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(54) Masonry supporting device.

(57) A masonry supporting device and method for constructing a masonry wall using the device is disclosed. The device is characterized by a unitary structure (10) having a first pair of parallel faces (2,4) spaced a first dimension (12) apart and having a second pair of parallel faces (6,8) spaced a second dimension (14) apart. The device (10) is configured to removably reside intermediate opposed cantilevered horizontal surfaces of a masonry wall during the time that the masonry wall is being fabricated. The first dimension (12) is equivalent to the dimension separating the opposed cantilevered horizontal surfaces of the masonry wall when the masonry wall is fabricated using a mortar layer having a first thickness and the second dimension (14) is equivalent to the dimension separating the opposed cantilevered horizontal surfaces of the masonry wall when the masonry wall is fabricated using a mortar layer having a second thickness.

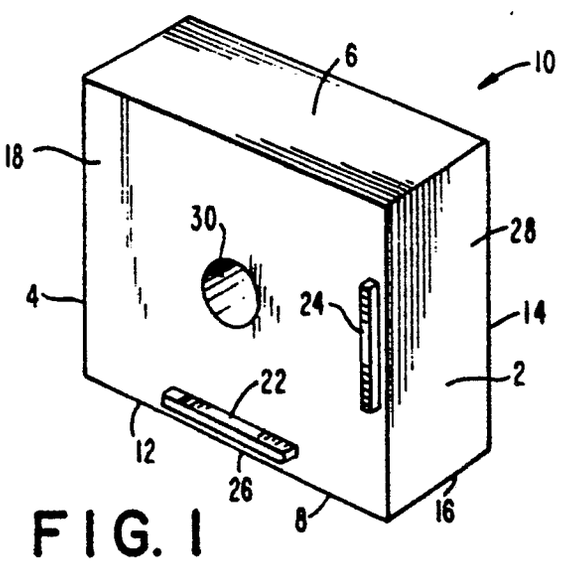

FIG. 1

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MASONRY SUPPORTING DEVICE

This invention relates to the masonry trade in general and in particular to that class of devices which are adapted to support the cantilevered portions of a masonry wall residing in a vertical plane and extending outwardly from the balance of the wall during the time that the mortar used in the fabrication of the wall is hardening.

When fabricating masonry walls from concrete block, brick and the like, the blocks or bricks are typically staggered from one horizontal layer to the next so that the joint between adjacent blocks or bricks on one row is straddled by an entire block or brick in the following row. This method of construction results in cantilevered portions of blocks or bricks in alternating rows which extend beyond the remainder of the wall structure.

In erecting the wall, a layer of mortar is laid between each row of blocks or bricks and between adjacent blocks or bricks, so that the cantilevered blocks or bricks at the end of the wall are free to move, if unsupported, until the mortar sets and fixes the block or brick in place. It is typical in the masonry trade to cut and insert pieces of wood having the proper dimension between the cantilevered portions of the block or brick in order to support the ends of the wall until the mortar has set. Once the mortar has set sufficiently to itself support the end portions of the wall the pieces of wood are removed.

The practice of using wood as a temporary support has many disadvantages. As wood is porous the wet mortar has a tendency to stick to the wood as it sets and is not easily removed therefrom. As the dimension of the wood is critical in order to maintain the cantilevered portions of the block or brick in the proper position, deposits of mortar which will alter this dimension cannot be tolerated. Furthermore, wood swells as it becomes wet, thereby changing its dimensions so that it may not accurately support the block or brick in the desired location. For the aforementioned reasons, it is frequently necessary to cut new pieces of wood in each instance that a wall is erected. This slows construction and introduces the possibility that the wood will not all be cut to the proper dimension so as to support the cantilevered portions of the block or brick in the proper position.

An alternate method for supporting the cantilevered bricks which is extensively used in the masonry industry is to cut a brick to the proper length to fit flushly with the end of the wall and cement it in place with mortar in the same manner as the rest of the wall. When the mortar has sufficiently set to rigidly support the cantilevered bricks, the cut brick is broken out of the wall and the mortar joint is chipped away.

Obviously, this method also has many disadvantages. In the first place, it is necessary to destroy many bricks during a construction project which results in increased costs. Additionally, removal of the cut brick is time-consuming, thereby slowing construction. There is also the possibility that neighboring bricks will be damaged upon removal of the cut brick, necessitating costly and time-consuming repairs.

