March 10, 1953 B. BAXTER 2,630,794

CARBON ELIMINATOR

Filed Sept. 28, 1949

Fig. 1.

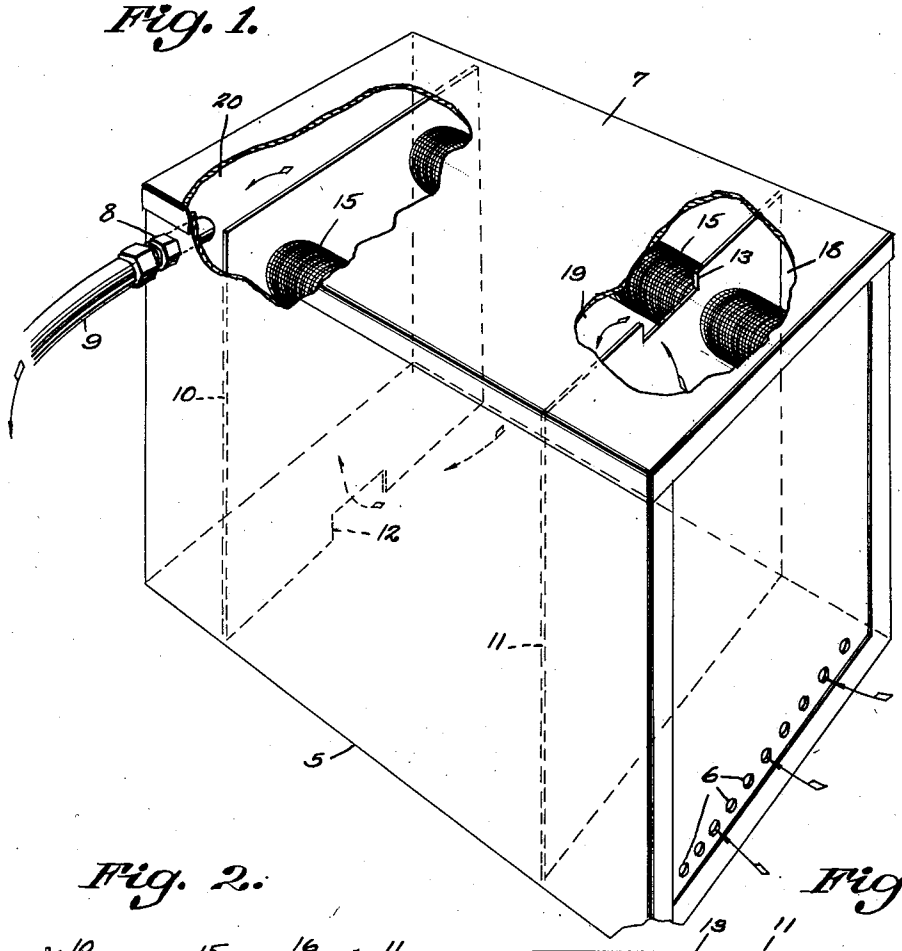



Fig. 2.

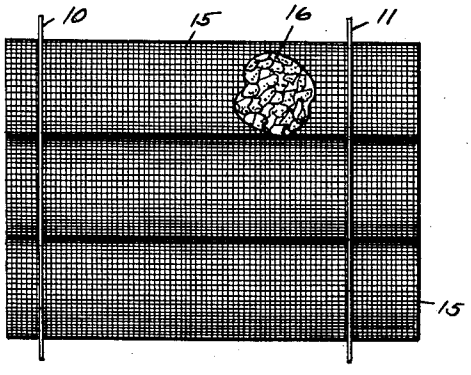
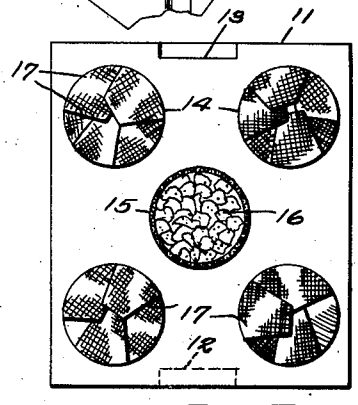



Fig. 3.




B. Baxter INVENTOR

BY C. A. Snow & Co.

ATTORNEYS.

Patented Mar. 10, 1953 2,630,794

# UNITED STATES PATENT OFFICE

2,630,794

## CARBON ELIMINATOR

Bert Baxter, Plymouth, Calif.

