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(54) **CEILING VENT AIR DIVERTER**

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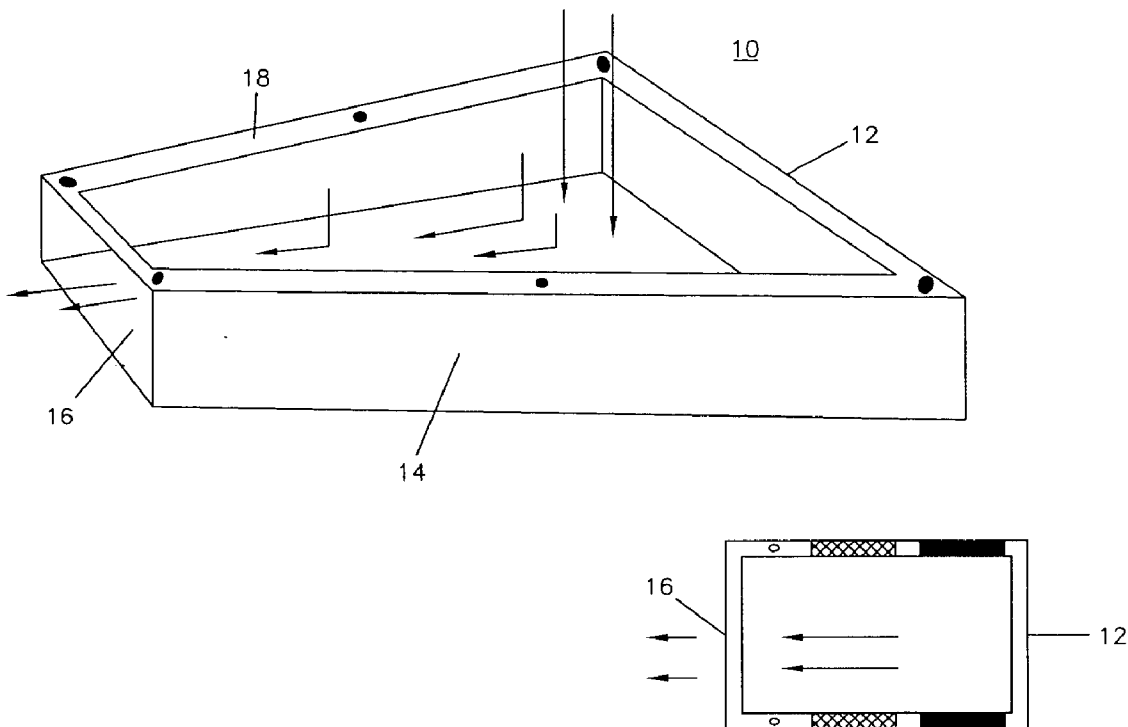
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(57) **ABSTRACT**

A ceiling air duct diverter system comprising a box like housing with side walls and having an open top and at least one open side to divert air flow and a means for affixing the open top near a ceiling air vent.

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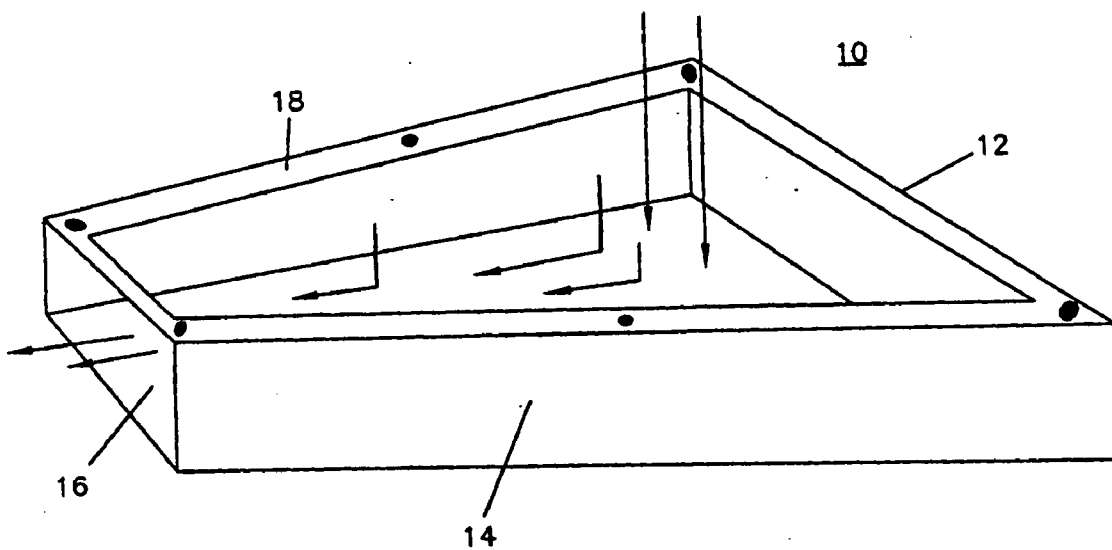


