

July 21, 1936.

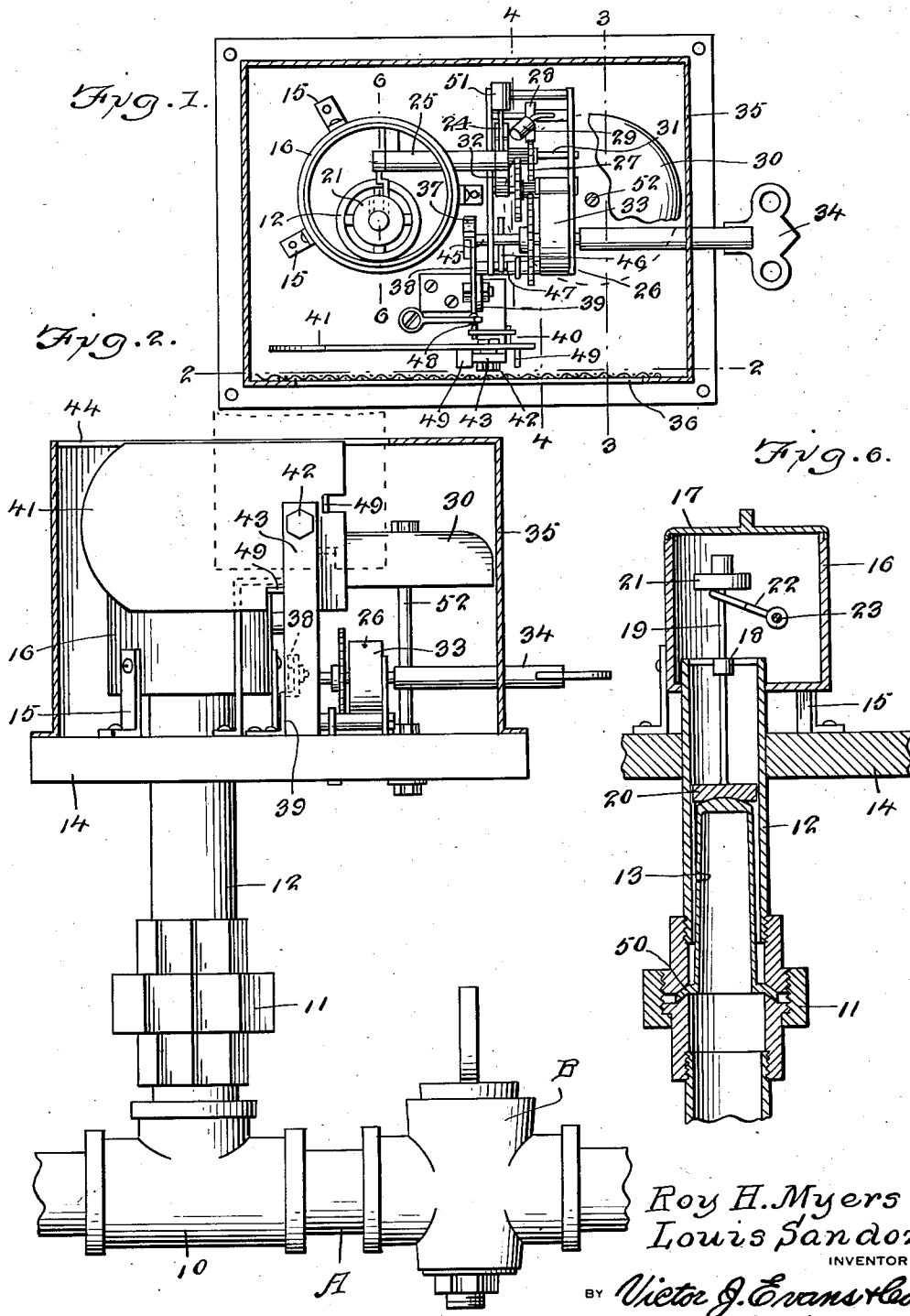
R. H. MYERS ET AL

2,048,615

LOW PRESSURE GAS ALARM

Filed Sept. 25, 1935

2 Sheets-Sheet 1



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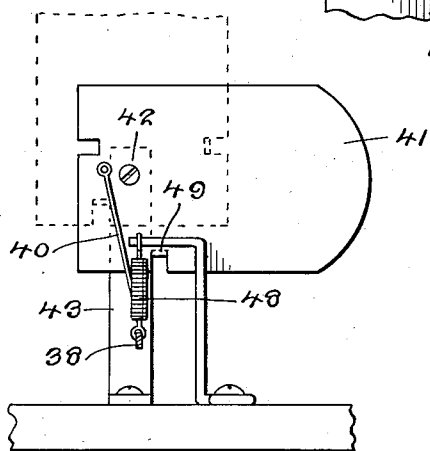
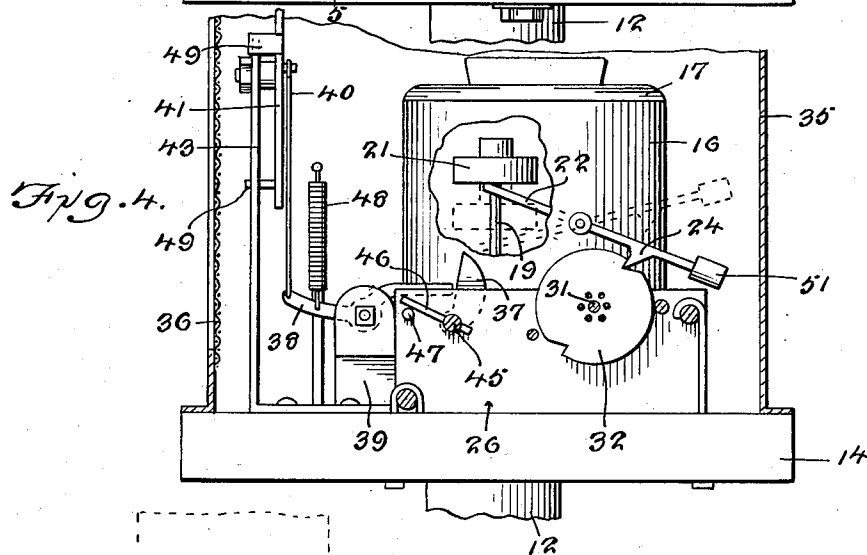
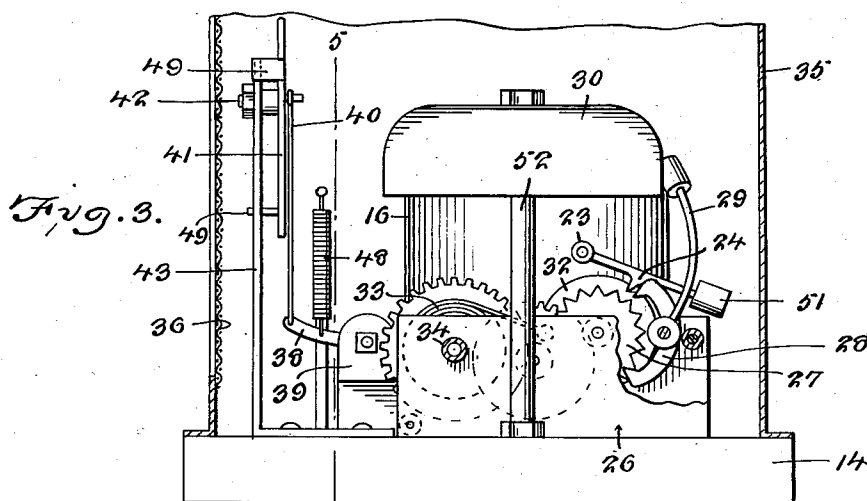
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UNITED STATES PATENT OFFICE

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LOW PRESSURE GAS ALARM

Roy H. Myers and Louis Sandoz, Ventura, Calif.

Application September 25, 1935, Serial No. 42,134

5 Claims. (Cl. 116—70)

The invention relates to a low pressure alarm and more especially to a gas flow alarm.

The primary object of the invention is the provision of a device of this character, wherein an audible and visible alarm is given for the purpose of safeguarding the lives of human beings when the gas pressure in a supply main lowers so that there is no possibility of the escape of gas at a burner should the flame become extinguished due to the drop or lowering of the pressure of gas delivered thereto, the device being especially adaptable should someone accidentally fall asleep with the gas burning and the pressure become low in the feed conduit or line because on the sounding of the alarm the person will awaken and sufficient time will be had to inspect and shut off the flow of gas to the burner.

Another object of the invention is the provision of a device of this character, wherein the construction thereof is novel in form so that it will be compact and will not be unsightly when associated with a gas main or conduit and will be automatic in its action for giving an alarm either audible or visible or both when gas pressure becomes lowered in the line whereby an attendant can shut off the supply until the pressure rises therein.

A further object of the invention is the provision of a device of this character, which is simple in construction, thoroughly reliable and efficient in its operation, readily and easily coupled with a gas feed line, automatically operable and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is a horizontal sectional view through the device constructed in accordance with the invention and a portion of the bell being broken away.

Figure 2 is a sectional view on the line 2—2 of Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

Figure 5 is a sectional view on the line 5—5 of Figure 3.

