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(71) Applicant: **Apros S.r.l.**
35010 S. Giorgio delle Pertiche (IT)

(72) Inventor: **Nalon, Luigi**
35010 S. Giorgio delle Pertiche (PD) (IT)

(74) Representative: **Vinci, Marcello**
Ufficio Veneto Brevetti
Via Sorio 116
35141 Padova (IT)

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(54) **Flue with jacket and spacers**

(57) The invention is a new flue (F) for stoves and fireplaces in general, with jacket (C) fastened externally by means of one or more perforated spacers (A), so as to provide an air space (K) between the wall of said flue (F) and the wall of said jacket (C) for convective circulation of the air (W), and wherein said air space (K) com-

municates with the outside via one or more apertures or air passages (P). Each of said spacers (A) comprises a flat part (R), with shape corresponding to the air space (K), and a plurality of tabs (E, I) for fastening to the wall of said jacket (C) and to the wall of said flue (F). Said jacket (C) can also be applied to existing flues.

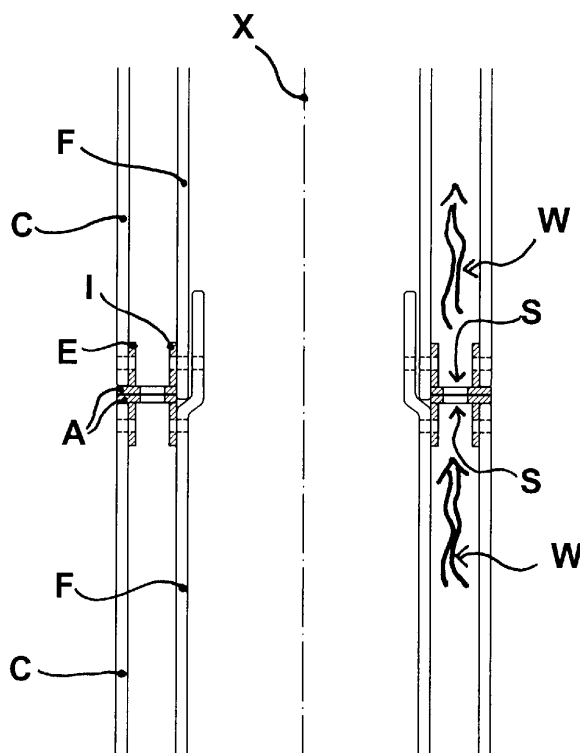


Fig. 2

Description

[0001] The present patent concerns flues for stoves and fireplaces in general and in particular concerns a new flue with jacket and spacers.

[0002] The use of stoves and fireplaces in general for indoor heating is widespread. The two most important component elements of said stoves or fireplaces are substantially the combustion chamber, inside which combustion of the combustible material, such as wood, coal or other, takes place, and the flue or chimney.

[0003] The flue or chimney, in particular, has the function of conveying the combustion fumes out of the building.

[0004] Said combustion chamber and said flue are made of refractory materials which are resistant to heat and to the corrosive action of the acid combustion residues. For example flues can be made of concrete, cast iron, asbestos cement or, preferably, stainless steel, the smooth walls of which facilitate ascent of the smoke and prevent adhesion of the soot. Furthermore, stainless steel is able to withstand mechanical stress deriving from thermal expansion and sudden changes in temperature.

[0005] Flues have a preferably circular section which guarantees a better draught, since the smoke evenly laps the whole inner surface of the flue, thus heating it uniformly.

[0006] The use of insulating materials for flue insulation, necessary to reduce heat loss, thus preventing the combustion fumes from cooling excessively and consequently causing draught problems, is known.

[0007] The flue can comprise a first exposed section, providing the connection between the stove or fireplace, positioned in the room to be heated, and the chimney, i.e. the section of flue embedded in the wall. It is preferable for said exposed section to be as short as possible to prevent excessive cooling of the fumes inside.

[0008] The practice of using the heat radiated by the exposed section of flue as an additional heating source is known. The flue, in fact, heated by the combustion fumes passing through it, radiates heat in the surrounding environment.

