

Feb. 22, 1927.

1,618,211

H. E. McNATT

TIRE PRESSURE TESTER

Filed June 29, 1925

Fig. 1

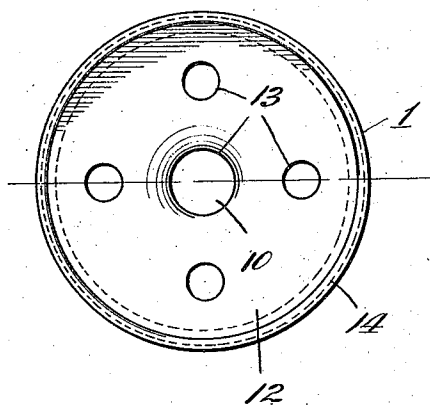


Fig. 2

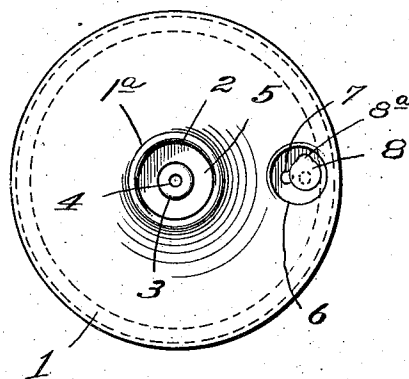


Fig. 3

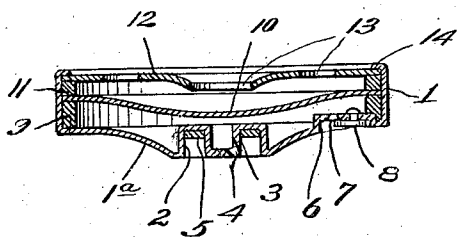


Fig. 4

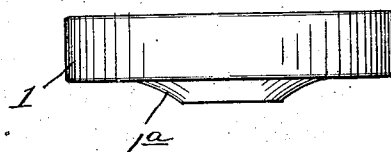


Fig. 5



Witness:

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UNITED STATES PATENT OFFICE.

HOMER E. McNATT, OF ENGLEWOOD, MISSOURI, ASSIGNOR TO HIMSELF AS TRUSTEE.

TIRE-PRESSURE TESTER.

Application filed June 29, 1925. Serial No. 40,464.

This invention relates to fluid pressure testers and is adapted for use particularly with automobile tires. One of the objects of the invention is to produce a pressure tester which will be initially set to operate at a predetermined minimum pressure and will register when a tire is at the minimum pressure or above, either through an audible signal or through the sense of touch as will hereinafter appear.

Another object is to produce a pressure tester of economical construction having no movable parts subject to deterioration or appreciable wear.

A further object is to produce a pressure tester provided with means whereby the minimum pressure at which the device will be operated may be adjusted at the factory, that is all parts of the testers are standard, the testers varying only in the setting of a certain pressure release opening described hereinbelow.

A still further object is to produce a pressure tester of strong, durable, efficient and inexpensive construction; and in order that it may be fully understood, reference is to be had to the accompanying drawing, in which:—

Figure 1' is an elevation of the rear side of a pressure tester embodying the invention.

Figure 2 is an elevation of the operative face of the tester.

Figure 3 is a section on the line III—III of Figure 1.

Figure 4 is a side elevation of a tester embodying the invention.

Figure 5 is an enlarged broken sectional view to show a slightly modified diaphragm construction in which the diaphragm is provided with a pressure exhaust opening.

In the said drawing, where like reference characters identify corresponding parts in all of the figures, 1 represents a cylindrical metallic casing of any convenient or desirable diameter, said casing being formed integrally with an outwardly bowed closure forming a conical protuberance 1^a. The central portion of the cone is pressed inwardly to form a circular recess 2 in which is centrally located a valve operating stud 3, having its face substantially flush with the margin of the cone, it being understood that the recess will be of sufficient width and depth to receive a valve stem and to permit the stud 3 to open the valve by pressing on

the spring-advanced core. The face of the stud 3 is formed with a circular air-inlet opening 4 off center with respect to the stud in order that the valve core stem shall not impinge on and seal or partially seal the opening, it being noted that the opening tapers, increasing in diameter interiorly to offer greater resistance to the accidental entry of dust or dirt into the casing and to insure the blowing inwardly of any dirt which may enter the opening. The bottom of the recess 2 is provided with a washer 5 for air-tight sealing engagement with the valve stem as common in the art.

