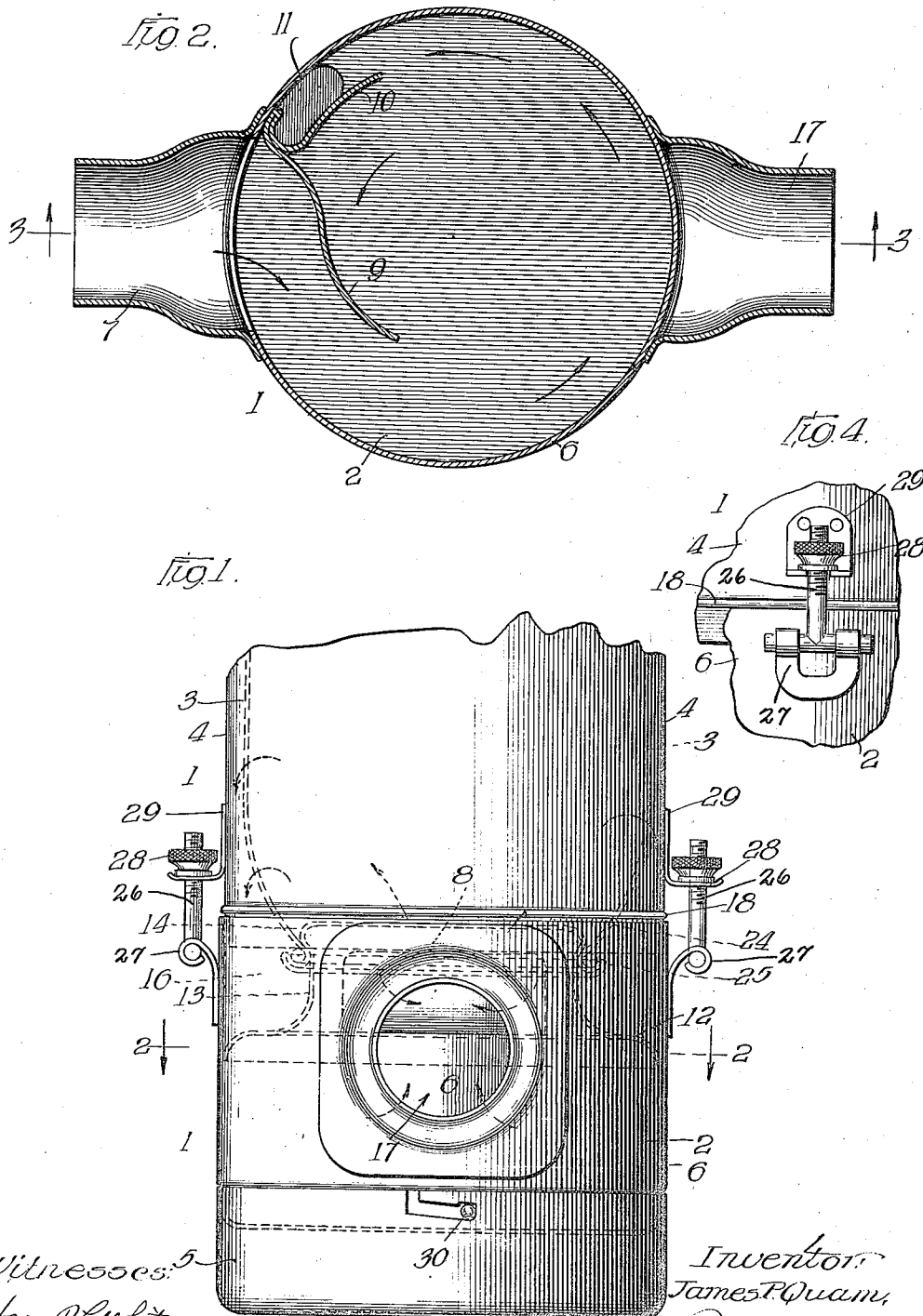


J. P. QUAM.
AIR STRAINER FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED JAN. 27, 1919.

1,405,437.

Patented Feb. 7, 1922.
2 SHEETS—SHEET 1.



