

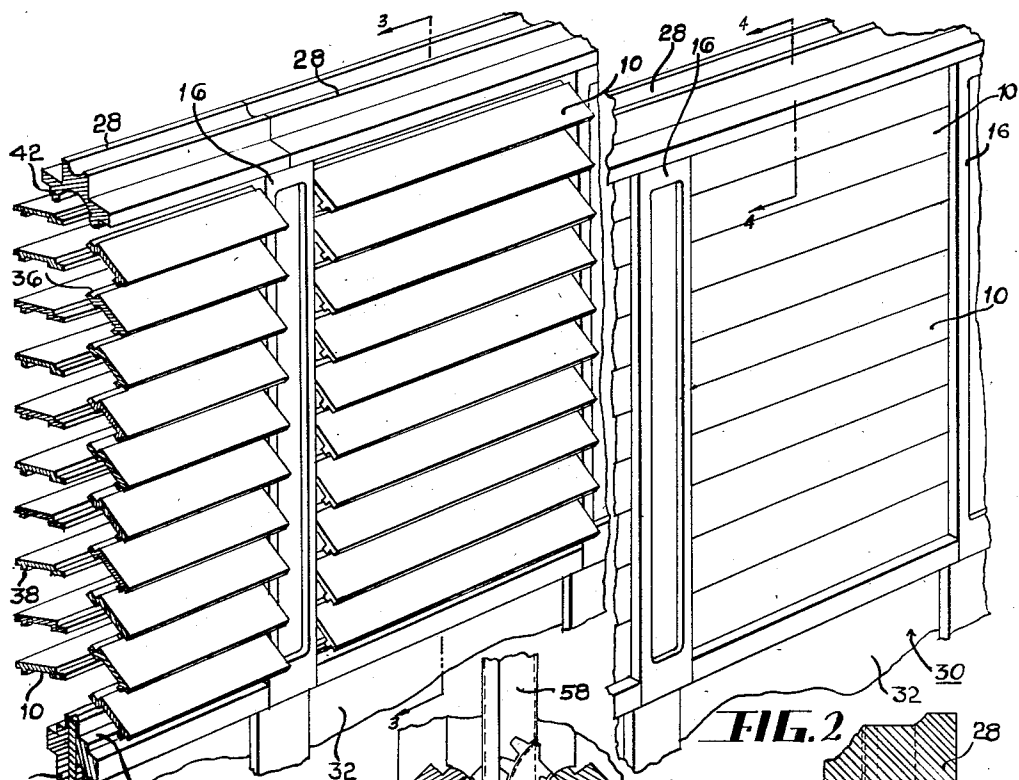
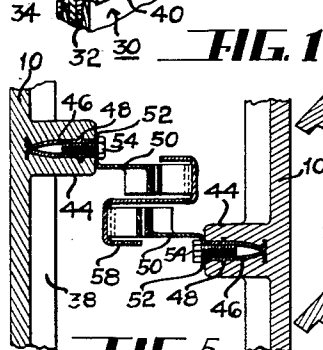
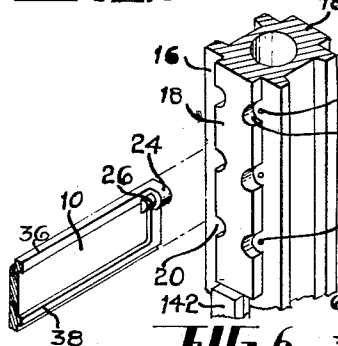
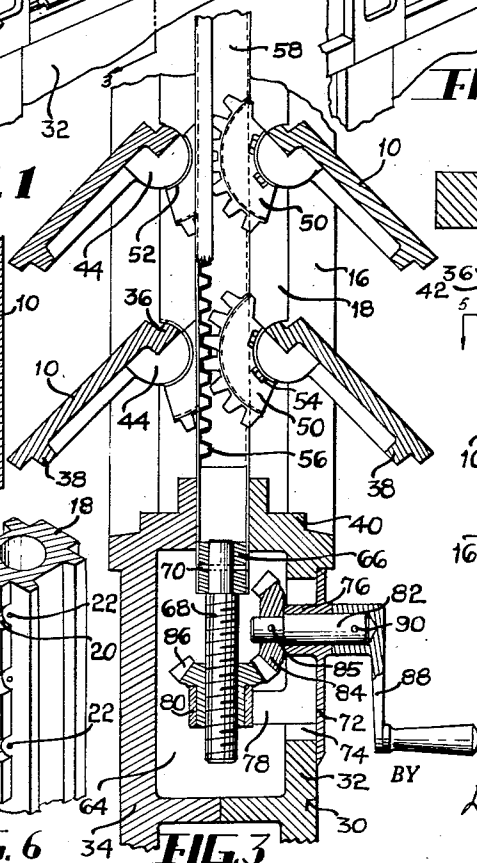
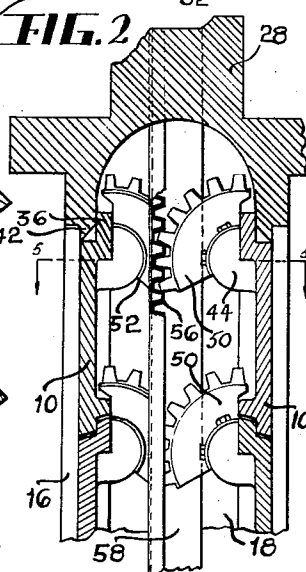
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LOUVERED WALL

