IN-FIREPLACE ROOM AIR CONDITIONER

Inventor: Taiming Chen, Los Gatos, CA (US)

Correspondence Address:
Taiming Chen
150 Forest Hill Dr
Los Gatos, CA 95032 (US)

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ABSTRACT

This air conditioner system is designed to air condition a room from within an existing fireplace instead of a window opening, and the hot air heated by the air conditioner’s condenser will exit out of fireplace chimney to outside. The air conditioner machine also blocks fireplace opening and maintains separated interior room air circulation and air circulation to cool down air conditioner’s condenser.
IN-FIREPLACE ROOM AIR CONDITIONER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to and claims priority from U.S. Provisional Patent Application Ser. No. 60/647,283 filed on Jan. 27, 2005.

FIELD OF THE INVENTION

[0002] The present invention relates, in general, to an air conditioner system and, more particularly, this invention relates to an air conditioner system that mounts within the opening of a conventional fireplace that has a chimney instead of a window opening.

BACKGROUND OF THE INVENTION

[0003] The instant invention relates generally to an air conditioner system that mounts within the opening of a fireplace instead of a window opening.

[0004] Conventional window air conditioner either needs a special window for mounting or has to occupy part of an existing window. When air conditioner mounts on an existing window, it blocks some view of window and can be an eye sore. Special air conditioner window requires certain cost and some work on a house which may not be welcomed everywhere.

[0005] Fireplace opening, however, is not used and even requires some covering during hot summer season. This invention provides air conditioner function and also covers fireplace opening.

[0006] There is one devices have been provided in the prior art that are adapted to support air conditioner within fireplace opening. U.S. Pat. No. 4,916,918 to Marelli Douglas A. While this unit maybe able to mount air conditioner within fireplace and put it to work, it draws cool air from interior room to cool down condenser of air conditioner. Which make this design has lower efficiency.

BRIEF SUMMARY OF THE INVENTION

[0007] A primary object of the present invention is to provide an air conditioner system that is able to work within fireplace opening with high efficiency and does not require a window opening to mount nor will not block window view.

[0008] Another object is to provide an air conditioner system that blocks fireplace opening and isolates interior cool room air from hot air outside of room or heated air produced by air conditioner condenser. Hot air heated by the condenser section of the air conditioner will be send up through chimney of fireplace to outside of building.

[0009] The present invention is especially designed for seasonal use of air conditioner vs. fireplace. Portable design allows easy installation and quickly removing air conditioner unit for storage and to reuse fireplace function at cold weather or winter time. No rework on fireplace or building is required.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a view of a J-shape duct of the present invention for mounting on top edge of chimney and for intake fresh air from outside of building.

[0011] FIG. 2 shows a view of air conditioner machine of the present invention.

[0012] FIG. 3 is a section view of the present invention works in a fireplace, particular showing two separated air circulation of interior room air and air inside of fireplace or chimney.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] Prior to proceeding to the more detailed description of the present invention, it should be noted that, for the sake of clarity and understanding, identical components which have identical functions have been identified with identical reference numerals throughout the several views illustrated in the drawing figures.

[0014] FIG. 1 shows a J-shape first air duct 11 that is rigid and can be mounted on the wall edge of chimney top. It has supporting bracket 12 for secure mounting on chimney wall, an intake end 13 that takes fresh air from outside of building or chimney, its J-shape body turns air flow downward into chimney and another opening 14 for connecting to a second air duct 15. The size of duct must be able to fit inside of a chimney and does not completely block air flow inside of a chimney. A mesh is used at its air intake end 13 to prevent small animal or insects from getting into the air duct.

[0015] FIG. 2 shows the air conditioner machine 1 which has two boxes body. Its first box 1 is small enough to fit through a fireplace opening 21, yet its second box, the fascia box, 2 is big enough to block fireplace opening in order to isolate interior room and wood burning space 30 of fireplace. On top of its first box 1, there is an air receiver opening 3 that should be connected to air duct 15 in order to take fresh air flow. On the side of first box, there are hot air vents 8 to vent heated air into inside of fireplace 30. On the room facing side of its second box 1, there are warm air intake 4 and cold air vent 5 for interior room air circulation. On the contact surface with fireplace wall of second box, there are rubber seals 6 to ensure tight air isolation between interior room and inside of fireplace.

[0016] FIG. 3 shows the air conditioner machine 1 mounted on the opening of fireplace 21, the J-shape air duct 11 mounted on edge of chimney top 20. There is another air duct 15 conducts fresh air 31 from the J-shape duct 11 to air conditioner machine 1. A height adjustable stand 17 is placed on inner floor of fireplace 30 to support air conditioner machine to be level with fireplace opening sill. A set of wheels 7 is under air conditioner second box 2 for easy moving this air conditioner machine.

[0017] In FIG. 3, where also contain roofline 22, room ceiling 24, interior wall 23, fireplace and chimney outer wall 20.

[0018] When air conditioner machine 1 is put to work within fireplace space 30, one side of it stands on height adjustable stand 17 so that the air conditioner machine 1 can be leveled with fireplace opening sill where the other side stands on. The inside surface of its oversized second box 2 makes contact against fireplace opening wall 21 with rubber seals 6 in between to isolate interior room air with air inside fireplace or chimney. A cooling fan 9 inside of air conditioner machine 1 pulls fresh air 31 from outside of building to enter J-shape first air duct from its opening 13 and pass
through itself 11 as well as the second air duct 15 to reach to air conditioner machine 1. Inside of air conditioner machine 1, fresh air 31 cools down the hot working air conditioner condenser, and brings exhaust heat with it into inner space of fireplace 30. Inside the sealed fireplace space 30, heated air 32 has no place to go but get pushed upward and exits out of chimney to outside. Another fan inside of air conditioner machine 1 circulates interior room air 33 and heat exchanges it into cold air 34, and then sends it back into interior room. The second air duct is hanged from first duct so a flexible and extendable air duct will make the installation much easier.

I claim:

1. An air conditioner system, for operating air condition function for interior room from within a fireplace, which comprises:
   (a) a rigid first air duct with supporting bracket for securing itself over the top edge of a chimney wall, and its J-shape body allows it to intake fresh air from outside of chimney and guides it downward into chimney, and it also provides a hanging point for the second air duct;
   (b) a second air duct connects to and hangs from said first air duct for continue guiding fresh air flow downward inside of chimney, the other end of said second air duct connects to an air conditioner machine to provide fresh air flow originated from outside of building for cooling down air conditioner condenser;
   (c) a air conditioner machine has a first part that can fit through a fireplace opening and into its wood burning space, and a oversize second part that fits over fireplace opening to seal against fireplace wall for isolating interior room air from air inside of fireplace, said second air duct connects to first part of air conditioner machine to provide a channel for fresh air, and air heated by air conditioner machine is pushed out into inside space of fireplace and eventually is pushed to outside through chimney.

2. The air condition system, according to claim 1, wherein the second air duct maybe flexible and extendable.

3. The air conditioner system, according to claim 1, wherein the first part of air conditioner machine stands on a height adjustable stand rose from inner floor of fireplace to keep it level with fireplace opening sill.

4. The air condition system, according to claim 1, wherein the second part of air conditioner has rubber seals to fit against fireplace room facing side wall.

5. The air condition system, according to claim 1, wherein the second part of air conditioner machine can be detached from the first part for easy packing and shipping.

6. The air condition system, according to claim 1, wherein the air conditioner machine may have a predetermined plurality of wheels underneath for easy moving.

7. The air conditioner system, according to claim 1, wherein the opening of first air duct has mesh or grill guard to stop small animal or insects from getting into.

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