

C. F. LITTLEJOHN.
RECORDING DEVICE FOR FARE REGISTERS.
APPLICATION FILED JAN. 10, 1906.

1,058,312.

Patented Apr. 8, 1913.

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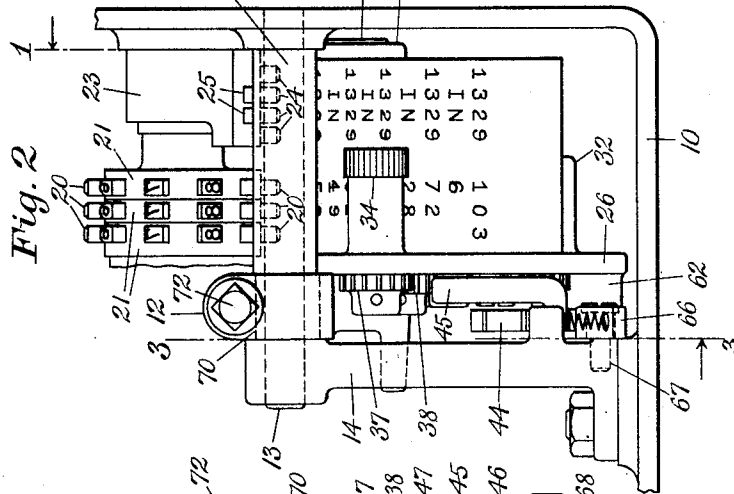
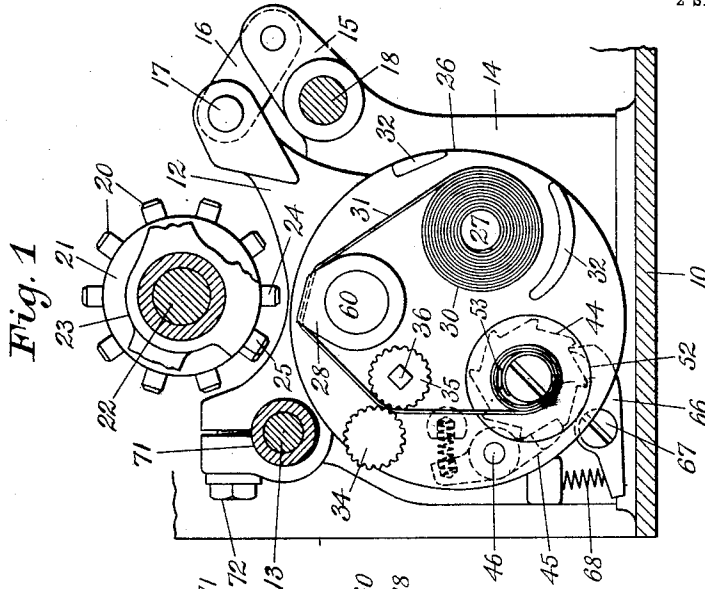
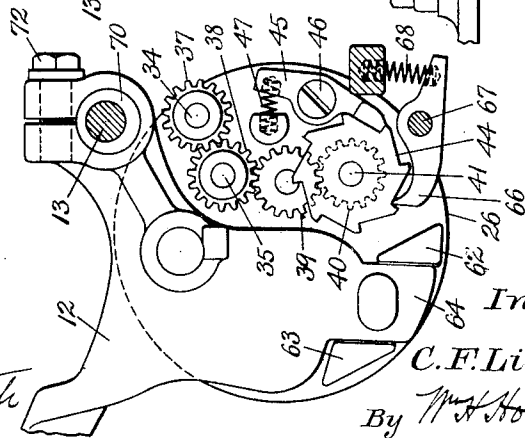


Fig. 3



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2 SHEETS—SHEET 2.

