(No Model.)

G. W. CHRISTOPH.

EXHAUST HEAD.

No. 493,908. Patented Mar. 21, 1893.

Fig. 1.

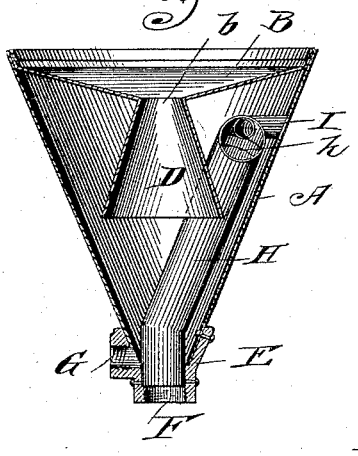


Fig. 2.

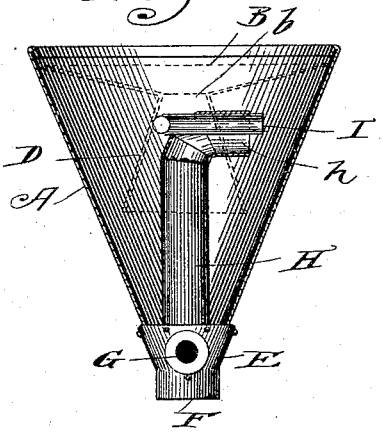
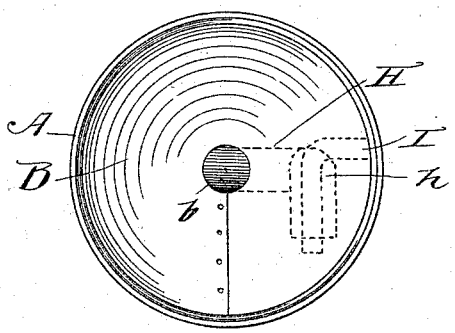


Fig. 3.



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UNITED STATES PATENT OFFICE.

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EXHAUST-HEAD.

SPECIFICATION forming part of Letters Patent No. 493,908, dated March 21, 1893.

Application filed July 22, 1892. Serial No. 440,870. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CHRISTOPH, of Hartford, Connecticut, have invented certain new and useful Improvements in Condenser-Heads for Steam-Exhaust Pipes, of which the following is a specification.

This invention relates to an improved condenser head for steam exhaust pipes; and has for its object to provide an exhaust pipe head by which a rapid and practically complete condensation of the exhaust steam may be effected and the entrained water, grease or other solid matter carried thereby be effectually trapped. To this end I preferably conduct the exhaust steam into the interior of the head and discharge it therein near the peripheral wall of such head; and at that point I provide an inlet through which an induced current of atmospheric air will pass serving to lower the temperature of the exhaust steam and assist its condensation. The exhaust steam is conducted to the interior of the head through an extension of the exhaust pipe from the engine, and this extension or supplemental pipe is preferably provided at its upper end with an elbow arranged to discharge the exhaust steam horizontally—it being assumed that the head will be placed in a vertical position. This arrangement will impart to the current of exhaust steam an incipient gyrating or rotary movement within the head, thus causing the exhaust steam to impinge upon the walls of the head, which, being cold, will greatly assist the condensation, and if the current has sufficient force to generate therein a well defined rotary motion, the centrifugal force acting upon the particles of water will operate to throw them out of the current against the wall of the shell down which they will trickle to a suitable outlet at the bottom of the head. The head is preferably placed in a vertical position, cone shaped and having a dished cover or top plate with a central outlet for the dry steam, surrounded by a depending deflector, the bottom of which is below the point where the exhaust steam is discharged within the head.

The invention will be described in connection with the accompanying drawings and particularly pointed out in the claims.

In the drawings, Figure 1 is a central sectional elevation through the shell of the exhaust head, its cover and depending cone, the conductor pipe and air inlet being shown in elevation. Fig. 2 is a similar view at right angles to that shown in Fig. 1 with the cover and deflector shown in dotted lines, the upper end of the conductor pipe being partly in broken section; and Fig. 3 is a plan view of the head, parts showing in dotted lines.

In the drawings, A represents the shell of the head having the top plate B which is dished and has a central aperture *b* surrounded by a depending, flaring deflector D. The small end of the conical shell is secured by a fitting E having the threaded nipples F, G, the former for connection with the exhaust steam pipe and the latter for connection with the drip pipe, and which nipple G may be of such size as to provide a hand hole.

H represents a conductor pipe, the lower end of which is fitted into the nipple F and which is preferably carried along the side wall of the shell and provided at its top, which is above the lower edge of the depending deflector, with an elbow *h* which delivers the exhaust steam in a horizontal direction. Connected into this elbow is an inlet pipe I, one end of which is tapped through the shell of the head so that it may communicate with the atmosphere, while the inner end may project through the elbow and beyond it. The delivery of the exhaust steam through the elbow will by reason of its elevated temperature induce an in-draft of air through the pipe I which will affect the rapid condensation of the exhaust steam. The exact length, size or arrangement of this inlet is not essential and the pipe is used because it is deemed a preferable construction but a small opening in the shell at this point will be found effective, and other means may be employed to cause an induced current of air to pass into the condenser head. The area of the exhaust pipe at the point where the cold air pipe enters it is great enough to avoid any back pressure; and I have found in use that with a condenser head built in substantially the proportions shown in the drawings a very rapid and effective condensation of the ex-

haust steam is secured while all grease and other foreign materials carried upon the current of exhaust steam is effectually trapped.

Without limiting my invention to precise details of construction, I claim—

1. A condenser head having a conductor for the exhaust steam opening interiorly of the head and near its peripheral wall and an air inlet in said wall at or near the discharge for the exhaust steam, substantially as described.

2. A condenser head having a conductor pipe communicating with the exhaust steam passage and an elbow at its top to deliver exhaust steam at or near the peripheral wall of the head and in a plane at right angles to the axis thereof and an air inlet through the wall of the head near the discharge end of said conductor pipe, substantially as described.

3. In a condenser head, the combination with a conductor pipe communicating with the discharge from the exhaust pipe and extending upwardly within the head and having an elbow at its top and an air inlet pipe communicating with the atmosphere through the wall of the casing and projected through said elbow in the direction of the opening thereof, substantially as described.

4. A condenser for exhaust steam pipes comprising in combination a conical shell, a dished cover plate having an escape aperture, a depending flaring deflector surrounding said aperture, a conductor pipe communicating with the discharge from the exhaust steam pipe and having its discharge above the lower edge of said deflector and near the peripheral wall of the shell and air inlet pipe communicating with the atmosphere and projected past the end of the conductor pipe, substantially as described.

GEORGE W. CHRISTOPH.

Witnesses:
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