July 19, 1949. J. C. CROWLEY 2,476,706

INFLATING AND GAUGING DEVICE

Filed Feb. 4, 1946

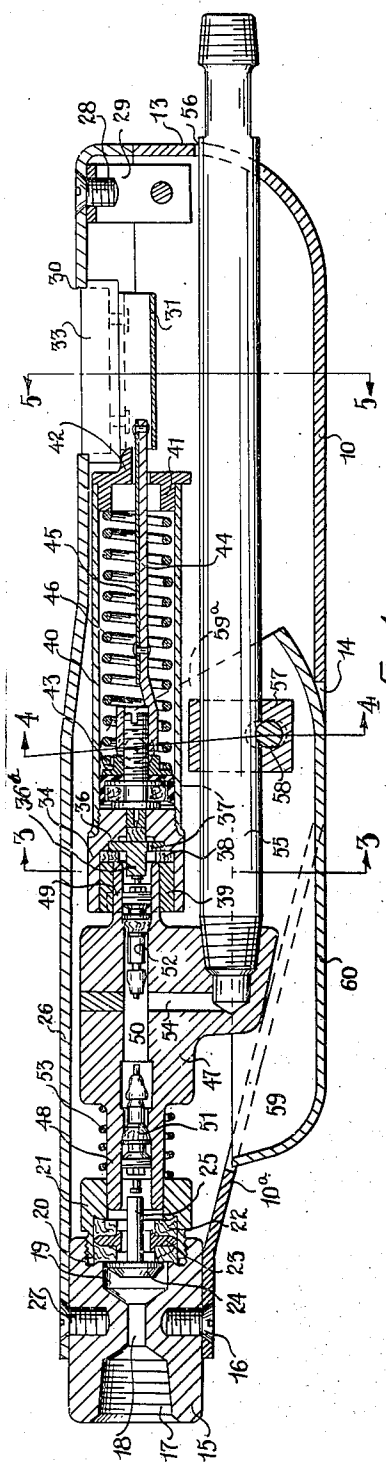


Fig. 1

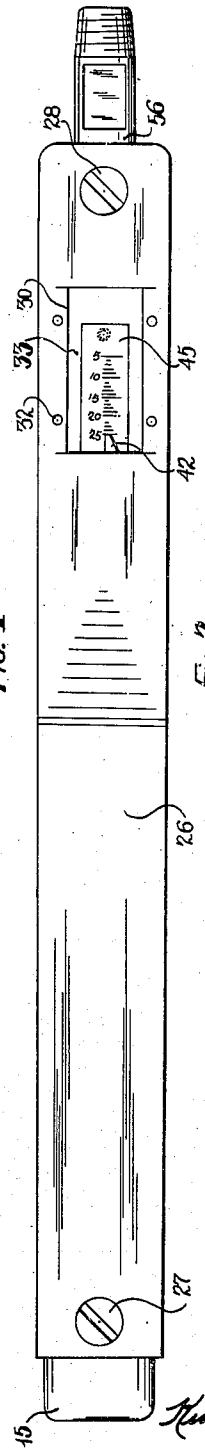


Fig. 2

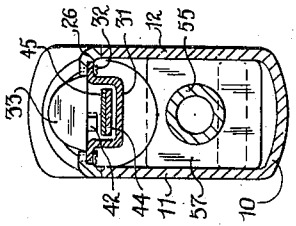


Fig. 5

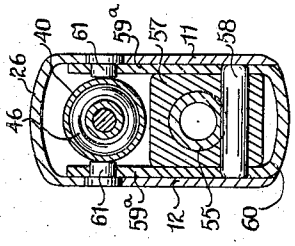


Fig. 4

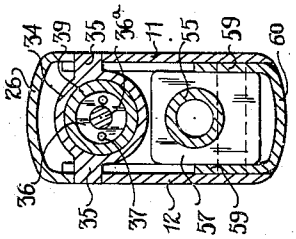


Fig. 3

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Patented July 19, 1949

2,476,706

UNITED STATES PATENT OFFICE

2,476,706

INFLATING AND GAUGING DEVICE

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Application February 4, 1946, Serial No. 645,412

6 Claims. (Cl. 137—69.5)

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This invention relates to an inflating and gauging device and particularly to a device used in combination with an air line for inflating articles such as tires and for gauging the pressures in the inflated articles.

An object of the invention is to provide an inflating and gauging device of the type referred to and which device is of simple construction, is easily assembled and disassembled, and can be readily operated by the user, thus facilitating the inflating of tires or other inflatable articles.

Another object is to provide an inflating and gauging device of the type referred to which can be incorporated in an air line and which is so constructed that the user can grasp the device with one hand and by means of a squeezing action of said one hand control the inflating or gauging functions of the device.

