Apr. 17, 1923. 1,452,259

L. K. SNELL

BREATHER TUBES

Filed Sept. 24, 1920

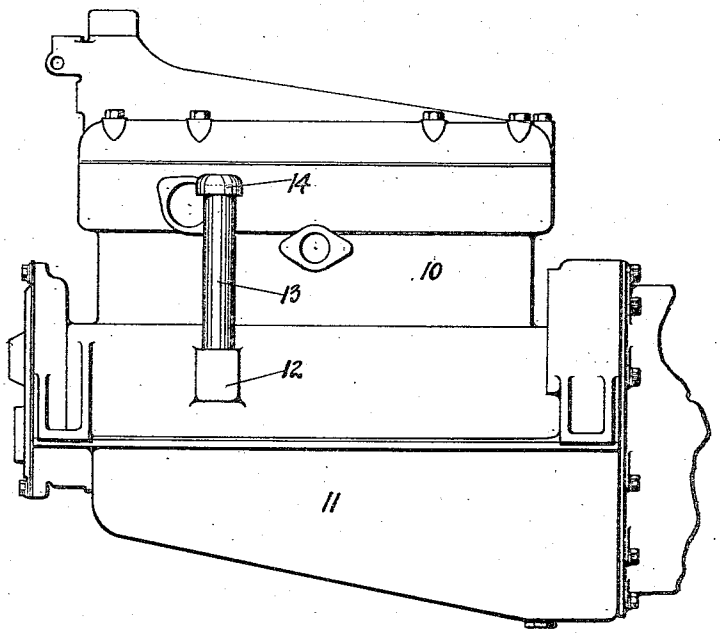


Fig. I

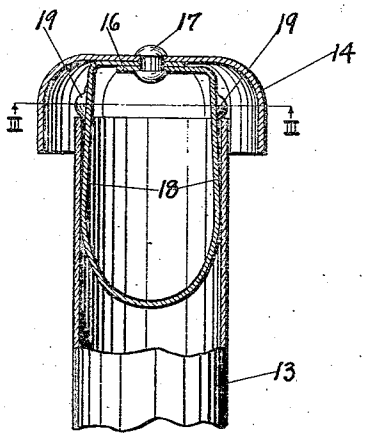


Fig. II

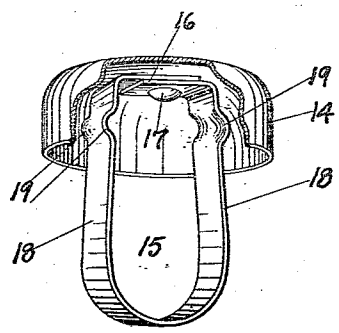


Fig. IV

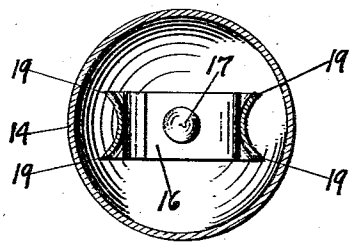


Fig. III

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UNITED STATES PATENT OFFICE.

LYLE K. SNELL, OF TOLEDO, OHIO, ASSIGNOR TO THE WILLYS-OVERLAND COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

BREATHER TUBE.

Application filed September 24, 1920. Serial No. 412,489.

To all whom it may concern:

Be it known that I, LYLE K. SNELL, residing at Toledo, county of Lucas, State of Ohio, have invented certain new and useful Improvements in Breather Tubes, of which I declare the following to be a full, clear, and exact description.

My invention relates to breather tubes for internal combustion engines and has for its object to provide an improved device of this character adapted for connection to the crank case of the engine to permit the oil therein to be subjected at all times to atmospheric pressure.

A further object of the invention is to provide an improved breather tube for engines having a removable cover which may be quickly and readily inserted upon and removed from the tube.

Another object of the invention is to provide a breather tube having an improved detachable cover held in engagement with the tube by means yieldingly engaging the same.

To these and other ends the invention comprises certain novel features of construction and arrangement of parts as will be hereinafter more fully pointed out and claimed, it being apparent to those skilled in the art that the invention shown and described herein is susceptible of various modifications, embodiments and arrangements to suit special or varying conditions and I wish it to be understood that the terms which I have used are merely descriptive and not limiting, and that it is my intention to include any and all modifications which come within the scope of the invention as expressed in the appended claims.

A structure constituting one embodiment of my invention is illustrated in the accompanying drawings in which:

Figure I is a side elevation of an engine showing the breather tube connected therewith.

Figure II is an enlarged sectional elevation through the top of the tube and the cover therefor.

Figure III is a sectional plan taken on line III—III of Figure II and

Figure IV is a perspective view of the cover with a portion broken away to more clearly indicate the construction of the means for holding the cover upon the tube.

Similar reference numerals refer to similar parts throughout the several views of the drawing.

