March 2, 1937. K. S. JENSON 2,072,369

PRESSURE INDICATOR

Filed July 1, 1935

Fig. 2.

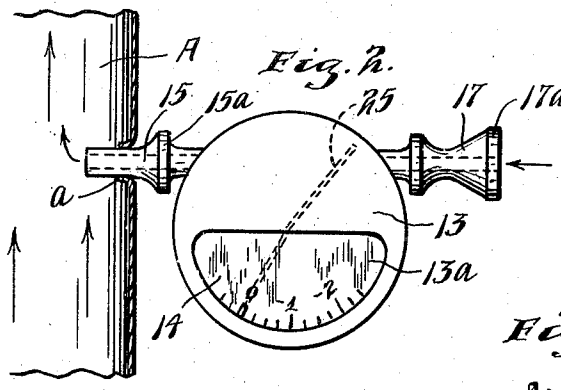


Fig. 9.

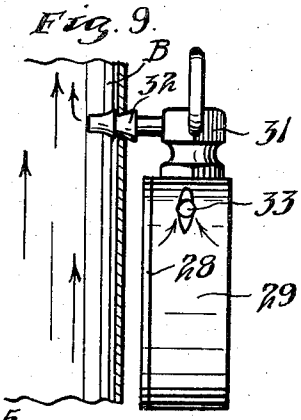


Fig. 5.

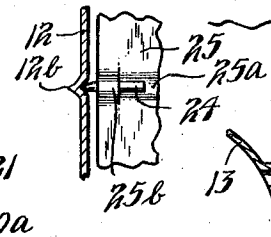


Fig. 3.

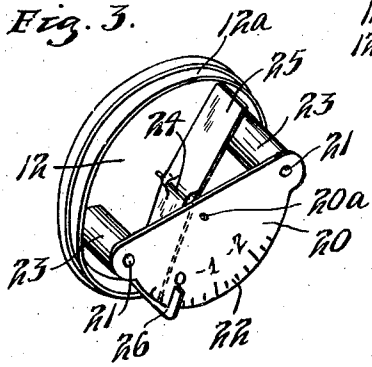


Fig. 4.

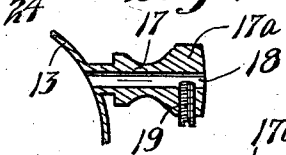


Fig. 1.

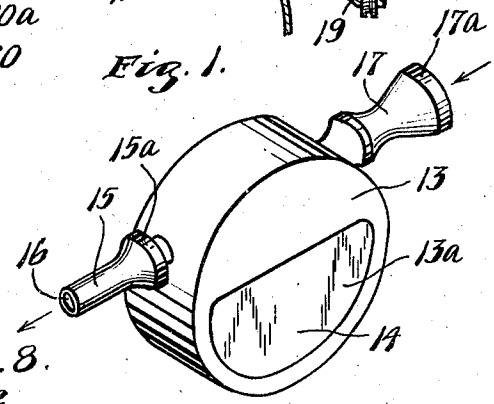


Fig. 10.

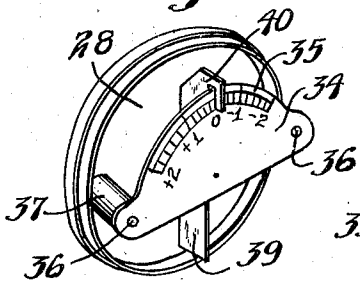


Fig. 8.

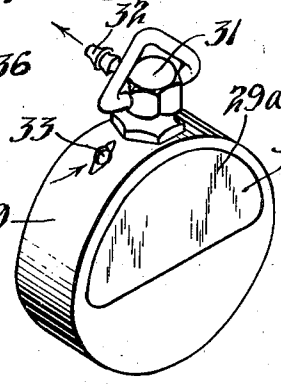


Fig. 6.

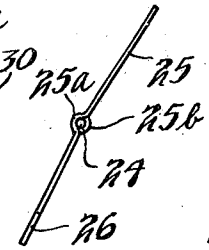


Fig. 7.

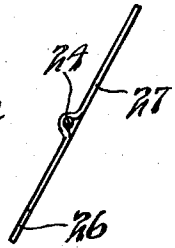
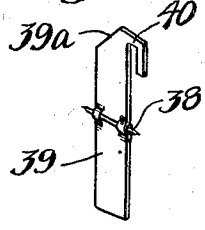


Fig. 11.



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PRESSURE INDICATOR

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Application July 1, 1935, Serial No. 29,299

2 Claims. (Cl. 73—31)

This invention relates to pressure indicators.

