No. 806,760. PATENTED DEC. 5, 1905.

A. S. F. VAN DE PUTTE.

INJECTING AND MIXING DEVICE FOR HYDROCARBON MOTORS.

APPLICATION FILED AUG. 19, 1905.

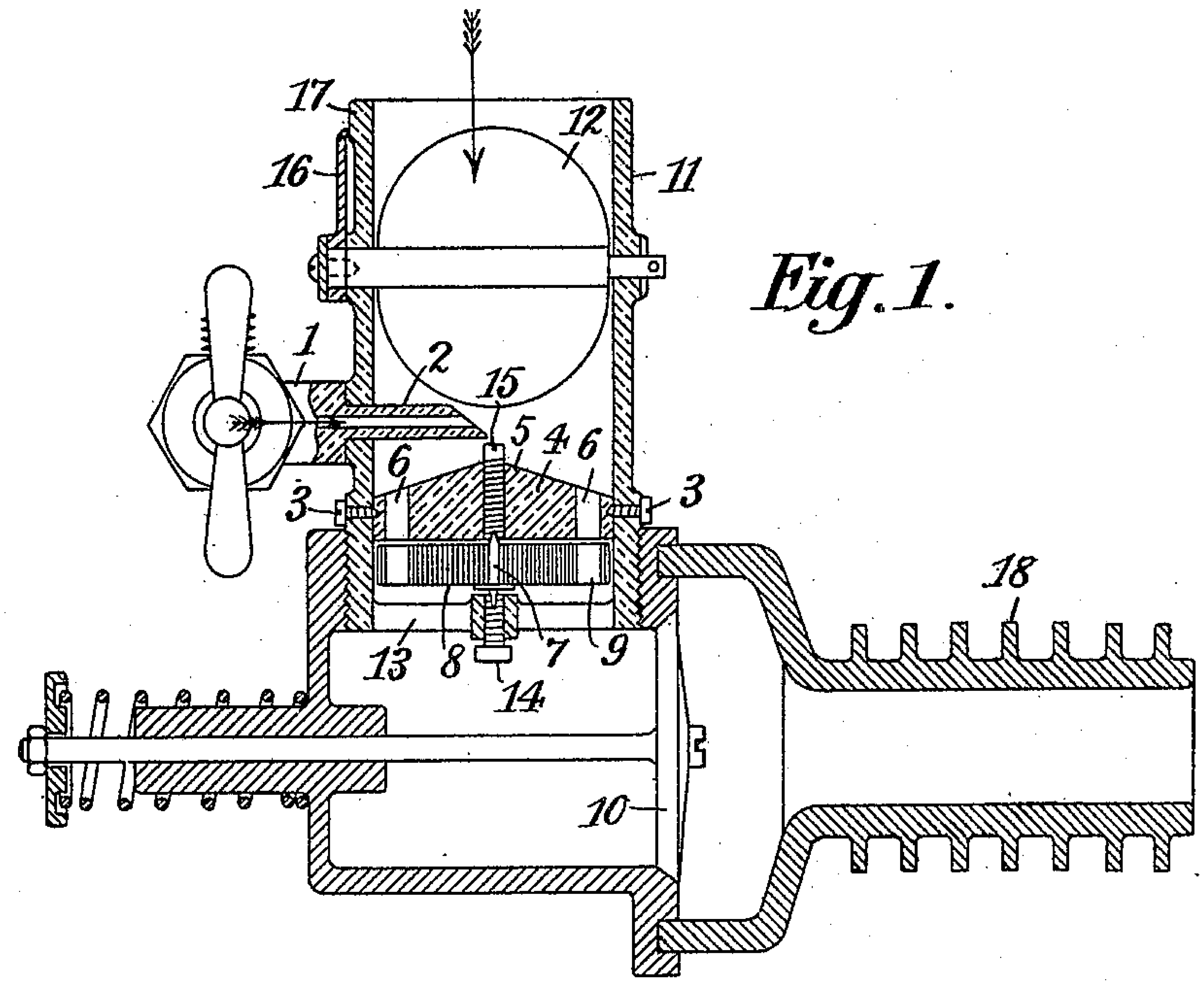

Fig. 1.