Fig. 4

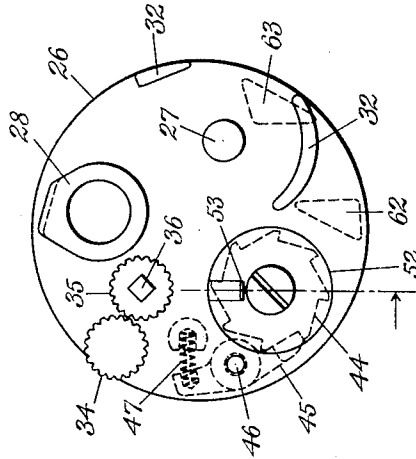
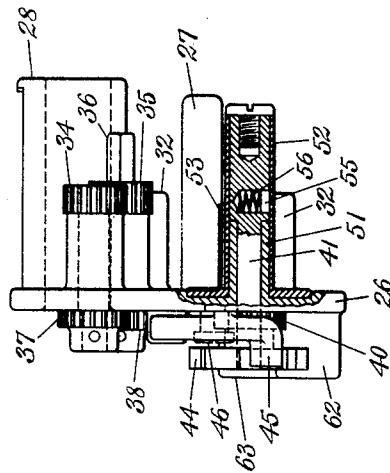


Fig. 5



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UNITED STATES PATENT OFFICE.

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RECORDING DEVICE FOR FARE-REGISTERS.

1,058,312.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed January 10, 1906. Serial No. 295,331.

To all whom it may concern:

Be it known that I, CHARLES F. LITTLEJOHN, a citizen of the United States, and resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Recording Devices for Fare-Registers, of which the following is a full, clear, and exact specification.

This invention relates to improved means for mounting, operating, inspecting and renewing recording strips in fare registers and similar registering machines.

Figure 1 of the drawings is an end view in approximately full sized scale, showing the recording device with its record strip mounted in operative position upon the carrier arm or other movable device of a fare register. Fig. 2 is a side view projected from the left hand side of Fig. 1. Fig. 3 is an end view projecting from the left hand side of Fig. 2, showing the end of the apparatus opposite that which is shown in Fig. 1. Fig. 4 is an end view of the removable carrier alone. Fig. 5 is a side view projected from Fig. 4.

In fare registering machines, and many other machines of this class, it is found desirable to preserve a visible record of the daily transactions of the machine; and to do this by the regular operation of the machine itself, independently of the conscious or voluntary operation of the conductor; and as a rule, concealed from his observation; and at the same time to have these record strips easily accessible to the inspector or other proper official, so that he may easily and quickly remove the record for the previous day, or other period, and substitute a new record strip for the succeeding day or other desired period.

In a general way, the present invention may be regarded as an improvement upon the recording device shown and described in U. S. Patent #567,315 of Sept. 8, 1896. In the machine of that patent the record strip was wrapped around the circumference of a drum, which drum with its strip was accessible and removable through a door in the side of the fare register. By the present invention I am enabled to employ a very much longer record strip in the same space occupied by the drum, such a longer record strip being now found to be desirable in many cases of the extended lines of electric cars,

in which it is desirable to collect and record the fares according to the zone system, and also in the case of short lines on which numerous trips are made. By the present invention a record strip of any length that may be desired in practical service may be used, fed forward and rewound, and yet be easily removable for inspection, replacement, and renewal, through a door similar to that shown in the aforesaid patent, which door may be locked against all excepting the inspector or other authorized official.

In the accompanying drawings, a portion of the framing or case 10 of the fare register is shown. The recording strip holder is carried upon a carrier arm or printer arm 12, which is pivotally mounted upon the stud 13, extending between the framing 10 and a bracket 14. The arm is swung upon the pivot 13 by means of a crank or cam, or any other convenient member 15, which is connected by means of the link 16 with the arm 12 at 17. The crank or cam 15 is appurtenant to the shaft 18 which is connected with the other mechanism of the register so as to be turned at the proper time and to the proper extent to lift the arm 12 and thereby carry the record strip against the impressing type 20 which are appurtenant to the type wheels 21 mounted to turn with or upon the shaft 22, and also against the type 24 and 25, appurtenant to the direction indicating arm 23. These type wheels and the arm 23 are or may be similar in construction, arrangement and mode of operation to the corresponding type wheels and arm shown and described in the above mentioned patent, and which are employed to impress upon the record strip the number of fares registered in each trip and the direction of that trip, with the number of the car or register. Obviously, however, these type wheels may be arranged to carry and print the numbers corresponding to the face of the totalizer, showing the total number of fares registered during an extended period.

