CLAIMS:

1. A trapping and pumping device (100), said device (100) comprising:
    - a vessel (102) having a condensate inlet port (21) in fluid communication with an outlet of a heat exchanger (200) to receive condensate, a condensate outlet port (22) in fluid communication with a condensate discharge pipe (160), a steam inlet port (19) in fluid communication with a steam source, and a steam outlet port (20);
    - a support bracket (10) connected to an inner wall of said vessel (102);
    - a float (1) disposed within said vessel (102), said float (1) having an extension (2) connected to said float (1);
    - a float lever (3) pivotally connected to said support bracket (10) and said extension (2), wherein said extension (2) is configured to be angularly displaced about the pivotal connection between said float lever (3) and said extension (2) at a predetermined angle;
    - a connecting link (6) pivotally connected to said float lever (3) proximal said support bracket (10);
    - a bell crank lever (7) pivotally connected to said support bracket (10) and said connecting link (6), said bell crank lever (7) configured to be displaced under influence of said connecting link (6);
    - a biasing member (9) pivotally connected to said bell crank lever (7), wherein said bell crank lever (7) is configured to compress said biasing member (9) under influence of said connecting link (6) when said float (1) is displaced in an operative upward or downward direction;
    - an actuator link (11) pivotally connected to said biasing member (9) and said support bracket (10), said actuator link (11) is configured to be pivotally displaced about the pivotal connection between said actuator link (11) and said support bracket (10) under influence of said biasing member (9) to operate a steam inlet valve (17) and a steam outlet valve (18), thereby controlling steam flow through said steam inlet port (19) and said steam outlet port (20) respectively; and
    - a trap valve (4) pivotally connected to said extension (2) and configured to be linearly displaced under influence of said float (1) to control flow of condensate through said condensate outlet port (22).

2. The device (100) as claimed in claim 1, wherein said predetermined angle ranges from 5º to 15º.

3. The device (100) as claimed in claim 1, wherein a first stopper (F) is configured on said float lever (3) to restrict said pivotal displacement of said extension (2) about the pivotal connection between said float lever (3) and said extension (2) beyond said predetermined angle.

4. The device (100) as claimed in claim 1, wherein an inlet check valve (14) is configured at said condensate inlet port (21) to allow inflow of condensate into said vessel (102) and restrict outflow of condensate through said condensate inlet port (21).

5. The device (100) as claimed in claim 1, wherein a non-return valve (16) is configured at said condensate outlet port (22) to allow outflow of said condensate from said condensate outlet port (22) and to restrict inflow of condensate into said vessel (102) through said condensate outlet port (22).

6. The device (100) as claimed in claim 1, wherein said biasing member (9) is a spring.

7. The device (100) as claimed in claim 1, wherein the distance between the pivotal connection of said bell crank lever (7) and said support bracket (10) and the pivotal connection of said bell crank lever (7) and said biasing member (9) is more than the distance between the pivotal connection of said bell crank lever (7) and said support bracket (10) and the pivotal connection between said bell crank lever (7) and said connecting link (6).

8. The device (100) as claimed in claim 1, wherein the ratio of distance between the pivotal connection of said float lever (3) and said connecting link (6) and the pivotal connection (pivot C) between said float lever (3) and said extension (2) to the distance between the pivotal connection of said float lever (3) and said connecting link (6) and the pivotal connection (pivot B) of said float lever (3) and said support bracket (10) is at least one.

9. The device (100) as claimed in claim 1, wherein said float lever (3), said connecting link (6), said bell crank lever (7), and said support bracket (10) are configured to form a double crank mechanism.

10. A method of removing condensate by using thea ~~pumping and~~ trapping and pumping device (100) according to claim 1 when the pressure downstream of said device (100) is greater than the pressure upstream of said device (100), said method comprising the following steps:

pivotally displacing thea float (1) disposed within said device (100) about a pivot point (pivot C) when a condensate level within said device (100) rises above a predetermined upper level;

opening thea trap valve (4) coupled to said float (1);

opening a steam inlet orifice (E) to allow steam to enter said device (100), thereby pressurizing said condensate within said device (100); and

simultaneously closing said steam inlet orifice (E) and opening a steam outlet orifice (D) to remove steam from said device (100) when condensate level within said device (100) falls below a predetermined lower level.