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EXHAUST FOR CLOTHES DRIERS

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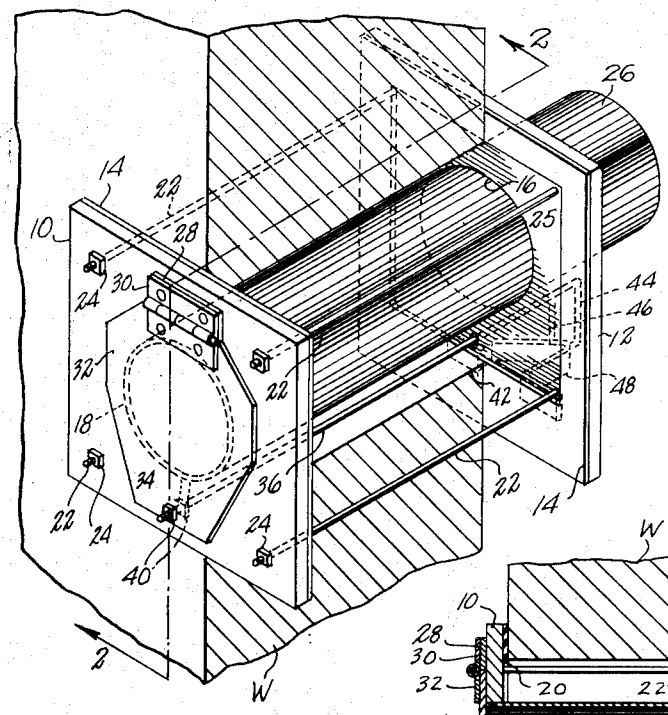


FIG. 1.

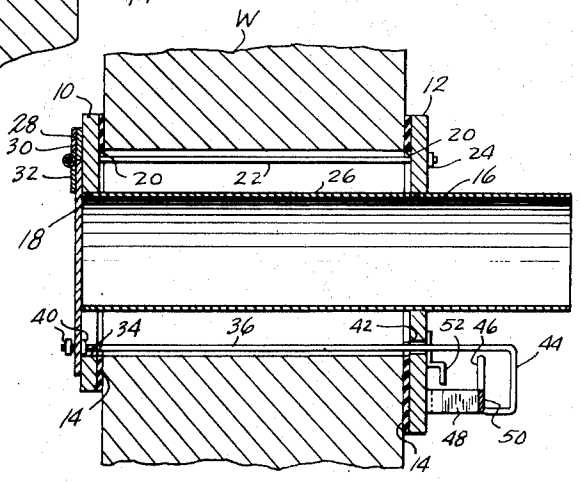


FIG. 2.

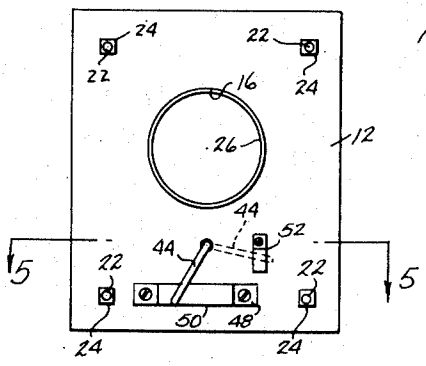


FIG. 3.

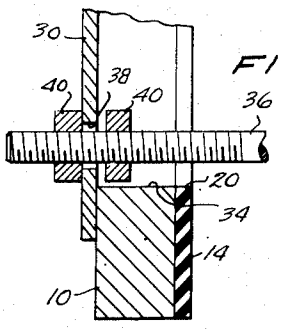


FIG. 4.

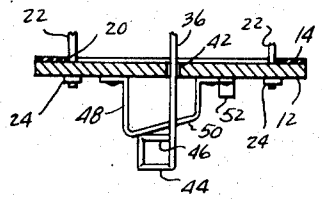


FIG. 5.

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EXHAUST FOR CLOTHES DRIERS

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7 Claims. (Cl. 98—118)

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This invention relates to a device adapted to be mounted in the wall of a building in association with a clothes dryer, for exhausting to the outside of the building moist air and lint emanating from the dryer.

Clothes dryers have found increasing favor among householders, and have proved themselves highly efficient in drying wet or damp laundry. However, in many instances, the use of a dryer in the basement or laundry of a home has raised to an undersirably high degree the amount of humidity in the air within the home. Additionally, the moisture-laden air is charged with lint, which is distributed through the interior air of the home and thus creates an undesirable condition.

