

UNITED STATES PATENT OFFICE.

HENRY SIMS, OF ERIE, PENNSYLVANIA.

EXHAUST-HEAD.

SPECIFICATION forming part of Letters Patent No. 696,601, dated April 1, 1902.

Application filed July 25, 1901. Serial No. 69,678. (No model.)

To all whom it may concern:

Be it known that I, HENRY SIMS, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Exhaust-Heads; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to exhaust-heads for steam-pipes, and has for its objects the condensation of the steam and the prevention of the water so condensed from being thrown out with the remainder of the steam escaping therefrom and also muffling to a large extent the noise of the exhaust-steam. I accomplish these results by constructing my improved exhaust-head in the form of an upright cylinder having an exhaust-inlet at its lower end and an outlet at its upper end. In the lower part of the cylinder I secure around its inside a series of vertical ribs or wings, and in the exhaust-inlet I make lateral openings provided with curved wings which operate to swirl the incoming steam against these ribs on the side of the shell, and above these ribs I secure an inclined annular deflector, and on the lower end of the outlet I secure an inverted conical deflector, around which the escaping steam must pass to openings in the sides of the outlet-pipe. These and other features of my invention are hereinafter set forth and described, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical central section of my improved exhaust-head. Fig. 2 is a transverse section of the same on the line xx in Fig. 1.

In the drawings thus illustrating my invention, A is the cylinder-shell of the exhaust-head, having oval ends B and B' secured therein. In the lower head B there is a pipe C, which is adapted to be secured to a steam-exhaust pipe. (Not shown.) This pipe C extends up into the lower part of the exhaust-head a short distance and has its upper end closed. Its sides, however, are provided with lateral openings c , and extending from the

side of each of these openings c there is a spiral wing D, which extends approximately one-fourth of the distance around the pipe C, so as to form a spiral passage D' from each side of the openings c . The upper and lower sides of these spiral passages are closed by plates d and d' , so that the steam in escaping from the openings c in the exhaust-pipe C is given a spiral direction as it strikes the inside surface of the shell A. On the inside of the shell A, opposite the spiral passages D', I secure vertical ribs or wings E, preferably inclined, as clearly illustrated by Fig. 2, so that as the steam strikes these ribs a large condensing-surface is presented thereto. Above the upper ends of the ribs E, near the center vertically of the shell A, I secure an annular deflector F, which inclines downward and has a large central opening f therein. In the center of the upper head B', I secure an escape-pipe G, which extends downward into the shell A a short distance, where it is provided with lateral openings g , and on the lower end of the pipe G, I secure an inverted cone H, which closes the lower end of the pipe G, except a small drip-opening h , and extends laterally therefrom approximately two-thirds of the distance between the pipe G and the inside of the shell A.

In the bottom of the lower head B of the shell there is a drip-opening b for the escape of the condensed water from the shell A. In operation as the steam passes out and through the passages D' it is spirally projected against the ribs E, where a considerable portion thereof condenses. The remainder thereof rises up under the deflector F and is deflected downward again until it reaches the central opening f therein, through which it passes upward and strikes the lower surface of the conical deflector H, which operates to condense more of the steam, the remainder thereof passing up around the edge of the deflector H and down to and out through the openings g and the escape-pipe G to the atmosphere, the water of condensation accumulating in the inside of the conical deflector H and in the escape-pipe G passing downward through the drip-opening h to the lower part of the shell and out through the drip-opening b therein.

Having thus described my invention, so as

to enable others to construct and use the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination in an exhaust-head, of
 5 an inclosed shell, an outlet-pipe in the upper end thereof, an inlet-pipe in the central portion of the lower head thereof closed at its upper end and having lateral openings therein, spiral-shaped wings extending from said
 10 openings so as to form spiral passages therefrom, and vertical ribs or wings on the inside surface of said shell opposite said spiral passages, substantially as and for the purpose set forth.
- 15 2. The combination in an exhaust-head of an inclosed shell, an exhaust-pipe extending

into the lower part of said shell, wings on said exhaust-pipe forming spiral escape-openings therefrom, vertical ribs or wings on the inside of said shell opposite said spiral discharge- 20 openings, an annular deflector having a central opening therein above said vertical ribs, an outlet-pipe on the top of said shell, and an inverted conical deflector on the lower end thereof, substantially as and for the purpose 25 set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY SIMS.

Witnesses:

H. M. STURGEON,
 FLORENCE STOCKERT.