

(No Model.)

W. A. CROMWELL.
DETACHABLE EXHAUST HEAD.

No. 466,657.

Patented Jan. 5, 1892.

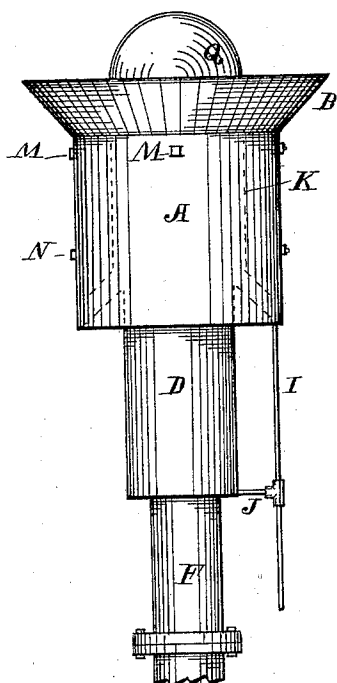


Fig. 1.

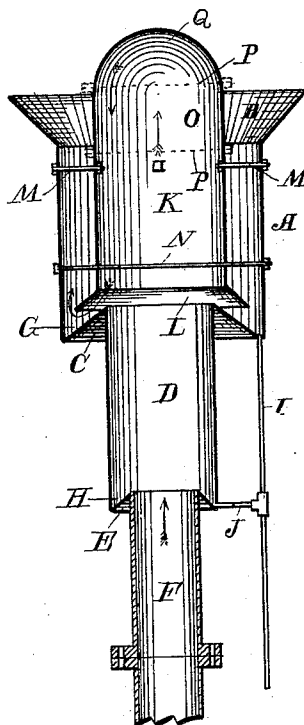


Fig. 2.

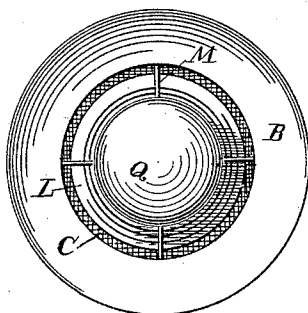


Fig. 3.

WITNESSES:

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DETACHABLE EXHAUST-HEAD.

SPECIFICATION forming part of Letters Patent No. 466,657, dated January 5, 1892.

Application filed August 2, 1890. Renewed December 5, 1891. Serial No. 414,123. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CROMWELL, a citizen of the United States, and a resident of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Detachable Exhaust-Heads, of which the following is a specification.

The object of my invention is to construct a detachable exhaust-head for low or high speed engines; and it consists in having a vertical drum with a wide flaring open upper end and a depressed lower end, to which is attached a smaller or secondary drum, which is also provided with a depressed bottom, where the exhaust-pipes from the engines are attached. A dome or hood is placed within the large drum, its lower open end having a flaring mouth, and this hood is suspended within the drum by means of rods, which enable it to be removed at will or replaced. Drain-pipes are connected with both the large and the small drums, so as to collect the condensation.

The special features or advantages in this invention are that the hood being detachable the cushioning or condensing chamber can be readily taken out and increased in height or length, should it be required, without disturbing the main drum or the exhaust-pipe. This construction and arrangement entirely does away with the noise of escaping steam and there is no back-pressure on the engine caused by its use, and it forms a perfect condenser.

Figure 1 is a perspective view of the invention; Fig. 2, a central vertical section of the same, and Fig. 3 a top view.

