April 19, 1955 D. S. RISLEY 2,706,442

VENTILATED WALL

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FIG. 1.

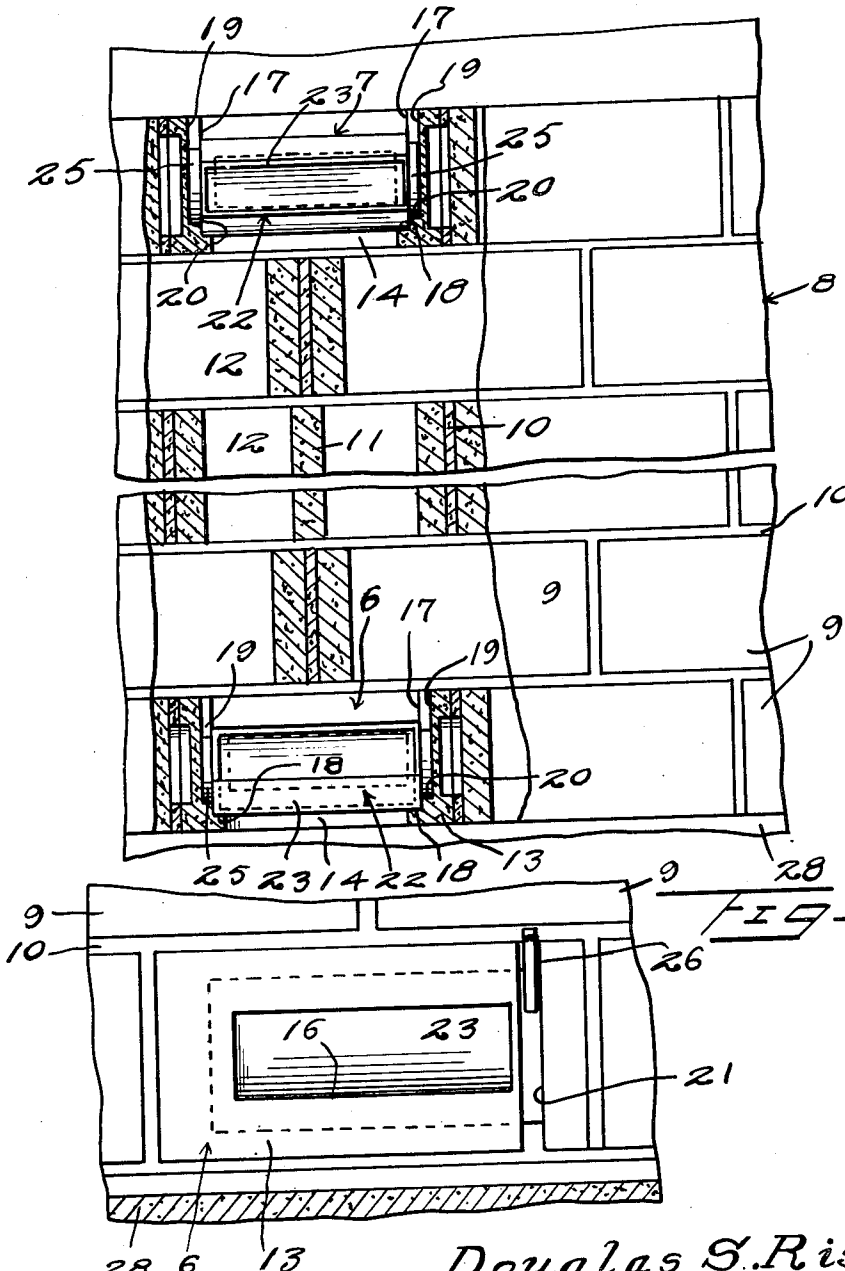

FIG. 7.

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Fig. 2.

