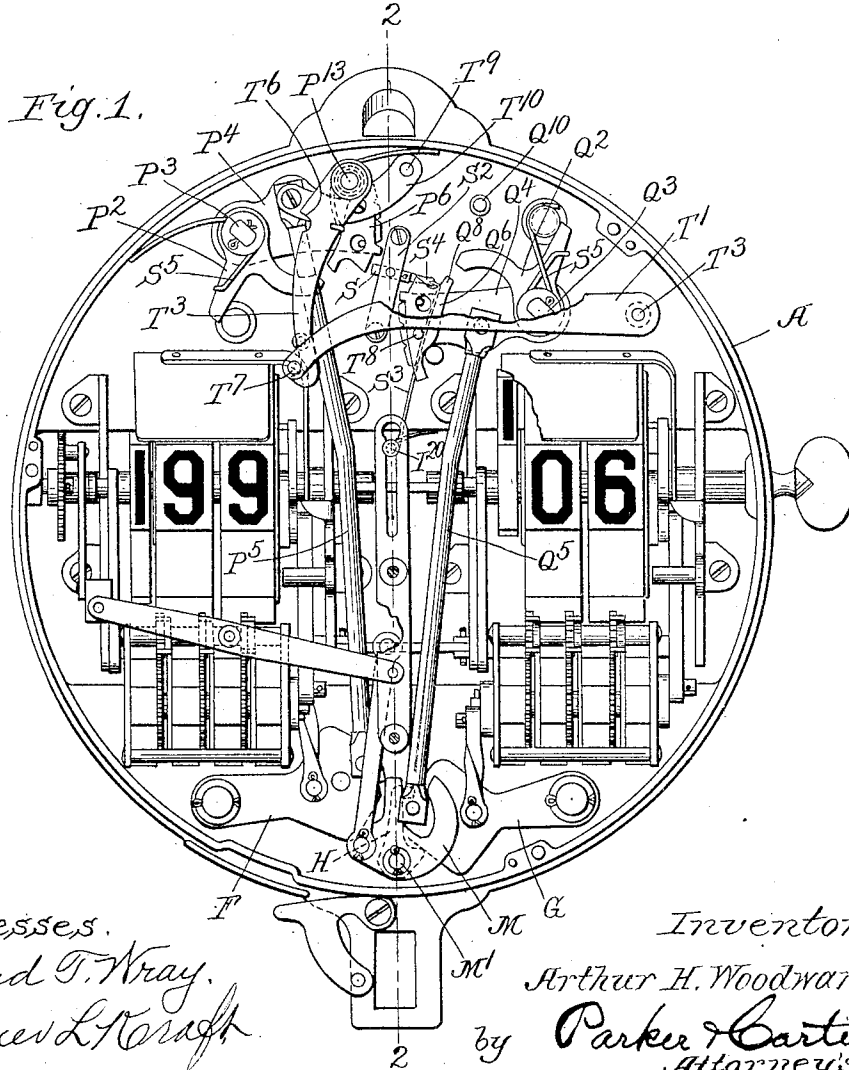
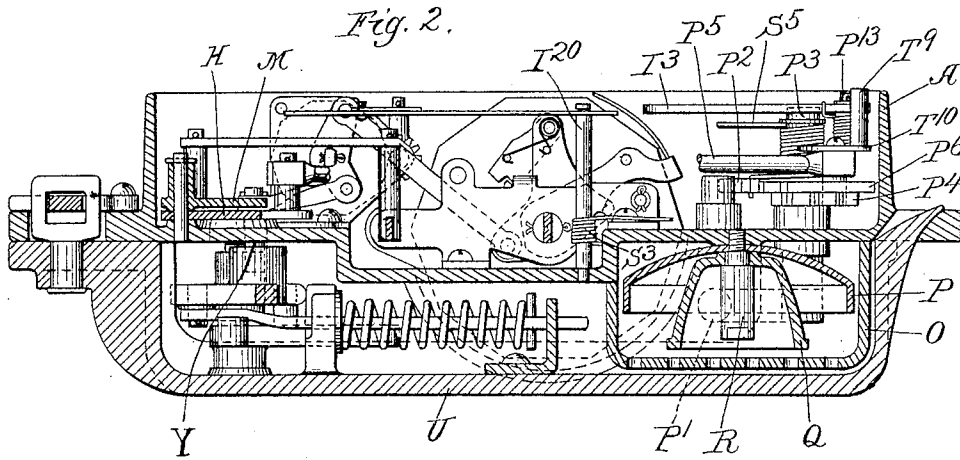


