May 20, 1969 L. FREHNER 3,444,694

CURVILINEAR TERRACE CONSTRUCTION AND PLANTER BLOCKS AND METHODS THEREFOR

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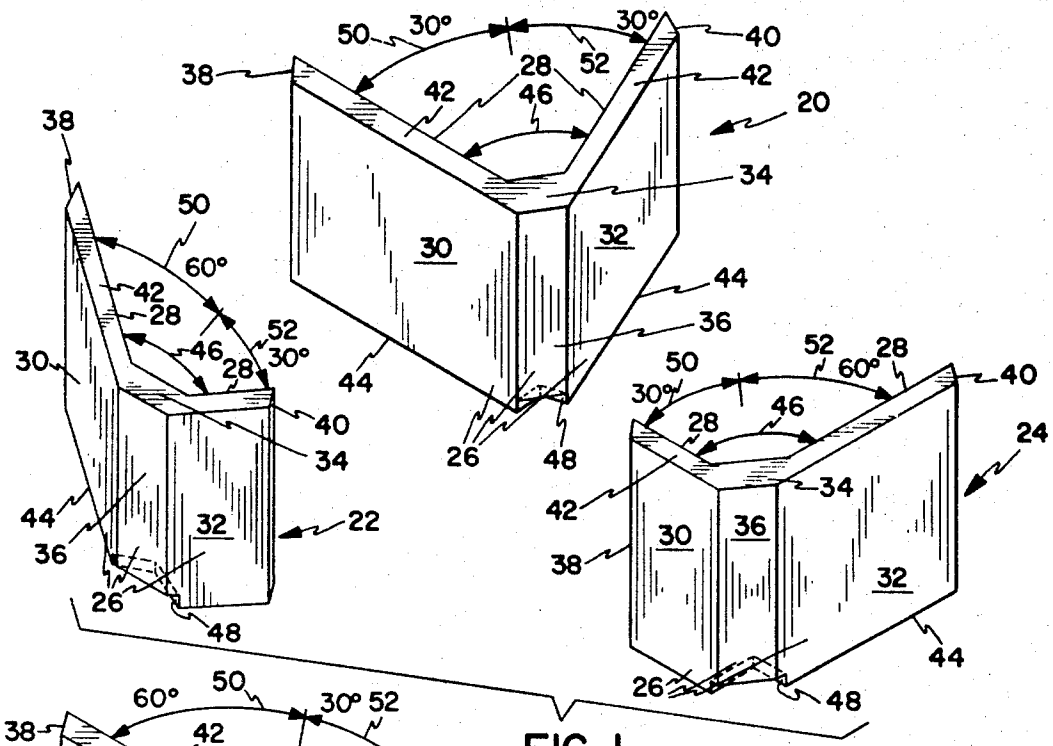


FIG. 1

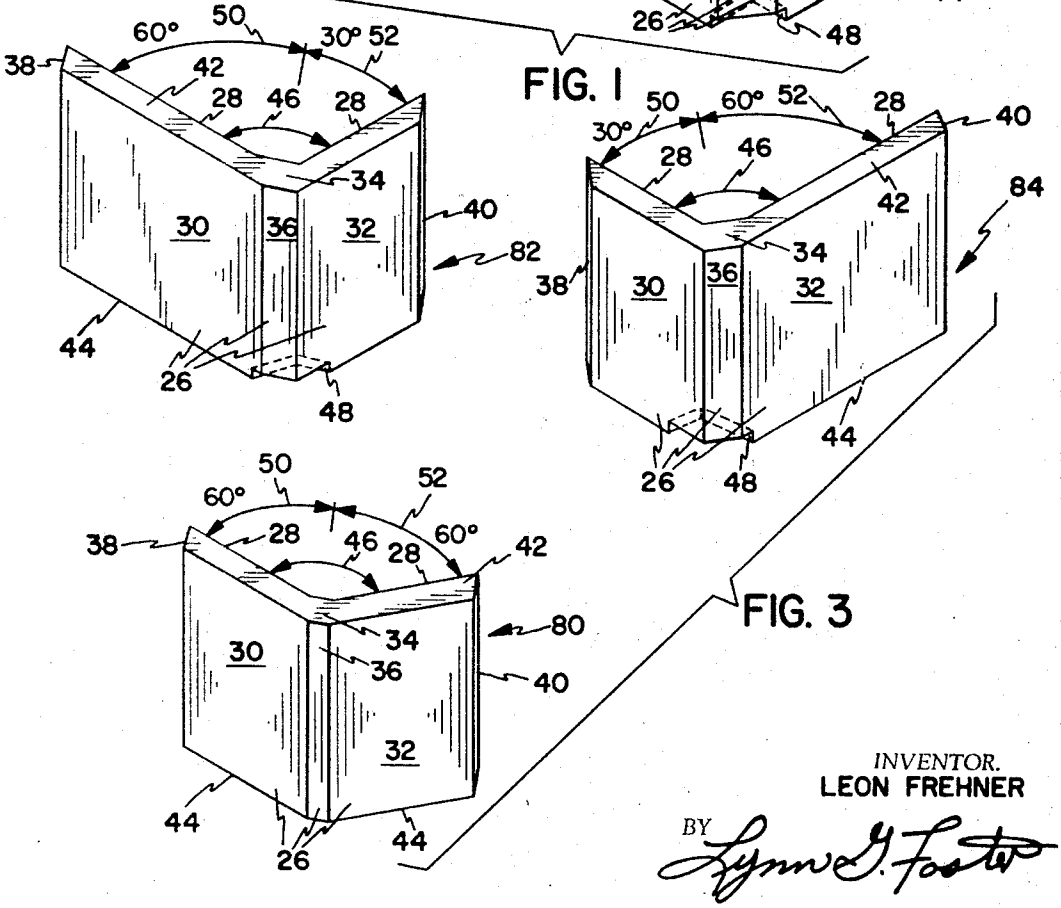


FIG. 3

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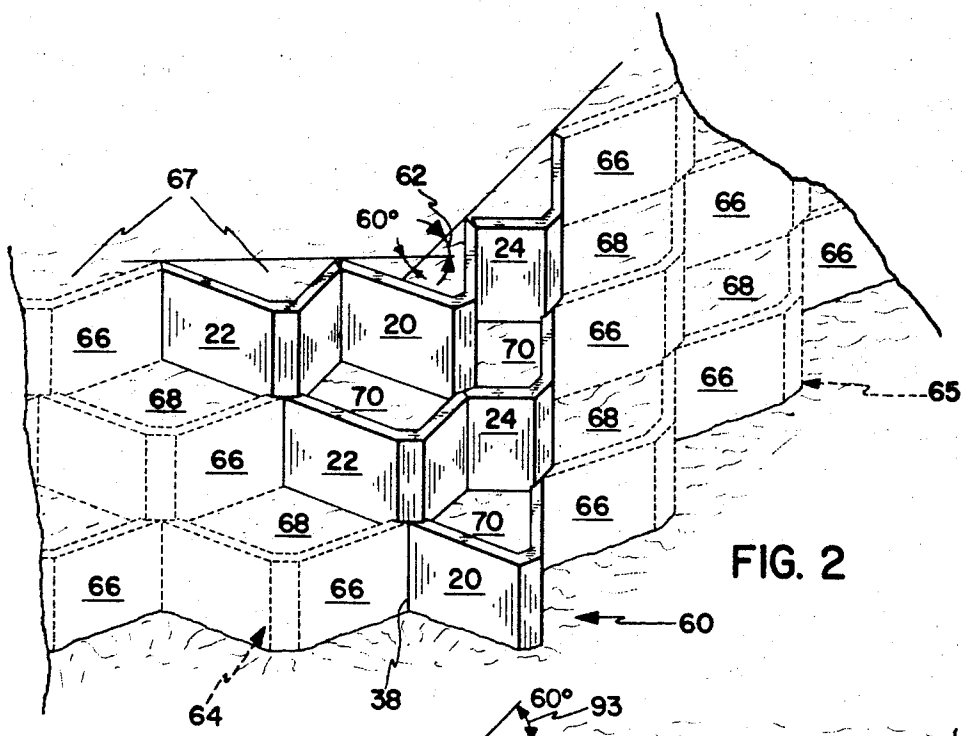