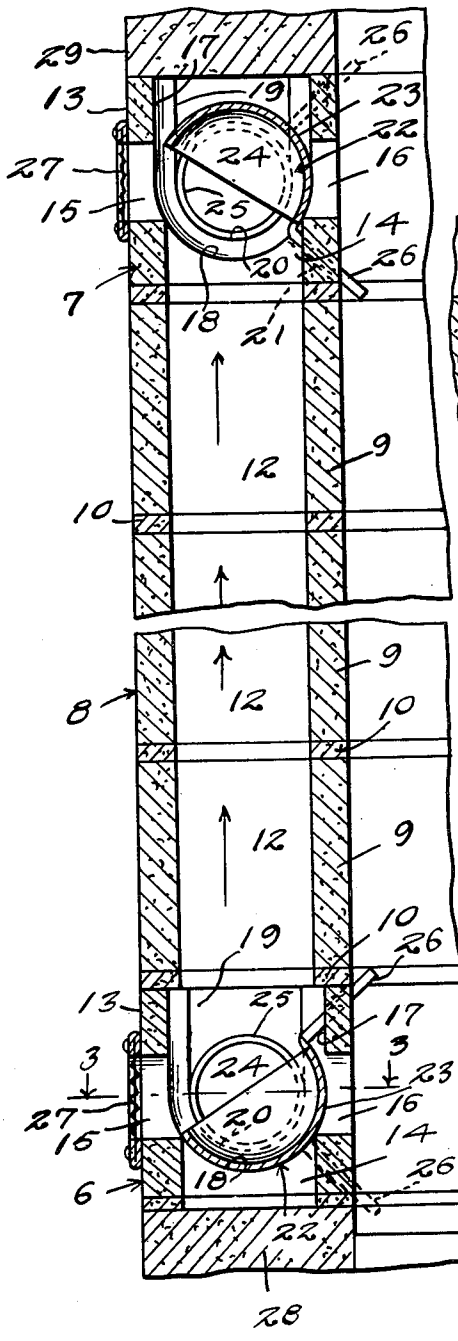
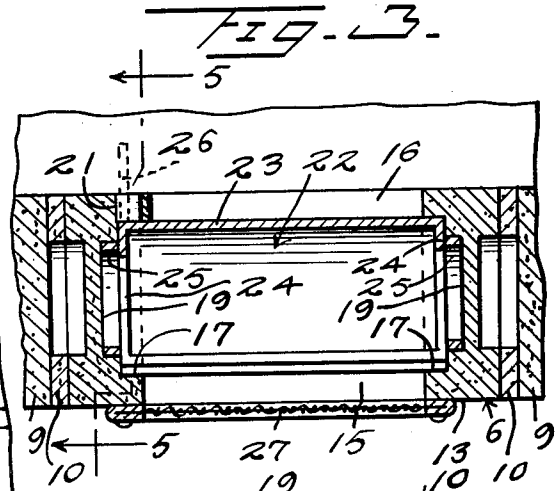


Fig. 3.



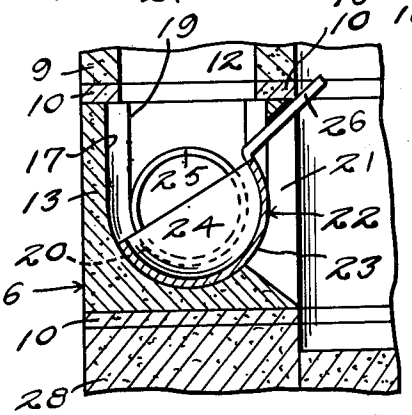


Fig. 5.

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VENTILATED WALL

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Application September 19, 1952, Serial No. 310,409
7 Claims. (Cl. 98—32)

This invention relates to a ventilated building wall and more particularly to a wall of hollow block construction and including at least two specially constructed hollow blocks containing regulating means to control the entrance of air to the wall through one of said blocks and from a selected side of the wall and to additionally control the exit of air from the hollow interior of the wall through the other specially constructed block through a selected side of the wall.

More particularly, it is an aim of the present invention to provide a specially constructed ventilating block intended to be employed in pairs for controlling the circulation of air through a wall of hollow block construction and the entrance of the air into the wall and the exit of the air therefrom.

