Oct. 30, 1923.

1,472,366

F. N. KELSEY

SIGNAL VALVE

Filed Oct. 31, 1921

Fig. 1

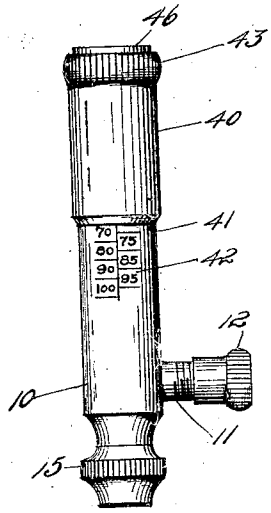
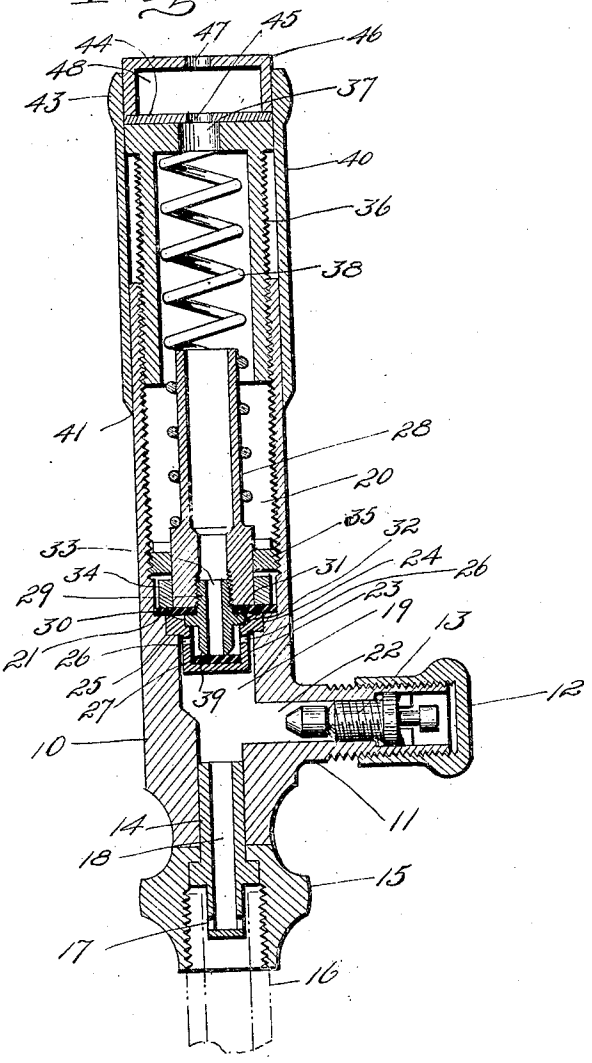


Fig. 2



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UNITED STATES PATENT OFFICE.

FRANK N. KELSEY, OF NEW HAVEN, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO PAUL C. SWOLE, OF NEW HAVEN, CONNECTICUT.

SIGNAL VALVE.

Application filed October 31, 1921. Serial No. 511,821.

To all whom it may concern:

Be it known that I, FRANK N. KELSEY, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Signal Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to signal valves of the type designed to be attached to the valve stem of a motor vehicle or similar tire and to operate and function when the air exceeds a predetermined pressure.

Among other aims and objects of the invention may be recited the provision of a device of the character mentioned with a view to compactness, and in which the number of parts are few, the construction simple, the cost of production small and efficiency and operation high.

The improvements in the details and arrangement of parts will be apparent from an inspection of the accompanying drawings, in connection with the description hereinafter contained, wherein a preferred embodiment of the invention is disclosed for the purpose of imparting an understanding of the same.

In the drawings,

Figure 1 is an elevation of my improved device complete; and

Figure 2 is an enlarged longitudinal sectional elevation thereof.

Having more particular reference to the drawings, in connection with which like reference characters refer to corresponding parts in both figures, 10 designates the valve body having a projecting stem 11 upon one side thereof closed by a cap 12 threaded thereon and within which is mounted an air inlet valve 13 of the usual type for this class of devices.

Secured in the lower end of the valve body 10 is the plug 14 having a nut 15 rotatable therein and which is threaded onto the valve stem 16 connected with the tire. Ports 17 near the outer end of the plug 14 connect with the port 18 therein.