FIG. 2

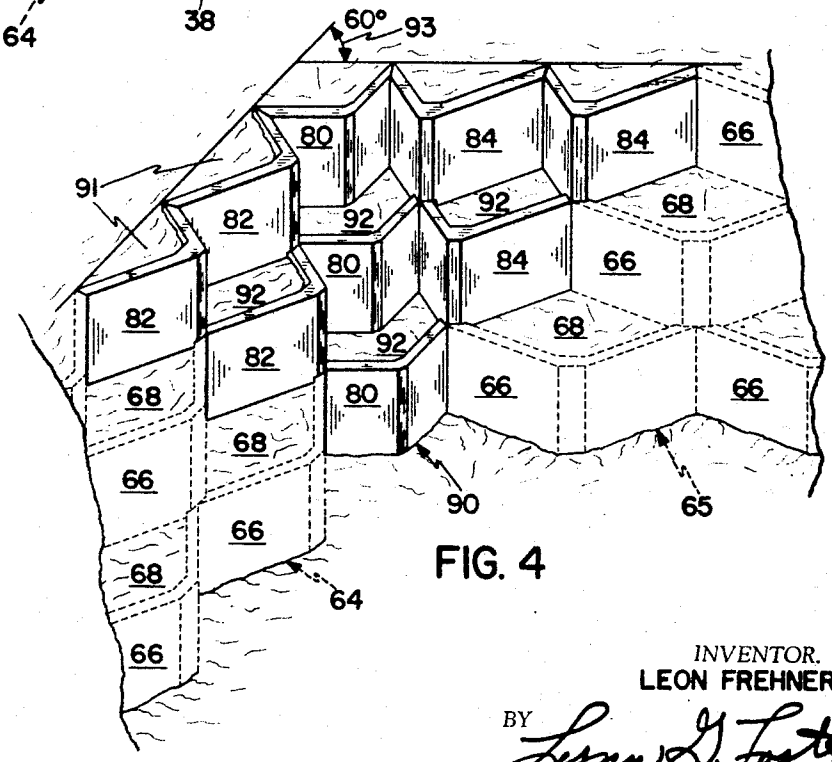


FIG. 4

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CURVILINEAR TERRACE CONSTRUCTION AND PLANTER BLOCKS AND METHODS THEREFOR

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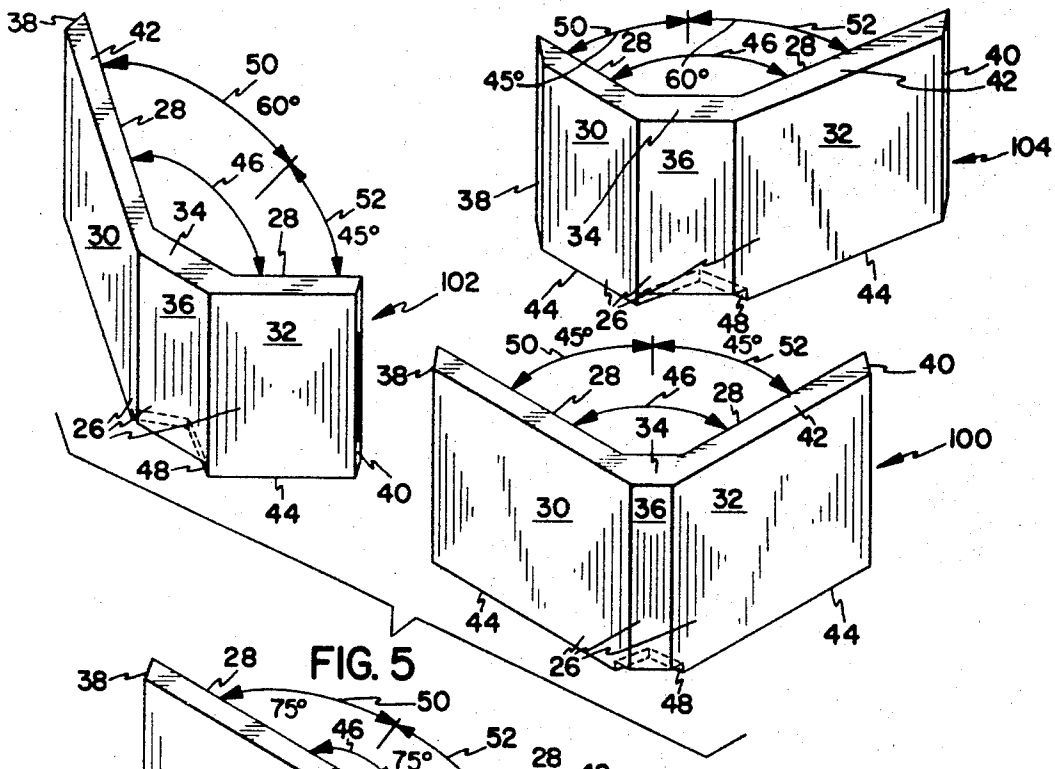


FIG. 5

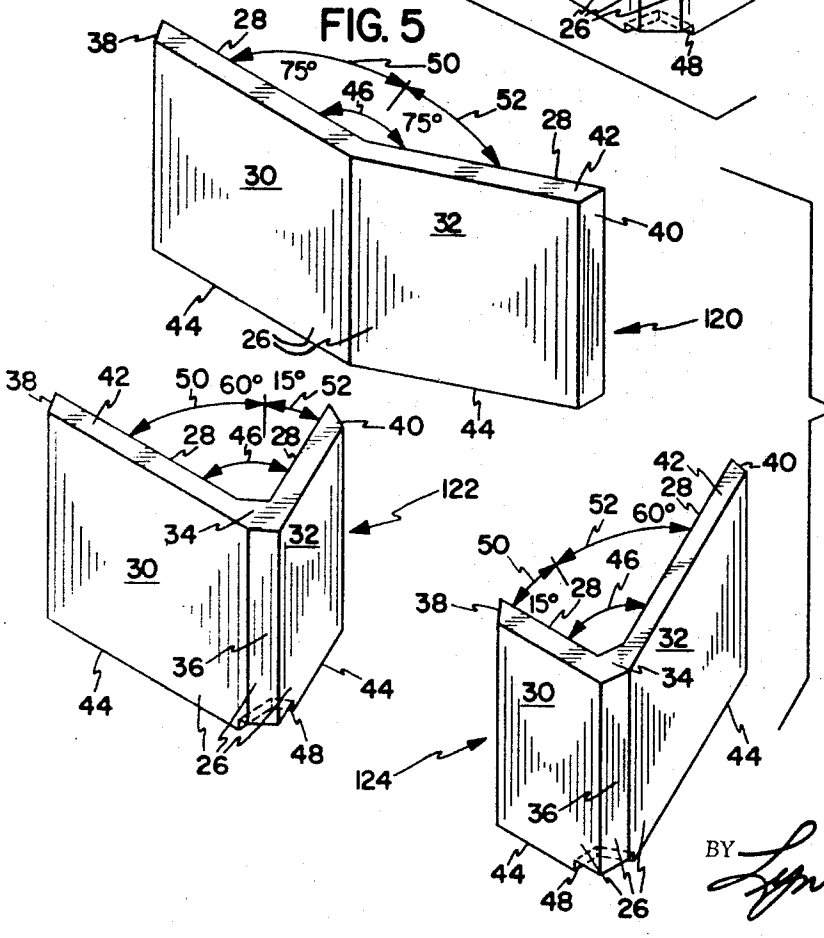


FIG. 7

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CURVILINEAR TERRACE CONSTRUCTION AND PLANTER BLOCKS AND METHODS THEREFOR

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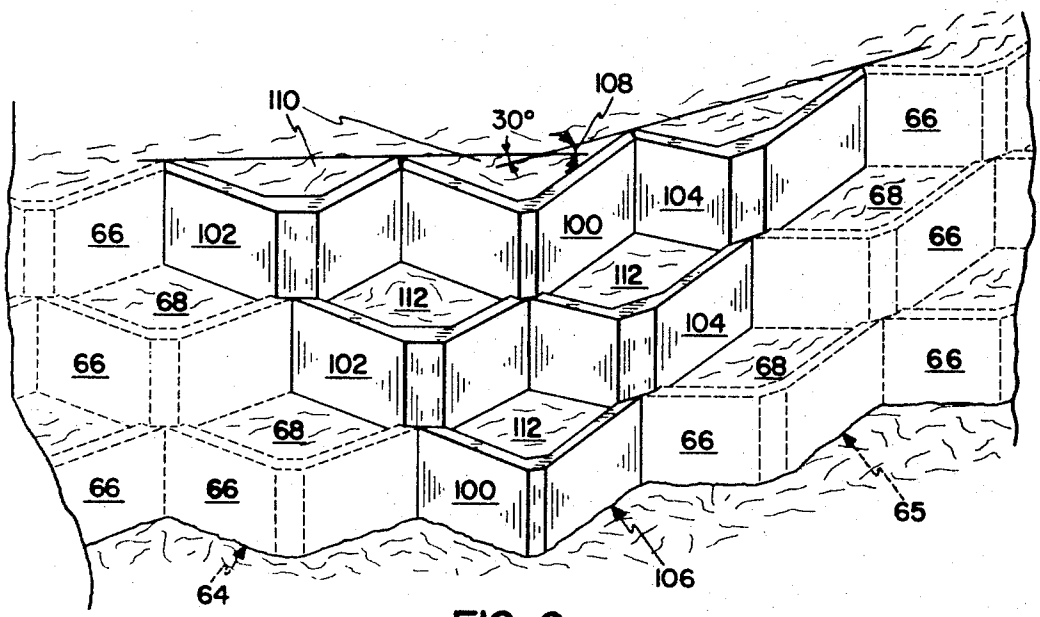