A. H. WOODWARD.
BELL MECHANISM FOR REGISTERS.
APPLICATION FILED APR. 23, 1903.

2 SHEETS—SHEET 1.

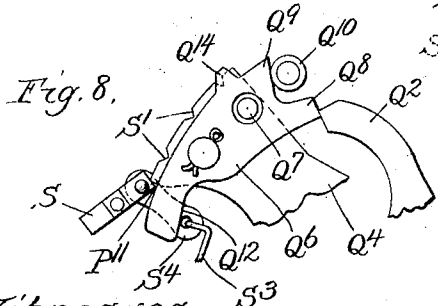
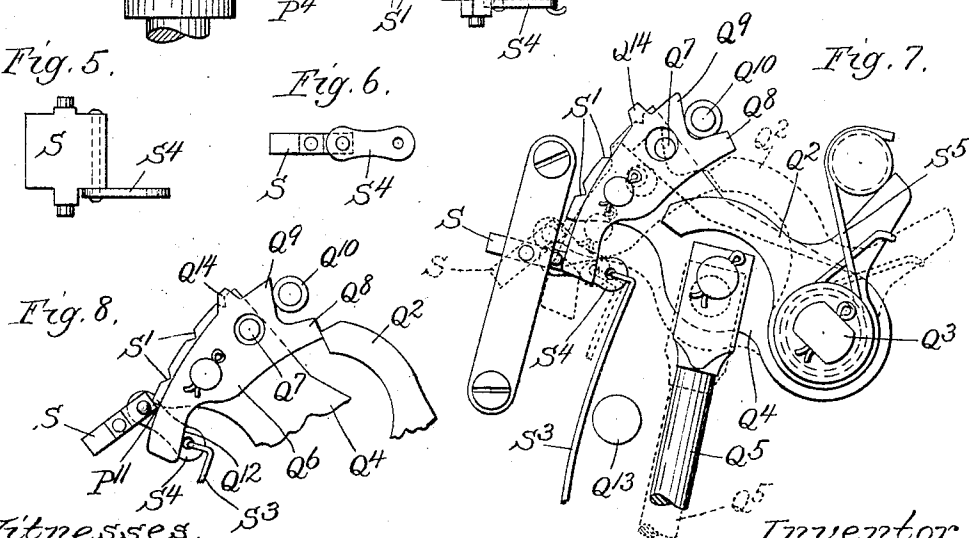
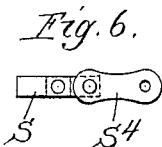
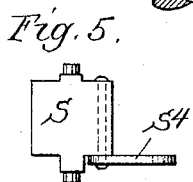
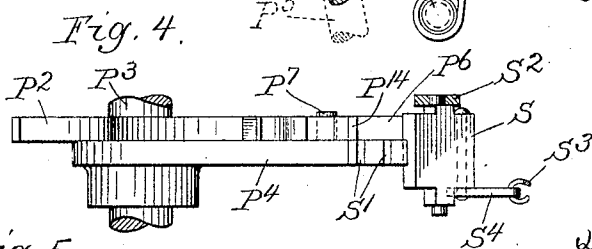
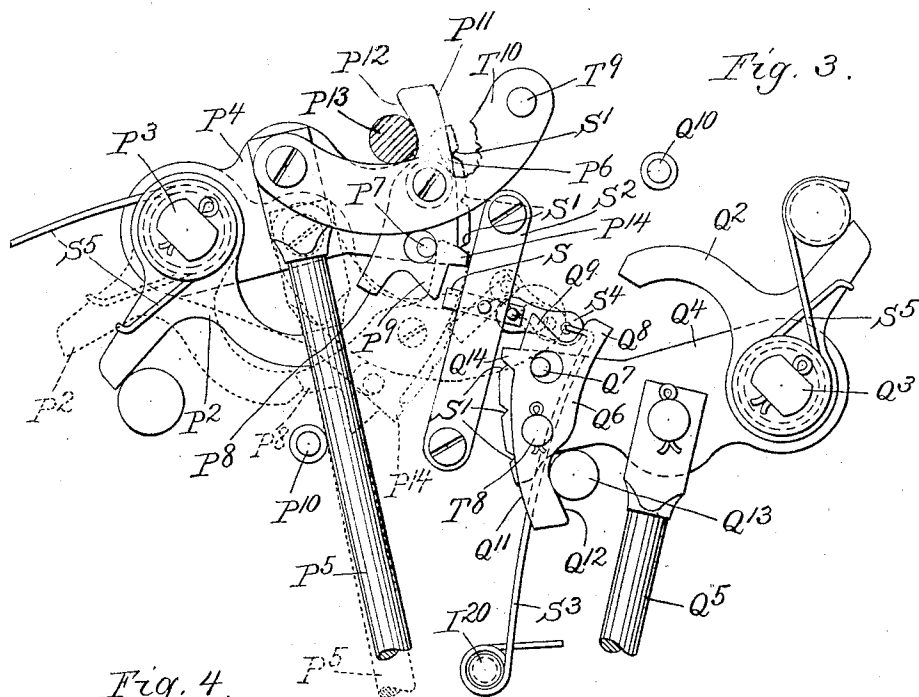


