

(No Model.)

J. B. EDMISTON.

CONDENSER.

No. 351,585.

Patented Oct. 26, 1886.

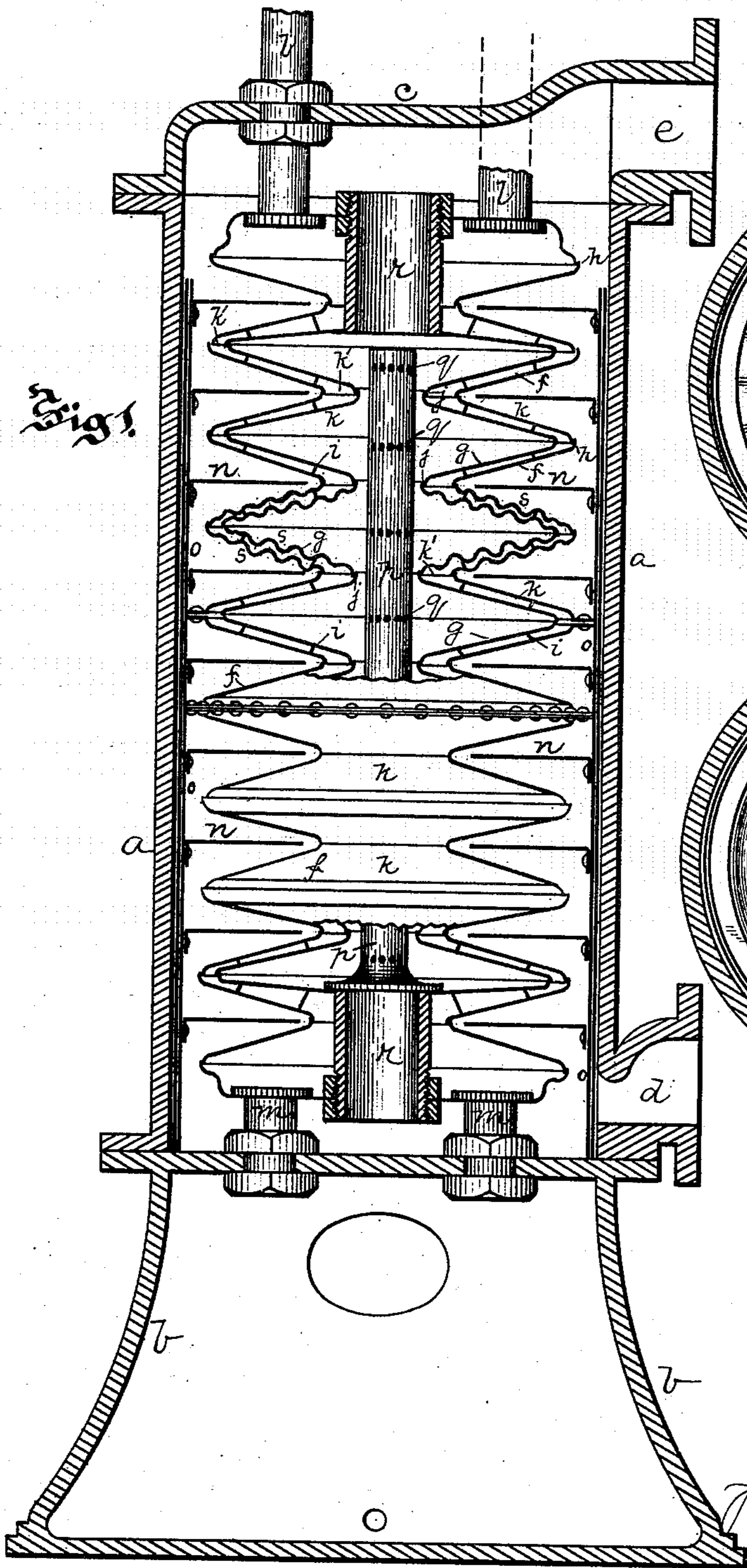


Fig. 1.