FIG. 6

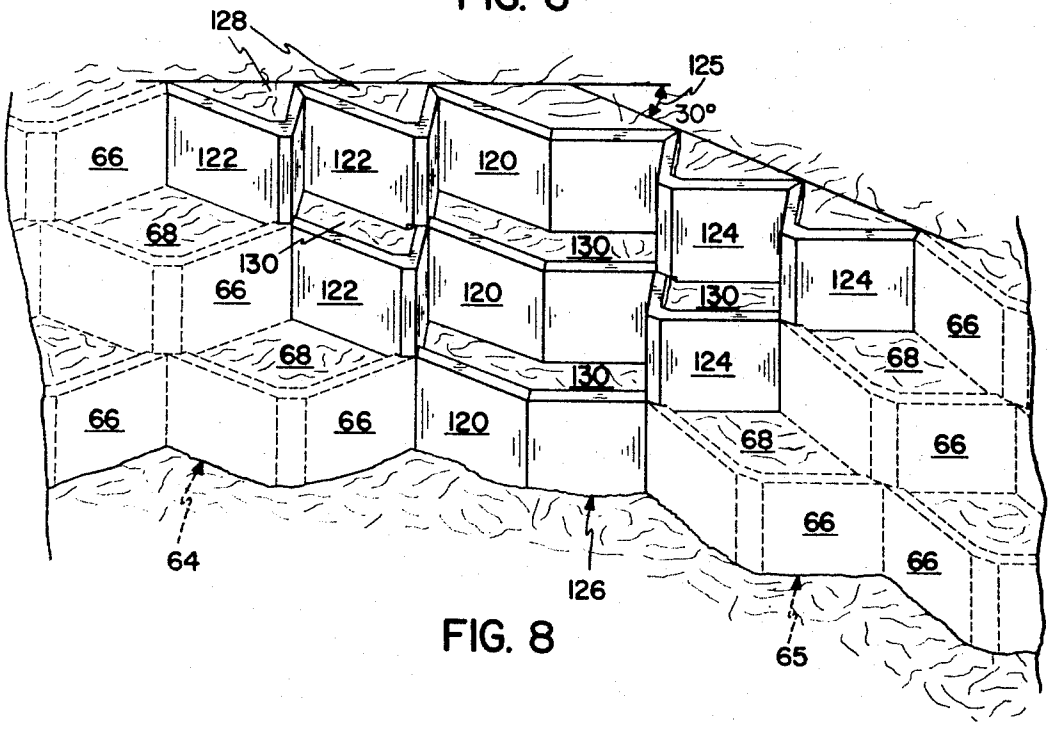


FIG. 8

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CURVILINEAR TERRACE CONSTRUCTION AND PLANTER BLOCKS AND METHODS THEREFOR

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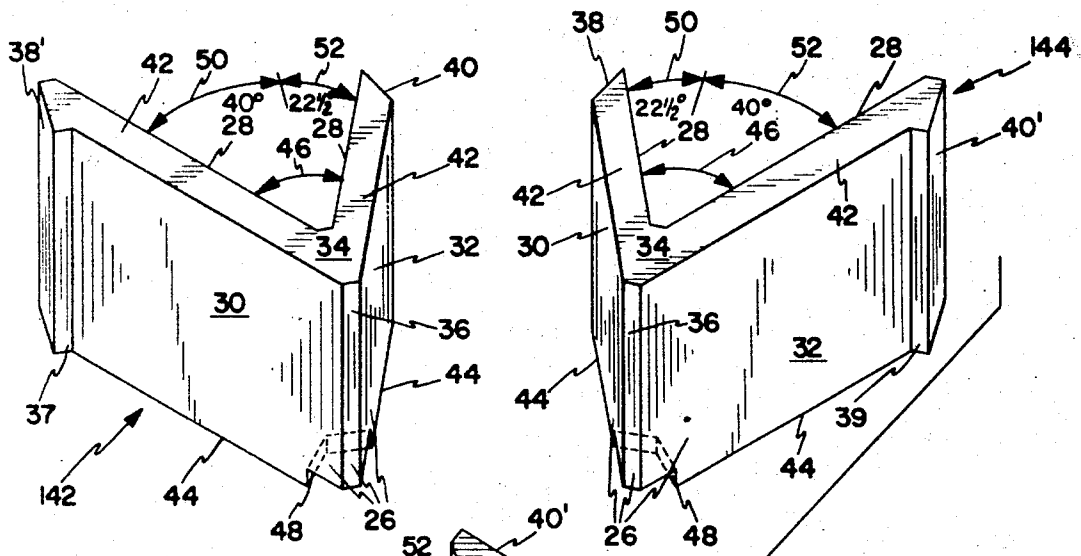


FIG. 9

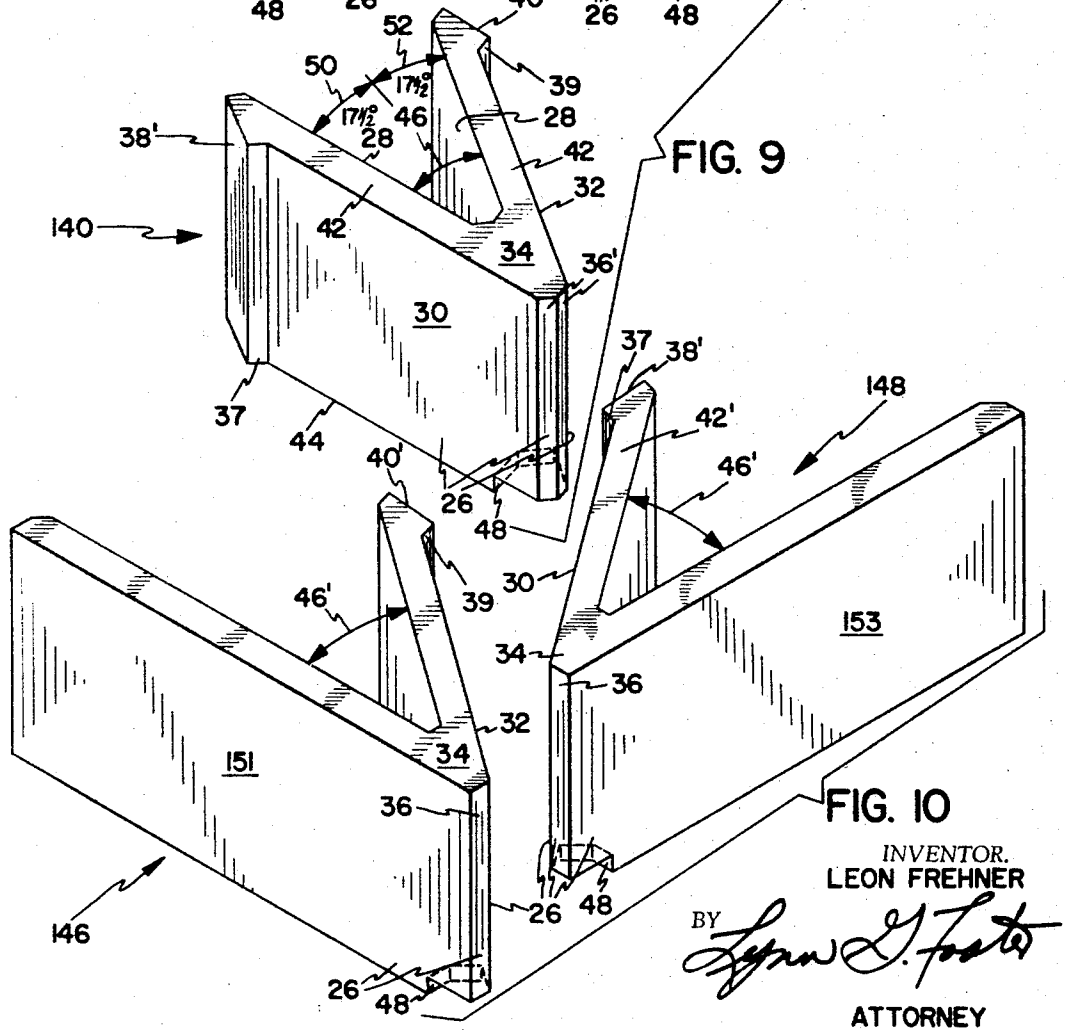


FIG. 10

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CURVILINEAR TERRACE CONSTRUCTION AND PLANTER BLOCKS AND METHODS THEREFOR

