G. M. MILLS.

TIME RECORDER FOR HOMING PIGEONS.

APPLICATION FILED JUNE 17, 1909.

952,832.

Patented Mar. 22, 1910.

4 SHEETS—SHEET 1.

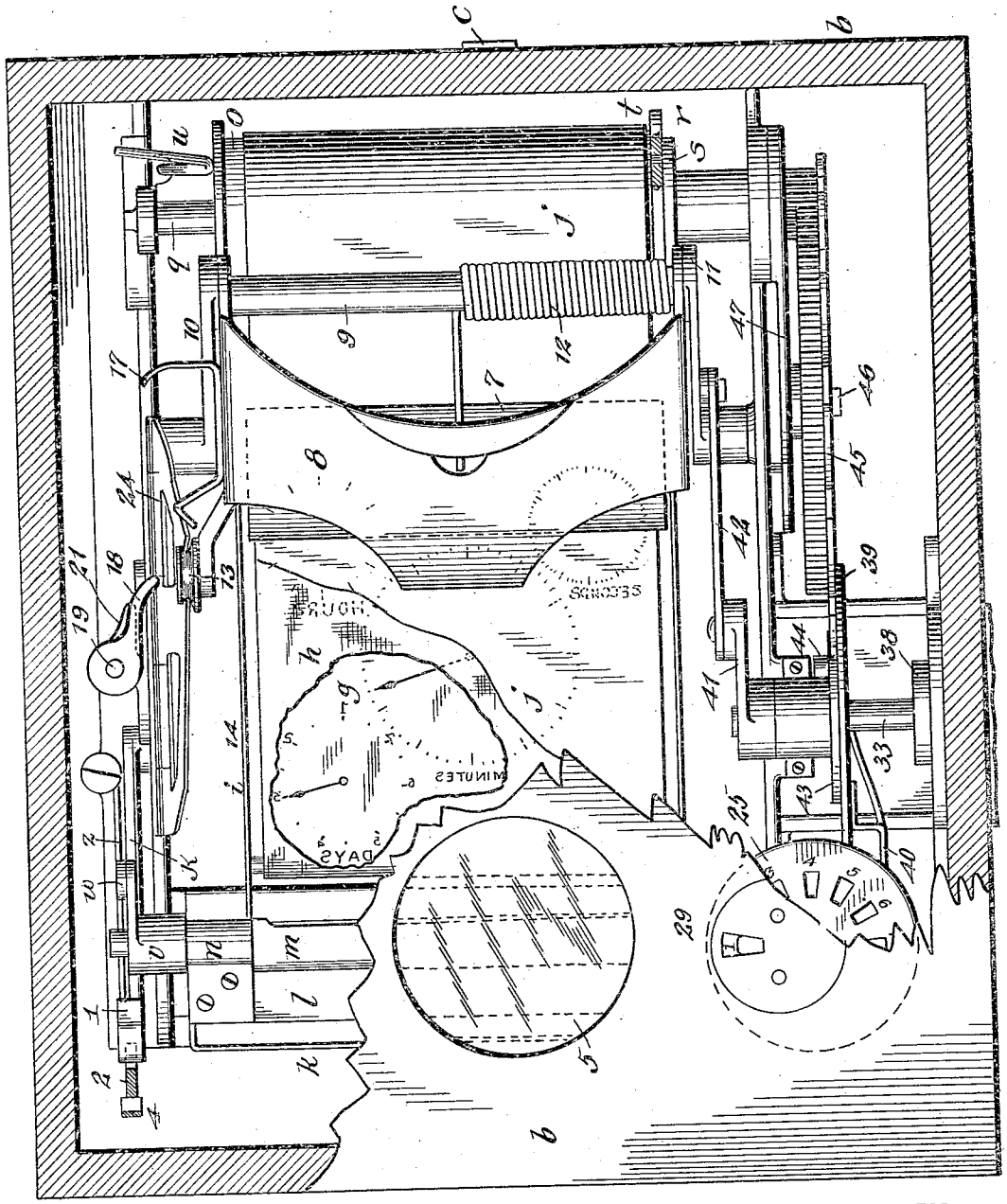


Fig. 1.