[0009] To remedy all the above-mentioned drawbacks, a new type of flue with jacket and spacers has been designed and produced.

[0010] The main object of the present invention is to provide a flue that is adequately insulated.

[0011] A further object of the present invention is to prevent direct contact with the flue, protecting users from accidental burns.

[0012] A further object of the present invention is to ensure that the jacket can be fastened to the flue in a stable correct manner.

[0013] A further object of the present invention is to exploit the heat radiated by the flue, as an additional source of heating for the rooms in which the stove or fireplace is located.

[0014] A further object of the present invention is to

constitute an external element which can also be used as a decorative element, not subject to the technical limits imposed by an ordinary single flue.

[0015] A further object of the present invention is to make installation thereof possible also on existing flues.

[0016] These and other direct and complementary objects have been achieved through the construction of the new flue with jacket and relative spacers for fastening said jacket.

[0017] The present invention consists in its main parts of a flue, of known type, with preferably circular section and made of stainless steel or other material that can withstand not only the heat of the combustion fumes but also the corrosive action of the acid combustion residues.

[0018] The present invention comprises a further duct, or jacket, having section of any shape, for example corresponding to the shape of the flue section but with larger dimensions.

[0019] Said jacket and said flue are positioned coaxially so as to provide an air space between the cylindrical wall of the flue and the cylindrical wall of said jacket.

[0020] Said jacket is fastened to said flue by means of a plurality of spacers, with shape corresponding to the shape of the air space, i.e. annulus-shaped in the case of jacket and flue with circular section.

[0021] Each of said spacers is fixed between said flue and said jacket, i.e. between the outer wall of the flue and the inner wall of the jacket.

[0022] Said spacers therefore have the main function of maintaining said jacket in a position coaxial with said flue, so that the air space has a constant section.

[0023] Said air space also performs the important function of insulating the flue, thus preventing the combustion fumes from cooling excessively during ascent.

[0024] Furthermore, the air contained in the air space heats up and, by convection, tends to move upwards. Said spacers are perforated to let the air circulate into the air space. Furthermore, to allow said hot air passing through the air space to flow out and contribute to heating of the surrounding environment, said jacket can be positioned so as to provide one or more apertures or air passages, for example near the base of the flue, where the connection with the stove or chimney is made, and/or near the top of the exposed section of flue, i.e. where said flue penetrates into the wall or ceiling.

[0025] Said jacket also has the important function of preventing accidental contact with the surface of the flue, which, during passage of the combustion fumes, reaches very high temperatures.

[0026] Said jacket also has an aesthetic function, particularly if applied, by means of said spacers, to existing flues, the outer surfaces of which may be worn due to prolonged use.

[0027] A further advantage deriving from the use of said jackets lies in that they can have any shape, while it is preferable for said flue to have a circular section to ensure a good draught.

[0028] The attached drawing shows, by way of non-

limiting example, a practical embodiment of the invention.

[0029] Figure 1 shows one of said spacers, while figure 2 schematically shows the connection point between two adjacent sections of flue and jacket.

[0030] Figure 3 shows the new invention fully assembled.

[0031] The flue (F) is a duct with a preferably circular section made of ordinary or stainless steel.

[0032] The jacket (C) is positioned coaxially to said flue (F) and has a shape corresponding to the section of the flue, but with larger dimensions. In this way, between said jacket (C) and said flue (F), an air space (K) is provided, inside which a flow of air (W) circulates.

[0033] To guarantee stable correct positioning of said jacket (C) outside the flue (F), said jacket (C) is fastened to the flue (F) by means of a plurality of spacers (A), each having a section substantially corresponding to the section of said air space (K).

[0034] In the case of flue (F) and jacket (C) with circular section, said spacers (A) comprise a flat annulus (R), of dimensions such as to be inserted inside said air space (K), in a position substantially square to the longitudinal axis (X) of said flue (F) and said jacket (C).

