2 Sheets—Sheet 1.

W. H. HORNUM.

FARE-REGISTERS.

No. 193,958. Patented Aug. 7, 1877.

Fig. 1.

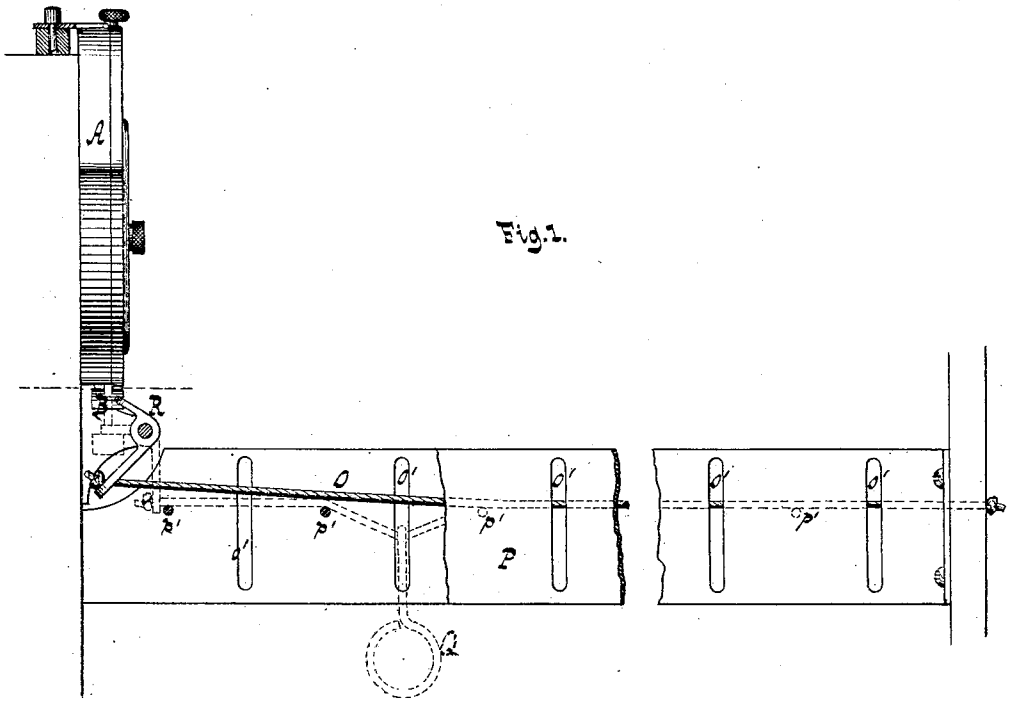

Fig. 2.

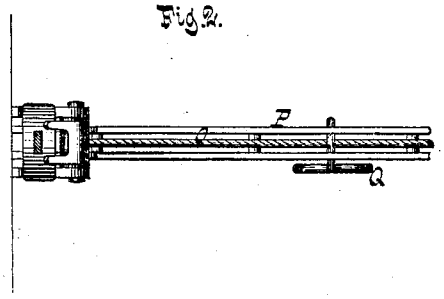

Fig. 3.



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2 Sheets—Sheet 2.

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Fig. 4.

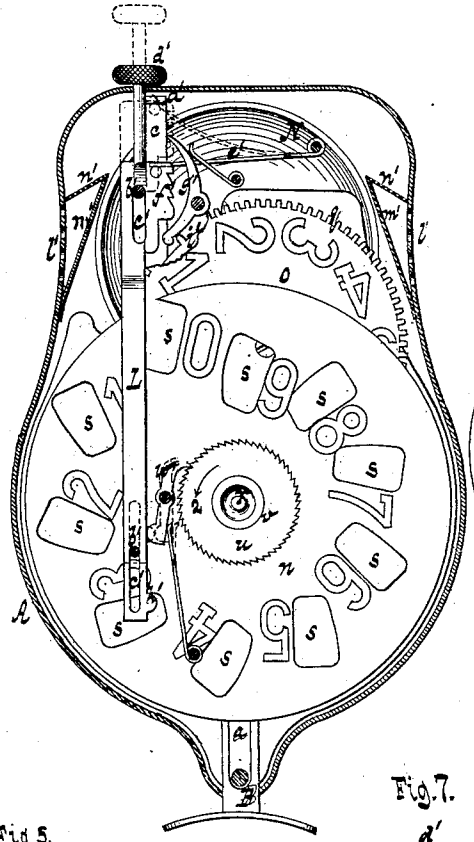


Fig. 6

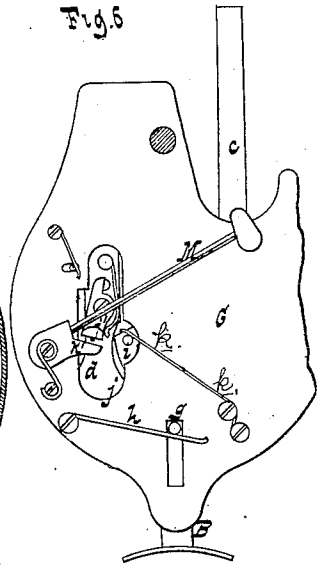


Fig. 7.