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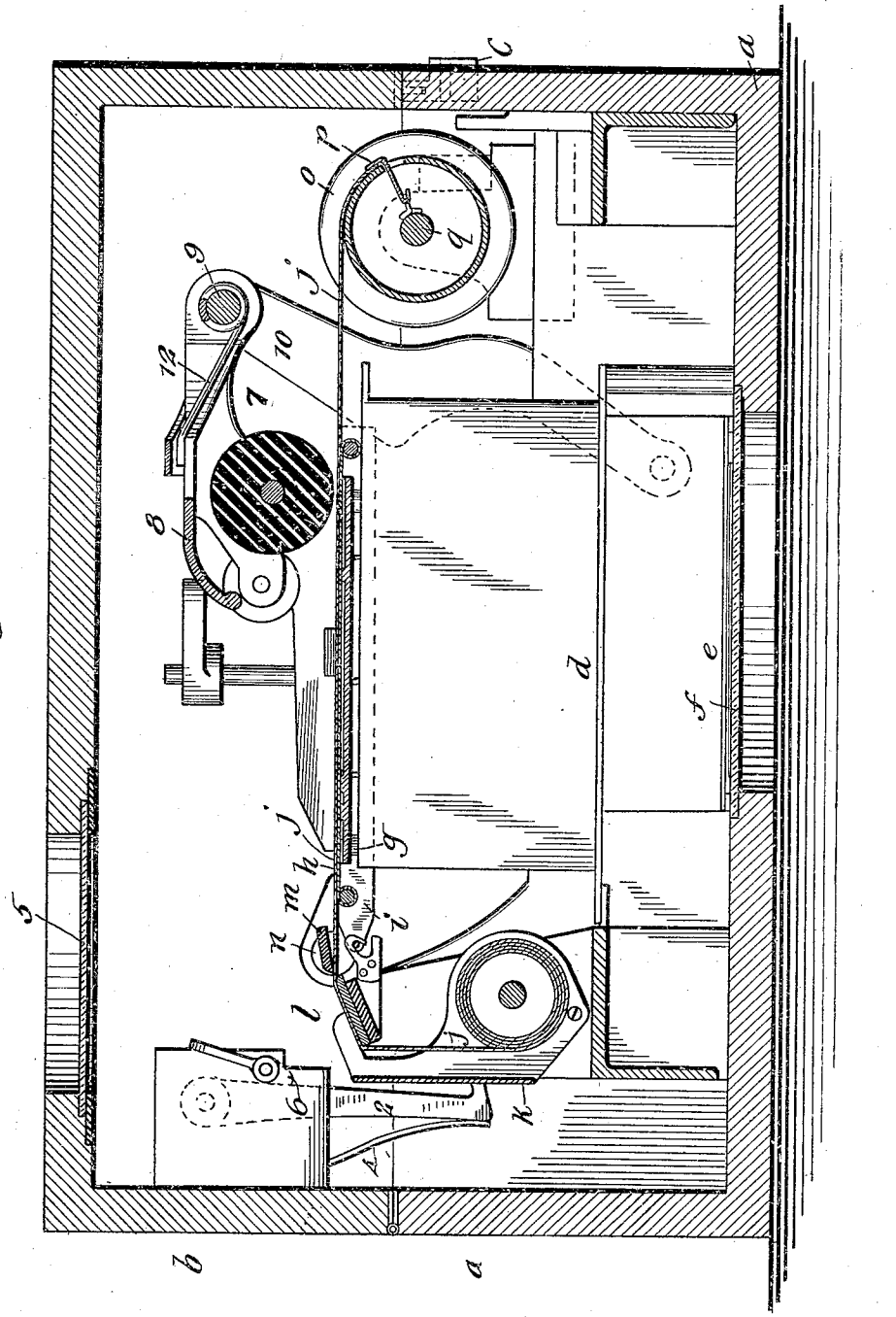


Fig. 2.