Another object is to provide an inflating and gauging device of the type referred to and wherein the gauge can be readily mounted in or removed from the device, since it is supported by the edges of the side walls of the housing of the device and is held in position by the removable cover.

Further and additional objects and advantages not hereinbefore referred to will become apparent hereinafter during the detailed description of an embodiment of the invention which is to follow.

Referring to the accompanying drawing illustrating said embodiment of the invention,

Fig. 1 is a longitudinal sectional view through an inflating and gauging device constructed in accordance with the invention.

Fig. 2 is a top plan view of the device shown in Fig. 1, and

Figs. 3, 4 and 5 are transverse vertical sectional views taken respectively on lines 3—3, 4—4 and 5—5 of Fig. 1 looking in the direction of the arrows.

The device comprises a housing of generally U-shaped cross-section and which has a bottom wall 10, side walls 11 and 12 and at one end a curved end wall 13. The bottom wall 10 of the housing is provided with an elongated opening 14 in that portion of the bottom wall that is inclined upwardly as viewed in the drawings and as indicated at 10a. The U-shaped housing at the end thereof opposite to the end wall 13 embraces a circular fitting 15 and is secured thereto by screws 16 or by other suitable securing means.

The fitting 15 is provided with a tapped counterbore 17 by means of which an air line (not shown) is connected to the device and which air line extends to a source of supply of compressed air or

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other pressure fluid. The fitting 15 is provided with a bore 18 communicating with the counterbore 17 and with counterbores 19 and 20 formed in the inner end of the fitting. The counterbore 20 is threaded and has screwed therein a nut 21 of a chuck assembly, said nut acting to clamp in the counterbore 20 between an internal shoulder of the nut and a shoulder at the base of said counterbore suitable packing 22 arranged on opposite sides of a sleeved washer 23. The chuck assembly includes a chuck valve having a valve head 24 located in the counterbore 19 and adapted to seat on the packing 22 and a valve pin 25 which extends through the sleeve of the washer 23 and into the central opening in the nut 21.

An inverted substantially U-shaped cover 26 is secured in assembled position upon the housing by a screw or other suitable means 27 extending into the fitting 15 and a screw or other suitable means 28 passing through the cover 26 and into a strap member 29 secured to one or both of the side walls 11 and 12 of the housing and located adjacent the right hand end of the device as shown in Figs. 1 and 2. The side walls of the cover 26 form continuations of the side walls 11 and 12 of the housing when the cover is secured to the housing. The cover 26 is provided adjacent its right hand end with a window opening 30 and has secured to its underside and beneath said window a U-shaped member 31, it being noted that said member is provided with flanges along its opposite longitudinal edges which underlie the cover 26 and are secured thereto by suitable screws 32 or other means. A glass or other suitable transparent window 33 is provided for the window opening 30 and it will be noted that said window is semi-circular in cross-section with its flat side closing the upper side of the member 31 and that said member when secured in position secures the window in position.

A pressure gauge is mounted in the device and comprises a chuck portion 34 which is provided with laterally extending integral rectangular lugs or keys 35 that rest upon the upper edges of the side walls of the housing and interfit recesses formed in the lower edges of the cover, see Fig. 3. The chuck portion 34 of the pressure gauge comprises a disk 36 held in position in a counterbore formed in the chuck portion 34 and provided with one or more openings 37 that communicate with the bore in the inner end of the chuck portion as will be well understood. The disk 36 is held in position in the chuck portion by a packing ring 38 and a clamping sleeve or nut 39. The

disk 36 is provided with a pin 36a that extends through the packing ring 38 and into the packing sleeve or nut 39.

A tubular casing 40 is secured at one end to the chuck portion 34 of the gauge and mounts in its opposite end a closure member 41 which is provided with a central opening and has a pointer finger 42 projecting forwardly beneath the window 33 of the window opening 30. The closure member 41 has lugs or keys 35, as does the chuck portion 34, engaging in recesses in the lower edges of the cover and resting upon the upper edges of the side wall of the housing. Hence the gauge may be mounted in or removed from the device readily by removing the cover. The tubular casing 40 slidably supports a gauge piston assembly 43 which need not be described in detail herein since it is well understood and forms no part per se of the present invention. The piston assembly 43 is operatively and adjustably connected with a movable bar 44 that moves linearly through the opening in the closure member 41 and is provided with a gauge plate 45 bearing suitable indicia which cooperate with the pointer 42 to show the pressure reading of the gauge through the window 33.

A coil spring 46 mounted in the casing 40 and surrounding the bar 44 abuts the piston assembly 43 and the closure member 41 and exerts a predetermined resistance to the movement of the piston toward the right as viewed in the drawing and under the pressure of the air or pressure fluid.

