

W. K. MENNS.
 SPEED INDICATING AND RECORDING DEVICE.
 APPLICATION FILED FEB. 23, 1912.

1,037,952.

Patented Sept. 10, 1912.

3 SHEETS—SHEET 1.

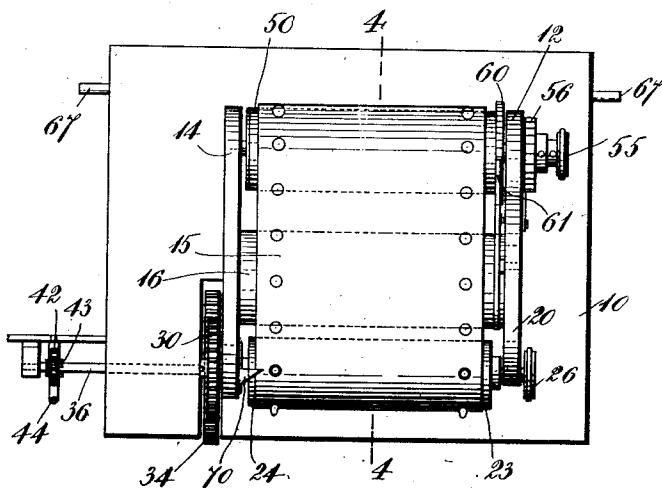


FIG. 1.

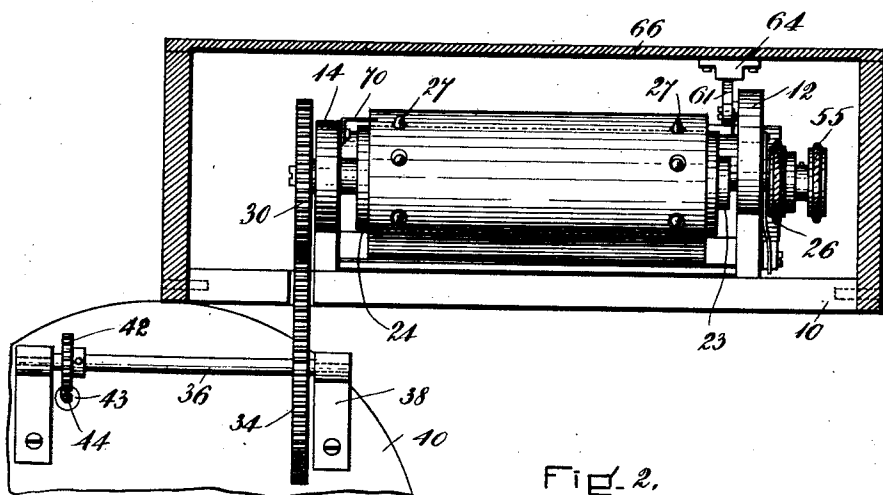


FIG. 2.

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 By Charles F. Howe,
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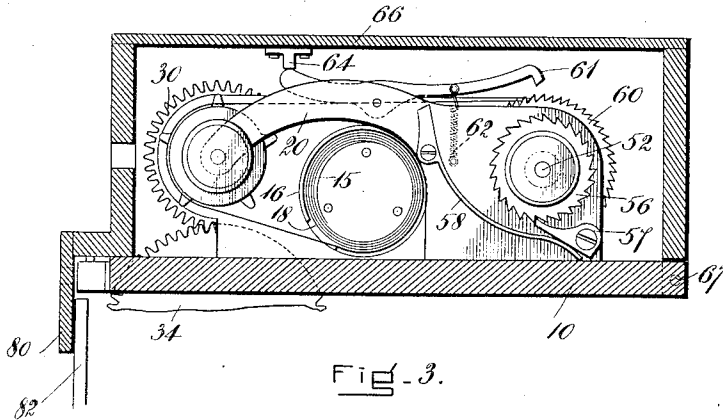


Fig-3.

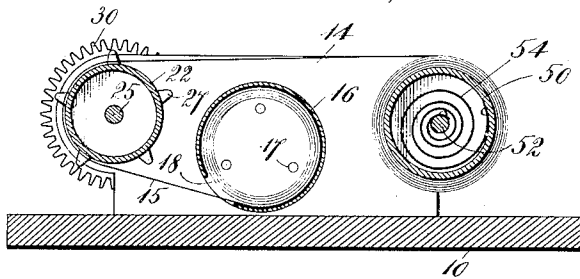


Fig-4.