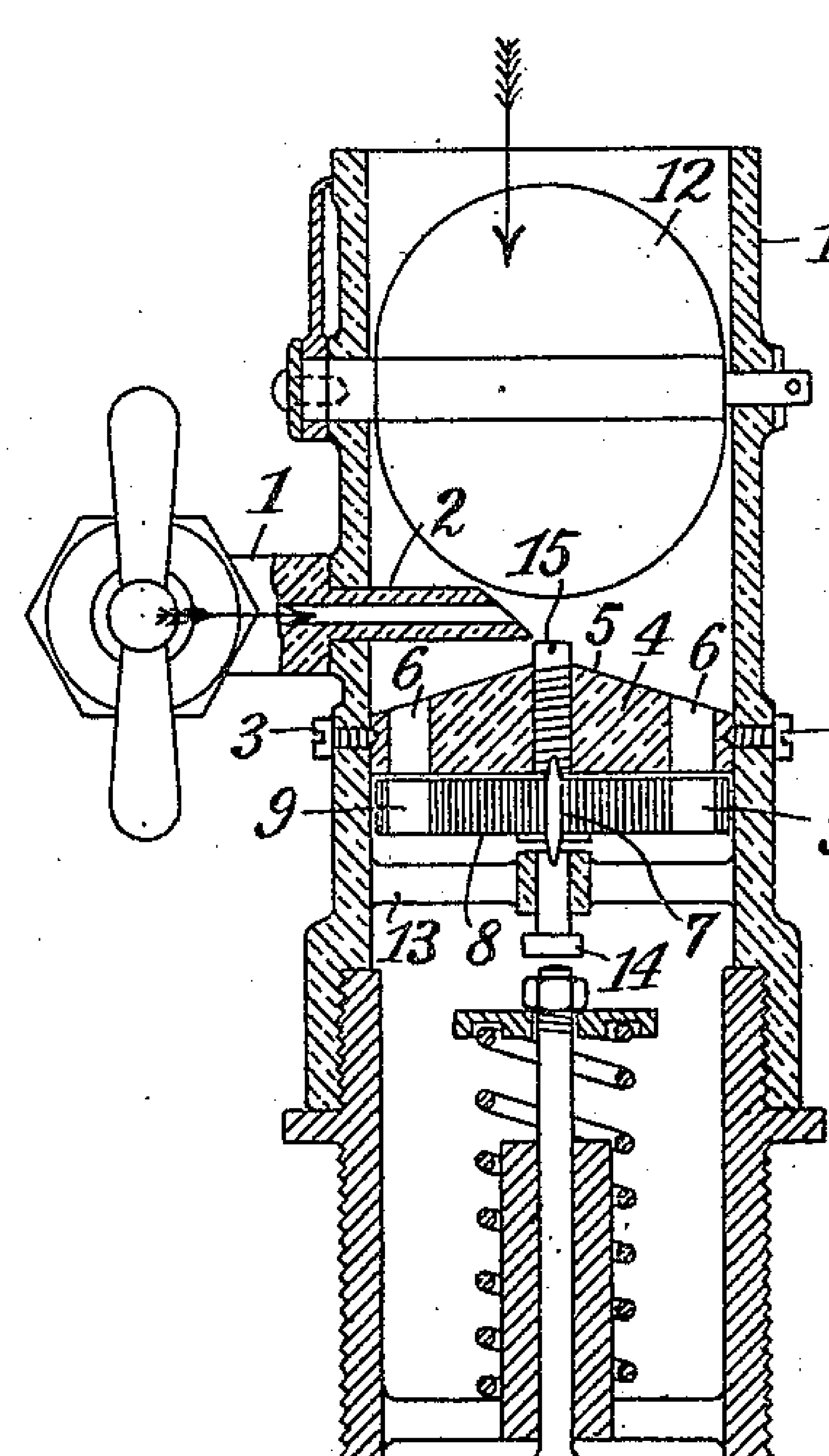

Fig. 2.

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INJECTING AND MIXING DEVICE FOR HYDROCARBON-MOTORS.

No. 806,760. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed August 19, 1905. Serial No. 274,960.

To all whom it may concern:

Be it known that I, ANDRÉ STEPHANO FRANSEN VAN DE PUTTE, a subject of the Queen of the Netherlands, residing at St. Petersburg, in the Empire of Russia, have invented a new and useful Injecting and Mixing Device for Hydrocarbon-Motors, of which the following is a specification.