The removable strip holder which is shown detached in Figs. 4 and 5 and shown in operative position in the machine in Figs. 1, 2 and 3, may be made in various ways, according to the environment in which it is to be used. As herein shown it consists of a plate 26, provided with suitable bosses for carrying the necessary shafts and spindles. The stud 27 is fixed at one end in the plate

26, and its projections or overhanging portion is adapted to receive the coil or roll 30, which consists of a long strip 31 of paper or other suitable material. The plate 26 is preferably provided with guard flanges 32 designed to partly encircle the roll 30 and prevent it from unwinding or otherwise becoming entangled. From the roll 30 the strip 31 passes over the platen 28, which extends outwardly from the side of the plate 26, beneath the type wheels 21 and the direction arm 23. The top surface of the platen is shaped and disposed so as to carry the record strip evenly against the faces of the type when the arm 12 is raised during the printing or recording operation.

As a means for feeding the strip forward a uniform lineal distance after each impression, the rolls 34 and 35 are provided, the surfaces of these rolls being preferably somewhat roughened in order to feed the paper through positively. These rolls preferably engage with the strip at about the center of its width. The outer end of one of these rolls is preferably provided with a square stem 36 to receive a key by means of which the strip may be fed forward independently of the registering machine, this being found convenient in taking off and putting on the strips. The rolls 34 and 35 are provided with shafts or stems which extend through suitable bosses or bearings of the plate 26 to the rearward side of that plate, where they are provided with intermeshing gears 37 and 38, one of which is connected by an idler gear 39 with a driving gear 40 on the shaft 41, that shaft having also fixed upon it a ratchet wheel 44, the teeth of which are engaged by a detent pawl 45 mounted by means of the pivot screw 46 on the plate 26, a spring 47 being employed to hold the detent in contact with the ratchet, and thus prevent the ratchet and its associated train of gears from being moved inadvertently.

The record strip as it is fed forward by the feed rolls 34 and 35 is rewound into a compact roll, and in order to compensate for the irregularity in the takeup that would naturally result from the increasing diameter of the roll, a friction device is provided which slips backwardly as the roll increases in size. The shaft 41 is extended through a suitably projecting stud or boss 51 on the outside of which is mounted the shell-like spool 52 provided with a clip 53, under which the leading end of each new record strip is passed in feeding it to place, in order to attach it to the rewinding spool. The shaft 41 is enlarged at its outer end to the size of the boss 51, so that it practically fits the interior of the outer end of the spool 52, and forms a continuation of the bearing surface of the boss or stud 51. This enlarged portion of the shaft is provided with a frictional driving block 55 and spring 56 seated

in a transverse hole in the shaft. The end of the plug thus bears with spring pressure against the interior of the spool, and drives it forward with friction, which is sufficient to wind up the leading end of the record strip, while permitting the spool 41 to travel forward slower than the shaft 41 as the roll increases in size. The overhanging construction of the studs or bosses 27 and 51 and the shaft 41 allows the record rolls to be freely and quickly slipped on and off over the ends of these members.