It is the general object of the invention to provide a novel and improved pressure indicator of cheap and simple construction, which can be used for roughly measuring the pressure of gas as in smoke flues for heaters, stoves, etc.

To this end, generally stated, the invention consists in the novel parts and novel combinations of parts, hereinafter defined in the claims and described in the following specification, made in connection with the accompanying drawing, wherein like reference characters refer to the same or similar parts throughout the various views, and, in which,

Fig. 1 is a perspective view illustrating a pressure indicator embodying the invention;

Fig. 2 is a view in front elevation of the said indicator showing the same as it will appear when in use for determining the pressure within a smoke flue for a heater, portions of the smoke flue being shown in vertical section;

Fig. 3 is a perspective view of the same indicator with the front part of the casing removed;

Fig. 4 is a detail in vertical section of certain of the parts of the indicator;

Fig. 5 is a vertical section showing other parts in detail;

Fig. 6 is a view in front elevation illustrating the vane used with the indicator shown in the previously described views;

Fig. 7 is a similar view illustrating an alternative form of vane that may be used;

Fig. 8 is a perspective view illustrating a second type of indicator embodying the invention;

Fig. 9 is a view in side elevation of the indicator shown in Fig. 8 applied for use to a smoke flue, the flue being shown in vertical section;

Fig. 10 is a perspective view illustrating the indicator of Fig. 9 with the front part of the casing removed; and

Fig. 11 is a perspective view illustrating the vane used with the indicator of Fig. 8.

Referring first to the embodiment of the invention illustrated in Figs. 1 to 6, there is provided a cylindrical casing including a back 12 and a front 13. The back 12 has a forwardly extending circular flange 12*a* joining a circular disk portion and this flange is thinned or rabbeted at its outer forward portion to receive the cylindrical wall of front 13. The forward face of front 13 is provided with a semi-circular opening 13*a* closed by a light 14 of glass, celluloid or other transparent material. The cylindrical wall of front 13 considerably above the axial center of the cylinder is equipped with a nipple 15 forming a port 16 communicating with the interior of the casing. Directly opposite the nipple 15 the cylindrical wall of front 13 is equipped with a tubular member 17 forming a port 18 communicating with the interior of the casing. The nipple 15 is preferably provided with a shoulder 15*a* joining a reduced portion of the nipple outwardly therefrom by a converging flaring portion, while the tubular member 17 is provided with a head 17*a* at its outer end and is convexly grooved inwardly therefrom to form a convenient handle by which the indicator may be held when in use. A set screw 19 mounted in the member 17 is provided for adjustably regulating the size of the port 18.

A semi-circular dial 20 is supported by spaced studs 21 from the casing back 12 so that calibrations 22 on this dial are exposed to view through the glazed opening 13*a* in casing front 13. Spacing thimbles 23 surrounding the studs 21 are interposed between the casing back 12 and dial 20.

The casing back 12 at its central portion is provided with a pintle bearing 12*b* and dial 20 in opposition to the bearing 12*b* is provided with a similar pintle bearing 20*a*. A pintle or vane shaft 24, pointed at both ends is located between the casing back 12 and dial 20 and the pointed ends of this pintle are received respectively within the bearings 12*b* and 20*a*. Mounted on pintle 24 is a vane 25. This vane has at its central portion a pair of longitudinal slits and parts of the vane are oppositely grooved adjacent these slits at 25*a* and 25*b* to receive the pintle. The vane 25 has two radial arms extending outwardly from the pintle 24, the upper arm being bent somewhat out of the plane of the lower arm so as to cause the vane to normally balance as indicated in Figs. 2 and 3. The lower arm of the vane is slightly heavier than the upper arm and the lower arm is provided with an angular pointer finger 26, which works over the calibrations 22 on dial 20. When the vane is in its normal balanced condition, as shown in Figs. 2 and 3, the pointer finger 26 will point to the calibration "O" on the dial.

