Nov. 26, 1963 W. A. SMITH 3,111,722

VENT DUCT ADAPTER

Filed May 20, 1959

Fig. 1

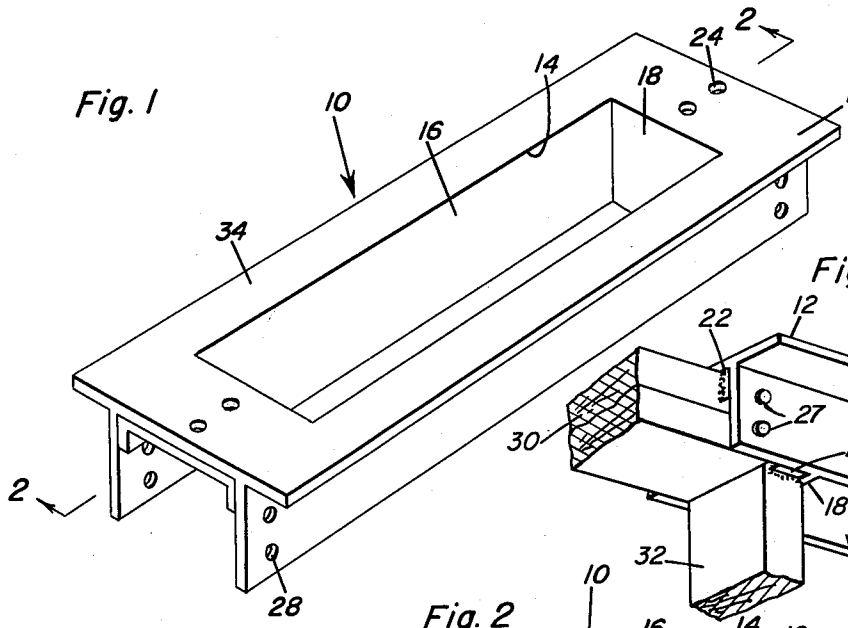
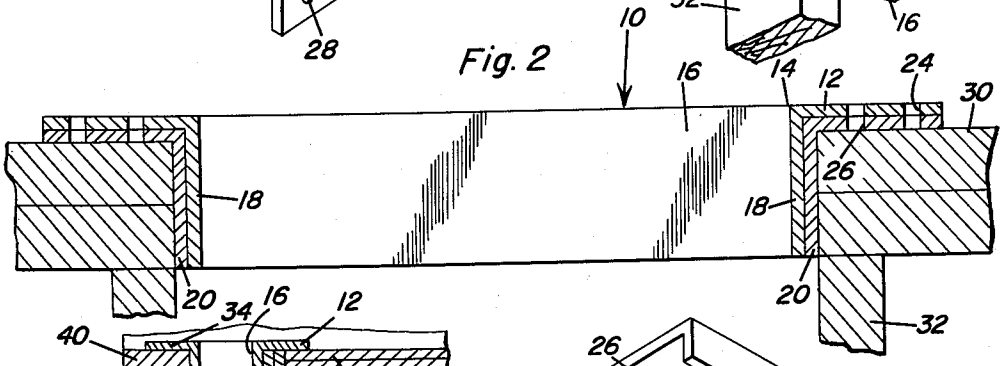


Fig. 5

Fig. 2



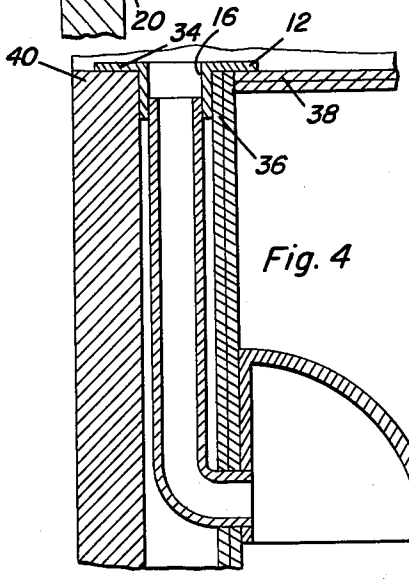
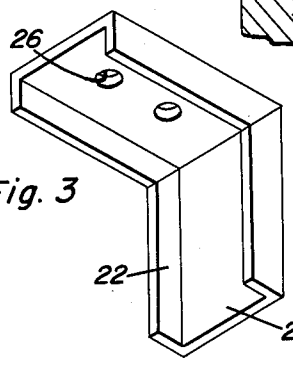


Fig. 4

Fig. 3



William A. Smith

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

United States Patent Office 3,111,722 Patented Nov. 26, 1963

3,111,722
VENT DUCT ADAPTER

William A. Smith, Dallas, Tex.
(P.O. Box 445, Eunice, N. Mex.)