It is known in the prior art to use spacers and other devices adapted to determine the lateral position of bricks or blocks, when erected in a wall-like structure, so as to insure that the horizontal distance separating such bricks or blocks is appropriate for inclusion of mortar in such space. United States Patent No. 3,196,581 issued to D. Castelli on July 27, 1965 is such a device which teaches spacing mechanisms adapted to gauge the vertical distance between layers of bricks as well as the horizontal distances between adjacent bricks when erecting a wall.

United States Patent No. 3,411,257 issued on November 19, 1968 to G. Yaremchuk discloses a spacing apparatus useful in the art of brick laying to position the height of bricks and their lateral spacing. Similarly, United States Patent No. 3,420,031 to D. Castelli issued on January 7, 1969 teaches a spacer in non-removable fashion to insure that blocks are sitting on a sufficiently thick, but not too thick, amount of mortar under their horizontal lateral surfaces. Also known are U-shaped spacers of varying thickness which are used in the construction industry to shim and support window frames, door frames and the like until they have been secured in place to the surrounding structure.

In addition to the foregoing, the tile setting trade has a plurality of teachings which essentially constitute gauges to control the separation of tiles at their joints, be they of cross- or x-type or be they of the T-type. This is typified by United States Patent No. 2,930,135 issued on March 29, 1960 to R.J. Rodtz, Sr. In such patent, the inventor has taught a plurality of shapes useful in making cross-type joints or T-type joints as well as continual straight runs utilizing spacers adapted to rest between the tiles when placed on a floor so that they are positioned accurately during the time that the mastic applied to the substrate and to the undersurface of the tile hardens and sets.

None of these prior art devices, however, can securely support the cantilevered portions at the ends of a masonry wall in a manner which makes them easily removable therefrom once the mortar

securing the blocks or bricks has set. Thus, there exists the need for a device which is accurately dimensioned and sufficiently strong to fit between and support the cantilevered portions of the block or brick at the ends of a masonry wall, and thereby maintain the position of the cantilevered blocks or brick until the mortar securing same has set. In particular, there exists a need for a support device which is easily removable from between the cantilevered blocks or bricks once the mortar has set, and from which any mortar which has hardened thereon may be easily removed.

The present invention addresses these needs by providing a masonry supporting device constructed of a unitary structure having a first pair of parallel faces spaced a first dimension apart and having a second pair of parallel faces spaced a second dimension apart, the device configured to removably reside intermediate opposed cantilevered horizontal surfaces of a masonry wall during the time that the masonry wall is being fabricated, the first dimension being equivalent to the dimension separating the opposed cantilevered horizontal surfaces of the masonry wall when the masonry wall is fabricated using a mortar layer having a first thickness and the second dimension being equivalent to the dimension separating the opposed cantilevered horizontal surfaces of the masonry wall when the masonry wall is fabricated using a mortar layer having a second thickness.

The present invention further addresses these needs by providing a method for constructing a masonry wall having alternating layers of bricks and mortar, each of the layers of bricks being longitudinally displaced from an adjacent layer of bricks to form opposed spaced apart cantilevered horizontal surfaces between pairs of the layers of bricks, the method includes measuring a first spaced apart distance between the opposed cantilevered horizontal surfaces; inserting a unitary masonry supporting device intermediate the opposed cantilevered horizontal surfaces to support the opposed cantilevered horizontal surfaces at the first spaced apart distance, the masonry supporting device having a first pair of parallel faces spaced apart a first dimension, and a second pair of parallel faces spaced apart a second dimension, at least one of the first and second dimensions being equivalent to the first spaced apart distance; and removing the masonry supporting device from intermediate the opposed cantilevered horizontal surfaces after the mortar layers have sufficiently set to hold the layers of bricks at the first spaced apart distance.

In order that the invention may be fully understood, it will now be described with reference to the accompanying drawings in which:

FIGURE 1 is a perspective view of one embodiment of the device in accordance with the present invention.

FIGURE 2 is a side elevational view of the device of FIGURE 1.

FIGURE 3 is an elevated view of a portion of an erected wall utilizing the present invention to support the cantilevered bricks at the ends thereof.

FIGURE 4 is an elevated view of a portion of an erected wall utilizing the present invention to support the cantilevered bricks in a central portion thereof.

