

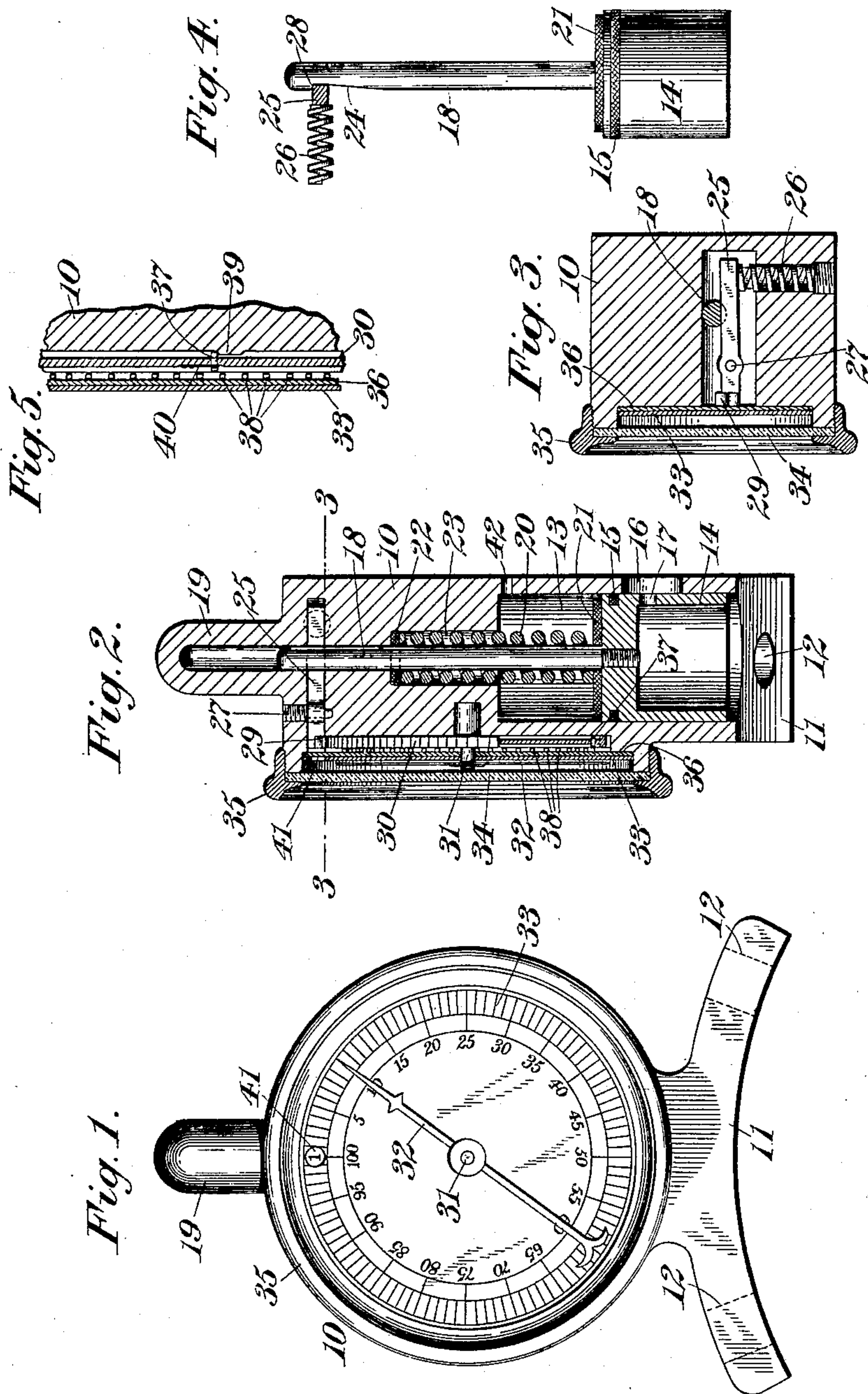
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Patented June 27, 1899.

W. E. SYMONS & G. W. WILDIN.
EMERGENCY RECORDER FOR AIR BRAKES.

(Application filed Jan. 6, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

WILSON E. SYMONS AND GEORGE W. WILDIN, OF SAVANNAH, GEORGIA.