Referring to the drawing 10 represents an engine of any preferred form having a crank case 11 in which the oil for lubricating the engine is carried. A lug or boss 12 is provided at one side of the engine and is bored out to receive a breather tube 13 which communicates with the crank case. A cap or cover 14 preferably in the form of an inverted cup, which is of larger diameter than the diameter of the tube 13, is held in spaced relation with respect to the tube with its lower edge below the top thereof. The cap is supported by means of a spring loop 15 preferably formed of strap or flat material, the extremities of which are bent inwardly as indicated at 16 to overlie each other, said extremities being disposed upon the inner surface of the cup 14 and connected therewith by means of a rivet 17 as indicated in Figure II and IV. The downwardly extending side portions 18 of the loop project within the tube 13 and yieldingly engage the same to hold the cover 14 thereon. Abutments or shoulders 19 are formed upon the loop adjacent the upper ends thereof to provide stops adapted to engage the upper end of the tube 13 to limit the movement of the cover 14 in the direction thereof and to prevent the closing of the tube by forcing the cover into engagement therewith. The shoulders or abutments 19 are preferably formed by striking outwardly the opposite edges of each of the downwardly extending portions 18 of the loop as best illustrated in Figures III and IV, although it will be understood that the abutments or shoulders may be constructed in any other suitable manner. The abutments when constructed in this manner produce four points of contact between the loop and the upper edge of the tube and said abutments not only serve to prevent the forcing down of the cover upon the tube but also serve to prevent rocking of the cover by preventing lateral displacement of the loop within the tube. When the cover is in the position shown in Figure II each of the shoulders or stops 19 engage the upper edge of the tube at points in spaced relation to each other and it is not therefore possible for the cover to shift its position upon the tube after it is once secured thereon. It

will be understood of course that when the cover is removed from the tube the side portions 18 of the loop will spring outwardly to assume their normal positions, but when forced downwardly within the tube to the position shown in Figure II they are considerably compressed and thereby tightly grip the inner wall of the tube and by frictionally engaging the same they serve to prevent accidental displacement of the cover, but permit the same to be readily removed from the tube by exerting pressure in an upward direction upon the cover. While I have shown the retaining means for the cover in the form of a loop constructed of yieldable material, it will be understood that other forms of yieldable cover supporting or retaining means may be provided without departing from the spirit of the invention and it will be further understood that the particular manner of forming the stops or abutments for limiting the movement of the cover in the direction of the tube may be changed or varied as desired without departing from the scope of the invention as expressed in the claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, a breather tube, a cap therefor and yieldable supporting means for the cap slidable within the tube and having means to prevent movement of the cap to closed position.

2. In combination, a breather tube, a cap therefor and a supporting member for the cap adapted to yieldingly engage the tube, said member having a shoulder formed thereon to prevent movement of the cap to closed position.

3. In combination, a breather tube, a cap therefor and supporting means for the cap adapted to yieldingly engage the tube, a portion of said means being adapted to engage the end of the tube to prevent movement of the cap to closed position.

4. In combination, a breather tube, a cap therefor and a spring adapted to yieldingly engage the tube to support the cap thereon, said spring being provided with an abutment serving to prevent movement of the cap to closed position upon the tube.

5. In combination, a breather tube, a cup-shaped cover therefor of greater diameter than the tube, a spring connected with the cover and adapted to yieldingly engage the tube to support the cover in inverted position with its lower edge below the upper edge of the tube and means serving to prevent movement of the cover to a position completely closing the tube.

6. In combination, a breather tube, a cover therefor and a loop of spring material insertable within the tube to yieldingly engage the same for the purpose of supporting the cover upon the tube, said loop being provided with an abutment adapted to engage the tube to prevent movement of the cover to closed position.

7. In combination, a breather tube, a cover therefor and a spring connected with the cover and adapted to yieldingly engage the tube to support the cover thereon, said spring having outwardly struck portions serving to limit the movement of the cover in the direction of the tube.

8. In combination, a breather tube, a cover therefor and a flat spring connected with the cover and adapted to yieldingly engage the tube to support the cover thereon, said spring having portions of its edges struck outwardly to engage the tube to limit the movement of the cover thereon and to prevent rocking of the same.

9. In combination, a breather tube, a cover therefor and a loop of spring material connected with the cover and extending within the tube and yieldingly engaging the same to support the cover thereon, said loop being provided at opposite points with outwardly struck portions adapted to engage the tube to limit the movement of the cover in the direction thereof.

10. In combination, a breather tube, a cover therefor and a flat spring bent in the form of a loop with its extremities turned inwardly upon each other and connected to the cover, the sides of said loop yieldingly engaging the tube to support the cover thereon and having outwardly struck portions adjacent the top of the loop bearing upon the top of the tube to limit the movement of the cover in the direction thereof.

11. In combination, a breather tube, a cover therefor, a spring constructed of strap material and bent in the form of a loop and extending into the tube to yieldingly engage the same, means connecting the spring with the cover and stops formed upon the opposite edges of each of the sides of the loop by striking outwardly the edge portions of the strap whereby four points of contact are provided which engage the end of the tube to limit the movement of a cover thereon and which serve to prevent rocking of the same.

In testimony whereof, I affix my signature.

LYLE K. SNELL.