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LOUVERED WALL

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The present invention relates to a ventilating wall constructed from interlocking members, and more particularly to a wall having a double layer of adjustable louvers therein, although not necessarily so limited.

One object of this invention is to provide a louver assembly of interlocking construction of sufficient strength and durability for use in outside walls of homes.

Another object of this invention is to provide a louver assembly which is adjustable to provide adequate ventilation at the same time providing privacy and protection from direct sunshine and rainfall.

Still another object of this invention is to provide an adjustable louver assembly which may be constructed from concrete and other construction materials and which has a rugged adjustment mechanism compatible with the use of heavy construction materials.

A further object of this invention is to provide a louver assembly wherein interlocking louvers are utilized providing for complete closure of the wall assembly to form an air insulated wall section for use in cold weather.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

In the drawing,

Figure 1 is a perspective view, with portions broken away, of a louver assembly adjusted to an open position.

Figure 2 is a perspective view of a portion of the louver assembly shown in Figure 1 with the louvers in the closed position.

Figure 3 is an enlarged fragmentary sectional view taken substantially along the line 3—3 of Figure 1.

Figure 4 is an enlarged fragmentary sectional view taken substantially along the line 4—4 of Figure 2.

Figure 5 is a fragmentary sectional view taken substantially along the line 5—5 of Figure 4.

Figure 6 is an enlarged exploded fragmentary detail view showing one louver of the assembly in relation to a supporting member.

Referring to the drawings in detail, the louver assemblies in Figures 1, 2 are shown mounted within a frame of interlocking construction blocks. Each louver assembly includes a plurality of equally spaced horizontal louvers 10 arranged in two parallel vertically extending lattices so as to form inner and outer wall sections. The louvers 10 are hingedly joined to upright studs 16, which may be common to two louver assemblies.

As shown in Figure 6, each stud 16 is a hollow, substantially rectangular post provided with offset portions 18 on opposite sides thereof. Each offset portion 18 has a plurality of vertically spaced pairs of oppositely directed semi-cylindrical notches 20 in the margins thereof. A hole 22 is provided in the stud 16 adjacent each notch 20, the hole being located at substantially the geometric axis of the semi-cylindrical notch.

Along the upper marginal portion of each louver 10 are two semi-cylindrical projections or bosses 24, there

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being one such projection at each end of the louver. The louvers 10 are each hingedly joined to the upright studs 16 by seating the semi-cylindrical projections 24 into the horizontally aligned notches 20 in the studs.

5 The louvers are secured to the studs by pins 26, one projected through each boss 24 into the adjacent hole 22. Each louver 10 is thus free to pivot upwardly and outwardly between the studs 16.

The frame enclosing each louver assembly is completed by providing a lintel 28 extending horizontally across the top of the louver assembly, and a sill assembly 30 extending horizontally across the bottom of the louver assembly. As will be described hereinafter, the sill assembly 30 comprises two opposing interlocking sill members 32 and 34, housing a jack assembly for adjusting the louvers 10.

