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(54) **AIR FLOW EXTENSION SYSTEM FOR AIR FLOW REGISTERS**

(57) **ABSTRACT**

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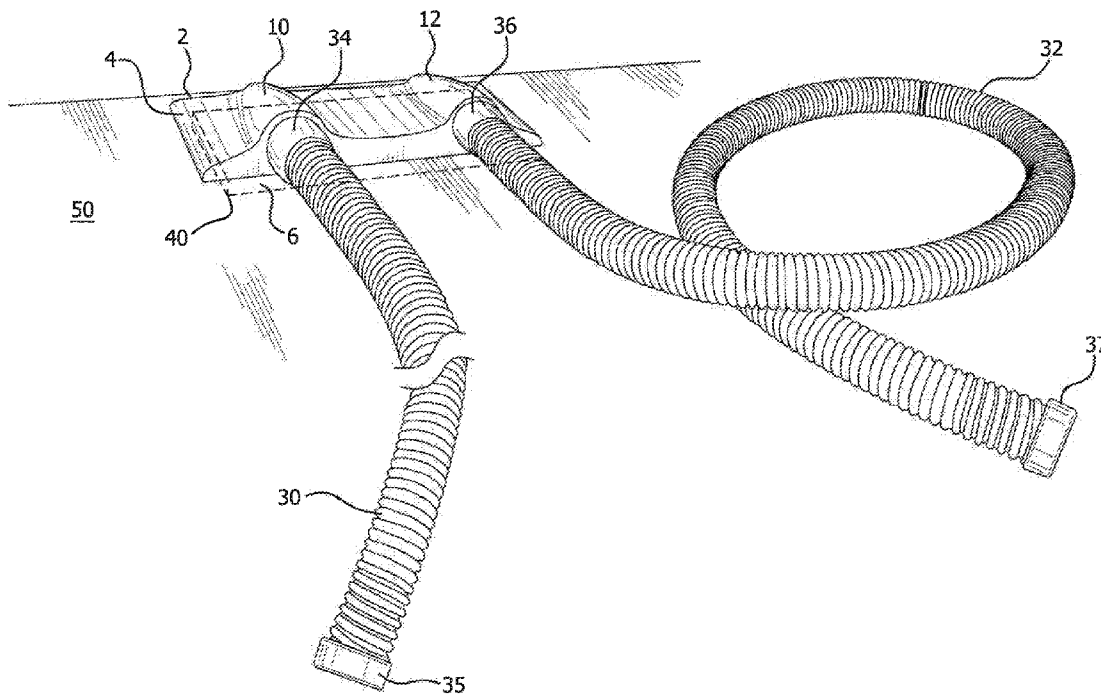
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An air flow extension system has a collection compartment with a lower section and an upper section having a plurality of tapered air flow accumulation chambers. An open interior space is located within the collection compartment. Each of the accumulation chambers has an air flow discharge opening into which air flow lines are removeably attached. The lower section of the collection compartment is fitted so that it can be snugly positioned within and over an open air flow register and remain in this position without the use of outside attachment devices. Air flows from the air flow duct through the register, into the upper section, and is accumulated in the accumulation chambers for ultimate discharge out of the openings into the air flow lines, where the air is dispensed to different locations at various distances from a register.