Referring to the figures, FIGURE 1 shows a masonry supporting device constructed in accordance with the present invention having a first pair of parallel faces 2, 4 and a second pair of parallel faces 6, 8. Device 10 is a generally rectangular, three-dimensional, unitary structure, preferably fabricated from a plastic material such as polyethylene, although other strong and durable plastic materials may be used. A strong, integral structure may be achieved in either hollow or solid form by employing plastic molding techniques such as blow molding.

The dimensions of device 10 include a length 12, a height 14 and a width 16. The dimensions of length 12, height 14 and width 16 are related to the dimensions of the particular brick or block to be used in a masonry wall construction. As the masonry industry utilizes blocks and bricks having conventional sizes, devices 10 may be fabricated in a variety of sizes so that a device 10 will be available for use with substantially all of the blocks and bricks which may be used.

Typically, the dimensions of length 12 between faces 2, 4 and height 14 between faces 6, 8 will be similar to one another, and the dimension of width 16 will be significantly less. For example, in one embodiment in accordance with the present invention the dimension of length 12 will be about 3.00 inches, while the dimension of height 14 will be about 3.125 inches, and the dimension of width 16 will be about 1.250 inches.

Integrally formed on opposite faces 18 and 20 of device 10 are raised grips 22 and 24, as can be seen by referring to FIGURES 1 and 2. Raised grips 22 are formed adjacent and parallel to end 26 of device 10 which defines length 12. Raised grips 24 are formed adjacent and parallel to end 28 of device 10 which defines height 14. Hole 30 passes through a central area of device 10, from face 18 to face 20.

FIGURE 3 illustrates one use of device 10 during the construction of a masonry wall. In forming wall 40, bricks 42 are typically laid in parallel rows separated by layers of mortar 44. The bricks 42 in each layer are separated by mortar joints 46, and are so laid that the brick 42 in one layer straddles a mortar joint 46 in the previous layer.

When a wall is constructed in this manner, the ends of the wall will include alternating layers of bricks 50 having cantilevered portions 52 which extend beyond the remainder of the wall structure. Until the mortar in layers 44 and joints 46 has set, bricks 50 are free to move or sag. In order to prevent this movement, device 10 is inserted in the space between the cantilevered portions 52 of bricks 50. Depending upon the thickness of mortar layer 44 used during construction, either length 12 or height 14 of device 10 will snugly fit between the cantilevered portions 52 of bricks 50 and thereby provide support.

In those situations where wall 40 is constructed from bricks or blocks having a height either greater than or less than the height of bricks 42, a different device 10 is used having dimensions appropriate to those bricks or blocks. Therefore, devices 10 may be manufactured in a variety of sizes for use with all of the standard sizes of block or brick in the masonry industry.

Once the mortar in layers 44 and joints 46 has sufficiently set to support the cantilevered portions 52 of bricks 50, the devices 10 may be removed from therebetween. Removal of the devices 10 is readily accomplished by grasping raised grips 22 or 24, depending upon which dimension is used to support cantilevered portions 52 of bricks 50, and pulling in a lateral direction. While grips 22 and 24 have been shown to aid in the removal of the device 10 from between the cantilevered portions 52 of bricks 50, the present invention contemplates the use of any similarly functional structure. Thus, faces 18 and 20 may be fabricated with slots, recesses, bosses, holes, openings, knobs, or the like which may be similarly grasped to remove device 10 from its supporting position.

Once device 10 has been removed from fabricated wall 40, any extraneous deposits of mortar may be easily removed from its surfaces. Hole 30 facilitates the storage of the devices 10 when they are not in use. Thus, a length of rope, wire or other material may be threaded through the holes 30 in devices 10 in order to gather them for storage. In this manner the devices 10 can be conveniently stored in separate groups according to their dimensions.

During the construction of a masonry wall, device 10 may also be used in those situations where cantilevered portions of brick are deliberately positioned in the interior portion of a first wall. Thus, in forming wall 40′ from bricks 42′, shown in FIGURE 4, vertically aligned bricks in alternating rows are omitted to allow a second wall or structure to be tied into the first wall. The central portion of wall 40′ will thus include alternating layers of bricks 50′ having cantilevered portions 52′. As the length 12 and height 14 of device 10 are typically less than the length of bricks 42′, device 10 will normally fit into the space 60 formed by the omission of brick 42′ and its associated mortar. As described above, device 10 may be rotated so that either length 12 or height 14 will snugly fit between the cantilevered portions 52′ of bricks 50′ and thereby provide support until the surrounding mortar has set.