Witnesses:
Harry R. L. White
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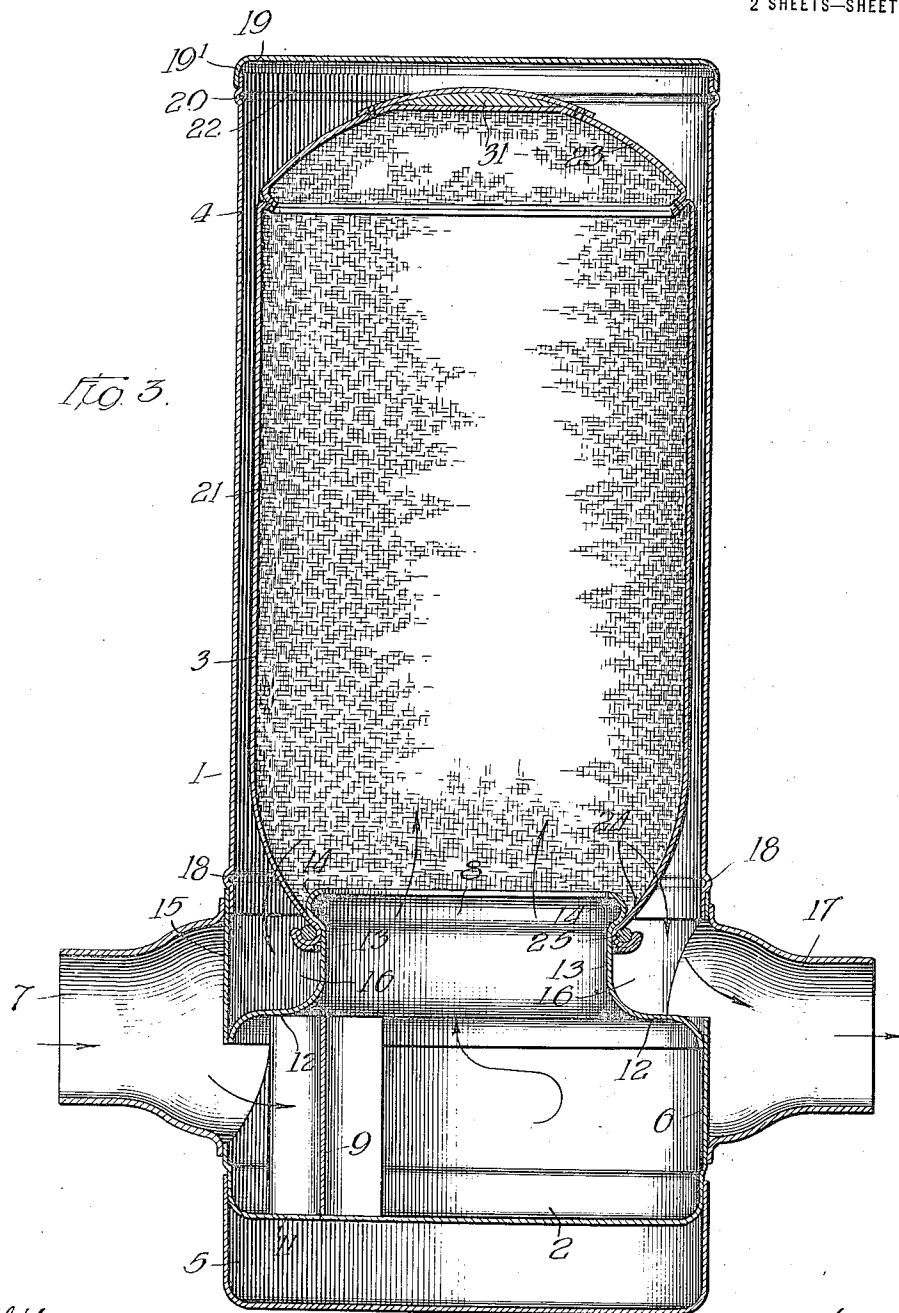
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UNITED STATES PATENT OFFICE.

JAMES P. QUAM, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNITED MANUFACTURING & DISTRIBUTING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

AIR STRAINER FOR INTERNAL-COMBUSTION ENGINES.

1,405,437.

Specification of Letters Patent.

Patented Feb. 7, 1922.

Application filed January 27, 1919. Serial No. 273,415.

To all whom it may concern:

Be it known that I, JAMES P. QUAM, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Air Strainers for Internal-Combustion Engines, of which the following is a specification.

This invention relates to internal combustion engines and more particularly to means for purifying the air supplied to the carbureter.

The main objects of the invention are to provide an improved form of air filtering means adapted for use in combination with the carbureter of an internal combustion engine; to provide such a device of interchangeable character adapted for ready attachment to the standard carbureters ordinarily used on such engines; to provide an improved form of centrifuge therefor; to provide automatic means for shaking the dust from the strainer and so prevent clogging; to provide an improved form of sectional shell or housing for the centrifuge and strainer; and to provide a combination of improved means for separating dust from the air delivered to a carbureter and for discharging the dust into a collecting receptacle therefor.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which—

Fig. 1 is a front elevation of the lower part of the air purifier as viewed from the left-hand side of Fig. 3.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a vertical section on the line 3—3 of Fig. 2.

Fig. 4 is a front elevation of one of the cover-holding clamps.

In the embodiment shown in the drawings, the air purifier 1 comprises mainly, in combination, a centrifuge 2, a strainer 3 detachably connected thereto, an air-tight housing 4 for said strainer demountably secured to said centrifuge, and a dust collector 5 also secured detachably to said centrifuge.