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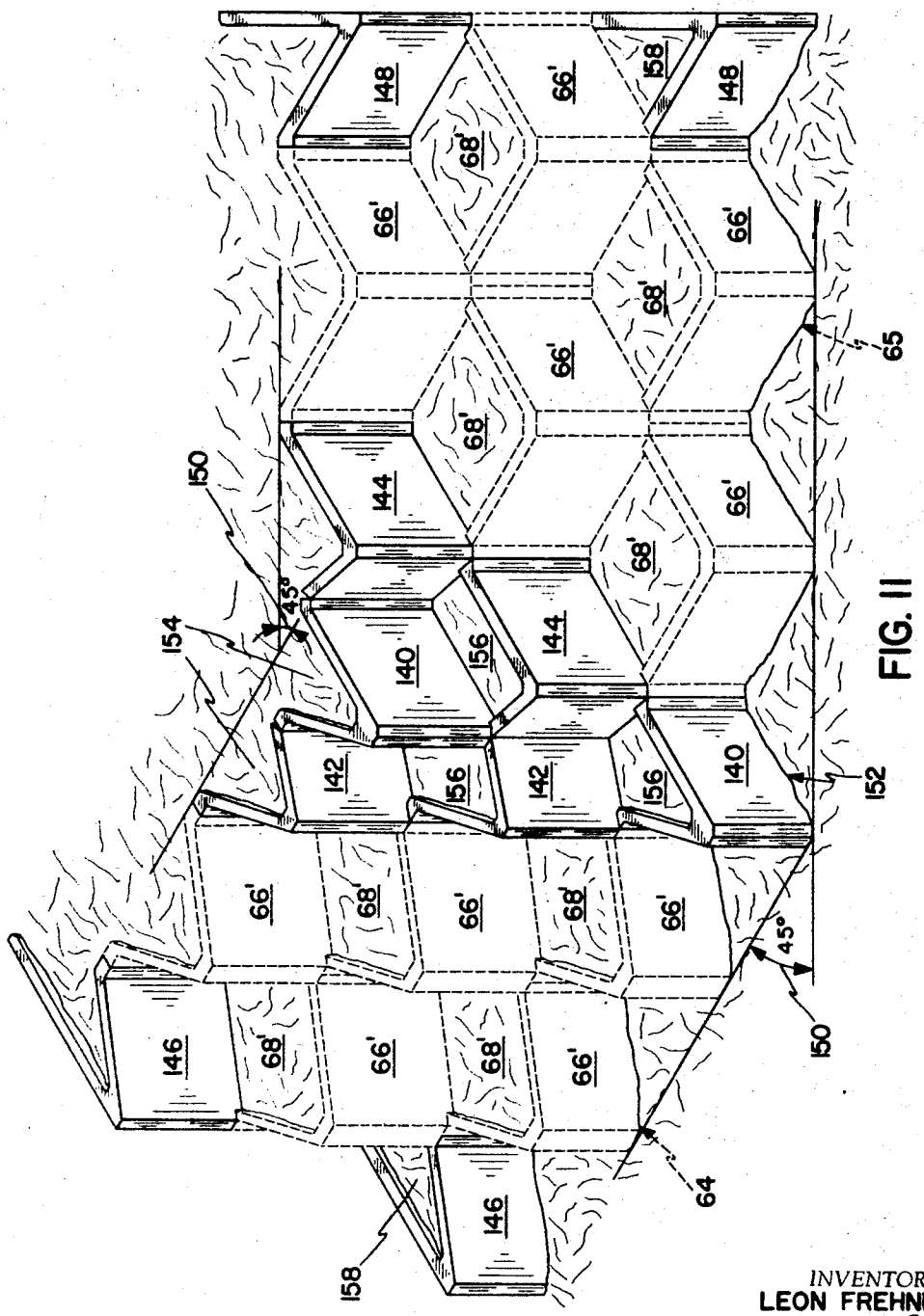


FIG. 11

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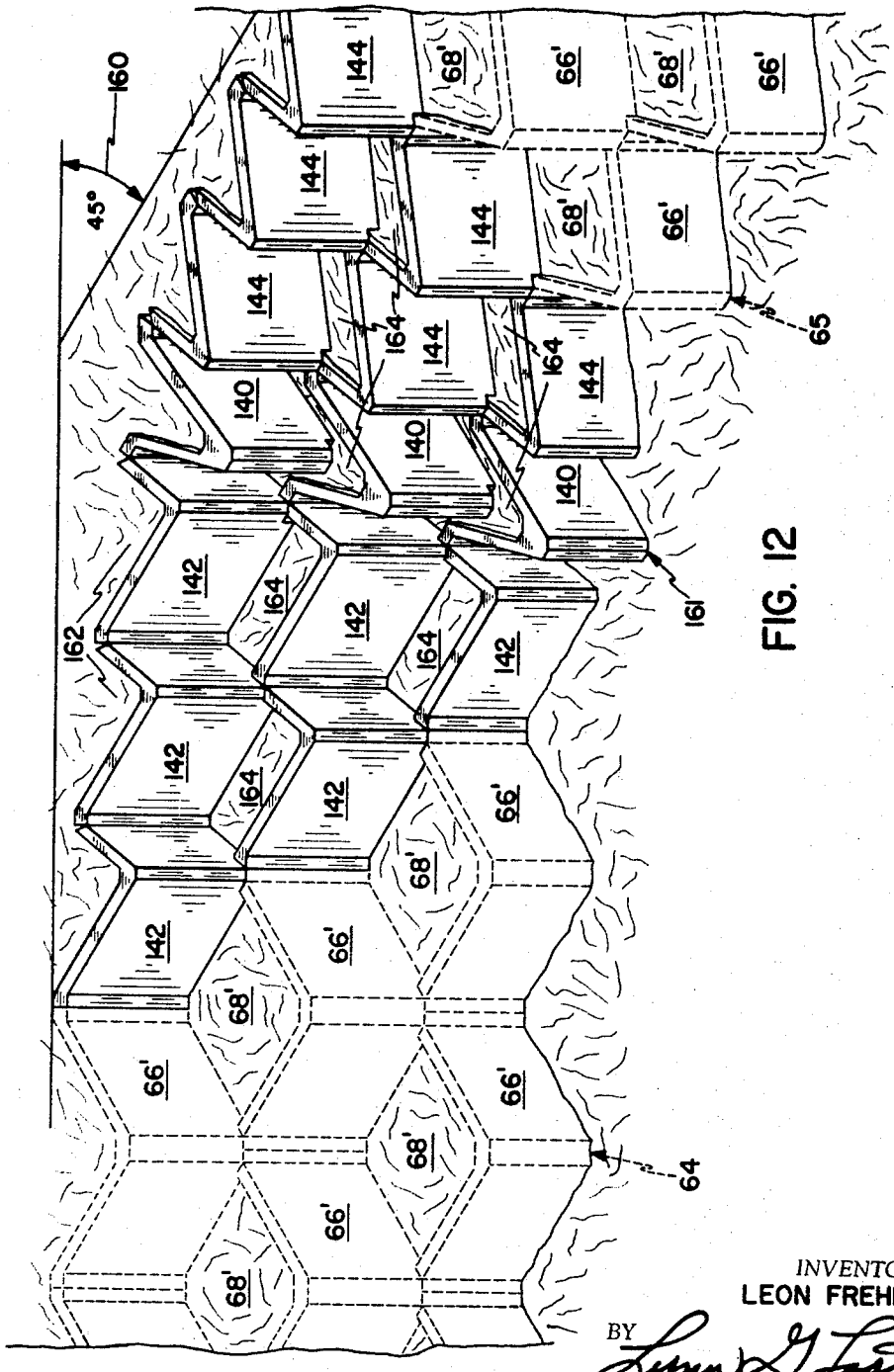


FIG. 12

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United States Patent Office 3,444,694
Patented May 20, 1969

3,444,694

CURVILINEAR TERRACE CONSTRUCTION AND PLANTER BLOCKS AND METHODS THEREFOR

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Filed Oct. 25, 1967, Ser. No. 677,932
Int. Cl. E02d *17/20, 29/16;* A01g *9/02*
U.S. Cl. 61—35 15 Claims

ABSTRACT OF THE DISCLOSURE

Methods, planter blocks and terrace stacking arrangements for constructing decorative curvilinear portions of earth-retaining terrace walls adapted to provide spaces containing exposed soil where flowers and the like can be planted.

This invention relates generally to the construction of retaining walls in systematically offset tiers and, more specifically, to methods, masonry blocks and stacking arrangements for forming both inside and outside curved portions of terraced retaining and like walls.

The subject matter of my previous invention as set forth in United States Patent 2,960,797 was conceived and reduced to practice in an effort to solve long-standing problems related to the retaining of sloped terrain in desired positions. By use of the mentioned invention, erosion of hillsides is eliminated, decorative planting spaces are provided, beautiful landscaping effects can be readily achieved, and maintenance is minimized.

Following the making of the invention of the mentioned patent, it became apparent that the planter blocks depicted and described in the patent would be of limited application in retaining meandering sloping terrain, the described planter blocks being adapted for construction of linear terrace retaining walls.

Accordingly, it is a primary object of the present invention to provide a novel system for constructing curvilinear portions of terraced retaining and like walls of the general type set forth in my United States Patent 2,960,797, the novel system embracing unique (a) methods, (b) blocks and (c) stacking arrangement for the blocks.

Preliminary to making the invention set forth in this specification, I worked on a trial and error basis almost continuously for more than four years trying to arrive at satisfactory solutions to the problem of producing curvilinear walls of the type under consideration. Hundreds of sketches were drafted and discarded. At one point in time, I concluded that a satisfactory solution could not be found. However, persistence bore fruit and, finally, acceptable solutions were arrived at through conception and prototype construction of novel sets of masonry planter blocks which, when stacked in particular combinations tier upon tier, present curved terrace wall portions which respectively traverse various angles in either direction from a straight line.

The presently preferred embodiments of this invention comprise sets of three corner blocks, each block resembling though distinct from the blocks described in my mentioned patent. Each set of three corner blocks comprises a central angled block having two angularly-related legs of essentially equal length and two, left and right, opposite hand angled blocks, respectively having angularly-related legs, the outside leg in each case being substantially longer than the inside leg. All three blocks are generally exteriorly convex and interiorly concave, when viewed in their properly stacked positions.