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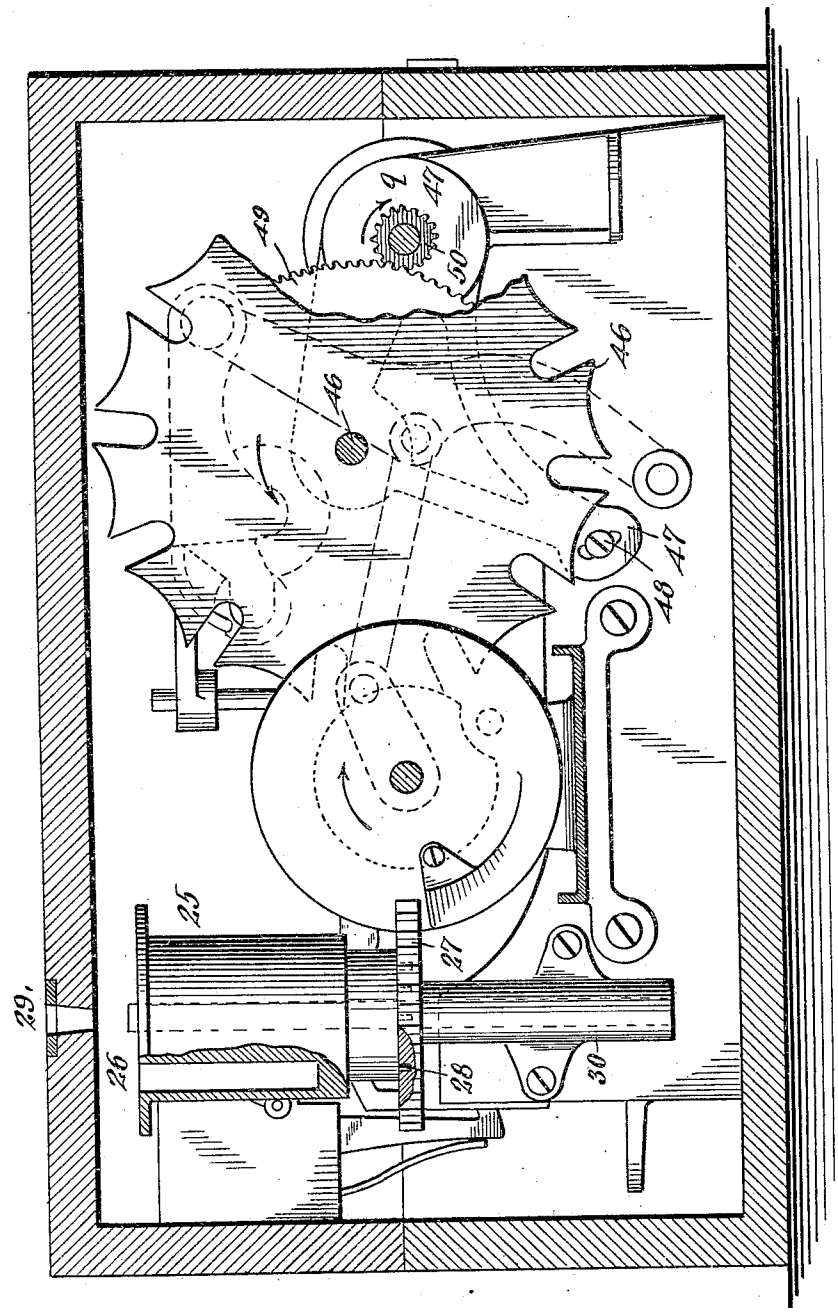
4 SHEETS—SHEET 3.

Fig. 3.

