

April 2, 1929.

L. ROY ET AL

1,707,356

RECORDER

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2 Sheets-Sheet 1

Fig. 1.

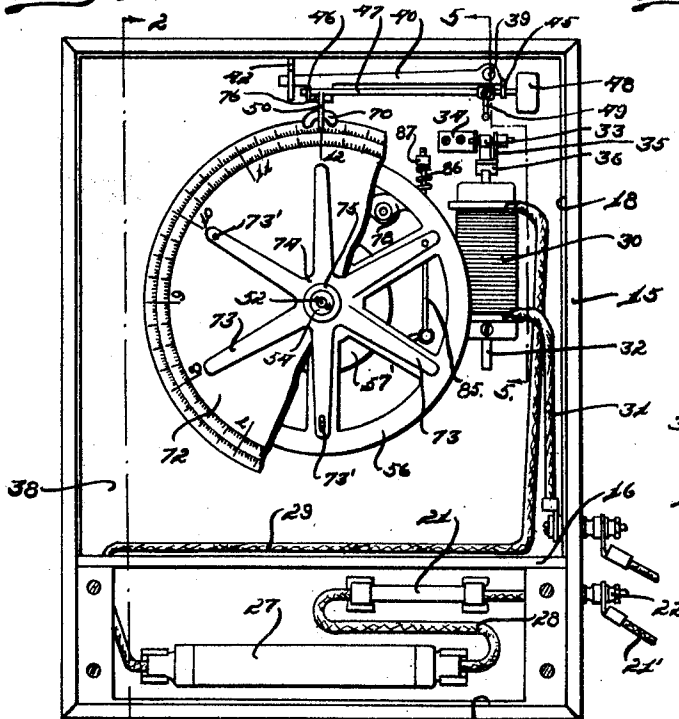


Fig. 2.

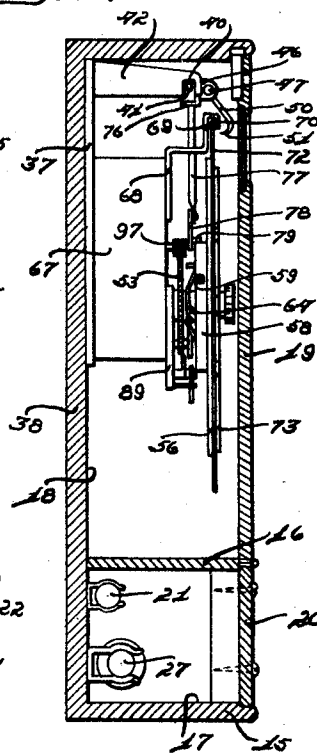
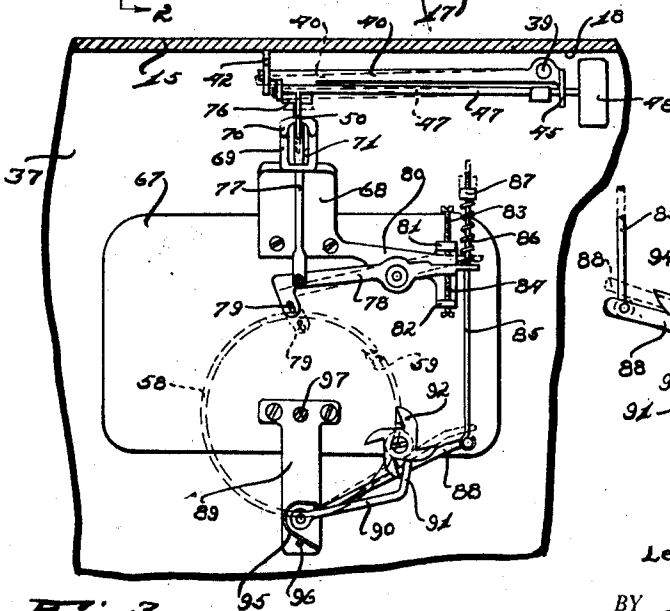


Fig. 4.

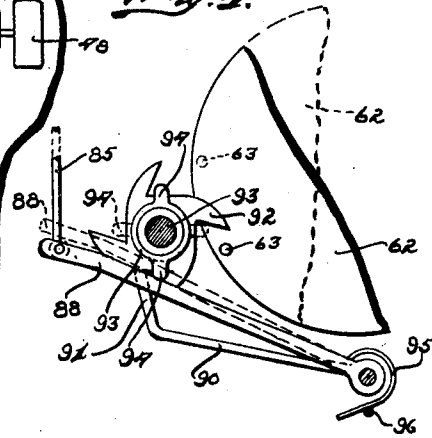


Fig. 5.

