

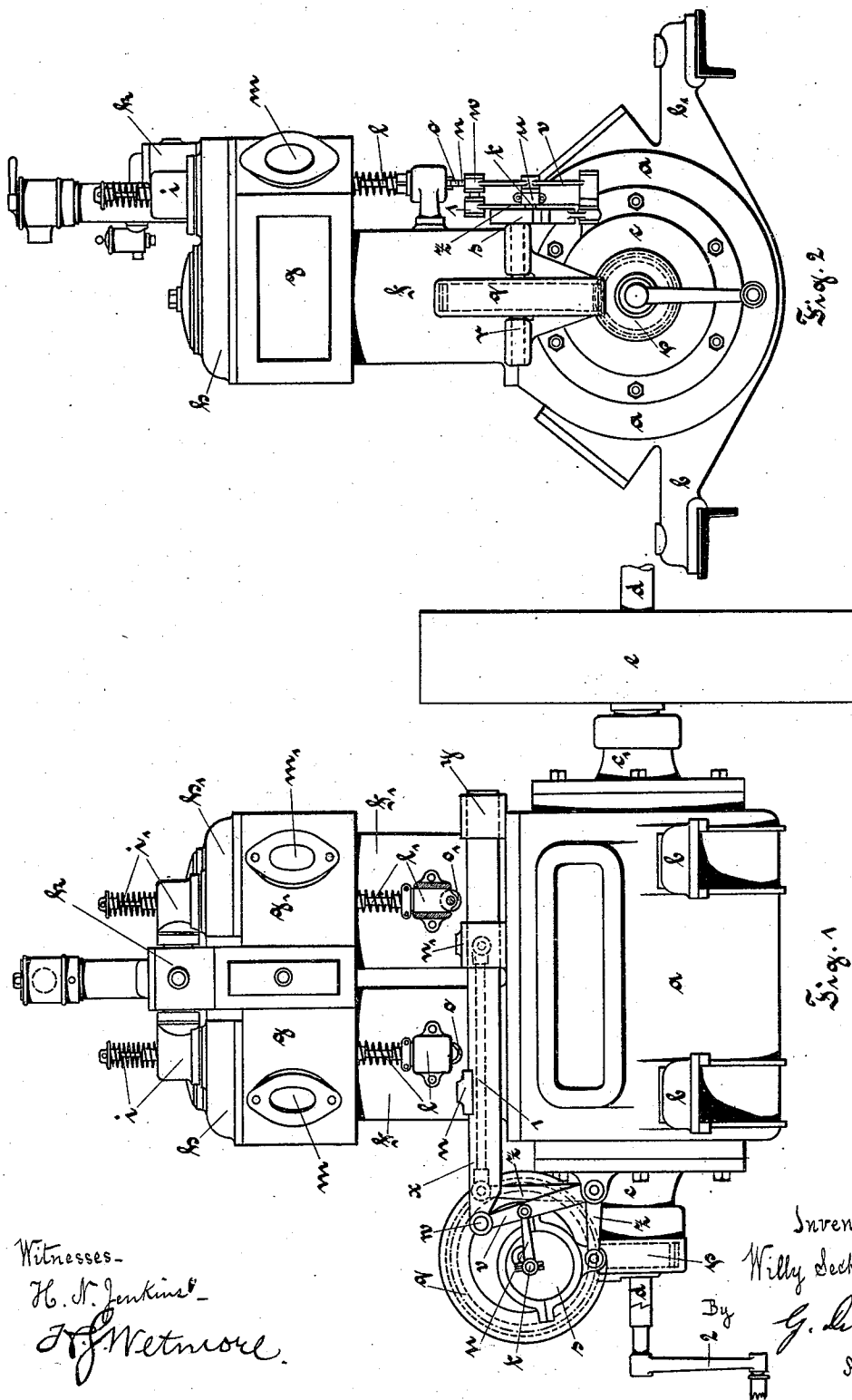
(No Model.)

2 Sheets—Sheet 1.

W. SECK.
MARINE HYDROCARBON MOTOR.

No. 549,939.

Patented Nov. 19, 1895.



