No. 616,087. Patented Dec. 20, 1898.

A. P. DODGE.

CONDENSER.

(No Model.) (Application filed Dec. 1, 1897.)

2 Sheets—Sheet 1.

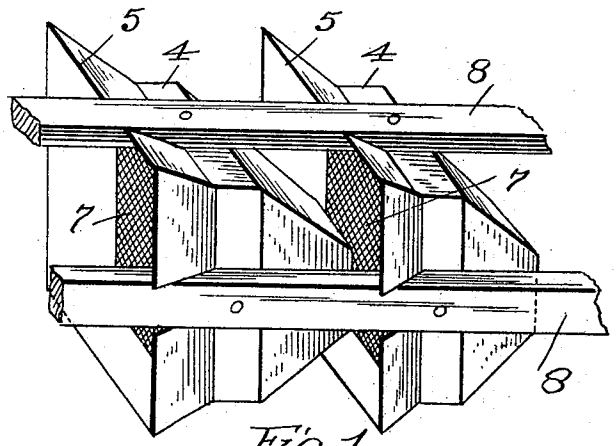
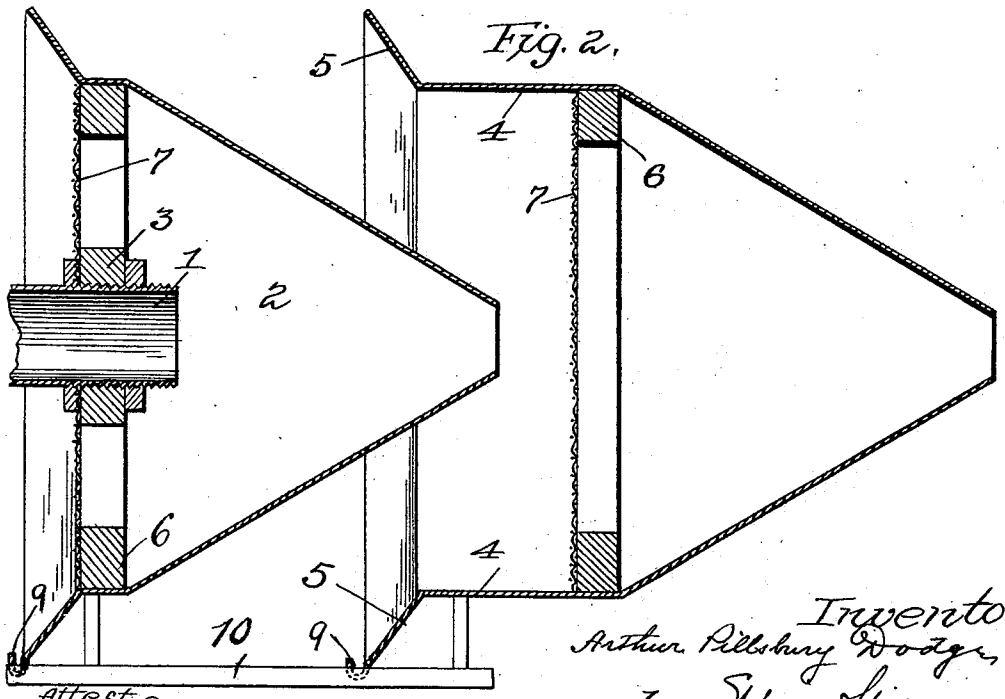


Fig. 1.

Fig. 2.



