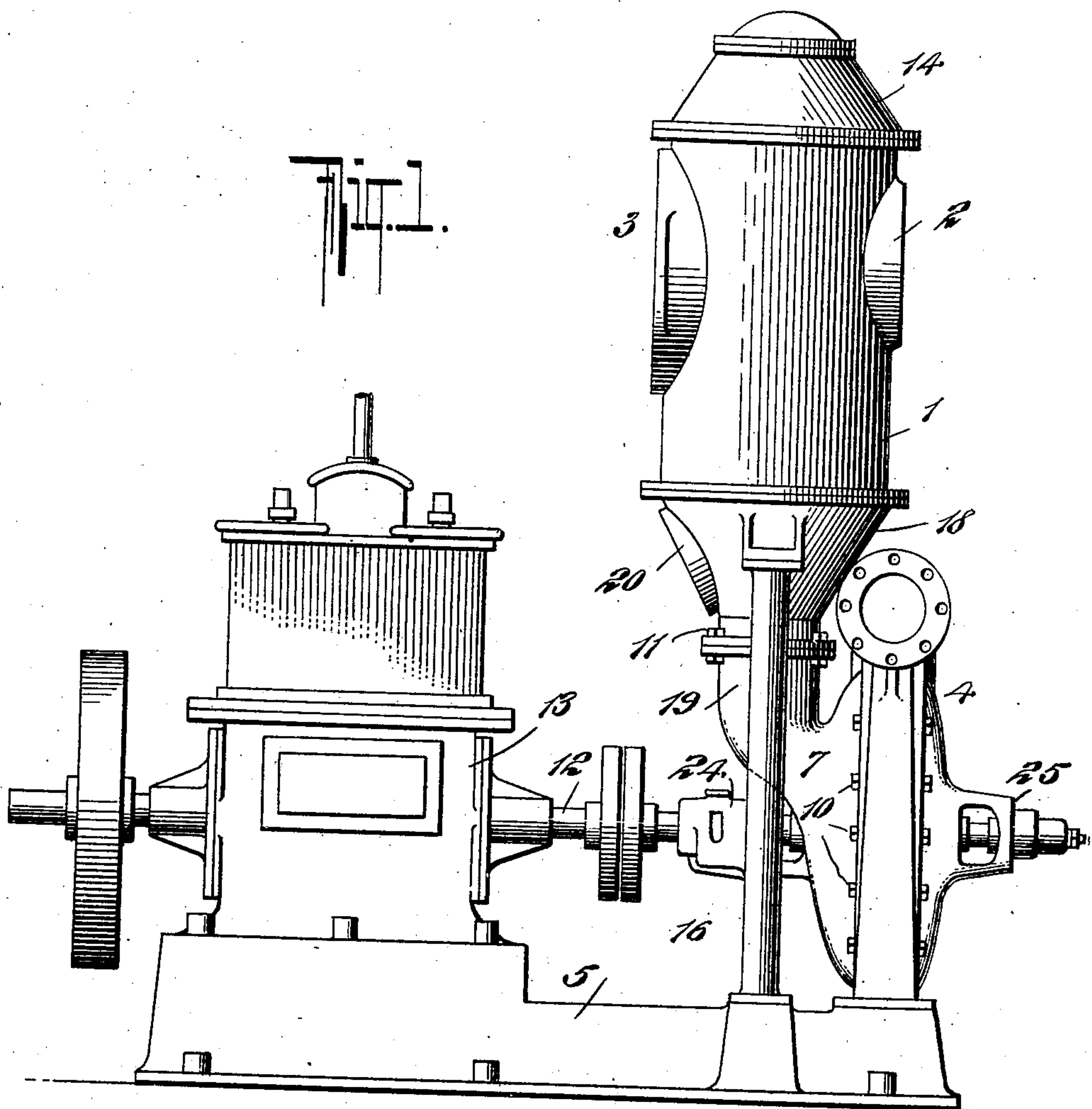


L. R. ALBERGER.
SUPPORT FOR STEAM CONDENSERS.
APPLICATION FILED JULY 12, 1907.

914,778.

Patented Mar. 9, 1909.
4 SHEETS—SHEET 1.