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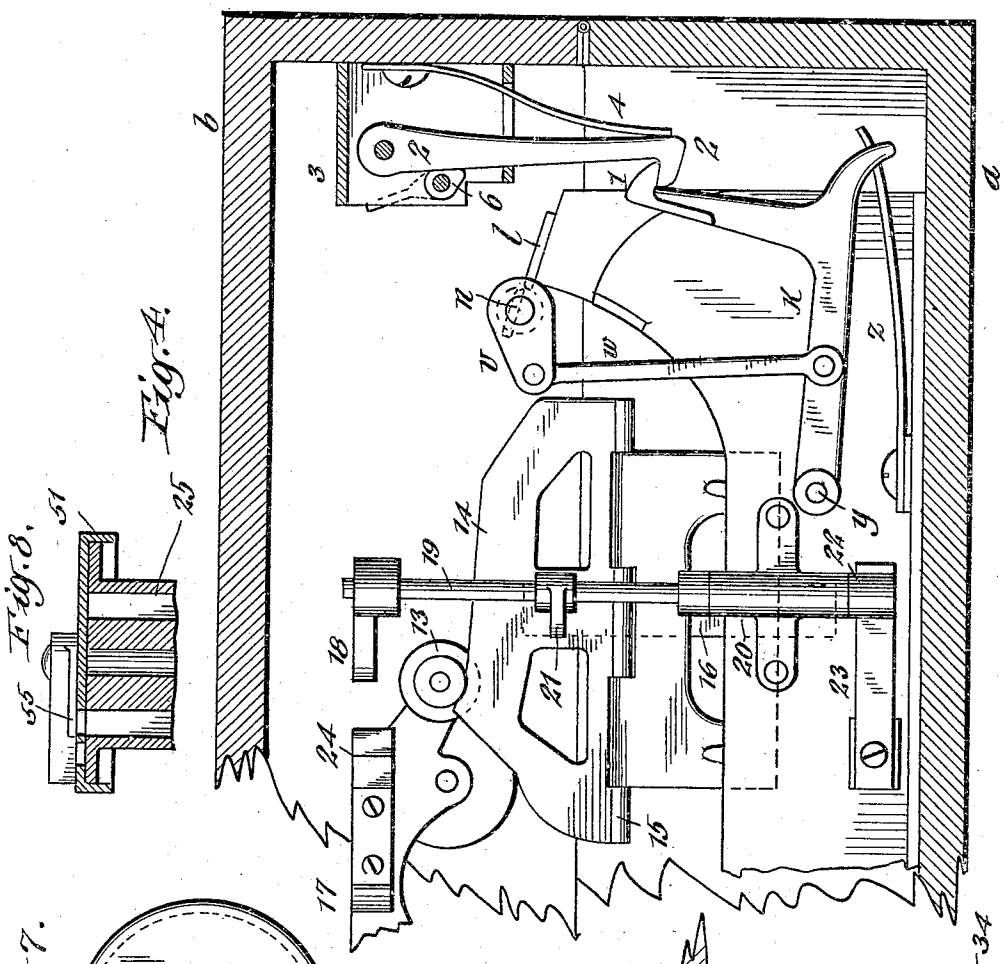

Fig. 4.



Fig. 8.

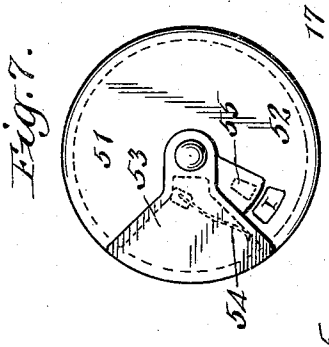

Fig. 7.

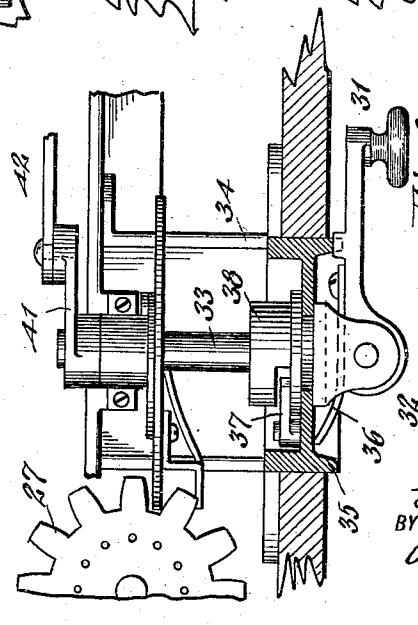

Fig. 5.

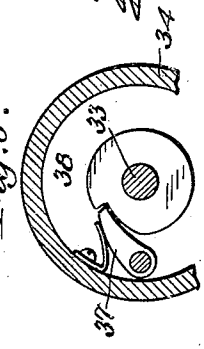

Fig. 6.

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# UNITED STATES PATENT OFFICE.

GEORGE M. MILLS, OF JERSEY CITY, NEW JERSEY.

## TIME-RECORDER FOR HOMING-PIGEONS.

952,832. Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed June 17, 1909. Serial No. 502,648.

*To all whom it may concern:*

Be it known that I, GEORGE M. MILLS, a citizen of the United States, and a resident of Jersey City, county of Hudson, and State of New Jersey, have invented a new and useful Improvement in Time-Recorders for Homing-Pigeons, of which the following is a specification.

The subject of this invention is a machine for providing reliable accurate permanent records of the times of home arrival of carrier pigeons.

