

J. H. FISHER.
EXHAUST HEAD.

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1,292,450.

Patented Jan. 28, 1919.

Fig. 1

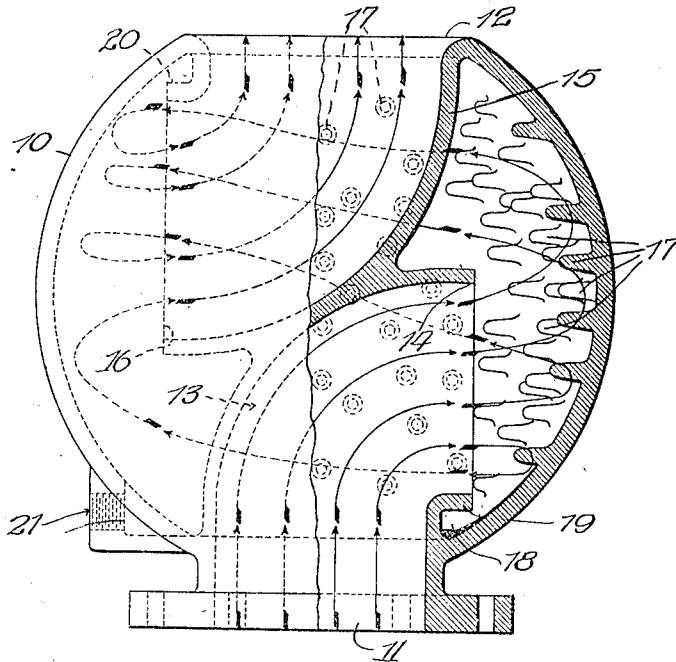
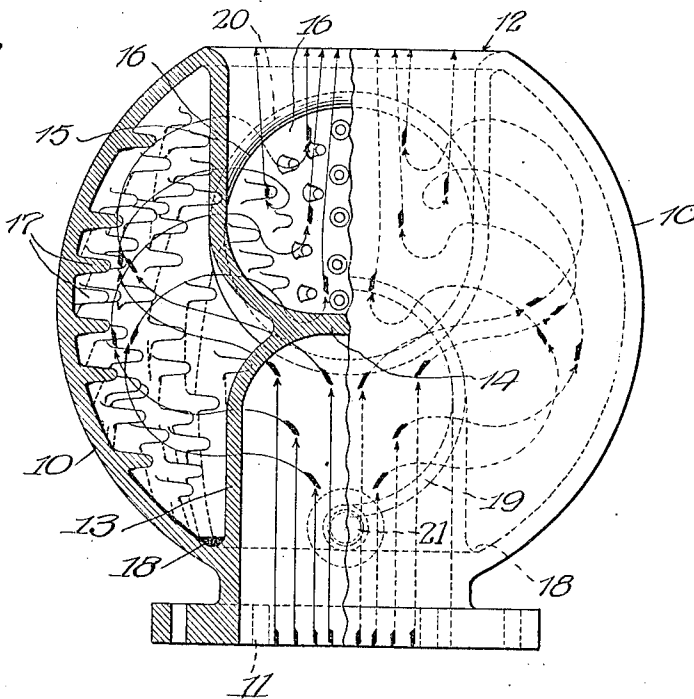


Fig. 2



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EXHAUST-HEAD.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JASPER H. FISHER, a citizen of the United States, residing at Marshalltown, in the county of Marshall and State of Iowa, have invented certain new and useful Improvements in Exhaust-Heads, of which the following is a specification.

This invention relates to improvements in exhaust heads adapted for use on steam and exhaust pipes leading from engines, auxiliaries, etc., and one of the objects of the invention is to provide an improved device of this character for separating water, oil, and heavy substances from the steam, and allowing the steam to pass into the atmosphere while the water, oil, and heavy substances will be collected in the head, to be removed therefrom in any suitable manner. To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts, hereinafter more fully described and claimed and shown in the accompanying drawing illustrating this invention, in which:

Figure 1 is a view partly in elevation and partly in section of an improved device of this character constructed in accordance with the principles of this invention.

Fig. 2 is a view of the parts shown in Fig. 1 taken from the left-hand side of the figure with parts in elevation and partly in section.

Referring more particularly to the drawing, the numeral 10 designates generally a casing which may be constructed of any suitable material of any desired size, and configuration and is provided with an inlet 11 and an outlet 12 to afford a means whereby the steam will pass through the exhaust head.

Arranged within the head and communicating with the inlet opening 11 is an elbow 13 preferably which extends only partially of the length of the casing, and the outlet 14 of the elbow is directed toward one portion of the wall of the casing and terminates short thereof, so that the steam entering the inlet 11 will pass through the elbow 13 to be directed against the wall of the casing, and the diameter of the elbow 13, together with the outlet thereof is of substantially

the same size and configuration as the diameter of the inlet opening 11, which allows a straight flow of the steam, thereby obviating frictional loss.

Communicating with the outlet opening 12 is another elbow 15, the inlet 16 of which is directed away from the outlet 14 of the elbow 13, and this inlet end 16 of the elbow 15 is also spaced from the wall of the casing so as to receive the steam from the casing and direct it through the outlet 12. The diameter of the inlet 16 of the elbow 15 and the outlet opening 12 is somewhat larger than the diameter of the inlet 11 and the elbow 13, so as to provide for the expansion of the steam on its passage through the casing.