The broad object of the present invention is to provide a device adapted to be operatively associated with a clothes dryer of the character referred to, to exhaust to the outer atmosphere the moisture and lint laden air issuing from the dryer.

To this end, I provide a device of the type stated which, summarized briefly, includes a pair of spaced plates mountable on the inner and outer surfaces, respectively, of a building wall, said plates being clampably engaged with the wall by a plurality of tie rods extending therebetween, the tie rods being adapted to space the plates apart a selected distance depending upon the thickness of the particular building wall on which the plates are mounted. An exhaust duct is extended between the plates, one end of the duct projecting through and beyond the inner plate and being adapted for connection to the exhaust opening of a clothes dryer. The other end of the duct is flush with the outer plate, and is normally closed by a swingable closure panel carried by the outer plate. The closure panel is adjusted to duct opening and closing positions by means of a latch rod connected to the free end thereof and extending between the plates. A latch means is carried by the rod and the inner plate respectively, and is adapted to hold the rod in selected positions in one of which the closure panel is tightly closed and locked, and in the other of which the panel is open.

Among more specific objects of the invention are the following:

First, the provision of a device of the type stated that can be attached to any of various makes of dryers, without requiring modification or redesigning of the same;

Second, the provision of a device as described wherein one form of the device can be mounted on any of various building walls of different thicknesses, by utilization of a clamp type plate-connecting means that does not require the bolting or screwing of the device directly to the wall;

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Third, the provision of a device as described wherein a closure panel latch means is adapted to hold said panel tightly closed and locked when the dryer is not in use, thus to prevent the admission of cold air, insects, or dampness into the basement or home laundry; and

Fourth, the provision of a device as described that can be manufactured at relatively low cost, will comprise a minimum of parts simply arranged in a manner whereby they will not readily get out of order, and will be capable of installation by a homeowner with a minimum of difficulty and without requirement of special tools.

Other objects will appear from the following description, taken in conjunction with the annexed drawing, wherein like reference numerals have been applied to like parts throughout the several views, and in which:

Figure 1 is a perspective view of an exhaust device for lint and moist air formed in accordance with the present invention, as it appears when mounted in a building wall, said wall being illustrated fragmentarily and in section;

Figure 2 is a longitudinal sectional view on a reduced scale, taken substantially on line 2—2 of Figure 1;

Figure 3 is an end elevational view, taken from the right of Figure 2;

Figure 4 is an enlarged detail sectional view, showing the connection of the operating rod to the closure panel; and

Figure 5 is a sectional view on line 5—5 of Figure 3.

The exhaust device includes outer and inner plates 10, 12 mountable against the outer and inner surfaces, respectively, of a building wall W. In this connection, it will be understood that an opening of substantial size is initially formed in the building wall, the plates overlying the respective ends of said opening. To provide a weather and insect proof means engageable between the respective plates and the building wall, sealing members 14, formed of soft rubber or other compressible material, are interposed between the respective plates and the inner and outer wall surfaces. The members 14 have their outer edges flush with the peripheries of the respective plates 10, 12.

In the plates 12 and 10 I form large center openings 16, 18 respectively, said openings being aligned transversely of the building wall and being here shown as circular, although they may

be of other shapes if desired. The sealing members 14 have large openings 20 of rectangular configuration, formed to a size substantially greater than that of the openings 16 and 18.

For the purpose of securing the plates in place against the inner and outer wall surfaces, I utilize a plurality of tie rods 22 each of which is threaded at its opposite ends. The tie rods are extended through corner openings formed in the respective plates 10, 12, and are disposed within the opening of the wall.

After the tie rods have been extended through the corner openings of the respective plates, nuts 24 are threaded upon the opposite ends thereof, against the outer surfaces of the respective plates. It will be noted, in this regard, that the plates and tie rods can be mounted upon building walls of varying thicknesses. On any wall on which they are mounted, the plates will be forced into tight, clamping engagement with their adjacent wall surfaces, when the nuts are threaded inwardly on the opposite ends of the tie rods, the members 14 being compressed against the wall surfaces to seal the wall opening at its ends, through an area extending marginally of the plates.

Carried by the respective plates 10, 12 is a duct 26, formed open at its ends and fitted snugly within the openings 16, 18 said duct extending transversely of the building wall between the plates 10 and 12. One end of the duct is disposed flush with the outer surface of the plate 10 (Figure 2), and is fitted snugly within the opening 18 of said plate. The other end of the duct is projected inwardly of the building, beyond the inner plate 12, and is snugly but slidably fitted within the opening 16 of said inner plate. Thus, when the plates are shifted toward one another into clamping engagement with the building wall, the projecting inner end of the duct is permitted to slide within the opening 16, to any extent necessary. After the plates have been clamped to the wall, the inner end of the duct is connected in communication with the air outlet of a conventional clothes dryer, not shown.