Figure 6 is a fragmentary vertical sectional view through the coupling between the device and

a gas feed main showing in detail the expansible and collapsible diaphragm.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, A designates a portion of a gas line or supply pipe through which the flow of gas is controlled by means of a hand operable plug valve B. Fitted in the pipe A is a T union 10 and the same is located on the outlet side of the said pipe with respect to the valve B. With this union is attached by a coupling 11 a vertically disposed or upstanding barrel 12 for an expansible and collapsible diaphragm 13, it being detachably seated in the coupling 11 for the rise and collapse thereof within the barrel 12.

About the upper portion of the barrel 12 is arranged a platform or bed 14 carrying thereon by legs 15 a cylinder 16 having a removable top or cover 17. Into this cylinder is extended the upper end of the barrel 12. Formed in the upper end of the barrel 12 is a spider constituting a center guide 18 for the stem 19 of a follower head 20 playing upon the diaphragm 13. The stem 19 also carries a weight disk 21 for action upon a trip arm 22 extended from the arbor 23 of a latching detent 24, the arbor 23 being journaled in a bearing 25 formed with the cylinder 16.

At one side of the cylinder 16 is supported on the bed or platform 14 a spring actuated alarm clock mechanism 26 which through the escapement wheel 27 and the escapement 28, respectively, operates a bell clapper 29 for the striking of a bell 30 when the mechanism 26 is free for operation. The arbor 31 for the escapement wheel 27 has fixed thereto a peripherally notched latching wheel 32 with which coacts the latching detent 24 so that when the detent is engaged in the notches in the wheel 32 the mechanism 26 will be held passive or inactive and this detent is engaged with the wheel 32 when the diaphragm 13 is extended under the influence of high gas pressure within the main or pipe A. When the diaphragm 13 collapses the weight disk 21 acts upon the arm 22 to move the detent 24 so that the mechanism 26 is freed for action. The spring 33 of this mechanism 26 is hand wound by a key 34 accessible exteriorly of a cover housing 35 for the mechanism 26 and the cylinder 16 and detachably fastened upon the bed or platform 14.

The housing 35 at one side is fitted with a screen panel 36 so that the sound of the bell 30 when acted upon by the clapper 29 will be readily

emitted from the housing 35 and clearly audible for signal or alarm purposes.

The mechanism 26 controls and operates a cam 37 active upon a rocking lever 38 journaled in a bearing or bracket 39 and has linkage at 40 with a swinging visible signal plate 41 journaled at 42 upon an upright or standard 43 rising from and carried by the platform or bed 14 interiorly of the housing 35. The plate 41 is adapted to be moved upwardly through a slot 44 formed in the top of the housing 35 to signalling positions when the mechanism 26 is active resultant from low pressure presence within the main or pipe A and in this manner a person will have the benefit of an audible and visible signal indicative of low pressure within the main or pipe A, these signals being operated on activity of the mechanism 26 within the housing 35. The arbor 45 of the cam 37 and which is the winding shaft for the spring 33 has thereon a stop arm 46 arranged in the path of a stop lug 47 on the frame for the mechanism 26 so that the cam 37 will be limited in its travel in a direction to operate the lever 38 for the actuation of the signal plate 41. This lever 38 has connected thereto a tensioning spring 48 so that when the cam 37 is inactive on the lever 38 the spring 48 becomes active to lower the signalling plate 41 into the housing 35 which is the normal position of said plate.

The plate has the stops 49 cut and bent therefrom to coact with the standard 43 so as to limit the throw of the plate 41 in reverse directions when actuated by the cam 37 or the spring 48.

When the key 34 is turned for the winding of the spring 33 of the mechanism 26 the cam 37 is moved away from the lever 38 and by the action of the spring 48 the signalling plate 41 is lowered from signalling position to within the housing 35 and thus out of sight.

The seating at 50 of the diaphragm 13 and the coupling 11 effects a seal against the escapement of gas through the barrel 12 into the cylinder 16 and assures the pressure of the gas within the main or pipe directly against the diaphragm 13 which is of thimble-like form.

The operation of the mechanism 26 is timed by the cam 37 because on the release of the wheel 32 the audible alarm is sounded by the striking of the bell 30 until the plate 41 has moved to visible signalling position whence the mechanism 26 is rendered passive or stops by the member 46 engaging the stop 47 and this interval of signalling of the device allows a person recognizing the signals to shut off the gas in the main or pipe A by the valve B, the latter being normally in open position for the feeding of gas to a point of consumption through the main or pipe A.

The detent 24 carries a weight 51 so that it will be moved to locking position with the wheel 32 when the weight disk 21 is lifted from the arm 22 and this weight disk 21 is lifted by the extending or expanding of the diaphragm 13 directly active upon the head 20 on the stem 19 carrying said weight disk.