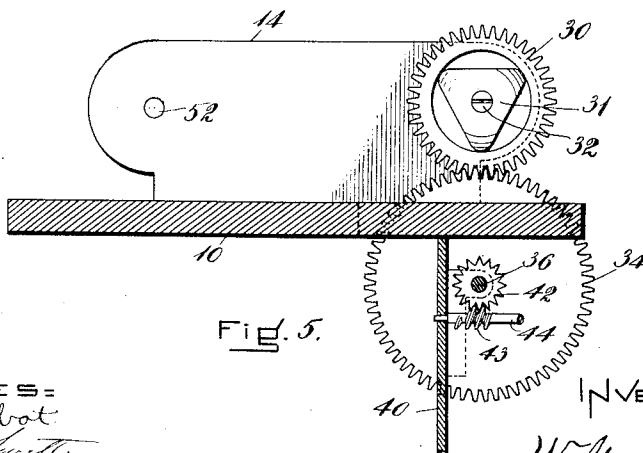


Fig. 5.

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3 SHEETS—SHEET 3.

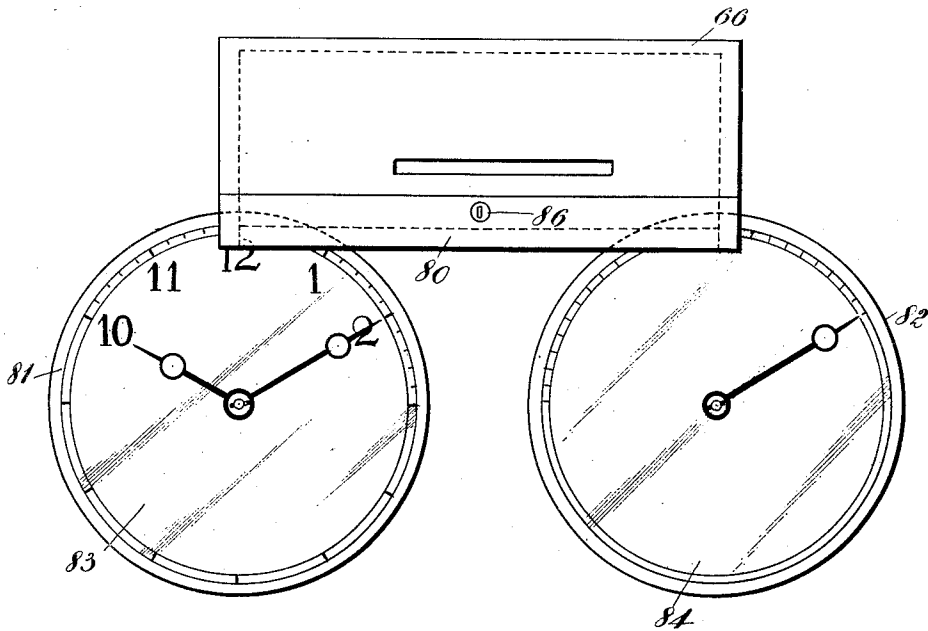


Fig. 6

WITNESSES:
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UNITED STATES PATENT OFFICE.

WALTER K. MENNS, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO CHELSEA CLOCK COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SPEED INDICATING AND RECORDING DEVICE.

1,037,952.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed February 23, 1912. Serial No. 679,277.

To all whom it may concern:

Be it known that I, WALTER K. MENNS, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Speed Indicating and Recording Devices, of which the following is a specification.

This invention relates to speed indicating and recording devices, and more particularly to the mechanism by which a web of paper is moved past a marking implement, whereby a record is produced upon the paper, and is an improvement upon the device shown in my Patent No. 997,075 dated July 4, 1911. The device shown in said patent comprises a feed regulating roll driven by a clock mechanism to regulate the feed of a record-receiving sheet past a marking implement, and a take-up roll for winding up the sheet as it is fed by the feed roll. It has been found in practice that if the spring in the take-up roll is strong enough to properly take up the web of paper its effect on a delicate clock mechanism is such as to accelerate the latter. In order to overcome this difficulty it has been common practice to provide a heavy spring clock mechanism which is adapted to overcome the effect of the take-up spring. This type of clock mechanism is not adapted to keep accurate time.

It is, therefore, one object of the present invention to overcome this difficulty experienced with delicate clock mechanisms, by providing a driving connection between the feed regulating roll and the clock mechanism which will not be affected by the take-up mechanism.

Accordingly, one feature of the invention contemplates the provision of a worm gear drive between the clock mechanism and the feed roll, whereby any movement of the feed-roll or force exerted thereby due to the take-up mechanism, will have no effect to rotate the worm shaft, and consequently no effect on the time-keeping qualities of the clock.