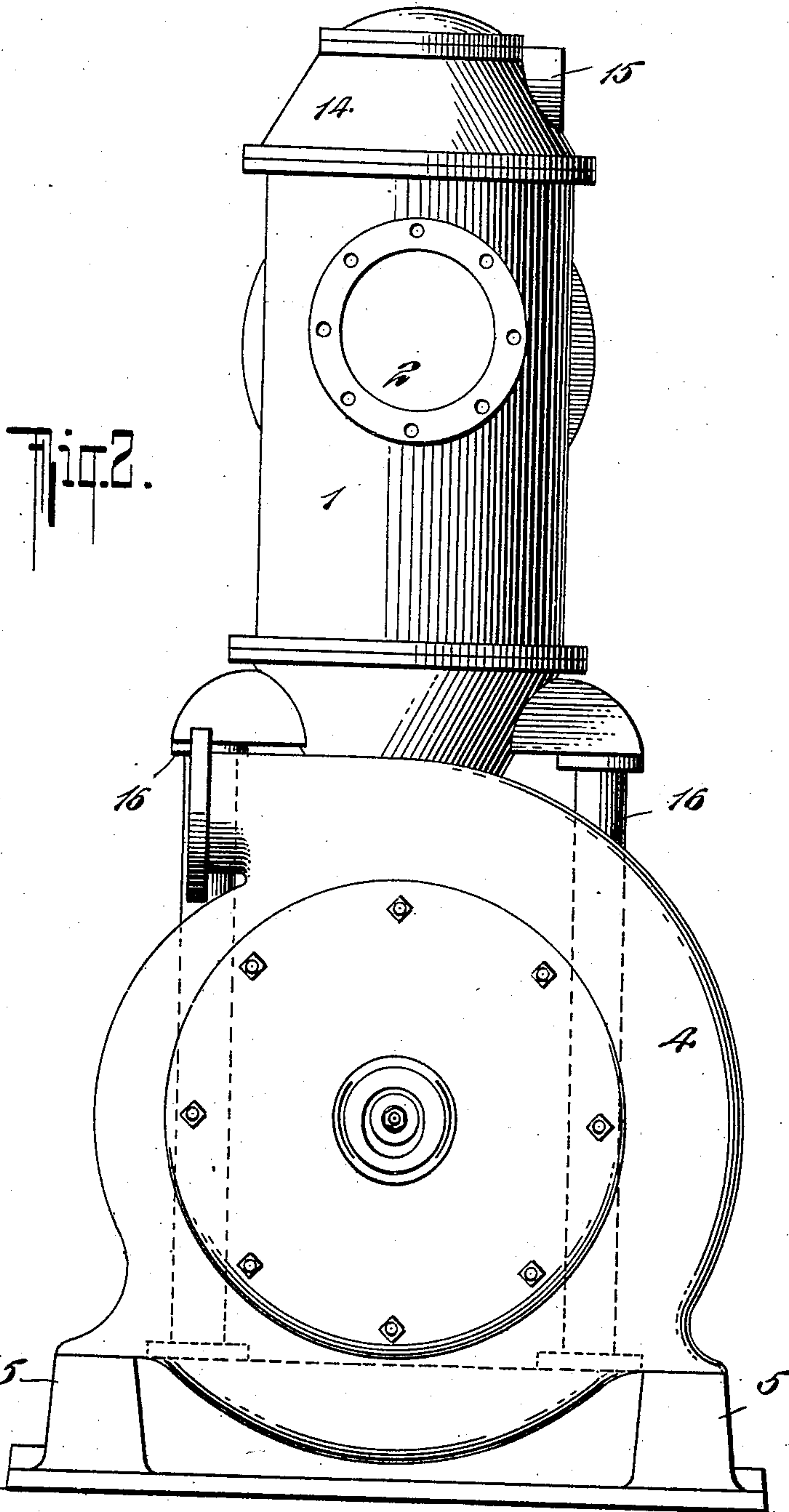
Witnesses:
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Louis R. Alberger Inventor
By *His Attorney*
Frank W. Baker

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4 SHEETS—SHEET 3.