The corner blocks comprising a given set are symmetrically arranged to form a corner wall portion, usually between linear sections of a retaining wall, such that each

successively staggered tier contains progressively more corner blocks, which, taken together, peripherally generally define an inverted triangular shape. Using the presently preferred stacking arrangements, the assemblages of corner blocks respectively generate inside and/or outside curves of 30 degrees, 45 degrees, and 60 degrees as well as combinations thereof. The assemblages of these sets of corner blocks and combinations thereof satisfactorily accommodate erection of a curved wall of interlocking blocks which closely conforms to and holds in position essentially any irregularly contoured sloping terrain. The sets of corner blocks and combinations thereof can also be erected on essentially flat ground in the form of various self-enclosing configurations, each intended to serve as a decorative planter, a snow fence or a wind break.

Accordingly, it is another important object of this invention to provide novel planter corner blocks, corner block stacking arrangements and methods therefor, to accommodate erection of a curved wall to retain earth in a predetermined sloping disposition, essentially immune from the effects of erosion and adapted to beautify the area of the earth being retained.

Another significant object is the provision of a novel method and structure having one or more of the following features and being useful for erecting terrace walls possessing at least one curvilinear portion to retain earth which is similarly curved and sloped:

(1) which is economical to use;
(2) which does not require great skill to accomplish erection;
(3 the blocks of which can be sized for easy handling and placement;
(4) which can be used to effectuate a number of combinations of curves in either direction, differing in degree of curvature one from another;
(5) the stacked assemblages of which are highly decorative, with or without placement of flowers, etc. in the planting spaces provided;
(6) the blocks of which are self-interlocking, necessitating no mortar at the joints and requiring no footings as a foundation;
(7) the blocks of which can be used to assemble a wall of any height which negotiates and restrains any curved, sloped terrain;
(8) the blocks of which can be arranged in self-enclosing configuration and filled with soil to provide an architectural edifice, or a beautiful garden piece when the planting spaces are provided with flowers;
(9) which can be used for selectively erecting a wall to serve as a snow fence or a wind break.

These and other objects and features of the present invention will become more fully apparent from the folfowing description and appended claims taken in conjunction with the accompanying drawings wherein:

FIGURE 1 is a perspective of a set of three individual corner blocks used in series, as depicted in FIGURE 2, to erect a curvilinear wall having a curved outside angle traversing 60 arcuate degrees;

FIGURE 3 is a perspective of a set of three additional corner blocks used in series, as depicted in FIGURE 4, to erect a wall having a curved terrace retaining wall which traverses an inside angle of 60 arcuate degrees;

FIGURE 5 is a perspective of a set of three additional individual corner blocks used in series, as depicted in FIGURE 6, to erect a curved terrace retaining wall which traverses an outside angle of 30 arcuate degrees;

FIGURE 7 is a perspective of a set of three additional individual corner blocks used in series, as depicted in FIGURE 8, to erect a curved terrace retaining wall which traverses an inside angle of 30 arcuate degrees;

FIGURE 9 is a perspective of a set of three additional individual corner blocks used in series, as depicted in FIGURE 11, to erect a curved terrace retaining wall which traverses an outside angle of 45 arcuate degrees, and also used in series, as depicted in FIGURE 12, to erect a curved terrace retaining wall which traverses an inside angle of 45 arcuate degrees; and

FIGURE 10 is a perspective representation of left and right opposite hand end blocks used to terminate a wall construction in the manner shown in FIGURE 11.

Each block depicted in the drawings is preferably relatively thin walled and generally presents a V shape when observed in plan view. The blocks are desirably formed of a hard-setting cementitious material, such as concrete formed of hydraulic cement, aggregate and water.

For simplicity of presentation, each individual block of FIGURES 1, 3, 5, 7 and 9 has been generally designated by a separate numeral in the ensuing description and accompanying drawings, but each of the various parts of all of the depicted blocks which generally correspond one with another have been identified by the same numeral throughout the description and drawings.

Preferably, all blocks manufactured according to the present invention will be of a uniform height so that any desired assemblage of corner blocks can be constructed, for example, as a transition between angularly-related linear portions of a retaining wall constructed with the block and using the procedure set forth in my earlier U.S. Patent 2,960,797, which block herein shall be called the "standard" block.

With specific reference to the drawings, FIGURE 1 depicts a set of three individual corner blocks, i.e. a center corner block **20**, a left corner block **22** and a right corner block **24**. The corner blocks of FIGURE 1 are preferably of one-piece molded construction and are used to erect a curved portion of a retaining wall which defines an outside curvature of 60 arcuate degrees. See FIGURE 2.

Each of the masonry corner blocks **20**, **22** and **24** define a V configuration, when viewed in plan, and present a horizontally-directed, outwardly convex front face **26** and a back concave surface **28**. The V configuration is generated by left and right legs **30** and **32** which are integrally joined one to another by a nose fillet **34**, disposed at the apex of the V. The nose fillet **34** terminates outwardly in a blunt nose surface **36**.

The left and right legs **30** and **32** of the blocks **20**, **22** and **24** are each respectively terminated in a left side edge **38** and a right side edge **40**. Each edge **38** and **40** is disposed at an acute angle with respect to the planes which respectively contain the legs **30** and **32**.

It should also be observed that the right leg **32** of the left corner block **22** and the left leg **30** of the right corner block **24** are respectively shorter in length than is the left leg **30** of the block **22** and the right leg **32** of the block **24**, the blocks **22** and **24** being identical though opposite hand. The right and left legs **32** and **30** of the block **20** are of equal length.

The legs **30** and **32** and the nose fillet **34** jointly terminate at a continuous flat top edge **42** and at a continuous flat bottom edge **44**. The top top and bottom edges **42** and **44** are respectively situated in planes which are generally horizontal and also normal to the planes containing the left and right legs **30** and **32**.

The relationship of the legs **30** and **32** one to another is such as to present an included angle therebetween, which is designated **46**. Naturally, the angle **46** will vary in its magnitude from block to block depending upon the angle to be traversed by the assemblage of corner blocks.

It should also be noted that the included angle **46** consists of two components measured within the plane containing the top surface **42** with respect to a vertical plane disposed perpendicular to both the first mentioned plane and the plane containing the blunt nose surface **36**. These

angle components are identified left and right by the numerals **50** and **52**. Note that the angle components **50** and **52** of block **20** are equal in magnitude, namely, 30 degrees each in the FIGURE 1 embodiment. The angle component **50** of the block **22** and the angle component **52** of the block **24** are respectively greater in magnitude than the angle component **52** of the block **22** and the angle component **50** of the block **24**, the ratios being 60 degrees to 30 degrees, respectively, in the FIGURE 1 embodiment.

The blocks **20**, **22** and **24** are each provided with a pie-shaped recess or notch **48** which is situated at the base of fillet **34** and opens to the front generally at the blunt nose **36** and to the bottom at the bottom edge **44**. The notch **48** of a given block in one tier is configurated to rest in mating relationship over top of a side edge joint between two blocks in the next lower tier. This type of stacking will horizontally situate the bottom edge of all blocks in one tier slightly below the horizontally situated top edge of all blocks in the next lower tier. The bottom edge **44** of any given block will rest horizontally upon a prepared base of soil.

Observe that the notch **48** of the central corner block **20** at its forward opening spans only between the margins of the blunt nose **36**. However, the notch **48** of each of the left and right corner blocks **22** and **24**, shown in FIGURE 1, at the forward opening thereof spans beyond the margins of the blunt nose a short distance into the legs **30** and **32**.

Except for the curvilinear features, the pattern of and procedure for assembling blocks in terraces to form a retaining wall according to this invention is in a broad sense much like the pattern as set forth in my earlier U.S. Patent 2,960,797, to which reference may be made for greater detail, if desired. Each tier of blocks is generally horizontally arranged so that the side edges of adjacent blocks are situated end-to-end. Successive tiers exposed at different horizontal elevations, (a) will comprise standard blocks disposed in both rearwardly offset and laterally staggered relation to the blocks in adjoining tiers where the retaining wall so formed is linear or straight and (b) will comprise corner blocks which are rearwardly offset and may or may not be disposed in laterally staggered relation to the blocks in the adjoining tiers when the retaining wall so formed is curvilinear. Whether or not such corner blocks are laterally staggered depends on whether the curvature in the wall is an inside or outside curve.

With specific reference to FIGURE 2, the outside curve in the illustrated retaining wall, generally designated **60** and shown in solid lines, traverses an outside angle **62** of 60 arcuate degrees and thereby spans between two angularly-related linear wall portions, generally designated **64** and **65** and shown in dotted lines. The curve **60** is formed of the corner blocks **20**, **22** and **24**, using a novel stacking arrangement, while the straight wall poritons **64** and **65** are formed of standard blocks **66**.