FIG. 1

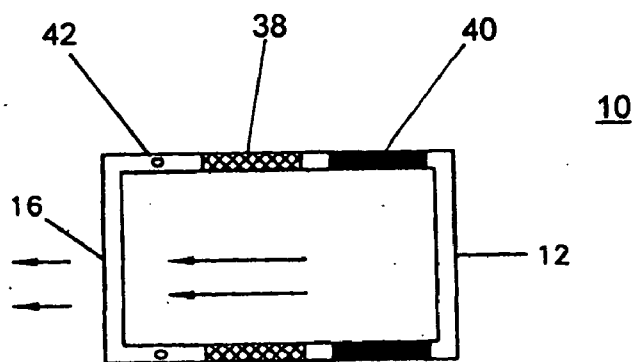


FIG. 1a

10

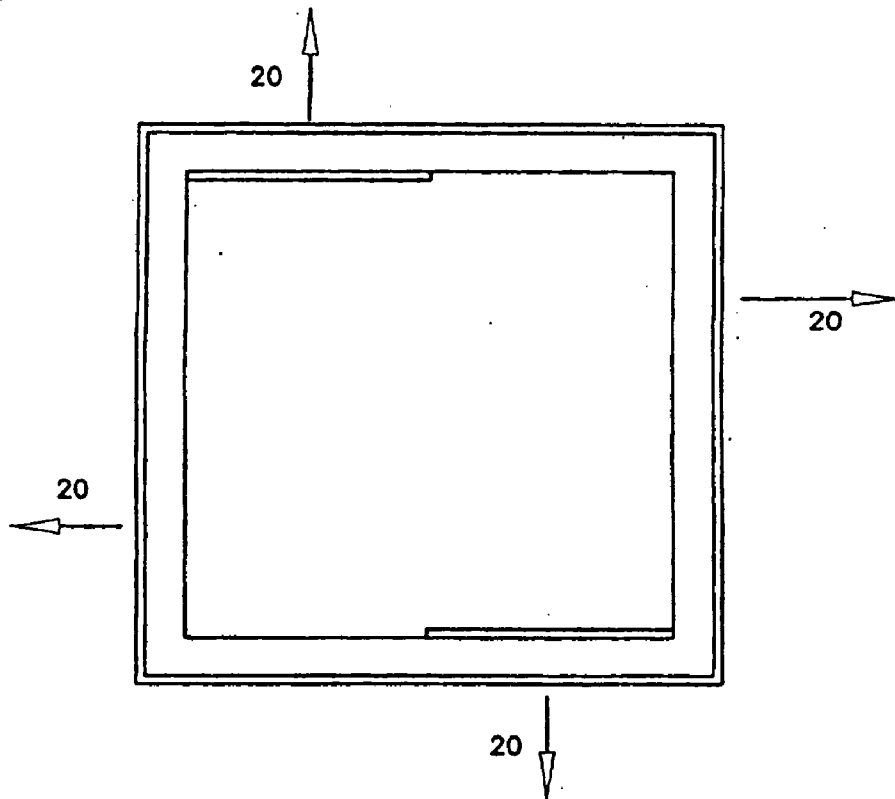


FIG. 2

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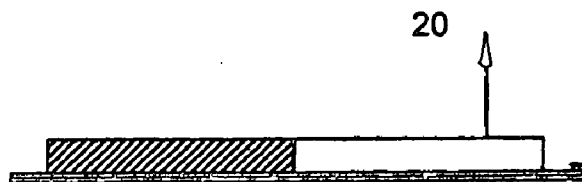


