

986,757.

Patented Mar. 14, 1911.



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UNITED STATES PATENT OFFICE.

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MOISTENER FOR INTERNAL-COMBUSTION ENGINES.

986,757.

Specification of Letters Patent.

Patented Mar. 14, 1911.

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To all whom it may concern:

Be it known that I, CHARLES C. RICH, a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Moisteners for Internal-Combustion Engines, of which the following is a specification.

This invention has for its object, means for furnishing moisture or water vapor to air or gaseous mixtures passing through the same for use in the combustion chambers or cylinders of internal combustion engines such as gas, gasoline, or alcohol engines, the invention aiming to compel the air or gaseous mixture to take up the moisture by absorption during its passage from the carbureter to the cylinder or cylinders, or if desired, to have the moisture drawn into the carbureter before the air makes its entrance therein, and the invention also has for its object, means whereby the air or gaseous mixture will be destratified in addition to being moistened.

With these and other objects in view, as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings in which:

Figure 1 is a conventional representation of an internal combustion engine and carbureter therefor: Figs. 2 and 3 are similar views illustrating two different ways in which my invention may be combined with the engine cylinders and carbureter; Fig. 4 is a longitudinal sectional view of the moistening device: Fig. 5 is a transverse sectional view thereof on the line 5—5 of Fig. 4. Fig. 6 is a horizontal section, the section being taken just above the top of the body portion; Fig. 7 illustrates in detail perspective one of the perforated disks employed and its absorbent layers or coating; one of said layers being partly broken away; and, Fig. 8 is a detail perspective view of a partition hereinafter specifically referred to.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

My improved moistener and destratifier

embodies a casing A which may be of any desired construction, size or design, and which preferably comprises a bottom section 1, and a top or lid section 2 of any desired proportions and detachably connected together in any desired way, so that the bottom section may be removed for the purpose of pouring water therein, or for the purpose of inserting or removing any of the interior parts, or for any other purpose. It is to be understood, however, that the invention is not limited in this regard, and that the bottom section may be provided with any means for admitting water therein, and that the top section may be constructed in any desired way to provide for the insertion and removal of the parts which it contains.

Designed to be contained within the casing A, are any desired number of plates or disks 3 which are formed with any desired number of bolt holes to receive tie-bolts 4, which, together with interposed washers or thimbles 5 strung on the tie-bolts connect together the entire series of plates or disks in predetermined spaced relation to each other. Each disk is formed with any desired number of perforations 6, the perforations of each disk being set out of alinement or in staggered relation to the perforations of the two adjacent disks, whereby the air or gaseous mixture passing through each disk in the series will be broken up into a plurality of streams or currents which will impinge against the solid portion of the next disk in the series and thereby not only effect the destratification of air or other gases, but conduce to the effective absorption of moisture owing to the fact that by the arrangement described a maximum superficial area will be presented to the air or gaseous mixture commensurate with a minimum of space provided by the entire apparatus. Each disk is covered on both faces by perforated absorbent material 7 of any desired character, the material extending below the disk or plate forming two extensions as indicated at 8. In the embodiment of the invention illustrated in the accompanying drawing, the entire set of disks connected together as above described, is slipped preferably by an end-wise movement into a compartment which is formed in the top section 2 of the casing A by means of a partition 10 conforming substantially to the shape of the inner surface of the upper section 2, and spaced from the inner wall of such section, the partition being substantially of in-

verted U-shape in the present instance. This partition may be composed of any desired substance or material and may be supported in any desired way as upon the top 1^a of the bottom section or body portion 1 of the casing. In the present instance, the disks are supported upon transversely curved or longitudinally extending ledges 9 that form integral portions of the interior walls of the partition 10. The said partition is formed at intervals with segmental and transversely extending slots 11 of any desired length and preferably of a width to correspond to the width of the coated disks, there being one slot 11 for each disk and the slot registering with the edge of the disk as clearly illustrated in the drawing. The downwardly extending ends 8 of the absorbent material or coating 7 extend through the slots 13 formed in the top plate 1^a of the section 1 and are immersed in water which such section contains whereby the said material will absorb the water and maintain the material 7 in a moist condition so as to supply moisture to the air or other gaseous mixture passing through the device. Interposed between the partition 10 and the inner wall of the casing is an auxiliary layer 12 of wicking or other absorbent material, the same preferably extending from end to end of the receptacle or casing, the ends of the layer extending down into the water in the lower section 1, while the upper portion of the layer extends across the slots 11 thereby conveying moisture to the upper portions of the disks.