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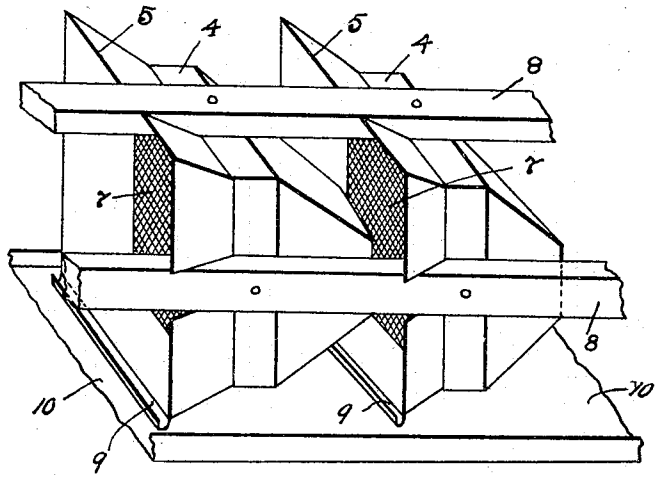
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FIG. 3



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UNITED STATES PATENT OFFICE.

ARTHUR PILLSBURY DODGE, OF NEW YORK, N. Y.

CONDENSER.

SPECIFICATION forming part of Letters Patent No. 616,087, dated December 20, 1898.

Application filed December 1, 1897. Serial No. 660,415. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR PILLSBURY DODGE, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Condensers, of which the following is a specification.

My invention relates to condensers or muffles for steam-motors and the like in which it is desired to condense the steam and prevent the noise of the exhaust and to prevent the exhaust-steam from being visible to the passengers or other persons.

In the accompanying drawings, Figure 1 is a perspective view of the condenser, and Fig. 2 a sectional view thereof. Fig. 3 represents the condenser with drains to pass off the condensation.

In the drawings the steam-pipe is shown as entering the first section 2 of the condenser, which comprises a funnel-shaped box with its axis directed horizontally, the said steam-pipe being screw-threaded through the frame 3 at the large end of the funnel, where it is held by a washer and jam-nut. The funnel may be made of sheet-iron, and its small end projects into the large end of the next section, which large end has parallel walls 4, ending in flaring walls 5, which flaring walls form air-channels between themselves and the inclined walls of the preceding section. Following the straight walls of the second section are funnel-shaped walls, constituting the balance of said section, and this section may at its smaller end project into the large end of another similar section, and so on, thus providing a series of sections, each one of which is of funnel shape, with its small end projecting into the large end of the succeeding section, with spaces between for sucking in the air, as hereinafter described. The large ends of the funnels are provided with vertical frames 6, carrying lateral vertical screens 7, and these screens may be either straight or curved. They extend across the large ends of the funnel-shaped portions and near to the small ends of the preceding funnels, and they receive and break up the steam issuing therefrom in the presence of the air drawn in through the lateral air-spaces, so that the steam will be broken up and condensed. The sections may be held by strips 8, as shown in Fig. 1, which are screwed to the large or parallel portions of the funnels, or by any similar means, and they may be square or round or any other desirable shape in cross-section. On the outer edge of the lower side of each parallel part of each section is a small drain 9, leading to a continuous drain 10, extending the entire length of the whole car-roof, the purpose of which is to receive the water of condensation and lead it to any desired point.

The flow of air through the apparatus is caused partly by the motion of the car, which should be the same as the direction of the steam, and partly by the injecting action of the current of steam. The condensing of the steam is also caused by two agencies—the absorption of heat by the colder air being mingled with it and the loss of heat through contact with the wire screens.

I claim as my invention—

1. A condenser comprising a series of funnels with a horizontal flow, the smaller end of each funnel projecting into the large end of the next succeeding funnel and the vertical screens extending across the larger ends of the funnels to break up the steam, the said funnels having air-draft spaces between them, substantially as described.

2. In combination, the horizontal funnels projecting within each other and having parallel portions with flaring edges and the strips connected with the parallel portions of the funnels, and the bottom flaring edges having drains 9 to pass off the condensation with a continuous drain to receive the water from said drains 9, substantially as described.

3. In combination, the horizontal funnels with vertical interpassing screens 7 having their ends adjacent so that the small end of one funnel is directed into the large end of the next funnel, the air-inlets between the funnels and the drains leading from the funnels, substantially as described.

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

ARTHUR PILLSBURY DODGE.

Witnesses:

HORACE F. HODGES,

W. N. THOMAS, Jr.