Witnesses.
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Homer L. Kraft.

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A. H. WOODWARD.
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2 SHEETS—SHEET 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

ARTHUR H. WOODWARD, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE
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CORPORATION OF ILLINOIS.

BELL MECHANISM FOR REGISTERS.

No. 603,655.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Original application filed September 27, 1901, Serial No. 76,746. Divided and this application filed April 23, 1903. Serial No. 153,904.

To all whom it may concern:

Be it known that I, ARTHUR H. WOODWARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Bell Mechanism for Registers, of which the following is a specification.

My invention relates to bell mechanisms for registers, and has for its object to provide a new and improved mechanism of this description.

My present application is a division of my prior application, filed September 27, 1901, Serial No. 76,746.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a view of a register embodying my invention with the face-plate removed. Fig. 2 is a section on line 2 2, Fig. 1. Fig. 3 is a view of bell-operating mechanism. Fig. 4 is a view of the safety-dog located between the two bell-operating mechanisms. Fig. 5 is a side view of said dog apart from the mechanism. Fig. 6 is a view of Fig. 5 as seen from below. Fig. 7 is a view of the bell-operating mechanism, showing the parts when the bell-hammer has been released. Fig. 8 is a view similar to Fig. 7 just prior to the release of the bell-hammer.

Like letters refer to like parts throughout the several figures.

I have illustrated my invention in connection with fare-registers adapted to register two classes of fares. The register mechanism proper is contained within the case A, provided with a suitable cover and adapted to be connected to a removable back. Within the case A are provided the two trip-registers and the two permanent registers. Two operating-levers F and G are pivotally connected to the register-case and are provided with projecting pins or parts Y, which project beyond the register-case and which are actuated by the mechanism associated with the removable back. These operating-levers are connected with the mechanism of the register, so as to operate such mechanism when moved. As illustrated in the drawings, the trip-register B and the permanent register D and associated parts form one mechanism for registering one kind of fares and the trip-register C and permanent register E and associated parts form another mechanism for reg-

istering a different class of fares. By means of the mechanism associated with the back of the register either of these register mechanisms can be operated from any given point in the car.

As indicated in the drawings, the two trip-registers are arranged to indicate cash fares and transfers, although of course it is evident that they could indicate any other kind of fares desired. I provide two different bells having different tones—one adapted to be rung when one class of fares is registered and the other adapted to be rung when the other class of fares is registered. In the construction illustrated in the drawings I place these bells outside of the register-case proper, providing an exterior chamber inclosed by the exterior bell-casing O, attached to the main register-case by screws, which are inserted from the inside, so that they cannot be tampered with except by taking off the top of the register-case.

