



(12) **EUROPEAN PATENT APPLICATION**

(21) Application number : **95830078.2**

(51) Int. Cl.<sup>6</sup> : **F24H 9/00, F28F 13/00**

(22) Date of filing : **06.03.95**

(30) Priority : **06.04.94 IT MI940248 U**  
 (43) Date of publication of application :  
**11.10.95 Bulletin 95/41**  
 (84) Designated Contracting States :  
**AT BE CH DE DK ES FR GB IE LI NL PT**  
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(54) **Pipe assembly for conveying fumes in steel boilers provided with condensate quick evaporating means.**

(57) The present invention relates to a pipe assembly for conveying fumes in steel boilers provided with condensate quick evaporating means, characterized in that it comprises an inner pipe and an outer pipe which define a closed gap therebetween.

The main feature of the invention is that between the inner pipe and outer pipe are provided contacting lines extending according to parallel lines which are either helicoidal or not.

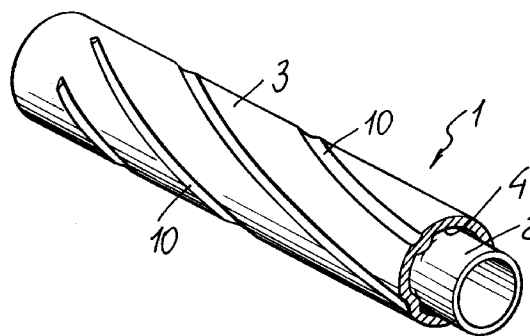


FIG. 1

## BACKGROUND OF THE INVENTION

The present invention relates to a pipe assembly for conveying fumes in steel boilers provided with condensate quick evaporating means.

As is known, a problem to be solved in making boilers is that of the combustion product condensate formed in the fume conveying pipes and which causes a quick wear of the boilers.

In particular, with respect to boilers made of steel, the lacking of fins, which can be hardly formed, greatly facilitates a collection of the condensate at cold regions.

## SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to solve the above mentioned problem, so as to reduce the condensate materials and facilitate an evaporation of said condensate materials, during the idle periods in the operation of the burner device associated with the boiler.

Within the scope of the above mentioned aim, a main object of the present invention is to provide a fume conveying pipe assembly in which the surfaces contacting the fumes are cooled very slowly so as to facilitate the evaporation of possible condensate materials.

Another object of the present invention is to provide such a fume conveying pipe assembly which is very reliable and safe in operation and which can be easily made starting from easily available elements and materials and which, moreover, is very competitive from a mere economic standpoint.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a pipe assembly for conveying fumes in steel boilers provided with condensate quick evaporating means, characterized in that said pipe assembly comprises an inner pipe and an outer pipe, which define a closed gap therebetween, between said inner pipe and outer pipe being provided contacting lines extending according to parallel lines which are either parallel or not.

## BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the invention will become more apparent hereinafter from the following detailed disclosure of a pipe assembly for conveying fumes in steel boilers provided with condensate quick evaporating means which is illustrated, by way of an indicative, but not limitative, example in the figures of the accompanying drawings, where:

Figure 1 is a perspective view illustrating the fume conveying pipe assembly according to the

present invention;

Figure 2 is an elevation view illustrating the fume conveying pipe assembly according to the invention;

Figure 3 is a cross-longitudinal view illustrating the fume conveying pipe assembly of the invention; and

Figure 4 is a cross-sectional view illustrating the fume conveying pipe assembly according to the invention.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the number references of the above mentioned figures, the fume conveying pipe assembly, specifically designed for steel boilers provided with condensate quick evaporating means, according to the present invention, which has been generally indicated at the reference number 1, comprises an inner pipe 2 and an outer pipe 3, coaxial with respect to one another, and so arranged as to define a closed gap 4 therebetween.

The inner pipe, at the end portions thereof, is enlarged so as to perfectly abut against the outer pipe, thereby said gap 4 is perfectly closed and has substantially an even thickness.

The heat conduction between the inner pipe and outer pipe is obtained by contacting lines 10 extending with a helical pattern and which are obtained by a drawing on the outer pipe.

The provision of the above mentioned gap allows to satisfactorily solve the condensate problem, since the air gap will reduce the generation of cool regions susceptible to favour the formation of condensate materials.

Moreover, with respect to prior solutions, the contacting surface between the two pipes being the same, there will be obtained a smaller spacing of the contacting points, with a consequent greater heating speed or rate of the surfaces between the contacting points.

This is very important since, as the burner associated with the boiler is disenergized, the mentioned surfaces will be cooled with a smaller rate and, accordingly, will facilitate the evaporation of the condensate material.

From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

In particular, the fact is to be pointed out that, owing to the provision of the helical lines, it is greatly improved the operation of the fume conveying steel pipes used in the boilers.