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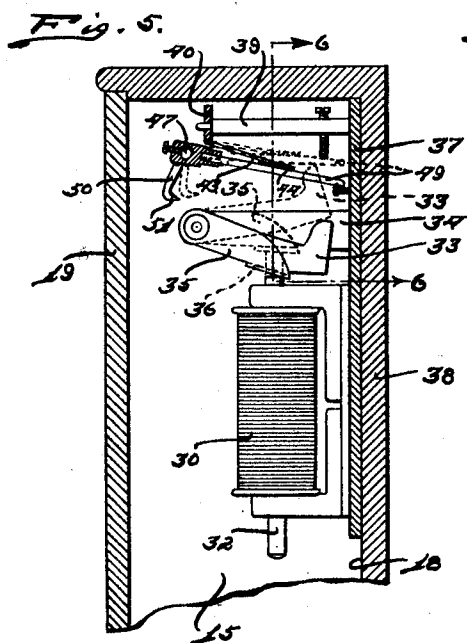
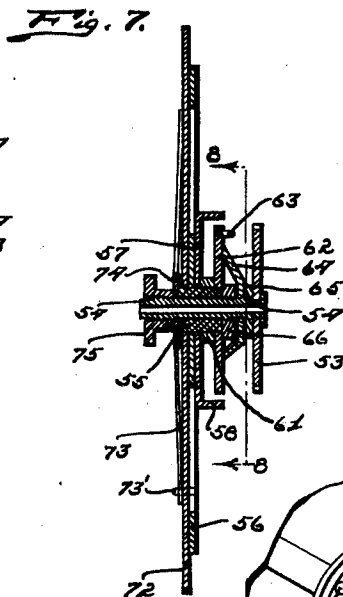
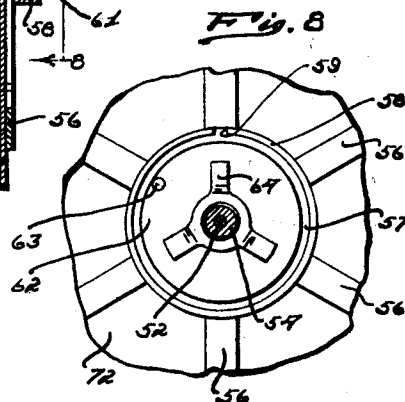
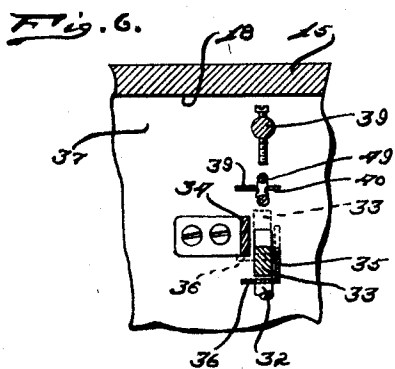
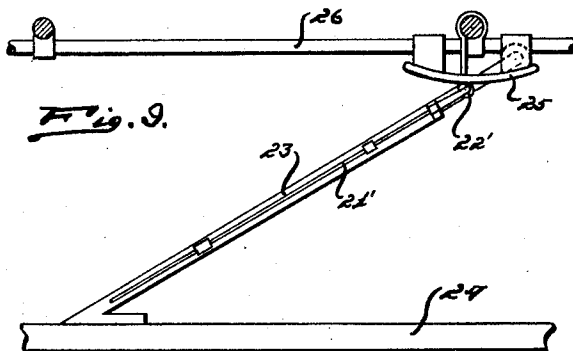
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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RECORDER.

Application filed September 29, 1927. Serial No. 222,710.

Our invention relates to a new and useful improvement in a recorder adapted for mounting on vehicles travelling on regular routes to automatically record the time of passing a specified point on the route by the vehicle, and is a development of the invention of Martin H. Lizyness and Charles A. Jennings filed May 25, 1927, Serial No. 194151.

The principal features and objects of the present invention is to provide in a recording device of this class mechanism of which the dial and punching apparatus will operate for time preceding midnight and for time following midnight, so that there is a mechanism for punching A. M. time and P. M. time on the same dial, the mechanism automatically adjusting itself, depending upon the actual time. This is quite desirable inasmuch as many of the "runs" taken out by the crew begin before midnight and end after midnight, thus necessitating an adjustment of the mechanism or a changing of the dial were not this automatic adjusting feature present.

