Jan. 12, 1932. R. K. RUNYON 1,840,411

DUST REMOVER

Filed Aug. 20, 1930

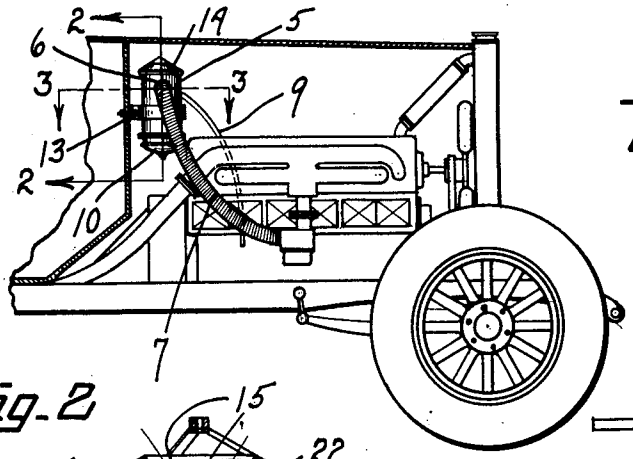


Fig. 1

Fig. 2

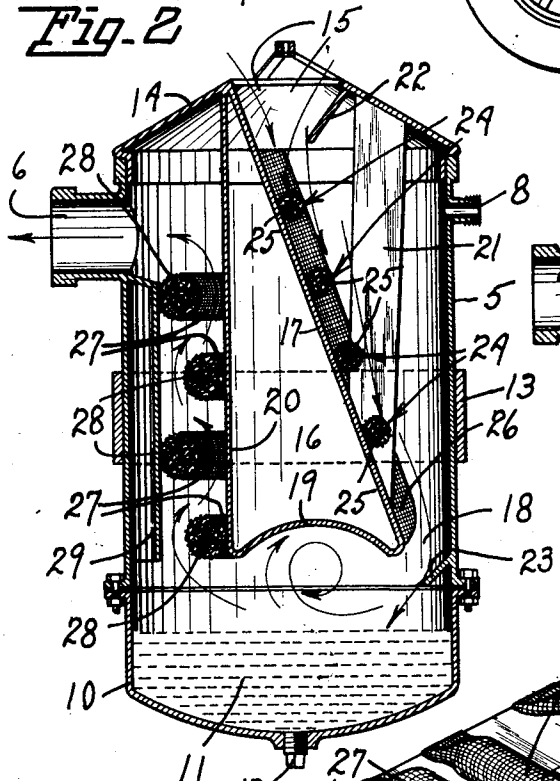
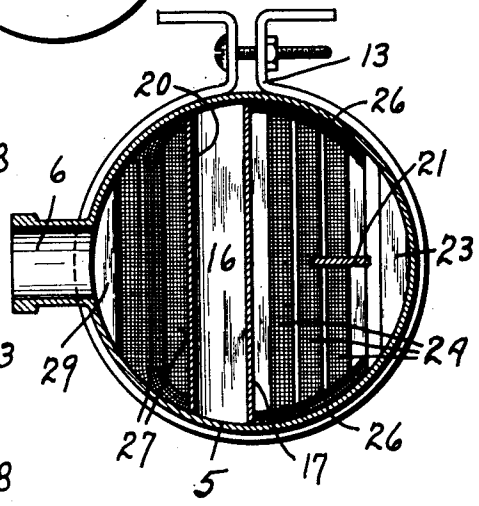