The centrifuge 2 is provided with a drum-shaped wall 6 as will be seen by reference to Fig. 2. A lateral inlet 7 of tubular shape is provided on one side of the centrifuge, and an axially disposed discharge aperture

8 is provided at the top. A partition 9 is disposed adjacent to the inlet 7 in an upright position and extends from one side of said inlet diagonally inward and across the air intake passageway and constitutes substantially a spirally disposed wall arranged to impart a centrifugal motion to the air as it enters the centrifuge. Another wall 10, also in an upright position, is disposed adjacent to the centrifuge wall 6 in approximately concentric relation thereto and is preferably formed by extending the outer end of the wall 9 where it contacts with the wall 6, inward somewhat and then in an arc extending oppositely from the direction of the wall 9, whereby a dead-air pocket is provided adapted for settling the dust contained in the air. The floor of said pocket is provided with an aperture 11 whereby the dust may escape downward by gravity.

The top of the centrifuge 12 includes a nozzle-like wall part 13, the top edge of which is provided with an outwardly disposed bead or flange 14 the purpose of which is hereinafter described. The centrifuge wall 6 has an upward extension or rim 15 surrounding the nozzle part 13 in spaced relation thereto and encloses an annulus chamber 16, one side of which communicates with the discharge passage or flue 17 which extends from the opposite side of the centrifuge from the intake flue 7.

The strainer casing 4 has a bead 18 formed adjacent to its lower edge which rests on the upper edge of the annulus rim 15, the lower extremity of said casing fitting tightly within the wall 15 in telescopic relation thereto. The upper end of said casing is provided with a detachable cover 19 provided with a downwardly turned flange adapted to embrace the upper extremity of said casing telescopically and to rest on the bead 20 which is provided adjacent to the upper edge of said casing. The strainer bag 3 comprises substantially a cylindrical wall part 21 and a convex, weighted closure part 22 for the upper end, sewed thereto at 23. The opposite end is provided with a restricted mouth 24 facing downward for fitting over the bead 14 of the centrifuge discharge nozzle 13. This intake end of the strainer is provided with a fastening band 25 which may be of resilient

material such as rubber or the like, or a wire may be used and its ends fastened by twisting together, as will be understood.

The casing 4 is locked to the centrifuge wall 6 by means of a pair of clamp rods or bolts 26 disposed on opposite sides of the device. Each rod 26 is T-shaped with its horizontal arms supported pivotally by a pair of lugs 27 fixed to the wall 6. The third arm or main body of the lock is threaded and provided with a nut 28 adapted for manual operation. When the rod is swung upward against the casing 4, it passes between the upwardly projecting lower arms of a pair of L-shaped brackets 29 fastened to said casing, the outer tips of the horizontal arms being turned upward slightly to positively engage the nuts 28 when the latter are turned down for locking the device.

The operation of the above-described air-cleaning attachment is as follows: The device is connected to the air intake of the carbureter by means of the discharge nozzle 17 which may be either connected directly or provided with a tubular connection. The suction of the engine then produces more or less of a vacuum in the centrifuge and causes periodic inrushes of air through the intake 7 synchronously with the air and fuel inductance of the engine.

The wall 9 imparts a rotary motion to the air as it enters the centrifuge chamber, thus causing all particles of dust to be thrown outward centrifugally to the zone adjacent to the wall 6, where they are caught behind the wall 10 of the dead-air pocket and eventually discharged into the dust receptacle 5, which may be emptied from time to time by releasing the bayonet catch 30. The suction produces a substantial vacuum in the casing 4, which tends to draw the air outward through the walls of the strainer 3, but as the mesh is very fine so as to exclude dust, considerable resistance has to be overcome, with the result that the suction causes the bag 3 to expand and substantially fill the chamber 4.

The weight 31 on the strainer wall 22 collapses the strainer whenever there is no suction. This serves to shake off the dust and keep the meshes of the bag free for the passage of air.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. An air straining carbureter attachment comprising in combination a drum-shaped centrifuge chamber having a lateral inlet aperture and on its upper side an upwardly facing central discharge aperture provided with an upwardly extending short tubular rim having a beaded top, a foraminous pouch-like strainer having a mouth part embracing and secured to said rim, a detachable air-tight chambered casing mounted on the frame of said chamber and enclosing said strainer, and means adapted for conducting the purified air from said casing to the carbureter.

2. An air straining carbureter attachment comprising in combination a drum-shaped centrifuge chamber having a lateral inlet aperture and an upwardly facing air discharge aperture with a strainer connected thereto, a chambered casing enclosing said strainer and a conduit way leading therefrom to the carbureter, said chamber having a guide wall extending inward from one side of the intake aperture and diagonally across the axis of direction thereof, and a short wall extending oppositely from the outer end of said guide wall whereby a dead-air pocket is formed, said chamber having a downward dust outlet at the bottom of said pocket and a closed dust receptacle with which said outlet communicates.

Signed at Chicago this 18th day of Jan., 1919.

JAMES P. QUAM.