A body member 47 is movably mounted in the device and has longitudinally aligned extensions 48 and 49 which slidably interfit, respectively, the central openings in the nut member 21 and in the clamping sleeve 39. A passage 50 extends through the member 47, and the extensions 48 and 49 with the portions of said passage within the extensions shaped and formed to have mounted therein conventional valve cores or insides 51 and 52 the pins of which extend, respectively, toward and align with the pin 25 and the pin 36a. A coil spring 53 surrounds the extension 48 of the body 47 and abuts the nut 21 and a shoulder on the body and acts to normally maintain the body 47 in its most right hand position as shown in Fig. 1, at which time the pin of the valve core 52 is engaged with and depressed by the pin 36a to maintain the valve of said valve core unseated, wherefore the interior of the gauge is normally in communication with the passage 50 in the body. When the body 47 is moved toward the left against the action of the coil spring 53 the valve of the core 52 can then seat and interrupt communication between the passage 50 and the gauge. At this time, however, the passage 50 is in communication with the bore and counterbores of the fitting 15 and with the air line since the pin of the valve core 51 has engaged the pin 25, with the result that the valve of the core 51 is unseated as is also the valve 24 of the chuck assembly.

The body 47 is provided with a passage 54 communicating with the passage 50 and extending transversely thereof and also communicating with a threaded tapered counterbore into which screws the threaded tapered end of a tube 55. The tube 55 extends longitudinally through the housing toward the right and passes outwardly thereof through an opening 56 in the end wall 13 of the housing. The outer end of the tube is adapted to be connected to a short length of air hose, not shown, and which carries on its outer end the usual air chuck that can be applied to the valve stem of the tire or other article to be inflated as will be well understood. The tube 55 passes through and is clamped in a block 57 by means of a pin 58 which also serves to mount the block between the side walls 59 of a trigger member which is substantially U-shaped in cross-section and which is located in the opening 14 of the bottom wall 10 of the housing and which trigger member has its bottom wall 60 extending below the plane of said bottom wall portion 10a. The side walls 59 of the trigger member at the location of the block 57 are extended upwardly within the housing and the cover 26 as indicated at 59a. The upwardly extending side walls 59a of the trigger member are provided with openings through which extend pins 61, the heads of which pins are mounted in openings formed by cooperating semi-circular recesses in the side walls 11 and 12 of the housing and in the side walls of the top 26.

It will thus be seen that the trigger member can be rocked upwardly, as viewed in Fig. 1, about the axis of the pins 61 and since the tube 55 is clamped in the block 57 such rocking movement of the trigger member 60 will move the tube 55 and the body 47 from the position shown in Fig. 1 and against the action of the spring 53 into a position wherein the valve of the valve core 51 is unseated, it being recalled that at this time the valve of the valve core 52 will be seated.

Assuming that the fitting 15 is connected to an air line and that the outer end of the tube 55 is connected to an air hose provided on its end with an air chuck, the operator applies such air chuck to the valve stem of the tire or article to be inflated with one hand while grasping the device with the other hand. As soon as the chuck has been applied to the valve stem the operator can take a gauge reading of the pressure in the article and can then inflate the tire or article by merely squeezing his hand which holds the device to rock the trigger member 60 upwardly from its normal position indicated in Fig. 1. As already intimated this upward rocking movement of the trigger member 60 effects seating of the valve of the valve core 52 and an unseating of the valve of the valve core 51, wherefore the gauge is out of communication with the passage 50 while the air line is in communication with said passage and hence the compressed air or pressure fluid can flow through the body member 47 and through the tube 55 and into the tire. At any time the operator wishes to stop the inflation of the tire or article he merely releases the squeezing action of his hand on the trigger 60, whereupon the spring 53 restores the parts to the relationship shown in Fig. 1 and at such time the passage 50 is out of communication with the air line but the gauge is in communication with the passage 50, tube 55 and the interior of the tire since the valve of the core 52 is now open. Thus the operator at such time can readily ascertain the inflated pressure in the tire by reading the gauge through the window 33.

From the foregoing it will be evident that the device embodying the invention when incorporated in an air line can be readily operated by the operator with a single hand and that the inflating or gauging functions of the device can be attained simply by a squeezing or releasing movement of the hand. It will also be noted that the parts of the device in large measure are formed of readily manufactured stampings and that said parts can be readily assembled and

disassembled. In addition, it will be noted that the cover 26 can be quickly removed from the housing, after which the gauge can be easily removed for replacement or adjustment purposes. Similarly, the valve cores 51 and 52 can be readily replaced should the necessity for so doing occur. The device is of simple construction, does not include parts which can get out of order readily and provides an efficient, easily operated device for inflating and gauging a tire or other article.

Although a preferred embodiment of the invention has been illustrated and described herein it will be understood that the invention is susceptible of various modifications and adaptations within the scope of the appended claims.

