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ENGINE INTAKE ATTACHMENT

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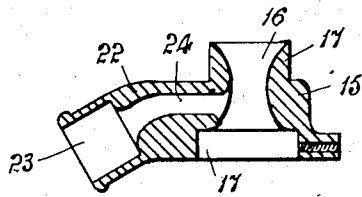


Fig. 3.

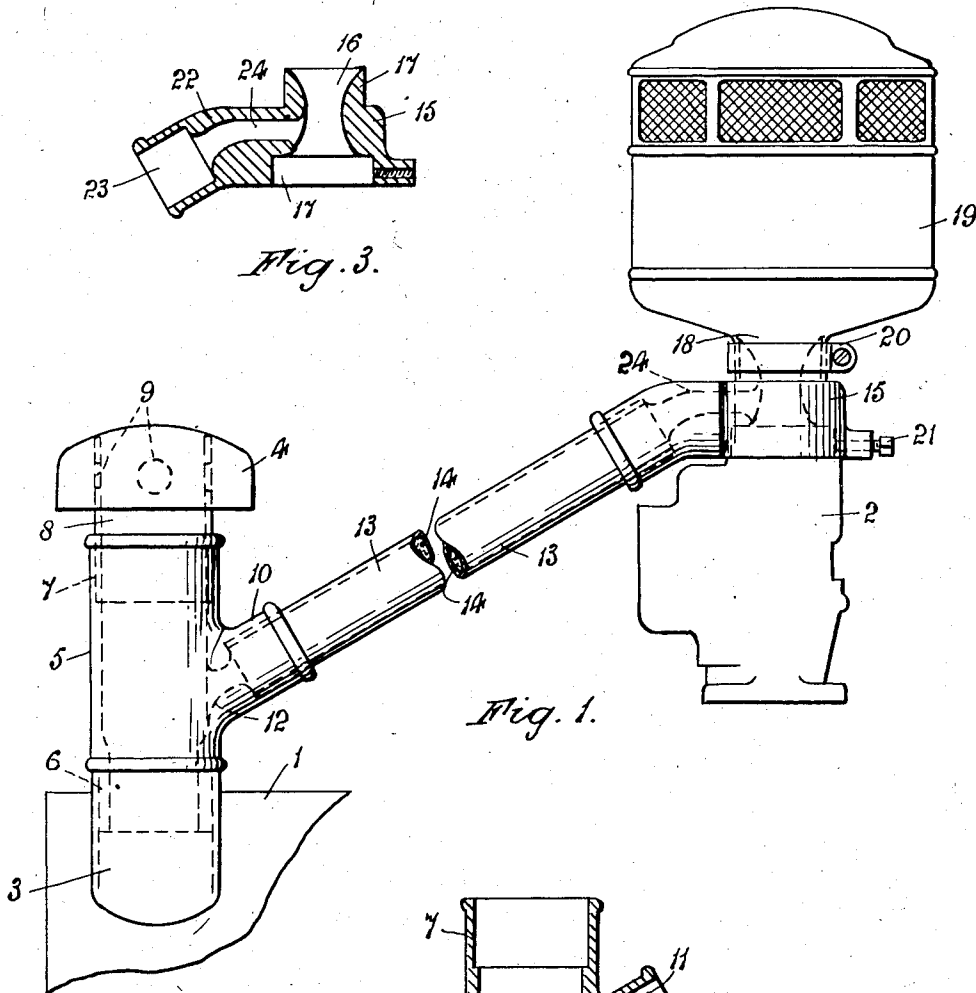


Fig. 1.

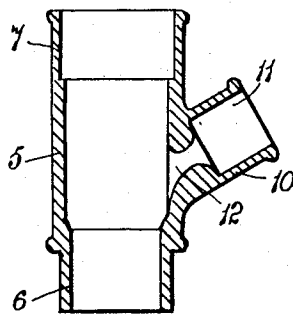


Fig. 2.

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ENGINE INTAKE ATTACHMENT

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3 Claims. (Cl. 123-119)

This invention relates to means for improving the operation of internal combustion engines, and more especially of such engines which due to extended use have lost some of their efficiency on account of "blow-back" developing, whereby, due to wear or otherwise, part of the cylinder charge passes beyond the pistons to the crank case of the engine and admixes with the oil vapor in the crank case; one of the objects of the invention being to effect a recovery at least part of this combustible fuel from the crank case vapors and to return this to the cylinders as an addition to the incoming charge through or from the carburetor of the engine.

A further object is to provide for the induction to the charge stream of the engine of oil vapor from the crank case of the engine in a manner auxiliary of the said charge; and, still further, to effect the mixture of air from the outside atmosphere with the said induced auxiliary charge.

Still further, it is an object of the invention to provide condenser means having a tendency to condense at least part of the heavier or lubricating oils from the said induced charge, and to return the condensate to the crank case where this is deemed necessary or desirable.

In its preferred form, the invention has as its object to provide an attachment for ready application to existing engines, and more especially to engines which have had some considerable use, said attachment being in the form of a condenser having an inlet and an outlet, the inlet being provided with a means for connection to the breather pipe of the engine crank case, and the outlet with means for connection to the intake system of the engine or its carburetor; and still further the said invention contemplates a provision of an air inlet to the first mentioned connection which inlet may receive the breather cap ordinarily provided on the said breather pipe.

Still further objects and advantages subsidiary to or resulting from the aforesaid objects or from construction or operation of the invention as it may be carried into effect, will become apparent as the said invention is hereinafter further disclosed.