Another feature of the invention is the provision of mechanism for forcing the punch through the dial so as to perforate it, and at the same time, permitting the movement of the punch to inoperative or non-penetrating position, even though the actuating mechanism for driving the punch member through the dial should remain in its last operative position. This is a desirable feature in that should the vehicle, particularly when the device is used with an electric car, stop at a point where the contact on the trolley would engage the contact member communicating to the operating coil, the clock-work for rotating the dial would either continue to operate and thus tear the dial because of the penetration of the punch therethrough, or the punch projecting through the dial would stop the clock mechanism.

Another object of the invention is the provision of a mechanism of this class which will be compact so that it may be mounted in a minimum amount of space.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawings

which form a part of this specification and in which,

Fig. 1 is a front elevational view of the invention with parts broken away.

Fig. 2 is a sectional view taken on substantially line 2—2 of Fig. 1.

Fig. 3 is an enlarged front elevational view of the invention in fragment with parts removed.

Fig. 4 is an enlarged fragmentary rear elevational view showing the trip used in the invention.

Fig. 5 is a fragmentary sectional view taken on substantially line 5—5 of Fig. 1.

Fig. 6 is a fragmentary sectional view taken on substantially line 6—6 of Fig. 5.

Fig. 7 is a central vertical sectional view through the dial holding wheel and associated parts.

Fig. 8 is a fragmentary view taken on line 8—8 of Fig. 7.

Fig. 9 is a side elevational view illustrating the contact connection between the mechanism and the trolley wire.

In the drawings we have shown the invention encased in a housing 15 having a partition 16 formed therein to provide a lower compartment 17 and an upper compartment 18, the upper compartment 18 being closed by a suitable door 19 and the lower compartment being closed by a suitable door 20. Mounted in the lower compartment 17 is a fuse 21 connected to the terminal 22 which connects to the wire 21', this wire connecting to a contact 22' carried by the trolley pole 23 of the vehicle 24 and adapted to ride over a shoe 25 which may be mounted at various points on the trolley wire 26. A transformer 27 is connected by the wire 28 to the fuse 21 and by the wire 29 to the coil 30 which is mounted in the compartment 17, this coil 30 being also connected by the wire 31 to the other lead wire from which the power is derived. The core 32 in the coil 30 is slidably connected and when this coil is energized this core will move upwardly to force the hammer 33 upwardly to pass above the bracket 34 upon which it is hingedly connected at its outer end. A guard strip 35 is also hingedly connected at the outer end of the bracket 34 and provided with an angularly turned portion 36 which, when moved upwardly, en-

gages, as shown in dotted lines in Fig. 6, the undersurface of the bracket 34. When this core 32 moves upwardly the movement is a rapid one so that the hammer 33 swings into the position shown in dotted lines in Fig. 5, the upper end of the core 32 engaging the angularly turned portion 36. Consequently, it is seen that if the contact 22' should be held on the shoe 25, the hammer, after being driven upwardly into the position shown in dotted lines in Fig. 5, would fall back to rest upon the angularly turned portion 36. Projecting outwardly from a plate 37 which is mounted on the rear wall 38 of the container and which serves as a support for the mechanism is a stud or bolt 39 projected through a plate 40 so as to pivotally mount the plate in position. The plate 40 engages in a slot 41 formed in the bracket 42 which projects outwardly from the plate 37. Secured to the plate 40 adjacent its position of attachment to the bolt 39, is a spring 43 having the angularly turned portion 44. Formed on the plate 40 are lugs 45 and 46 in which is rotatably mounted the rod 47 carrying at one end a heavy disc 48 which serves as a counterweight. Mounted on this rod 47 and projecting rearwardly is a rod 49 adapted to engage the angularly turned portion 44 of the spring 43 when the rod 47 is rocked. Projecting downwardly and outwardly from the rod 47 is a wire member 50 having its end angularly turned to form a perforating finger 51.

Mounted on the plate 37 is a suitable set of clock works adapted to rotate the shaft 52. A disc 53 having teeth formed on its periphery to provide a gear is fixedly mounted on the hub 54, this hub projecting through the hub 55 upon which is fixedly mounted a wheel 56. Fixedly mounted on the hub 55 is a disc 57 having an outwardly projecting flange 58 to provide a cup-shaped member, a slot 59 being formed in this flange. A spacing member 61 serves to space the disc 57 from the disc 62 which is fixedly mounted on the hub 55 and provided with an outwardly projecting pin 63. Positioned between the gear 53 and the disc 62 is a spring member having the angularly turned arm 64 adapted to engage the face of the disc 62 so that the disc 62, as well as the cup-shaped member 57 and the wheel 56, normally rotate with the hub 54 which is fixedly mounted on the shaft 52. Nuts 65 and 66 serve to bind the spring members 64 on the hub 54. The clock works for driving the shaft 52 are preferably enclosed in a casing 67, and projecting outwardly from this casing 67 is a bracket 68 having the vertically directed portion 69 and the doubled over portion 70, this vertically directed portion 69 being provided with the slot 71, as shown in Fig. 3.