The devices 10 may be removed from between the cantilevered portions 52′ of bricks 50′ once the surrounding mortar has sufficiently set. Removal is accomplished in the same manner as described previously, Thus, raised grips 22 or 24, depending upon which dimension is used to support cantilevered portions 52′ of bricks 50′, are grasped and pulled in a lateral direction until device 10 is removed from its support position.

Claims

1. A masonry supporting device characterized by a unitary structure (10) having a first pair of parallel faces (2,4) spaced a first dimension (12) apart and having a second pair of parallel faces (6,8) spaced a second dimension (14) apart, said device (10) configured to removably reside intermediate opposed cantilevered horizontal surfaces of a masonry wall during the time that said masonry wall is being fabricated, said first dimension (12) being equivalent to the dimension separating said opposed cantilevered horizontal surfaces of said masonry wall when said masonry wall is fabricated using a mortar layer having a first thickness and said second dimension (14) being equivalent to the dimension separating said opposed cantilevered horizontal surfaces of said masonry wall when said masonry wall is fabricated using a mortar layer having a second thickness.

2. The device as claimed in claim 1, further characterized by grasping means (22,24) for applying a removal force to remove said unitary structure (10) from intermediate said opposed cantilevered horizontal surfaces of said masonry wall.

3. The device as claimed in claim 2, characterized in that said grasping means (22,24) comprises grip members (22,24) protruding laterally from an exterior surface (18:20) of said unitary structure (10), said grip members (22,24) being accessible for grasping when said unitary structure (10) is in place intermediate said opposed cantilevered horizontal surfaces of said masonry wall.

4. The device as claimed in claim 3, characterized in that said grasping means (22,24) comprises at least two grip members (22,24) protruding laterally from the exterior surface of said unitary structure, one of said grip members (22) in a first position perpendicular to said first pair of parallel faces (2,4) and another of said grip members (24)

in a second position perpendicular to said second pair of parallel faces (6,8).

5. The device as claimed in claim 4 further characterized by at least two additional grip members (22,24) protruding laterally from the exterior surface of said unitary structure, one of said additional grip members (22) located in said first position on the exterior surface (18:20) of said unitary structure (10) opposite said one of said grip members (22), and another of said additional grip members (24) located in said second position on the exterior surface (18:20) of said unitary structure (10) opposite said another of said grip members (24).

6. The device as claimed in claim 2, characterized in that said grasping means (22,24) comprises at least one opening in an exterior surface (2,4,6,8,18,20) of said unitary structure (10), said at least one opening being accessible for grasping when said unitary structure (10) is in place intermediate said opposed cantilevered horizontal surfaces of said masonry wall.

7. The device as claimed in any one of the preceding claims further characterized by means (30) for holding said unitary structure in assembled position for storage.

8. The device as claimed in any one of the preceding claims characterized in that said unitary structure (10) is fabricated from plastic material.

9. The device as claimed in any one of the preceding claims characterized in that said unitary structure (10) is hollow.

10. The device as claimed in any of claims 1-8 characterized in that said unitary structure (10) is solid.

11. The device as claimed in any one of the preceding claims characterized in that said first dimension (12) is different from said second dimension (14).

12. The device as claimed in any of claims 1-10 characterized in that said first dimension (12) is equivalent to said second dimension (14).

13. A method for constructing a masonry wall having alternating layers of bricks and mortar, each of said layers of bricks being longitudinally displaced from an adjacent layer of bricks to form opposed spaced apart cantilevered horizontal surfaces between pairs of said layers of bricks, said method characterized by measuring a first spaced apart distance between said opposed cantilevered horizontal surfaces; inserting a unitary masonry supporting device (10) intermediate said opposed cantilevered horizontal surfaces to support said opposed cantilevered horizontal surfaces at said first spaced apart distance, said masonry supporting device (10) having a first pair of parallel faces (2,4) spaced apart a first dimension (12), and a second pair of parallel faces (6,8) spaced apart a second dimension (14), at least one of said first and second dimensions (12,14) being equivalent to said first spaced apart distance; and removing said masonry supporting device (10) from intermediate said opposed cantilevered horizontal surfaces after said mortar layers have sufficiently set to hold said layers of bricks at said first spaced apart distance.