Application September 28, 1949, Serial No. 118,427

1 Claim. (Cl. 123—198)

1

This invention relates to a carbon eliminator, and more particularly, has reference to a device of this type adapted to eliminate the carbon in gasoline engines.

The injurious effect of carbon upon gasoline engines is of course well known, and need not be dwelt upon at length herein. As is well known, engines free or substantially free of carbon operate with considerably less friction, and as a result have maximum power accompanied by a clear and distinct saving in fuel.

An important object of the present invention is to produce a device, at low cost, that can be readily attached to gasoline engines of conventional construction, and when so attached will serve to eliminate the carbon which would otherwise collect upon various portions of said engine.

Summarized briefly, the invention comprises a sealed container having entrance openings at one end comprising an air intake and having an outlet opening at its other end to which can be connected a tube leading to the intake manifold of an engine below the carbureter; spaced partitions in said container and respectively notched at opposite ends to cause air flowing through the container to move through a tortuous path; and cylindrical screen containers mounted upon and extending between said partitions and projecting beyond opposite sides of said partitions, said screen containers each being filled with chemicals in crystal form adapted to attack carbon by causing a chemical reaction creating a gas which will so attack the carbon.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings:

Fig. 1 is a perspective view, portions being broken away of a carbon eliminator formed in accordance with the invention.

Fig. 2 is a side elevational view showing the partitions and the chemical carrying containers supported thereby.

Fig. 3 is an end elevational view of said partitions and chemical containers.

Referring to the drawings in detail, 5 is a metal box here shown as rectangular in form, but which can in accordance with the invention take other shapes. The box 5 is formed at one

2

end with a plurality of air intake openings 6, through which air moves into the box in the direction of the arrows illustrated in Fig. 1.

The box is provided with a cover 7 which once attached to the box is preferably secured thereto in a manner to seal the box tightly against the admission of air except through the air intake openings. The lid 7 can be soldered or otherwise rigidly secured in a sealing relationship to the box.

At the other end of the box, said box is provided with a fitting or coupling 8 whereby there can be attached thereto a copper tube 9 or the like, leading to the intake manifold, not shown, of a gasoline engine, immediately below the carbureter.

The fitting 8 represents an outlet opening for the box, disposed at the opposite end thereof from the air intake openings 6, and disposed adjacent the top of the box, as distinguished from the air intake openings 6, which are disposed near the bottom of the box.

Within the box, there are mounted spaced partitions 10 and 11 that are mounted in upright position within the box, one of these partitions being disposed near one end of the box and the other partition being disposed near the other end, as clearly shown from Fig. 1. The partition 10 engages the box along all its edges, and the bottom edge of the partition 10 is formed with a notched indentation 12. Thus, since all the edges of the partition 10 tightly engage the side walls, bottom, and top of the box, air can move past the partition 10 only through the aperture 12.

The partition 11 is of approximately the same shape as the partition 10, and is identical to said partition with the exception that the partition 11 is formed with a notch 13 at the top of the partition as distinguished from the partition 10 which has its notch at the bottom.

The partitions are formed with aligned openings 14, in suitable number, and extending through these openings between the partitions, and projecting beyond each of the partitions as best shown in Fig. 2, are the cylindrical wire mesh containers 15 each of which is filled with chemicals 16 in crystal form, which chemicals will be described in more details hereinafter. These chemicals are of such a nature as to set up a chemical reaction when air passes therethrough, which chemical reaction sets up a gas which is drawn with the air into the combustion chambers and which, after being exploded, operates to attack and eliminate carbon formation upon the engine parts.

As may be noted from Fig. 3, the cylindrical screen containers 15 can be closed at the ends simply by folding over the flaps 17 defined at said ends of the container, thus to close the screen containers completely for the purpose of retaining the chemicals 16 therein.

The screen containers 15 preferably extend practically from end wall to end wall of the box 5, so as to have maximum effect upon air moving in the tortuous path through the box.

Considering the passage of said air, it may be noted that as a suction is set up in the intake manifold, air will be drawn through the air intake openings 6, and will be caused to move upwardly in end chamber 18 defined between the partition 11 and the adjacent end wall of the box 5. This air moving upwardly through the end chamber 18, is caused to move past and through the projecting end portions of the wire mesh container 17, thus to cause the aforementioned chemical reaction to be instituted.

