CLAIMS

1. An auto-ignition prevention device applied to a dust removal device that removes dust adhering to an inner wall surface of a furnace or an outer surface of a heat transfer pipe, comprising:

a pipe to be filled with flammable gas, the pipe being arranged to communicate with a target region;

an expanding pipe having an inner diameter larger than an inner diameter of the pipe and arranged between the pipe and the target region; and

an ejection part configured to eject non-flammable gas from an outer peripheral part of the expanding pipe toward a central part side and form an air curtain, wherein,

the air curtain provides a partition between the expanding pipe and the target region.

2. The auto-ignition prevention device according to claim 1, wherein the expanding pipe has a diameter that continuously increases from the pipe toward the target region.

3. The auto-ignition prevention device according to claim 1 or 2, wherein the ejection part ejects the non-flammable gas in a tilt direction tilted on the target region side relative to a radial direction of the expanding pipe.

4. The auto-ignition prevention device according to any one of claims 1 to 3, wherein the ejection part is provided on the target region side in the expanding pipe.

5. The auto-ignition prevention device according to any one of claims 1 to 4, wherein the ejection part is provided on the pipe side in the expanding pipe.

6. The auto-ignition prevention device according to any one of claims 1 to 5, wherein

the ejection part includes an upstream ejection part disposed upstream in a flow direction of gas flowing through the target region and a downstream ejection part disposed downstream in the flow direction of the gas in the target region, and

an ejection amount of the non-flammable gas from the downstream ejection part is larger than an ejection amount of the non-flammable gas from the upstream ejection part.

7. The auto-ignition prevention device according to any one of claims 1 to 6, wherein a flow rate of the non-flammable gas ejected from the ejection part is set in accordance with a property of the flammable gas.

8. The auto-ignition prevention device according to any one of claims 1 to 7, wherein a flow rate of the non-flammable gas ejected from the ejection part is set in accordance with a property of gas flowing through the target region.