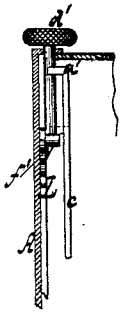


Fig. 8

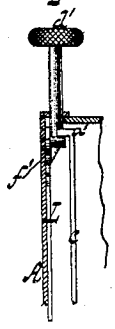
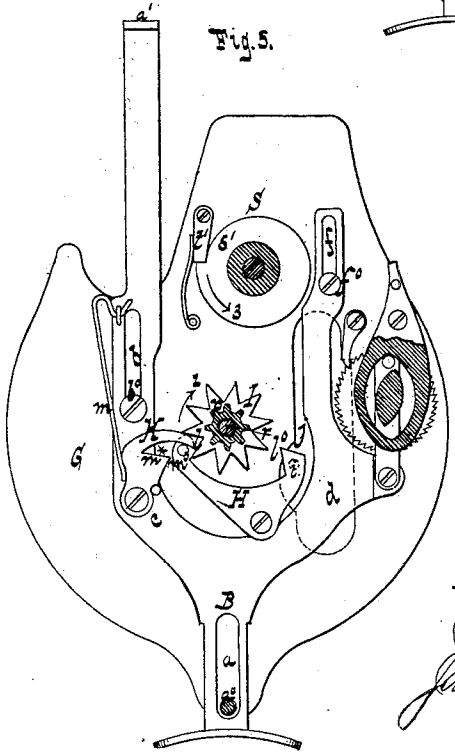


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HORNUM, OF NEW YORK, N. Y., ASSIGNOR TO THE HORNUM PATENT REGISTER MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN FARE-REGISTERS.

Specification forming part of Letters Patent No. **193,958**, dated August 7, 1877; application filed June 6, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. HORNUM, of the city, county, and State of New York, have invented a new and useful Improvement in Fare-Registers, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a sectional elevation of one of my fare-registers as secured in a railroad-car. Fig. 2 is a plan or top view of the same. Fig. 3 is an elevation of the hook employed for operating the register. Fig. 4 is a face view of the registering mechanism, the front plate of the case having been removed. Fig. 5 is a face view of the partition-plate, showing the mechanism for imparting motion to the several parts of my register. Fig. 6 is a rear view of the same. Fig. 7 is a side view of the locking-latch when the same is pushed in. Fig. 8 is a similar view of the locking-latch when the same is drawn out.

Similar letters indicate corresponding parts.

This invention consists in the combination, in a fare-register, of a locking-latch, a pawl and ratchet, a prime mover, a registering mechanism, and an alarm mechanism, so that by moving the latch to its locking position the alarm is prevented from being sounded until the single-trip register has been turned to zero, and by moving the latch to its unlocking position all the parts of the register can be actuated by the prime mover, but the single-trip register cannot be turned by hand in either direction. On the single-trip-registering mechanism is a projection, toe, or cam, which releases the locking-latch, automatically, as soon as said single-trip register has been turned to zero. A zero-stop prevents the register from being moved past zero. With the sound-openings in the case which incloses the register and alarm is combined a solid protector, with an opening in its top, so that the sound can freely pass to the sound-openings, while water and other impurities are prevented from passing to the working parts inclosed in the case. With the prime mover of the fare-register are combined a bell-crank lever, a strap, chain, or belt, a case which protects the strap, and is provided with a series of vertical slots, so that by inserting a suitable hook into one of the vertical slots and pulling down, the fare-register can be operated from any part of the car or vehicle.

In the drawing, the letter A designates a case, which is made of sheet metal or any other suitable material, in the form best adapted for the purpose for which it is intended to be used. In this case is situated a slide or prime mover, B, which serves to actuate the single-trip-registering mechanism, the alarm, and the general registering mechanism, if such is used. Said prime mover is guided by slots *a b f*, catching over pins a^0 b^0 f^0, which are secured in a plate, G, Fig. 5, that is secured in the case A, and forms a partition between the single-trip-registering mechanism on one side, and the alarm and general register on the opposite side, and which supports the principal working parts of my apparatus. The end of the prime mover extends through a slot in the edge of the case, and is provided with a finger-piece, which serves to operate the same. From the body of the prime mover extend two arms, *c d*, and in its under surface is secured a pin, *g*, which extends through a slot in the partition-plate G, Fig. 6, and bears on a spring, *h*, which has a tendency to throw said slide up to the position shown in the drawing.