The visible signal plate 41 is automatically lowered to non-signalling position and the detent 24 automatically engages with the wheel 32, the signal plate being lowered by the spring 48 and the detent engaged with the wheel when the weight disk 21 is relieved from the arm 22.

The bell 30 is carried upon a support 52 suitably fitted in the bed or platform 14 within the housing 35 and is sounded by the clapper 29 when the mechanism 26 is operating.

What is claimed is:

1. A device of the character described comprising alarm mechanism having a key wound main spring, a latching wheel driven by said mechanism, a cylinder having a barrel opening into the same, a coupling connecting the barrel with a fluid pressure main, an expansible and contractible diaphragm fitting said coupling and confined within the barrel, a stem slidably fitted in the barrel and having a head contacting with said diaphragm, a weight disk carried by the stem, a rocking shaft journaled through the side of the cylinder and having a lever acted upon by the weight disk, a latching arm on said shaft and releasably engageable with the latching wheel, a signal plate swingingly supported, an actuating lever for the signalling plate and a cam driven by said mechanism and operating upon the actuating lever to move the signalling plate to signalling position.

2. A device of the character described comprising alarm mechanism having a key wound main spring, a latching wheel driven by said mechanism, a cylinder having a barrel opening into the same, a coupling connecting the barrel with a fluid pressure main, an expansible and contractible diaphragm fitting said coupling and confined within the barrel, a stem slidably fitted in the barrel and having a head contacting with said diaphragm, a weight disk carried by the stem, a rocking shaft journaled through the side of the cylinder and having a lever acted upon by the weight disk, a latching arm on said shaft and releasably engageable with the latching wheel, a signal plate swingingly supported, an actuating lever for the signalling plate, a cam driven by said mechanism and operating upon the actuating lever to move the signalling plate to signalling position and means for moving the actuating lever when released by the cam to move the signalling plate to non-signalling position.

3. A device of the character described comprising alarm mechanism having a key wound main spring, a latching wheel driven by said mechanism, a cylinder having a barrel opening into the same, a coupling connecting the barrel with a fluid pressure main, an expansible and contractible diaphragm fitting said coupling and confined within the barrel, a stem slidably fitted in the barrel and having a head contacting with said diaphragm, a weight disk carried by the stem, a rocking shaft journaled through the side of the cylinder and having a lever acted upon by the weight disk, a latching arm on said shaft and releasably engageable with the latching wheel, a signal plate swingingly supported, an actuating lever for the signalling plate, a cam driven by said mechanism and operating upon the actuating lever to move the signalling plate to signalling position, means for moving the actuating lever when released by the cam to move the signalling plate to non-signalling position and means co-operating with the cam to limit the movement of the latter when shifting the signalling plate to signalling position.

4. A device of the character described comprising alarm mechanism having a key wound main spring, a latching wheel driven by said mechanism, a cylinder having a barrel opening into the same, a coupling connecting the barrel with a fluid pressure main, an expansible and contractible diaphragm fitting said coupling and confined within the barrel, a stem slidably fitted in the barrel and having a head contacting with said diaphragm, a weight disk carried by the stem, a rocking shaft journaled through the side of the

cylinder and having a lever acted upon by the weight disk, a latching arm on said shaft and releasably engageable with the latching wheel, a signal plate swingingly supported, an actuating lever for the signalling plate, a cam driven by said mechanism and operating upon the actuating lever to move the signalling plate to signalling position, means for moving the actuating lever when released by the cam to move the signalling plate to non-signalling position, means cooperating with the cam to limit the movement of the latter when shifting the signalling plate to signalling position, and escapement means included with said mechanism for intermittently sounding a bell.

5. A device of the character described comprising alarm mechanism having a key wound main spring, a latching wheel driven by said mechanism, a cylinder having a barrel opening into the same, a coupling connecting the barrel with a fluid pressure main, an expansible and contractible diaphragm fitting said coupling and

confined within the barrel, a stem slidably fitted in the barrel and having a head contacting with said diaphragm, a weight disk carried by the stem, a rocking shaft journaled through the side of the cylinder and having a lever acted upon by the weight disk, a latching arm on said shaft and releasably engageable with the latching wheel, a signal plate swingingly supported, an actuating lever for the signalling plate, a cam driven by said mechanism and operating upon the actuating lever to move the signalling plate to signalling position, means for moving the actuating lever when released by the cam to move the signalling plate to non-signalling position, means cooperating with the cam to limit the movement of the latter when shifting the signalling plate to signalling position, escapement means included with said mechanism for intermittently sounding a bell and means enclosing the said mechanism, cylinder and the bell.

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