More particularly, it is a primary object of the present invention to provide specially constructed vent blocks equipped with valve means intended to be incorporated in a hollow wall or otherwise conventional construction to permit the circulation of air through the wall for cooling the wall and an enclosure of which the wall forms a part in hot weather and for utilizing the sun's heat for heating air passing through the wall and for supplying the heated air to an enclosure of which the wall forms a part in cold weather.

Still a further object of the invention is to provide a specially constructed vent block having demountable valve means and which may be readily combined with conventional hollow blocks to provide a hollow block wall through which a control of circulation of air may be accomplished, to thus provide a structure of extremely simple construction capable of being readily incorporated in hollow block walls being constructed at very slight additional cost for obtaining a control of circulation of air through the wall for assisting in heating a building of which the wall forms a part in cold weather and to facilitate cooling of the building during hot weather.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a fragmentary side elevational view, partly in vertical section, of a portion of a hollow block wall showing the novel vent block incorporated therein;

Figure 2 is an enlarged vertical sectional view through the wall and through the specially constructed vent block thereof;

Figure 3 is a fragmentary horizontal sectional view through the lower vent block taken substantially along a plane as indicated by the line 3—3 of Figure 2;

Figure 4 is an elevational view looking toward the inner side of the lower vent block, and

Figure 5 is a cross sectional view of the lower vent block taken substantially along a plane as indicated by the line 5—5 of Figure 3.

Referring more specifically to the drawings, for the purpose of illustrating a preferred application and use of a pair of the vent blocks, designated generally 6 and 7 and comprising the invention, the numeral 8 designates generally a wall of hollow block construction which may be of any length and height and which may include any number of conventional hollow building blocks 9, formed of concrete or other suitable material. The blocks 9 of the wall 8 are joined in superposed courses in a conventional manner by a suitable mortar or bonding medium 10 and the individual blocks of the adjacent courses are staggered relatively to one another in a conventional manner. The mortar or bonding medium 10 extends only along the top and bottom edges of the front and rear walls of the blocks 9 and between the abutting ends of said blocks but not between the top and bottom edges of the block ends and webs 11. Consequently, air may circulate longitudinally of the wall 8 between the courses thereof and the hollow blocks 9 of the different courses have communicating bores or hollow chambers 12 defined

by the end walls, front and rear walls and webs 11 thereof whereby the air may circulate vertically through the blocks of the different courses from the bottom to the top of the wall as well as longitudinally of the wall.

The wall 8 is accordingly of conventional hollow block construction except that the vent block unit 6 constitutes one of the blocks of the bottom course of the wall and the vent block unit 7 constitutes a block of the upper course thereof. The vent block units 6 and 7 each includes a hollow block 13 of the same exterior dimensions as the blocks 9 but which is provided with a relatively large hollow interior chamber 14 which opens outwardly of the top and bottom of the block 13. The outer and inner walls of each block 13 are provided with vent openings 15 and 16, respectively, formed therein and which communicate with the hollow interior chamber 14. The hollow interior chamber 14 of each block 13 has an enlarged upper portion 17 opening outwardly of the top of the block and which is provided with a rounded or semicircular bottom portion 18. Said enlarged upper portions 17 of the blocks 13 are provided with restricted end portions 19 of the same shape as the portions 17, each of which includes a semicircular bottom portion 20 disposed above and concentric with the semicircular bottom portion 18. As best seen in Figure 4, the inner wall of each block 13 is provided with a vertically elongated slot or opening 21 disposed beyond one end of the vent opening 16 thereof.

A valve member, designated generally 22, is detachably and turnably mounted in each of the blocks 13. Each valve member 22 is preferably substantially semicircular in cross section. The valve members 22 are illustrated as being of hollow construction including a substantially semicylindrical side wall 23 and having semicircular end walls 24. The valve members 22 as thus constructed may be formed of metal and may be made relatively light in weight or said valve members may be of solid construction substantially semicircular in cross section and may be formed of concrete or other suitable material. Each valve member 22 has a trunnion 25 at each end thereof which is formed integral with or suitably fixed to the outer side of the contiguous end wall 24. The trunnions 25 are smaller in diameter than the semicircular valve body 23. Each valve member 22 also includes an actuating element comprising an arm or rod 26 which is fixed to and projects outwardly therefrom adjacent an end of the valve member 22 and which is disposed for swinging movement in the slot 21 of the block 13 in which said valve member 22 is turnably disposed.