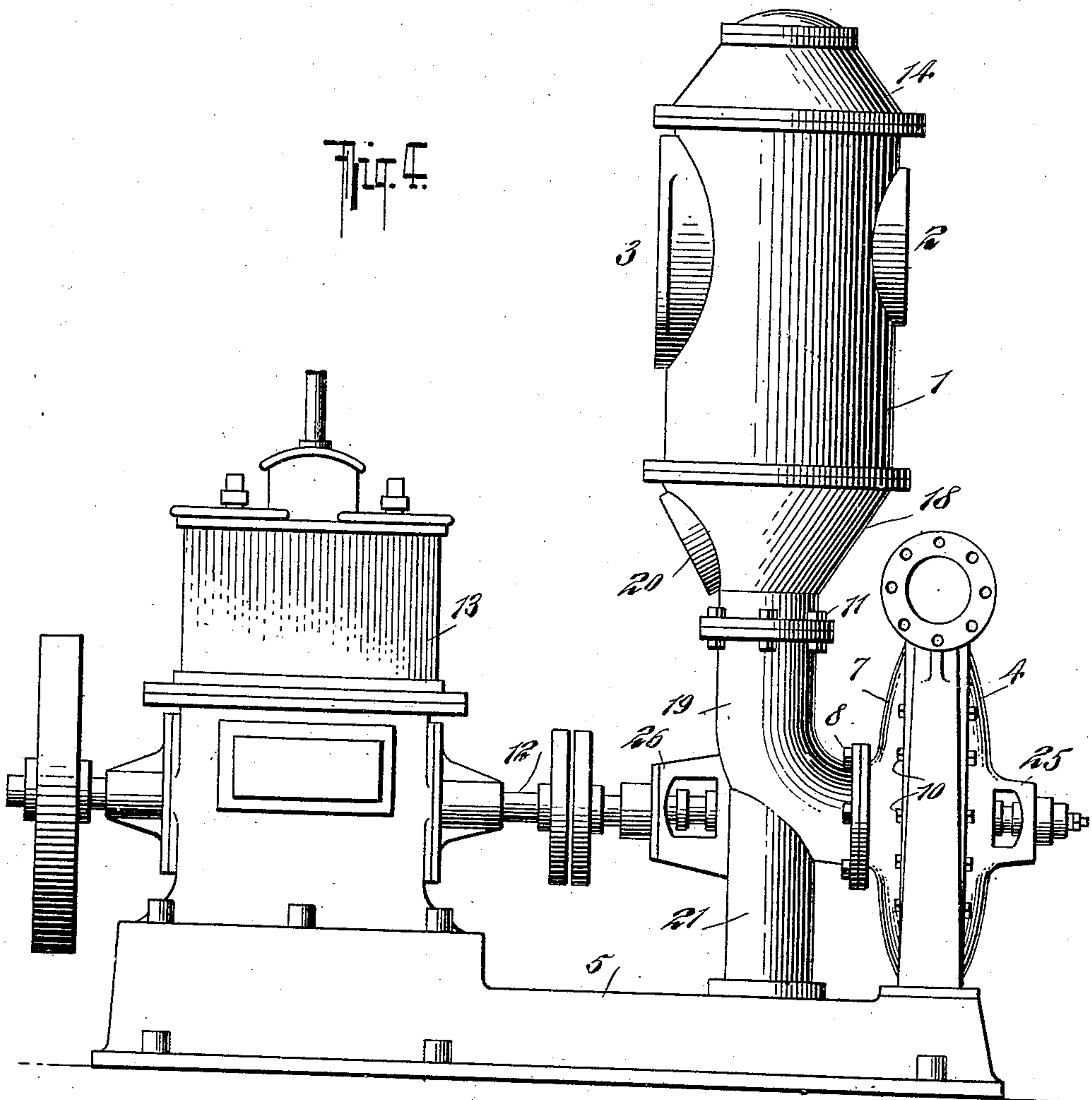


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UNITED STATES PATENT OFFICE.

LOUIS R. ALBERGER, OF GREENWICH, CONNECTICUT, ASSIGNOR TO ALBERGER CONDENSER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SUPPORT FOR STEAM-CONDENSERS.

No. 914,778.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed July 12, 1907. Serial No. 383,446.

To all whom it may concern:

Be it known that I, LOUIS R. ALBERGER, a citizen of the United States of America, and a resident of Greenwich, county of Fairfield, State of Connecticut, have invented certain new and useful Improvements in Supports for Steam-Condensers, of which the following is a specification.

My present invention relates to means for supporting a steam condenser of the type with which a centrifugal or turbine pump is employed for the purpose of withdrawing water from the condenser.

The object of the invention is to enable the condenser to be so supported that its weight will not place any undue strain or pressure upon the working mechanism of the pump, and also so that very easy access to the interior of the pump, the pump head, and other parts may be permitted, it being primarily important that the supporting means for the condenser should not obstruct the easy access to the pump.