The casing A may be provided at its ends with pipe connections or nipples 14 whereby it may be connected between the carbureter B and the engine cylinder C as indicated in Fig. 2 whereby the entire gaseous mixture will be moistened as it passes from the carbureter to the cylinders or may be connected by one of the nipples to the air-inlet port of the carbureter B as indicated in Fig. 3, so as to moisten the air before it makes an entrance into the carbureter. It is to be understood that my invention is not limited to either of these arrangements, nor to any particular construction, arrangement, or proportion of the parts, as various changes may be made without departing from the scope of the invention as defined by the appended claims.

From the foregoing description, in connection with the accompanying drawing, it is manifest that the air or gaseous mixture passing into the casing at one end will be effectually moistened and destratified by passing through the apertures 6 of one moistened disk after the other, the moisture being not only absorbed entirely by the increase in superficial area which is obtained by staggering the apertures of the respective disks and causing the fine streams or cur-

rents to impinge against the solid portion of one disk after passing through the apertures of the next preceding disk, but by this arrangement also, the formation of strata which is one of the disadvantageous features incidental to the passage of air and gaseous mixture to the combustion chambers or cylinders of internal combustion engines is effectually avoided. As the under or lower portions of the coated disks 3 would tend to be kept more moist than the upper portions owing to their proximity to the immersed extensions 8, I provide the partition 10 and the auxiliary wicking or absorbent layer 12 which is interposed between the partition 10 and the inner wall of the casing, the side edges of the layer 12 extending down into the water and the uppermost portion of said layer conveying moisture to the upper portions of the coated disks through the segmental slots 11. By this means, the moistening of the coated disks is rendered uniform.

It is of course to be understood that the device of this invention may be used as a destratifier solely, merely by omitting the water from the casing and also the absorbent layers or strips. With this arrangement, the gases will be divided into a multiplicity of fine streams or currents which, as they pass through the perforations of one disk will strike imperforate portions of the next disk in the series, and so on throughout the entire series of disks, the destratification being thereby effectively accomplished. An arrangement of this character would be particularly advantageous in freezing weather, when the automobilist, for instance would not care to run the risk of the water freezing in the casing.

Having thus described the invention, what is claimed as new is:

1. In a device of the character described, a casing adapted to contain a liquid, an absorbent strip mounted in said casing and extending down into said liquid, and an auxiliary strip mounted in the casing and also extending down into said liquid and thence over the top of the first-named strip, for the purpose specified.

2. In a device of the character described, a casing adapted to contain a liquid, an absorbent strip mounted in said casing and extending down into said liquid, and an auxiliary strip mounted in the casing and also extending down into the same liquid as the first-named strip and thence over the top of the first-named strip, and both strips being in contact with each other at the top of the first-named strip, but otherwise held distinct from each other.

3. In a device of the character described, a casing adapted to contain liquid, an absorbent strip mounted therein and extending into said liquid, a partition mounted in

the casing and spaced from the inner walls thereof, the partition covering the absorbent strip and formed at its top with a slot, and an auxiliary strip mounted in the casing between the partition and the inner wall of the casing and contacting through the slot with the first named strip.

4. In a device of the character described, a casing adapted to contain liquid, a plurality of absorbent strips mounted therein and extending into the liquid, a partition mounted in the casing and spaced from the inner walls thereof, the partition extending over the entire series of strips and formed at its top with slots registering with said strips, and an auxiliary strip mounted in the casing between the partition and the inner wall of the casing and contacting through the slots with the first-named strips.

5. In a device of the character described, a casing adapted to contain liquid, a plurality of perforated disks formed with bolt-holes, tie-bolts extending through the bolt-holes, washers interposed between said disks and mounted on said tie-bolts whereby to hold the disks in spaced relation to each other, and absorbent material applied to the face of the disks and adapted to be moistened by the liquid contained in the casing.

6. In a device of the character described, a casing adapted to contain liquid, a partition mounted in said casing and spaced from the inner wall thereof, the partition being formed at opposite sides with supporting

ledges, a series of perforated disks held in spaced relation to each other and supported on said ledges, absorbent material secured to the faces of said disks and arranged to be moistened by the liquid in the casing, the partition being formed at the top of said disks with slots registering with the disks, and an auxiliary strip of absorbent material disposed between the partition and the inner wall of the casing and extending into the liquid therein, said auxiliary strip extending over the slots whereby to supply the upper edges of the disks with moisture.

7. In a device of the character described, a casing, a partition mounted in the casing and spaced from the inner wall thereof, the partition being formed at opposite sides with supporting ledges, a series of perforated disks held in spaced relation to each other and supported on said ledges, the partition being formed at the top of said disks with slots registering with the disks, and a strip of absorbent material disposed between the partition and the inner wall of the casing and arranged to be moistened by the liquid within the casing, said strip extending over the slots in the partition for the purpose specified.

In testimony whereof, I affix my signature in presence of two witnesses.

CHARLES CLAYTON RICH. [L. S.]

Witnesses:

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