(No Model.)

J. J. J. DE RYCKE.

EXHAUST HEAD.

No. 487,723. Patented Dec. 13, 1892.

Fig. 1.

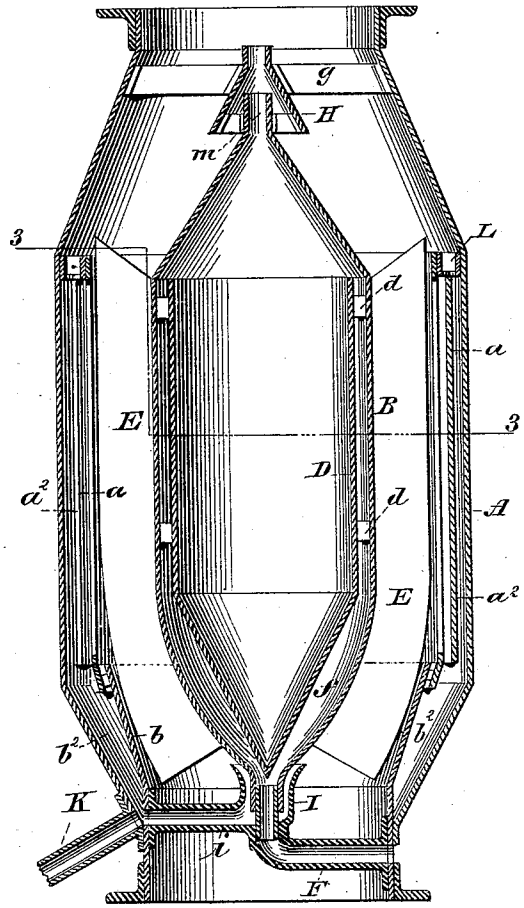


Fig. 2.

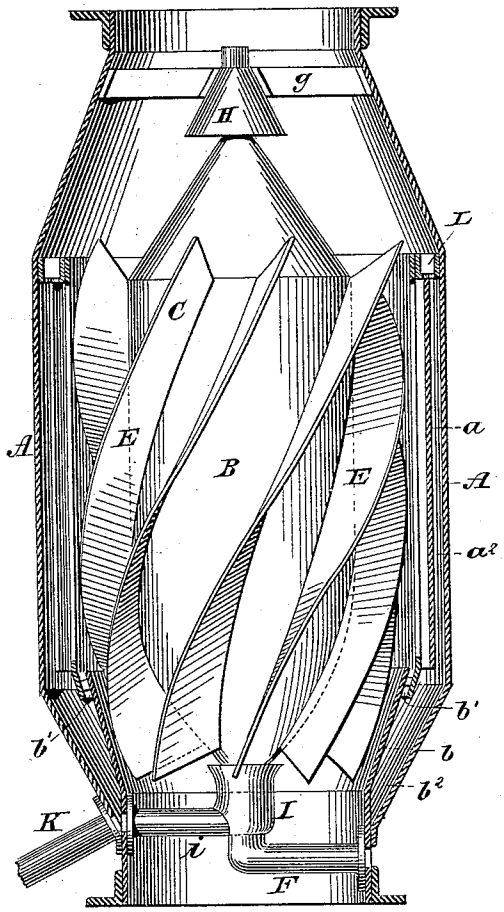


Fig. 3.

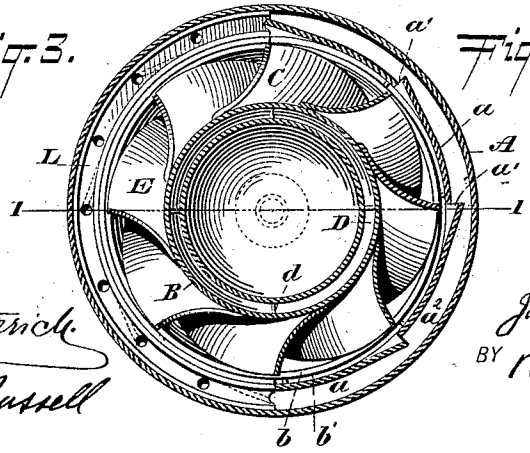
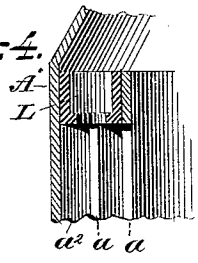


Fig. 4.



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JULES JOHN JOSEPH DE RYCKE, OF BROOKLYN, NEW YORK.

EXHAUST-HEAD.

SPECIFICATION forming part of Letters Patent No. 487,723, dated December 13, 1892.

Application filed April 29, 1892. Serial No. 431,097. (No model.)

To all whom it may concern:

Be it known that I, JULES JOHN JOSEPH DE RYCKE, a resident of Brooklyn, Kings county, and State of New York, have invented an Improved Exhaust Head and Condenser, of which the following is a specification, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a vertical central section of my improved exhaust head and condenser, the line 1 1, Fig. 3, indicating the plane of section. Fig. 2 is a side elevation of the interior portion of said exhaust head and condenser, showing the exterior portion in section. Fig. 3 is a horizontal section on the line 3 3, Fig. 1. Fig. 4 is a detail vertical section on an enlarged scale of the upper annular trough.

The object of this invention is to produce mechanism to be placed on roofs of buildings and the like for condensing to the fullest possible extent any oil carried away by exhaust-steam from engines and as much of the water of said steam as practicable, so that the steam will be liberated from impurities and will be prevented from soiling garments and other things on the roofs of such buildings.

The invention consists of the combinations and arrangements of parts that are hereinafter more fully specified and described.