A further feature of the invention contemplates the provision of a paper feeding mechanism of the character described, which is adapted to be readily manipulated when a roll of paper is to be inserted or removed from the device.

A further feature of the invention contemplates the provision of means for pre-

venting tampering with the time mechanism or with the speed indicating mechanism. To this end means are provided for locking the faces of the clock and speed indicator so that they cannot be opened unless the required key is at hand.

I will describe my invention in the following specification and point out the novel features thereof in the appended claims.

In the accompanying drawings, Figure 1 is a plan view of the device with the inclosing case removed; Fig. 2 is sectional front elevation of the same on an enlarged scale; Fig. 3 is a sectional end elevation of the same, as viewed from the right hand side of Fig. 1; Fig. 4 is a central vertical section taken on the line 4-4 in Fig. 1; Fig. 5 is a sectional end elevation as viewed from the left hand side of Fig. 1; and Fig. 6 is a front elevation of the clock and indicator faces together with the means for locking the same in closed position.

As illustrated in the drawings, the device comprises a base 10 and two end standards 12 and 14 mounted thereon. A web of paper 15, upon which the record is made, is fed from a magazine or tube 16 extending between the standards 12 and 14, said tube provided with a closed end which is attached to the standard 14 by means of screws 17. The tube 16 is provided with a slot 18, through which the paper passes as it is fed to receive the record. With this construction it is not necessary to have the paper mounted upon a reel or other support, but the roll may be slipped into the tube and fed therefrom by the time controlled mechanism which will be hereinafter described. The standard 12 is cut away to provide an overhanging arm 20 and allow free access to the tube from the right hand side, as is clearly shown in Fig. 3. Thus the rolled up web of paper can be inserted into the tube under the arm 20.

The paper 15 passes from the slotted tube or magazine 16 over a feed regulating roll or sprocket 22. This sprocket comprises a hollow cylinder mounted on collars 23, 24, which are pinned to shaft 25, journaled to rotate in the standard 14 and the arm 20. A knurled knob 26 is secured to the shaft 25, whereby the feed roll may be turned manually to adjust the web of paper with relation to the marking implement which produces the record. Two series of pins 27 pro-

ject radially from the cylinder 22 near its edges, and they are adapted to enter corresponding holes formed in the web of paper. In the present instance there are five pins in each series, and the feed roll is designed to complete one revolution each hour, so that the distance between two consecutive pins represents an interval of twelve minutes, although any other intervals may be employed.

A driving gear 30 is mounted on shaft 25 so that it may be turned thereon, but is held in driving relation therewith by a triangular spring 31, the latter being held against the outer flat face of the gear by a screw 32. By adjusting the screw 32, the frictional engagement of the spring with the gear may be varied as desired. This construction is fully illustrated and explained in my said patent, and need not be more fully described herein. The driving gear 30 meshes with a larger gear 34, mounted on a shaft 36 journaled in bearings 38, the latter being mounted on a plate 40 of the clock mechanism. A worm wheel 42 is mounted on the shaft 36 and engages worm 43 on a shaft 44 which is driven by the clock mechanism. The pitch of the worm 43 is such that any rotary force applied to the wheel 42 due to the take-up mechanism, to be hereinafter described, will have no effect on the rotary movement of the worm shaft 44, and consequently the take-up mechanism will have no effect on the time keeping qualities of the clock.

After the paper leaves the sprocket or feed regulating roll it passes to a take-up. This comprises a drum or barrel 50, which is rotatably mounted on a shaft 52 journaled to rotate in the standards 12 and 14. The end of the web of paper 15 may be conveniently attached to the drum by means of a hook, as shown in my said patent, or in any other suitable manner, so that the drum during rotation will wind up the paper. A long coiled spring 54 is connected at one end to the interior of the drum 50, and its other end is connected to the shaft 52. A knurled knob 55 is provided at one end of the shaft 52 by which the latter may be rotated to wind up the spring 54. A ratchet wheel 56 is fast on the shaft 52 adjacent to the outer face of the standard 12, and cooperates with a locking pawl 57, which is pressed into engagement with the teeth of the ratchet by a spring 58, mounted on the outer face of said standard. The pawl 57 prevents the shaft 52 from turning under the influence of the wound-up spring 54.