The face 1^a of the casing at a point in proximity to the margin is formed with a circular recess 6 having a tapered opening 7, increasing in diameter exteriorly so that any dust or dirt within the casing which may enter the opening shall be blown out by the current of air set up within the casing as will hereinafter appear. Mounted in the recess adjacent the opening is an eccentric-head rivet or screw 8 having a lug 8^a which may be set so that the head, more or less overlaps the opening 7, or may entirely close the opening. In the use of the device, it is to be understood that the air from the tire enters the casing 1 through the opening 4 and exits through the opening 7, the relation of the areas of the openings to each other governing the minimum operative pressure necessary for the operation of a diaphragm below-described.

It has been found that devices made in accordance with the invention in which the exit opening 7 is entirely closed by the eccentric rivet 8 and its lug 8^a, or in which the opening is entirely omitted, are operative for a predetermined pressure. As a matter of manufacturing convenience it may be desirable to make all devices without an exit opening and then test each device and mark it with the registered pressure, or to make all the devices without an outlet opening and then through a series of experiments determine the area of an opening or series of openings to secure registration at a predetermined pressure.

Within the casing and snugly fitting against the inside face of the same is a ring washer 9 of any suitable relatively non-compressible material, and resting on said washer is a flexible metallic diaphragm 10 which is dished or bowed toward the closed face of the casing. To hold the diaphragm

in position a second ring washer 11 is inserted.

Fitting upon the washer 11 is a metallic closure plate 12 bowed inwardly to such a point as to provide a stop to prevent the diaphragm from being forced too far beyond center where it might remain and be thus inoperative, said plate being of sufficient rigidity to close the back of the casing. The plate 12 is formed with a plurality of openings 13 so that the air back of the diaphragm shall not be compressed. The closure 12, the washers 9 and 11, and the diaphragm 10 are tightly clamped in position by crimping or rolling the edge 14 of the casing down upon the back of the plate 12, as illustrated.

In the operation of the device the operator places the tester so that the recess 2 receives the valve stem. Now by pressing downwardly on the casing the stud 3 is caused to open the valve and the air in the tire rushes into the casing 1 through the opening 4. If the tire contains sufficient air pressure to effect the snapping or pressing rearwardly of the diaphragm 10, said diaphragm will strike an appreciable blow against the closure plate 12 or will itself snap or pop, and this fact will be registered to the driver either through the sense of touch in his finger tips, or by the audible sound of the contact between the diaphragm and the inner face of the closure 12, or by the flexing or snapping of the diaphragm itself.

From the above description, it will be apparent that I have produced a pressure tester possessing all of the features of advantage pointed out as desirable and while I have described and claimed the preferred embodiment of the same, I reserve the right to make all changes properly falling within

the spirit and scope of the appended claims.
I claim:

1. In a pressure tester, a casing closed at one of its ends and formed with a valve engaging recess and valve operating lug, said casing having inlet and outlet openings, a diaphragm mounted in the casing, and a closure plate rearwardly of the diaphragm and adapted to be struck thereby.

2. In a pressure tester, a casing closed at one of its ends and formed with a valve engaging recess and valve operating lug, said casing having inlet and outlet openings, means for varying the relative area of said openings, a diaphragm mounted in the casing, and a closure plate rearwardly of the diaphragm and adapted to be struck thereby.

3. In a pressure tester, a casing, a diaphragm in said casing, and means on said casing for engaging and opening a valve; said casing being formed with a pressure inlet opening at one side of the diaphragm, and a second unimpeded opening for exhausting air entering through said inlet opening.

4. In a pressure tester, a casing closed at one of its ends and formed with a valve engaging recess and valve operating lug, said lug being provided with an inlet opening, a diaphragm mounted in the casing and normally bowed inwardly toward the inlet opening, and a protecting member for said diaphragm, said member being secured in the end of the casing opposite its inlet provided closed end to guard the diaphragm against accidental contact by the operator of the device.

In witness whereof I hereunto affix my signature.

HOMER E. McNATT.