It comprises a receptacle having a series of numbered pockets or chambers for the reception of the indicating bands removed from the legs of the pigeons as they arrive home; a clock provided with time dials adapted to produce in conjunction with an ink ribbon imprints of standard time; a holder for a roll of paper; a feeding device for moving the paper over the printing dials of the clock and, after an impression is made, moving the impressed time records away from the clock; an impression roller adapted to be rolled over the part of the paper adjacent to the printing dials to impress a time record thereon; a knife for severing from the roll of paper the part on which the time records are made; means carried by the lid of the box or case containing the machine for operating the knife when the lid is raised; means for moving the band receiver to cover and protect a numbered pocket in which a band is placed and expose the opening of the succeeding pocket; means for actuating the impression roller; and means for actuating the paper feeding device.

It also includes a handle connected to the actuating means of the band receiver, the impression roller and the paper feeding device, by the manipulation of which the various parts are actuated in proper sequence. A cap or cover for the band receptacle is also provided, by means of which the bands may be removed in proper order from the receptacle so that the band numbers or indications may be marked on their respective time printed impressions on the paper.

These with other and minor features of construction will be more fully described by reference had to the accompanying drawings.

In the use of these time recording machines it is intended that the various parts be properly adjusted and the clock set at standard time by the racing committee of the association having records of the pigeons whose times of flight are to be recorded; the boxes are then locked, the owners of each homing station having one. As each homer comes in the numbered or indicating band is removed from its leg and placed in the band receptacle of the machine; the handle of the machine is then rotated whereby the time of day and the number of days elapsed since the machine was set by the committee is printed on the strip of paper and the band receptacle moved so as to set the compartment in which the band was placed out of range of the entrance slot and expose the mouth of the succeeding compartment to said entrance slot. At the termination of the race, or when it is determined to examine the time records, the box or boxes is or are opened by the committee, the numbers or other markings of the bands noted in the order in which the bands are placed in the machine and the corresponding impression on the strip of paper similarly marked; the act of opening the box or retaining case of the machine severs the paper, as far as impressed, from the roll, and this feature of the machine is a warranty or guard against any tampering with the machine as the committee will immediately know if the lid has been opened while the machine is out of the hands of the committee, there being a window or glass in the lid through which the condition of the paper may be observed before the box is opened by the committee.

In the accompanying drawings Figure 1 is a plan view of the pigeon homing time recorder, showing the upper part of the box or retaining case partly broken away; Fig. 2 is a vertical central section of the machine; Fig. 3 is a side elevation, showing the case in section, illustrating the main operating mechanism; Fig. 4 is a part side elevation of the other side of the machine, showing the impression roller controlling ledge and the knife actuating mechanism; Fig. 5 is a horizontal view of the operating handle and attached mechanism, partly in section; Fig. 6 is an elevation of the reverse stop device of the handle; Fig. 7 is a plan of the cap for the band receiver for controlling the discharge of the bands therefrom, and Fig. 8 is a section of the same and the upper part of the band receiver.

All of the operating parts of the machine

are inclosed in a box or case *a* having a hinged cover *b* secured by a lock *c*, and the frame of the machine is securely fastened to the box. In the central portion of the frame is located a clock movement *d* of any suitable construction the ordinary dial face *e* of which is visible through a glass *f* let into the bottom of the box, and on the opposite or upper part of the clock are placed printing dials with hands indicating hours, minutes and seconds, and also days to show those elapsed from the time the clock is set and started. The dials are shown on a plate *g* Figs. 1 and 2. Over the printing dials is placed an ink ribbon *h* carried on a detachable frame *i*, and over this ink ribbon passes the band of paper *j*, which in roll form is held in the paper holder *k* located at one end of the time mechanism. From the holder *k* the paper passes over the stationary blade *l* of a knife and under the working blade *m*, pivoted at *n* in the side frames of the machine. At the other end of the time mechanism is located a drum *o* on which the paper is wound and drawn over the ink ribbon *j*, said drum being provided with a clamping device *p*, and is carried by but free to slide on a shaft *q*. This shaft has secured to it a flange *r* provided with a pin *s*, arranged to enter one of a series of holes in the end of or in a flange *t* secured to the drum *o*, whereby the drum is caused to rotate with the shaft *q* when held in operative position by a locking pawl *u* vertically pivoted in the frame. By turning this pawl the drum may be released from the pin *s* for attaching the end of the paper to the drum in setting the machine to produce time records and for the removal of the printed records therefrom after the paper has been severed from the roll by the knife *l*, *m*.