In my co-pending application for Letters Patent, filed July 12, 1907, Serial No. 383,445 I have illustrated, described and claimed a form of the invention in which lateral legs, piers, uprights, or other similar supports are employed in such a manner as to leave a free space below the condenser to be occupied by the connections between the pump and the condenser, thereby also permitting freer access than hitherto to the pump head and to the interior of the pump. Or, in other words, in said application, there is a number of symmetrically disposed supports for the condenser arranged so as not to interfere with easy access to the pump, said supporting means being non-central or non-axial with the condenser, so that it is possible to reach below the condenser between the supports and approach the pump with easy access and facility to inspect or investigate it for any desired purpose. In the combination in said application, moreover, the pump is located at a point between the condenser and the motor which drives the pump. In my present improvement, I have an extension of the idea embodied in the other application, and in the present instance the pump, which is of the centrifugal or turbine variety, is situated at the side of the condenser opposite to where the motor is located, so that the elbow and other connections between the condenser and

the pump, instead of curving toward the motor, curve in a direction away from the motor, and the pump is reversed in position. None the less, however, in this case than in the mechanism contained in the other application, does the whole combination form one compact integral and self-contained unit with all the parts ready of access without disturbing the alinement and relation of the principal elements one to the other. Inasmuch as the pump is, by the reversal of its position, placed beyond the space between the condenser and the motor, it is, of course, easily accessible, and hence it is not always essential to use symmetrically disposed supports as in the other application for upholding the condenser so as to leave an open space beneath it; but the column or foot form of support below the condenser, and forming a part of the connections between the condenser and the pump, can be utilized with effectiveness.

The invention consists essentially, therefore, in the construction, arrangement and combination of the various parts, substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention: Figure 1 is a side elevation of a centrifugal jet condenser provided with my improved supporting devices for the condenser chamber, in combination with an improved location for the centrifugal pump. Fig. 2 is an end elevation of the same. Fig. 3 is a side elevation of a centrifugal jet condenser, having a modified form of supporting means for the condenser chamber, said supporting means being of the columnar type, and the elbow between the condenser and the pump being integral with the pump head. Fig. 4 is a side elevation of a centrifugal jet condenser provided with the columnar type of support for the condenser chamber, as also with the reverse form of a centrifugal pump, and shows the connecting elbow between the pump and the condenser chamber made as a separate piece from the pump head and secured thereto in a suitable manner.

Similar characters of reference designate corresponding parts throughout the different figures of the drawing.

In order to illustrate the practical carrying out of my invention, I have delineated in the drawings a single specimen or example

of condenser, the same being of the jet type and having therewith a centrifugal or turbine pump for withdrawing the condensing water, as well as the steam condensed by the action of said water, the pump occupying a position which is not between the condenser and the motor, although it is conveniently placed so that the motor shaft may actuate its impeller.

1 denotes the condenser chamber having a steam inlet 3, opposite to which is an inlet 2 for the condensing water. At the top of the chamber 1 is an air cooler 14 and an air outlet 15, the latter being adapted to be connected with the vacuum or air pump. The lower end of the chamber 1 is provided with a conical lower portion 18, having a manhole 20 for access into the interior of the condenser. To the lower part 18 of the condenser is connected an elbow 19, preferably by means of bolts 11 passing through flanges, one on the elbow and one on the condenser, which elbow 19 is likewise connected to the centrifugal or turbine pump 4. 7 denotes the head of said pump 4 which is held in place on the side thereof by means of bolts 10. The elbow 19 is, in Figs. 1 and 3, made integral with the head 7 of the pump; but in Fig. 4 it is made separate from said head 7; and bolts 8 are employed to connect together the flanges which are on the elbow and the pump head, all as clearly indicated in Fig. 4. I show both forms, since it is very common to make them both ways, the elbow being sometimes a separate piece, and sometimes a part of the head.

