

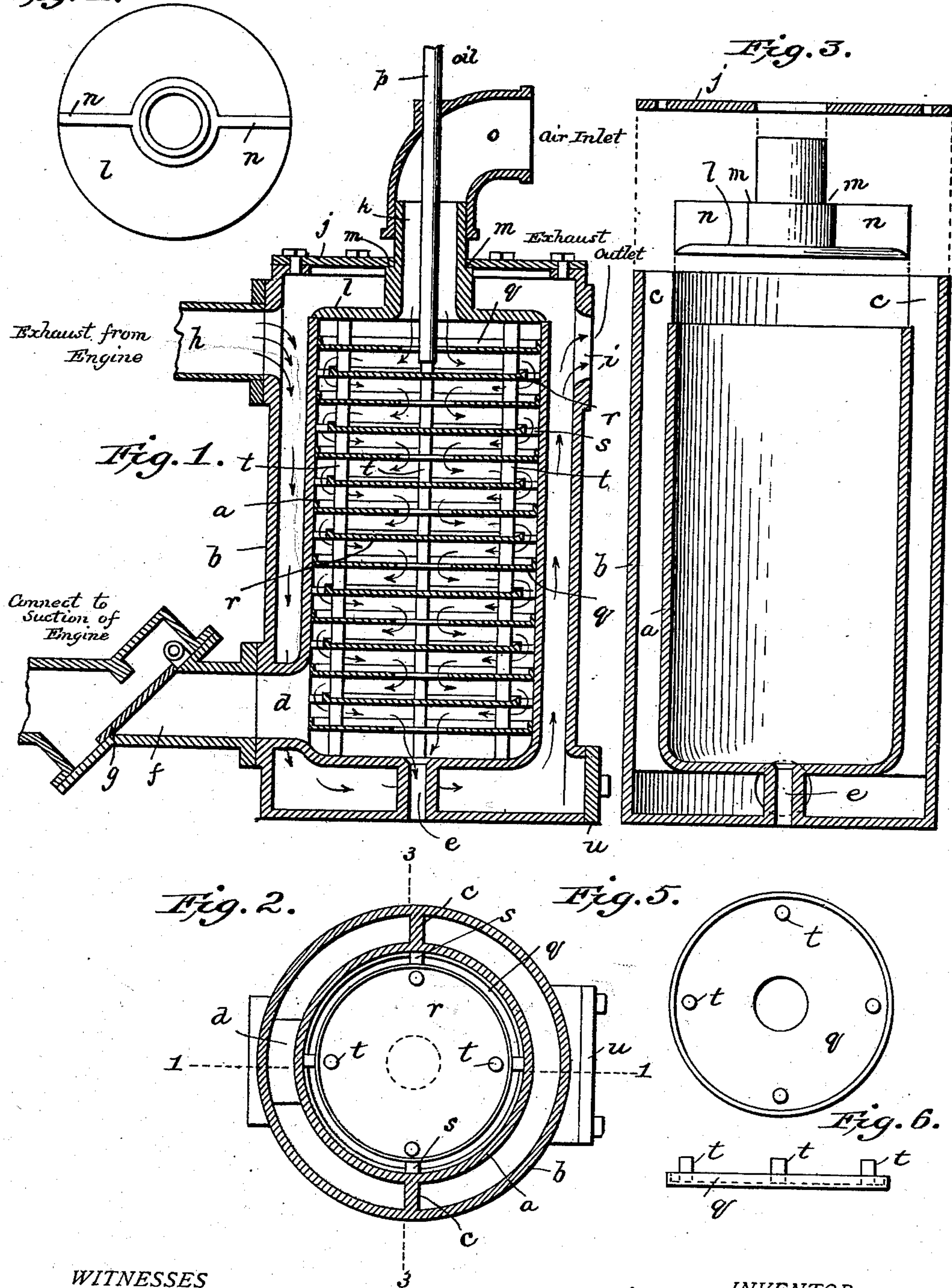
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J. D. ANDERSON.  
CARBURETER FOR EXPLOSIVE ENGINES.

