

No. 731,469.

PATENTED JUNE 23, 1903.

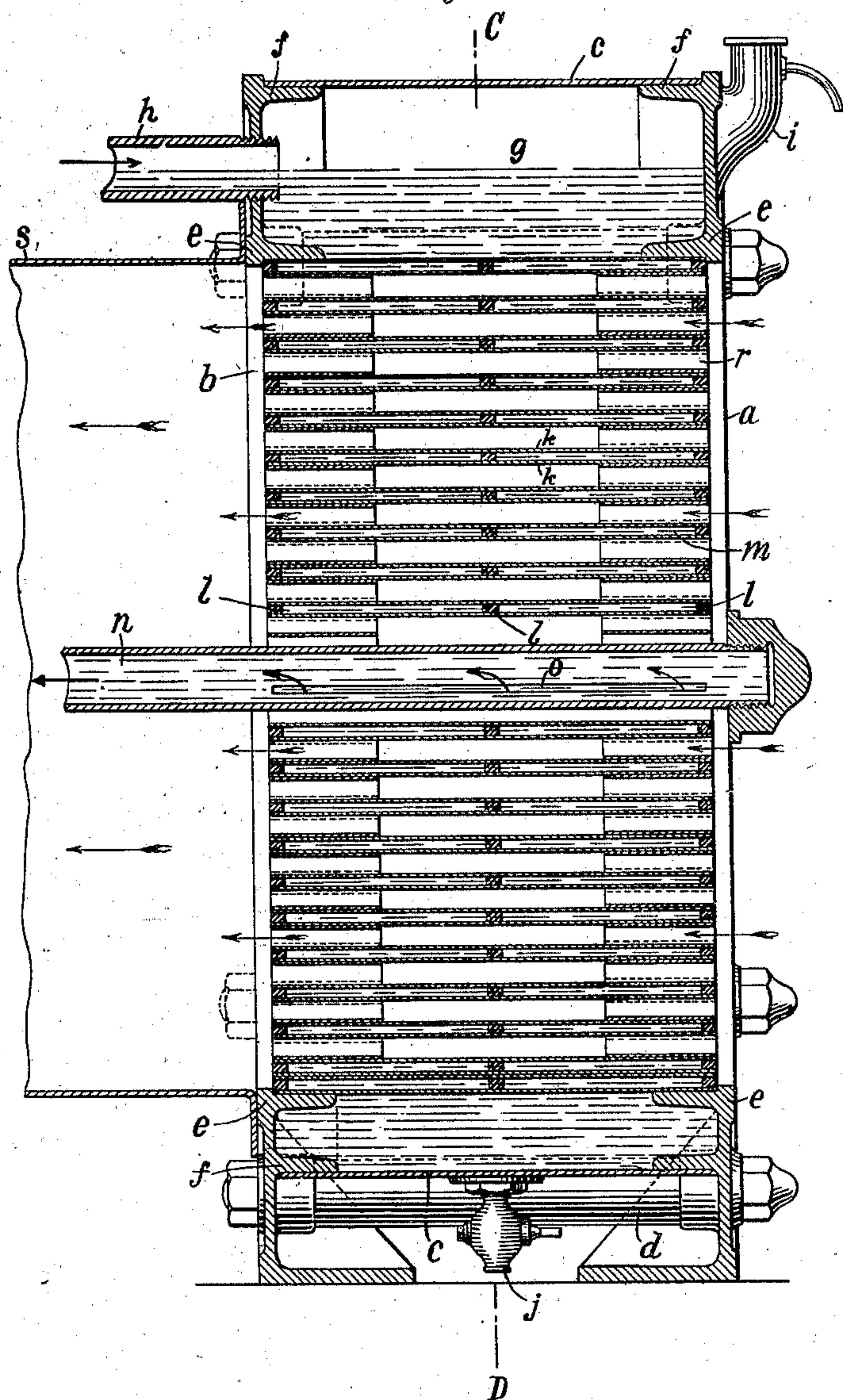
L. J. LE PONTOIS.  
CONDENSER.

APPLICATION FILED JULY 16, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:  
Charles D. Jones.  
May S. Amy.