FIG. 2a

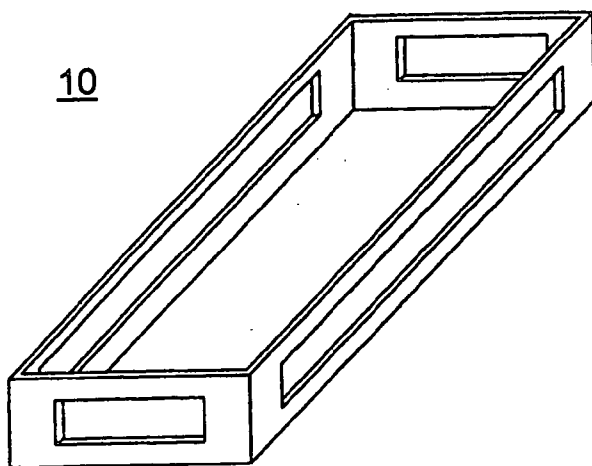


FIG. 3

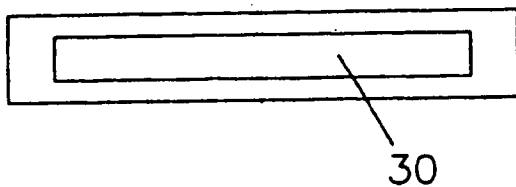


FIG. 3a

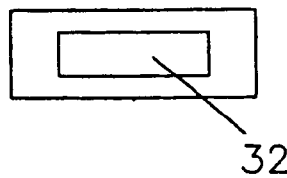


FIG. 3b

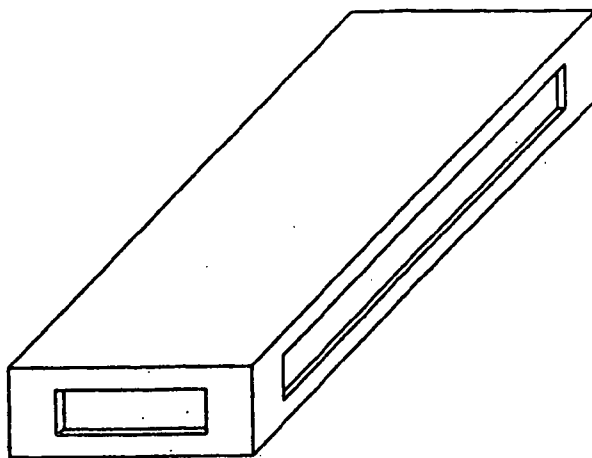


FIG. 3c

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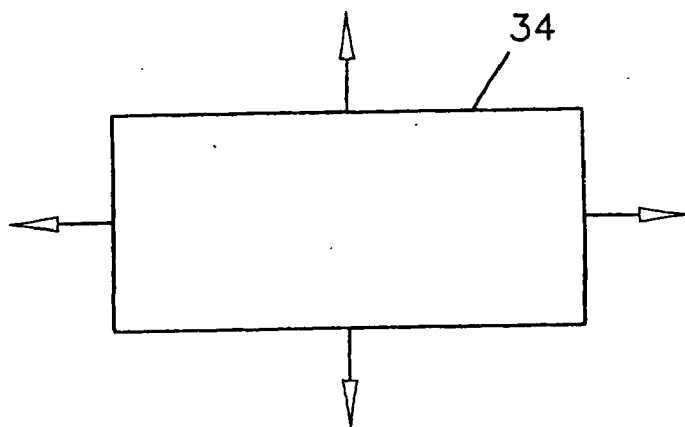


FIG. 4

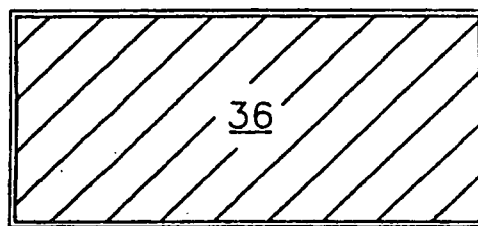


FIG. 4a

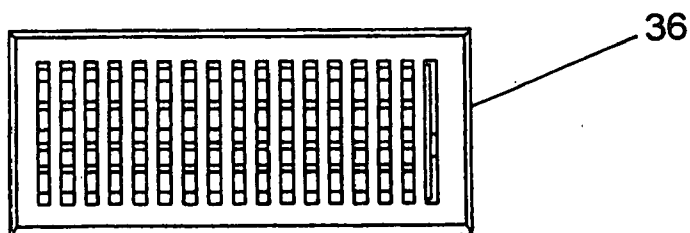


FIG. 4b

CEILING VENT AIR DIVERTER

FIELD OF THE INVENTION

[0001] The present invention is directed toward an air vent diverter, and placed over an existing vent to prevent air from flowing downward and to direct the air across the ceiling to enhance air flow.