The bells P and Q, as herein shown, are mounted one within the other to economize space, the inner bell Q being loosely mounted upon the support R. The bell-hammers P' and Q' are located in the bell-casing and are provided with the hammer-arms P² and Q², which are contained within the casing and which may be integral with the bell-hammers or connected thereto in any other desired manner. These hammers are connected to the posts P³ and Q³ and may be integral with said posts or attached thereto in any desired manner. Mounted concentric with the hammer-arms are the hammer-levers P⁴ and Q⁴, provided with notched ends, as shown in Figs. 1 and 3. These hammer-levers are connected by the connecting-rods P⁵ and Q⁵ to the operating-levers F and G, as shown in Fig. 1. Pivotally connected with the hammer-levers are the hammer-dogs P⁶ and Q⁶. These dogs have a limited movement about their pivotal connection with the hammer-levers, such movement being obtained by the pins P⁷ and Q⁷, attached to the hammer-levers, working in enlarged holes in the hammer-dogs. (See Fig. 3.)

Located between the two hammer-levers is a safety-dog S, adapted to cooperate with both of said levers and to engage the notches S' in the face of the levers, so as to prevent them from being moved back before ringing the bell

after they have been started in motion. This safety-dog is illustrated in detail in Figs. 4, 5, and 6 and is pivotally connected to the base of the register-case and the holding-piece S².
 5 The dog works about its center as a pivot and is connected to a controlling-spring S³ by means of a link S⁴. This spring besides controlling this dog has other functions and aids in the control of the hammer-dogs P⁶ Q⁶. It
 10 will be noted that in this mechanism for ringing the two bells the mechanism is arranged so that a partial stroke of either is impossible, and yet there is used only three springs, the safety-dog springs S³ and the two bell-ham-
 15 mer springs S⁵.

Each of the hammer-dogs P⁶ Q⁶ has a series of working faces adapted to perform a separate function. The faces P⁸ Q⁸ engage the hammer-arms, so as to lift the hammers when
 20 the hammer-levers are moved. The inclined faces P⁹ Q⁹ engage the stationary parts or posts P¹⁰ Q¹⁰, so as to move the hammer-dogs to release the hammer-arms. The faces P¹¹ Q¹¹ engage the safety-dog and release it si-
 25 multaneously with the release of the hammer—that is, simultaneously with the disengagement of the faces P⁸ Q⁸ with the hammer-arms P² Q². The faces P¹² Q¹² engage the stationary parts P¹³ Q¹³ when the dogs are moved
 30 back to their initial position and move said dogs from their released to their operative position—that is, the position where they en-
 35 gage the hammer-arms P² Q². Said dogs also have the projections or faces P¹⁴ Q¹⁴, which are engaged by the safety-dog as the ham-
 40 mer-dogs are moved forward, so as to insure the engagement of the hammer-dogs with the hammer-arms and prevent them from miss-
 45 ing the hammer-arms due to jarring or the like during the first part of their forward movement. It will thus be seen that these hammer-dogs have no separate springs of
 50 their own, and yet perform a series of functions necessitating their being held in differ-
 55 ent relative positions at different times.

It will be seen that in this construction there is a bell-hammer and a hammer-lever for op-
 60 erating the bell-hammer oscillating around the same center and a hammer-dog carried by the hammer-lever adapted to lift the bell-
 65 hammer and release it at the end of the stroke, the release being a positive release at a pre-
 determined point. There is also a safety-dog freely engaging the notched end of the ham-
 mer-lever when it is being moved forward, but which positively engages said lever if it
 is attempted to move it backward at any point
 between its initial and final positions. This
 safety-dog to be effective is released simul-
 60 taneously with the ringing of the bell. This
 feature is necessary to the satisfactory opera-
 tion of the device, for if the safety-dog is re-
 65 leased an instant too soon the parts may be
 moved to their initial position without ring-
 ing the bell, and if the bell rings before the