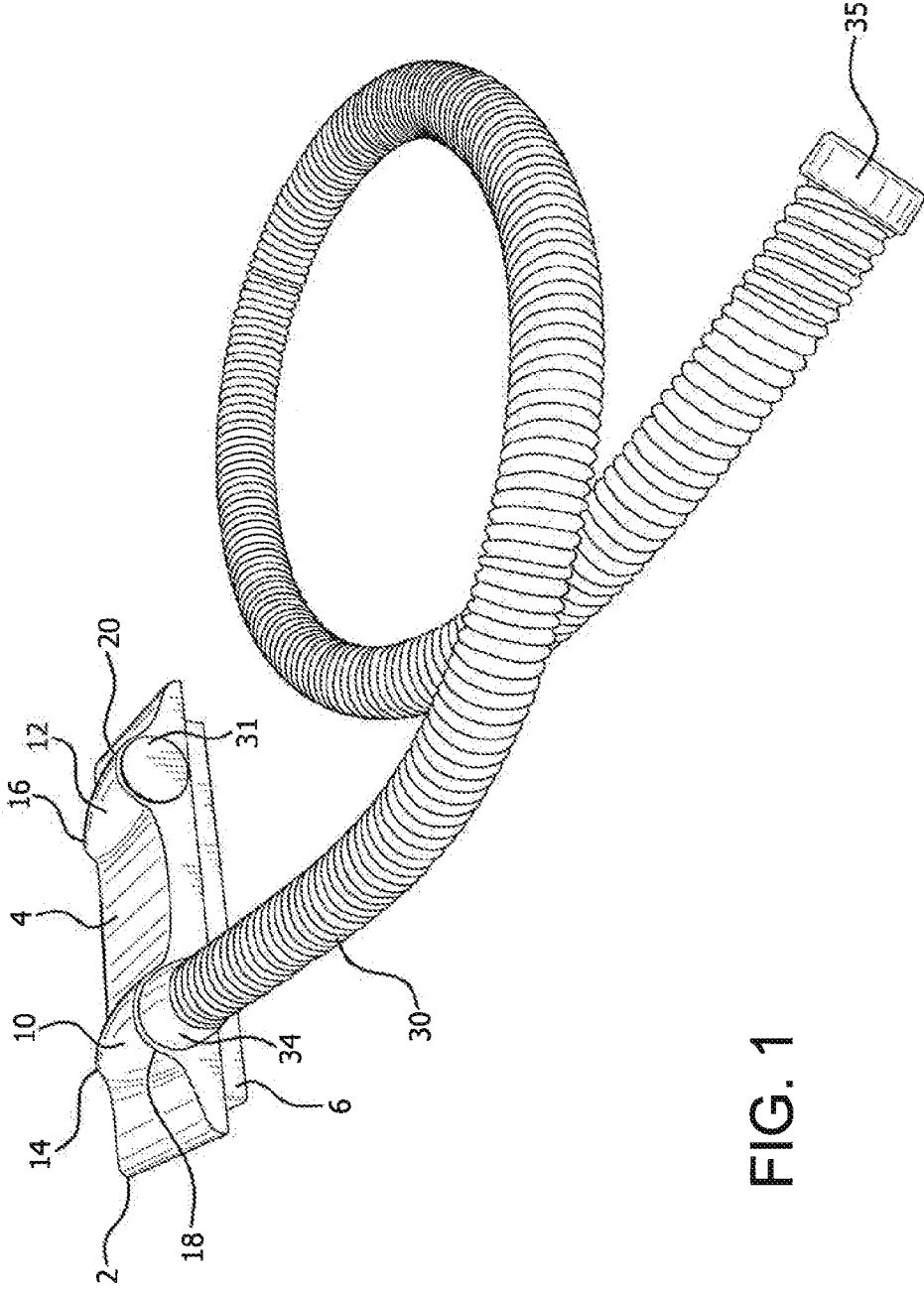


FIG. 1

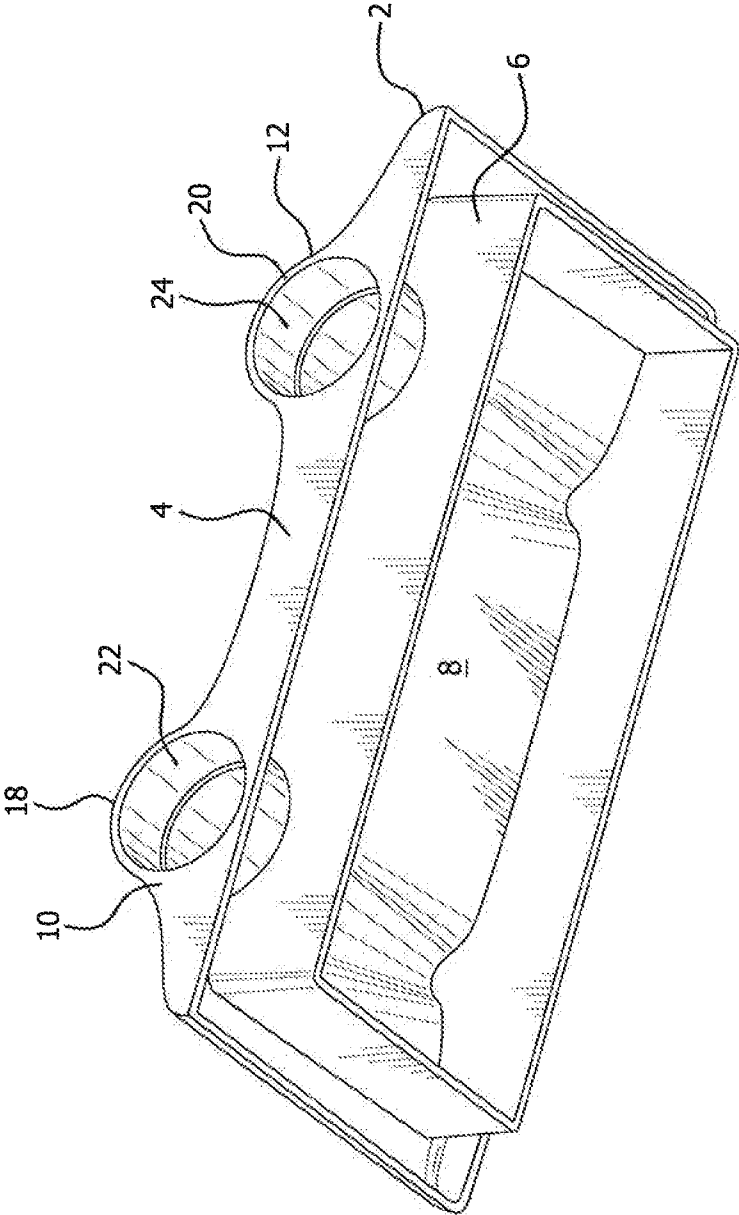


FIG. 2

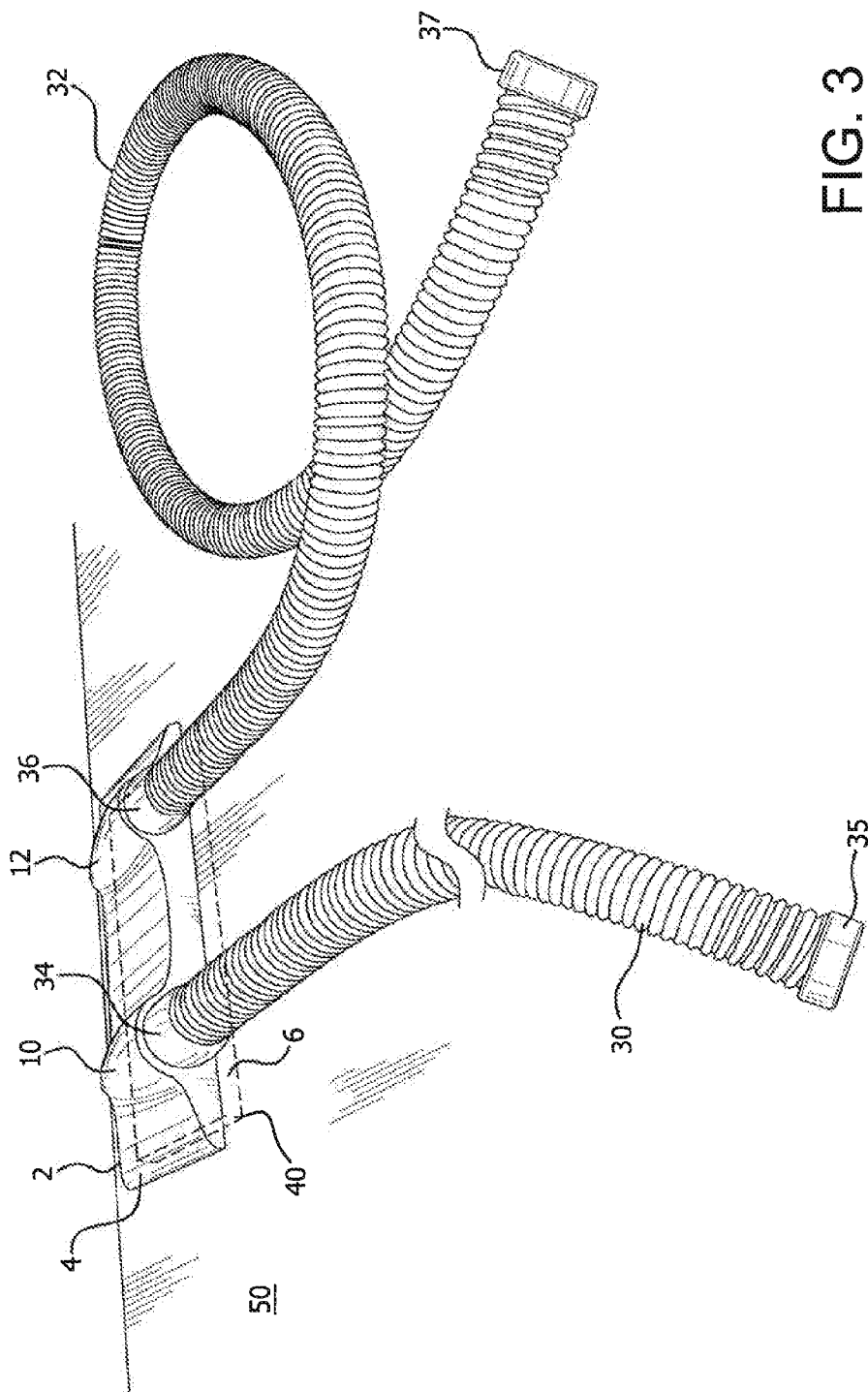


FIG. 3

AIR FLOW EXTENSION SYSTEM FOR AIR FLOW REGISTERS

BACKGROUND OF THE INVENTION

[0001] Hot and cold air used for interior heating and cooling, routinely flow out of air flow registers located through the floor or lower section of a wall. However, the locations of these registers are usually not designed for the most energy efficient placement of furniture. As a result, desks, couches, tables, etc., are very often positioned over, partially adjacent to, or otherwise obstructing registers, thereby substantially blocking the flow of hot and cold air into a room. The very nature of the air flow register itself is designed to permit the flow of air only out of one location. This also limits to dispersal of air, especially when heating or cooling is required for larger rooms.

[0002] Attempts have been made to address these limitations, thus far with limited success. For instance, U.S. Pat. No. 7,022,011 discloses a representative air duct expander system for directing air away from a register grill; however, it and systems like it, have distinct limitations and disadvantages. Such systems cannot be mounted and used with through floor air registers. They are adapted to be attached to through the wall registers. In addition, these systems are not simple or convenient to install, since they must be fashioned, aligned, and connected, with screws or equivalent attachment means, to the existing register grills which