Filed May 20, 1959, Ser. No. 814,431
3 Claims. (Cl. 20—4)

The present invention generally relates to a vent duct adapter and more particularly to a device for tying together and rigidifying the wall when the top plate which normally interconnects the vertical studs is cut out to allow passage of a ventilation duct or the like.

In present day building construction, there is usually provided a plurality of spaced parallel vertical studs secured together at their upper ends by a structural member generally called a top plate which extends horizontally along the top of the studs and which is secured thereto which prevents movement of the studs in relation to each other. Also, in present day practice, heating and ventilation ducts quite often are concealed in the wall and where these ducts pass between the studs, there is usually sufficient room for such passage. However, when these ducts have to pass up through the wall to a floor above or out through the roof such as in certian types of exhaust ventilator ducts, it is necessary to remove a section of the plate in order to pass the duct therethrough. Thus, the wall loses its rigidity and quite often resulting cracks in the wall will occur. Also, some building codes in certain localities prevent cutting of this plate unless some substitute means is provided for rigidifying the wall structure. Therefore, it is the primary object of the present invention to provide an adapter for use with vent ducts and which will interconnect or tie together the adjacent ends of a top plate for maintaining the top plate in the same rigid condition as were it a single piece and never cut into with the device being capable of use in a partition wall as well as in an outside wall.

Another object of the present invention is to provide a vent duct adapter primarily adapted for use with cooking stove ventilators in which the vent pipe is to be run vertically between the studding with the present adapter meeting requirements of the fire codes and also building codes while permitting a very neat and attractive job. The present device is extremely rigid and will not twist or distort and is provided with double anchors at each end with the device being adaptable for various types of ducts employed with various types of devices requiring ventilation or air passage.

Another important object of the present invention is to provide a duct adapter which is extremely simple in construction, easy to make, easy to install, rigid in its construction, strong, long lasting, reinforced at the required points, useful in various installations and generally inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the duct adapter of the present invention;

FIGURE 2 is a longitudinal, vertical sectional view taken substantially upon a plane passing along section line 2—2 of FIGURE 1 illustrating the details of construction of the adapter and illustrating the relationship thereof to the studding and top plate;

FIGURE 3 is a perspective view of one of the anchors employed in the ends of the adapter;

FIGURE 4 is a transverse sectional view illustrating

the arrangement in a typical installation for venting the hood of a cooking range; and

FIGURE 5 is a perspective view of the adapter and assembled framing components.

Referring now specifically to the drawings, the numeral 10 generally designates the duct adapter of the present invention which includes a generally flat horizontally disposed top plate or flange 12 having an enlarged open area 14 in the center thereof with the flange 12 defining the periphery of the opening 14. Extending downwardly from the periphery of the opening 14 is a peripheral wall including side walls 16 and end walls 18. The side walls 16 extend beyond the end walls 18 and extend to and are co-extensive with the end edges of the rectangular flange 12. Thus, the combination of the side walls 16 and the flange 12 which extends beyond the end walls 18 form downwardly opening sockets with the end walls 18 forming inner walls for the sockets.

Disposed in each of the sockets is a right angular reinforcement or anchoring member 20 having inwardly extending rigidifying flanges 22 thereon and the L-shaped member 20 is disposed in the socket and has one leg thereof lying against the outer surface of the end wall 18 and the other leg thereof lying against the undersurface of the flange 12 between the side walls 16.

The flange 12 is provided with a pair of apertures 24 in each end portion thereof which is in alignment with apertures 26 in the top leg of the angle iron member 20 for receiving lag screws or the like 27. Also, the side walls 16 are each provided with a pair of apertures 28 disposed outwardly of the end walls 18 and below the lower edge of the flange 22 as illustrated in FIGURE 1 which apertures 28 are also for receiving lag screws or the like.

In the installation of the device, the top plate or top plates whichever is used is designated by numeral 30 and a section of the top plate is cut out between the vertical studs 32. To replace the cutout section of the top plate 30, the adapter 10 is inserted with the ends of the top plate or plates 30 being received in the sockets defined by the end wall 18 and the side wall 16 and being secured thereto by the lag screws or similar fasteners which extend through the openings 28 and also extend downwardly through the openings 24 and 26. As shown in FIGURE 5, the flanges 32 may deform the wood of the top plate 30 by employing a hammer to drive the adapter into final position.

In some installations on outside walls, it may be necessary to cut off the rear portion 34 of the horizontal flange but the side wall 16 will still provide sufficient rigidity to prevent twisting or other distortion of the adapter. Thus, with the flange 34 removed, the device may be installed on outside walls without any possible interference with the usual sheeting although in some installations, as illustrated in FIGURE 4, the flange 12 will not interfere whatsoever with the sheeting or any of the other building components. For example, in FIGURE 4, the flange 12 rests against the top edge of the wall sheeting or wall structure 36 and also the ceiling structure 38 while the flange 34 rests against the top surface of the outside wall 40.

