No. 672,106. Patented Apr. 16, 1901.

A. H. PARSONS.

LOW PRESSURE ALARM AND INDICATOR FOR AIR BRAKES.

(Application filed Oct. 25, 1900.)

(No Model.)

Fig. 1.

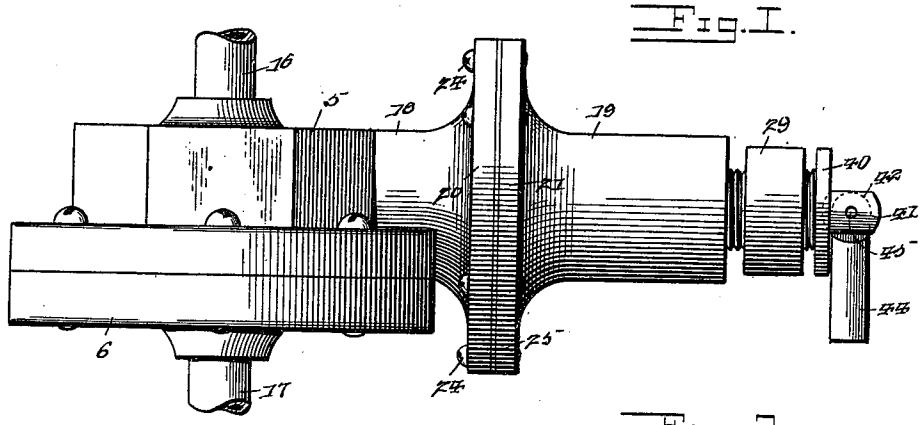


Fig. 2.

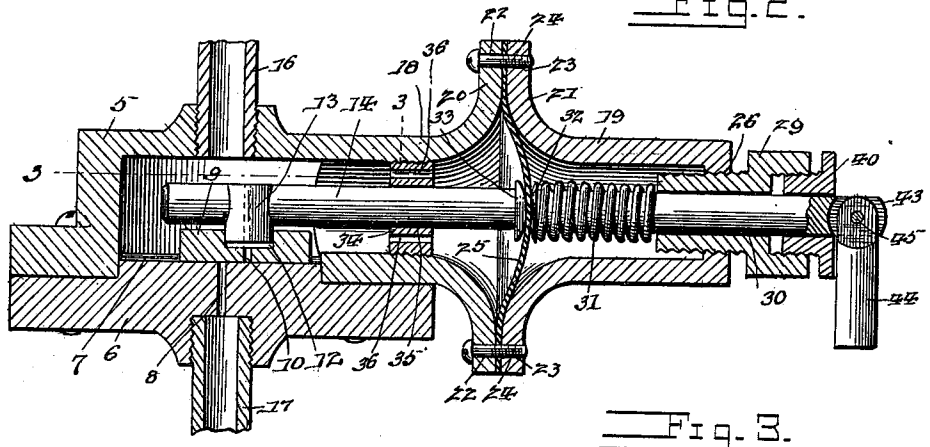
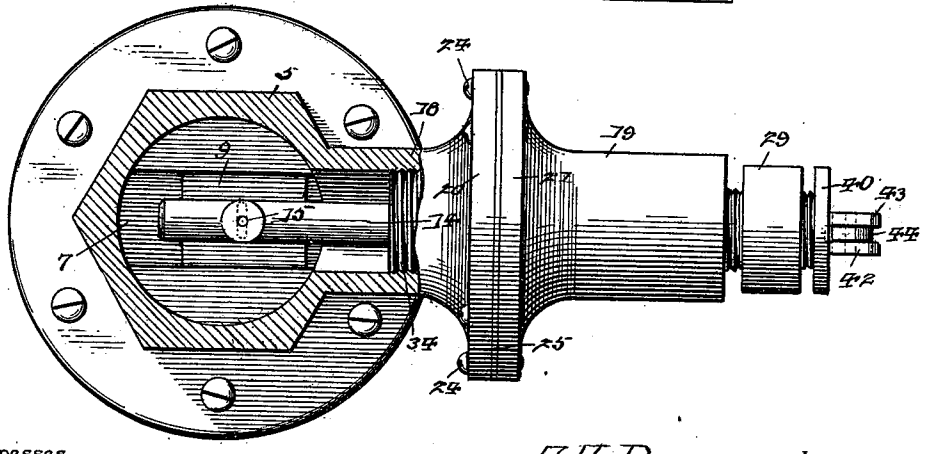


Fig. 3.



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UNITED STATES PATENT OFFICE.

AVERY H. PARSONS, OF SOMERVILLE, TEXAS.

LOW-PRESSURE ALARM AND INDICATOR FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 672,106, dated April 16, 1901.

Application filed October 25, 1900. Serial No. 34,335. (No model.)