APPLICATION FILED JULY 13, 1903.

NO MODEL.  
Fig. 4.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

JOSEPH D. ANDERSON, OF ST. MARYS, OHIO.

## CARBURETER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 743,416, dated November 10, 1903.

Application filed July 13, 1903. Serial No. 165,329. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH D. ANDERSON, a citizen of the United States of America, residing at St. Marys, in the county of Auglaize and State of Ohio, have invented certain new and useful Improvements in Carbureters for Explosive-Engines, of which the following is a full, clear, and exact specification.

In the accompanying drawings, Figure 1 is a vertical section on the line 1 1 of Fig. 2. Fig. 2 is a horizontal section. Fig. 3 is a vertical section taken on the line 3 3 of Fig. 2, the top plates being detached and the distributing-pans being removed. Fig. 4 is a plan view of the top plate of the mixing-chamber, and Fig. 5 is a detail view of one of the distributing-pans.

The object of the invention is to provide a simple carbureting device especially adapted for heavy crude oils; and it consists in certain novel features of construction hereinafter first fully described and then more particularly pointed out in the claims.

A special feature of the invention is to provide for readily removing the carbureting devices from the carbureting-chamber for the purpose of cleaning, this facility of removal and cleaning being specially advantageous when using crude oil, as in oil of this sort there is present considerable impure matter, which forms a residuum on the carbureting-plates.

Another feature is the means employed for utilizing the heat of the products of combustion of the engine, as fully hereinafter set forth.

Referring to the drawings by letters, *a* designates the carbureting or mixing chamber, which in the present instance consists of a vertical cylinder inclosed all around by a similarly-shaped jacket *b*, the two cylinders being integrally connected by the two oppositely-disposed vertical ribs or partitions *c* and the tubular connections *d* and *e*. The tubular connection *d* is the outlet for the carbureted air and is connected to a pipe *f*, which leads to the intake of the engine, this pipe *f* being provided with an outwardly-opening check-valve *g*, adapted to protect the carbureter against the explosive pressure of the engine. The tubular connection *e*, which connects the bottoms of the two cylinders and

communicates with the interior of the inner cylinder, affords an outlet for the surplus oil.

At one side of the partitions *c*, near the top of the jacket, is connected a pipe *h*, which is connected to the exhaust-outlet of the engine, and at a point opposite is formed an outlet *i* for connection to a pipe for conducting away the products of combustion from the carbureter. The partitions *c* extend down to a point in line with the bottom of the inner cylinder, so that the exhaust products from the engine will be compelled to pass down under the inner cylinder before escaping at the outlet *i*.

The jacket is covered by a removable top plate *j*, and through this top plate projects the tubular extension *k* of the top plate *l* of the carbureting-chamber, the said tubular extension being shouldered at *m*, so as to abut against the under side of the cover-plate *j* and be thereby held in place over the upper end of the carbureting-chamber. Formed on the plate *l* at opposite sides of the tubular extension thereof are two wings *n*, which extend radially outward to the edge of the plate and whose vertical edges meet the vertical edges of the partitions *c* and form, in effect, extensions of said partitions and serve to prevent the products of combustion from the engine passing over the top of the carbureting-chamber. The upper edges of these wings *n* contact with the under side of the cover-plate *j*.

Connected to the upper end of the tube *k* is an elbow *o*, which forms the air-inlet, and extending down to this elbow and through the tube *k* is the oil-supply pipe *p*, to which a supply of oil may be fed either by gravity or by a suitable automatic pumping apparatus.