The diameters of the semicircular valve bodies 23 are slightly less than the diameter of the recessed bottom portion 18 and the width of the recessed upper portion 17, and the diameter of the semicircular recessed bottom portions 20 and the width of the restricted end portions 19 are slightly greater than the diameter of the trunnions 25, so that before the blocks 13 are laid in the top and bottom courses of the wall 8 the valve members 22 are inserted into the recessed portions 17 thereof through the open upper ends of said blocks and so that the valve bodies 23 will engage said recessed portions 17 and 18 and the trunnions 25 will engage the recessed end portions 19 including the semicircular bottom portions 20 thereof, for turnably supporting the valve members 22 in the blocks 13. As illustrated in Figure 2, the valve member 22 of the upper block 13 is inverted relatively to the valve member 22 of the lower block and the slot 21 of the upper block 13 may be disposed adjacent the end of the block opposite the end of the lower block 13 in which the slot 21 is provided or the arm 26 of the upper valve member may be located at the opposite end of said valve member to the arm 26 of the lower valve member. The valve members 22 are inserted through the tops of the blocks 13 and so that the arms 26 will extend through the slots 21.

The vent openings 15 of the outer walls of the blocks 13 are preferably covered with mesh wire fabric 27 or similar screening material to prevent insects entering the hollow interior of the wall 8 through said openings 15.

During the summertime or under hot weather conditions when it is desirable to cool the wall 8, the actuating arm 26 of the lower valve member 22 is swung to the

upper extremity of the slot **21** and so that the valve **22** will be positioned as illustrated in Figure 2 to close the inner vent opening **16** and expose the outer vent opening **15** of the lower vent unit **6**. The upper valve **22** is likewise positioned to close the inner vent opening **16** and to expose the outer vent opening **15** of the upper vent unit **7** by positioning the arm **26** at the lower end of the slot **21**, as illustrated in Figure 2. Consequently, when the wall **8** is heated by the sun's ray impinging thereagainst hot air therein will rise through the communicating vertical bores **12** of the blocks **9** and pass outwardly through the outer vent opening **15** of the upper block **13** creating a partial vacuum in the wall **8** so that cool air will be drawn inwardly through the outer vent opening **15** of the lower block **13**. The cool air will pass upwardly and also horizontally or longitudinally of the wall **8** between the mortar joints **10** disposed above and beneath the front and rear walls of the blocks, said air additionally passing between the end walls and webs of the blocks **9** of the different courses since said portions are not connected by mortar joints, as illustrated in Figures 1 and 2. Thus, the cool air will circulate longitudinally and vertically of the wall **8** causing the hot air in the upper portion of the wall to move both longitudinally and vertically thereof to escape from the vent opening **15** of the upper block **13**. The wall **8** is supported in a conventional manner on a suitable footing **28** which closes the open bottoms of the blocks of the bottom course and a lintel **29** which rests on the top of the wall **8** closes the open tops of the blocks of the upper course thereof, so that all air entering the wall **8** must do so through the vent opening **15** of the bottom block **13** and all air escaping from the hollow interior of said wall must pass outwardly through the vent opening **15** of the upper block **13**. Ordinarily a single pair of vent units **6** and **7** is sufficient for a wall of normal length since the air may pass both vertically and longitudinally of the wall. However, for walls of extreme length two or more sets of vent units **6** and **7** may be provided. It will thus be seen that the vent units **6** and **7** will effectively function for cooling the wall **8** and will thus assist materially in cooling an enclosure of which the wall **8** forms a part during hot weather.

