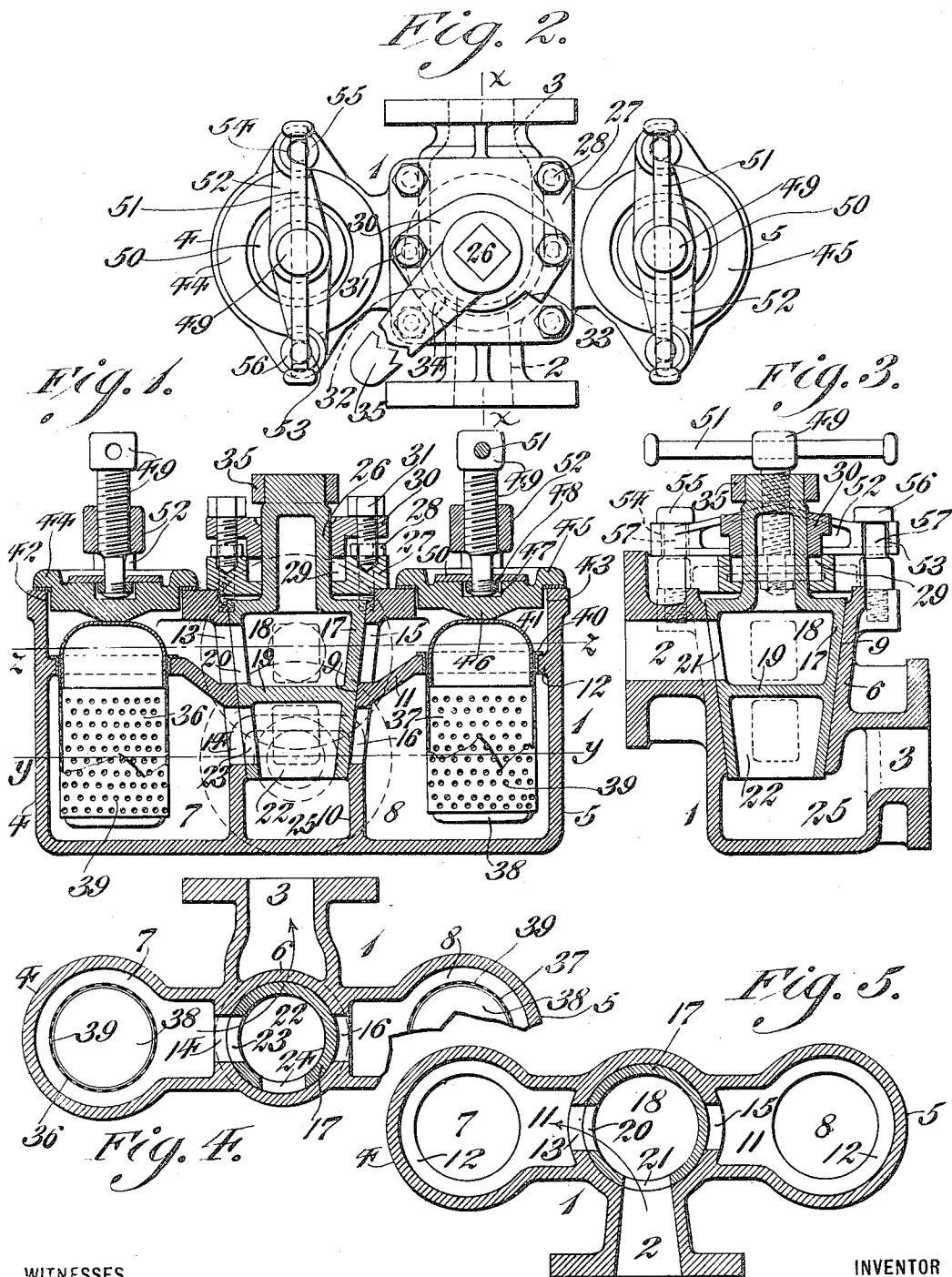


K. M. DAHL.
FUEL OIL STRAINER.
APPLICATION FILED FEB. 20, 1912.

1,042,203.

Patented Oct. 22, 1912.



WITNESSES

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UNITED STATES PATENT OFFICE.

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FUEL-OIL STRAINER.

1,042,203.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed February 20, 1912. Serial No. 678,861.

To all whom it may concern.

Be it known that I, KNUT MARTIN DAHL, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented a new and useful Fuel-Oil Strainer, of which the following is a specification.

My invention in its broad and generic scope comprises a novel fuel oil strainer which is especially adapted to be employed in conjunction with oil burning systems and wherein any sediment or foreign material contained in the oil passing from the oil supply tank to the burners is removed owing to the provision of a plurality of impurity collecting devices, novel means being provided to enable the operator to switch the flow of oil from one impurity collecting means to another so that it is possible to have one of the impurity collecting means in an operative and unobstructive condition at all times and the operator is enabled to switch from one impurity collecting means to another without affecting in any manner the operation of the entire plant.