To all whom it may concern:

Be it known that I, AVERY H. PARSONS, a citizen of the United States, residing at Somerville, in the county of Burleson and State of Texas, have invented a new and useful Low-Pressure Alarm and Indicator for Air-Brakes, of which the following is a specification.

This invention relates to air-brake mechanisms in general, and more particularly to the alarms for giving warning when the pressure in the train-pipe drops to a predetermined point and for giving a visual signal when such condition exists, the object of the invention being to provide a simple and efficient construction which may be attached to the train-pipe upon each vehicle of a train and which when the pressure drops will sound a warning and will at the same time indicate approximately the train-pipe pressure at that point, the construction being such that further reduction in pressure will act to close off the sounding signal to prevent excessive waste, but will maintain the visual signal or indicator.

A further object of the invention is to provide a construction wherein the visual indicator will be operable at all times to indicate the pressure or approximate pressure in the train-pipe at that point.

Further objects and advantages of the invention will be evident from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of the mechanism of the present invention. Fig. 2 is a longitudinal section of the device, the interior mechanism being shown in elevation. Fig. 3 is a detail section of a portion of the device in the plane indicated by the line 3 3 of Fig. 2.

Referring now to the drawings, the present device includes a casing comprising a hollow head 5, having a cap-plate 6 for closing one side thereof, and in the inner face of this plate 6 is formed a diametrical groove or slideway 7, in the bottom of which is formed a perforation or port 8, which is adapted to be opened and closed by a slide-valve 9 in the form of a rectangular block disposed and fitted in the guideway 7, said slide-valve having a port 10 therein, which is adapted for registration at times with the port 8 as the valve is reciprocated to move the port 10 from one side to the other of the port 8.

The valve-block has an annular recess 12 in its upper face, and in this recess is disposed the cylindrical stud 13, adjacent to the inner end of a valve-rod 14, said rod and stud having a perforation 15 formed therethrough to communicate the port 10 with the head 5 of the casing above the valve. A feed-pipe 16 is engaged with the head 5 of the casing above the slide-valve, while a whistle-pipe 17 is engaged with the cap-plate 6, concentric with the port 8, so that when the ports 8 and 10 are alined the feed-pipe which leads from the train-pipe is brought into communication with the whistle-pipe, so that air under pressure is supplied to the whistle to operate it.

The casing of the device has a stem, including an integral section 18 and a separable section 19, provided with flanges 20 and 21, having perforations 22 and 23, adapted for alinement, to receive holding bolts or screws 24, and between these flanges there is clamped an elastic diaphragm 25, which hermetically seals the forward portion of the casing from the removable section of the stem thereof.

In the rear end of the section 19 of the casing is formed a threaded central perforation 26, with which is adjustably engaged a bushing 29, having a central bore 30, in which is slidably disposed the valve-rod 14, the outer end of which projects entirely through the bushing, as illustrated, and upon the valve-rod, between the bushing 29 and the diaphragm, is disposed a helical spring 31, one end of which rests against the bushing, while the opposite end rests against the clamping-nut 32, which is disposed against the face of the diaphragm and acts to hold it against the annular flange 33 of the valve-rod. The tendency of the spring 31 is to hold the rod 14 in position to hold the slide-valve with the port 10 beyond the port 8 and is of such tension that when the train-pipe pressure is at normal to hold the brakes free it will be compressed by the action of the air-pressure against the diaphragm, and when the pressure in the train-pipe drops below normal the spring will act to move the valve-rod, and therewith the valve, to aline the ports 8 and 10, permitting a portion of the air in the casing to

pass to the whistle-pipe and sound the whistle, with which each of the devices is provided. Further reduction in the pressure will permit the spring to farther expand and move the valve farther to move the port 10 from registry with the port 8 to stop the outflow of pressure to the whistle, this further movement of the valve being made before the pressure in the train-pipe has dropped to a sufficient degree to set the brakes.

To support the valve-rod between the valve and the bushing 29, a bushing 34 is engaged with the portion 18 of the casing and has a central bearing-opening 35, in which the valve-rod slides, this bushing having perforations 36 to permit access of pressure from the head 5 of the casing to the diaphragm to operate the latter.

With this construction it will be seen that when a drop in pressure occurs in a train-pipe at any vehicle which is sufficient to endanger proper operation of the brakes the slide-valve will be operated to communicate the whistle-pipe with the train-pipe to actuate the whistle, this communication being then cut off to prevent an excessive drop, and, furthermore, the whistle will be again sounded when the pressure is raised to normal or when the normal pressure is approached, thus showing that proper pressure at that point has been reëstablished. The spring 31 may be adjusted by manipulation of the bushing 29 to vary its tension and to set it at such a point as to insure proper operation.