Inventor  
Léon Jules Le Pontois  
by Secretary to Master Atty

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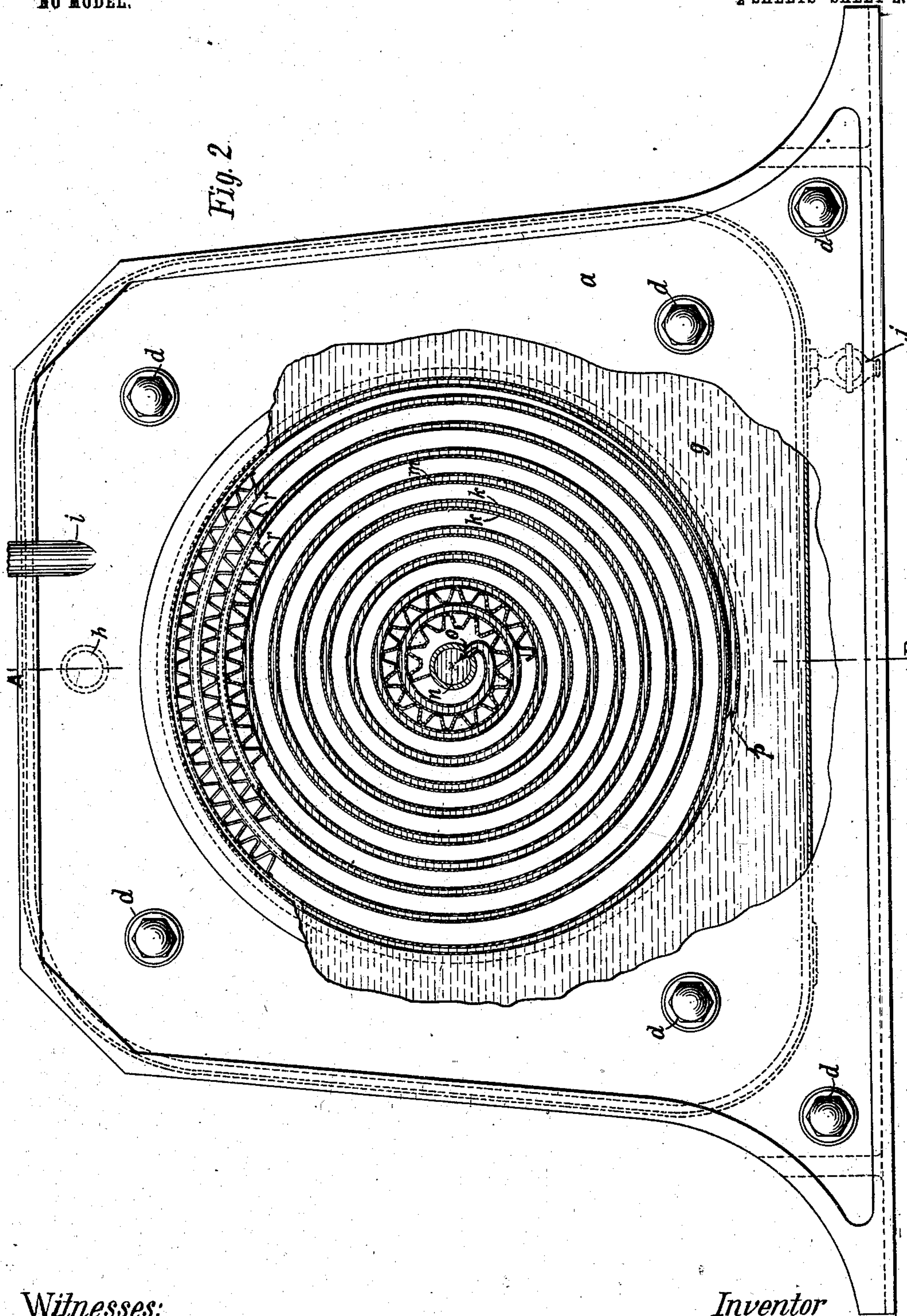
L. J. LE PONTOIS.  
CONDENSER.

APPLICATION FILED JULY 16, 1902.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2



Witnesses:  
Charles S. Jones.  
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Inventor  
Leon Jules Le Pontois  
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## UNITED STATES PATENT OFFICE.

LEON JULES LE PONTOIS, OF NEW YORK, N. Y.

## CONDENSER.

SPECIFICATION forming part of Letters Patent No. 731,469, dated June 23, 1903.

Application filed July 16, 1902. Serial No. 115,848. (No model.)

*To all whom it may concern:*

Be it known that I, LEON JULES LE PONTOIS, a citizen of the Republic of France, and a resident of New York city, State of New York, have invented certain new and useful Improvements in Condensers, of which the following is a specification.

My invention relates to a condenser of a character which may be employed either as a cooler for liquids or as a surface condenser for steam.

The purpose of the invention is to increase the cooling-surface to a maximum with a minimum of water-weight.

In the following I have described, with reference to the accompanying drawings, a structure embodying my invention, the features thereof being more particularly pointed out hereinafter in the claims.

In the accompanying drawings, in which similar letters of reference indicate similar parts, Figure 1 is a vertical sectional view on plane A B of Fig. 2; and Fig. 2 is a view, partly in front elevation and partly in section, on plane C D of Fig. 1, the front plate being shown partly broken away.

The condenser-coil is mounted in a suitable casing comprising a front plate *a*, a rear plate *b*, and an intermediate connecting-plate *c*. Suitable tie-rods *d* hold the plates of the casing together. The front and rear plates are cut away centrally to permit free passage of air through the coil, which is supported in the casing, as hereinafter described.