In use the invention is used with a dial 72 formed from paper or other easily perforated

material upon which are graduations and numbers to indicate the time. Projecting outwardly from the spokes of the wheel 56 are pins 73' which project through openings formed in the dial 72 and through openings formed in the spring arm 73 radiating outwardly from the hub 74 which is positioned over the hub 54 and secured thereon by means of the nut 75. As shown in Fig. 7 this dial 72 is of greater diameter than the wheel 56 and projects beyond the periphery thereof, the projecting portion engaging between the vertically extended portion 69 of the bracket 68 and the doubled over portion 70, thus forming a sort of frame to frame the dial at that portion where the pointer or perforating member 51 is adapted to strike. This is considered an important feature of the invention as it retains the dial 72 in a rigid resisting form when the pointer 51 strikes for perforating purposes.

When the contact 22' engages the shoe 25, the coil 30 being energized will force its core 32 upwardly rapidly so as to drive the striking member or hammer 33 into the position shown in dotted lines in Fig. 5, thus forcing the pointer or perforating member 51 into the position shown in dotted lines so as to drive it through the dial 72. This dial will be so positioned on the shaft 52 that its graduations will correspond with the time of day, the shaft 52 rotating in a counter-clockwise direction.

Projecting rearwardly of the plate 40 is a bracket 76, secured to which is the depending rod 77 which extends through the bracket 68 and is pivotally connected to the L-shaped arm 78, this arm carrying the outwardly projected pin 79 and being pivotally connected, intermediate its ends, on a laterally projecting portion 80 of the bracket 68, this laterally projecting portion having a pair of spaced outwardly extending lugs 81 and 82, in each of which is threaded a screw 83 and 84 respectively. Projecting through the plain end of the arm 78 is a rod 85, upon which is positioned in embracing relation the spring 86 adapted to engage at one end the arm 78 and at the other end the nut 87 threaded on the rod 85. The lower end of the rod 85 is connected to the arm 88 which is pivotally connected to the depending bracket 89 mounted on the face of the clock casing. The construction is such that upon a downward movement of the arm 88 on its pivot the L-shaped arm 78 is moved upwardly so as to move the plate 40 upwardly and carry the pointer or perforating member 51 upwardly.

Pivotally mounted on the depending arm 89 is the arm 90 having the upwardly projecting portion 91 adapted to engage the teeth 92 of the detent forming member, this detent forming member being provided with a hub 93, projecting outwardly from which are bosses 94 to provide a cam arrangement,

this hub being rotatably mounted on the screw or shaft 93 which is threaded into the clock casing or frame. The arm 88 is so arranged as to be engaged by the bosses 94 when the hub 93 is rotated. A spring 95 is mounted on the arm 90 and doubled upon itself to engage the pin 96 projecting outwardly from the depending arm 89 so as to normally retain the arm 90 in elevated position to engage the teeth 92. When the gear forming disc 53 is in position it meshes with the gear 97 driven by the clock works so that the gear or disc 53 is rotated when the clock is going. These clock works are not shown in detail as one skilled in the art could readily construct a sufficient set of clock works to perform the function desired.

As the gear 53 rotates the disc 57 also rotates and the pin 63 will, in its rotation, be brought into engagement with the teeth 92, thus causing the hub 93 to rotate and rock the arm 90 on its mountings because of its engagement with the teeth 92. When the hub 93 has been rotated sufficiently to bring the angularly turned end 91 of the arm 90 to the peak of the teeth, the arm 90 will, in response to the pressure of the spring 95, snap downwardly between the teeth into the position shown in Fig. 3. Prior to snapping down into this position, the bosses 94 will have moved the arm 88, against the tension of the spring 86, downwardly into the position shown in full lines in Fig. 4, thus having a tendency to rock the arm 78 upwardly into the position shown in full lines in Fig. 3. When the disc 57 has rotated so as to bring the slot 59 into registration with the pin 79 the arm 78 may then rock into the position shown in full lines in Fig. 3, thus moving the perforating member or pointer upwardly.