As a convenient way of locating and supporting the removable holder device upon the carrier arm 12, the latter is provided with a stud 60, which extends through a suitable boss of the plate 26. The platen 28 is made large enough so that it can be bored to receive the stud 60, which in this way is enabled to support the holder at a point closely adjacent to the surface of the platen, where the printing pressure is applied. On account of the fact that the stud 60 and its seat in the platen is most conveniently made cylindrical in form, other means are provided for preventing the holder from turning relative to the stud. The back of the plate 26 is provided with two lugs 62 and 63 between which extends a projection 64 of the arm 12. Thus the holder and in fact a number of different holders in succession may be readily applied in perfect register upon the arm; and while in position thereon is carried by the swinging movement of the arm as though integral therewith.

In order to turn the ratchet 44 and its associated train of gearing so as to feed the strip forward, and also rewind it upon the spool 52, at each recording operation, the advancing pawl 66 is pivotally mounted upon the stud 67 appurtenant to the side of the bracket 14, the pawl being held into engagement with the ratchet by means of the spring 68. As the arm is swung upwardly upon the pivot 13 from the position shown in Fig. 1, the pawl 66 draws backwardly over the teeth of the ratchet 44 which during this time is held by the detent 45, so as to hold the train of gearing and the record strip 31 still during the time that it is being pressed up against the type wheel. After the impression is taken, and as the arm 12 swings downwardly back toward the position shown in Fig. 1, the detent 66 engages with a tooth of the ratchet 44 and pushes it forward, thus advancing the train of gears and consequently feeding and rewinding the strip to a predetermined extent sufficient to separate the successive impressions far enough to make them legible.

In order to provide a simple and convenient method of adjusting the depth or hardness of the impression, the arm 12 is clamped upon an eccentric portion 70 of the sleeve 71, being tightened in place by means

of the clamp screw 72. By loosening that clamp screw and turning the sleeve 71 upon the stud or shaft 13, the arm 12 and its appurtenances may be adjusted toward or away from the type so as to take an impression of suitable depth or clearness.

The record strip 31 may be of soft paper suitable for receiving a sunken impression from the type 20, or the strip 31 may be thin and have a superimposed strip of carbon paper or ribbon, and several of these strips may be employed so as to impress the record simultaneously upon a plurality of strips.

The single pair of rolls are herein shown as engaging the strip at about the middle of its width, but this position may be varied according to the width or character of the strips, and the space occupied by the impressions, it being preferable to thus engage the strip between or at one side of the lines of impressions. Two or more pairs of rolls may be employed, and they may engage the side margins of the strip outside of the impression lines. In other ways the features of the device may be varied to suit different registering machines or different conditions of service.

I claim as my invention:—

1. The combination with recording mechanism provided with impressing type, of a record roll carrier removable as a unitary structure from the recording mechanism, and comprising a holder provided with a platen, means for supporting a record roll, means for intermittently feeding the record strip from the roll across the platen and winding up its leading end after passing the platen, and means for detachably connecting the said holder and its appurtenances in operative relation to, and in driving connection with, the recording mechanism.

2. Recording mechanism, including in combination changeable impressing type, a record roll carrier removable as a unitary structure from the recording mechanism, and comprising a holder provided with a platen, means for supporting a rolled record strip, unwinding the strip from its roll, drawing it across the platen and rewinding it in another roll, and means for moving said carrier to impress the record strip between the platen and the said type, when the carrier is in operative connection with the recording mechanism.

3. Recording mechanism, including in combination changeable impressing type, a record strip carrier, removable as a unitary structure from the recording mechanism, and comprising a holder provided with an impressing platen and with means for supporting a roll of the record strip, and means for intermittently drawing the record strip across the platen and rewinding it upon the other side, pressing devices for taking separate impressions upon the strip from the

type, and operating means for driving the record feeding devices by the movement of the record impressing means when the carrier is in operative position.

4. The combination, in recording mechanism, of record strip holding, feeding and impressing mechanism, removable from the mechanism as a unitary structure, and comprising a holder provided with an impressing platen and with means for supporting a rolled record strip, means also carried by the holder and driven by the record impressing mechanism for advancing the said record strip intermittently between the platen and the pressing type of the recording mechanism, and self-connecting devices appurtenant to the recording mechanism and to the holder for driving the strip advancing means when the holder is in operative position.