BACKGROUND OF THE INVENTION

[0002] Frequently it is often desirable to divert an air duct in a direction other than that provided by the duct. Often the existing duct work may divert the air conditioning/heating in a non-optimized way, often downward. This can flow cold or hot air downward in a way which may cause discomfort. This is particularly the case in bedrooms where cold/hot air is "blasted" downward onto a sleeping person.

[0003] There have been a number of patents directed to the field of vent covers. U.S. Patent No. 20060025067 to Koessler discloses a vent comprising of a cover member having a cover member surface which defines at least a portion of a vent passageway. The cover member has at least one first connector and at least one second connector spaced outwardly from the first connector. The first and second connectors are operable to provide pivotal coupling to a damper.

[0004] U.S. Patent No. 20030220069 to Orendorff discloses a wooden vent cover that has fixed vanes with major vane surfaces at angles which enhance the throw and spread of air flow through the vent cover. It is a vent assembly with a wooden vent cover having optimized vane major surface angles including an air flow regulator in combination with the wooden vent cover. The air flow regulator may be a slidable member or other configuration and may be held in place by couplers.

[0005] U.S. Patent No. 20020069599 to Dhallan discloses a vent cover plate system for the register of a ventilation system that securely and snugly fits over the register thereby blocking the flow of air from that register. The vent cover plate is releasably attached to the register by hook and loop fastening material, magnetic material and mixtures thereof, and can include a rectangular strip of rubber tubing insulation to provide an air tight seal. The vent cover plate system allows for the localized and selective control of airflow in a room or building. Therefore, the specific ventilation requirements of a room or building can be readily achieved.

[0006] U.S. Patent No. 20020022450 to Berger discloses a modular air vent assembly kit that can be used to cover duct openings that supply a flow of heated or cooled air to a room in addition to covering duct openings that receive return air from a room. The modular air vent assembly kit is comprised of a frame, a base, a damper mechanism, and two different face plates where the damper mechanism can be selectively assembled into the base depending on whether control through the air vent by operation of a damper is needed in the particular duct opening and where either of the two face plates may be selectively connected with the base where one face plate has a lattice and is used in combination with the damping mechanism and the other face plate has a series of louvers and is used when the damping mechanism is not used in the vent assembly. The frame is secured to an air duct opening and the base and attached face plate are removably attachable to the frame without the need for separate fasteners.

[0007] U.S. Patent No. 20010046838 to Hertel discloses a counterweight biased duct vent closure and door for a con-

ventional overhead or surface mounted forced hot/cool air supply vent opening. The closure door includes a covering sized to fit over and sealably cover the register or vent opening from communication with the conditioned space when the HVAC system is not in use while automatically opening the cover to provide for treated or forced hot/cool air to be allowed into a space. The duct vent closure provided with an extension forming a counterweight spaced from and rotatable along with the door about a hinge in response to an increase and decrease in air pressure from the duct. Upon generation of a positive air pressure through the duct, the force of air pressure overcomes the gravitational bias provided by the counterweight and the covering is automatically pushed open away from the frame of the apparatus thus enabling the forced air to emanate from the vent and into the room.

[0008] U.S. Patent No. 20010023173 to Schiedegger discloses a vent apparatus for cooperating with duct work associated with an exhaust fan to enable air to be exhausted from an interior room of a dwelling to the exterior environment. The vent apparatus includes a base member and a cover member releasably securable to the base member. The base member includes an attaching portion having a plurality of locking portions, while the cover member includes a plurality of flexible latching arm members which releasably engage the locking portions when the cover member is placed over the attaching portion. The attaching portion includes an enlarged opening which enables air exhausted from an interior room to be directed out between the base and cover members to the exterior atmosphere. The apparatus is particularly well-adapted to be used with vinyl or aluminum siding and is relatively inexpensive to construct, light-weight and easy to install. In an alternative embodiment, the apparatus includes a screen adapted to be secured to the base member. The screen has dimensions which enable it to fit within the cover member so as not to be visible once the cover is installed on the base member. The screen prevents insects and small mammals from entering through the base member. The screen is secured to the base member via a plurality of locking arm members which engage within openings formed in the base member such that the screen can be "snapped" onto the base member without special tools or external fastening elements such as threaded screws or the like.

[0009] U.S. Pat. No. 6,866,578 to Orendorff discloses a wooden vent cover that has fixed vanes with major vane surfaces at angles which enhance the throw and spread of air flow through the vent cover. It is a vent assembly with a wooden vent cover having optimized vane major surface angles including an air flow regulator in combination with the wooden vent cover. The air flow regulator may be a slidable member or other configuration and may be held in place by couplers.