Witnesses—

H. H. Jenkins—

J. F. Wetmore.

Inventor

Willy Seck

By

G. Littman

Attorney

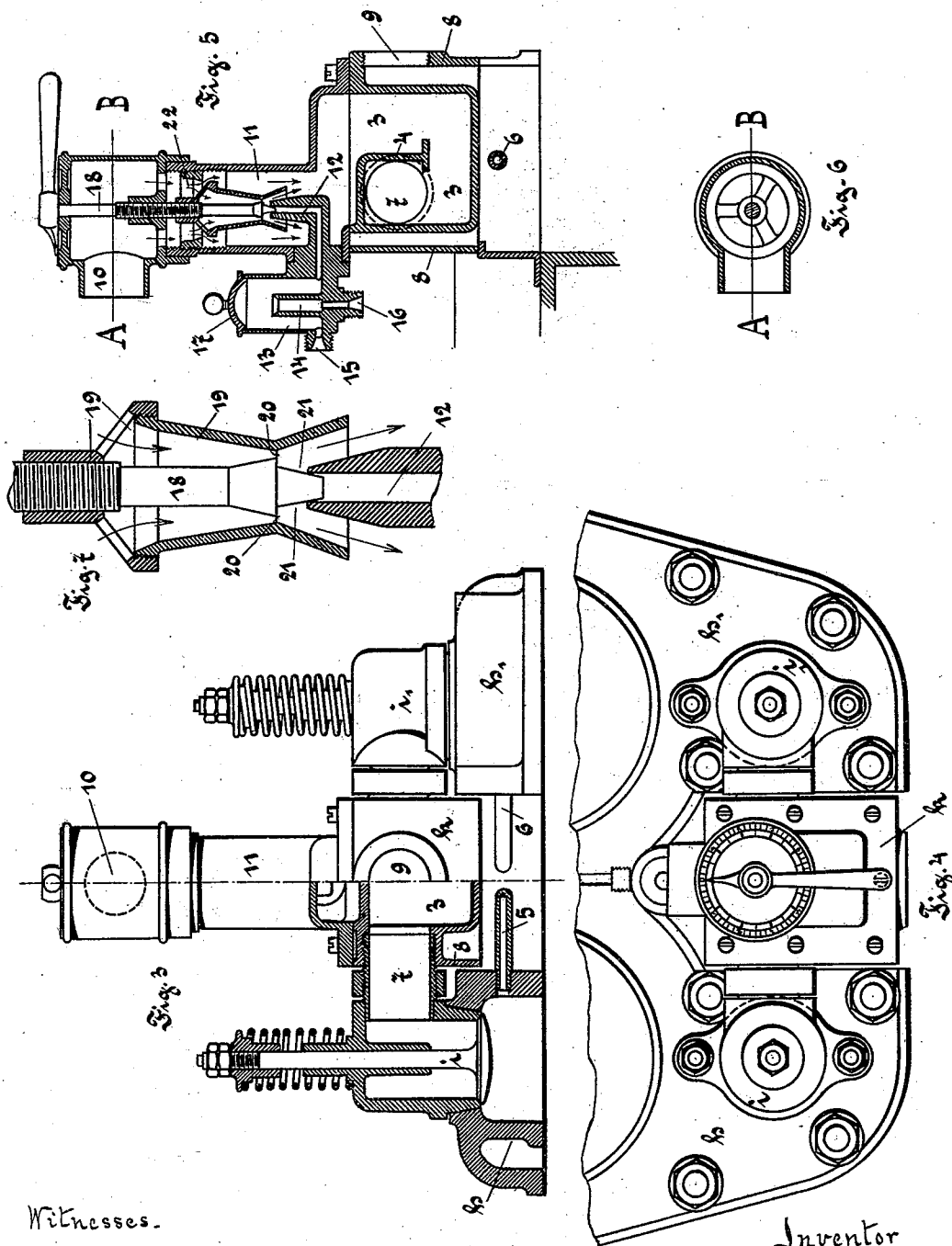
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Inventor
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By G. Sittmar.
Attorney

UNITED STATES PATENT OFFICE.

WILLY SECK, OF OBERWESEL, GERMANY.

MARINE HYDROCARBON-MOTOR.

SPECIFICATION forming part of Letters Patent No. 549,939, dated November 19, 1895.

Application filed September 12, 1895. Serial No. 562,334. (No model.)

To all whom it may concern:

Be it known that I, WILLY SECK, a subject of the German Emperor, residing at Oberwesel, near Frankfort-on-the-Main, Germany, have
5 invented certain new and useful Improvements in Hydrocarbon-Motors for Navigation Purposes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others
10 skilled in the art to which it appertains to make and use the same.

My invention relates to hydrocarbon-motors especially adapted for ships.

The new motor is shown in the accompanying drawings, in which—

15 Figure 1 is a side elevation, and Fig. 2 an end view, of the motor. Figs. 3 to 7 are detail views of the vaporizer and parts thereof employed in my engine.

20 The motor rests on a frame *a*, which is supported by the arms *b b'* on suitable parts of the ship, such as beams, angle-irons, &c.

c c' are two covers forming the bearings of the crank-shaft *d*, and *e* is a fly-wheel.

25 Two cylinders *f f'* are supported on the frame, the upper halves of which are inclosed in a water-jacket *g*. The cylinders are closed on the top by the covers *h h'*.

30 *i i'* are the inlet-valves for the air and coal-oil or gas mixture, being secured upon the covers of the cylinders.

k is a vaporizer common to both cylinders, the construction of which will be hereinafter described, with reference to Figs. 3 to 7.