It further consists of a novel construction of fuel oil strainer having a novel construction of a valve controlling the passage of fuel to the strainers and adapted to permit the oil to pass through and out of one of the strainers and at the same time prevent the passage of the oil to another strainer so that the operator can switch the flow of oil from one strainer into the other while cleaning any refuse out of a strainer that may have become choked or clogged.

It further consists of a novel construction of a casing adapted to receive a novel construction and arrangement of removable perforated baskets, and novel means for providing access to such baskets to permit the same to be inserted or removed.

It further consists of a novel construction of a fuel oil strainer adapted to receive a novel construction of a plurality of filters and a novel construction of closure and actuating means therefor, whereby both the closure and the actuating means are bodily removable as a unit of structure thereby eliminating the liability of the parts becoming separated when removed and also eliminating the necessity of the operator carrying an independent actuating wrench.

It further consists of other novel features

of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawing one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a sectional elevation of a fuel oil strainer embodying my invention. Fig. 2 represents a top plan view thereof. Fig. 3 represents a section on line $x-x$ Fig. 2. Fig. 4 represents a section on line $y-y$ Fig. 1. Fig. 5 represents a section on line $z-z$ Fig. 1.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a casing of a fuel oil strainer embodying my invention, the same being illustrated as consisting of a casting provided with an inlet 2 and an outlet 3 which are adapted to be connected to the oil conduit between the oil supply tank and the burners in any desired or conventional manner. The casing 1 may have any desired contour but, in the present instance, the same is shown as being provided with the lateral extensions 4 and 5, the outer portions of such extremities being preferably rounded, although in the broad scope of my invention the shape of the same is immaterial. The central portion of the casing 1 forms an annular wall 6 thereby forming chambers or compartments 7 and 8. The wall 6, in the present instance, has the upper portion of its internal periphery forming a tapering or conical bearing or seat 9 while the lower wall thereof is substantially vertical as indicated at 10.

11 designates a laterally extending flange carried by the wall 6 intermediate its lower portion and, in the present instance, the flange extends outwardly and upwardly and forms an integral part of the annular rib or flange 12. The compartment 7 is provided with an inlet port 13 located above the flange 11 and an outlet port 14 located below the flange 11 while the compartment 8

is provided with an inlet port 15 located above the flange 11 and an outlet port 16 located below the flange 11.

17 designates a valve which, in the present instance, is shown as a cylindrical plug valve having its outer periphery of a conical contour thereby adapting the same to cooperate with the conical seat 9 of the casing. The valve 17 is provided with an upper chamber 18 the bottom of which is closed by a laterally extending diaphragm 19, said chamber 18 being provided with a plurality of ports 20 and 21 which are spaced apart in such a manner that when one of the ports communicates with the main inlet 2 then the other port will communicate with either the inlet 13 or 15. The inner or lower end of the valve 17 is chambered as indicated at 22 and is provided with a plurality of ports 23 and 24 one of which communicates with a chamber 25 leading to the outlet 3 while at the same time the other port will communicate with either the port 14 or 16.

The plug valve 17 is provided with a stem 26 adapted to receive a plate 27 which is secured to the casing 1 by means of suitable fastening devices 28 as will be understood by reference to Fig. 2. The plate 27 is provided with a recess 29 into which the depending flange of a gland 30 is adapted to extend, said gland having bolts 31 passing therethrough which are in threaded engagement with the plate 27. The gland 30 is cut away to form shoulders 32 and 33 thereby serving as stops for a lug or stop 34 carried by a handle 35 which latter is adapted to be secured with respect to the outer end of the stem 26 in any desired manner.

36 and 37 designate two or more filtering devices of any desired character but shown in the present instance as consisting of baskets or strainers which are preferably constructed of tin, zinc or other suitable material and since each one is constructed in a similar manner, I have deemed it necessary to describe in detail but one of the same. The baskets are each provided with a closed bottom 38 and the sides thereof are provided with a desired number of perforations 39. At the upper end of the strainers is secured in any desired manner a flange or bracket 40 which is adapted to seat on the flanges 11 and 12 and, in the present instance, I have shown the flanges 40 as having an angular contour.

41 designates a handle or bail secured to the sides of each basket.

42 and 43 designate openings in the upper part of the casing which are adapted to be sealed by closures or covers 44 and 45 respectively which latter are each constructed in a similar manner and provided on their inner face with a lug or boss 46 which engages the handle 41 to maintain the strainer to which it is attached in assembled

position. The means for holding the strainers in position are constructed in a similar manner and I will therefore give to the same the same reference characters. The upper face of each closure is inwardly recessed as at 47 to provide a chamber for the reception of a nut 48 which latter is in engagement with a bolt or stud 49 and each nut 48 is prevented from disengagement with the recess 47 owing to the provision of a plate 50 secured to the closure in any desired manner and through which the reduced end of the stud 49 passes, said stud having an arm 51 passing therethrough which, in the present instance, has a working fit in an aperture in the head of the stud 49 and is suitably headed to prevent such arm disengaging from its stud. Each stud 49 is in threaded engagement with a cross bar 52 having a recess 53 at one end thereof while the opposite end thereof is provided with a recess 54 which presents its open side in a direction opposite to that of the recess 53.

