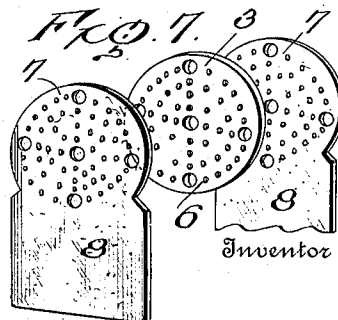
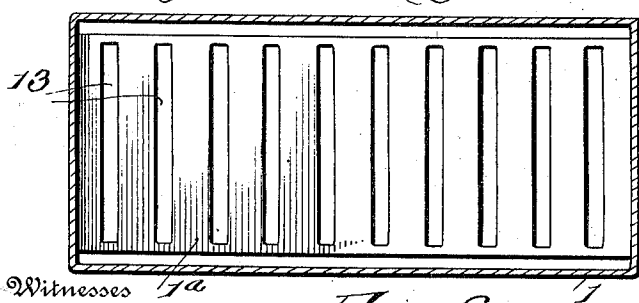
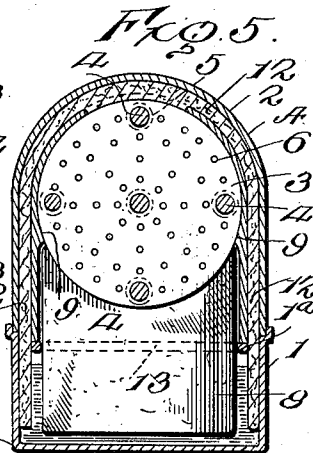
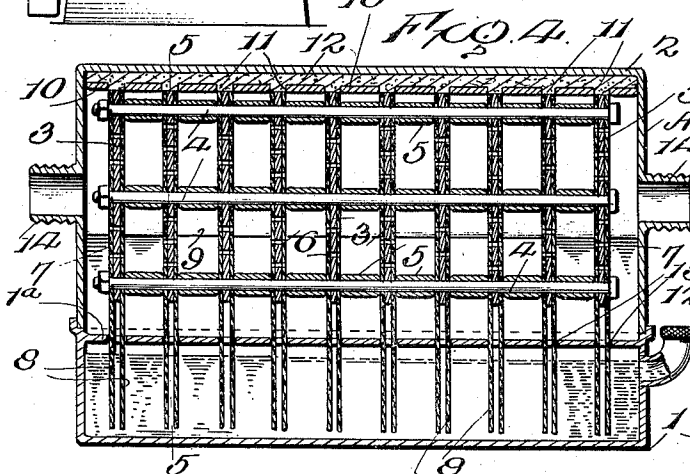
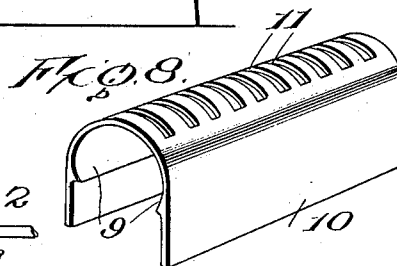
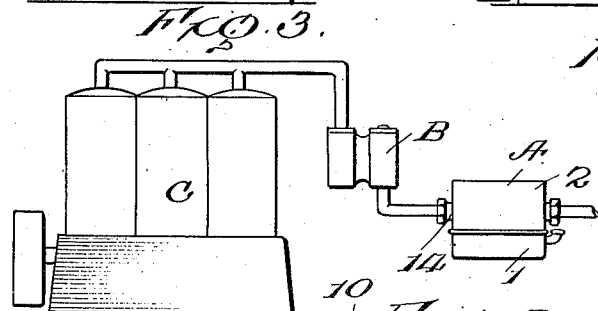
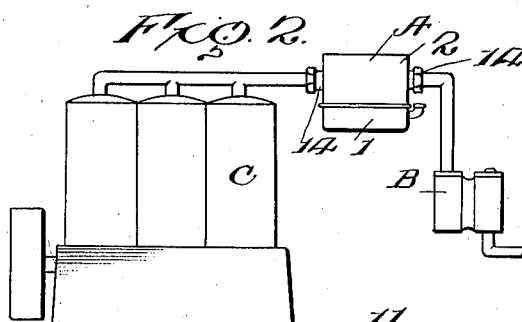


986,757.