Fig. 3



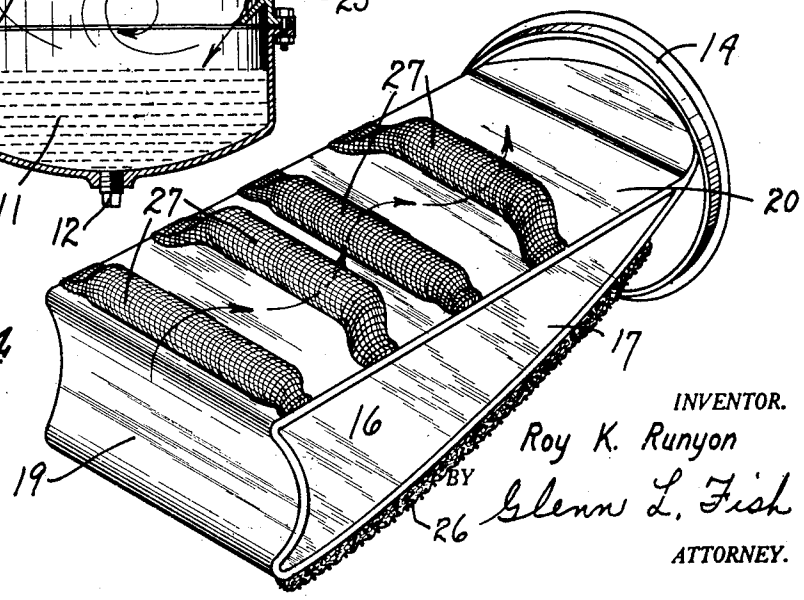


Fig. 4

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UNITED STATES PATENT OFFICE

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DUST REMOVER

Application filed August 20, 1930. Serial No. 476,517.

My invention relates to dust removers and is an improvement over the device described in my co-pending patent application for "dust collectors", Serial Number 386,833, and filed August 19, 1929; and is also an improvement over the device described in my co-pending patent application for "air cleaner cases", Serial Number 418,222, and filed January 3, 1930. Certain objects of my present invention are to provide dust removing elements, means for causing an eddy current of the air whereby the dust is more effectively removed, a novel arrangement and disposition of the dust removing elements, and a simplified arrangement in the structural details as a whole.

With the above and other objects in view which will appear as the description proceeds, the invention consists of the novel construction, adaptation, combination and arrangement of parts hereinafter described and claimed. These objects are accomplished by devices illustrated in the accompanying drawings; wherein:

Figure 1 is a view in side elevation showing my device installed on the forward portion of a motor vehicle;

Fig. 2 is a view in central vertical section of the device taken substantially on a broken line 2, 2 of Fig. 1;

Fig. 3 is a view in horizontal section of the same taken on a broken line 3, 3 of Fig. 1; and

Fig. 4 is a detail view in perspective showing the cover and its attached cleaner elements.

Referring to the drawings throughout which like reference numerals indicate like parts, the numeral 5 designates the casing having an outlet 6 at its rear side portion through which the cleaned air passes to the engine through the carburetor by means of a pipe 7, and an inlet 8 at its forward side portion through which oil and gas vapors are sucked from the crankcase by means of a connecting pipe 9 as shown in Fig. 1. Said casing is provided with a bottom portion 10 bolted or otherwise secured thereto and adapted to retain a pool of oil 11 for the purpose of removing some of the dust from the air passing therethrough. A plug 12 may be installed in said bottom for drawing off the oil and the casing may be secured to a fixed part of a motor vehicle by a bracket 13.

The casing 5 is provided with a cover member 14 fitting thereinto and having an entry port 15 for the admission of air. Said cover is integrally or otherwise provided with a right angled triangular metal frame designated as a whole by the numeral 16 and having its acute angular portion fixed to the cover at the rear side of the entry ports. When said cover is installed on the casing the triangular metal frame projects downwardly into said casing nearly the full depth thereof with its forward side or hypotenuse 17 slanting outwardly to form a restricted passage 18 adjacent the bottom portion 10. The bottom portion of the frame is concave, as at 19, for reasons presently explained and its rear side 20 is disposed in parallel spaced relation with the rear side wall portion of the casing.

An upstanding bracket 21 may extend from the lower portion of the triangular frame 16 to the cover 14 in order to strengthen the support of the frame. A baffle 22 secured to said cover member at the forward side of the entry 15 is arranged to direct the incoming air downwardly and against the slanting side 17 of the triangular frame. Another baffle plate 23 is formed on the interior of the casing 5 at the restricted passage 18 and serves to direct the incoming air against the oil pool 11 as will be understood.

A number of rolls 24 are disposed in spaced apart relation transversely of the slanting side portion 17 of the triangular frame 16. Said rolls are made of wire mesh and filled with suitable absorbent material 25 and their depressed end portions are soldered or otherwise secured to the side edges of said slanting frame portion. At each edge of said slanting frame portion a corresponding roll 26 is secured in place for the purpose of intercepting air which may pass between said edges and the interior wall of the casing 5.