The described corner blocks **20**, **22** and **24** are shaped and sized in the illustrated embodiment to be erected in the manner indicated in FIGURE 2 in merging relation with a terrace assemblage of the mentioned standard blocks **66**, where each standard block (a) has legs of equal length exceeding the length of legs **30** and **32** of block **20** and (b) has legs which form an included angle traversing 120 degrees.

While the corner blocks of FIGURE 1 could be used to form a self-enclosing, soil-filled yard or like planter box, for simplicity of description only the earth-retaining wall structure of FIGURE 2 will described.

Desirably, for example, one of the two linear wall portions, say portion **64**, is first constructed with standard planter blocks **66** in the manner set forth in the previously mentioned patent. Thus, the standard blocks **66** will be arranged front face forward in generally horizontally disposed terrace courses or tiers, with the blocks of the

adjoining tiers laterally offset one from another by one-half of one block. In this way, a sloping sidehill **67** can be indefinitely restrained in the same disposition and, moreover, standard planter areas **68** of exposed soil are provided, for example, for the purpose of accepting decorative live and artificial plants, flowers, etc.

The blocks **66** of each course or tier in either linear wall portion are situated end-to-end and, where a suitably sized and shaped notch is provided at fillet **34** which opens forwardly at the lower end of the nose surface and downwardly at the forward center part of the bottom surface, a positive self-locking engagement will take place between assembled blocks where the nose notch of one block in one intermediate tier mates with the top of juxtaposed free ends of two blocks situated end-to-end in the next lower tier. Of course, any nose notch comprising part of any standard planter block **66** or any corner block according to this invention will be redundant when such blocks are used to form the ground-engaging bottom tier of a retaining or like wall.

Naturally, since the earth supports each block along the bottom edge thereof in horizontal disposition as illustrated, the soil at slope **67** must somehow be terraced and, if necessary, compacted in satisfactory configuration before or during erection to correctly accept and support the illustrated assemblages of blocks.

Now, let it be assumed that (a) the linear wall portion **64** has been erected using standard planter blocks **66** as shown in dotted lines in FIGURE 2 and (b) it is desired to negotiate the wall through an outside curve of about 60 degrees.

Next, one corner block **20** is situated in the bottom tier in horizontal disposition with the left edge **38** of the block **20** in tight end-to-end fully contiguous relation with the right end of the last block **66** of the linear wall portion **64**. Since the included angle **46** formed by the legs of the block **20** spans 60 arcuate degrees and the side edges **38** and **40** are fabricated at a precise predetermined angle, namely 30 degrees, relative to the vertical plane normal to the adjacent leg **30** or **32** no more corner construction need take place at the bottom tier. The blocks **66** of the bottom tier of the linear wall portion **65** can thereafter be placed in the manner heretofore set forth with left edge of the first mentioned block **66** disposed in essentially fully contiguous relation with the right edge **40** of block **20** of the bottom tier.

The curvature in the second tier of wall portion **60** is constructed in a similar manner serially, from left to right, using (a) a corner block **22** at the right end of the straight wall portion **64**, with the left edge of block **22** fully contiguous with the right edge of the last, laterally staggered block **66**, second tier, the face of which is situated in horizontal disposition, and (b) a corner block **24** at the right end of the block **22** with the left edge of the block **24** fully contiguous with the right edge of the block **22**. Note that the blocks **22** and **24**, second tier, are disposed in symmetrical relation above and to each side of the block **20**, bottom tier. Also, the blocks **22** and **24**, second tier, are sized and shaped so that the notch **48** of each block will rest in self-interlocking relation upon the top of the end-to-end block joints formed at the opposed side edges **38** and **40** of the block **20**, bottom tier.

The blocks **22** and **24**, taken together, therefore, comprise the curved wall portion **60** of the second tier which traverses the required outside 60 degree angle.

Observe in FIGURE 2 that the entire left side of each block **22**, measured to the left of a vertical plane passing through the nose surface **36** perpendicular to a vertical plane extending between the ends of the block, and the entire right side of each block **24**, measured in the same way, are respectively identical in shape and size to the entire left side and the entire right side, respectively, of any block **66**. Thus, the entire left side of the block **22** constitutes a straight line continuation of the linear wall portion **64** and the entire right side of the block **24**, taken alone, is in straight alignment with the linear wall portion **65**. Accordingly, the entire right side of the block **22** turns the retaining wall through one-half of the outside 60° angle of the curvature of the wall portion **60**, because the angle component **52** of the block **22** spans 30 degrees, the short leg **32** traverses rearward to a depth equal to the depth traversed by the long leg **30**, and the side edge **40** is fabricated at a 30° angle to a vertical plane normal to the leg **32**. Likewise, the entire left side of the block **24** turns the retaining wall through the second one-half of the outside 60° angle of the curvature of the wall portion **60**, because the angle component **50** of the block **24** spans 30 degrees, the short leg **30** traverses rearward to a depth equal to the depth traversed by the long leg **32**, and the side edge **38** is fabricated at a 30° angle to a vertical plane normal to the leg **30**.

After blocks **22** and **24** have been properly situated to provide the curved part of the second tier, the blocks **66** of the linear portion **65** may then be placed.

Thereafter, the 60 degree curved portion of the third tier is erected in a manner as above-described serially using, left to right, one block **22**, one block **20** and one block **24**. The entire block **22** taken alone constitutes a straight line continuation of the third tier of the linear wall portion **64** but is foreshortened to cause the notch **48** of the block **22**, third tier, to self-interlock over the top of the end joint between block **22** and block **66**, second tier. The entire block **24** taken alone is in straight alignment with the linear wall portion **65** in the same way. Therefore, the block **20**, third tier, turns the third tier of the retaining wall through the outside 60° angle of curvature at **60**. Note that the side edge or end joints of the corner block **20**, **22** and **24**, third tier, are disposed end-to-end although the adjoining side edges of adjacent blocks are disposed at an acute angle one to another. By providing such side edges of the corner blocks in all tiers in various acute angular relationships, the curvature turned by any curved wall portion can be correspondingly varied.

Thereafter, the blocks **66** of the third tier of wall portion **65** can be correctly placed.

The overall stacking arrangement of blocks **20**, **22** and **24** at wall portion **60** is in the form of an inverted triangle and produces spaced corner planter areas **70**, adapted to receive artificial or live plants, flowers, etc.

It is to be appreciated that the curvature **60** of FIGURE 2 can be of any desired number of tiers. If a fourth tier were used it would, from left to right, serially comprise, at curved portion **60**, a first block **22**, a second block **22**, a first block **24**, and a second block **24**, situated in the described end-to-end relation with each notch **48** of each block self-interlocking with a lower block end joint, as described. In like manner, if a fifth tier were to be incorporated in the wall construction of FIGURE 2, the curved portion **60** thereof would serially comprise, left to right, a first block **22**, a second block **22**, one block **20**, a first block **24**, and a second block **24**, situated in the described end-to-end relation with each notch **48** interlocking with a lower block end joint, as described.

Reference is now made to FIGURE 3 which depicts another set of three individual corner blocks, i.e. a center corner block **80**, a left corner block **82** and a right corner block **84**. The corner blocks of FIGURE 3 are similar in most respects to the described corner blocks of FIGURE 1, with some important differences. The included angle **46** and angle components **50** and **52** of the left and right corner blocks **82** and **84** respectively are identical in magnitude with the included angle and angle components of left and right corner blocks **22** and **24**, heretofore described. The side edge **38** of block **82** and the side edge **40** of block **84** are each situated in a vertical plane disposed at a 30° angle to a vertical plane normal to the adjacent leg of the block. The side edge **40** of block **82** and the side edge **38** of the block **84** are each situated in a vertical plane disposed at a 60° angle measured in the same way.

The center corner block **80** differs from the previously described center corner block **20** in that the included angle **46** of block **80** traverses 120 degrees, 60 degrees of which comprise angle component **50** and 60 degrees of which comprise angle component **52**. Moreover, block **80** is not provided with a notch **48** as is block **20**.

The side edges **38** and **40** of block **80** are each disposed at an angle of 60 degrees to a vertical plane normal to the plane containing the respective adjacent legs **30** and **32**.

The blocks **80**, **82** and **84** are used to erect the curved wall portion **90**, shown in solid lines in FIGURE 4, which traverses an inside angle **93** of 60 arcuate degrees and thereby tightly spans between two angularly-related linear wall portions **64** and **65**, shown in dotted lines in FIGURE 4.

Using the methodology earlier described, the curved wall portion **90** is constructed to retain the sloping side hill **91** by centrally disposing one block **80** upon the ground as part of the bottom tier so that, when the bottom tier is completed, the block **80** will fit tightly between linear wall portions **64** and **65** with the left and right side edges of the block **80** disposed contiguous with the right and left side edges respectively of the two adjacent blocks **66**, first tier, as shown. Outward movement of the block **80** is thereby prohibited and at the same time the configuration of the block **80** precisely turns the first tier of the retaining wall through the required **60** inside degrees between the wall portions **64** and **65**.

