

CLEANING DEVICE**CROSS-REFERENCE TO RELATED APPLICATION**

This application claims priority of Taiwanese Patent
5 Application No. 104215454, filed on September 24, 2015.

FIELD

The disclosure relates to a cleaning device, and more particularly to a cleaning device for cleaning a mixing head of a foaming machine.

10 **BACKGROUND**

A conventional mixing head of a foaming machine has a foam exit. Foam material is injected into the conventional mixing head and ejected from the foam exit for packing. However, oftentimes residues of the foam
15 material remain at the foam exit after usage. Therefore, it is necessary to clean the foam exit after usage in order to prevent partial or complete blockage from occurring.

A conventional cleaning cover is proposed to
20 alleviate the above issue. The conventional cleaning cover is disposed on the conventional mixing head of the foaming machine and defines a cleaning space in which the foam exit is disposed. In addition, the conventional cleaning cover has an injection channel for injecting
25 cleaning fluid into the cleaning space, so the foam exit can be cleaned by the cleaning fluid. However, the foam exit may not be thoroughly cleaned, unless it is

completely bathed by the cleaning fluid.

SUMMARY

Therefore, an object of the disclosure is to provide a cleaning device for cleaning a mixing head, which has
5 a foam exit, of a foaming machine that can alleviate at least one of the drawbacks of the prior art.

The cleaning device includes a gas pipeline, a gas pump, a pressure controller, a closed container, and a cleaning duct.

10 The gas pipeline has an inlet portion, an outlet portion, and a nozzle portion that is adapted to be aligned with the foam exit of the mixing head.

The gas pump is connected to the inlet portion of the gas pipeline for providing gas into the gas pipeline
15 via the inlet portion.

The pressure controller is disposed on the gas pipeline for controlling a flow velocity of the gas passing through the nozzle portion.

The closed container is for storing cleaning solution
20 and communicates with the outlet portion of the gas pipeline.

The cleaning duct communicates with the closed container, and has a duct end that is adjacent to the nozzle portion of the gas pipeline.

25 The cleaning solution in the closed container is expelled by the gas that comes out from the outlet portion of the gas pipeline to flow along the cleaning duct to

the duct end, and is atomized and sprayed out by the gas at the nozzle portion of the gas pipeline for cleaning the foam exit of the mixing head.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Other features and advantages of the disclosure will become apparent in the following detailed description of the embodiments with reference to the accompanying drawings, of which:

10 Figure 1 is a schematic sectional view illustrating a first embodiment of a cleaning device for cleaning a mixing head of a foaming machine according to the disclosure; and

15 Figure 2 is a schematic sectional view illustrating a second embodiment of the cleaning device for cleaning the mixing head according to the disclosure.

DETAILED DESCRIPTION

20 Before the disclosure is described in greater detail, it should be noted that where considered appropriate, reference numerals or terminal portions of reference numerals have been repeated among the figures to indicate corresponding or analogous elements, which may optionally have similar characteristics.

25 Referring to Figure 1, a first embodiment of a cleaning device for cleaning a mixing head 7 of a foaming machine is illustrated. The mixing head 7 has a foam exit 71. The cleaning device includes a gas pipeline 1, a gas pump 2, a pressure controller 3, a closed

container 4, and a cleaning duct 5.

The gas pipeline 1 has an inlet portion 114, an outlet portion 115, and a nozzle portion 121 that is adapted to be aligned with the foam exit 71 of the mixing head 7.

The gas pipeline includes a first pipe 11 and a second pipe 12. The first pipe is a three-pronged pipe, and includes a first segment 111, a second segment 112, and a third segment 113 that communicate with one another. The first, second and third segments 111, 112, 113 have respectively a first open end portion 116, a second open end portion 117, and a third open end portion 118. The first open end portion 116 serves as the inlet portion 114 of the gas pipeline 1. The third open end portion 118 serves as the outlet portion 115 of the gas pipeline 1. The second pipe 12 has a distal open end portion that serves as the nozzle portion 121 of the gas pipeline 1, and a connecting open end portion 122 that is opposite to the distal open end portion.

The gas pump 2 is connected to the inlet portion 114 of the gas pipeline 1 (i.e., the first open end portion 116 of the first segment 111) for providing gas into the gas pipeline 1 via the inlet portion 114.

The pressure controller 3 is disposed on the gas pipeline 1, and interconnects the second open end portion 117 of the first pipe 11 and the connecting open end portion 122 of the second pipe 12, so that a flow velocity

of the gas which flows therethrough from the first pipe 11 to the second pipe 12, i.e., the flow velocity of the gas passing through the nozzle portion 121, can be controlled. In this embodiment, the pressure controller
5 3 may be implemented, but not limited thereto, to decrease the flow velocity of the gas in the second pipe 12, so that the flow velocity of the gas in the second pipe 12 is slower than that in the first pipe 11.

The closed container 4 defines a closed space for
10 storing cleaning solution 8 therein, and communicates with the outlet portion 115 of the gas pipeline 1, i.e. the third open end portion 118.

The cleaning duct 5 communicates with the closed container 4 for transmitting the cleaning solution 8
15 therein, and is partly disposed in the gas pipeline 1. In this embodiment, a portion of the cleaning duct 5 is disposed in and extends along a portion of the third segment 113 of the first pipe 11, and another portion of the cleaning duct 5 is disposed in and extends along
20 a portion of the second pipe 12 and has a duct end 51 that is adjacent to and communicates with the nozzle portion 121 of the gas pipeline 1.

