F. SCHUBERT.

PRESSURE ALARM GAGE.

APPLICATION FILED FEB. 26, 1912.

1,074,137. **Patented Sept. 30, 1913.**

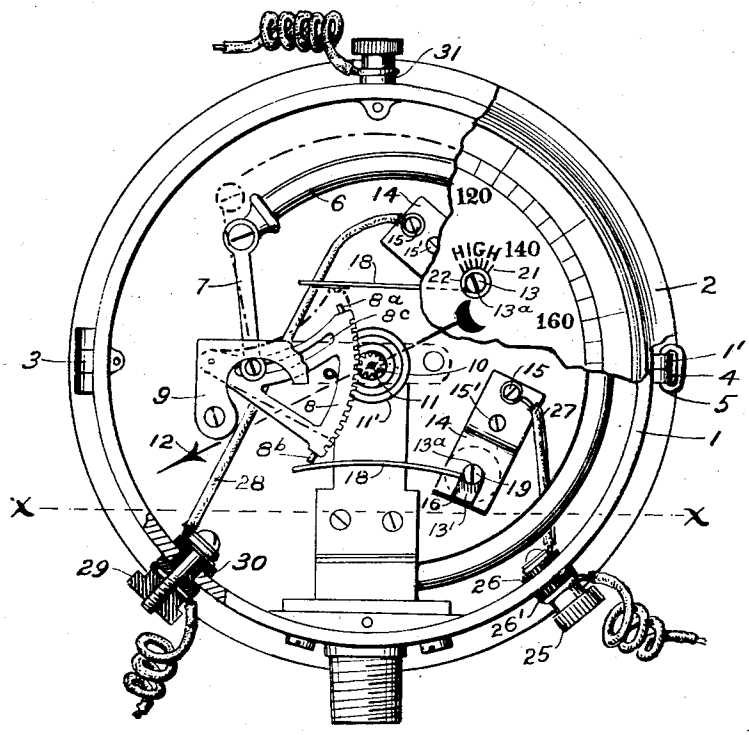


Fig. 1

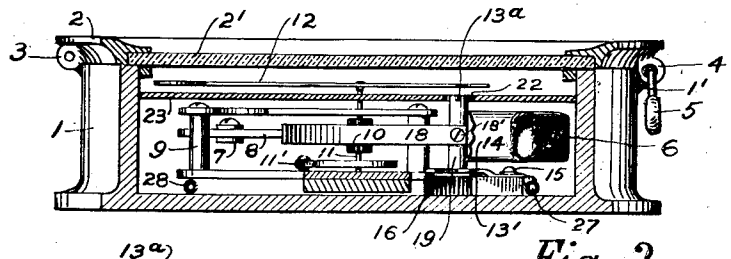


Fig. 2.

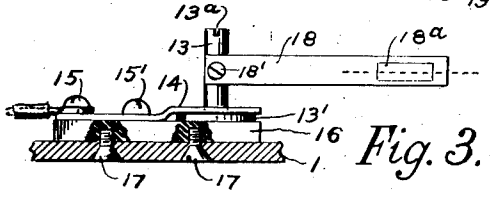


Fig. 3.

WITNESSES:

Edgar M. Leinbaum

Thomas McMenamy

INVENTOR

Frederick Schubert

BY

E. F. Gunert

ATTORNEY

UNITED STATES PATENT OFFICE.

FREDERICK SCHUBERT, OF SELLERSVILLE, PENNSYLVANIA.

PRESSURE-ALARM GAGE.

1,074,137. Specification of Letters Patent. Patented Sept. 30, 1913.

Application filed February 26, 1912. Serial No. 680,036.

To all whom it may concern:

Be it known that I, FREDERICK SCHUBERT, a citizen of the United States, and resident of Sellersville, in the county of Bucks and State of Pennsylvania, have invented certain new and useful Improvements in Pressure-Alarm Gages, of which the following is a specification.

This invention relates to electrical alarm gages for indicating high and low pressure in a steam boiler and the like, the object being to produce such a gage in which the adjustment is inclosed to prevent tampering by any unauthorized person.

A further object is to provide simple electrical contacts for sending two distinct alarms to a point distant from the boiler, which contacts will not interfere with the correct indication of the pressure on the dial.

The accompanying drawings illustrate the preferred embodiment of the invention, but it is understood that changes, variations, and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings, wherein like reference characters denote corresponding parts in the several views, Figure 1 is a front elevation of the alarm gage, the movement standing at "low pressure," the bezel being broken away to show construction, and the case also broken away to show insulation of one of the wire connecting or binding posts; the dash and dot lines show the position of the Bourdon-spring tube, link and sector when indicating "high-pressure." Fig. 2 is a sectional view on line x—x of Fig. 1, the Bourdon-spring tube being broken away, for clearness of illustration and Fig. 3 is an enlarged side elevation of one of the electrical contact posts, as mounted complete in the gage case, shown in section, the insulated block being broken away at the screws.

The case, 1, is of the usual construction, but I prefer to use a bezel or ring, 2, with a hinge, 3, on one side and a staple, 4, at a point diametrically opposite said staple alining with a similar staple, 1′, on the case for the purpose of fastening with a lock or seal 5. A glass 2′ is fastened in the ring 2.

The pressure indicating movement consists of the usual Bourdon-tube spring, 6, link, 7, and sector, 8, the sector having two contact points, 8^a and 8^b, for the purpose hereinafter specified. A curved slot, 8^c, permits adjustment of the link, this being a modification of the curved adjustment shown in Letters Patent No. 831,191 issued to me on September 18th, 1906.