Each louver 10 is provided with an inner offset flange 36 along the upper horizontal margin thereof and a horizontal inwardly projecting rib 38 adjacent the lower margin thereof. When the louvers 10, cooperating to form one wall of the assembly, all are oriented vertically, the offset flange 36 of each louver 10 engages the lower inner margin of the next higher louver, cooperating with the rib 38 thereof to form a weather tight closure. As shown in the drawing, the edges of the louvers may be beveled slightly to insure that the louvers interlock properly as they pivot to a vertical orientation.

The inner margin of the lowest louver 10 on each side of the wall assembly seats against a stop or rebate 40 provided therefor in the adjacent sill. Similarly, the offset flange 36 of the highest louver 10 on each side of the wall assembly seats against a flange 42 provided therefor in the lintel 28. Thus, the wall assembly provides a weather tight inner and outer wall surface when the individual louvers 10 are all vertically oriented.

The louver assembly herein described may be constructed from concrete, metal, wood, ceramic tile, or any other suitable construction material. As shown in the drawing, the studs, the lintels, and sill members, may interlock with other construction blocks, as will be explained more fully.

The louvers are adjusted to open and close the wall assembly for ventilation by the mechanism shown in Figures 3, 4, and 5. In an off-center position in each louver 10, an arcuate projection 44 is provided adjacent the upper margin of the louver on the inward side thereof. Extending substantially radially into each said projection 44 is a tubular insert 46 having interior threads adapted to receive a screw. The insert 46 is provided with circular flanges 48 embedded in the projection 44 which prevent withdrawal of the insert.

Secured to the arcuate projection 44 of each louver 10 is a gear segment 50 provided with an arcuate flange portion 52 complementing and engaging the surface of the arcuate projection 44. The arrangement of parts is such that the geometric center of the gear segment 50 lies on the axis about which the louver pivots. The gear segment 50 is anchored to the louver 10 by bolts 54 engaging the threaded insert 46. Each gear segment 50 is substantially a quadrant.

For economy of weight and cost, the gear segments 50 illustrated are of stamped metal construction, however, the gear segments may be formed by any other suitable means. The gear segments 50, attached to inner and outer louvers of the wall assembly, are aligned in two vertical columns, the gear segments secured to the inner louvers forming one column on one side of the center of the wall assembly and the gear segments secured to the outer louvers forming another column on the opposite side of the center of the wall assembly. Extending vertically in a central position between the inner and outer louvers is a gear rack assembly including

two oppositely disposed vertical gear racks 56 and a substantially S-shaped vertical channel member 58 for supporting the racks. This construction is seen best in Figure 5.

The gear racks 56 are seated in opposing channels in the S-shaped channel member 58, one gear rack 56 meshing with the gear segments 50 attached to the outer louvers 10 and the other gear rack 56 meshing with the gear segments 50 attached to the inner louver members 10. The upper end of the gear rack assembly projects through the lintel 28 at the top of the wall assembly. The lower end of the gear rack assembly projects into a cavity 64 disposed centrally between the sill members 32 and 34 at the base of the wall assembly. Secured to the lower end of the channel member 58 is a metallic block 66 into which is journaled a vertical threaded shaft 68 secured therein by a pin 70. A jack assembly including the threaded shaft 68 is employed to move the channel member 58 vertically.

The jack assembly comprises a plate 72 mounted flush with the inner sill member 34 and covering an aperture 74 therein. The plate 72 supports a horizontally disposed bearing 76 and also carries an L-shaped bracket 78 supporting a vertically disposed bearing 80 within the cavity 64. A shaft 82 journaled for rotation in the bearing 76 provides an axle for a beveled gear 84 which is secured non-rotatably thereto by a pin 85. A beveled gear 86 meshing with the gear 84 is journaled for rotation in the bearing 80. The beveled gear 86 threadedly engages the threaded shaft 68 attached to the gear rack assembly. A crank handle 88 is pinned to the shaft 82 with a pin 90, the crank handle projecting away from the sill member 34 for manual actuation.

Rotation of the crank handle 88 causes the beveled gears 84 and 86 to rotate within the cavity 64. As the beveled gear 86 rotates, the threaded shaft 68 is forced to move upwardly or downwardly depending upon the direction of rotation. The gear racks 56 are thereby urged to move vertically, forcing the louvers 10 to move pivotally.

It will be noted that the louvers 10 are movable only by turning the crank handle 88. Thus, the louver assembly is substantially free of rattles. Further, the louvers cannot be adjusted by a person outside the house, a safeguard to privacy.