As I have already said, in my co-pending application hereinabove referred to, the pump is located between the motor, (an example of which is shown at 13, having a motor shaft 12 which drives the impeller of the pump), and the condenser. In the present arrangement, however, I have removed the pump from that intermediate position and placed it on that side of the condenser, which is preferably opposite to where the motor is located, it being only essential that it should be so situated that the shaft of the pump, which is driven by the motor, should run easily between the motor and the pump impeller. When the pump is thus located away from the position of intermediacy between the motor and the condenser, it becomes accessible on all sides, and is much easier to get at than when placed between the condenser and the motor. This is true, although heretofore it has been the practice in the building and arranging of a centrifugal condenser to place the centrifugal pump between the motor and the condenser. Generally, of course, this has been thought a more compact form, and one better calculated to enable the motor to effectively drive the pump; but the disadvantage of not being able to get at the interior of the pump easily

gave rise to the making of my invention in condenser supports, which I described and claimed in my other pending application, hereinabove referred to. With this transfer of the pump to a position on the other side of the condenser, although the same reason does not always exist for employing symmetrically disposed supports, yet I find the combination which is illustrated in Figs. 1 and 2, consisting of the lateral legs or supports 16, 16, to be of great advantage, and I desire to distinctly claim such combination herein. These supports 16, as indicated in Fig. 2, are placed at opposite sides of the condenser, and they rest on the base 5, being practically equally distant from the center line of the condenser. Hence they are symmetrically disposed with reference to the condenser and to the center line thereof, and they leave the space under the condenser free for approach to the pump and the pump head, except in so far as such approach may be obstructed by the elbow 19 and the drive shaft 12. Suitable bearings on the lower portion of the condenser chamber 1 rest upon the upper ends of these legs 16. But I find it also convenient at certain times and in certain installations to substitute in lieu of the lateral or symmetrically disposed supports a single central or axial column 21. This is illustrated in Figs. 3 and 4. Preferably the column 21 is cast as the part of the elbow 19, although I am not restricted to making it in this fashion. Column 21 rests firmly upon the base 5. It will be of proper size, diameter and length to enable it to properly perform the work of upholding the condenser chamber and the accompanying fittings piping and other parts, and, of course, it must be so proportioned as to evenly and effectually sustain the weight imposed upon it. As I have already intimated, the form shown in Fig. 4 where the elbow is separate from the pump head, and that shown in Fig. 3 where it is made integral with the pump head, present substitutable and convertible forms, both of which, however, are utilized in different locations, in conjunction with the columnar type of condenser support.

The motor 13 may vary very widely as to its construction and motive power, and the shaft 12 may be supported in any preferred way. In Fig. 1, the shaft 12 is shown operating in the bearings 24 and 25, which are on opposite sides of the pump 4; while in Figs. 3 and 4 the bearing 26 alongside of the column 21 is used instead of the bearing 24; and on the other side of the pump 24, the bearing 25 is employed as in Fig. 1.

Many changes in the precise construction and arrangement of the various parts may be made without exceeding the legitimate scope of the invention as laid down in the ensuing claims.

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

1. The combination with a condenser, and
5 a centrifugal or turbine pump for withdrawing the water, of independent lateral supports for the condenser, means connecting the condenser and pump between said supports, and a pump motor located on that side
10 of the condenser axial line opposite to where the pump is situated.

2. The combination with a jet condenser, of a centrifugal or turbine pump for withdrawing the water, said pump having a pump
15 head, an elbow connecting the condenser with the pump head, and a column centrally below the condenser and associated with the said elbow.

3. The combination with a condenser, of a
20 centrifugal or turbine pump having a removable head, an elbow integral with the head and connecting it with the condenser, and means for supporting the condenser, said means being arranged below the elbow, and
25 pump driving means on the opposite side of said latter means from that where the pump is situated.

4. The combination with a condenser, and
30 a centrifugal or turbine pump for withdrawing the water, of non-central supports for the condenser uniformly disposed at the sides

of the condenser, connections between the pump and the condenser including an elbow through which the water passes into the pump, and a motor for actuating the pump, 35 which motor is located on the side of the center axial line of the condenser from that where the pump is situated.

5. The combination with a condenser, of a centrifugal or turbine pump for withdrawing 40 the condensing water, said pump having a head, connections between the head and the condenser, and a central vertical column below said connections for upholding the condenser and connected parts uniformly and 45 evenly.

6. The combination with a jet condenser, of a centrifugal or turbine pump located outside of the central axial line of the condenser and free of access, means for supporting the 50 condenser without placing any strain upon the pump, and means for driving the pump, said latter means being situated on the opposite side of the central line of the condenser from where the pump is situated. 55

Signed at New York city, this 3rd day of July, 1907.

LOUIS R. ALBERGER.

Witnesses:

FRED E. TASKER,
C. B. SCHROEDER.