H. SMITH.

HEAT EXHAUSTING DEVICE.

APPLICATION FILED SEPT. 7, 1917.

1,280,569. Patented Oct. 1, 1918.

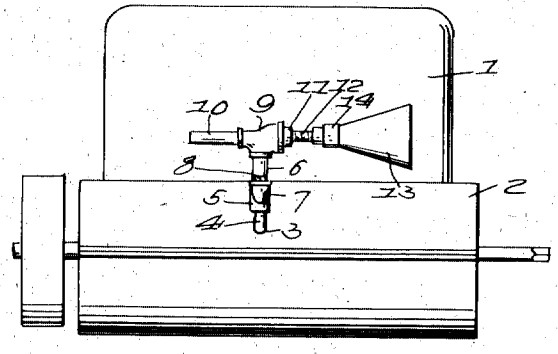


Fig. 1.

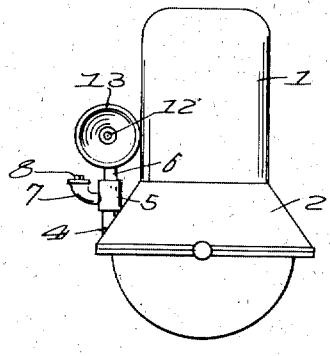


Fig. 2.

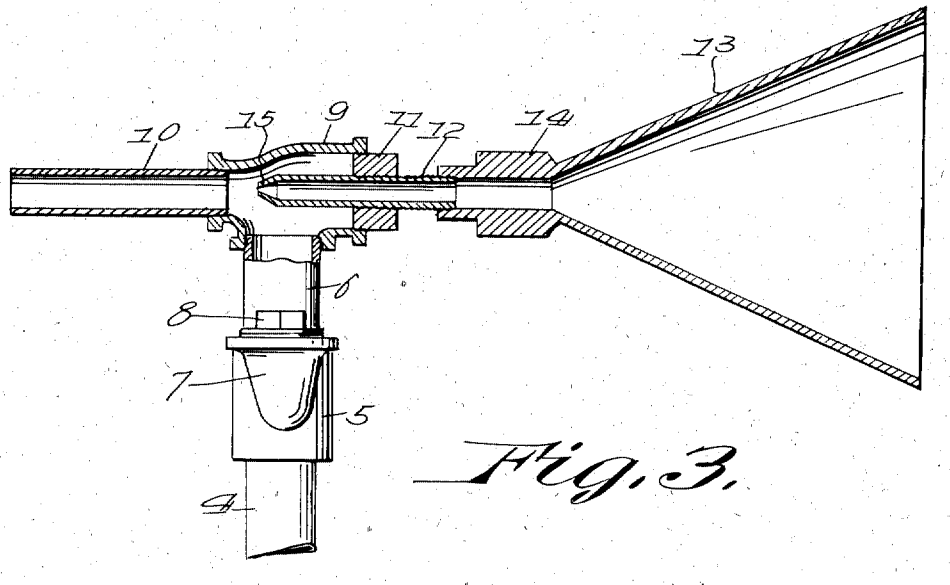


Fig. 3.

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UNITED STATES PATENT OFFICE.

HENRY SMITH, OF CUMBERLAND, MARYLAND, ASSIGNOR OF ONE-HALF TO PHIL SMITH, OF CUMBERLAND, MARYLAND.

HEAT-EXHAUSTING DEVICE.

1,280,569. Specification of Letters Patent. Patented Oct. 1, 1918.

Application filed September 7, 1917. Serial No. 190,238.

To all whom it may concern:

Be it known that I, HENRY SMITH, a citizen of the United States, residing at Cumberland, in the county of Allegany and State of Maryland, have invented new and useful Improvements in Heat-Exhausting Devices, of which the following is a specification.

As a heat exhausting device, the invention seeks to provide, as its principal object, a compact and effective means for extracting hot air from the crank-cases of internal combustion engines and the like, and replacing this with cool air.

A further object is to provide a device of this kind which will be capable of exhausting hot air and admitting cool air to an engine crank-case in such a manner as to preclude danger of admitting dust or grit to the crank-case.

Cheapness of construction and simplicity of structure are other objects of the invention.

Still another object is to provide means in the device, whereby the crank case may be oiled therethrough.

Other and further objects will appear as the detailed description progresses.

While the invention is illustrated in but one of its embodiments, it is not to be considered as restricted to this embodiment. An actual reduction to practice may suggest certain desirable changes or alterations, which the right is claimed to make, in so far as they may be compatible with the spirit of the subjoined claims.

In the accompanying drawings:—

Figure 1 is a side elevation of an internal combustion engine, such as is used with auto-vehicles. This figure shows the manner in which the invention is applied to such an engine.

Fig. 2 is an end elevation of the structure shown in Fig. 1.

Fig. 3 is an enlarged view partly in elevation and partly in section of the invention *per se*.

In the drawings, 1 is an internal combustion engine provided with a crank case 2 and the invention is applied to this crank case by attachment in the hole through which the crank case is ordinarily oiled, as indicated at 3 in Fig. 1.