Referring to the drawings, A represents the main vertical cylinder or drum of any suitable size or length. The upper open end is provided with a wide flaring mouth B, while its lower end has a depressed or inwardly-flanged bottom C. To this bottom is attached the upper end of a smaller or secondary drum D, the lower end of which has a similarly-depressed or inwardly-flanged bottom E, to which the exhaust-pipe F is attached. By this construction the main drum A has an annular drain-trough G in its base, while the secondary drum D has a similar trough H in its base. A drain-pipe leads downward from the base of the drum A, and is connected with

a branch pipe J from the base of the secondary drum, so that all the condensation collected in both drums will pass out freely. The hood or dome K is closed at its upper end and its lower open end is provided with a flaring mouth L. It will be observed that the diameter of this hood is somewhat greater than the diameter of the secondary drum D, and that the rim of the flaring mouth L is smaller than the interior diameter of the main drum A. The hood is supported within the main drum by means of four short horizontal bolts M near the upper end and by a horizontal rod N near the lower end. The hood may be made longer or shorter, or adapted to be raised or lowered within the main drum to suit the requirements. For some exhaust-pipes the length or the position of the hood may be practically as shown in Fig. 2. For other pipes the hood may be raised up higher or made either longer or shorter; but in every case the diameter of the hood should be greater than the diameter of the secondary drum D, and I find in practice that the best results are obtained by making the diameter of the main drum A approximately three times greater than the exhaust-pipe F.

The operation is as follows: The steam coming from the exhaust-pipe F rushes into the secondary drum D, where it immediately expands, thus preventing it from impinging with such great force against the dome of the hood K. The large exposed surface of the two drums and the dome has the effect of rapidly condensing the steam while the latter passes from the hood around beneath its flaring rim L, and thence upward between the hood and the main drum. The hood being greater in diameter than the secondary drum D, all condensation within the hood will fall on the outer slope of the bottom C and be carried off through the pipe I and all condensation on the inner surface of the secondary drum passes rapidly off through the drain-pipe J. The main features of my invention, therefore, are to provide for positive means of quickly freeing the interior of condensation and giving a large area for condensation, while at the same time there is but the smallest amount of resistance offered to the movement of the steam. As a result, I have ascertained by practical operation of the device that there

is absolutely no back-pressure in the use of this exhaust-head, and should any back-pressure be discovered in its operation I can readily remedy it by changing the length, height, or position of the hood without in any way interfering with the exhaust-pipe or the drums.

A very desirable means of shortening or lengthening the dome K is shown in Fig. 2, wherein O represents a short section, (between the dotted lines P,) which may be removed, so that the arc portion Q can be attached directly to the cylindrical part K, thus shortening the dome to meet the requirements. In manufactories different lengths of this section O can be kept in stock.

What I claim as new is—

1. An exhaust head or condenser for steam, composed of a vertically-disposed main drum or cylinder surmounting a smaller vertical drum or expansion-chamber, said main drum having within a hood or dome which projects above the flaring mouth of the outer drum and provided with a large flaring mouth at its lower open end, substantially as herein set forth.

2. An exhaust-pipe having a vertical drum thereon with a depressed bottom and a larger drum with a similar depressed bottom secured to the upper end thereof, said larger drum having a wide flaring mouth and a hood or dome within, which dome has its lower end open and is provided with a flaring mouth, substantially as herein set forth.

3. An exhaust-pipe having a vertical drum

thereon with a depressed bottom and a larger drum with a similar depressed bottom secured to the upper end thereof, said larger drum having therein a removable and adjustable hood or dome, the lower open end of which has a flaring mouth, substantially as herein set forth.

4. An exhaust-head which consists in having two vertically-disposed drums, one above the other, communicating directly with each other, the upper drum being approximately double the size of the lower, with a wide flaring mouth, and having within it a hood or a dome larger diametrically than the lower drum and extending above the outer flaring-mouthed drum, substantially as herein set forth.

5. An exhaust head or condenser composed of a large vertical drum surmounting a smaller vertical drum and connected therewith, in combination with a removable and adjustable hood or dome with a wide flaring mouth at its lower end and with the adjusting-rods for holding the same in position, and the drain-pipes for removing the condensation, substantially as herein set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 25th day of June, 1890.

WILLIAM A. CROMWELL.

Witnesses:

C. W. MCNEILL,

J. D. VAN WICKEL.