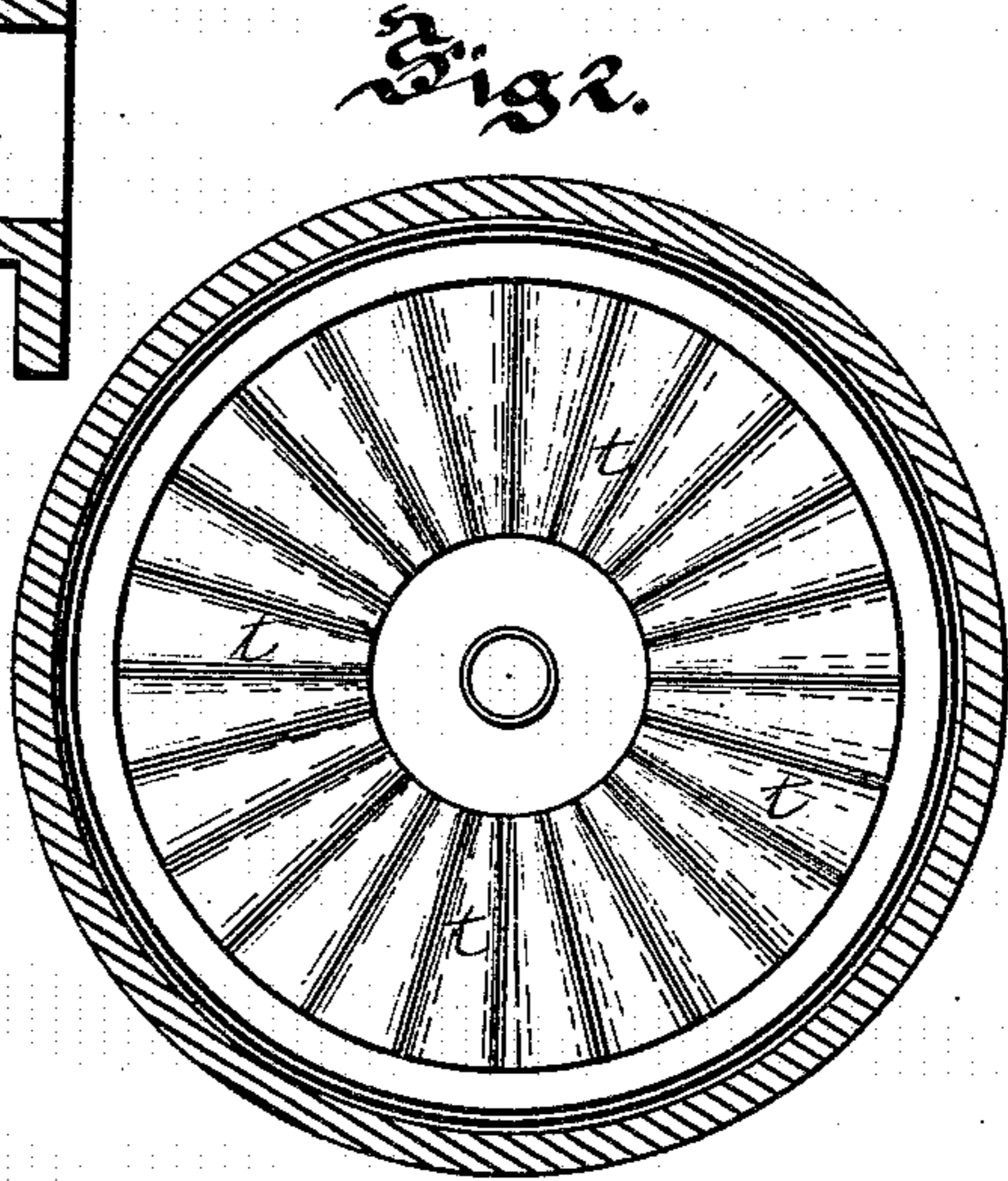


Fig. 2.

