar type wheel in the same plane with types representing hours on its underside and rotated by the large type wheel one unit for each revolution, a rocking shaft and a handle on it for operating the same, a vertical shaft and an elastic arm fixed to it having an inking pad at its end, means actuated by the rocking shaft and adapted to turn the shaft and arm so that the inking pad wipes over the types on both type wheels, the arm passing be-

tween the types and a paper band, a hammer on a horizontal lever pivoted at one end, a spring adapted to hold up said hammer at a short distance from the band and a stop against which the spring rests, a finger on the rocking shaft adapted to depress the outer end of the hammer lever and tighten the spring and to liberate it as soon as the inking pad on the arm has passed over the types, so that the hammer is jerked up by the spring and strikes the paper band against the type by its momentum, and springs for returning the vertical shaft and arm and the rocking shaft to their starting positions.

3. In time recording apparatus actuated by a rocking shaft and in which a recording strip is exposed for signature through an opening in the casing and is printed by a hammer striking the strip against type wheels; the combination of a clock movement; a dial plate connected with the arbor of the minute hand and moving at the same speed and having type printing characters representing minutes in numerals around the underside margin and clock face characters on the front face; an independently mounted dial similarly provided with printing and clock face characters representing hours and turned a unit at every revolution of and by the minute dial, said hour dial having a ratchet wheel and pawl non return device; two horizontally mounted rollers, one for carrying the roll of paper and having a friction device to cause a drag thereon, and the other for winding on the paper advanced and having a ratchet wheel on one end, said rollers being arranged so that one edge margin of the paper passes under the adjacent type of both dial plates; a table support under the paper between the rollers; a shutter to normally cover the opening in the casing and hinged on a vertical axis and having a spring tending to move it from its normal position; an arm pivoted on a vertical axis and carrying an inking pad at its end adapted to wipe over the adjacent type when actuated against a spring and to restrain the shutter from moving in advance of it; a catch normally locking the shutter over the opening and actuated by an idle portion of the sweep of the said arm; a hinged striking arm under the paper and said adjacent type, having at its end a weighted hinged finger supported by a stop to resist a downward blow only and to give way to an upward blow, said striking arm being normally supported by a spring against which it is depressed so as to rebound; a shaft carrying a radial arm adapted to strike the finger of the striking arm, and another arm to which is pivoted a pawl for engaging the ratchet wheel of the winding on roller so as to draw the roll off the first named roller, the shaft

being turned to actuate the striker and the
roller against a strong spring; and a lever
handle fixed to said shaft for actuating the
moving parts of the apparatus except the
5 clock and dials, said handle projecting
through a slot in the casing substantially as
described and illustrated.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

WALTER BERESFORD.

Witnesses:

RIDLEY G. URQUHART,
JOHN L. DOWNIE.