Having thus described my invention, I claim:

1. An inflating and gauging device comprising an elongated relatively narrow housing having an opening in a wall thereof, a cover for said housing provided with a window, a fitting mounted in and extending outwardly of one end of said housing and adapted to have its outer end connected to an air line and provided at its inner end with a chuck assembly, a tube in and extending outwardly of the opposite end of said housing and adapted to have its outer end connected to an air hose provided with an inflating chuck, a pressure gauge in said housing provided with a chuck portion and having an indicating member visible through said window, a body movable in said housing and having a pair of extensions slidably interfitting said chuck assembly and said chuck portion, said body and extensions having a passage therethrough in which are mounted a pair of valve cores, one core cooperating with said chuck assembly and the other core with said chuck portion, a spring normally maintaining said body in a position to cause seating of the valve of said one core and unseating of the valve of said other core, said body being provided with a second passage communicating with said first passage intermediate said cores, the inner end of said tube being connected to said body and in communication with said second passage, an actuating member movably mounted in said housing and extending through said wall opening, and means carried by said actuating member and movable therewith and operatively connected directly to said tube whereby movement of said actuating member in one direction moves said tube and said body from normal position to a position effecting unseating of the valve of said one core and seating of the valve of said other core.

2. An inflating and gauging device comprising an elongated relatively narrow housing having an opening in its bottom wall, a cover for the top of said housing provided with a window, a fitting mounted in and extending outwardly of one end of said housing and adapted to have its outer end connected to an air line and provided at its inner end with a chuck assembly, a tube in said housing and extending outwardly of the opposite end of said housing and adapted to have its outer end connected to an air hose provided with an inflating chuck, a pressure gauge in said housing provided with a chuck portion and having an indicating member visible through said window, a body movable in said housing and having a pair of extensions slidably interfitting said chuck assembly and said chuck portion, said body and extensions having a passage therethrough adapted to mount a pair of valve cores, one core cooperating with said chuck assembly and the other core with said chuck portion, a spring normally maintaining said body in a position to cause seating of the valve of said one core and unseating of the valve of said other core, said body being provided with a second passage communicating with said first passage intermediate said cores, the inner end of said tube being connected to said body and in communication with said second passage, an actuating member having a portion pivotally mounted in said housing and a portion extending through said bottom wall opening, and means carried by said actuating member and connected directly to said tube whereby movement of said actuating member in one direction moves said tube and said body from normal position to a position effecting unseating of the valve of said one core and seating of the valve of said other core.

3. An inflating and gauging device comprising an elongated relatively narrow housing having an opening in its bottom wall, a cover for the top of said housing provided with a window, a fitting mounted in and extending outwardly of one end of said housing and adapted to have its outer end connected to an air line and provided at its inner end with a chuck assembly, a tube extending longitudinally in said housing and outwardly of the opposite end thereof and adapted to have its outer end connected to an air hose provided with an inflating chuck, a pressure gauge in said housing and provided with a chuck portion and having an indicating member visible through said window, said gauge being located above said tube and in spaced longitudinal alignment with said fitting, a body intermediate said fitting and said gauge and movable in said housing and having a pair of aligned extensions on opposite sides of said body which slidably interfit said chuck assembly and said chuck portion, said body and extensions having a substantially straight passage therethrough adapted to mount a pair of valve cores, one core cooperating with said chuck assembly and the other core with said chuck portion, a spring normally maintaining said body in a position to effect seating of the valve of said one core and unseating of the valve of said other core, said body being provided with a second passage communicating with said first passage intermediate said cores, the inner end of said tube being connected to said body and in communication with said second passage, an actuating member having a portion pivotally mounted in said housing and a portion extending through said bottom wall opening, and means carried by said actuating member and connected to said tube whereby movement of said actuating member in one direction moves said tube and said body from normal position to a position to effect unseating of the valve of said one core and seating of the valve of said other core.

4. An inflating and gauging device as set forth in claim 3 and wherein said housing and said cover are substantially U-shaped in cross-section and when assembled together have their side walls forming plane surfaces, said actuating member also being substantially U-shaped in cross-section and having a portion of its bottom wall located outwardly of a portion of the bottom wall of the housing whereby an operator may grasp the device with one hand and operate or release the actuating member by a squeezing or releasing movement of said one hand.

5. An inflating and gauging device as defined in claim 3 and wherein said pressure gauge is provided with key portions resting upon the upper

edges of the side walls of the housing and extending into recesses formed in the lower edges of the side walls of said cover and wherein said actuating member is pivotally mounted by means of pins supported in openings formed by cooperating recesses in said housing and cover.

6. An inflating and gauging device as defined in claim 3 and wherein said cover has secured to its underside and beneath said window a substantially U-shaped element with said gauge indicating member movable in said element and beneath the window.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,765,850	Richardson	June 24, 1930
1,815,533	Vincent	July 21, 1931
2,040,868	Moody	May, 1936
2,285,569	Crowley	June 9, 1942