Arranged on the inner face of the casing wall and extending laterally therefrom are a plurality of projections or clearly defined fingers 17 which may be of any desired size or shape but preferably of a tapering configuration, and these fingers or projections are arranged in staggered relation with respect to each other so that the steam which is directed against the wall of the casing, will, as it flows over the wall of the casing, pass between these projections 17 and the latter will serve to comb the steam and remove therefrom the oil and heavy particles.

As the steam enters the inlet opening 11 of the casing, it will pass through the elbow 13, and which elbow has the same mean effective area as the exhaust pipe, thereby causing no back pressure on the engine or apparatus to which this exhaust head is connected. The steam will then be deflected or thrown against the inner wall of the casing, or head proper and will change its course so as to flow over the wall of the casing. The steam will then again change its course, passing through the water and oil comb, formed by the projections 17, and which latter will separate any particles of oil, water, or heavy substances which did not adhere to the walls on the first change in the direction of the flow of the steam. The direction of the flow of the steam through the exhaust head is indicated by the arrows. The oil and heavy particles which are thus separated from the steam will flow freely to the bottom of the head where it will be trapped as at 18, and as the steam continues to flow over the wall of the casing it will pass through still more of the projections

17 on the opposite side of the head. This will cause the steam to again change its course and will then enter the inlet opening 16 of the elbow 15, which is, as has
 5 already been stated, of a larger diameter than the elbow 13, and the steam will then flow through the elbow 15 out of the opening 12 into the atmosphere. This entire operation is accomplished without creating
 10 any back pressure on the engine or apparatus to which this exhaust head is connected, as no back pressure on the engine or apparatus is desired at this point.

When the steam, water, and oil come into
 15 contact with the wall or surface of the casing 10, the water, oil, and heavy substances will be thrown to the outer edge and will adhere thereto. To prevent these heavy particles or oil from flowing around the head or casing
 20 which would retard the action of the steam, these projections 17, which operate in the nature of a comb, are placed in the head, all over the inside thereof and opposite the elbows on both sides.

25 One feature of advantage gained by the use of this comb is that the filter fingers or comb 17 will have the tendency to create a vacuum which will suck or draw the heavy substances to the wall of the casing 10,
 30 and the heavy substances thus accumulated will finally flow to the bottom of the casing to be trapped as at 18.

The outlet end 14 of the elbow 15 is so arranged with respect to the wall of the
 35 casing to form a lip as at 19 which acts as a seal to prevent the water and oil from flowing back into the exhaust pipe, which would be the case in the event that this lip 19 is not provided.

40 The inlet 16 of the elbow 15 is similarly shaped to form a lip 20 and operates to deflect back into the casing any water or oil which might by chance be carried around the inside of the head or casing 10 by cen-
 45 trifugal force.

Obviously the water or particles which accumulate as at 18 may be removed there-
 50 from in any desired and suitable manner such as by being tapped off through a discharge 21.

With this improved construction it will be manifest that an effective and efficient separation of the steam from the water, oil, or heavy particles will take place, and it will be
 55 also manifest that the lip or shield 19 formed by the end of the elbow 13 with the casing wall 10 will serve as a means for preventing the water and heavy particles which have been thus accumulated from being en-
 60 trained through the head.

What is claimed as new is;

1. An exhaust head embodying a casing having an inlet and an outlet, means dis-

posed intermediate the inlet and outlet for causing the steam to flow in a tortuous pas- 65
 sage through the casing and for directing the steam against the inner wall of the casing, separate and clearly defined spaced fingers on the wall of the casing arranged in
 70 staggered relation and projecting laterally for a considerable distance from the wall and into the path of movement of the steam through the casing.

2. An exhaust head embodying a casing having an inlet and an outlet, an elbow 75
 within the casing communicating with the said inlet, an elbow within the casing and communicating with the outlet, the outlet of one elbow and the inlet of the other elbow
 80 being disposed adjacent and directed away from each other, the outlet of the elbow which is connected with the inlet of the head terminating short of and adapted to direct
 85 the steam against the wall of the casing, and a plurality of spaced laterally projecting and clearly defined fingers on the casing wall and arranged around the casing to
 90 project a considerable distance from the wall to intercept the steam as it flows through the casing and over said wall, said fingers
 also operating to separate the heavy particles from the steam as the steam flows over said wall.

3. An exhaust head embodying a casing having an inlet and an outlet, means com- 95
 municating with the inlet for directing the steam against the casing wall, means connected with the outlet for receiving the steam from the casing and directing it through
 100 the outlet, means on the casing wall for separating the heavy particles from the steam as the steam flows through the casing, the last recited means embodying a plurality of
 spaced and clearly defined tapering fingers extending laterally from the casing wall for
 105 a considerable distance and into the path of movement of the steam.

4. An exhaust head embodying a casing having an inlet and an outlet, means within 110
 the casing for directing the steam from the inlet against the casing wall, means for causing the steam to flow in a tortuous pas-
 115 sage through the casing, means on the casing wall for separating the heavy particles from the steam and embodying separate and clearly defined laterally projecting fingers
 arranged in staggered relation about the casing wall and projecting for a considerable distance from the wall and between
 120 which projecting fingers the steam flows to comb the heavy particles from the steam, and means for collecting the separated particles.

In witness whereof, I hereunto subscribe my name to this specification.

JASPER H. FISHER.