

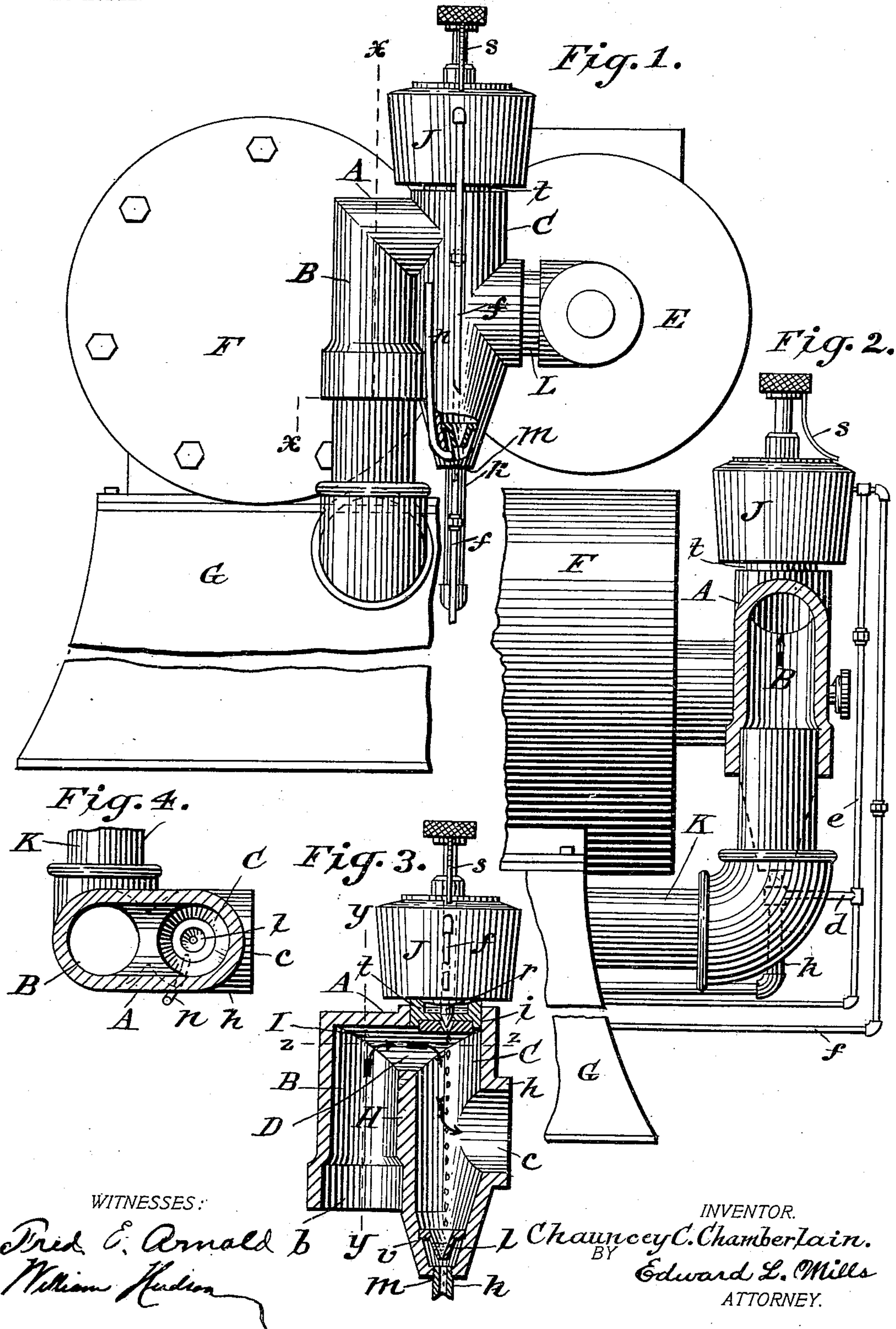
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C. C. CHAMBERLAIN.
MIXER FOR HYDROCARBON ENGINES.

APPLICATION FILED SEPT. 22, 1902.

NO MODEL.



WITNESSES:

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MIXER FOR HYDROCARBON-ENGINES.

SPECIFICATION forming part of Letters Patent No. 742,774, dated October 27, 1903.

Application filed September 22, 1902. Serial No. 124,313. (No model.)

To all whom it may concern:

Be it known that I, CHAUNCEY C. CHAMBERLAIN, a citizen of the United States, residing at Ionia, in the county of Ionia and State of Michigan, have invented certain new and useful Improvements in Mixers for Hydrocarbon-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of this invention are to provide an extremely simple and reliable device for thoroughly vaporizing and mixing gasolene or other volatile hydrocarbons with air for induction into the explosion or igniting chamber of the working cylinder, one which is adapted to the saturation of air with gasolene under a slow circulation, as in starting the engine, one in which the air is not obstructed in its passage to the igniting-chamber of the engine, nor the stream of gasolene or other volatile hydrocarbons turned abruptly from its natural course, thereby making it easy to mix and vaporize the required amount as needed, which amount is obtained without changing the feed throughout a wide range of engine speed, also one which is adapted to prevent the gasolene or hydrocarbon being drawn back into the vaporizing-chamber of the mixer. I attain these objects by means of the device herein described, and illustrated by the accompanying drawings, in which—

Figure 1 is a side view and part section of my improved mixer for hydrocarbon-engines attached to the end of an igniting-chamber of an ordinary hydrocarbon-engine. Fig. 2 is a perpendicular longitudinal section of the same, the other parts or connections being shown in elevation. It is taken on the line *xx* of Fig. 1 and *yy* of Fig. 3. Fig. 3 is a detached perpendicular longitudinal section, taken at a right angle to Fig. 2 and through the center of same, the other parts or connections also being shown in elevation. Fig. 4 is a detached horizontal section of the same, taken through the line *zz* of Fig. 3.