In practicing the invention, the used materials, as well as the contingent size and shapes can be any, depending on requirements.

**Claims**

1. A pipe assembly for conveying fumes in steel boilers provided with condensate quick evaporating means, characterized in that said pipe assembly comprises an inner pipe and an outer pipe, which define a closed gap therebetween, between said inner pipe and outer pipe being provided contacting lines extending according to parallel lines which are either parallel or not.  
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2. A pipe assembly according to Claim 1, characterized in that said inner pipe is enlarged at the end portions thereof, in order to tightly contact the outer pipe and close said gap.  
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3. A pipe assembly according to the preceding Claims, characterized in that the helical contacting lines are substantially parallel to one another.  
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4. A pipe assembly according to one or more of the preceding Claims, characterized in that said contacting line are made by drawing the outer pipe.  
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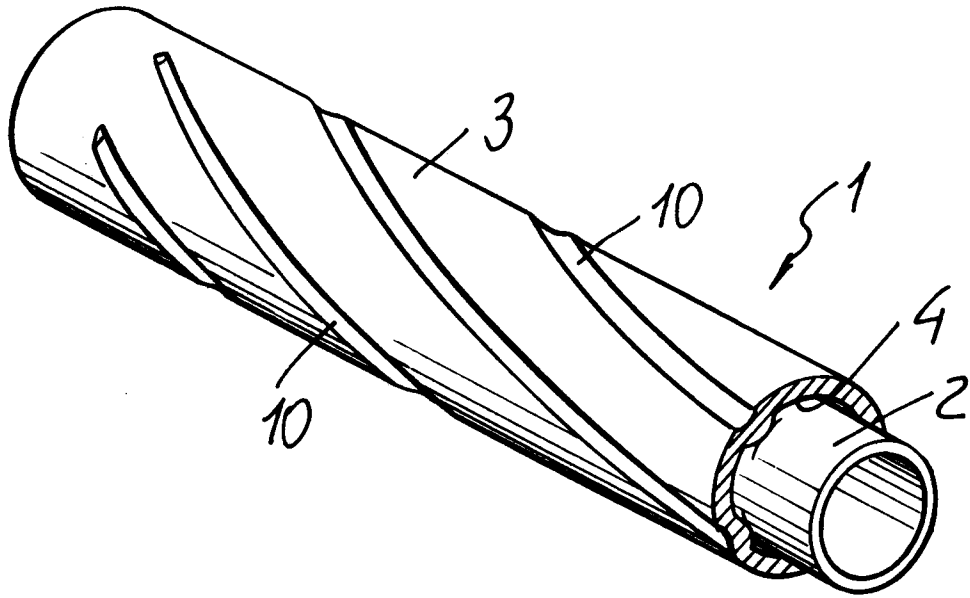


FIG. 1

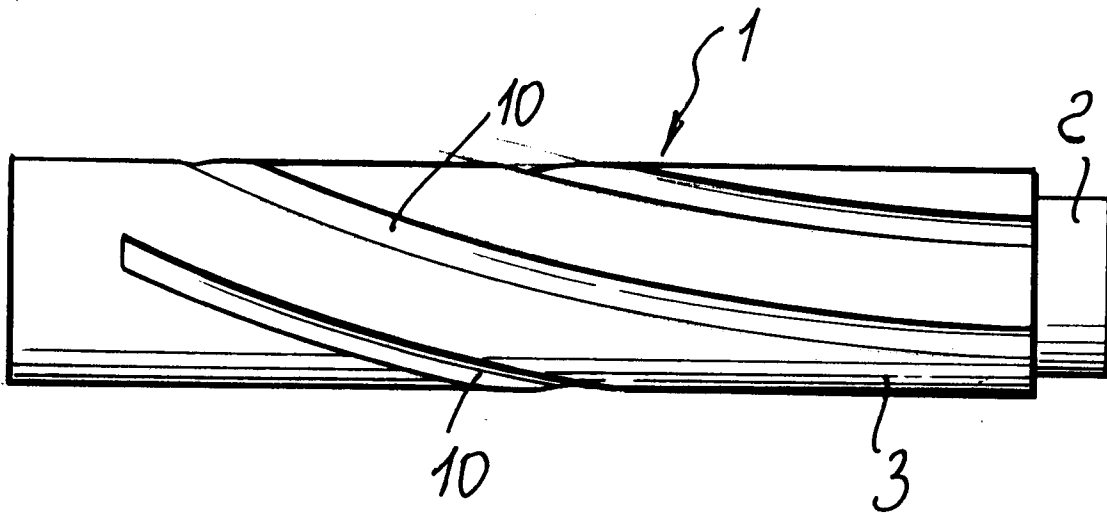


FIG. 2