The carbureting devices consist of a stack or series of pans arranged one above the other in the cylinder *a*, practically filling said cylinder and causing the oil and the air to take a downward zigzag course on its way to the outlet *d*. The uppermost pan *q* substantially fits the cylinder and is provided with a central opening, and every other pan down to the bottom of the series is constructed in the same manner. The second pan *r* is made smaller in diameter than the cylinder, so as to leave a space around its edge for the



passage of the oil and air in its downward course. This second pan is centered by means of a series of radial lugs *s*, which bear against the inner wall of the cylinder *a*, and its bottom is imperforate. Every other pan from the second one downward is constructed in the same manner, and the pans are maintained the proper distance apart and supported by means of upright lugs *t*, formed on each pan.

It will be observed that when oil is introduced into the upper part of the carbureter it will spread itself over one pan after another and while so spread will be brought into intimate and extensive contact with the air that is also drawn in at the top of the carbureter. In this manner a thorough carbureting of the air is insured, and I am enabled to use crude heavy oils. It will also be observed that I provide means for utilizing to its fullest extent the heat of the products of combustion from the engine, thereby dispensing with an independent heating apparatus.

To initially heat the carbureting-chamber in starting the engine, I provide a hole at the lower end of the jacket, which is covered by a removable plate *u*. Through this opening a torch or other device may be inserted to heat the carbureter, and after the engine is running the plate *u* may be locked in place over the opening.

It will be observed, further, that my peculiar arrangement of carbureting-plates and cover-plates provides for the ready removal of the carbureting devices for cleaning and repair, this being specially advantageous when using crude oil on account of the impurities commonly found therein.

As is obvious, the direction of the air through the carbureter may be reversed, if desired—that is, the air may be taken in at the bottom through pipe *f* and the gas from pipe *o*.

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

1. In a device of the class described, the combination of a carbureting-chamber, a jacket inclosing the same, vertical partitions connecting the chamber with the jacket and terminating above the bottom of the jacket, an inlet for the products of combustion at one side of the partitions, and an outlet at the other side, this outlet being located near the top of the jacket, carbureting devices in the carbureting-chamber, means for introducing oil, means for introducing air therein at one end, and an outlet for the carbureted air at the other end of the carbureting-chamber.

2. In combination, a carbureting-chamber,

means for introducing oil into the upper end thereof, means for introducing air at one end and for drawing off the carbureted air at the other end, a series of pans arranged one above the other in said carbureting-chamber, every alternate pan being provided with an opening and being adapted to approximately fit the carbureting-chamber and the intermediate pans being smaller in diameter than the other pans and being imperforate and provided with radial lugs to center them in the carbureting-chamber, a jacket inclosing the carbureting-chamber and connected thereto by vertical partitions, an inlet and an outlet for the products of combustion on opposite sides of the said partitions, a removable cover-plate on top of the carbureting-chamber provided with lateral wings, meeting said vertical partitions, and a removable cover-plate for the jacket.

3. In combination, a carbureting-chamber inclosing a series of removable carbureting devices, an inlet at its lower end, a removable cover-plate for its upper end, provided with a tubular extension and lateral wings, means for introducing oil into the carbureting-chamber, a jacket inclosing the carbureting-chamber and connected thereto by opposite partitions, the upper ends of which meet the lateral wings on the top plate, and a cover-plate on top of the jacket, and means for introducing heated products at one side of the jacket and for allowing them to escape at the other side.

4. The combination, of a carbureting-chamber, a jacket inclosing the same, vertical partitions connecting the chamber with the jacket and terminating above the bottom of the jacket, an inlet for the products of combustion at one side of the partitions, and an outlet at the other side, this outlet being located near the top of the jacket, a series of pans arranged one above the other in the carbureting-chamber every alternate pan being provided with an aperture and fitting the interior of the carbureting-chamber, the intermediate pans being smaller than the chamber and imperforate, and an upstanding flange formed at the margin of each imperforate pan, and means for introducing air and oil into one end of said chamber, and an exit for the carbureted air at the other end of said chamber, and an exit at the bottom of the carbureted chamber for the oil.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 2d day of July, 1903.

JOSEPH D. ANDERSON.

Witnesses:

F. D. CLARK,  
T. S. WHITE.