Referring to the drawings, A indicates my improved mixer for hydrocarbon-engines as attached to the end of a hydrocarbon-engine having an igniting-chamber E, working cylinder F, with its base or support G. It is of

peculiar construction and consists of a single piece of casting having two chambers formed therein, B being the air-chamber, and C the vaporizing-chamber, wherein the hydrocarbon vapors are produced. Said chambers B and C are separated by means of the partition H, which extends upward therein about two-thirds its greatest diameter. It is inclosed at the top by means of a wall I, which is semicircular in form, and is of the same inner and outer diameter as the walls of the chambers B and C, with which it is horizontally connected. D is an opening between said chambers B and C, formed by means of the wall I and partition H.

b is an opening in the lower end of the air-chamber B, at which portion suitable air-inlet-pipe connection K is made with the interior of the base G of the engine, (shown in Figs. 1 and 2,) the purpose of which is to exclude dust or foreign substances which might otherwise be drawn into the engine, and it is of somewhat larger diameter than said chamber B.

c is an opening in the vaporizing-chamber C midway its upper and lower ends, and it has a circular flange *h*, in which suitable outlet connection L is made to the igniting-chamber E of the engine, its inner diameter being somewhat larger than the inner diameter of the vaporizing-chamber C, on which it is formed.

At the upper end of the vaporizing-chamber C is a suitable reservoir J, having a needle-valve *r*, indicator *s*, and hydrocarbon-supply connection *t*. Said reservoir J is secured to the vaporizing-chamber C by means of the boss *t*, which is inserted within an opening *i* at the upper end of the vaporizing-chamber C.

At the lower end of the vaporizing-chamber C the size is reduced, being partly conical in form, as shown more particularly in Figs. 1, 3, and 4. It has a pipe *k* and a funnel *l* in its end, which are secured to said vaporizing-chamber C, as at *v* and *m*. The purpose of the funnel *l* is to prevent the gasolene or other volatile hydrocarbon fluids from being drawn up into the igniting-chamber E of the engine.

Referring to Figs. 3 and 4, it will be noticed that the partition H extends considerably above the outlet *c* of the vaporizing-chamber C, the purpose of which is to cause the air in

chamber B in its passage to the vaporizing-chamber C, as indicated by the arrows, to rise above the outlet *c* in said vaporizing-chamber C, and thus cause the air to act in unison with the gasoline or other volatile fluid in its downward flow, it being not forced abruptly from its natural course, thereby causing a more complete vaporization within the vaporizing-chamber C.

Referring to Fig. 2, *f* indicates a supply-pipe which connects reservoir J with hydrocarbon-pump, (not shown,) it being considered unnecessary to show it, as it constitutes no part of my invention.

e is an overflow-pipe which connects reservoir J with return-pipes *d* and *k*.

Referring to Figs. 1 and 4, *n* indicates an induction-tube connecting the lower inner portion of the vaporizing-chamber C with the outer air by means of a hole extending there-through. It is bent and turned upward, as shown, the purpose of which is to supply free air to the small opening in the funnel *l*, so that no gasoline or hydrocarbon is drawn back into the vaporizing-chamber C, which would otherwise produce an uncertain mixture therein.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a mixer for hydrocarbon-engines, the combination with a working cylinder and an igniting-chamber, of two chambers, one an air-chamber and the other a vaporizing-chamber, an air-inlet at the lower end of the air-chamber, and a vapor-outlet midway the perpendicular length of said vaporizing-cham-

ber, the two chambers being connected by a lateral passage at their upper ends, and a hydrocarbon-supply connection in the upper portion of said vaporizing-chamber and a suitable hydrocarbon-supply reservoir having an indicator, needle-valve and supply connection, an opening at its lower end with hydrocarbon-return pipe secured therein, a funnel within the lower portion of the vaporizing-chamber, and an induction-tube having an opening extending to the lower end of said funnel, substantially as described.

2. In a mixer for hydrocarbon-engines, the combination with a working cylinder E, and an igniting-chamber F, of two chambers, one an air-chamber B, and the other a vaporizing-chamber C, an air-inlet *b*, at the lower end of the air-chamber B, and a vapor-outlet midway the perpendicular length of said vaporizing-chamber C, the two chambers being connected by a lateral passage D, at their upper ends, and a hydrocarbon-supply connection *i*, in the upper portion of said vaporizing-chamber C, and a suitable hydrocarbon-supply reservoir J, having a suitable indicator *s*, needle-valve *r*, and supply connection and opening *m*, in its lower end having a hydrocarbon-return pipe *k*, connected thereto, with suitable hydrocarbon-supply pipe *f*, and overflow-pipe *e*, substantially as described.

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

CHAUNCEY C. CHAMBERLAIN.

Witnesses:

F. A. SLIVEN,
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