Jan. 20, 1931. R. G. HEDDEN 1,789,746

PRESSURE REGULATOR AND CUT-OFF

Filed Jan. 25, 1929

Fig. 1.

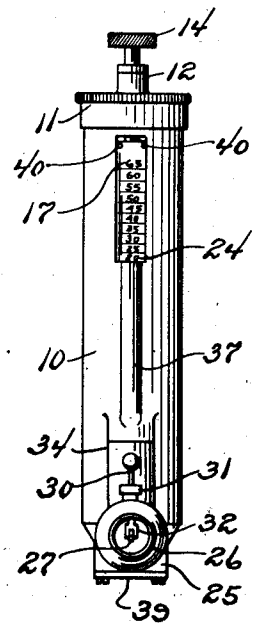
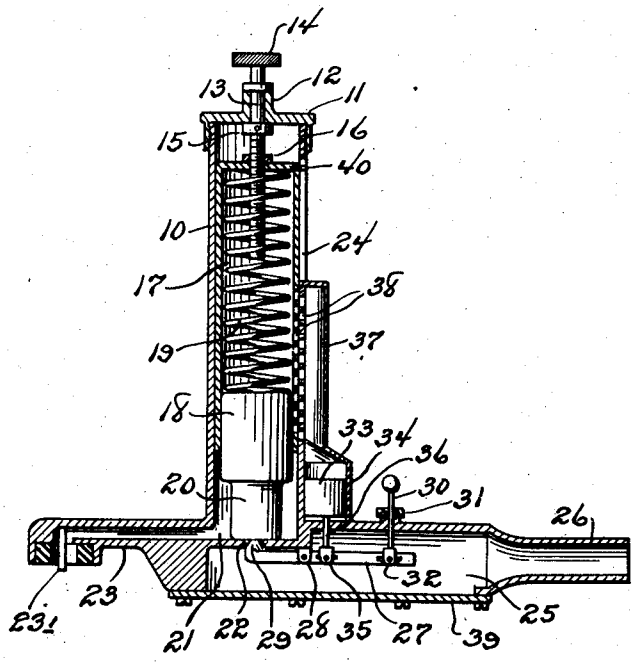


Fig. 2.



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PRESSURE REGULATOR AND CUT-OFF

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This invention has particular relation to gauges of the pressure indicating type primarily designed for use in the inflating of pneumatic tubes and the like.

An object of the invention comprehends a nozzle for the gauge to facilitate application of same upon the valve stems of pneumatic tubes.

Another object of the invention contemplates an adjusting apparatus for the gauge whereby the same may be set to desired pressure commensurate with the amount of pounds pressure desired in the particular tube.

An additional object of the invention consists in the provision of a cut off mechanism operable in conjunction with the gauge to cut off the supply of air to the tube when the latter has been filled to the pressure indicated by the gauge.

With the above and other objects in view, the invention further consists of the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawing and pointed out in the appended claims.

In the drawing:—

Figure 1 is an end elevation of the invention.

Figure 2 is a sectional view of the entire apparatus.

Referring to the drawing in detail, wherein like characters of reference denote corresponding parts, the reference character 10 indicates a tubular member having a closure cap 11 suitably arranged and secured to the outermost end thereof in the manner shown in Figure 2 of the drawing. A guide sleeve 12, outwardly projecting from the horizontal center of the closure cap 11, is adapted to journal the adjacent portion of an adjusting shaft 13 therein having a knurled or serrated head 14 upon its outermost end. The adjusting shaft is held against displacement within the sleeve 12 by a stop collar 15 carried thereby within the tubular member 10 and engageable with the inner side of the closure cap 11. The innermost projecting portion of the adjusting shaft 13 is tapped and threadedly engaged with a nut 16 carried upon the outer closed end of a substantially inverted cup-shaped member 17.

A plunger valve 18 slidably mounted within the opposite and open end of the substantially inverted cup-shaped member 17 is adapted for engagement with the adjacent end of a compression spring 19 sprung at its opposite end convolution against the inner side of the closed end wall of the substantially inverted cup-shaped member 17 whereby the reduced extension 20 of the plunger valve 18 will be normally induced to occupy the Figure 2 position, that is, against the wall 21 to close a valve port 22 therein. The wall 21 forms the opposite end wall of the tubular member 10. A nozzle 23, carried by and projecting from the lowermost portion of the tubular member 10, and in communication with the bore thereof, is adapted for operative connection with valve stems of the conventional type through contact of a stationary lug 23' therewith, commonly employed upon the tubes for pneumatic tires.

The tubular member 10, is in addition, provided with an elongated sight opening 24 therein through which calibrations or other indicia included upon the outer wall of the substantially inverted cup-shaped member 17 are visible and which correspond to the pounds pressure carried by the tubes of pneumatic tires of different sizes, types and designs. Adjustment of the shaft 13 through the instrumentality of the knurled or serrated knob 14 upon the outermost projecting end thereof will shift the substantially inverted cup-shaped member 17 within the tubular member 10 to dispose a particular calibration or other legend upon the outer wall of the substantially inverted cup-shaped member 17 adjacent the lower end of the elongated slot 24 in the tubular member 10, substantially as illustrated in Figure 1 of my drawing.

A housing 25, carried by and formed as a continuation of the wall 21, terminates to provide a neck 26 upon one end for connection with a hose, not shown, from a compressor.