5. The combination, in recording mechanism, of changeable type for impressing the record, a holder provided with a platen and with means for supporting a rolled record strip, means for feeding the strip across the platen from the roll, and rewinding it in another roll upon the holder, a train of gearing, also carried by the holder for driving the strip advancing and rewinding devices from the recording mechanism, the holder and its appurtenances being removable as an integral structure from the recording means, and self-connecting working connections between the said train of gearing and the said recording mechanism when the holder is placed in operative position.

6. A removable holder provided with means for supporting, feeding and rewinding a long record strip, and provided with a platen over which the strip is drawn, the platen being perforated to receive a stud for centering the roll holder in position upon a carrier.

7. The combination, in recording mechanism, of changeable impressing type, a removable holder provided with means for supporting and intermittently feeding and rewinding an extended record strip, and provided with a platen over which the strip is fed, means for taking different impressions of the changeable type upon the record strip, and a detachable connection between the said holder and its associated recording mechanism, whereby the holder with its appurtenant record strip mechanism may be bodily detached from and replaced in register with its associated recording mechanism.

8. The combination with a swinging carrier arm, of a strip holder removably carried by the arm, and provided with means for registering it in uniform position upon the arm, means appurtenant to the holder for carrying, feeding and rewinding a long record strip, and driving gearing operated

by the swinging movement of the arm, for actuating the feeding and rewinding means.

9. The combination with a swinging carrier arm, of a holder for supporting, feeding and rewinding a long record strip, the holder being provided with means for registering itself removably upon the arm, and with driving gearing for the feeding and rewinding means, and means disposed in the pathway of the said gearing for actuating it as it is swung to and fro by the arm.

10. The combination with a movable carrier arm, provided with a stud, a removable record strip holder mounted upon the stud and provided with means for holding it from turning movement relative to the stud, the holder being provided with means for supporting, feeding and rewinding the record strip.

11. The combination with a movable carrier arm provided with a stud, a holder removably mounted upon the stud, and provided with means for preventing it from turning relative to the stud, the holder being also provided with means for supporting, feeding and rewinding a long record strip, and with a platen adjacent to the said stud over which the strip is moved during its feeding movement.

12. The combination, in recording mechanism, of impressing type, a platen, and means for taking an impression between the said type and the platen, including an adjustable eccentric supporting bearing for the impression taking mechanism, and means for clamping the eccentric bearing in its adjusted positions.

13. The combination, in recording mechanism, of impressing type, a platen, means for taking an impression between the type and the said platen, and means for regulating the hardness of the impression, in-

cluding an adjustable eccentric support for the impression taking devices, and means for securing the eccentric in its adjusted positions.

14. The combination, in recording mechanism, of changeable impressing type, and bodily removable mechanism for supporting intermittently feeding and rewinding a rolled record strip, comprising a holder provided with a platen, a support for the roll, positive feeding rolls, and a frictionally driven rewinding spindle, a train of gearing connecting the said driving and rewinding means, means for taking independently readable impressions of the type upon the strip, and means for imparting intermittent feeding movement of the strip from the impressing means.

15. The combination, in recording mechanism, of a record strip holding and feeding attachment, removable in a unitary structure from the rest of the mechanism, and comprising a holder, means for supporting a roll of the record strip and with means for drawing the strip from the roll and rewinding it elsewhere upon the holder, means self-connecting and disconnecting upon the applying and removal of the holder for imparting its record impressing movements to the holder, and for advancing the record strip between the impressions, and means for receiving a detachable key for manually actuating the record strip advancing and rewinding devices.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses, this 6th day of January, 1906.

CHARLES F. LITTLEJOHN.

Witnesses:

A. N. WHEELER,

HENRY J. DONNELLY.