In order to prevent the rotation of the drum 50 by the spring 54, except when the time-controlled feed roll is in operation, a ratchet 60 is secured to the drum 50 adjacent the inner face of the arm 20. A spring 62 is connected at one end to the pawl 61, and its other end is connected to the

standard 12. This spring tends to keep the pawl 61 in engagement with the teeth of the ratchet 60 to prevent the take-up spring 54 from running down when the web of paper 15 is being attached to or removed therefrom. The heel of the pawl 61 is adapted to be engaged by a lug or projection 64 depending from the under side of a cover or casing 66. This cover is hinged at 67 to the base plate 10, so that when the cover is in its closed position, the projection 64 engages the pawl 61 and frees it from the ratchet 60, as is shown in Fig. 3. The take-up is thus automatically placed in condition to take up the paper 15 as it is fed by the feed regulating roll or sprocket 22. When the cover 66 is raised, the projection 64 is disengaged from the pawl 61, and the latter is automatically drawn into engagement with the teeth of the ratchet 60 to prevent unwinding or running down of the take-up drum. When the parts are in this position the paper web 15 can be removed and renewed, and the web can be adjusted to have any desired point come opposite the index 70, the latter being mounted on the inner face of the standard 14 and projecting across the path of travel of the paper. When the paper web has been adjusted, the cover 66 is closed and the take-up is then in condition to take up the paper as it is fed by the feed regulating roll. With the construction above set forth and the location of the paper magazine between the feed regulating and take up rolls, the paper web can be more readily inserted and removed from the rolls than with the construction shown in my said patent. One reason for this is that in the present invention the feed regulating roll is always in operative driving relation with the clock mechanism.

In order to prevent tampering with the clock mechanism or with the speed indicator, I provide means for preventing unauthorized access to the faces of the clock and indicator. A depending ledge 80 is provided at the front lower edge of the cover 66 adapted to overlies the bezels 81, 82, of the closure for the clock and speed indicator faces 83, 84, respectively, and to be close to or in contact with said bezels when the cover is in closed position, as shown in the Fig. 6. The cover is provided with a lock 86, which should be of a good quality not easily picked whereby the cover 66 can be locked in closed position. As the bezels 81 and 82 are secured to their respective faces by means of screw threads, it will be seen that any attempted unscrewing of said bezels will bring them into intimate contact with the inner face of the ledge 80, by which further movement of the bezels will be arrested.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be

made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of the construction shown and described, but

What I do claim:—

1. In a device of the character described, the combination of a time-controlled feed regulating mechanism adapted to regulate the feeding of a web of paper, an independent take-up for taking up the web as it is fed by the feed regulating mechanism, a closure for covering said feeding mechanism and take-up, and means for automatically locking said take-up against operation when the closure is opened, said take-up being automatically freed when said closure is closed.

2. In a device of the character described, the combination of a feed-regulating roll adapted to regulate the feeding of a web of paper, a clock mechanism, a spring-actuated take-up roll driven independently of the clock mechanism for taking up the web as it is fed by the feed-regulating roll, a magazine located between said rolls adapted to hold a rolled web of paper, said magazine being provided with a slot through which the paper is adapted to pass to the feed-regulating roll, and connections between said clock mechanism and said feed-regulating roll whereby the take-up roll is prevented from affecting the time-keeping qualities of the clock mechanism.

3. In a device of the character described, the combination with a clock mechanism, of a feed regulating roll adapted to regulate the feeding of a web of paper, a take-up for taking up the web as it is fed by the feed regulating roll, and connections between the clock mechanism and the feed regulating roll whereby the take up mechanism is prevented from accelerating the clock mechanism.

4. In a device of the character described, the combination of a time-controlled worm, a worm wheel engaging said worm, a feed-

regulating roll operatively connected to said worm wheel arranged to regulate the feeding of a web of paper, and a take-up roll driven by a source of power other than the time mechanism adapted to take up the paper as it is fed by the feed-regulating roll.

5. In a device of the character described, the combination of a time-controlled feed regulating roll adapted to regulate the feeding of a web of paper, a take-up roll for automatically taking up the paper as it is fed by the feed roll, a casing for said rolls having a closure, and means for automatically locking said take-up roll when said closure is opened, said take-up being automatically released from said locking means when the closure is moved into closed position.

6. The combination with an indicating device having a detachable closure, of a casing for a recording device having means extending into the path of said closure to prevent detachment of the latter, and means for locking said casing against movement.

7. The combination with an instrument having a closure provided with a bezel, of an overhanging member adapted to engage said bezel upon attempted removal from said instrument, and means for locking said member in place to prevent the detachment of said bezel.

8. The combination with an instrument having a face provided with a bezel screwed in place, a recording device operatively connected to said instrument, a casing inclosing said recording device and having a hinged closure provided with a portion projecting in front of said bezel and arranged to be engaged thereby upon attempted unscrewing of the bezel, and means for locking the closure in closed position.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WALTER K. MENNS.

Witnesses:

CHAS. F. HOWE,

GEORGE CLARENDON HODGES.