Thereafter, the air passes through the notch 13 at the top of the partition 11, into a middle chamber 19, and moves downwardly through this middle chamber, through medial portions of the chemical containers 15, so as to be further acted upon by the chemicals in said containers.

Thereafter, the air moves out of the middle chamber 19 through the notch 12 at the bottom of the partition 10, and moves upwardly through the opposite end chamber 20, again moving past the projecting opposite ends of the chemical containers 15 for still further impingement of the air upon the chemicals. Finally, the air and the gases formed by said chemical reaction are caused to move through the outlet opening 8 by the suction action mentioned above, and then through the copper tubing 9 into the intake manifold. After mixture with the engine fuel, and explosion, said gases attack the carbon that otherwise would tend to form upon the engine parts.

With respect to the chemicals which I have found advantageous for the purpose of obtaining the desired results, I provide a mixture of chemicals in crystallized form as follows:

| | Parts |
|---|---|
| $NH_4Cl$—Ammonium chloride | 3 |
| $CaCl_2 2H_2O$—Calcium chloride | 3 |
| $C_4H_6O_6$—Tartaric acid | 2 |
| $ZnCl_2$—Zinc chloride | 1 |
| Sodium chloride | 1 |

The gas which occurs through the chemical reaction previously mentioned is not injurious in any way to metal, although it efficiently attacks and in effect eliminates the carbon tending to form upon engine parts. This gas further attacks and destroys the greater percentage of the carbon monoxide gas which would otherwise be present.

By reason of a carbon eliminator constructed in accordance with the invention, and mounted in a vehicle adjacent the engine and in the position stated, the engine will be allowed to run substantially free of carbon, thus to be more flexible in operation and to operate with less friction, with a resultant increase in power accompanied by a saving in fuel.

It is pertinent to consider further exactly how the chemicals operate to eliminate carbon deposits that otherwise would tend to form upon metal parts of the engine. In this connection, ammonium chloride, zinc chloride, tartaric acid, and sodium chloride, with a small amount of moisture, will remove carbon from metal. Calcium chloride furnishes the necessary moisture to assist in the creation of gas, the generation of the gas further being effected by the circulation of air around the foraminous tubes. The gas so generated is drawn into the intake manifold with said circulating air, by suction set up in the intake manifold by operation of the engine. This gas is drawn into the intake manifold below the carburetor, that is, beyond the outlet side of the carburetor. It feeds, along with the fuel-air mixture that enters the intake manifold from the carburetor, to the engine cylinders and during the explosion of the fuel-air mixture and after said explosion, the chemical analysis of the generated gas does not change. In this regard, if it were to change it would not have any effect upon the carbon. As to the effect of the gaseous compound upon the carbon, it should be noted that it does not change the carbon to a gas, but only loosens the carbon deposits from the metal parts, whereupon the loosened carbon particles are blown out through the exhaust.



What is claimed is:

In a carbon eliminator for removing the carbon deposits which form in the cylinders of an internal combustion engine an elongated substantially rectangular hollow box having a removable cover closing one side thereof, one end wall of the box having a row of spaced air intake openings extending therethrough adjacent the side of the box remote from the cover, a pair of spaced parallel partitions removably mounted in the box in spaced parallel relation to the end walls of the box, elongated foraminous circular cylindrical chemical containers carried by the partitions within the box, said containers extending in spaced parallel relation longitudinally within the box and engaging opposite end walls thereof, the partition adjacent the end wall having the openings therein being provided with a recess opening through the edge thereof adjacent the cover, the other partition having a recess opening through the edge thereof remote from the cover, said box having a discharge port opening through a side thereof adjacent the cover and between the end wall of the box remote from that having the air intake openings and the adjacent partition, and a duct connected to the box and communicating with the interior thereof through the discharge port for establishing communication between the box and the intake manifold of an internal combustion engine.

BERT BAXTER.

## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS


| Number | Name | Date |
|---|---|---|
| Re. 16,425 | Bird | Sept. 21, 1926 |
| 1,160,682 | Ahern | Nov. 16, 1915 |
| 1,205,264 | Rogers | Nov. 21, 1916 |
| 1,593,137 | O'Rourke et al. | July 20, 1926 |
| 1,867,325 | Neville | July 12, 1932 |
| 1,878,245 | Matthis | Sept. 20, 1932 |
| 1,975,619 | Rector | Oct. 2, 1934 |
| 2,064,561 | O'Sullivan | Dec. 15, 1936 |
| 2,288,943 | Eastman | July 7, 1942 |