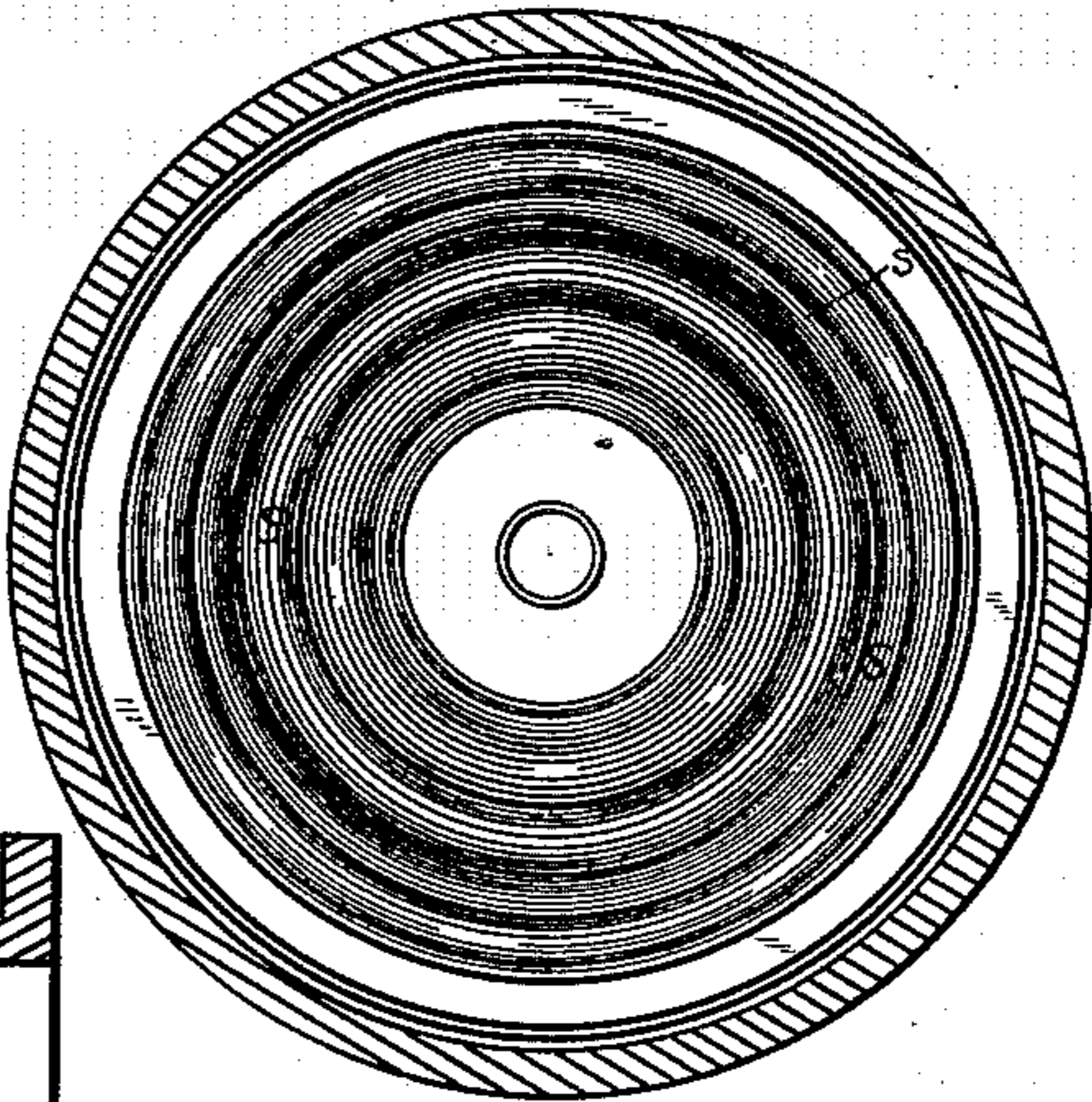


Fig. 3.

Witnesses:
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JAMES BROWN EDMISTON, OF LIVERPOOL, COUNTY OF LANCASTER,
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CONDENSER.

SPECIFICATION forming part of Letters Patent No. 351,585, dated October 26, 1886.

Application filed December 29, 1885. Serial No. 187,004. (No model.) Patented in England February 23, 1885, No. 2,422.

To all whom it may concern:

Be it known that I, JAMES BROWN EDMISTON, a subject of the Queen of Great Britain, residing at Liverpool, in the county of Lancaster, England, have invented a new and useful Condenser, (for which I have obtained a patent in Great Britain, No. 2,422 of the year 1885, and nowhere else,) of which the following is a specification.

10 The invention relates to condensers mainly for use on board ship for condensing steam produced by distillation of sea-water, or from deck boilers or winches and like sources; and the object is to provide a condenser which shall be
15 economical in construction, occupy comparatively small space, and have large and efficient cooling and condensing surfaces.

The invention consists, generally, in a series of duplex or double-walled cellular condenser-
20 compartments contained in a casing or chamber and communicating with each other, in connection with means for causing the condensing-water to come in contact with all parts of the walls of the condenser-compartments, as hereinafter fully described.