EMERGENCY-RECORDER FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 627,661, dated June 27, 1899.

Application filed January 6, 1899. Serial No. 701,365. (No model.)

To all whom it may concern:

Be it known that we, WILSON E. SYMONS and GEORGE W. WILDIN, citizens of the United States, residing at Savannah, in the county of Chatham and State of Georgia, have invented a new and useful Emergency-Recorder for Air-Brakes, of which the following is a specification.

The invention relates to an automatic emergency-recorder adapted for use in connection with air-brakes, but wholly independent of the operation of the air-brake except in so far that the exhaust from the engineer's valve is utilized as to the means of operating the recorder, the object in view being to provide a simple and efficient construction and arrangement of devices whereby the number of emergency applications of the brakes is registered to fix the responsibility for damages resulting from emergency applications when they are not required.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a front view of a pressure-recorder constructed in accordance with the invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a transverse section on the plane indicated by the line 3 3 of Fig. 2. Fig. 4 is a detail view of the piston or follower, the pressure-affected rod, and the lever actuated by the cam-face of said rod. Fig. 5 is a detail section to show the means for communicating motion from the pointer-operating ratchet-wheel to the disk of higher denomination.

Similar reference characters indicate corresponding parts in all the figures of the drawings.

The apparatus embodying the invention includes a casing 10, provided at one end with an attaching-plate 11, perforated, as at 12, for the reception of bolts to secure the same to the casing of the engineer's valve or other supporting structure, whereby the open end of a pressure-chamber 13 formed in the casing is in communication with the exhaust-port of the engineer's valve or that port through which the pressure in the train-pipe of

an air-brake mechanism is exhausted in making an emergency application of the brakes.

It will be understood that the construction and arrangement of the exhaust-port of the brake mechanism do not affect the operative-ness of the construction embodying the present invention, and that the latter may be applied operatively to any form of air-brake mechanism wherein an exhaust-port for relieving pressure for emergency application is used, and therefore it has been deemed unnecessary to illustrate the apparatus in connection with any specific form of air-brake or engineer's valve.

Mounted in the pressure-chamber 13 is a piston or follower 14, adapted for reciprocation and having, preferably, a suitable encircling packing-ring 15. This follower, which may be hollowed, as indicated in the drawings, Fig. 2, normally occupies a position spanning an emergency-port 16 in the wall of the pressure-chamber, and the piston or follower is provided with a service-port 17, which is normally in communication with the emergency-port 16 to allow ordinary service reductions in the air-brake mechanism to be made through the pressure-chamber of the recording apparatus without affecting the position of the piston or follower, the air or other fluid used in the brake mechanism being exhausted into said pressure-chamber through the cavity of the piston, and thence through the service-port 17 and emergency-port 16.

Actuated by the piston or follower is a reciprocatory element 18, which in the construction illustrated consists of a rod attached at one end to the piston and extending into an axial guide 19, which is formed in the casing 10 in communication with the chamber 13, and the piston or follower is yieldingly held in its normal position to span and close the emergency-port 16 by means of a spring 20, seated at one end upon a yielding cushion 21, consisting of a rubber washer or the equivalent thereof, and at the other end against a similar cushion 22, arranged in contact with a shoulder at the extremity of a counterbored portion 23 of said guide 19. These cushions relieve jar due to a sudden discharge of pressure into the chamber 13 in a quick emer-

gency application. Carried by or, as shown in the drawings, formed upon said reciprocatory element 18 is a cam-face 24, which is arranged in operative relation with a lever 25, yieldingly held in its normal position by means of a spring 26, said lever being fulcrumed upon a pin 27, as shown in Fig. 2. This lever is moved in opposition to the tension of the spring 26 by the operation of the cam-face 24 when the piston or follower 14 is advanced under the pressure of fluid due to an emergency application of brakes, the tension of the return-spring 20 being such as to resist an ordinary or service application, the advance of the piston being sufficient to uncover the emergency-port 16 and allow the free escape of the fluid without in any way affecting the promptness of the emergency application, and upon the reduction of pressure in the chamber 13 the spring 20 will return the piston or follower to its normal position, spanning the port 16, and thus will bring the abrupt shoulder 28 at the extremity of the cam-face 24 into contact with the lever 25 to limit the return movement of the piston, and thereby prevent it from passing beyond its normal position.