The plates *a* and *b* are each provided with an inwardly-projecting annular flange *e* and an inwardly-projecting flange *f*, the latter following the outer contour of the casing. The condenser-coil is supported in the casing by the flanges *e e*, to which it is united by any suitable means, forming an air and water tight joint. The flanges *f f* form the support of the intermediate connecting-plate *c*, which is united thereto by any suitable means forming an air and water tight joint. The space between the coil and the casting forms the water-chamber *g*, into which the pipe *h* conveys the liquid which is to be cooled or the exhaust-steam from the cylinder of the engine. At a convenient point in the upper portion of the chamber *g* is an escape-valve *i* for the escape of vapors and gases. The said

chamber is provided at its lower portion with a drain or draw-off cock *j*.

The condenser-coil is formed of two sheets of metal *k k*, preferably copper, of a width corresponding to the depth of the condenser and wound so as to form a continuous spiral channel. Sheets *k k* are separated and held apart from each other by strips *l l l*, preferably arranged between the sheets at each end and at the middle thereof, as shown. The edges of the sheets are united to the end separating-strips *l l* in such manner as to form an air and water tight channel *m* of great width and very narrow depth, open at each end of the coil. The channel *m* discharges into the central discharge-pipe *n* through the slot or slit *o*, the liquid to be cooled or the steam entering the coil at the point *p*. Between the turns of the coil I have arranged corrugated metal strips *r*, preferably copper, extending in the direction of the depth of the coil, thereby greatly increasing the cooling or condensing surface and forming means for holding the turns of the coil apart from each other.

The discharge-pipe *n* leads to any suitable pump. (Not shown.)

As shown in the drawings, the cut-away portions of the front and back plates of the casing permit the air to pass directly through the condenser from the front toward the rear, as shown by the arrows in Fig. 1, and into a chamber formed by a suitable hood or receiver *s*. This hood or receiver may be of any suitable metal and is attached at the rear of the condenser. It is obvious that means for sucking the air through the condenser may be installed in the hood or receiver *s*, if desired.

The operation of my improved cooler or condenser will be readily understood from the above description. The liquid to be cooled or the steam to be condensed enters the chamber *g* through the inlet-pipe *h*, filling the chamber *g* and surrounding the condenser-coil. By the action of the exhaust-pump connected to the outlet or discharge pipe *n* the steam, hot water, or other liquid is drawn through the coil, entering the same at the point *p* in the bottom of chamber *g* and discharging into the pipe *n*. During the passage through the coil the liquid is cooled or the steam is condensed. If the apparatus is used



as a cooler for liquids, the cooled liquor is discharged through the pipe *n* into any suitable reservoir. If the apparatus is used as a condenser for steam, the water is discharged  
5 from the pipe *n* to a hot-well or other reservoir, from which it may be returned to the boiler.

It is obvious that the cooling effect of the coil will act upon the water or steam surrounding the same in the chamber *g*, as well  
10 as upon the liquid or steam passing through the coil. In order to increase the heat-conductivity of the condenser-coil, the corrugated strips *r* are soldered to the turns of the coil  
15 by dipping the condenser-coil with the strips in place into a bath of suitable molten metal, thus forming the same into practically a solid whole.

It is obvious that the details of construction  
20 may be varied without departing from the spirit of my invention, and I do not restrict myself to the details shown.

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

1. A cooler or condenser comprising a spiral coil constituted of two substantially parallel plates, a suitable inclosing frame forming a chamber around said coil, and corrugated  
30 strips interposed between the turns of the coil.

2. A cooler or condenser comprising a spiral coil constituted of two substantially parallel plates, a suitable inclosing frame forming a  
35 chamber around said coil, corrugated strips

interposed between the turns of the coil and means for metalically uniting the corrugated strips and the coil.

3. A cooler or condenser comprising a spiral coil constituted of two substantially parallel  
40 plates, corrugated strips interposed between the turns of the coil and a suitable inclosing water-tight casing forming a water-chamber around said coil.

4. A cooler or condenser comprising a spiral  
45 channel for the passage of liquid or steam therethrough constituted of two substantially parallel coiled plates, corrugated strips interposed between the turns of the coil, a discharge-pipe connected to said coil, and a suit-  
50 able supporting-casing the front and rear plates of which are cut away to provide air-openings to the coil.

5. A cooler or condenser comprising a longitudinally-disposed spiral coil constituted of  
55 two substantially parallel plates, corrugated strips interposed between the turns of the coil and a suitable inclosing frame forming a chamber around said coil, the entry to said coil being at the lower part of said chamber  
60 and the outlet into a discharge-pipe arranged substantially central of said coil.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEON JULES LE PONTOIS.

Witnesses:

GEORGE G. SCHREIBER,  
SEABURY C. MASTICK.