[0035] For fastening said spacers (A) to said jacket (C) and to said flue (F), each of said spacers (A) comprises a plurality of tabs (E, I) distributed in a perimeter fashion around both the smaller and larger diameters of said annulus (R).

[0036] In particular, said outer tabs (E) and inner tabs (I) are positioned square to the plane on which the annulus (R) lies, so as to adhere to the inner wall of the jacket (C) and to the outer wall of the flue (F), respectively.

[0037] Said tabs (E, I) are preferably provided with one or more holes (V) for the insertion of screws for fastening the spacers (A) to the jacket (C) and to the flue (F).

[0038] Said tabs (E, I) are preferably distributed uniformly along the larger and smaller circumferences of the annulus (R) of the spacers (A).

[0039] In particular, each of said spacers (A) preferably comprises at least 4-6 tabs (I) on the inner diameter and at least 6-8 tabs (E) on the outer diameter. This guarantees maintenance of the roundness, particularly of the jacket (C).

[0040] Each of said spacers (A) also comprises one or more apertures (S), provided on the annulus (R), to permit the circulation of air (W) inside said air space (K).

[0041] To permit air circulation between the outside and inside of said air space (K), said jacket (C) is positioned so as to provide one or more apertures or air passages (P), for example between two adjacent sections constituting the jacket (C) or near the base of the flue (F), where the connection is made with the stove or fireplace (B), and near the top of the exposed section of flue (F), where said flue (F) penetrates into the wall.

[0042] While it is preferable for said flue (F) to have a circular section, said jacket (C) can have any section, for example elliptical, hexagonal, etc. In said case, also the outer perimeter of each of said spacers shall have a

shape corresponding to the shape of said section, i.e. elliptical, hexagonal etc.

[0043] Therefore, with reference to the preceding description and the attached drawings, the following claims are made.

Claims

1. Flue (F) for stoves and fireplaces in general, **characterised in that** it comprises at least one jacket (C) fastened externally to said flue (F) by means of one or more spacers (A) provided with holes or apertures (S), so as to provide an air space (K) between the wall of said flue (F) and the wall of said jacket (C) for convective circulation of the air (W), and wherein said air space (K) communicates with the outside via one or more apertures or air passages (P).
2. Flue (F) according to claim 1, **characterised in that** each of said spacers (A) comprises:
 - a flat part (R), with shape corresponding to the section of said jacket (C), with at least one central aperture with shape corresponding to the section of said flue (F) for insertion of said flue (F), and wherein on said flat part (R) one or more apertures (S) are obtained for passage of the air;
 - a plurality of tabs (E, I), distributed along the outer and inner perimeters of said flat part (R), in a position square to the plane on which said flat part (R) lies, for fastening to the wall of said jacket (C) and to the wall of said flue (F);
 - and wherein said spacers (A) are inserted in said air space (K) transversally to the longitudinal axis (X) of said jacket (C) and said flue (F).
3. Flue (F) according to claims 1, 2, **characterised in that** said jacket (C) has a circular section.
4. Flue (F) according to claims 1, 2, **characterised in that** said jacket (C) has an elliptical, hexagonal etc. section.
5. Flue (F) according to claims 1, 2, 3, 4, **characterised in that** said tabs (E, I) of each spacer (A) each comprise at least one hole (V) for the passage of screws or other means for fastening said spacers to said jacket (C) and to said flue (F).
6. Flue (F) according to claims 1, 2, 3, 4, 5, **characterised in that** said tabs (E, I) are distributed uniformly along the inner and outer perimeters of each of said spacers (A).
7. Flue (F) according to claims 1, 2, 3, 4, 5, 6, **characterised in that** the outer perimeter of said spacer (A) comprises 6-8 of said tabs (E), to guarantee

maintenance of the roundness of said jacket (C).

8. Flue (F) according to the previous claims, **characterised in that** said apertures or air passages (P) are positioned near the base and/or near the top of said flue (F) and/or at the connection points between two continuous sections of said jacket (C). 5
9. Jacket (C) according to the previous claims, **characterised in that** it can be applied also to existing flues. 10

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