release of the safety-dog and the operator ceases moving the lever the mechanism does not return to its initial position. If, for ex-
 70 ample, it is desired to register a transfer fare, the operating-lever G is moved. The motion
 of the operating-lever G is communicated to the hammer-lever by the rod Q⁵, and said
 hammer-lever is moved forward. The ham-
 75 mer-dog Q⁶, being attached to said lever, is moved forward and released from the post
 Q¹³. The projection or face Q¹⁴ is then en-
 gaged by the safety-dog S, so as to insure the
 engagement of the face Q⁸ with the hammer-
 80 arm Q². The hammer-arm is then moved so as to move the bell-hammer away from the
 bell. As the parts approach the end of the
 stroke the beveled face Q⁹ engages the stop
 Q¹⁰ and the hammer-dog is moved so as to re-
 85 lease the arm Q². The spring S⁵ then re-
 turns the bell-hammer and rings the bell. Si-
 multaneously with this release and the ring-
 ing of the bell occurs the release of the safety-
 dog. The parts are shown just prior to the
 release of the hammer-arm in Fig. 8. In Fig.
 90 7 the parts are shown after the hammer-arm
 has been released and before the parts are re-
 turned to their initial position. When the
 bell has been rung, the handle is released by
 the operator and the spring in the back of
 95 the register moves the parts to their initial
 position.

I claim—

1. The combination in a register of a bell-hammer arm, a lever for operating said ham-
 100 mer-arm, oscillating about the same center, a
 dog carried by said lever and adapted to en-
 gage the hammer-arm and release it at the
 end of the stroke, said dog free to move in a
 limited manner and having several operating-
 105 faces cooperating with adjacent devices.

2. The combination in a registering mechan-
 110 ism of a bell-operating mechanism, compris-
 ing a hammer-arm, a hammer-lever, a ham-
 mer-dog mounted thereon so as to have a lim-
 ited movement, a safety-dog provided with a
 controlling-spring and adapted to engage said
 hammer-lever, said safety-dog engaging the
 hammer-dog at a predetermined point, so as
 to insure its proper operation.

3. The combination in a registering mech-
 115 anism of a hammer-arm, a hammer-lever, os-
 cillating about the same center, and a ham-
 mer-dog adapted to connect said lever and
 arm during a portion of the movement of the
 hammer-lever.
 120

4. The combination in a registering mech-
 125 anism of a hammer-arm, a hammer-lever, os-
 cillating about the same center, a hammer-
 dog adapted to connect said lever and arm
 during a portion of the movement of the ham-
 mer-lever, and a positive knock-off or release
 for said hammer-dog adapted to disengage it
 from the hammer-arm.

5. The combination in a registering mech-
 130 anism of a hammer-arm, a hammer-lever, a

hammer-dog loosely mounted on said hammer-lever, said hammer-dog adapted to engage the hammer lever and arm so that they will move together, a stop against which said hammer-dog is moved so as to release the hammer-arm, and an engaging device adapted to move said dog from its released to its engaging position.

6. The combination in a registering mechanism of a hammer-arm, a hammer-lever, a hammer-dog loosely mounted on said hammer-lever, said hammer-dog adapted to engage the hammer lever and arm so that they will move together, a stop against which said hammer-dog is moved so as to release the hammer-arm, an engaging device adapted to move said dog from its released to its engaging position, and a safety-dog associated with said hammer-lever, the hammer-dog provided with an engaging face or part adapted to engage said safety-dog during the first part of its forward movement, so as to be held in its operative position thereby.

7. The combination in a registering mechanism of a hammer-arm, a hammer-lever, a safety-dog for preventing the backward movement of said hammer-lever, a hammer-dog mounted on the hammer-lever and adapted to engage the hammer-arm, and means for simul-

taneously releasing the hammer-arm and safety-dog.

8. The combination in a registering mechanism of two complete bell-ringing mechanisms, each having a single actuating-spring associated therewith, and a third intermediate spring adapted to control the remaining parts.

9. The combination in a registering mechanism of two complete bell-ringing mechanisms, each having a single actuating-spring associated therewith, an intermediate safety-dog common to both mechanisms and provided with a single controlling-spring, and means for simultaneously releasing the bell-hammer and the safety-dog.

10. The combination in a registering mechanism of two complete bell-ringing mechanisms, each having a single actuating-spring associated therewith, an intermediate safety-dog common to both mechanisms and provided with a single controlling-spring, means for simultaneously releasing the bell-hammer and the safety-dog, and a positive knock-off or release for the bell-hammers.

ARTHUR H. WOODWARD.

Witnesses:

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EDWARD T. WRAY.