The invention itself comprises the nipple 4 which is threaded in the hole before referred to as existing in the crank casing 2. On the upper end of this nipple, there is threaded a coupling 5 which receives on its upper end, by threaded engagement therewith, a second nipple 6. A tubular elbow 7 projects from the side of the coupling 5 and its free leg is turned upward, receiving on its end the screw plug 8, which is designed as a closure member for the elbow.

Threaded onto the nipple 6 at its upper end, there is a T 9 which receives in opposite ends of its cross leg, by threaded engagement therewith, the tube 10 and the bushing 11. The tube 12 projects centrally through the bushing 11 and is rigidly fixed therein, this tube extending into the cross leg of the T 9 a sufficient distance to permit it to cross the upper end of the nipple 6. On that end of the tube 12 which projects out of the bushing 11, a funnel 13 is attached, this funnel having a cylindrical hub portion 14 which effects a threaded engagement with the end of the tube 12.

That end 15 of the tube 12 which is within the cross leg of the T 9 is frusto-conical in shape, thus reducing the diameter of the outlet of the tube 12 at this end as compared with the inlet at the other end. Since the tube 12 is designed to take air at its larger end, this frusto-conical end 15 has the effect of creating a vortex at the outlet of the tube which results in a relatively greater suction being set up in the tube 10.

The invention is designed to be applied as shown in Fig. 1 and, as the engine shown therein is the kind commonly used on auto-vehicles, the invention is so positioned that, as the engine is moved forward by the vehicle which it drives, the funnel 13 gathers a quantity of cool air currents which are converged at the apex of the funnel and pass through the tube 12 at a high velocity, being further converged as they pass out the frusto-conical end 15 of the tube 12. As these air currents pass out of the tube 12 and through the tube 10, they serve to drive all the still air contained therein out of the latter, creating a partial vacuum which results in a suction through the air outlet from the crank casing 2, which air outlet is composed of the nipples 4 and 6 and their connecting coupling 5. Since the tube 12 enters the cross leg of the T 9 a sufficient distance to extend across the upper end of

the nipple 6, any dust or grit that may be gathered by the funnel 13 is driven out through the tube 10 and thus prevented from dropping into the crank casing where it would likely do damage.

Since the device is attached to the crank casing in the hole through which the latter is ordinarily oiled, the elbow 7 and plug 8 are provided for oiling the crank casing at the desired point without disconnecting the device.

Ordinarily auto-vehicles and the like employ internal combustion motors of the four-cycle type which, therefore, are not required to have gas-tight crank casings, as is the case with the two-cycle motors. In the employment of the present invention, it is presumed that the crank casing can receive air through the bearings and between the edges of its connecting sections to take the place of the hot air removed by the device; but in case this means of admitting cool air is not sufficient, a hole may be formed in the crank casing to admit enough cool air to take the place of the hot air removed.

Without making any provision for the admission of cool air, it is obvious that the device would be effective in operation. The cool air gathered by the funnel 13 and discharged through the frusto-conical end will of course create sufficient suction to drive all hot air away from the crank casing. Since air is reduced in weight as its temperature rises, the heavier and cooler air brought in through the tube 15 will drop down through the nipples 6 and 4 into the crank casing, thus taking the place of the hot air removed.

What is claimed is:—

1. In a heat exhausting device for internal combustion engine crank-casings and the like, an outlet tube, a T positioned on the top thereof, a suction tube connected to one end of the cross-leg of the T, an inlet tube projecting into said cross-leg through the opposite end thereof, and a funnel attached to the end of the inlet tube, the inlet tube having the opening at its free end reduced as compared with the opening at its other end, whereby air currents may be gathered by the funnel and converged thereby and by the inlet tube to create a suction in and through the suction and outlet tubes.

2. In a heat exhausting device for internal combustion engine crank-casings and the like, an outlet tube designed for attachment to the crank-casing of an engine, said outlet tube having an elbow extending laterally therefrom which elbow provides a means for oiling the crank-casing, a T positioned on the top of the outlet tube, a suction tube connected to one end of the cross-leg of the T, an inlet tube projecting into said cross-leg through the opposite end thereof, and a funnel attached to the end of the inlet tube, the inlet tube having the opening at its free end reduced as compared with the opening at its other end, whereby air currents may be gathered by the funnel and converged thereby and by the inlet tube to create a suction in and through the suction and outlet tubes.

3. In a heat exhausting device for internal combustion engine crank-casings and the like, an outlet tube, a T positioned on the top thereof, a suction tube connected to one end of the cross-leg of the T, an inlet tube projecting into said cross-leg through the opposite end thereof and extending across the upper end of the outlet tube, and a funnel attached to the end of the inlet tube, the inlet tube having the opening at its free end reduced as compared with the opening at its other end, whereby air currents may be gathered by the funnel and converged thereby and by the inlet tube to create a suction in and through the suction and outlet tubes.

In testimony whereof I affix my signature.

HENRY SMITH.