In carrying the said invention into effect, I may provide a condenser in the form of a flexible condenser pipe enclosing a core or baffle of screen material, such as copper mesh, a fitting at the lower end of said pipe of substantially Y formation the lower end of which seats in the open end of the engine crank case breather

and the upper end of which fitting receives the breather cap ordinarily applied directly to the breather pipe, and a fitting on the upper end of the said pipe in the form of a collar adapted to be interposed between the carburetor and the intake pipe of the engine, or more preferably superimposed on the intake opening of the carburetor; and, where an air cleaner is provided, preferably between the intake of the carburetor and the said air cleaner. All of which is more particularly described and ascertained herein-after, by way of example, having reference to the accompanying drawing, wherein:

Figure 1 is an elevation of my improved device applied to the breather pipe and the carburetor of an engine, the condenser pipe being partly broken away;

Figure 2 is a vertical section through the breather pipe fitting; and

Figure 3 is a vertical section through the carburetor fitting.

Similar characters of reference indicate similar parts in the several figures of the drawing.

1 indicates the crank case and 2 the carburetor of an internal combustion engine, 3 being the crank case breather pipe to which the breather cap 4 is usually applied.

5 is a Y fitting having a spigot end 6 adapted to enter and fit in the open end of the breather pipe 3 and a socket end 7 adapted to receive the tubular stem 8 of the breather cap 4, which stem has any suitably formed openings 9 therein to permit air to enter the same and thereby gain access to the interior of the said fitting 5. The said fitting has a branch 10 provided with the socket 11 to which a passage 12 from the interior of the fitting communicates, and this socket is adapted to receive the lower end of a pipe 13 which encloses a core 14 of wire mesh, netting, or other suitable baffle means of any desirable form or construction suitable for the purposes of the invention as described. This pipe may be of a rigid nature, where its precise dimensional and location requirements are definitely known, but, as the device is intended to be adaptable to various sizes, types, and designs of engines, it is preferred that the said pipe be of a flexible nature or at least be subject to being bent or varied as to form and relative disposition of its ends.

15 is a second fitting the body of which is in this example, provided with a Venturi type opening 16 therethrough and a socket 17 at its lower end adapted to engage the intake pipe of the carburetor 2, and a spigot extension 17 at its

upper end adapted to enter outlet pipe 18 of an air cleaner 19, the said outlet pipe 18 may be secured to the said spigot extension 17 by means of a clamp 20, or in any other desirable manner, and a set screw 21 may be provided for securing the fitting to the carburetor intake pipe.

The said fitting 15 is provided with the branch 22 having a socket 23 formed therein to receive the upper end of the said pipe 13, 24 being a passage extending from said socket to the core of the fitting.

The pipe 13 and its baffle core 14 are intended to form a condenser, and the dimensions thereof will be governed accordingly, it being preferred that considerable volumetric capacity relative to the size of the passages 12 and 24 be provided; and in operation the suction of the engine will draw oil vapors from the crank case (by way of the breather pipe through the fitting 5, the condenser casing 13 and the fitting 15) to admix with the intake charge of the engine. This action is accompanied by the induction to such flow, of air through the openings of the breather cap, and this air, together with the area of the pipe 13 exposed to the outer air, the capacity of the pipe 13 to permit expansion of the induced air and gases therewithin, the relatively slow flow of such gases through the pipe resulting from the greater cross sectional area thereof relative to the openings 12 and 24, the length of the pipe 13, and the screening effect of the baffle means within the pipe, will operate to cool and condense at least a part of the heavier oils contained in the vapor passing through the said pipe; whereby such condensate may return, as by gravity, to the crank case and the more volatile gases pass through the opening 24 to admix with the intake of the engine.

Further, the cold air passing downwardly through the fitting 5 and meeting the upwardly traveling vapors from the crank case will tend at that point to chill these rising vapors and initiate the condensing of the heavier oils therefrom.

In actual practice, the use of the described device has materially added to the economical and efficient operation of internal combustion engines, especially those which have been worn to a degree where material "blow-back" by the pis-

tons takes place, and the device also serves an additional purpose in assisting in reducing the temperature of the crank case oil thereby permitting more effective lubrication. At the same time, dilution of the crank case oil is materially alleviated.

While in the illustrated example the condenser is shown as being connected with the intake end of the carburetor, which arrangement I prefer, it will be obvious that it may be connected with the intake system of the engine at any suitable point according to convenience.

This invention may be developed within the scope of the following claims without departing from the essential features of the said invention and it is desired that the specification and drawing be read as being merely illustrative and not in a limiting sense, except as necessitated by the prior art.

What I claim is:

1. In combination with the crank case and charge intake system of an internal combustion engine, a venturi in said intake system, a conduit connecting the upper part of said crank case with said venturi to supply vapors from said crank case thereto as an auxiliary to the engine charge, and an oil condenser interposed in said conduit, said venturi acting in a direction to overcome the resistance of said condenser to the passage of vapors therethrough.

2. As an attachment for internal combustion engines having a crank case breather pipe and a charge intake system, a tubular extension for said breather pipe, a tubular fitting for interposition in said intake system, and a condenser in the form of a pipe enclosing a core of filtering material extending in an upward direction from said extension to said fitting, said condenser thereby draining into said extension.

3. As an attachment for internal combustion engines having a crank case breather pipe, a breather cap, and a charge intake system; a tubular extension for said breather pipe, said extension being open at the top to receive said breather cap, a tubular fitting having a Venturi bore for interposition in said intake system, and a condenser communicating with said extension and said fitting.

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