A plurality of wire mesh rolls 27, filled with absorbent material 28, have their end portions secured transversely to the rear side 20 of the triangular frame 16. As most clearly shown

in Fig. 2 of the drawings, said rolls are alternatively secured against and away from said rear triangular portion so that the outgoing air may pass inside and outside of said rolls as will be understood. A pocket member 29 made of sheet metal and open at its bottom is provided on the rear interior side portion of the casing 5 and in alignment with the outlet 6. Said pocket catches and prevents any oil from being sucked up and out of the casing from the oil pool 11 by the air.

In the operation of my device the suction stroke of the engine causes air to be drawn inwardly through the entry port 15, and also draws oil saturated air through the inlet 8 from the engine crankcase which serves to lubricate the rolls 24 and 26. The incoming air is directed by the baffle 22 against the slanting side 17 of the triangular frame and against said rolls. Much of the dust is removed from the air by adhering to the oil soaked absorbent material within the rolls as the air passes downwardly to the restricted passage 18.

The velocity of the air is increased by the restricted passage 18 where the air is directed by the baffle 23 against the oil pool 11. The air rebounds upwardly from the surface of the oil to the concave bottom portion 19 of the triangular frame whereby it is caused to eddy or whirl around as indicated by direction arrows in Fig. 2. In this whirling motion the air repeatedly comes in contact with the oil pool causing much dust to be removed therefrom by adherence to the surface of the oil pool. Any small amount of dust which might remain in the air is removed therefrom by the rolls 27 as it passes inwardly and outwardly therethrough on its way to the outlet 6 and to the engine.

It will now be apparent that I have provided an improved means for removing dust from the air prior to its entry through the carburetor into the engine. Having thus described my invention, it being understood that minor changes may be resorted to in its construction and arrangement without departing from the scope and spirit of the invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A dust remover having in combination, a casing, a detachable bottom for the casing, a pool of oil in said bottom, a cover member having an air entry port therein, a triangular frame connected to the cover member adjacent the air port, said frame arranged to extend into the casing to form a restricted passage therewith, screen rolls secured in transverse spaced relation to the slanting side of said frame between said air entry port and restricted passage, air outlet means for the casing, a plurality of screen rolls secured in spaced apart relation to the side of the triangular frame between the oil pool and the outlet means, and absorbent filler for all of said screen rolls.

2. A dust remover having in combination a casing, a detachable bottom for the casing, a pool of oil in said bottom, a cover member having an air entry port therein, a triangular frame connected at its acute angular end to the cover member adjacent the air port and adapted to extend into the casing to form a restricted passage therewith, screen rolls secured in transverse spaced relation to the slanting side of said frame between said entry port and restricted passage, screen rolls secured to the side edges of said slanting triangular frame side, oil saturated absorbent material within all of said screen rolls, air outlet means for the casing, a plurality of screen rolls secured in spaced apart relation to the side of the triangular frame between the oil pool and the outlet means, and oil saturated filler within said rolls.

3. A dust remover having in combination a casing, a detachable bottom for the casing, a pool of oil in said bottom, a cover member having an air entry port therein, a triangular frame connected at its acute angular end to the cover member adjacent the air port and adapted to extend into the casing to form a restricted passage therewith near the bottom of the casing, screen rolls secured in transverse spaced relation to the slanting side of said frame between said air entry port and restricted passage, oil saturated absorbent filler for said rolls; screen rolls secured to the side edges of said slanting side and having oil saturated absorbent material therein, a baffle for the air entry ports arranged to direct incoming air against said slanting frame side and screen rolls, a baffle for the restricted passage adapted to direct air against the oil pool, a concave underside for the triangular frame adapted to cause an eddy current of the air against the oil pool, air outlet means for the casing, a plurality of screen rolls secured in spaced relation to the side of the triangular frame between the oil pool and the outlet means, oil saturated absorbent filler for said rolls, said last mentioned rolls disposed in staggered relation against and away from the triangular side, and an oil pocket interposed between the oil pool and the air outlet means.

In testimony whereof I affix my signature.

ROY K. RUNYON.