overlay the registers. To accomplish this, tools and some measure of expertise with tools is required. Significantly, the system has no means for accumulating air from the air supply duct, before dispersing it through its air conduits. This materially limits the amount of air and force by which air is expelled through the conduits.

[0003] SUMMARY OF THE INVENTION

[0004] It is thus the object of the present invention to provide an air flow extension system for air flow registers which overcomes the limitations and disadvantages of prior systems.

[0005] It is an object of the present invention to provide an air flow extension system for air flow registers which provides an efficient and expeditious means of disbursing air flow to various locations in a room, without the air flow being compromised by furniture which may be positioned over or adjacent to the air flow register.

[0006] It is another object of the present invention to provide an air flow extension system for air flow registers which serves to accumulate air from the air supply duct, thus enhancing the amount of air and force by which the air is expelled from the system.

[0007] It is a further object of the present invention to provide an air flow extension system for air flow registers which is particularly adapted to be utilized with through floor air registers.

[0008] It is still another object of the present invention to provide an air flow extension system for air flow registers which is very simple to install and, since it utilizes a collection compartment which is configured to be easily placed within an open register, allows the system to be easily installed without the use of outside attachment devices or tools.

[0009] These and other objects are accomplished by the present invention, an air flow extension system for air flow registers comprising a collection compartment having a lower section and an upper section with a plurality of tapered air flow accumulation chambers. An open interior space is located within the collection compartment. Each of the accu-

mulation chambers has an air flow discharge opening into which air flow lines are removeably attached. The lower section of the collection compartment is fitted so that it can be snugly positioned within and over an open air flow register and remain in this position without the use of outside attachment devices. Air flows from the air flow duct through the register, into the upper section, and is accumulated in the accumulation chambers for ultimate discharge out of the openings into the air flow lines, where the air is dispensed to different locations at various distances from a register.

[0010] The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The invention, itself, however, both as to its design, construction and use, together with additional features and advantages thereof, are best understood upon review of the following detailed description with reference to the accompanying drawings,

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a perspective view of the air flow extension system for air flow registers of the present invention with one air flow line attached.