Besides, it is worth noting that the cleaning device further includes a positioning mechanism 6, which is
25 a combination of two blocks for positioning the portion of the third segment 113 of the first pipe 11, the portion of the second pipe 12, and the cleaning duct 5.

When using the cleaning device, the nozzle portion 121 is aligned with the foam exit 71 of the mixing head 7, and the gas pump 2 supplies pressured gas into the gas pipeline 1 via the inlet portion 114. In addition, 5 the pressure controller 3 controls the flow velocity of the gas which flows therethrough from the first pipe 11 to the second pipe 12. The cleaning solution 8 in the closed container 4 is then expelled by the gas that comes out from the outlet portion 115 of the gas pipeline 1 to flow along the cleaning duct 5 to the duct end 51, 10 and is atomized and sprayed out by the gas at the nozzle portion 121 of the gas pipeline 1 for cleaning the foam exit 71 of the mixing head 7. Furthermore, it should be noted that the pressure controller 3 may be used to control the level of atomization of the cleaning solution 8. 15

Referring to Figure 2, a second embodiment of the cleaning device of this disclosure is illustrated. The second embodiment is similar to the first embodiment 20 but has some variations as addressed in the following section.

The first segment 111 of the first pipe 11 has a first subsegment 1111 and a second subsegment 1112. The first subsegment 1111 is connected to the third segment 113 25 of the first pipe 11, and has an opening portion that is connected to the gas pump 2. The second subsegment 1112 is connected to the second segment 112 of the first

pipe 11, is spaced apart from the first subsegment 1111, and has an opening portion that is connected to the gas pump 2. The opening portions of the first and second subsegments 1111 and 1112 cooperatively serve as the
5 inlet portion 114 of the gas pipeline 1.

In summary, the cleaning device of this disclosure is capable of atomizing the cleaning solution 8 and spraying out the same evenly to the foam exit 71 by the gas at the nozzle portion 121 of the gas pipeline 1.
10 As a result, the foam exit 71, which is aligned with the nozzle portion 121, can be effectively cleaned.

In the description above, for the purposes of explanation, numerous specific details have been set forth in order to provide a thorough understanding of the embodiments. It will be apparent, however, to one skilled in the art, that one or more other embodiments may be practiced without some of these specific details. It should also be appreciated that reference throughout this specification to "one embodiment," "an
15 embodiment," an embodiment with an indication of an ordinal number and so forth means that a particular feature, structure, or characteristic may be included in the practice of the disclosure. It should be further appreciated that in the description, various features
20 are sometimes grouped together in a single embodiment, figure, or description thereof for the purpose of streamlining the disclosure and aiding in the

understanding of various inventive aspects.

CLAIMS

1. A cleaning device for cleaning a mixing head of a foaming machine, the mixing head having a foam exit, said cleaning device comprising:

5 a gas pipeline having an inlet portion, an outlet portion, and a nozzle portion that is adapted to be aligned with the foam exit of the mixing head;

 a gas pump connected to said inlet portion of said gas pipeline for providing gas into said gas pipeline
10 via said inlet portion;

 a pressure controller disposed on said gas pipeline for controlling a flow velocity of the gas passing through said nozzle portion;

 a closed container for storing cleaning solution and
15 communicating with said outlet portion of said gas pipeline; and

 a cleaning duct communicating with said closed container, and having a duct end that is adjacent to said nozzle portion of said gas pipeline;

20 wherein the cleaning solution in said closed container is expelled by the gas which comes out from said outlet portion of said gas pipeline to flow along said cleaning duct to said duct end, and is atomized and sprayed out by the gas at said nozzle portion of
25 said gas pipeline for cleaning the foam exit of the mixing head;

 wherein said gas pipeline includes

a first pipe having a first open end portion that serves as said inlet portion of said gas pipeline, a second open end portion, and a third open end portion that serves as said outlet portion of said gas pipeline,
5 and

a second pipe having a distal open end portion that serves as said nozzle portion of said gas pipeline, and a connecting open end portion that is opposite to said distal open end portion;

10 said pressure controller interconnects said second open end portion of said first pipe and said connecting open end portion of said second pipe for controlling the flow velocity of the gas which flows therethrough from said first pipe to said second pipe; and

15 wherein level of atomization of the cleaning solution is controlled by said pressure controller.

2. The cleaning device as claimed in claim 1, wherein said duct end of said cleaning duct communicates with
20 said nozzle portion of said gas pipeline.

3. The cleaning device as claimed in claim 2, wherein said cleaning duct is partly disposed in said gas pipeline.

25 4. The cleaning device as claimed in claim 1, wherein said first pipe is a three-pronged pipe.

5. The cleaning device as claimed in claim 1, wherein
said first pipe of said gas pipeline includes a first
segment, a second segment, and a third segment that
5 communicate with one another, said first, second and
third segments having respectively said first, second
and third open end portions of said first pipe.

6. The cleaning device as claimed in claim 1, wherein:
10 said first pipe of said gas pipeline includes a first
segment, a second segment, and a third segment having
respectively said first, second and third open end
portions of said first pipe; and

said first segment of said first pipe has
15 a first subsegment connected to said third segment
of said first pipe, and having an opening portion that
is connected to said gas pump, and

a second subsegment connected to said second
segment of said first pipe, spaced apart from said first
20 subsegment, and having an opening portion that is
connected to said gas pump, said opening portions of
said first and second subsegments cooperatively serving
as said inlet portion of said gas pipeline.

25 7. The cleaning device as claimed in claim 1, further
comprising a positioning mechanism for positioning at
least a portion of said gas pipeline and said cleaning

duct.