When no tension is placed on the spring 86 and the slot 59 is brought into registration with the pin 79, the arm 78 will rock by gravity so as to bring the pin 79 beneath the lower surface of the flange 58.

It will be noted that the dial 72 is provided with two sets of graduations arranged concentrically of each other, one of these sets indicating time before midnight, and the other set being intended to indicate time subsequent to midnight. The arrangement of the dial on the wheel which carries it and the location of the discs 57 and 62 relatively to the location of the wheel 53 is such that the slot 59 will be brought into registration with the pin 79 promptly at midnight, thus permitting the movement of the pointer upwardly so as to cause it to perforate the outwardly arranged row of graduations. In this way, the device automatically adjusts itself to indicate time before midnight and time after midnight.

With the mechanism constructed and described it is apparent that the advantages sought for and indicated above are obtained,

the counterweight 48 serving to afford such momentum to carry, subsequent to the striking of the hammer member 33 as indicated, the pointer 51 in a rocking motion to penetrate the dial 72.

It is believed apparent that if desired the pointer might be inked to mark instead of perforating without particularly changing the structure herein set out.

While we have illustrated and described the preferred form of our invention, we do not wish to limit ourselves to the precise details of structure shown, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. A recording instrument of the class described, comprising: a rotatable dial-bearing member; a dial on said member rotatable therewith; an indicating member for indicating on the face of said dial; a striking member for moving said indicating member to operative position; and electrically operated means for actuating said striker, said striker being adapted for movement to inoperative position upon retention of said actuating means in actuating position.

2. A recording instrument of the class described, comprising: a rotatable dial-bearing member; a dial carried by said member; an indicating member for engaging said dial and indicating thereon the position of engagement; means for forcing said engagement member into engagement with said dial; means for moving said engagement member out of engaging position; and means for actuating said forcing means and moving the same to operative position, said forcing means, upon retention of said actuating means in actuating position, being non-interfering with said moving means for moving said engagement member into non-engaging position.

3. A recording instrument of the class described, comprising: a rotatable dial-bearing member; a dial carried by said member; an indicating member for engaging said dial and indicating thereon the position of engagement; means for forcing said engagement member into engagement with said dial; means for moving said engagement member out of engaging position; means for actuating said forcing means, and moving the same to operative position, said forcing means, upon retention of said actuating means in actuating position, being non-interfering with said moving means for moving said engagement member into non-engaging position; and means for moving said engagement member relatively inwardly and outwardly of said dial dependent upon the rotation of said rotatable member.

4. A device of the class described, comprising:

ing: a rotatable dial-bearing member; a dial mounted on said member; a rockingly mounted indicating member for engaging said dial at predetermined periods; means for forcing 5 said engagement member against said dial; actuating means for actuating said forcing means; means for moving said engagement member out of engagement with said dial subsequent to the actuation of said forcing 10 means, the retention of said forcing means in forcing position being non-interfering with the functioning of said moving means; means for moving said engagement member radially inwardly and outwardly of said dial depend- 15 ent upon the rotation of said rotatable member; and means for retaining said engagement member in either position through a predetermined period of rotation of said rotatable member.

20 5. A device of the class described, comprising: a rotatable dial-bearing member; a dial mounted on said member; a rockingly mounted indicating member for engaging said dial at predetermined periods; means for forcing 25 said engagement member against said dial; actuating means for actuating said forcing means; means for moving said engagement member out of engagement with said dial subsequent to the actuation of said forcing 30 means, the retention of said forcing means in forcing position being non-interfering with the functioning of said moving means; means for moving said engagement member radially inwardly and outwardly of said dial depend- 35 ent upon the rotation of said rotatable mem-

ber; means for retaining said engagement member in either position through a predetermined period of rotation of said rotatable member; and means positioned at opposite sides of said dial at the point of engagement 40 with said engagement member for reinforcing the same.

6. A device of the class described, comprising: a rotatable dial-bearing member; a dial 45 mounted on said member; a rockingly mounted indicating member for engaging said dial at predetermined periods; means for forcing said engagement member against said dial; actuating means for actuating said forcing 50 means; means for moving said engagement member out of engagement with said dial subsequent to the actuation of said forcing means, the retention of said forcing means in forcing position being non-interfering 55 with the functioning of said moving means; means for moving said engagement member radially inwardly and outwardly of said dial dependent upon the rotation of said rotatable member; means for retaining said engagement 60 member in either position through a predetermined period of rotation of said rotatable member; and trip mechanism for controlling the radial movement of said engagement member.

In testimony whereof we have signed the 65 foregoing specification.

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