Means is embodied in the device for controlling the opening and closing of the duct whenever the device is to be used. This means includes spacer 28 interposed between a hinge 30 and the outer surface of plate 10, screws or equivalent fastening elements being extended through one leaf of said hinge and through the spacer into the plate. The other hinge leaf has connected thereto a closure panel 32 proportioned to cover the open outer end of the duct 26 and adapted, when closed, to be shifted into engagement with said outer end.

Formed in the outer plate 10 is a slot 34 communicating with the opening 18 of said plate. A latch rod 36, extended in parallelism with and spaced away from the duct 26, is threaded at one end, the threaded end of the rod extending through the slot and through an aperture 38 formed in the closure panel. As will be noted from Figure 4, the aperture 38 is formed to a size substantially greater than the diameter of the rod 36, so as to prevent the rod from binding within the opening when the closure panel is being swung between its open and closed positions.

Threadedly engaged with the outer end of the rod 36 are nuts 40, one of said nuts being disposed against the outer surface of the plate 30 and the other nut being disposed in spaced relation to the inner surface thereof. The nuts 36, as will be noted, can be adjusted longitudinally of the rod 36, so as to accommodate the same to the adjusted distance between the plates 10 and 12, it being mainly important that the nut 40 shown at the left in Figure 4 be engaged against the outer surface of the plate 30 in the closed position of the closure panel.

The other or inner end portion of the rod 36 is extended loosely through an opening 42 provided in the inner plate 12 and is projected interiorly of the building wall, the projecting inner end of the rod being bent to form a closed loop extending radially of the rod to provide a handle 44. The loop is of rectangular formation, having an inner portion 46 disposed normally to the axis of the rod 36.

A latch member 48 is secured to the inner plate 12, and is formed from a single length of flat bar material bent to shape, the opposite ends of said length of material being turned outwardly to form feet abutting against the plate 12 and fixedly secured thereto by screws or equivalent fastening elements. The medial portion of the latch member is formed to a U-shape, the legs of said medial portion extending outwardly from the plate 12 and merging into a bight 50 extending obliquely to the plane of the plate to form a cam surface extending across the path of swinging movement of the portion 46, when the closure panel is closed and the rod 36 is rotated.

Secured to the inner plate 12, adjacent the latch member 50, is a keeper 52 having a free end portion offset outwardly from the inner plate, though not to so great an extent as that to which the bight 50 is spaced away from said plate.

By reason of this construction, it will be noted that when the closure panel is swung to a closed position, the handle 44 can be swung from the dotted line position to the full line position thereof shown in Figure 3. As a result, the portion 46 of the handle will be engaged by the cam surface of the latch member and continued rotation of the handle in the same direction will be effective to bind the portion 46 against the cam surface, with said surface being operative to shift the rod in the direction of its length away from the closure panel. Thus, the closure panel will be forced into a tightly closed position, and will be locked in said position.

At such time as the dryer is to be again used, the handle is swung counterclockwise in Figure 3, freeing the rod for longitudinal movement in an opposite direction, to open the closure panel. When the panel has been opened, the handle is extended into the keeper 52 to hold the panel in the open position thereof.

It is believed apparent that changes may be made in the construction illustrated and described within the scope of the claims appended hereto.

I claim:

1. An air exhaust for clothes dryers comprising: a pair of plates adapted to be mounted upon the inner and outer surfaces, respectively, of a building wall; an exhaust duct extending between said plates adapted at one end to be connected in communication with the air outlet of a clothes dryer and having its other end opening to atmosphere through one of the plates; a closure panel swingably connected to said one plate for adjustment to opposite, extreme positions in one of which it engages said other end of the duct to close the same, and in the other of which it is swung outwardly from said end of the duct; and means to shift the panel to the respective

extreme positions thereof including a latch rod connected at one end to the panel and extending in substantial parallelism with the duct, said latch rod being loosely mounted in the plates for rotation and for movement in the direction of its own length, a keeper on the other plate disposed to engage the other end of the latch rod on rotation of the latch rod in one direction in the outwardly swung position of the closure panel, and a latch member on the other plate having a portion spaced outwardly from said other plate a greater distance than the keeper, said portion being disposed for engagement with said other end of the latch rod on rotation of the same in an opposite direction in the duct-closing position of the closure panel.