A fulcrum lever 27, eccentrically mounted, as at 28, in spaced relation to one side of the

wall 21 diametrically opposed to that of the reduced extension 20 of the plunger valve 18, terminates to provide a valve head 29 right angularly disposed upon the shorter end thereof and arranged for disposition within the seat 22.

A release shaft 30, extended through a packing gland 31 in the wall of the housing 25, is provided with a bifurcated portion 32 upon its innermost end and having pivotal connection with the longer end of the fulcrum lever 27.

A piston 33, mounted for sliding movement within a cylinder 34 carried by the housing 25 and tubular member 10, is provided with a bifurcated portion 35 upon the opposite end of the connecting rod 36 therefor for operative engagement with the adjacent portion of the fulcrum lever 27.

An extension 37, carried by and having communication with the bore of the cylinder and the interior of that portion of the substantially inverted cup-shaped member 17 unfilled by the plunger valve 18 through openings 38 therein comprises an essential portion of the cut-off apparatus which will be presently apparent.

A closure plate 39, removably secured upon the housing 25, will permit access to the fulcrum rod and adjacent fittings when desired.

As shown in Figure 1 of my drawing, studs or pins, such as indicated at 40, outwardly projecting from the outer wall of the substantially inverted cup-shaped member 17, are disposed adjacent the opposite side edges of the sight opening or slot 24 in the tubular member 10 whereby the calibrations or other legends upon the adjacent visible portion of the inverted cup-shaped member will be constantly aligned.

With the improved type of tire inflating and cut-off gauge applied to the tube or pipe line leading from the ordinary compressor type of engine, as commonly employed in garages and filling stations as a convenience to the motoring world, the adjusting shaft is regulated by the knob 14 therefor to register a desired calibration upon the outer wall of the substantially inverted cup-shaped member 17 with the aforementioned end of the sight opening or slot 24 in the tubular member 10. Said calibration or legend is adapted to correspond with the number of pounds pressure of air required by a pneumatic tire of a certain size and type. The nozzle projecting from the tubular member and housing is then fitted upon the valve stem of the pneumatic tube, and which, due to the construction thereof, automatically opens the valve inside of the valve stem. The release shaft 30 is then grasped and ejected for an appreciable distance through the packing gland 31 in the adjacent wall of the housing 25 to unseat the valve 29 from the seat 22 in the end wall 21.

The pressure of air through the neck 26 and within the housing 25 therefor will then pass through the port 22 and elevate the reduced extension and plunger valve 18 by the pressure and pass through the nozzle and valve stem into the tube. When a certain pressure, or at least, a number of pounds pressure equivalent to that exhibited by the particular calibration upon the gauge, is reached within the tube, back pressure will then occur within the valve stem and nozzle and retract therethrough. Such action will elevate the plunger valve 18 against the tension of the compression spring 19 for an appreciable distance within the substantially inverted cup-shaped member 17 to permit the back pressure of air to pass through the openings 38, into the extension 37 and cylinder 34. The pressure of air against the top of the piston 33 will retract same within the cylinder 34 and which, due to the engagement of the connecting rod 36 therefor with the fulcrum lever 27, the latter will be caused to shift upon the pivot 28 therefor and seat the valve head 29 carried upon the shorter end thereof within the seat 22 in the wall 21 whereby the air pressure from the compressor engine will be shut off from the pneumatic tube.

The invention is susceptible of various changes in its form, proportions and minor details of construction, and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having thus described the invention, what is claimed is:—

1. A cut-off valve comprising a housing including a tubular member, a wall separating the adjacent portions of the housing and tubular member including a valve port, a fulcrum lever eccentrically mounted within the housing including a valve head upon one end seated within the valve port, a compression spring including within the tubular member, a plunger valve slidably mounted in conjunction with the spring within the tubular member and adapted to normally dispose one end thereof over the valve port and against said valve head, a cylinder carried by the housing in communication with the gauge member, and a piston operable within the cylinder and having connection with the lever to automatically close the valve head upon the occasion of the plunger valve being deposed.

2. A cut-off valve comprising a housing including a tubular member, a wall separating the adjacent portions of the housing and tubular member including a valve port, a fulcrum lever eccentrically mounted within the housing including a valve head upon one end seated within the valve port, a compression spring included within the tubular mem-

ber, a plunger valve slidably mounted in conjunction with the spring within the tubular member and adapted to normally dispose one end thereof over the valve port and against the valve head, a cylinder carried by the housing, a piston operable within the cylinder having connection with the fulcrum lever, and a reduced extension carried by the plunger valve producing a shoulder portion thereon to facilitate elevation of same to retract said piston and automatically close the valve head.

3. A cut-off valve comprising a housing including a tubular member, a wall separating the adjacent portions of the housing and tubular member including a valve port, a fulcrum lever eccentrically mounted within the housing including a valve head upon one end seated within the valve port and projecting for an appreciable distance within the tubular member, a compression spring included within the tubular member, a plunger valve slidably mounted within the tubular member against the tension of the spring and having contacting engagement at its opposite end with the protruding portion of the valve head, a cylinder carried by the housing and having communication adjacent its top with the interior of the tubular member adjacent said plunger valve, a piston operable within the cylinder having connection with the fulcrum lever, and a reduced extension carried by the plunger valve producing a shoulder portion to facilitate elevation of the plunger valve, retracting of said piston and automatic seating of the valve head.

In testimony whereof I affix my signature.

RAY G. HEDDEN.