In order that the pressure in the train-pipe at any vehicle may be approximately determined at any time, a visual indicator is provided. A bushing 40 is engaged in the outer end of the bushing 29, which is enlarged and threaded for this purpose, and this second bushing 40 also receives the valve-rod slidably and beyond which it projects. In the end of the valve-rod is formed a perforation 41, which is extended through the two terminal ears 42 and 43, formed by bifurcating the end of the rod, and these ears have a finger 44 disposed between them and held pivotally in place, said finger having also a perforation to receive the pivot-pin 45, which is also engaged with the ears 42 and 43. The finger 44 normally depends from the valve-rod, and the bushing 40 is adjusted to lie against the side of the finger when the valve-rod is held outwardly under the influence of normal pressure in the train-pipe and against the diaphragm. When the pressure drops, the diaphragm permits the valve-rod to move under the influence of the spring 31, when the rod tends to draw the finger 44 through the bushing 40, the finger being drawn against the bushing 40 in such manner as to swing its lower end laterally and upwardly upon the pivot-pin 45, the angular movement of the finger depending upon the degree of drop in the pressure in the casing. By adjusting the bushing 40 the finger may be given its initial movement at any desired point of movement of the valve-rod or at any desired drop in pressure, the angle at which the finger hangs indicating, of course, the pressure against the diaphragm. Thus whether or not the whistle is sounded the condition of the train-pipe pressure may be approximately determined by reference to the position of the indicating-finger, and by placing one of these devices upon each vehicle of a train and properly connecting it a drop in pressure will be followed by the sounding of the alarm-whistle and will be shown by the indicator, the condition of the pressure at each vehicle being thus individually shown and irrespective of the pressure at any other vehicle.

It will of course be understood that in practice various modifications of the specific construction shown may be made and that any suitable materials and proportions may be used for the various parts of the device without departing from the spirit of the invention.

What is claimed is—

1. A device of the class described comprising a casing having an opening therein, a rod slidably disposed in the opening and projecting therethrough, an indicating-finger pivoted to the protruding portion of the rod and unattached to the casing, said finger being adapted for movement with the rod, against the casing at one side of the pivot to pivotally move the finger, said rod being operable by variation of pressure in the casing.

2. A device of the class described comprising a casing, a rod slidably mounted in the casing, an indicating-finger pivoted to the rod and adapted for bodily movement therewith, said finger being unattached to the casing, a stop in the path of bodily movement of the finger to move it pivotally with respect to the rod, to lie at various angles to the rod, and a pressure-actuated diaphragm connected with the rod to move it.

3. A device of the class described comprising a casing, a pressure-actuated rod slidably mounted in the casing, an indicating-finger pivoted to the rod and adapted for bodily movement therewith, said finger being unattached to the casing, a stop in the path of bodily movement of the finger for moving it pivotally, to lie at various angles to the rod, and a potential device for moving the rod against pressure to actuate the finger.

4. A device of the class described comprising a casing having a rod slidably mounted therein, a diaphragm fixed to the casing and rod, a pressure-pipe connected with the casing at one side of the diaphragm to supply pressure thereto to actuate the diaphragm, a potential device disposed to move the rod against the pressure upon the diaphragm, an indicating-finger pivoted to the rod and movable bodily therewith, said finger being unattached to the casing and a stop in the path of movement of the finger with the rod, for moving the finger pivotally, to lie at various angles to the rod.

5. A device of the class described comprising a casing having an opening therein, a bushing adjustably engaged with the casing in the opening and having a bearing, a second bushing adjustably engaged with the first bushing and having a bearing alined with the bearing of the first bushing, a rod slidably engaged with the bushings, a finger pivoted to the rod and adapted for contact with the second bushing to move the finger pivotally when moved bodily with the rod, said finger being unattached, save to the rod, a diaphragm in the casing and connected with the rod, a pressure-pipe connected with the casing at one side of the diaphragm to supply pressure thereto to move the rod in one direction, and a helical spring engaged with the rod and disposed against the first bushing for adjustment thereby, said spring being disposed in opposition to the pressure against the diaphragm, the second bushing being adjustable toward and away from the finger to vary the pivotal movement of the finger with unit movement of the rod.

6. A device of the class described comprising a casing, a pressure-pipe and a signal-pipe connected with the casing, a valve for communicating the signal-pipe with the casing, a rod for the valve extending exteriorly of the casing, a diaphragm fixed in the casing and engaged with the rod, said diaphragm being disposed to receive pressure from the pressure-pipe to move the rod and valve in one direction, a bushing in the casing between the valve and diaphragm and having perforations leading to both sides thereof, a helical spring engaged with the rod and disposed to oppose the movement of the rod under the influence of pressure upon the diaphragm, a finger pivoted to the rod, and a stop in the path of bodily movement of the finger to move it pivotally.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

AVERY H. PARSONS.

Witnesses:
J. S. BAKER,
A. E. SMITH.