In practice I find the following construction answers well. A cylindrical cast-iron casing or chamber is fitted with covers at each end, and has openings for the inflow and outflow of
30 water. The cellular compartments are preferably of sheet-copper, or double-walled, annular in shape, and superposed one on another within the case or chamber and from one to another. The spaces between the double walls
35 communicate annularly from compartment to compartment and at each extremity by a pipe or pipes with the steam supply and condensed-water outflow. In use the steam from the supply enters the compartments or spaces be-
40 tween the double walls, and cold water flows through the casing within and around the annular condenser-compartments.

In the drawings, Figure 1 is a vertical section, partly in full lines; and Figs. 2 and 3 are
45 cross-sections of the condenser, showing the cellular compartments having two different forms of corrugated walls.

The cylindrical cast-iron chamber *a* is carried on a base, *b*, forming a reservoir for con-
50 densed water and the bottom cover of the con-

denser, *c* being the top cover thereof. The covers and chambers are bolted together or otherwise attached, as may be found desirable.

d is the inflow-opening, and *e* the discharge-opening, for the condensing-water. 55

Each cellular compartment *k* is formed of double or exterior and interior walls, *f g*, preferably of sheet-copper brazed together, as shown at *h*. If preferred, the walls may be bolted together. 60

i are ferrules or pieces for keeping the compartment-walls at the required distance apart.

The compartments, *k*, formed by the double walls are supported one on another and connected together by brazed or soldered joints, 65 as shown at *j*, and when fitted together a series of these cellular steam-compartments *k* connected by annular spaces *k'* are formed.

l are the steam-inlet pipes opening into the top steam-compartment, and *m* are condensed-
70 water pipes leading from the bottom compartment into the condensed-water reservoir forming the base *b*. Diaphragm-plates *n* are secured to carrying-bars *o* within the water-chamber *a*, and extend out between the compartments *k*, the said diaphragm-plates fitting between the compartments, so as to cause the condens-
75 ing-water to pursue a zigzag path through the chamber *a* and come in contact with every portion of the exterior walls of the condenser-
80 compartments *k*. A pipe, *p*, leads from the lower part of the chamber *a* up within the central space formed by the interior walls, *g*, of the condenser-compartments *k*. The said pipe is closed to the top, and has perforations or
85 openings *q* at regular intervals, so that the condensing-water in passing through the pipe will be projected against every portion of the interior walls of the compartments. The interior and exterior walls of the compartments *k* 90 are connected together at the ends by the threaded tubes and nuts *r*. The arrows show the direction of motion of the steam and condensing-water.

At *s* the compartment-walls are shown radially, and at *t* annularly corrugated or fluted, the said walls being corrugated or fluted to present a greater surface for contact of the condensing-water with the walls of the steam-condensing compartments *k*. 95

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In condensers, the combination, with the water-chamber *a*, having the inlet and outlet ports *d e*, of the series of annular condenser-compartments *k*, formed of exterior and interior walls, *f g*, the steam-inlet pipes *l*, the condensed-water-outlet pipes *m*, and the base *b*, forming a condensed-water reservoir, substantially as and for the purposes set forth.
2. In condensers, the combination of the water-chamber *a*, the series of annular condenser-compartments *k*, formed of the exterior and interior walls, *f g*, and the diaphragm-plates *n*, extending inwardly between the compartments, substantially as and for the purposes set forth.
3. In condensers, the combination of the water-chamber *a* and the series of annular double-walled condenser-compartments *k* therein, the interior and exterior walls of said compartments being corrugated or fluted, substantially as and for the purposes set forth.

4. In condensers, the combination of the water-chamber *a*, the series of double-walled condenser-compartments *k* therein, and the water-pipe *p*, extending up into the interior water-space of the condenser and perforated at intervals, substantially as and for the purposes set forth.

5. In condensers, the combination of the water-chamber *a*, the series of double-walled condenser-compartments *k*, formed of exterior and interior walls, *f g*, and the tubes *r*, connecting said walls at the ends, substantially as and for the purposes set forth.

6. In condensers, the annular condenser-compartments *k*, formed of exterior and interior walls, *f g*, in combination with ferrules *i*, to hold said walls apart, substantially as set forth.

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Witnesses:

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