Within the valve body 10 are the chambers 19 and 20 that are separated by a shoulder 21 and opening into the chamber 19 is a port 22 through the stem 11. 23 designates a valve cup, the head portion 24 of which rests upon a shoulder 25 within the valve body 10 and the body portion of which is of less diameter than the chamber 19 into which it projects. Within the bottom of the body portion is a disk 27 preferably of fiber, rubber or similar material, and through the outer wall thereof are one or more ports 26.

Within the chamber 20 is a valve carrier 28 having a valve 29 threaded in one end thereof with a port 33 therethrough, which latter is surrounded by a diaphragm 30 which contacts with the end of the valve carrier 28 upon one side and against the shoulder 21, the collar 31 and the head 24 upon the opposite side. The collar 31 when in its down position rests upon the shoulder 32 on the valve cup 23, at which time the lower end of the valve 29, which is preferably beveled at 39, is against the disk 27.

The diaphragm 30 is held against the shoulder 21 by a collar 34 which contacts therewith, and a nut 35 threaded within the body 10 substantially as shown in figure 2. This nut also provides a convenient support or guide for the valve carrier 28.

Threaded within the body 10 is a spring cylinder 36 provided with an opening 37 through the head thereof, between which and a shoulder upon the valve carrier 28 is a spring 38.

Fixed to the head of the spring cylinder 36 is a sleeve 40 the inside diameter of which is substantially the same as the outside diameter of the upper portion of the valve body 10, and the lower end 41 of which when in register with the graduations 42 upon the exterior of the valve body 10 indicates the air pressure required to lift the valve 29 off its seat against the tension of the spring 38. This sleeve also projects above the end of the spring cylinder 36 and terminates in a knurled head 43 so as to provide convenient means for manual rotation thereof, and fixed in the end thereof is a plate 44 having an opening 45 therethrough coincident with the opening 37 but of considerable smaller diameter. Closing the outer open end of the sleeve is an inverted cup 46 having an opening 47 through the

head thereof of substantially the same diameter as the opening 45.

The arrangement of the inverted cup 46 and the plate 44 is such that there is a chamber 48 therebetween.

In Figure 2 the parts are shown with the valve 29 upon its seat, that is, the disk 27, which is its normal position until after the pressure exceeds the number of pounds indicated by the graduations 42 in line with the lower edge of the sleeve 40.

In operation, the valve is connected with the valve stem 16 by threading the nut 15 thereon the cap 12 is removed, the end of the air inlet pipe or hose projected into the stem 11 as is usual. The air now passes through the valve 13 and port 22, fills the chamber 19, passes through the ports 26 into the valve cup 23, and through the ports 18 and 17 into the stem 16. When the pressure exceeds that indicated by the graduations 42, the valve 29 is lifted off its seat, by the air pressure within the valve cup 23, against the tension of the spring 38 and the air then escapes through the port 33 in the valve 29 and the valve carrier 28 into the chamber 20 of the body member, thence through the openings 37 and 45 into the chamber 48, and out through the opening 47.

The arrangement of the plate 44 and the relative sizes of the openings 37, 45 and 47 is such that an audible whistling sound is produced, thus announcing that the air pressure has exceeded that indicated by the graduations, when the admission of air through the valve 13 is discontinued and the spring 38 returns the valve 29 onto its seat.

There are minor changes and alterations that may be made within my invention, aside from those herein suggested, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of the appended claims.

What I claim as new and desire to secure by Letters Patent, is:

1. In a valve, a valve body, a cup, having one solid end and radial ports through a wall thereof, mounted in said valve body with its solid end in the direction of the intake of the valve, a valve movably mounted within said valve body and having a seat within said cup, a flexible diaphragm surrounding said valve; and spring means for holding said valve on its seat.

2. In a valve, a valve body, a valve cup within said body having one closed end and one or more radial ports through the side thereof, a valve with a port therethrough, one end of which projects into and is of less diameter than that of the inside of said cup, a flexible diaphragm mounted within said valve body and connected with said valve, and spring means for holding said valve upon its seat within said cup.

3. In a valve, a valve body having a chamber therein, a valve cup with one solid end within said valve body and projecting into said chamber having one or more radial ports through the wall thereof, the outside diameter of said valve cup being less than that of said chamber, a flexible diaphragm, means for holding said diaphragm in said valve body so as to prevent movement of said valve cup, a valve with a port therethrough connected with said diaphragm and mounted so that a portion thereof projects into said cup, the diameter thereof being less than that of the inside of said cup, and spring means for holding said valve on its seat within said cup.

In testimony whereof, I have hereunto affixed my signature.

FRANK N. KELSEY