Between the arms *c d* of the slide is situated an anchor-lever, H, in one arm of which is secured a stud, *i*, which extends through a slot, *j*, in the partition-plate, and is exposed to the action of a spring, *k*, Fig. 6. By the action of this spring the pallet *l* of the anchor-lever is thrown in gear with an escapement-wheel, I, which serves to impart motion to the single-trip register. Sometimes it happens, however, that this spring gives out, and in order to insure a correct action of the apparatus a safety-dog, K, is combined with the anchor-lever. This safety-dog is pivoted to the arm *c* of the slide B, and it is subjected to the action of a spring, *m*, which throws its edge in contact with a stud, m^0, secured in the pallet *l*. If the slide is drawn out its arm *d* acts on the pallet l^0 of the anchor-lever, and the pallet *l* is thrown out of gear with the escapement-wheel, and when the slide is allowed to rise or to move in the face m^* of the safety-dog sweeps past the

stud m^0, and throws the pallet l^0 in gear with the escapement-wheel, so as to cause the same to advance one tooth, even if the spring *k* should have become deranged.

In the example shown in the drawing the single-trip register consists of a unit-disk, *n*, and a ten-disk, *o*, which are geared together by a pinion, *p*, and cog-wheel *q*, the unit-disk and the pinion being firmly connected to the escapement-wheel I, and mounted on a pin or arbor, *r*, which is secured in the partition-plate G.

In the unit-disk are ten apertures, *s*, which are arranged in a convolute curve, and on the face of said disk are marked the figures 0 to 9, one opposite to each of the apertures *s*. On the face of the ten-disk are marked the figures from 0 to 9 in a circular line. As the unit-disk receives a step-by-step movement by the action of the anchor-lever H on the escapement-wheel I, the figures on its face are successively brought opposite to an opening in the cover or face-plate of the case A. At the same time the ten-disk receives a slow revolving motion, so that each of its figures will successively appear through the convolute apertures *s* in the unit-disk.

To the face of the unit-disk is secured a ratchet-wheel, *u*, from the center of which projects a finger-piece, *v*, that serves to set the single-trip register back to zero. The finger-piece may be replaced by a square for the reception of a suitable key. To the inside of the cover of the case A is secured a spring-pawl, *w*, which engages with the ratchet-wheel *u*.

By referring to Figs. 4 and 5 it will be seen that the escapement-wheel I and anchor-lever H prevent the unit-disk from being turned by hand, except by means of the prime mover, in the direction of arrow 1, Fig. 5, while the ratchet-wheel *u* and pawl *w* prevent said unit-disk from being turned in the direction of arrow 2, Fig. 4.

On the end of the arms *c* of the prime mover B is formed a lip or stop, a', and on the inside of the cover of the case A is situated a latch, L, which is guided by studs b' passing through slots c', and which is provided with a finger-piece, d', that serves to draw said locking-slide L out to the position shown in Fig. 8, and in dotted lines in Fig. 4. A spring, e', has a tendency to throw said latch back to the position shown in Fig. 7, and also shown in full lines in Fig. 4. On the edge of the latch, near its upper end, are formed ratchet-teeth f', which, when said latch is drawn out, engage with a spring-pawl, g'; and on the edge of said latch, near its bottom end, is formed a projection, h', which, when said latch is raised, bears on the tail end of the pawl *w*, and throws this pawl out of gear with the ratchet-wheel *u*. At the same time, when the latch is drawn out and is locked by the pawl g', its top edge bears against the stop a' of the prime mover, so as to prevent the same from being moved; and since, by drawing the locking-latch out the pawl *w* is thrown out of gear with the ratchet-wheel *u*, the single-trip-registering mechanism is free to be turned in the direction of the arrow 2 by hand, and without actuating the alarm.

On the cog-wheel *q* of the ten-disk, or any part of the single-trip register, is formed a tooth or projection, i', Fig. 4, and at the moment the single-trip register has been turned back to zero this projection strikes the tail end of the pawl g', so as to throw the same out of gear with the ratchet-teeth f', the locking-latch is released and permitted to return to its original position, the pawl *w* drops in gear with the ratchet-wheel *u*, and the single-trip-registering mechanism is prevented from being moved in either direction by hand. The prime mover is also released, and the registering apparatus can be operated by its action, as already described.

With the registering mechanism is combined a zero-stop, S, to prevent the register from being turned back beyond zero. In the example shown in the drawing this zero stop consists of a cam-plate, s', which is secured to the ten-disk *o*, and of a pawl, t', which is pivoted to the partition-plate G. The ten-disk can be turned in the direction of arrow 3 without obstruction; but when it is turned in the direction opposite to this arrow the pawl t' strikes a shoulder on the cam-plate and arrests the registering mechanism at zero.