14. The method as claimed in claim 13 characterized in that said removing said masonry supporting device (10) includes applying a removal force to grip members (22,24) protruding laterally from an exterior surface (18:20) of said masonry supporting device (10), said grip members (22,24) being accessible for grasping when said masonry supporting device (10) is in place intermediate said opposed spaced apart cantilevered horizontal surfaces of said masonry wall.

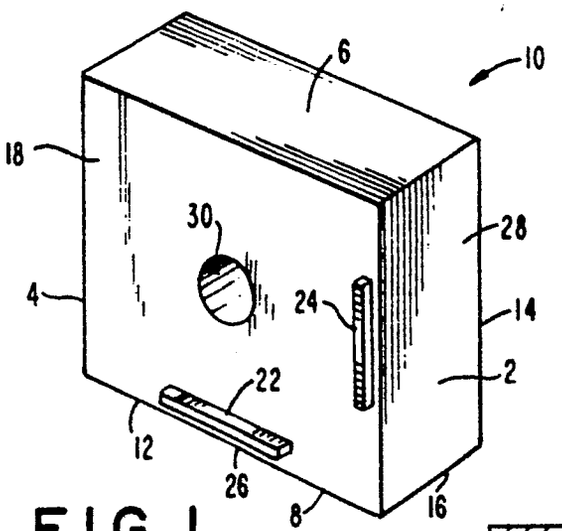

FIG. 1

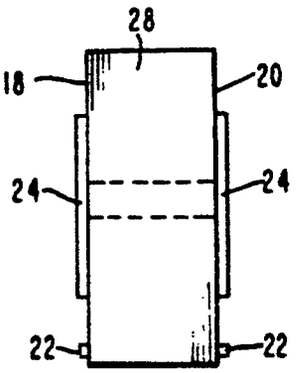

FIG. 2

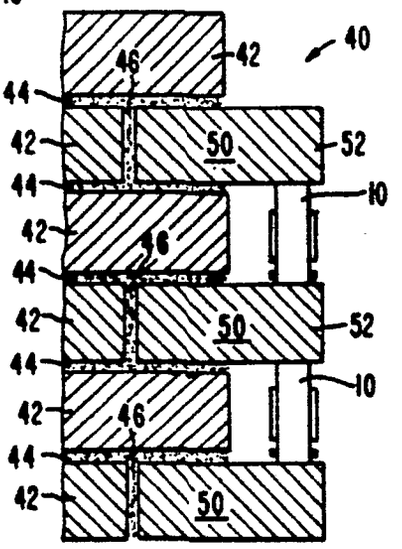

FIG. 3

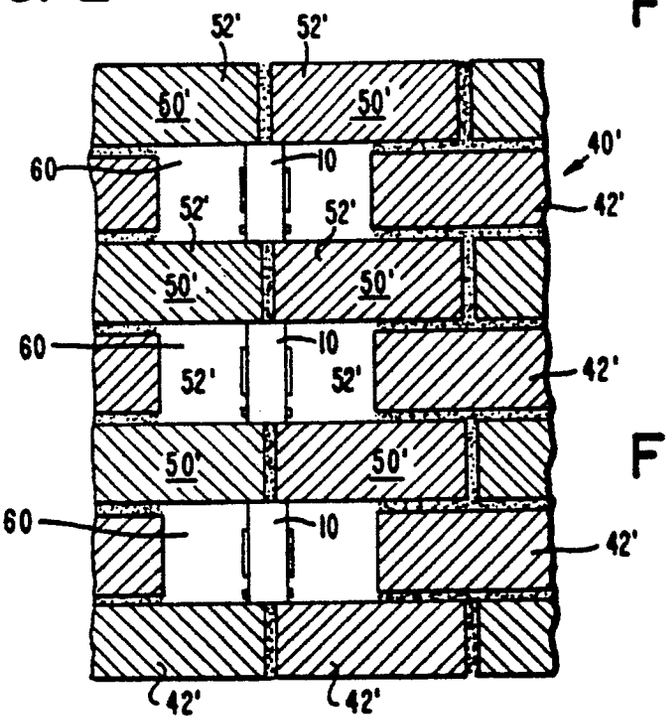

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 30 3917

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-2 428 374 (MALTHOUSE)		E 04 G 21/22 E 04 G 21/18
A	US-A-3 641 731 (WINFREE)		
A	US-A-2 105 613 (POSTON)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E 04 G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20-08-1990	VIJVERMAN W.C.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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