In Fig. 2 a smoke flue A for a stove or heater is illustrated. When it is desired to determine the draft conditions in this flue, a small aperture *a* is made in the flue whereupon the indicator is used. The operator grasps the tubular member 17 with his fingers received within the grooved portion thereof and presses his thumb against the head 17 to close the port 18. The nipple 15 is then inserted through the aperture *a*

in the flue, whereupon the indicator is tilted until the pointer finger **26** registers with the calibration "O" on dial **20** and thereupon the thumb of the operator is withdrawn from the head **17***a*. If there is a proper draft condition in the flue A, the air in this flue will be somewhat under atmospheric pressure, so that air will tend to be drawn into the flue through the port **16** of nipple **15**. As this occurs, of course, air will be supplied to the casing of the indicator through the port **18**. Air movement within the casing of the indicator between the inner mouths of the two ports **16** and **18** will cause the vane **25** to swing, thereby carrying the pointer finger to the right, as viewed in Fig. 2. The rapidity of air movement between the two ports will, of course, determine the position of the vane and the pointer finger and by comparing the position of the pointer finger with the calibrations **22** on dial **20**, a rough indication will be given as to the pressure within flue A. If the pressure within flue A is above atmospheric pressure, which would normally indicate a down draft rather than an up draft in the flue, the pointer **26** would swing to the left of the "O" position and this would be clearly shown by the indicator.

Instead of using the vane **25** and bending the two arms of the vane, so that they are out of alinement, to balance the vane normally so that the pointer is opposite the "O" position on the dial, the same result may be accomplished by use of vane **27** illustrated in Fig. 7. When this vane is used the pintle **24** is so connected to the vane that its central axis is located at the left side of the central plane of the vane so that although the two arms of the vane lie in the same plane, the vane normally stands with the pointer **26** opposite the "O" position of the dial.

Referring now to the form of the invention shown in Figs. 8 to 11, there is provided a cylindrical casing consisting of back **28** and front **29** of very similar construction to back and front of the casing previously described. The flat surface of the front **29** is provided above the cylindrical center with a semi-cylindrical opening **29***a* closed by a light **30** of glass or other transparent material. Mounted at the top of the front **29** is an apertured knob **31** to which a nipple **32** is connected, the nipple communicating with the aperture in the knob and the aperture in the knob communicating with the interior of the casing to form one of the ports of the device. A second port is formed by a small aperture **33** in the cylindrical wall of the front **29**. A dial **34** is mounted behind the glass **30** so as to expose calibrations **35** to view through the glass and this dial is secured to the back **28** by means of spaced studs **36** carrying spacing thimbles **37**. A pointed pintle **38** is mounted at the axial center of the cylindrical casing within pintle bearings formed in the back **28** and in the dial **34**. Pintle **38** is mounted in an off center position after the manner shown in Fig. 7 and carries a vane **39** provided with a pointer finger **40** which works over the dial **34**. The upper rear corner of the vane is preferably cut away at **39***a* to weight the vane slightly heavier below pintle **38** than above the same.

In using the indicator shown in Figs. 8 to 11, the nipple **32** is inserted through a small aperture in a flue B and the entire indicator may then be supported directly from the flue, as shown in Fig. 9. Movement of the vane **39** will be created by the passage of air through opening **33** into the casing of the indicator and thence through knob **31** and nipple **32** into the flue, or vice versa. The finger **40** registering with the calibration **35** on dial **34** will designate the variance in pressure from atmospheric in the flue. When the finger **40** registers with calibrations **35** to the right of the "O" mark, this will indicate updraft movement of air within the flue and will also indicate that the pressure of air within the flue is below atmospheric pressure. When the finger **40** registers with the callibrations **35** to the left of the "O" position, this will indicate that the air is moving downwardly in the flue and that the pressure within the flue is above atmospheric pressure.

The device is particularly effective in installing household heaters and stoves, so as to determine whether or not proper draft conditions may be maintained for operation of such heaters and stoves in particular locations. The indicator, of course, is useful for many other purposes.

When the form of the device shown in Figs. 1 to 7 is used, it is easy to quickly adjust the device for proper use by regulation of the set screw **19**.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departure from the scope of the present invention.

What is claimed is:

1. A pressure indicator including in combination a casing having a pair of spaced ports in communication with the interior thereof, a nipple communicating with one of said ports, said casing having a window therein, a dial mounted within said casing and exposed to view through said window, a pintle journaled within said casing between said dial and a surface of said casing, a vane mounted in a longitudinally off center position on said pintle and having a portion freely movable between said two ports and a pointer carried by said vane and working over said dial.

2. A pressure indicator including in combination a casing having a pair of spaced ports in communication with the interior thereof, a nipple communicating with one of said ports, the front of said casing having a window therein, a dial mounted in spaced relation from the back of the casing for view through said window, a pintle journaled in said dial and said back, a vane mounted on said pintle and freely swingable between said two ports and a finger carried by said vane and working over said dial, said vane including two radial arms, one of which is slightly heavier than the other and one of which is disposed in a plane at a slight angle to the plane of the other arm.

KENNETH S. JENSON.