Under cold weather conditions, the valve actuator **26** of the lower unit **6** is swung downwardly to the bottom of the slot **21** to its dotted line position of Figure 2 so that the valve member **22** will close the outer vent opening **15** and expose the inner vent opening **16** of the unit **6**. Similarly, the upper actuating arm **26** is swung upwardly to the upper extremity of its slot **21** so that the valve portion **23** will close the outer vent opening **15** and expose the inner vent opening **16** of the upper unit **7**. The sun's rays on the wall **8** during the wintertime or under cold weather conditions will heat the wall and the air contained therein, causing such air to rise and escape through the inner vent opening **16** of the upper unit **7** into the enclosure of which the wall forms a part creating a vacuum in the wall **8** so that cool air will be drawn into the wall **8** through the open vent opening **16** of the bottom unit **6** from the interior of the enclosure and adjacent the floor level. Thus, a circulation of air will be produced by the vent units **6** and **7** under cold weather conditions and which will result in cool air being withdrawn from an enclosure adjacent the bottom of the wall and heated air being supplied thereto.

It will thus be seen that the vent units **6** and **7** will effectively function for cooling a wall and an enclosure of which the wall forms a part in hot weather and for assisting in heating an enclosure of which the wall forms a part in cold weather. It will also be apparent that the vent units **6** and **7** which are substantially identical in construction may be very economically manufactured and sold and when assembled may be readily laid as parts of bottom and top courses of a block wall.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A controlled venting means for a hollow block wall comprising a lower vent unit and an upper vent unit each including a hollow block, the block of the lower vent unit forming a part of a lower course of the wall and the block of the upper vent unit forming a part of an upper course of the wall, said vent unit blocks having hollow interiors communicating with hollow interiors of other blocks of courses of the wall disposed between said vent unit blocks, each vent unit block including an outer wall and an inner wall provided with an outer vent opening and an inner vent opening, respectively, said vent openings being oppositely disposed and communicating with the hollow interior of the vent unit block, and a valve member turnably mounted in the hollow interior of each vent unit block and adjustable therein for selectively closing either the inner or outer vent opening thereof whereby air may circulate through the hollow interior of the wall and escape through the exposed vent opening of one of the vent unit blocks and may enter the wall through the exposed vent opening of the other vent unit block.

2. A controlled venting means for hollow block walls as in claim 1, the inner walls of said vent unit blocks each being provided with a vertically elongated slot disposed beyond an end of the inner vent opening thereof, and an actuating arm projecting from and fixed to each of said valve members and extending through and being swingably disposed in the slot of the block thereof for adjustably positioning the valve member to selectively close either of the vent openings of the block.

3. A controlled venting means for hollow block walls as in claim 1, said vent unit blocks having restricted recessed end portions, and said valve members including trunnions projecting from the ends thereof and journaled in the restricted recessed end portions of the blocks for rotatably supporting the valve members in the vent unit blocks.

4. A controlled venting means for hollow block walls as in claim 3, said valve members each including a substantially semicircular body portion disposed between said trunnions.

5. A controlled venting means for hollow walls as in claim 1, said vent unit blocks having upwardly opening recesses provided with semicircular bottom portions, said valve members being insertable into the vent unit blocks through the open tops thereof and having substantially semicircular body portions turnably fitting the semicircular bottom portions of said block recesses.

6. A controlled venting means for hollow block walls as in claim 5, said vent unit blocks each including restricted recessed end portions opening outwardly of the top of the block and having semicircular bottom portions, said valve members having trunnions fixed to and projecting from the ends of the semicircular body portion and journaled in the semicircular bottom portions of the restricted recessed ends for rotatably supporting the valve members in the vent unit blocks.

7. A controlled venting means for hollow walls comprising an upper vent unit and a lower vent unit each including a hollow block having an outer wall and an inner wall provided with an outer vent opening and an inner vent opening, respectively, communicating with the hollow interior thereof and disposed in opposed relationship, the lower vent unit block forming a part of a lower course of a hollow wall and the upper vent unit block forming a part of an upper course of the wall, the hollow interiors of said vent unit blocks being in communication with blocks of the courses of the wall disposed therebetween, and each of said vent unit blocks having a valve member movably mounted therein and manually adjustable for selectively closing either the outer or the inner vent opening thereof whereby air may escape through one of the vent openings of the upper vent unit block from the wall and may enter said wall through one of the vent openings of the lower vent unit block.

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