The part of the curved wall portion **90** defined by the second tier, FIGURE 4, is, left to right, serially formed of one block **82**, one block **80** and one block **84** so that the curved part of the second tier precisely merges with the adjacent blocks **66**, which are each laterally staggered in relation to the blocks **66** of the bottom tier. Because of configurations of the blocks **82**, **80** and **84**, the notch **48** of each of the blocks **82** and **84**, second tier, correctly interlocks over the top of the adjacent edge joint of the block **80**, bottom tier. The block **80**, second tier, rests upon the soil between the blocks **82** and **84** set back but in the same attitude and in direct line with the block **80**, first tier.

In like manner, the part of the curved wall portion **90** defined by the third tier, FIGURE 4, serially comprises a first block **82**, a second block **82**, one block **80**, a first block **84** and a second block **84** so that the curved part of the third tier precisely merges with the adjacent blocks **66**, which are laterally staggered with relation to the blocks **66** of the second tier. The notch **48** of each of the first and second blocks **82** and the first and second blocks **84** correctly interlocks over an edge joint provided by the second tier. The block **80**, third tier, rests upon the soil between the second block **82** and the first block **84** set back but in the same attitude and directly in line with the blocks **80** of the first and second tiers. Note that this overall stacking construction provides corner planter spaces **92** of exposed soil adapted to receive decorative live or artificial plants, flowers, etc.

The curved wall portion **90** could be erected to any height comprising the needed number of tiers by simply adding one more block **82** at the extreme left and one additional block **84** at the extreme right of the curvature **90** at each succeeding tier. In other words, if a fourth tier were added to the curved portion **90**, it would, left to right, serially comprise three blocks **82**, one block **80** followed by three blocks **84**.

Observe in FIGURE 4 that all blocks **82** constitute a straight line continuation of the linear wall portion **64**, and each block **80** turns the retaining wall through the required inside 60 degrees of curvature **93**. Also, block **80** could be linear or outwardly concave between its ends and serve the same purpose. Moreover, the retaining wall could be turned through angle **93** by eliminating block **80** in each tier of curved wall portion **90** with the remaining illustrated blocks being shifted so that (a) the ends of the angularly-related blocks **66** of the linear wall portions **64** and **65**, bottom tier, are brought together and (b) the adjacent legs of adjoining blocks **22** and **24** of each tier are brought together into front face-to-front face relation.

With reference to FIGURES 5 and 6, observe that the fundamental configuration of center corner block **100**, left corner block **102** and right corner block **104** generally corespond in each part to the structure of blocks **20**, **22** and **24**, respectively. In addition to slightly longer leg lengths, the more meaningful differences are (a) the angle segments **50** and **52** of block **100** comprise 45 degrees each, (b) the angle segment **50** of the block **102** and the angle segment **52** of the block **104** respectively traverse 60 degrees, while the angle segment **52** of the block **102** and the angle segment **50** of the block **104** respectively traverse 45 degrees and (c) the distance spanned by the notch **48** of each block **100**, **102** and **104** is respectively at variance with the distance spanned by the notch **48** of each block **20**, **22** and **24**.

As is evident from FIGURE 6, the set of corner blocks **100**, **102** and **104** is assembled to form a curved wall portion **106**, to restrain sloping sidehill **110** and provide corner planter areas **112** of exposed soil, in essentially the same manner as is the set of blocks **20**, **22** and **24** (see FIGURE 2), except that the outside curvature **108** traversed by the corner wall portion **106** is 30 arcuate degrees or a variance therefrom depending on the acute angular relation, if any, established between the side edges at the end joints between the blocks of each tier.

With reference to FIGURES 7 and 8, observe that the fundamental configuration of center corner block **120**, left corner block **122** and right corner block **124** generally correspond in each particular to the described blocks **80**, **82** and **84**, respectively. The more meaningful differences are (a) the angle segments **50** and **52** of the block **120** comprise 75 degrees each, (b) the angle segment **50** of the block **122** and the angle segment **52** of the block **124** respectively traverse 60 degrees each while the angle segment **52** of the block **122** and the angle segment **50** of the block **124** respectively traverse 15 degrees each, and (c) the angular dispositions of the side edges **38** and **40** of the blocks **120**, **122** and **124** with respect to a vertical plane normal to the plane of the adjacent leg differ from that of blocks **80**, **82** and **84**, the angular dispositions being (1) 30 degrees for edges **38** and **40** of block **120**, edge **38** of block **122** and edge **40** of block **124** and (2) 45 degrees for edge **40** of block **122** and edge **38** of block **124**.

As is evident from FIGURE 8, the set of corner blocks **120**, **122** and **124** is assembled to form curved wall portion **126**, to restrain sloping sidehill **128** and to provide corner planter areas **130** of exposed soil, in essentially the same manner as is the set of blocks **80**, **82** and **84** (see FIGURE 4), except that the inside curvature **125** traversed by the curved wall portion **126** is 30 arcuate degrees or a variance therefrom depending on any acute angular relation established between the side edges at the end joints between the blocks of each tier.

Also, block **120** could be linear or outwardly concave between its ends and serve the same purpose. Moreover, the retaining wall could be turned through angle **125** by eliminating block **120** in each tier of curved wall portion **126** with the remaining blocks being shifted so that (a) the ends of the angularly-related blocks **66** of the linear wall portions **64** and **65**, bottom tier, are brought together and (b) the adjacent legs of adjoining blocks **122** and **124** of each tier are brought together into front face-to-front face relation.

FIGURES 9 and 10 respectively depict a set of three individual corner blocks and a set of wall-terminating end blocks used respectively to turn a retaining wall through an outside curvature **150** (FIGURE 11) of 45 arcuate degrees and to bring a retaining wall to an end where desired.

The set of three individual corner blocks shown in FIGURE 9 comprise a center corner block **140**, a left corner block **142** and a right corner block **144**. Observe that the fundamental configuration of the blocks **140**, **142**,

and **144** generally correspond in most parts to the structure of blocks **20**, **22** and **24**, respectively, with certain important exceptions.

One important difference consists of the provision on block **140** of dog leg or left and right butt ends **37** and **39**, respectively presenting butt edges **38'** and **40'**. Block **142** also comprises the left butt end **37** and the left butt edge **38'** along with the earlier-described right side edge **40**, while block **144** also comprises the right butt end **39** and the right butt edge **40'** along with the earlier-described left side edge **38**. Edge **38** of block **144** and edge **40** of block **142** are respectively disposed in a vertical plane at 45 degrees to a vertical plane normal to the plane of the adjacent leg of the block under consideration.

The mentioned butt ends and butt edges are not critical but are needed in the illustrated embodiment because standard blocks **66'**, used to form the standard wall portions **64** and **65** of the wall of FIGURE 11, are shown as having the same type of butt ends and butt edges. Each block **66'** also varies from the described block **66** in that the end-to-end length is illustrated as being about one-third shorter than the corresponding length of block **66**. Thus, each planter space **68'** is deeper and less elongated than each space **68**.

A significant distinction of the left and right blocks of FIGURE 9 resides in the fact that leg **32** of block **142** nad leg **30** of block **144** respectively traverse rearward to a depth less than the depth traversed by the other leg of each block.

The angle component **50** of block **142** and the angle component **52** of block **144** consists of 40 degrees while the angle component **52** of block **142** and the angle component **50** of the block **144** each traverse 22 degrees 30 minutes. The angle components **50** and **52** of block **140** each traverse 17 degrees 30 minutes, while, insignificantly, the nose surface **36'** is illustrated as having a V shape. The angular disposition of the edge **40** of block **142** and the edge **38** of block **144** is 45 degrees to a vertical plane normal to the respective legs **32** of block **142** and **30** of block **144**.

As is evident from FIGURE 11, the set of corner blocks **140**, **142** and **144** is assembled in a form of a curved wall portion **152** to restrain the sloping sidehill **154** and provide corner planter areas **156** of exposed soil, in essentially the same manner as is the set of blocks **20**, **22** and **24** (see FIGURE 2), except that the outside curvature **150** turns the retaining wall through 45 arcuate degrees or a variance therefrom depending on the acute angular relation, if any, established between the side edges at the end joints between the blocks of each tier.

Note that the second and third tiers of the curved wall portion **152** bulge outwardly somewhat and the adjacent side edges at the end joints between the blocks **142** and **140** and the blocks **140** and **144** in the third tier of the curved wall portion **152** form a rearwardly divergent acute angle. The side edges of the blocks **140**, **142** and **144** of the bottom and second tiers are illustrated as being flush with the side edges of each adjacent block.

Notch **48** of each block **140**, **142** and **144** interlocks over the top of an end joint between blocks in the next lower tier.

With reference to FIGURE 12, observe that the described blocks **140**, **142** and **144** can be assembled to turn a terrace retaining wall, at curved portion **161**, through an inside curvature **160** of 45 arcuate degrees or a variation therefrom depending on the acute angular relation, if any, established between the side edges at the end joints between the blocks of each tier, to restrain sloping sidehill **162** and provide corner planter areas **164**, in essentially the same manner as is the set of blocks **20**, **22** and **24**.

Of course, the block **140** could be linear or outwardly concave between its ends and serve the same purpose. Moreover, the retaining wall could be turned through angle **160** by eliminating each block **140** or by replacing each block **140**, for example, with a standard block **66'**. Where each block **140** is eliminated the remaining illustrated blocks would need to be placed so that (a) the ends of the angularly-related blocks **66'** of the linear wall portions **64** and **65**, bottom tier, are brought together and (b) the adjacent legs of adjoining blocks **142** and **144** of each tier are brought together into front face-to-front face relation.