Fig. 1.



Witnesses 7a

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UNITED STATES PATENT OFFICE.

CHARLES CLAYTON RICH, OF MOUNT VERNON, NEW YORK.

MOISTENER FOR INTERNAL-COMBUSTION ENGINES.

986,757.

Specification of Letters Patent.

Patented Mar. 14, 1911.

Application filed April 12, 1910. Serial No. 555,045.

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-

5 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
 10 bottom section or body portion 1 of the cas-
 ing. In the present instance, the disks are
 supported upon transversely curved or lon-
 15 gitudinally extending ledges 9 that form in-
 tegral portions of the interior walls of the
 partition 10. The said partition is formed
 at intervals with segmental and transversely
 20 extending slots 11 of any desired length and
 preferably of a width to correspond to the
 width of the coated disks, there being one
 25 slot 11 for each disk and the slot registering
 with the edge of the disk as clearly illus-
 trated in the drawing. The downwardly
 extending ends 8 of the absorbent material
 or coating 7 extend through the slots 13
 30 formed in the top plate 1^a of the section 1
 and are immersed in water which such sec-
 tion contains whereby the said material will
 absorb the water and maintain the material
 35 7 in a moist condition so as to supply mois-
 ture to the air or other gaseous mixture pass-
 ing 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 prefer-
 40 ably extending from end to end of the re-
 ceptacle or casing, the ends of the layer ex-
 tending down into the water in the lower
 section 1, while the upper portion of the
 layer extends across the slots 11 thereby con-
 45 veying 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
 50 B and the engine cylinder C as indicated in
 Fig. 2 whereby the entire gaseous mixture
 will be moistened as it passes from the car-
 bureter to the cylinders or may be connected
 by one of the nipples to the air-inlet port
 55 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 un-
 derstood that my invention is not limited
 to either of these arrangements, nor to any
 60 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 ap-
 65 ended claims.

From the foregoing description, in con-
 nection with the accompanying drawing, it
 is manifest that the air or gaseous mixture
 passing into the casing at one end will be
 70 effectually moistened and destratified by
 passing through the apertures 6 of one mois-
 tened disk after the other, the moisture be-
 ing not only absorbed entirely by the in-
 crease in superficial area which is obtained
 by staggering the apertures of the respective
 75 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 ar-
 rangement also, the formation of strata
 80 which is one of the disadvantageous fea-
 tures 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
 85 lower portions of the coated disks 3 would
 tend to be kept more moist than the upper
 portions owing to their proximity to the im-
 mersed extensions 8, I provide the partition
 10 and the auxiliary wicking or absorbent
 90 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 por-
 tion of said layer conveying moisture to
 95 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
 100 destratifier solely, merely by omitting the
 water from the casing and also the absorb-
 ent layers or strips. With this arrange-
 ment, the gases will be divided into a mul-
 tiplicity of fine streams or currents which,
 105 as they pass through the perforations of one
 disk will strike imperforate portions of the
 next disk in the series, and so on through-
 out the entire series of disks, the destratifi-
 cation being thereby effectively accom-
 110 plished. An arrangement of this character
 would be particularly advantageous in freez-
 ing weather, when the automobilist, for in-
 stance 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 ab-
 115 sorbent strip mounted in said casing and
 extending down into said liquid, and an aux-
 iliary 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 ab-
 120 sorbent 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 be-
 125 ing 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 ab-
 130 sorbent strip mounted therein and extend-
 ing 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:

W. N. WOODSON,

FREDERICK S. STITT.