To one end of the shaft *n* of the knife blade *m* is secured an arm *v* connected by link *w* to a lever *x* pivoted at *y* to the frame of the machine and held in downward position by a spring *z* and the blade *m* is held away from the stationary blade *l*. At the upper end of a branch of the lever *x* is a toe or tappet I which is engaged by a hooked pawl 2 pivoted to a frame 3, secured to the lid of the case, and held in outer position by a spring 4 to catch under the tappet I of the lever *x*. Now when the lid *b* is raised the knife blade *m* is rocked and the paper cut, the hook of the pawl 3 slipping from the tappet I after the knife has been actuated. The lid *b* of the case is intended only to be raised when all of the homing records are made, and by a duly appointed racing committee, so should the lid be raised, with the object of tampering with the machine or records entered on the recording paper, such action would become known to the committee, and that this may be before the lid is raised by the committee an examination of the paper at the place of cutting may be had through the glass 5 provided therefor in the lid of the case. The hooked pawl 2 may be moved and held away from the tappet I by means of the cam lever 6, thus permitting the lid of the case to be raised without operation of the knife as desired in setting the machine &c.

The means for impressing the time records on the paper consists of a roller 7 carried in a frame 8 which is fitted to turn on a shaft 9 at the upper end of the rocking levers 10 and 11 which are pivoted at their lower ends to the side frames of the machine. On this shaft 9 is located a torsional spring 12 arranged to act on the frame 8 tending to hold it down and press the roller 7 toward the printing dials *g* of the clock. These levers with their attached parts are caused to reciprocate by action of the operating handle, as hereafter described. In the normal position of the rest of the machine the impression roller 7 is held clear of the paper by a grooved wheel 13 resting on a ledge 14, which is laterally hinged at 15 to an upward extension of the frame, and is by a spring 16 moved laterally away from the wheel 13 when released therefrom, the action of the wheel 13 while on the ledge 14 being to hold said ledge in vertical position against the resiliency of the spring 16. In the normal position of the roller 7, shown in the drawings, the grooved wheel 13 rests on the highest part of the ledge 14, the first movement imparted to the roller 7 is backwardly to its rearmost position, this causes the wheel 13 to leave the ledge, which is then by its spring 16 moved out of the path of the wheel 13, and the impression roller is pressed toward the printing device; the roller 7 now moves forwardly causing an impression to be made on the paper, and at the limit of its forward movement the ledge 14 is again moved into the path of the wheel 13. This is accomplished by a finger 17 projecting from the side of the roller frame 8 striking an arm 18 on the end of the vertical shaft 19, which has a suitable bearing 20 in the side frame of the machine, and on this shaft 19 is secured a cam-lever 21 arranged to bear against the side of the ledge 14, and the lower end of the shaft 19 is provided with a hub 22 with two flat surfaces against which the spring 23 bears to hold the shaft and its attached devices in the two positions—one with the cam-lever against the side of the ledge 14 and the other position with said cam-lever away from the ledge. With the ledge 14 thus set the grooved wheel rides up its inclined end at the commencement of the backward movement of the impression roller 7, said roller being thus raised away from the paper; and just before the wheel 13 arrives at its normal position

of rest on the ledge another finger 24, carried by the frame 8, strikes the arm 18 and moves the cam-lever 21 away from the ledge 14, leaving it subject to the action of the spring 16 but held against such action by the grooved wheel 13, as before described.

The band receiver 25 has a series of pockets open at its upper surface and consecutively numbered, it is by a central bore set over a vertical shaft 26 and rests on a worm gear 27 secured to said shaft, the bottom of the receiver being provided with a pin 28 which seats in any one of a series of holes in the face of the gear 27 equal in number to the number of pockets in the receiver. This permits of the proper adjustment of the receiver when the machine is set for receiving records irrespective of the position of the worm gear 27, the pocket numbered 1 being then generally set beneath the slot or opening 29 in the top of the case, through which opening the bands removed from the pigeons as they home, and straightened, are dropped into the pockets, each operation of the machine to record the arrival of a pigeon causes the next numbered pocket to be set under said opening 29. The shaft 26 is fitted to rotate in a vertical bearing 30 on the side frame of the machine.