In the drawings the letter A represents the outer casing of my improved exhaust head and condenser. This outer casing has, by preference, a cylindrical central portion and contracted ends, as shown, the lower end being adapted to be placed upon the roof of a house and being open to receive the exhaust-steam from the exhaust-pipe of an engine, whereas the upper end of said casing is also open to allow the escape of the steam. That part of the outer casing which is cylindrical is double walled, the inner shell or wall a being shaped in resemblance of a ratchet-wheel, so as to produce upright slits or openings a'. The lower end of this ratchet-like interior shell a, which, as before stated, is by preference arranged only within the cylindrical portion of the casing A, but which may, if desired, be carried beyond said cylindrical portion, embraces and is a short distance away from a lower inner wall b, which at its lower end connects with the outer wall of the casing, as shown. The small space between the lower end of the shell a and the upper end of the shell b is shown at b' in the drawings. The space between the casing A and the ratchet-like inner shell a is marked a^2 in the drawings. The space between the lowermost inner wall b and the outer jacket or casing A is represented by the letter b^2 in the drawings, and is the receptacle for the products of condensation, from which receptacle said products of condensation can escape by a pipe K.

Within the center of the casing A and its double wall, &c., is arranged an interior upright casing B, whose central portion is also, by preference, cylindrical, and whose ends are tapering, as represented; but both ends are open for the admission and discharge of air, as hereinafter more fully described. The lower open end of this inner structure B communicates with an air-inlet pipe F, as clearly shown in Fig. 1, so that through this pipe F air enters the lower end of the chamber B, and it escapes from the upper end of said chamber B by a pipe m, extending upwardly therefrom, as shown, into a hood-like structure H, which is fixed by brackets g to the interior of the upper portion of the casing A. The lower part of the central chamber B enters into a cup I, which communicates by a pipe i with the chaber b^2, so that any products of condensation that run down on the outer side of the structure B will be received in the cup I and carried off by the pipe i.

Within the central structure B is contained an interior shell D, having tapering lower portion and, by preference, cylindrical main body. This vessel D is by brackets d held at a short distance from the inner wall of B, so as to form a narrow air-space between the two parts B and D.

Between the central structure B and the inner shell a of the outer casing are spirally-arranged flanges or blades E, as shown. These blades may be affixed to the central structure B or to the outer structure A, or to both, as may be desired. The annular trough L is placed over the top of the inner shell a to receive drippings from the inner side of the upper portion of the casing A, drip-holes in the bottom of said trough L leading to the space a^2, and thence to the receiving-space b^2.

Having now described the construction of my apparatus, I will briefly state how it op-

erates. The structure being placed upon a roof in upright or other position communicates, as before described, at its lower end with the exhaust-steam pipe and receives the full head of steam in said open lower end. This steam, rushing up within the space traversed by the blades E E and between the structures B and A, receives a whirling motion by means of said blades, which causes the centrifugal force imparted to it to deposit on the inner wall of the ratchet-like shell *a* products of condensation. These products of condensation are hurled through the slots *a'* into the space a^2, and then flow down along the inner wall of the casing A, and possibly also along the outer side of the shell *a* into the final receiving-chamber or drip-chamber b^2, whence they escape through the pipe K. Meanwhile air travels up through the pipe F and through the space *f* between the vessels B and D and helps to chill the wall of B, so as thereby to assist in proper and rapid condensation, the interior vessel D serving to make the air-film narrow, and to therefore enhance the cooling action. The flow of air is further hastened by the hood H, which being open to the escaping steam and placed over the air-outlet *m* causes the steam to exert suction upon the air beneath and to help draw out the air from the vessel B. Any products of condensation that lodge against the inner wall of the casing A, above that part where the same is lined with the shell *a*, flow down into the trough L, and thence drip into the chamber a^2 and b^2. Any products of condensation that collect along the outer wall of B flow down along said outer wall into the cup I, and thence by the pipe *i* into the drip-chamber b^2.

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

1. The combination of the outer casing A, open at both ends, with the inner slotted shell *a*, spiral blades E, and interior cone B, substantially as and for the purpose herein shown and described.

2. The combination of the outer casing A, inner slotted shell *a*, and lower inner shell *b* with the spiral blades E and interior cone B, all arranged so that drip-openings *b'* are formed between the shells *a* and *b* and so that spaces a^2 and b^2 are formed between the casing A and inner shell *a* and between the casing A and inner shell *b*, respectively, substantially as herein shown and described.

3. The combination of the casing A and inner perforated shell *a* with the spiral blades E, central cone B, upper perforated trough L, and lower drip-chamber b^2, having outlet-pipe K, substantially as described, and for the purpose specified.

4. The combination of the outer casing A with the independent inner cone B, open at both ends, whereby the air can be taken in at the bottom and discharged directly into the atmosphere at the top, and with the air-inlet pipe F, connected to said inner cone, all substantially as and for the purpose herein shown and described.

5. The combination of the outer case A, inner cone B, open at both ends, air-inlet pipe F, and central vessel D, placed within the inner cone B, whereby the air is forced against the sides of said inner cones B, substantially as and for the purpose herein shown and described.

6. The combination of the outer case A with the central cone B, open at both ends, air-inlet pipe F, air-outlet pipe *m*, and upper hood H, all arranged substantially as and for the purpose herein shown and described.

7. The combination of the outer casing A, outer chamber b^2, spiral blades E, central cone B, air-inlet pipe F, cup I, and pipe *i*, all arranged substantially as and for the purpose herein shown and described.

8. The combination of the outer casing A with the perforated inner shell *a*, lower shell *b*, forming drip-chamber b^2, upper perforated trough L, spiral blades E, central cone B, open at both ends, air-inlet pipe F, air-outlet pipe *m*, hood H, cup I, and pipe *i*, all arranged substantially as and for the purpose herein shown and described.

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Witnesses:
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