[0010] U.S. Pat. No. 6,422,935 to Yampolski discloses a provided air vent covering which is adapted to be mounted to a floor, in the peripheral region of an air vent opening there-through. The air vent covering assembly comprises a cover plate, a base, at least one damper plate, and first and second brackets. The cover plate and base have a plurality of spaced-apart and substantially parallel louvers formed therein, and each of the plurality of louvers defines an edge of a space. Each of the at least one damper plate includes a plurality of spaced-apart and substantially parallel damper bars, and the number of damper bars is equal to the number of louvers provided. When the damper plate is in an open position, flow of air through the spaces defined by the plurality of louvers is

allowed, and when the damper plate is in a closed position, flow of air through the spaces is precluded.

[0011] U.S. Pat. No. 6,832,951 to Orendorff discloses a vent assembly that has a vent cover and sliding air flow regulator for controlling the flow of air through the vent cover. Unique couplers may be used to interconnect the air flow regulator and vent cover for relative sliding motion. In addition, actuator mechanisms are used to move the air flow regulator between open and closed positions. A vent assembly for corner applications is also disclosed.

[0012] U.S. Pat. No. 6,786,817 to Orendorff discloses a vent assembly has a vent cover and sliding air flow regulator for controlling the flow of air through the vent cover. Plural sets of unique couplers may be used to interconnect the air flow regulator and vent cover for relative sliding motion. Desirably, two such couplers are provided at each end of the assembly with an associated one of such couplers being adjacent to each of the corners of the assembly in the event a rectangular assembly is provided.

[0013] U.S. Pat. No. 6,848,990 to Berger discloses a register assembly for covering an air duct opening that is comprised of a faceplate, a base, a damper mechanism and a filter frame that are easily assembled together. Most if not all of the component parts may be constructed of plastic reducing the manufacturing cost of the register assembly. The faceplate can be snapped onto the base or manually removed from the base without the use of fasteners or tools. The faceplate is replaceable, allowing the use of various ornamental designs of the faceplate grid on the same base containing the damper mechanism and filter frame. The filter frame is easily removed from the base to allow replacement or cleaning of the filter materials supported in the frame.

[0014] U.S. Pat. No. 6,544,115 to Graf discloses a fairing vent comprising of a louver rotatably attached to a body, and a louver handle attached to the louver, and a method of installing the fairing vent on a vehicle fairing. The body contains a duct having a duct intake and a duct outlet. The louver is sized to block airflow through the duct when the fairing vent is in the closed position. The fairing vent is closed by rotating the louver using the louver handle until the louver blocks airflow through the duct. A lip is disposed around the duct intake. At least one resilient tab is disposed on the body, each resilient tab being biased away from the body at an angle of approximately 10 degrees. Each resilient tab is disposed a sufficient distance from the lip so as to sandwich the thickness of a vehicle fairing between the lip and the resilient tab(s). The fairing vent is installed on the fairing by cutting a fairing cutout into the fairing. The fairing cutout is sized to admit the body but not the lip. The body is then pushed into the fairing cutout, forcing the resilient tab(s) against, or flush with, the body against each resilient tab(s) installed bias away from the body, until the lip butts up against the fairing. At this point the resilient tab(s) spring back into their installed biased position away from the body, thus trapping the fairing between the resilient tab(s) and the lip, thus immobilizing the fairing vent relative to the fairing.

[0015] U.S. Pat. No. 6,302,784 to Berger discloses a modular air vent assembly kit which can be used to cover duct openings that supply a flow of heated or cooled air to a room in addition to covering duct openings that receive return air from a room. The modular air vent assembly kit is comprised of a base, a damper mechanism, and two different faceplates where the damper mechanism can be selectively assembled into the base depending on whether control through the air

vent by operation of a damper is needed in the particular duct opening and where either of the two faceplates may be selectively connected with the base where one faceplate has a lattice and is used in combination with the damping mechanism and the other faceplate has a series of louvers and is used when the damping mechanism is not used in the vent assembly.

[0016] U.S. Pat. No. 5,984,776 to Berger discloses a register assembly for covering an air duct opening which is comprised of a faceplate, a base, a damper mechanism and a filter frame that are easily assembled together. Most if not all of the component parts may be constructed of plastic reducing the manufacturing cost of the register assembly. The faceplate can be snapped onto the base or manually removed from the base without the use of fasteners or tools. The faceplate is replaceable, allowing the use of various ornamental designs of the faceplate grid on the same base containing the damper mechanism and filter frame. The filter frame is easily removed from the base to allow replacement or cleaning of the filter materials supported in the frame.