The operating handle 31 is, by a hinged connection 32, secured to a horizontal shaft 33, which has bearings in a bracket 34 extending from the side frame of the machine. One full revolution of the handle actuates all the working parts of the recording mechanisms, and to insure this and set the handle with the devices in normal positions of rest a flange 35 is provided on the bracket 34, and into a notch formed therein enters a lug on the handle, a spring 36, attached to the handle, presses the lug into the notch. To prevent backward rotation of the handle a spring pawl 37 is provided, which enters a depression in a collar 38 attached to the shaft 33, as clearly shown at Fig. 6, which is a rear view of the flanged end of the bracket 34.

The band receiver 25 is held stationary by a disk 39, on the shaft 33, with its edge between two of the teeth of the worm gear 27, and said disk is provided with an inclined flange 40 adapted to move the gear 27 one tooth during an early part of the rotation of the disk 39. On the inner end of the shaft 33 is secured a crank 41 connected by a rod 42 to the rocking lever or arm 11 of the impression roller mechanism, said crank being so set as to cause the grooved wheel 13 of said mechanism to rest on the ledge 14, as before described. The shaft $q$ of the paper feeding roller is actuated from the shaft 33 by means of a "Geneva-movement"; the controlling disk 43, provided with a pin 44, is secured to the shaft 33, and the "star" or notched wheel 45 is fitted to rotate on a stud 46 extending from a frame 47 having a pivotal connection on the side frame of the machine in line with the axis of the shaft $q$ and held in place, when set, by a screw 48. A gear wheel 49 secured to the notched wheel 45 meshes into a pinion 50 on the end of the shaft $q$, said gear and pinion being so proportioned that the movement of the notched wheel 45 by one revolution of disk 43 will cause the roller $o$ to wind up the paper sufficiently to bring a fresh part of it over the printing dials $g$.

The means provided for enabling the bands in the receiver 25 to be singly removed therefrom consists of a cap 51 adapted to fit on the receiver and having an opening 52 adequate for the exposure of the mouth and number designating a band pocket, and a movable cover 53 pivoted on the cap and held by a spring 54 to cause the ledge 55 to cover the part of the opening 52 above the mouth of the pocket leaving the number of the pocket exposed, as shown at Fig. 7.

To enable the printed time records to be correctly marked by the designating numbers of the bands the receiver is removed from the machine with the cap applied thereto and with the numbers of the pockets successively exposed in the order in which the bands are placed in the pockets, the cover 53 being moved to expose the mouth of the pocket, the band therein may be dropped out of the pocket without disturbing the other bands in the other pockets.

I claim as my invention:—

1. A time recorder for homing pigeons, comprising a clock provided with printing dials, a roll of paper holder, means for feeding the paper over the printing dials of the clock, an inclosing case, a knife for cutting the paper, and means carried by the lid of the case for actuating the knife when the lid is raised.

2. A time recorder for homing pigeons, comprising a clock provided with printing dials, a roll of paper holder, means for feeding the paper over the printing dials of the clock, an inclosing case, a knife for cutting the paper, means carried by the lid of the case for actuating the knife when the lid is raised, and a window in the case for examination of the paper after it leaves the knife.

3. A time recorder for homing pigeons, comprising a time printing mechanism, a detachable receptacle having numbered compartments for holding the designating pigeon bands, an inclosing case, a slot or opening in the case through which the bands are passed into the receptacle, an operating handle and connecting means for actuating the time printing mechanism and connecting means for operating the band receptacle to set the compartments successively in line

with the slot or opening in the case, and a cover or cap for the band receptacle having an opening corresponding to the mouths of the compartments and through which the bands may be successively discharged from the receptacle.

4. A time recorder for homing pigeons, comprising a time printing mechanism, a receptacle having numbered compartments for holding the designating pigeon bands, an inclosing case, a slot or opening in the case through which the bands are passed into the receptacle, an operating handle and connecting means for actuating the time printing mechanism and connecting means for operating the band receptacle to set the compartments successively in line with the slot or opening in the case, means for locking the handle in normal position, and means for preventing backward rotation of the handle.

5. A time recorder for homing pigeons, comprising a clock provided with printing dials, a roll of paper holder, means for feeding the paper over the printing dials of the clock, an inclosing case, a knife for cutting the paper, means for pressing the paper over the printing dials, a receptacle connected to means for moving it and having numbered compartments for holding the designating pigeon bands, and a handle connected to and actuating the paper feeding means, the printing impression means and also to the means for moving the band receptacle.

6. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device comprising a winding up drum, an operating handle, the disk and pin of a "Geneva-movement" connected to the handle and the "star" or notched wheel of said movement connected by gearing to the winding up drum.

7. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, a knife for severing the paper as it leaves the holder, a lever connected to the moving part of the knife and provided with a toe or tappet, a case inclosing the machine, and a spring actuated hook carried by the lid of the case for engaging the toe to actuate the knife when the lid is raised.

8. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, a knife for severing the paper as it leaves the holder, a lever connected to the moving part of the knife and provided with a toe or tappet, a case inclosing the machine, a spring actuated hook carried by the lid of the case for engaging the toe to actuate the knife when the lid is raised, and a cam-lever for setting and holding the hoop carried by the lid out of the path of engagement with the toe of the knife lever.

9. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, a knife for severing the paper as it leaves the holder, a lever connected to the moving part of the knife and provided with a toe or tappet, a case inclosing the machine, a spring actuated hook carried by the lid of the case for engaging the toe to actuate the knife when the lid is raised, and a window in the lid of the case through which the knife and paper may be observed.

10. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, an impression roller, a frame carrying the roller controlled by a spring to press the roller toward the printing dials of the clock, a wheel on the frame, a ledge on which the wheel rests to hold the roller away from the printing dials during the backward movement of the frame and roller, means for moving and holding the ledge away from the wheel just before and during the forward movement of the roller, and means for moving the impression roller frame.

11. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, an impression roller, a frame carrying the roller controlled by a spring to press the roller toward the printing dials of the clock, a wheel on the frame, a ledge on which the wheel rests to hold the roller away from the printing dials during the backward movement of the frame and roller, means for moving and holding the ledge away from the wheel just before and during the forward movement of the roller, means for setting the ledge in the path of the wheel just before the roller commences its backward movement, and means for moving the impression roller frame.

12. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, an impression roller, a frame carrying the roller controlled by a spring to press the roller toward the printing dials of the clock, a grooved wheel on the frame, a hinged spring actuated ledge on which the wheel rests to hold the roller away from the printing dials during the backward movement of the frame and roller, a vertical shaft having an arm at its upper end and a cam-lever located behind the ledge, a finger carried by the roller frame adapted by striking the arm on the vertical shaft to move through the medium of the cam-lever the ledge into the path of the grooved wheel before the impression roller commences its backward movement, and another finger on the roller

frame adapted to strike the arm to remove the cam-lever away from the ledge before the impression roller completes its backward movement, and means for operating the impression roller frame.

13. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, an impression roller, a frame carrying the roller controlled by a spring to press the roller toward the printing dials of the clock, rocking levers carrying at their upper ends the impression roller frame, an operating handle and crank, a rod connecting the crank to one of the rocking levers, and means controlled and set by the roller frame to hold the roller away from the printing dials during the backward movement of the roller.

14. In a time recorder for homing pigeons, a clock provided with printing dials, a roll of paper holder, and a paper feeding device, an impression roller, a frame carrying the roller controlled by a spring to press the roller toward the printing dials of the clock, means for reciprocating the roller frame, a movable ledge for holding the impression roller away from the printing dials, a vertical shaft and a friction spring to hold it in two positions, a cam-lever on the shaft adapted to hold the ledge toward the roller frame with the shaft in one of its positions, and means for setting the vertical shaft in its two positions.

15. A time recorder for homing pigeons, comprising a time printing mechanism, a detachable receptacle having numbered compartments for holding the designating pigeon bands, an inclosing case, a slot or opening in the case through which the bands are passed into the receptacle, an operating handle and connecting means for actuating the time printing mechanism, a worm disk on the shaft of the handle, and a worm wheel actuated by the worm disk and on which the band receptacle rests and caused to move therewith.

16. A time recorder for homing pigeons, comprising a time printing mechanism, a detachable receptacle having numbered compartments for holding the designating pigeon bands, an inclosing case, a slot or opening in the case through which the bands are passed into the receptacle, an operating handle and connecting means for actuating the time printing mechanism, a worm disk on the shaft of the handle, a worm wheel actuated by the worm disk and on which the band receptacle rests and caused to move therewith, a cap for the band receptacle and having an opening adapted to be set over the mouth of any of the compartments of the receptacle, and a spring actuated cover for closing the opening in the cap.

In testimony whereof, I have hereunto subscribed my name this 14th day of June, 1909.

GEORGE M. MILLS.

Witnesses:
W. A. Towner, Jr.,
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