The left terminal end block **146** is shown in FIGURE 10 as integrally comprising (a) a right half which is identical to the right half of the described block **144** and (b) a left half **151** which is planar and directly perpendicular to and which terminates at the plane containing nose surface **36**, so that an interior angle **46'** is provided between the two legs of the block **146**.

Likewise, the right terminal end block **148** is shown as integrally comprising (a) a left half identical to the left half of the described block **142** and (b) a right one half **153** which is planar and directly perpendicular to and which terminates at the plane containing the nose surface **36**, so that angle **46'** is also the included angle between the legs of the block **148**.

The ends blocks **146** and **148** are used to terminate the left and right ends, respectively, of a retaining wall of the type heretofore described and, in so doing, provided planter spaces **158**. The notches **48** of the blocks **146** and **148** interlock over the top of the terminal edge of the adjacent block in the next lowered tier, except for the bottom tier. See FIGURE 11.

With the foregoing in mind, it should be appreciated that various modifications could be made to the described embodiments of the present invention without departing from the scope of the invention and that the invention provides novel structure and stacking arrangements for and methods of erecting special, attractive, self-interlocked, inside and outside curvilinear wall portions of a terrace retaining wall.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. A stacking arrangement of masonry planter blocks for turning a terraced retaining wall through an acute inside or outside angle of 30°, 45°, 60° and limited variations thereof comprising a set of V-shaped corner blocks forming an outwardly convex face at least some of the corner blocks each presenting angularly-related legs of different lengths and different associated included angle components: a plurality of generally horizontally-extending rearwardly-stepped tiers, the bottom tier comprising zero to not more than three corner blocks, being interposed end-to-end between blocks having substantially identical though opposite hand legs used to erect a linear wall portion, and negotiating the first tier through the desired acute angle of curvature, each succeeding tier comprising corner blocks greater in number than the number of corner blocks in the next lower tier interposed end-to-end between blocks having substantially identical though opposite hand legs used to erect a tier of the linear wall portion, the number of corner blocks tier to tier comprising an arithmetic progression the "common difference" of which is either one or two, whereby the stacking arrangement of corner blocks at the angle of the curvature taken together generally resembles a generally vertically-extending equilateral V.

2. A stacking arrangement as defined in claim **1** wherein the set of corner blocks comprises left and right corner blocks of substantially identical though opposite hand eccentric configuration having an included angle

comprising one of approximately 90°, 105° and 62½° for establishing a corner which turns through an angle comprising one of approximately 60°, 30° and 45°, respectively, and a center corner block having substantially identical though opposite hand legs and an included angle comprising one of approximately 60°, 90° and 35° respectively, wherein the bottom tier comprises one center corner block and each tier other than the bottom tier comprises at least one left and one right corner block,and wherein the common difference of the arithmetic progression is one.

3. A stacking arrangement as defined in claim 1 wherein the set of corner blocks comprises left and right corner blocks of substantially identical though opposite hand eccentric configuration having an included angle comprising one of approximately 62½°, 75° and 90°, wherein the bottom tier comprises zero corner blocks and all other tiers comprise at least one left and one right corner block, and wherein the common difference of the arithmetic progression is two.

4. A stacking arrangement as defined in claim 1 wherein the set of corner blocks comprises left and right corner blocks of substantially identical though opposite hand eccentric configuration having an included angle comprising one of approximately 75° and 90° for establishing a corner which turns through an angle comprising approximately 30° and 60°, respectively, and a center corner block having substantially identical though opposite hand legs and an included angle of approximately 150° and 120°, respectively, wherein the bottom tier comprises one center corner block and all other tiers comprise at least one left and one right corner block, and wherein the common difference of the arithmetic progression is two.

5. A stacking arrangement as defined in claim 1 wherein the set of corner blocks comprises left and right corner blocks of identical though opposite hand eccentric configuration having an included angle of approximately 62½° for establishing a corner which turns through an angle comprising approximately 45° and a center corner block having substantially identical though opposite hand legs and an included angle of approximately 35°, wherein the bottom tier comprises one center corner block, one right corner block and one left corner block and all other tiers comprise at least one left, one center and one right corner block, and wherein the common difference of the arithmetic progression is two.

6. A stacking arrangement as defined in claim 1 wherein all of the corner blocks which individually comprise angularly related legs of different lengths have a flat notch opening to the front and downward at the bottom of the juncture between the unequal legs, which notch interlocks over an end-to-end joint between adjacent blocks in the next lower tier independent of whether the adjacent blocks are both corner blocks or one adjacent block comprises one of the mentioned blocks having substantially identical though opposite hand legs.

7. A stacking arrangement as defined in claim 1 wherein the set of corner blocks also comprises a center corner block having substantially identical though opposite hand legs.

8. A stacking arrangement as defined in claim 7 wherein the angle of curvature forms an inside curve and each tier has a notchless center corner block, and wherein all joints between successive blocks formed in whole or in part by the corner blocks having unequal legs are laterally offset one from another as between adjacent tiers except the joints formed at the two ends of the center corner block of each tier respectively are vertically aligned one with another.

9. A stacking arrangement as defined in claim 7 wherein the angle of curvature comprises an outside curve and every other tier has a center corner block presenting a notch as defined and wherein all joints formed in whole or in part by the center and the corner blocks having unequal legs are laterally offset one from another as between adjacent tiers.

10. In a method of stacking corner blocks to comprise an acutely curved portion of a terraced retaining wall on the order of about 30°, 45° and 60°: fabricating at least some corner blocks to present angularly-related legs convexly merging to an outwardly-projecting vertically-extending laterally-eccentric apex comprising a notch opening at the apex to the front and to the bottom, placing symmetrical blocks adapted to form a linear wall portion in stacked relation comprising rearwardly-stepped horizontal tiers, the last block of each tier being laterally offset in one direction from the last block of the next lower tier by about one-half of one symmetrical block, turning each tier of the wall through the desired acute angle by placing one corner block end-to-end against each symmetrical block in not less than all tiers above the bottom tier and by placing the remaining corner blocks so that the notch of each defined corner block rests over top and behind a joint between adjacent blocks in the next lower tier and all blocks are situated end-to-end to form the curved wall portion and interlock all blocks disposed at the curved wall portion.

11. In an eccentric corner masonry planter block having legs of unequal length defining an included acute angle there between and being of one-piece construction adapted to be horizontally disposed in a predetermined stacking pattern for use in turning a terrace retaining wall through a selected acute angle of curvature of approximately 30°, 45°, 60° and limited variations thereof and comprising a generally V-shaped body made up of two angularly-related legs each with one free end terminating in a generally vertically extending edge disposed at an acute angle with respect to the leg and integrally united one to another at a common apex to establish an outwardly convex configuration and form a generally vertically-extending front-facing nose eccentric with relation to the midpoint of the eccentric corner block, the eccentric corner block presenting narrow bottom and top edges respectively disposed in parallel generally horizontal planes, the apex exhibiting a flat wedge-shaped notch opening both at the front nose and at the bottom edge, one said leg having a length substantially greater in magnitude than the length of the other leg, the included acute angle between the legs consisting of two angular components (as measured in a vertical plane passing through the apex generally perpendicular to a plane joining the free ends of the legs one to another) wherein the angle component related to the long leg is substantially greater than the angle component related to the short leg whereby when masonry blocks, including other blocks having legs which are substantially equal in length for fabricating a linear portion of the retaining wall and selected corner blocks at least comprising said eccentric corner blocks, are placed end-to-end in rearwardly-receding generally horizontal tiers, the notch of each nonsymmetrical block will interlock with and nest upon the upper edge of an end-to-end joint between adjacent blocks in the next lower tier independent of whether or not said adjacent blocks are both corner blocks or consist of one corner block and one other block, to thereby turn the retaining wall through said acute angle of curvature.

12. A non-symmetrical block as defined in claim 11 wherein the longer leg transverses rearward to a depth essentially equal to the rearward depth so traversed by the short leg.

13. A non-symmetrical block as defined in claim 11 wherein the longer leg traverses rearward a depth greater than the rearward depth so traversed by the short leg.

14. A non-symmetrical block as defined in claim 11 wherein the terminal edge at the end of at least one leg is disposed in a vertical plane at an acute angle to the leg.

15. Two essentially identical though opposite hand essentially V-shaped corner construction blocks each of essentially uniform height throughout with generally planar top and bottom edges for use in turning a gen-

erally linear wall through a curvature comprising a predetermined number of degrees, each block having a long leg and a short leg extending divergently away from a common vertex in a generally horizontal direction and respectively terminating in end edges disposed in acute angular relation to the adjacent leg and defining an included acute angle between the legs, the acute angle being made up of two angle components measured between the respective long and short legs and a plane passing through the common vertex perpendicular to both a vertical plane parallel to the direction of the generally linear wall and a plane containing the top edge of the corner block, the angle component adjacent the long leg comprising more than one-half the included angle and the angle component adjacent the second leg comprising less than one-half the included angle.

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