35 *l l'* are the exhaust-valves for the consumed mixture of gas escaping through the openings *m m'*. These valves are moved in four-time periods. The motion of the valves is effected by the tappets *n n'*, traveling to and fro under
40 the rollers *o o'*.

Motion is imparted to the tappets in the following manner: A worm-wheel *p* is keyed upon shaft *d*, being in gear with the skew-wheel *q*. The worm makes four revolutions,
45 while the wheel *q* makes one. On the shaft of wheel *q* are also secured the eccentric *s* and the crank-pin *t*. The latter by means of the link *u* actuates the lever *v* and the rod *x*, carrying the tappets *n n'*, thus imparting to the
50 latter a horizontal reciprocating motion. *y* is a guide for the rod *x*. One of the tappets *n* is rigidly secured to the rod *x*, while the

other *n'* can slide on said rod and is pushed to and fro by means of the eccentric *s*, the bell-crank lever *z*, and rod *1*.

2 is a hand-crank serving to set the engine 55 in motion. The engine works in four-time periods. Therefore the motion of the exhaust-valves must be such that the exhaust-valve is opened upon every second upward stroke 60 of the piston. As the tappets *n n'* pass once forward and backward during four revolutions of the crank-shaft—that is to say, that they strike during this time the rollers *o o'* twice—the exhaust-valves will be opened once 65 at every two revolutions of the crank-shaft. The motion of the tappet *n'*, gliding with the rod *x*, can also be effected by securing the same upon a separate bar, being connected with the bell-crank lever *z* in the same man- 70 ner as the rod *x* with the lever *v*.

The vaporizing apparatus, Figs. 3 to 7, is composed of the casing 3, provided with means to be heated from the outside. The cross-partition 4 is provided for the purpose of com- 75 pelling the air and coal-oil mixture to make a long way before it comes through opening 7 to the suction-valves *i i'*. The casing 3 is provided with the heating-jacket 8. The temperature in the same is raised by the heat of 80 the flame for the two ignition-pipes 5 and 6. The opening 9 allows the heating-gases to escape.

The air aspirated by the pistons passes through the opening 10, the pipe 11, the cas- 85 ing 3, the pipe 7, and valve *i* into the space of ignition. This air is mixed with finely-divided coal-oil during its passage through the pipe 11. The admission and pulverization of the coal-oil is effected by the device shown in Fig. 90 7 in about natural size, having the form of an ejector.

The nozzle 12, being upwardly directed into the flaring mouthpiece 21 of the tube or body 19, also having a conical form, flaring up- 95 wardly, passes through the outside wall of the pipe 11, coming from a coal-oil receptacle 13, in which, consequently, the coal-oil is at the same level as in the nozzle 12.

14 is a pipe or overflow determining the 100 height of the coal-oil in the receptacle 13.

By means of the spindle 18 the quantity of the coal-oil passing through the nozzle 12 can be regulated. The spindle 18 carries the hol-

low body 19 above referred to, having the downwardly-flaring mouthpiece 21, which is so arranged that one part of the air passing through the pipe 11 can enter on the top and escape at the bottom of said hollow body. In passing through the same the air is greatly contracted and compressed by reason of the conical form of the upper part 19. The velocity of the air in passing through the narrowest part or annular section 20 will be much increased, and for the same reason the air in the annular wider space 21 will be expanded or rarefied, and thus the coal-oil being aspirated from the nozzle 12 in meeting the current of air coming in an opposite direction will be pulverized by the latter and carried away in the form of a fine spray.

The ring 22 being adjustable, admits of regulating the quantity of air. By screwing the ring lower down the section between the ring and the ejector will be decreased, and by screwing it higher up the section will be increased.

It is self-evident that this motor can also be employed or used as a stationary motor or as a motor for cars and other vehicles.

Having thus described my invention, I claim—

1. In hydro-carbon motors a valve gear for the exhaust composed of a reciprocating bar carrying two tappets acting on the valve rods

in their to and fro motion, one being rigidly secured to the bar and the other sliding thereon, said bar with the fixed tappet being guided by a swinging lever connected to a crank pin, the shaft of which is geared to make one revolution, while the motor shaft makes two, the other sliding tappet being guided by a bell crank lever one arm of which is connected to the tappet by a link while the other arm is connected to an eccentric, keyed upon the same shaft carrying the crank aforesaid, substantially as described and for the purpose set forth.

2. In hydro-carbon motors a vaporizer for coal oil composed of a nozzle communicating with an oil vessel, being upwardly directed into a tube which is being contracted near the opening of said nozzle, and arranged to allow air, aspirated by the pistons, to pass through and around said tube, whereby the hydro-carbon is aspirated, pulverized, and mixed with air in combination with a casing 3 provided with a cross partition 4 and provided with means to be heated, substantially as described and for the purpose set forth.

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

WILLY SECK.

Witnesses:

ALVESTO P. HOGUE,
JEAN GRUND.