55 and 56 designate studs in threaded engagement with the casing 1 and each of these is provided with a reduced neck 57 whereby when a cross bar 52 is properly actuated the recessed portions 53 and 54 of such cross bar will interlock with the studs 55 and 56 respectively, it being understood that when the cross bar is in such a position the closure connected therewith will be forced toward or away from the casing 1 on the rotation of a stud 49.

The operation of my novel fuel oil strainer will now be readily apparent to those skilled in the art to which this invention appertains and is as follows:—The casing 1 is connected in the fuel conduit intermediate the burner and the fuel supply tank. Assuming that the actuating handle 35 has been manually actuated to bring the inlet port 21 in alinement with the main inlet 2, then the oil may pass through the inlet 2 into the chamber 18 of the valve thence through the port 20 in the valve and port 13 in the casing and thence through the strainer 36 in which any sediment or foreign matter will be removed and the oil in its purified and filtered condition will pass into the chamber 7 thence through the outlet port 14, port 23 of the valve into the chamber 25, and thence through the main outlet 3 to a desired point of utilization, such as for example the burners. If the strainer 36 for any reason becomes clogged or it is desired to remove such strainer for any purpose, the handle 35 is actuated to bring the stop 34 against the shoulder 38 whereupon the ports 13 and 14 will be closed and the ports 15 and 16 in the casing will communicate with the ports 21 and 24 respectively so that the oil will now pass through the strainer 37 into the chamber 8 and thence through the port 16, port 24 to the chamber 25 and thence through the

main outlet 3 to a desired point of utilization.

It will be evident that by such a construction I provide an arrangement whereby the operator is enabled to switch the flow of oil from one filtering mechanism into another so that the refuse in a filtering mechanism which has become choked or clogged may be removed, and one is enabled to have one of the strainers, such as 36 and 37, in an operative condition at all times and to switch from one filtering device to another without shutting down the plant or effecting in any manner its operation.

Special attention is directed to the fact that the closure, stud and handle over each filtering device are so arranged that they cannot become separated when removed thereby preventing the possible loss of individual parts and also eliminating the necessity of the operator carrying a wrench with him. Special attention is also directed to the novel manner in which the filtering devices are mounted within the casing, it being noted that a practically unobstructed passage for the oil is provided and since the closure engages the handle or bail of a filtering device such filtering device is positively prevented from any improper relative movement. Special attention is also directed to the novel construction of valve employed and while, in the present instance, I have shown the valve as adapted to control the flow of oil to but two compartments, it is apparent that in the broad scope of my invention any desired number of compartments and separate filtering devices may be employed and the same will be within the broad scope of my invention. It will further be evident that owing to the novel construction of filtering devices and the novel construction of closures therefor, that the same may be readily removed or inserted when desired since it is only necessary to actuate the stud or bolt 49 and then rotate the cross bar 52 to cause the ends thereof to unlock from or interlock with studs 55 and 56 respectively whereupon the closure, the cross bar and the fastening stud may be bodily removed as a unit of structure and permit the removal of a filtering device such as 36 or 37 which has become clogged.

While I have, in the present instance, shown and described a preferred embodiment of a fuel oil strainer which has been found in practice to give satisfactory and

reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In an oil strainer, a casing having inclosing side, end and bottom walls, outer strainer chambers and an inner annular casing intermediate of and separating said strainer chambers, said annular casing having its inner face forming a valve seat provided at its upper portion with a main inlet port and at its lower portion with a main discharge port, and having an inlet and an outlet port leading to each strainer chamber, each chamber having an inwardly extending flange between its inlet and outlet port, strainers seated on said flanges, and a valve co-acting with said seat and having an upper inlet and an upper discharge port registering respectively with the main inlet port and a strainer chamber inlet port, said valve having its lower end provided with a common outlet chamber, and a port communicating with such chamber through the side of the valve and adapted to register with one or the other of said strainer chamber outlet ports.

2. In an oil strainer, a casing having an internal cylindrical wall, the upper portion of which is conical and forms a plurality of strainer chambers, said wall having its inner face forming a valve seat provided with a main inlet port and a main discharge port and having an inlet and an outlet port leading to each chamber, each chamber having an inwardly extending flange between its inlet and outlet port, strainers seated on said flanges, and a valve co-acting with the conical portion of said wall and having an upper inlet and an upper discharge port registering respectively with the main inlet port and one of the inlet ports of a strainer chamber, and having its extreme end recessed, and a port communicating with such recess through the side of the valve adapted to register with one of the outlet ports from a strainer chamber.

KNUT MARTIN DAHL.

Witnesses:

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