2. An air exhaust for clothes dryers comprising: a pair of spaced apart, flat, inner and outer plates proportioned to overlie the inner and outer surfaces, respectively, of a building wall, each of said plates having a center opening of substantial size and said openings being aligned transversely of the plates; a plurality of tie rods extending between the plates to connect the same and spaced about said openings of the plates; an exhaust duct formed open at its opposite ends, one end of the duct being fitted in the opening of the outer plate flush with the outer surface of said outer plate, the other end of the duct projecting through and beyond the opening of the inner plate and being adapted for connection to the air outlet of a clothes dryer; a closure panel swingably connected at one end to the outer surface of the outer plate for pivotal adjustment between opposite extreme positions in one of which the panel is sealably engaged against the outer end of the duct to close the same, and in the other of which the panel is swung outwardly from the outer plate to open the duct for exhaustion of air therethrough to atmosphere; and means movably mounted upon and extending between the plates in engagement with the other end of the closure panel and arranged for adjusting the same to the respective extreme positions thereof.

3. An air exhaust for clothes dryers comprising: a pair of spaced apart, flat inner and outer plates proportioned to overlie the inner and outer surfaces, respectively, of a building wall, each of said plates having a center opening of substantial size and said openings being aligned transversely of the plates; a plurality of tie rods extending between the plates to connect the same and spaced about said openings of the plates; an exhaust duct formed open at its opposite ends, one end of the duct being fitted in the opening of the outer plate flush with the outer surface of said outer plate, the other end of the duct projecting through and beyond the opening of the inner plate and being adapted for connection to the air outlet of a clothes dryer; a closure panel swingably connected at one end to the outer surface of the outer plate for pivotal adjustment between opposite extreme positions in one of which the panel is sealably engaged against the outer end of the duct to close the same, and in the other of which the panel is swung outwardly from the outer plate to open the duct for exhaustion of air therethrough to atmosphere; a latch rod arranged in substantial parallelism with the duct and loosely mounted in the respective plates for rotation and for movement in the direction of its own length, said latch rod having a connection at one end to the other end of the closure panel for adjusting the same

to the respective extreme positions thereof responsive to movement of the latch rod in the direction of its length; and means carried by the inner plate releasably engaging the other end of the latch rod in selected positions to which the latch rod is rotated at the limits of its longitudinal movement, for retaining the closure panel in each of said extreme positions thereof.

4. An air exhaust for clothes dryers comprising: a pair of spaced apart, flat inner and outer plates proportioned to overlie the inner and outer surfaces, respectively, of a building wall, each of said plates having a center opening of substantial size and said openings being aligned transversely of the plates; a plurality of tie rods extending between the plates to connect the same and spaced about said openings of the plates; an exhaust duct formed open at its opposite ends, one end of the duct being fitted in the opening of the outer plate flush with the outer surface of said outer plate, the other end of the duct projecting through and beyond the opening of the inner plate and being adapted for connection to the air outlet of a clothes dryer; a closure panel swingably connected at one end to the outer surface of the outer plate for pivotal adjustment between opposite extreme positions in one of which the panel is sealably engaged against the outer end of the duct to close the same, and in the other of which the panel is swung outwardly from the outer plate to open the duct for exhaustion of air therethrough to atmosphere; a latch rod arranged in substantial parallelism with the duct and loosely mounted in the respective plates for rotation and for movement in the direction of its own length, said latch rod having a connection at one end to the other end of the closure panel for adjusting the same to the respective extreme positions thereof responsive to movement of the latch rod in the direction of its length; and means carried by the inner plate releasably engaging the other end of the latch rod in selected positions to which the latch rod is rotated at the limits of its longitudinal movement, for retaining the closure panel in each of said extreme positions thereof, said means including a keeper secured in close proximity to the inner plate to engage the other end of the latch rod when the closure panel is in its duct-opening position, and further including a latch member having a portion spaced outwardly a substantial distance from the inner plate and disposed for engagement with said other end of the latch rod in the duct-closing position of the closure panel.

