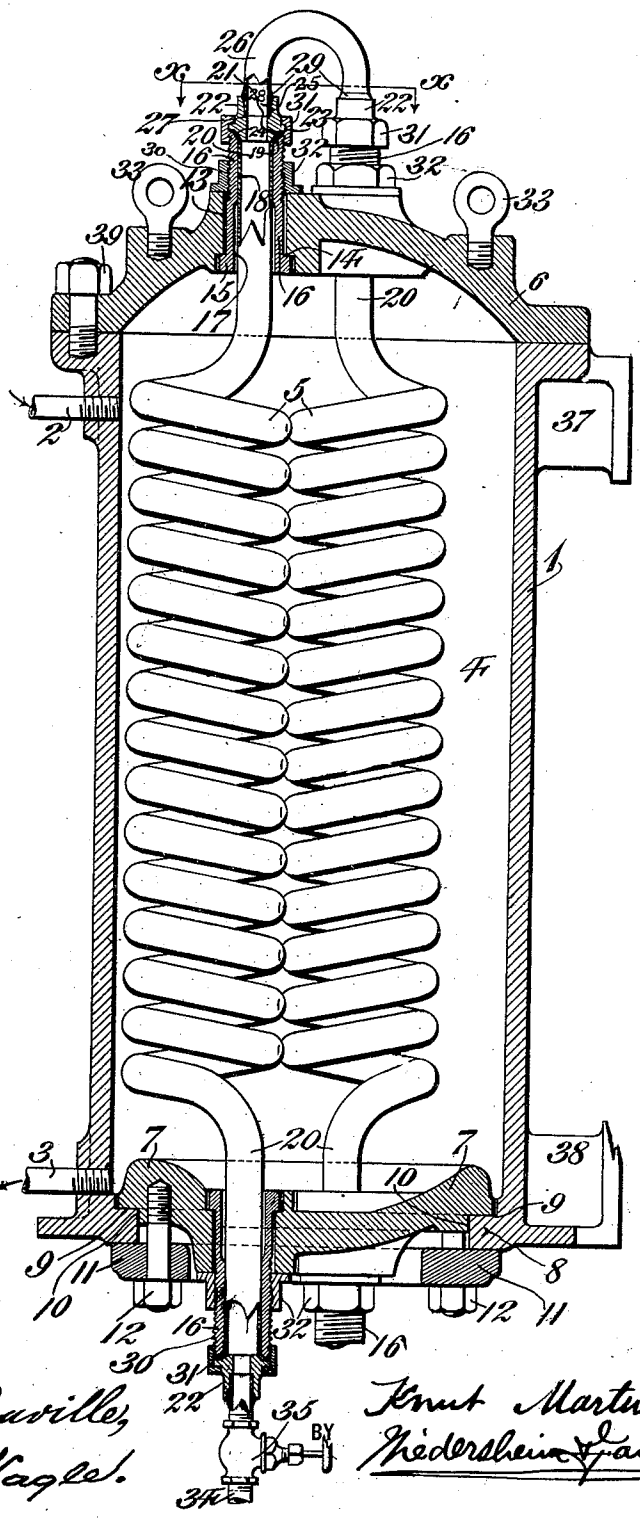
K. M. DAHL.

HEATER OR CONDENSER.

APPLICATION FILED MAR. 9, 1912.

1,068,742.

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WITNESSES

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KNUT MARTIN DAHL, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO UNION IRON WORKS CO., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF NEW JERSEY.

HEATER OR CONDENSER.

1,068,742. Specification of Letters Patent. Patented July 29, 1913.

Application filed March 9, 1912. Serial No. 682,695.

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 Heater or Condenser, of which the following is a specification.

The object of my present invention is to devise a novel construction of a heater with novel construction of heads or closures and novel means for securing the coils with respect to such heads or closures.

In the drawing the figure represents a sectional elevation of a heater embodying my invention.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a casing or body having any desired construction but which for the purpose of illustration I have shown as being cylindrical and provided with an inlet conduit 2 and a discharge conduit 3, whereby steam or any other desired heating or cooling medium may be passed into and through the heating or cooling chamber 4 of the casing 1.

5 designates coils located within the heating or condensing chamber 4 and although, in the present instance, I have shown two coils as being employed, it will be apparent that in the broad and generic scope of my invention, any number of coils may be employed.

The casing or body 1 is provided with a top head or closure 6 secured thereto by means of fastening devices 39 passing through the flanges common to the closure 6 and the casing 1, while the lower or opposite end of the casing 1 is provided with a closure 7 of novel construction and to which the coils are secured, whereby the coils may be removed from the casing 1 for inspection or repairs without disconnecting them from the closures 6 and 7, respectively.

The lower end of the casing 1 is provided with an inwardly extending flange 8 which is angularly recessed to form a shoulder or seat 9, it being noted that the closure 7 is angularly recessed, as indicated at 10, in order that the same will seat on the angularly-shaped recess 9 of the flange 8.