[0017] U.S. Pat. No. 5,472,380 discloses a modular forced-air register which includes two main sub-assemblies. A housing with an opening can be disposed into a hole in the floor of a room. A second sub-assembly includes a louver plate with a grid work of tri-directional vanes. Air flow is controlled by a slide grille disposed beneath the grid work and carrying an integral filter substrate secured to the slide grille. The two sub-assemblies are detachably connected to each other by an arrangement of bosses and recesses as well as a projection mounted on a flexible tang configured and disposed to engage a pocket configured in a thin wall region of the opposing sub-assembly.

[0018] U.S. Pat. No. D432,226 to Orendoff discloses a claim to the ornamental design for a vent cover.

[0019] U.S. Pat. No. D317,819 to Sello discloses a claim to the ornamental design for an air diffuser.

[0020] While there have been systems for various air filters used in homes, there has heretofore been no retrofittable system for diverting a ceiling air duct. In particular, there has been no easy way to alter the flow of air in a downward air-duct.

OBJECTS AND SUMMARY OF THE INVENTION

[0021] It is an object of the present invention to provide a retrofittable system for diverting a ceiling air duct.

[0022] It is a further object of the present invention to provide a system which can be affixed by Velcro, magnets, screws, or other attachment means.

[0023] In accordance, the present invention discloses a ceiling air duct diverter system comprising a box like housing having side walls having an open top and at least one open side to divert air flow and a means for affixing the open top near a ceiling air vent.

[0024] In a further embodiment, the present invention is a ceiling air duct diverter system comprising a box like housing with side walls having an open top and a plurality of openings on the side walls to divert air flow and a means for affixing the open top near a ceiling air vent.

[0025] In still a further embodiment, the present invention discloses a ceiling air duct diverter system comprising a plurality of side openings, housing with side walls having an open top and at least one open side to divert air flow and a means utilizing Velcro, magnets, screws or other attachment

means for affixing the open top over a ceiling air vent and duct so the air is diverted through the side opening(s).

BRIEF DESCRIPTION OF THE FIGURES

- [0026] FIG. 1 is a side perspective view of the invention.
- [0027] FIG. 2 is an alternative view of the invention.
- [0028] FIG. 3 is a plug to close air flow on any side design.
- [0029] FIG. 4 is an angular piece to cover the opening of the vent where an airflow is not needed.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

[0030] The present invention is described with reference to the enclosed Figures wherein the same numbers are used where applicable. In a broad embodiment the present invention is a retrofittable cover which can be used to divert heating and air conditioning from blowing downward.

[0031] Referring to the Figures, the invention, in a most preferred embodiment comprises a box-like structure 10 having three major sidewalls 12, 14 and 18 and an open sidewall 16. The depth of the sidewalls is preferably about 1.5 inches. The box-like structure has an open wall which is affixed to the to a ceiling air vent with an attachment mechanism such as Velcro, clips, screws or other attachment means. The cover may be constructed from a variety of materials including plastic, steel or aluminum.

[0032] FIGS. 2 to 4 illustrate other embodiments of the invention. In these embodiments, the cover 10 fits over the vent but includes four side openings 20. FIGS. 3 and 4 illus-

trate embodiments in which the sidewall opening can be closed off if needed 30, 32 and 34.

[0033] The invention has application for residential, commercial, and industrial uses. It is to be appreciated that the present invention has been described with reference to the above described preferred embodiment. The true nature and scope of the invention is to be determined with reference to the attached claims.

1. A ceiling air duct diverter system comprising:
 - a box like housing having side walls and having an open top and an open side to divert air flow, and
 - an attachment mechanism for affixing the housing open top near a ceiling air vent.
2. The ceiling air diverter system of claim 1 wherein the attachment mechanism is selected from the group consisting of fabric hook-and-loop fasteners, magnets and screws.
3. A ceiling air duct diverter system comprising:
 - a box like housing with side walls and having an open top and a plurality of openings on the side walls to divert air flow, and
 - an attachment mechanism for affixing the open top near a ceiling air vent.
4. A ceiling air duct diverter system comprising:
 - a housing having a plurality of side openings with side walls, an open top and an open side to divert air flow, and
 - an attachment mechanism selected from the group consisting of fabric hook-and-loop fasteners, magnets and screws for affixing the open top over a ceiling air vent and duct so the air is diverted through the side openings.

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