The lever 25 carries a dog 29 for engagement with the teeth of a ratchet-wheel 30, of which the spindle 31 carries an index or pointer 32, adapted to traverse a units-dial 33. This dial and the pointer are protected by a transparent cover or crystal 34, held in place by a cap-ring 35, threaded exteriorly upon the casing or otherwise suitably attached. For each advance movement of the piston or follower the lever 25 is actuated by the cam-face 24 to communicate motion through the distance of one step to the ratchet-wheel 30, and hence to the pointer or index 32, which indicates a graduation upon the dial or scale 33. Upon the return movement of the piston or follower and the resulting return of the lever 25 to its normal position the dog 29 slips back into engagement with the succeeding tooth of the ratchet-wheel 30. Also, in connection with the registering devices, it is possible to employ a hundreds dial or disk 36, loosely mounted upon the spindle 31 and actuated by any suitable means to cause the movement thereof through one step for each complete revolution of the index or the ratchet-wheel 30. In the construction illustrated the ratchet-wheel carries a pin 37 for movement parallel with the axis of said wheel through a distance sufficient to engage one of a series of teeth 38, depending from the disk 36, such movement of the pin occurring once during each complete revolution of the ratchet-wheel, and being caused by a cam 39, arranged in the path of the lower extremity of the pin, as indicated in Fig. 5. When the pin reaches the cam, it is raised to engage the adjacent tooth of the disk 36, and after advancing the latter through one step the pin again drops to its normal position out of en-

gagement with the disk, or said pin may be normally held retracted by means of a suitable spring 40. One graduation of the disk of higher denomination, the same being a hundreds-disk in the construction illustrated, is exposed through an inspection-opening 41 in the units-dial 33.

From the foregoing description it will be seen that under ordinary conditions of use, as when making service applications of the brakes, the apparatus embodying the present invention remains at rest; but when a severe application, known in the art as an "emergency" application, is made the pressure admitted to the chamber 13 is such as to advance the piston or follower in opposition to the tension of the return-spring 20, and thus actuate the registering devices to indicate that such emergency application, or that an application exceeding a certain force, relative to the tension of the return-spring 20, has been made, and thus indicating to the officials of the road in connection with which the apparatus may be used that a certain number of emergency applications have been made during a given trip.

Communicating with the pressure-chamber in advance of the piston or follower is a drip or relief port 42.

It will be understood, furthermore, that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having described the invention, what is claimed is—

1. An emergency pressure-recorder for the purpose named, having a yielding element controlling an exhaust-port, a reciprocatory element carried by said yielding element and having a cam-face, a lever arranged in operative relation with said cam-face, and registering devices actuated by said lever, substantially as specified.

2. An emergency pressure-recorder for the purpose named, having a casing provided with a pressure-chamber and a communicating exhaust-port, a spring-retained piston mounted in said pressure-chamber, and having a cooperating stem provided with a cam-face, indicating devices including a graduated dial and a pointer, and means actuated by the cam-face of said stem for advancing the pointer with relation to the dial, substantially as specified.

3. An emergency pressure-recorder for the purpose named, having a casing provided with a pressure-chamber and a communicating exhaust-port, a spring-retained piston mounted in said chamber and normally held in position to close said port, a ratchet-wheel, means carried by the piston for communicating a step-by-step forward movement to the ratchet-wheel, a pointer or indicator carried by the spindle of the ratchet-wheel, a graduated dial traversed by said pointer and having

an inspection-opening, a disk of higher denomination than said dial arranged to expose its characters successively through said inspection-opening, and means for communicating motion from the ratchet - wheel to said disk, substantially as specified.

5 In testimony that we claim the foregoing as

our own we have hereto affixed our signatures in the presence of two witnesses.

WILSON E. SYMONS.
GEORGE W. WILDIN.

Witnesses:

W. R. GROVENER,
A. E. MEYER.