11 designates a washer abutting against the lower end of the casing 1 and through which are adapted to pass fastening devices 12 which, in the present instance, consists of bolts in threaded engagement with the lower closure 7. The coils at their ends are secured with respect to the closure in a similar manner and to avoid needless repetition, I will therefore simply describe the detailed construction of but one of such connections, since the others would be preferably constructed in a similar manner. Taking the closure 6 for example, the same is provided with an aperture 13 therethrough having a variable diameter, the greater diameter of which is at the inner end, thereby forming a shoulder 14 which is adapted to engage the laterally extending flange 15 of a sleeve or socket 16, which latter is provided with a bore therethrough, the inner end 17 of the said bore being of greater diameter than the outer end 18, it being most clearly shown that the outer end of the bore is of conical form, as is indicated at 19. The flange 15 of the sleeve or socket 16 is adapted to prevent rotation of such socket and, in the present instance, is square, so that it will interlock with the enlarged lower portion of the recess 13 which is also square.

20 designates the end of a coil which passes through the enlarged diameter 17 and is expanded into the bore 18 to form a fluid tight connection, the outer end of the tube 20 being outwardly deflected or flared as at 21, in order that the same will seat on the beveled walls 19 of the sleeve 16.

22 designates a coupling member provided with a laterally extending flange 23 from which converges inwardly the inclined wall 24 which is adapted to engage the flared portion 21 of the tube 20. The coupling 22 is angularly recessed as at 25 in order to receive the end of the conduit 26 shown in the present instance as a goose neck, such recess 25 forming a shoulder 27 against which the end of the goose neck abuts. The coupling 22 near its outer end has its bore outwardly tapering or diverging, as at 28, so that when the parts are in the position seen in the figure, with the goose neck in position, the brazing material 29 may be brazed in position in order to securely fasten the goose neck 26 with respect to the coupling 22, as is evident. The outer end of the sleeve 16 is threaded, as indicated at 30, thereby adapting the same to receive a cap nut 31 which secures the coupling 22 with respect to the

sleeve 16, and causes the inclined walls 24 of such coupling to firmly press the deflected end 21 of the tube 20 against the inclined wall 19 of the socket or sleeve 16. The threaded portion 30 is also adapted to receive a nut 32 which engages a suitable face of the closure 6 to cause the flange 15 of the sleeve 16 to be maintained in fluid tight engagement with the shoulder 14 of the closure 6 and since the other end of the goose neck 26 is secured in a manner, similar to that already described, I have therefore given corresponding parts similar reference characters.

The closure 6 is provided with a desired number of attaching devices 33 having any desired construction or contour and, in the present instance, they are shown as consisting of I-bolts engaging bosses on the closure 6, whereby when the fastening devices 39 and 12 are loosened, the upper and lower closures, as well as the heater coils may be removed from the casing 1 without rendering it necessary to disconnect the coils from such closures.

In the operation, assuming that the parts are in assembled position, as indicated in the figure, the oil or other liquid which is to be heated passes from the oil pump or other source of liquid supply through the conduit 34 which is preferably provided with a controlling valve 35 of any desired or conventional type. The oil passes through the coil 5 to which it is connected, thence through the goose neck 26 into the second coil, to a desired point of utilization, such as for example a burner or atomizer of an oil burning system.

Although my novel construction of a heater is especially designed to be employed as a heater in conjunction with oil burning systems, it will be apparent that the same is adapted to be employed either as a heater or condenser, depending upon the character of the medium which circulates through the inlet pipe 2, the chamber 4 of the casing 1, and therefrom through the conduit 3, and it is therefore to be understood that I do not desire to be limited to a device which is only employed as a heater.

It will further be apparent that instead of passing oil through the conduit 34 any other desired liquid or gas may be passed therethrough in order to vary the temperature of such liquid or gas. The conduit 34 is connected with the sleeve 16 on the end of the first coil in a manner, similar to that already described in connection with the goose neck 26, and a detailed description thereof is therefore unnecessary.

Attention is also directed to the bottom closure 7, it being seen that the closure 7 has an increased thickness of metal to receive the fastening devices 12.

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

1. An apparatus as described comprising a casing provided at one end with an inwardly disposed flange, a head bearing against the opposite end of the casing, a closure located in the casing, a pipe passing through and secured to the head and closure and traction means for drawing the closure against the flange.

2. An apparatus as described comprising a casing provided at one end with an inwardly disposed flange, a head bearing against the opposite end of the casing, a closure located in the casing, a pipe passing through the head and closure, means for adjustably fixing the pipe to the head and closure, and traction means for drawing the closure against the flange.

3. An apparatus as described comprising a casing provided at one end with an inwardly disposed flange, a head bearing against the opposite end of the casing, a closure located in the casing, a coiled pipe passing through and secured to the head and closure and traction means for drawing the closure against the flange.

KNUT MARTIN DAHL.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."