The adapter may also have an angle construction for adapting the same to a sheet metal fan housing for exhausting air through a roof or other similar outlets.

In actual construction, the device may be constructed of ¼ inch angle iron of sufficient size to provide clear space around the sides of a duct and will actually be stronger than the original 2 inch by 4 inch plate construction and will provide suitable foundation for mounting plenum or transition for fans and also a flat base to flange duct work to. By spacing the duct from the

adapter, suitable insulation may be installed as required or desired.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination, a vent duct adapter of unitary construction, a wall frame including a horizontal member having an omitted portion receiving the adapter, and a vent duct, said adapter comprising a horizontal plate having an enlarged opening receiving the duct therethrough, depending side walls connected to said plate and lying in the plane of the end edges of the opening and alongside the duct, depending end walls connected to the horizontal plate and lying in the planes of the ends of the opening with the end walls and side walls being rigidly interconnected to each other and to the horizontal plate thereby providing a unitary construction, said side extending beyond the end walls and combining with the end portions of said plate to form sockets receiving portions of the wall frame, said horizontal plate and side walls having openings receiving fastening elements securing the adapter to the frame member, and right angular reinforcement anchor members disposed against the outer surface of the end walls and that portion of the horizontal plate extending outwardly beyond the end walls for reinforcing the socket and rigidifying the adapter thereby preventing twisting and distortion of the adapter.

2. In a building structure having a row of studs, a horizontal top plate interconnecting the top ends of said studs, an inner wall mounted on the inner surface of the studs, an outer wall mounted on the outer surface of the studs, the portion of the top plate between one pair of adjacent studs being omitted, a vent duct extending between the pair of studs and upwardly through the omitted portion of the top plate, a rigid rectangular sleeve member enclosing the duct and forming a juncture between the ends of the top plate, said sleeve including a peripheral wall parallel to and disposed adjacent the periphery of the duct, said sleeve member including an apertured top flange rigid with the peripheral wall and having end portions engaging the end portions of the top plate which interconnects the top ends of the studs and side portions engaging the inner and outer walls, said peripheral wall including apertured side walls extending downwardly from the top flange and beyond the end walls and cooperating with the top flange attached to the peripheral wall to form outwardly opening sockets receiving the end portions of the top plate interconnecting the studs, and fasteners extending through the apertured top flange and side walls thereby rigidly interconnecting the ends of the top plate interconnecting the studs and preventing twisting and deflection thereof, said apertured top flange and the end walls of the sleeve member being interconnected by an L-shaped reinforcing member disposed along the outer surface of the end walls and by an apertured portion along the bottom surface of the apertured top flange outwardly of the end walls and including terminal end edges coincidental with the bottom edge of the end walls and the outer ends of the apertured top flange respectively, said L-shaped member having an edge flange extending away from the end walls and apertured top flange respectively and alongside the facing surfaces of the portion of the side walls projecting beyond the end walls.

3. A vent duct adapter comprising a generally rectangular plate having a smooth top surface, said plate having an enlarged rectangular aperture therein whereby the plate forms a rectangular annular flange, a pair of parallel depending end walls rigid with the top plate and being coincidental with the end edges of the opening, a pair of parallel depending side walls rigid with the top plate and extending throughout the length of the top plate, the ends of the end walls being rigidly connected with the side walls inwardly of the end edges thereof, the end portions of the side walls and the end walls on the portions of the top plate defined by the top edge of the end wall and the top edge of the end portions of the side walls defining downwardly and longitudinally outwardly opening sockets in longitudinal alignment with each other, the end portions of the side walls having openings for receiving fasteners therethrough, the portions of the top plate disposed outwardly of the end edges of the opening therethrough having apertures for receiving fasteners, all of the components of the adapter being of rigid unitary construction, an L-shaped reinforcing member disposed with one leg thereof engaging the exterior surface of the end walls and the other leg engaging the undersurface of that portion of the top plate defining the socket, the end edges of said L-shaped member terminating coincidental with the end edge of the top plate and the bottom edge of the end plate respectively, said L-shaped member having laterally extending flanges along the edges of each leg with the flanges extending away from the contacting surface to surface engagement between the L-shaped member and the outer surface of the end walls and the undersurface of the socket defining portion of the top plate, the leg of the L-shaped member extending along the undersurface of the top plate having openings therein for registry with the openings in the end portions of the top plate for receiving fasteners.

References Cited in the file of this patent

UNITED STATES PATENTS

847,850	Tuteur	Mar. 19, 1907
996,687	Tuteur	July 4, 1911
1,906,634	Leake	May 2, 1933
2,103,064	Clarke	Dec. 21, 1937
2,103,644	Schaffer	Dec. 28, 1937
2,162,559	Lambert	June 13, 1939
2,809,405	McElwee	Oct. 15, 1957
2,878,529	Dupler	Mar. 24, 1959
2,956,496	Simblest	Oct. 18, 1960