The movement is mounted in a frame 9, as usual, and consists of a pinion, 10, on the shaft, 11, upon which the pointer, 12 is placed, the arc of the sector is provided with teeth on its periphery which engage the pinion, 11′ is a coiled spring.

At a suitable point above the movement an electrical contact post for "high" pressure 13, is positioned, the post having a flat, circular base, 13′, which is pressed down by a metal spring, 14, bifurcated at the post and held in place by screws, 15, 15′, upon an insulated plate, 16, said plate being fastened to the case by screws, 17, as shown in Fig. 3. The post, 13, may be slightly flattened on one side and a thin flat spring, 18, attached to it by a screw, 18′, or in any preferred manner; a small strip of platinum 18^a or other non-corroding metal may be fastened on the face of said spring so as to stand in the path of the contact point 8^a (or 8^b) of the sector, the path being indicated by a dotted line in Fig. 3.

A similar electrical contact post, 19, for "low" pressure is an exact duplicate of the one described above, and is placed in the case so that the spring 18 will present its side to and stand in the path of the contact point 8^b of the sector, as shown in Fig. 1. A slot, 13^a, by which the posts, 13 and 19 are rotated or adjusted, also acts as an indicator in conjunction with the marks, 21, placed above an opening 22 in the dial, 23, shown in Fig. 1. The "low" pressure post is mounted in exactly the same manner as the "high" pressure post, the difference being that the "low" pressure post and spring is connected with a binding post 25, insulated from the case 1, by a rubber bushing and washer 26, 26′ respectively and by an insulated wire, 27; and the "high" pressure post and spring is connected by an insulated wire 28 to a binding post 29, also insulated from the case by a suitable insulator 30. The binding post, 31 at the top of the case is directly connected or, has metallic connections with said case whereby one pole of a battery—not shown—will energize it, and,

as the indicating movement is of metal, it, as well as the sector is influenced by the same pole of the battery.

Such being the construction, the operation is as follows: When the gage has been placed in position, the wires are connected up to any preferred electrical alarms—not shown. One wire may be run to a "cow bell", and one to a gong—to distinguish the two different sounds. When pressure is applied to the gage, the Bourdon tube spring is distended,—as shown by dot and dash lines in Fig. 1,—the pointer shows the pressure on the dial. A screw driver is inserted in the slot, 13ª of the post 13 whereby it is rotatively adjusted so that the contact spring 18 will stand at the desired point—or pressure—at which an alarm is to be sounded—say as an illustration, 100 pounds pressure as a maximum high pressure; the other contact post, 19, is then adjusted for a "low" pressure limit, say 80 pounds. The slots 13ª will each indicate the position of the contact spring within the case by pointing to the marks around the high and low pressure openings, and if moved accidentally or purposely, such change will be noticable at a glance. To prevent a fireman or any unauthorized person from resetting these contact posts, the gage is locked up or sealed. The contact springs are very thin and resilient so that the movement of the sector is not affected when the contact points 8ª or 8ᵇ press against either of the springs, thus insuring a correct indication of the pressure.

The bells may be placed in the engineer's office, or elsewhere even at considerable distance from the boiler—if for steam pressure—and when the pressure varies from its safe or proper standard—say 90 pounds—an alarm will be sounded on either the "high" or "low" bell—as the case may be,—so that the fireman can give prompt attention to the boiler.

In small plants the engineer frequently does his own firing, and as the boiler house is oftentimes removed some distance from the engine room, when the engineer is attending to the engine or doing other required work, the boiler is neglected or not properly attended to and in such cases the pressure frequently rises or falls, and is not noticed until the safety valve blows off or the power runs slow; but by the use of an alarm gage such as I have described, the pressure can be kept within even five pounds variation, if desired, so that no loss of power or steam will be sustained. And if the alarm bells are kept near or in the office of a factory, this also has a tendency to keep the fireman or engineer attentive to his duties, and compels him to keep an even uniform pressure within the set limits.

Such being my invention what I claim is:—

1. A pressure gage, having a Bourdon tube spring, a sector, and indicating means operated by said spring and said sector, all inclosed within a case, a plurality of insulated binding posts mounted on said case, an electrical alarm comprising an upper and a lower contact point on the free end of said sector, two independently mounted posts carrying resilient contact springs for making electrical connection respectively with the upper or lower contact points on said sector, each of said posts being rotatively mounted upon an insulated block against the back of said case, a binding post directly connected with said case, and an independent electrical connection from each of said adjustable posts to an insulated binding post on the periphery of said case, a dial upon which the pressure is indicated, openings in said dial which aline with each of said rotatable posts, indicating marks at said openings, each of said posts having an indicating mark which indicates the position of said contact springs.

2. In a pressure gage, a movement case containing a Bourdon tube spring, a sector and indicating means operated by said sector, a post rotatively mounted, carrying a spring adapted for contacting with the free upper end of said sector, another post rotatively mounted carrying a spring adapted for contacting with the free lower end of said sector, said two posts being independently mounted upon an insulated block, two insulated binding posts mounted on said movement case, having independent connection with the said two rotatively mounted posts, a dial having openings through which the said posts first mentioned are rotatively adjusted, said movement and said electrical adjustment devices being inclosed and locked within said case.

Signed at Sellersville in the county of Bucks and State of Pennsylvania this 16th day of February A. D. 1912.

FREDERICK SCHUBERT.

Witnesses:

FRITZ BIERET,

ERNST SCHWIND.