The alarm is moved by means of a toe, j', Fig. 6, which projects from the under surface of the arm *d* of the prime mover B, and acts on a lip, k', formed on the shank of the hammer M. When the case A is closed and the prime mover is locked by the locking-latch L, the alarm cannot be sounded.

When a general register is used I place the same beneath the partition-plate G, and operate it from the arm *d* of the prime mover, by any suitable connection—such, for instance, as that shown in Fig. 5, and fully described in my Patent No. 187,632. By locking the prime mover the general register is prevented from being moved in either direction.

In the sides of the case A are openings l', to let out the sound of the alarm-bell or gong N. On the inside of these openings are secured solid protectors m', made of sheet metal or any other suitable material, and provided with openings n' in their top, through which the sound can freely pass to the sound-openings l'.

Heretofore the sound-openings have been protected by wire screens fastened on the inner surfaces of the sides of the case A. These wire screens prevent the entrance of coarse impurities, but they are not sufficient to prevent the entrance of very fine particles of dust, tobbaco, or other impurities, and they do not at all prevent the entrance of water.

My solid protectors effectually prevent the entrance of all impurities, while they do not perceptibly obstruct the passage of the sound through the sound-openings.

It must be remarked that the locking-latch can be made in various forms, either such as shown in the drawings or in the form of a pivoted lever, or in any form which will produce the desired effect. I have also combined with the locking-latch a swinging plate to cover up the opening which leads to the unit-wheel of the single-trip-registering mechanism, so that said unit-wheel cannot be reached and turned before the locking-slide is drawn out. Besides this, a dial or index may be combined with the locking-latch, so as to register the number of times said locking-latch has been moved or drawn out. The locking-latch can also be so arranged that a suitable key must be employed for the purpose of moving the same. These devices form the subject-matter of a separate application for a patent.

My registering device can either be carried on the person of the conductor, or it can be secured in the interior of a railroad-car or other vehicle. In this last-named case I secure it to one end of the car, as shown in Fig. 1, and combine it with a bell-crank lever, R, one arm of which bears upon the finger-piece of the prime mover, while its other arm is connected to a strap, rope, or chain, O, which extends throughout the length of the car, and is protected by a case, P, which is provided with a series of vertical slots, *o'*, and with a series of horizontal bars or rollers, *p'*, situated between these slots, and forming supports for the strap, rope, or chain. By introducing a suitable hook, Q, Fig. 3, into one of the slots, the strap, rope, or chain can be drawn down, as indicated in dotted lines in Fig. 1, and the registering mechanism can be actuated from any part of the car. The strap, rope, or chain may also be extended across the ends of the car, so that the register can be operated from any part of the platform.

I am aware that a chain extending throughout the length of the car has been used for operating a registering mechanism secured on the interior of the car, said chain being inclosed in a tube with horizontal slots. The operation of this device is very inconvenient, since it requires a strain in the direction of the length of the chain which is difficult to produce, the chain and its protecting-tube being necessarily situated near the top of the car. By my arrangement a downward strain applied to the strap, rope, or chain O produces the desired effect.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a fare-register, of a pawl and ratchet for preventing the registering mechanism from being turned backward, a registering mechanism, an alarm mechanism, a prime mover common to both, and a locking-latch for preventing the alarm from being sounded, while the registering mechanism is free to be turned to zero, substantially as described.

2. The combination, in a fare-register, of a single-trip register, a general register, a prime mover common to both, a pawl and ratchet for preventing the single-trip register from being turned back, and a locking-latch for preventing the general register from being moved, while the single-trip register is free to be turned to zero, substantially as set forth.

3. The combination, in a fare-register, of a single-trip register, a general register, an alarm, a prime mover common to all three, a pawl and ratchet for preventing the single-trip register from being turned back, and a locking-latch for preventing the general register and the alarm from being moved, while the single-trip register is free to be turned to zero, substantially as described.

4. The combination, with the locking-latch, the alarm mechanism, and the registering mechanism, of a pawl for locking the latch, and of a projection, cam, or toe, or any part of the registering mechanism, for releasing the locking-latch automatically, when the registering mechanism has been turned to zero, substantially as set forth.

5. The combination, in a fare-register, with a registering mechanism, an alarm, a prime mover common to both, a locking-latch, a pawl for retaining said locking-latch, and a tooth or projection for releasing the locking-latch, of a zero-stop to arrest the registering mechanism at the moment the locking-slide is released, substantially as specified.

6. The combination, in a fare-register, of a solid protector with the alarm-bell or gong, and with the sound-openings in the sides of the case, said protector being provided with an opening in its top, substantially as and for the purpose shown and described.

7. The combination of a strap, chain, or rope, extending from one end of a railroad-car or vehicle to the other, a protecting-case, provided with a series of vertical slots, a series of supports between the slots, a bell-crank lever, and a registering mechanism, all adapted to operate substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 5th day of June, 1877.

WILLIAM H. HORNUM. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.