The louvers 10 on either side of the wall assembly are positioned in parallel and are symmetric with respect to the louvers on the opposite side. As the gear rack assembly is cranked vertically to an extreme downward position, all of the louvers are opened to a substantially horizontal position and as the gear rack assembly is cranked to an extreme upward position, all of the louvers are positioned vertically to close the wall assembly.

In the construction of this device, the jack assembly including the crank handle 88, beveled gears 84 and 86 and threaded shaft 68 are preferably cast or machined parts of light weight metal such as an aluminum alloy.

The symmetric downward orientation of the louvers provides for good ventilation of air and transparency to diffuse light, yet affords privacy, in that it is impossible for one to see through the double louver assembly except when the louvers are adjusted toward horizontal position. Similarly, the louver assembly is comparatively impervious to rainfall. Although not shown, a screen may be positioned between the inner and outer louvers where it is well protected from the elements, yet effective in preventing entry of insects.

In the closed position, the louvers 10 provide two parallel solid wall sections with air insulation therebetween. The protection from cold air provided by this double wall assembly is sufficient for year around use in southern climates without further insulation.

Although the preferred embodiment and various modifications of the device have been described, it will be understood that within the purview of this invention

various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

I claim:

1. In a wall construction the combination including a pair of upright studs mounted in fixed spaced relation, a sill extending horizontally between said studs, means for securing the opposite ends of the sill to said studs, a lintel supported by said studs in spaced parallel relation to said sill, a plurality of vertically spaced inner louvers, a plurality of vertically spaced outer louvers, said inner louvers and said outer louvers occupying separate vertical planes between said sill and said lintel, means pivotally securing each said louver to said studs, a channel member extending vertically between said inner and outer louvers and having its ends journaled for reciprocating vertical movement in said sill and said lintel, a plurality of vertically spaced arcuate gear segments, there being one gear segment engaging each inner louver and meshing with one of said opposing gear racks, there being one gear segment engaging each outer louver and meshing with the other of said opposing gear racks, and jack means supported by said sill for moving said gear racks reciprocally in a vertical direction whereby said inner and outer louvers are each pivoted about a horizontal axis.

2. In a wall construction the combination including a pair of upright studs mounted in fixed spaced relation, a sill extending horizontally between said studs, means for securing the opposite ends of said sill to said studs, a lintel supported by said studs in spaced parallel relation to said sill, a plurality of vertically spaced inner louvers, means pivotally securing each said inner louver to said studs, a plurality of vertically spaced outer louvers, means pivotally securing each said outer louver to said studs, said inner and outer louvers occupying symmetric positions in separate vertical planes between said lintel and said sill, a channel member carrying a pair of offset opposing parallel gear racks extending vertically between said inner and outer louvers and having its ends journaled for reciprocating vertical movement in said sill and said lintel, a plurality of vertically spaced arcuate gear segments, there being one gear segment engaging each inner louver and meshing with one of said opposing gear racks, there being one gear segment engaging each outer louver and meshing with the other of said opposing gear racks, and jack means supported by said sill for moving said gear racks reciprocally in a vertical direction whereby said inner and outer louvers are pivoted oppositely about a horizontal axis to open and closed positions, the louvers each being provided with interlocking marginal portions whereby adjacent inner louvers and adjacent outer louvers interlock in the closed position.

3. In a wall construction, the combination according to claim 2 wherein the jack means includes a vertical threaded shaft secured to said channel member and projecting into said sill member, a first beveled gear provided with a threaded aperture threadedly engaging said shaft, means rotatably supporting said first beveled gear in fixed vertical position, a second beveled gear meshing with said first beveled gear, means rotatably supporting said second beveled gear in fixed spaced relation to said first beveled gear, and handle means for rotating said second beveled gear.

4. In a louvered wall construction, an inner and an outer wall section, each wall section comprising a plurality of elongate louvers disposed in spaced parallel positions, frame means supporting said wall sections in opposed relation in separate parallel planes, said frame means supporting each louver for pivotal movement about its own longitudinal axis, a channel member carrying a pair of offset opposing parallel gear racks extending between said wall sections in a direction normal to

the longitudinal axes of said louvers, a plurality of arcuate gear segments, there being one gear segment engaging each louver and each gear segment meshing with one of said gear racks, and jack means supported by said frame means for moving the gear racks reciprocally to pivot said louvers, each about its own longitudinal axis.

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