My invention relates to improvements in such injecting and mixing devices for hydrocarbon-motors in which a fan is employed for mixing the air with the liquid combustible; and the objects of my improvement are, first, to form the fan as a turbine-wheel, and, second, to dispose before it a bottom with leading channels and a conical face, the point of which is in the proximity of the end of the injecting-tube. I attain these objects by the constructions illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section through an injecting and mixing device in combination with the inlet-valve and gasifier for a petroleum-motor, and Fig. 2 is a vertical longitudinal section through an injecting and mixing device in combination with the inlet-valve for a benzin-motor.

Similar characters of reference refer to similar parts in both views.

A tube 11, serving as an air-inlet, is shown as screwed into the valve-box of an inlet-valve 10 and provided with a throttle-valve 12 and an injecting device. The latter may be of any known construction and is shown as comprising a convenient cock 1 or valve and an injecting-tube 2. The cock 1 or valve may be connected with a source of liquid combustible. The injecting-tube 2 extends to the center of the tube 11 and is beveled off in such a manner that its mouth is opposed to the direction (indicated by the arrow) of the air sucked in. A disk 4 of any material is arranged in the tube 11 and may be secured with pointed screws 3, as shown. The upper face 5 of this disk 4 is made conical, so that its point is in the proximity of the lower end of the injecting-tube 2. The tube 11 is also shown as made in one piece with a cross-bar 13, in which an adjusting-screw 14 is disposed. In the center of the disk 4 another adjusting-screw 15 is located, and between the two screws 14 and 15 the pointed axle 7 of a turbine-wheel 8 is mounted to turn. The disk 4 is provided with leading-in channels 6 6 of any suitable construction, and the turbine-wheel 8 is provided with channels 9 9 of any suitable construction adapted to coöperate with the channels 6 6 in such manner that the current of air passing through the channels 6 and impinging on the channels 9 will cause the rotation of the wheel 8.

The device operates as follows: When during the work of the hydrocarbon-motor the inlet-valve 10 is opened, be it by means of any known mechanism or under the sucking effect of the piston, air will enter the tube 11 and pass the throttle-valve 12, which is adjusted with the aid of an indicator 16 and a scale 17. The liquid combustible, be it petroleum or benzin or the like, is admitted through the cock 1 or valve and is thrown by the current of air on the point of the conical upper face 5 of the disk 4 and is uniformly distributed in a thin layer over this conical face 5 until it is forced through the leading channels 6 6 by the air. Thus the liquid is divided and is partly mixed with the air. The air striking the channels 9 9 of the turbine-wheel 8 will put the latter into a quick rotation, so that the liquid combustible is finely divided and intimately mixed with the air within the valve-box. The mixture of air and combustible passing through the opened inlet-valve will in the case of benzin-motors or similar motors at once enter the cylinder, while in the case of petroleum-motors the mixture requires to be first gasified before it enters the cylinder. For this purpose only a gasifier 18 of any known construction need be added, as shown in Fig. 1, and be arranged to be heated from without, as usual.

The bottom 4, with the conical face 5 and the leading channels 6 6, presents the advantage that the liquid combustible is preliminarily uniformly divided, while the turbine-wheel 8, owing to its construction, is capable of finely dividing and intimately mixing the liquid with the air.

The injecting and mixing device described may be varied without deviating from the spirit of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a hydrocarbon-motor, the combination with an air-inlet, of an injecting-tube extending to the center of said air-inlet, a conical bottom in said air-inlet and having its point in the proximity of the end of said injecting-tube, a plurality of leading channels along the periphery of said bottom, an inlet-valve box adjoining to said bottom, a turbine-wheel below said bottom and adapt-

ed to be acted upon by the air sucked in through the leading channels in said bottom, and a spring-pressed inlet-valve in said inlet-valve box.

2. In a hydrocarbon-motor, the combination with an air-inlet, of an injecting-tube extending to the center of said air-inlet, a conical bottom in said air-inlet and having its point in the proximity of the end of said injecting-tube, a plurality of leading channels along the periphery of said bottom, an inlet-valve box adjoining to said bottom, a turbine-wheel below said bottom and adapted to be acted upon by the air sucked in through the leading channels in said bottom, a spring-pressed inlet-valve in said inlet-valve box and a gasifier adjoining to said inlet-valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDRÉ STEPHANO FRANSEN VAN DE PUTTE.

Witnesses:

AUGUST SIEGFRIED DOCEN,

OTTO ZÖUESE.