5. An air exhaust for clothes dryers comprising: a pair of spaced apart, flat, inner and outer plates proportioned to overlie the inner and outer surfaces, respectively, of a building wall, each of said plates having a center opening of substantial size and said openings being aligned transversely of the plates; a plurality of tie rods extending between the plates to connect the same and spaced about said openings of the plates; an exhaust duct formed open at its opposite ends, one end of the duct being fitted in the opening of the outer plate flush with the outer surface of said outer plate, the other end of the duct projecting through and beyond the opening of the inner plate and being adapted for connection to the air outlet of a clothes dryer; a closure panel swingably connected at one end to the outer surface of the outer plate for pivotal adjustment between opposite extreme positions in one of which the panel is sealably engaged against the outer end of the duct to close the same, and in the other of which the panel is swung outwardly

from the outer plate to open the duct for exhaustion of air therethrough to atmosphere; a latch rod arranged in substantial parallelism with the duct and loosely mounted in the respective plates for rotation and for movement in the direction of its own length, said latch rod having a connection at one end to the other end of the closure panel for adjusting the same to the respective extreme positions thereof responsive to movement of the latch rod in the direction of its length; and means carried by the inner plate releasably engaging the other end of the latch rod in selected positions to which the latch rod is rotated at the limits of its longitudinal movement, for retaining the closure panel in each of said extreme positions thereof, said means including a keeper secured in close proximity to the inner plate to engage the other end of the latch rod when the closure panel is in its duct-opening position, said other end of the latch rod being formed with a portion arranged normally to the axis of the latch rod, said means further including a latch member secured to the inner plate and having a cam surface spaced a substantial distance outwardly of the inner plate, said cam surface being arranged obliquely to said portion of the latch rod to bias the same away from the inner plate, thereby to force the closure panel into sealing engagement with the first-named end of the duct.

6. An exhaust for clothes dryers comprising: a pair of flat, parallel inner and outer plates proportioned to overlie the inner and outer surfaces, respectively, of a building wall, each of the plates having a center opening of substantial size and a plurality of smaller marginal openings; a plurality of tie rods each of which has its opposite ends threaded and extended through the smaller openings of the plates, said tie rods extending between the plates to connect the same and being arranged about the large openings of the plates in a marginal series; nuts threaded on the ends of the respective tie rods against the inner and outer plates to clampably engage the plates with the wall at a distance apart corresponding to the thickness of the wall; a duct extending between the plates and having one end flush with the outer surface of the outer plate, said end of the duct being engaged within the larger opening of the outer plate, the duct having its other end slidably positioned through and extending beyond the inner plate for connection to the air outlet of a clothes dryer; a closure panel swingably connected at one end to the outer plate for pivotal adjustment to opposite extreme positions in one of which it engages said one end of the duct to close the same and in the other of which it is swung outwardly from the outer plate to open the duct for exhaustion of air therethrough to atmosphere; a latch rod extending between the plates in substantial parallelism with the duct; means for connecting one end of the latch rod to the other end of the closure panel at a selected location along the length of the latch rod, said latch rod being rotatably engaged with the closure panel and the respective plates and being mounted on the plates for movement in the direction of its length to shift the closure panel to said extreme positions thereof; a handle portion on the other end of the latch rod arranged normally to the axis of rotation thereof; a keeper secured to and spaced closely from the inner plate and disposed to engage said handle portion on rotation of the rod in one direction, in that position to which the rod is longitudinally moved in adjusting the panel out of engagement with the duct; and a latch member secured to the inner plate and including a cam surface arranged obliquely to the axis of rotation of the latch rod, said cam surface being spaced outwardly from the inner plate a substantial distance and being adapted for biasing the handle portion outwardly of the inner plate responsive to rotation of the latch rod in that position to which the latch rod is longitudinally moved in adjusting the closure panel into engagement with the duct, whereby to sealably engage the closure panel with the first-named end of the duct.

7. An air exhaust for clothes dryers comprising: a pair of plates adapted to be mounted upon the inner and outer surfaces, respectively, of a building wall; an exhaust duct extending between said plates adapted at one end to be connected in communication with the air outlet of a clothes dryer and having its other end opening to atmosphere through one of the plates; a closure panel swingably connected to said one plate for adjustment to opposite, extreme positions in one of which it engages said other end of the duct to close the same, and in the other of which it is swung outwardly from said end of the duct; a latch rod connected at one end to the closure panel and mounted on the plates for rotation and for longitudinal movement, said latch member including a laterally projecting handle at its other end; keeper means on the other plate releasably engaging the latch rod handle in the outwardly swung position of the closure panel, thus to retain the panel in said outwardly swung position; and a latch member mounted on the other plate for engaging the latch rod in the duct-closing position of the panel, said latch member including a cam surface extending obliquely across the path of movement of the latch rod handle on rotation of the latch rod in the duct-closing position of the panel, to bias the rod longitudinally in a direction away from the closure panel, thereby to bind the closure panel against said one plate.

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