[0012] FIG. 2 is an underside perspective view of the air flow extension system for air flow registers of the present invention.

[0013] FIG. 3 shows the air flow extension system of the present invention in use with two air flow lines.

DETAILED DESCRIPTION OF THE INVENTION

[0014] The hot and cold air flow extension system of the present invention comprises air flow collection compartment 2 having upper section 4 and lower section 6 extending down from the upper section. Interior open space 8 is formed beneath upper section 4 and is encompassed by lower section 6. Air flow accumulation chambers 10 and 12 rise up from upper section 4 and are located over open space 8. Chambers 10 and 12 are tapered the width of collection compartment 2 from the rear 14 and 16 of collection compartment 2 where they are at their narrowest, to the front 18 and 20 of the collection compartment where they are at their widest. Air flow discharge openings 22 and 24 are located at wide ends 18 and 20 of chambers 10 and 12, at the front of collection compartment 2. Closure member 31 is provided to seal openings 22 and/or 24 to close off the flow of air, if desired.

[0015] Air flow lines 30 and 32 are flexible, open tubular lines with open ends. Air flow lines 30 and 32 each have end connection members 34, 35, 36, and 37 which are configured to fit snugly within discharge openings 22 and 24 of collection compartment 2.

[0016] In use, lower section 6 of collection compartment 2 is fitted so that the compartment can be inserted and snugly positioned within and over open air flow register 40, located within floor 50. Collection compartment 2 can also be inserted and positioned within open air flow registers located in walls. Collection compartment 2 is specifically sized and configured to be inserted into an open air flow register and remain in this position without the use of any outside attachment devices, such that upper section 4 of the collection compartment completely covers and closes off the open register.

[0017] Once collection compartment 2 is positioned within air flow register 40, connection end members 34 and 36 of air flow lines 30 and 32, are inserted and fitted into discharge

openings **22** and **24**. The air flow lines can then be run in different directions under and/or around couches, tables, chairs or other furniture. In this manner, hot or cold air flows from the building's air supply duct and out of register **40** into upper section **8** of collection compartment **2**, where it is accumulated in accumulation chambers **10** and **12** of the collection compartment. The tapered nature of chambers **10** and **12** then serves to enhance and expedite the movement of the air out discharge openings **22** and **24**. From these openings, hot and cold air flows through air flow lines **30** and **32**, where the air is dispersed to different room areas, unobstructed by the presence of furniture which may be positioned over or adjacent to the register.

[0018] Certain novel features and components of this invention are disclosed in detail in order to make the invention clear in at least one form thereof. However, it is to be clearly understood that the invention as disclosed is not necessarily limited to the exact form and details as disclosed, since it is apparent that various modifications and changes may be made without departing from the spirit of the invention.

1. A hot and cold air flow extension system for an air flow register, said system comprising:

an air flow collection compartment comprising an open interior space, an upper section having a plurality of air flow accumulation chambers located over the space, each chamber having an air flow discharge opening, and a lower section extending down from the upper section and encompassing the open interior space of the collection compartment, said lower section sized to be placed directly within an open air flow register, with the upper section completely covering and closing off the register;

a plurality of elongated, open ended air flow lines; and connection means for removeably attaching the air flow lines to the discharge openings, whereby the collection compartment is fitted so that it is snugly positioned within and over the open register and remains in this position without outside attachment devices; and, in this position, air flows through the register into the upper section, is accumulated in the accumulation chambers, is discharged out of the openings into the air flow lines, and is dispensed to different locations at a distance from the register.

2. The air flow extension system as in claim **1** wherein the accumulation chambers extend the width of the collection compartment.

3. The air flow extension system as in claim **2** wherein the accumulation chambers are tapered, such that they are narrowest at the rear of the collection compartment.

4. The air flow extension system as in claim **3** wherein the accumulation chambers are widest at the front of the collection compartment and the discharge openings are located at the ends of the accumulation chambers at the front of the collection compartment.

5. The air flow extension system as in claim **1** wherein the discharge openings are located at the front of the collection compartment and extend upward from the lower section.

6. The air flow extension system as in claim **5** wherein the accumulation chambers extend the width of the collection compartment and are tapered such that they are narrowest at the rear of the collection compartment.

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