Dec. 5, 1967 N. L. HANCOCK 3,355,849

BUILDING WALL AND TAPERED INTERFITTING BLOCKS THEREFOR

Filed July 9, 1965 2 Sheets-Sheet 1

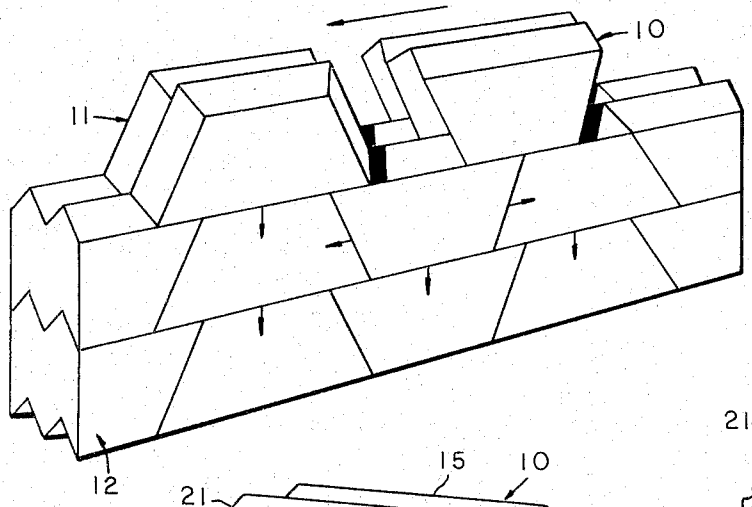


FIG. 1

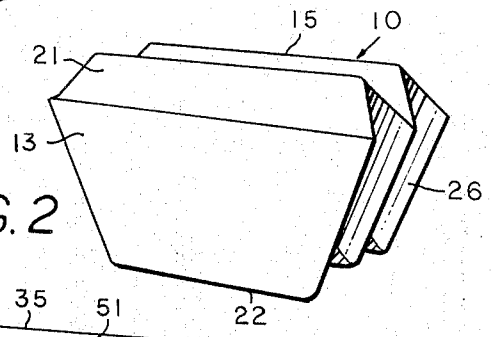


FIG. 2

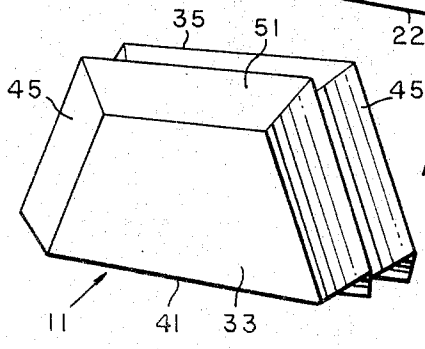


FIG. 3

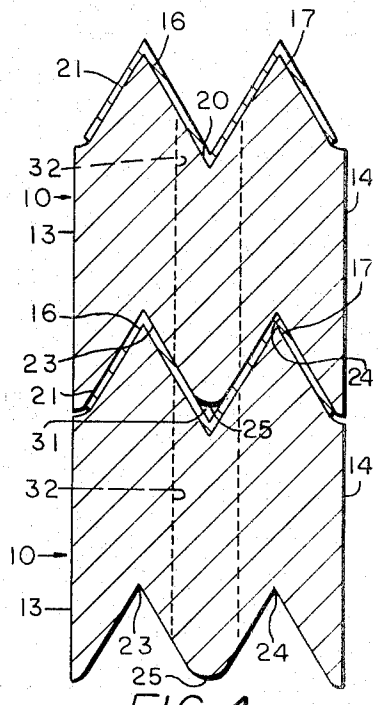


FIG. 4

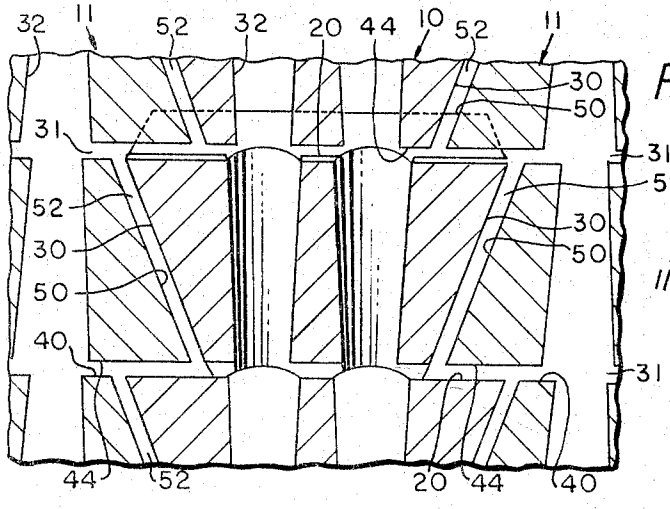


FIG. 5

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BUILDING WALL AND TAPERED INTERFITTING BLOCKS THEREFOR

Filed July 9, 1965 2 Sheets-Sheet 2

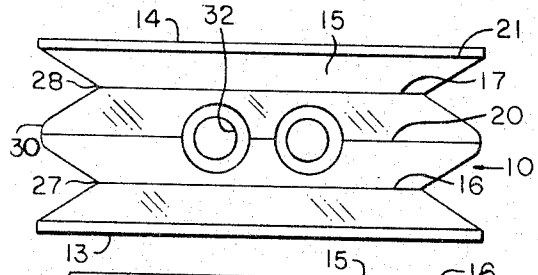


FIG. 6

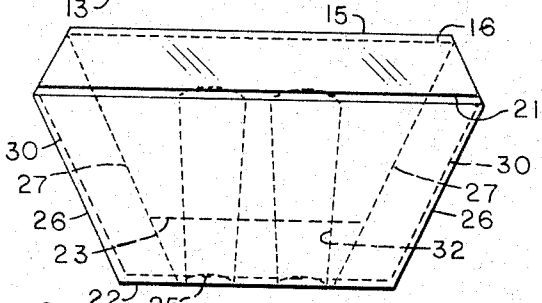


FIG. 7

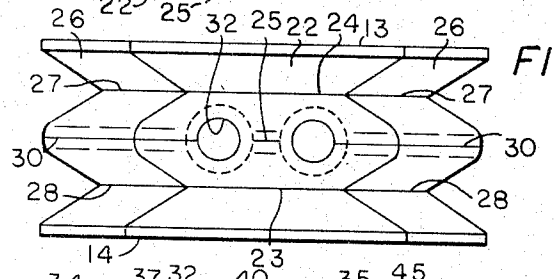


FIG. 8

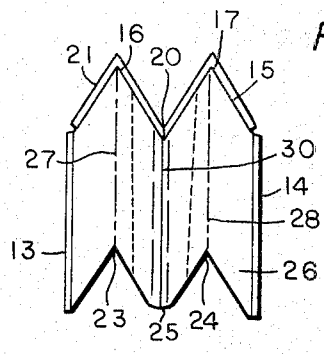


FIG. 9

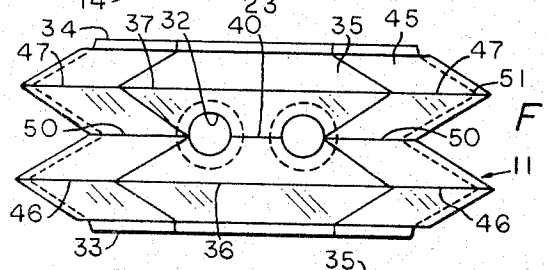


FIG. 10

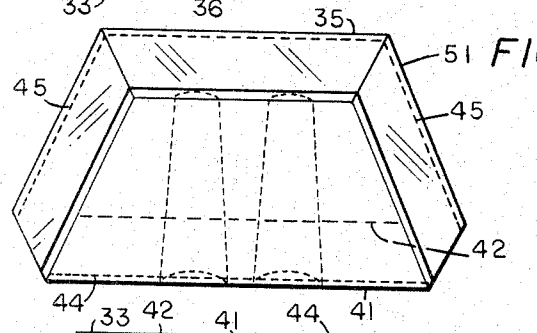


FIG. 11

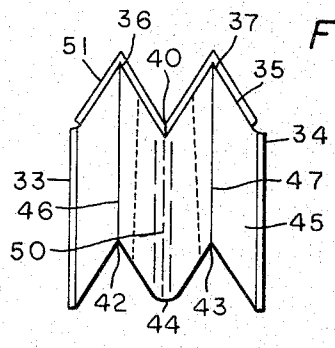


FIG. 12

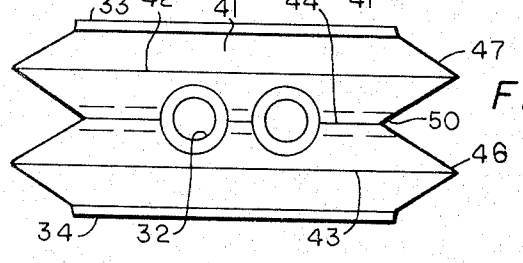


FIG. 13

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BUILDING WALL AND TAPERED INTERFITTING BLOCKS THEREFOR

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Filed July 9, 1965, Ser. No. 470,736
11 Claims. (Cl. 52—396)

ABSTRACT OF THE DISCLOSURE

The block has flat, front and rear faces and is provided with a W-shaped, ribbed and grooved configuration on its upper and lower sides and on its ends. The ribs and grooves on the upper and lower sides interfit the lower and upper sides respectively of a like block. The ends of the block are tapered and the ribs and grooves formed thereon interfit ribs and grooves formed on the ends of a laterally adjacent block which has a reverse end configuration.

This invention relates generally to improvements in a building wall and to the blocks used in the construction of such wall.

An important object is to provide an improved wall that does not require mortar, but relies on the novel interfitting and sealing characteristics of the blocks.

It is an important objective to achieve a building wall having an aesthetically pleasing appearance which can be constructed easily by interfitting specially formed blocks, thereby resulting in a considerable saving in time, labor and expense. The wall eliminates the heretofore prevalent problem of cracked walls caused by expansion, weight, settling and vibration. The blocks interfit to form a weather-tight seal and to provide a tighter connection and seal between blocks in proportion to the weight applied to the wall, the blocks serving to distribute the weight both horizontally and vertically throughout the wall.

An important object is realized by the provision of a building block having a pair of longitudinal ribs on its upper side with a corresponding longitudinal groove therebetween, a pair of longitudinal grooves in its lower side with a corresponding longitudinal rib therebetween, and a plurality of ribs and grooves upon its ends extending between the upper and lower sides.

Another important objective is provided by constructing the building blocks with tapered ends.

Still another important object is afforded by constructing the upper side, lower side and ends of the block with a substantially W-shape, whereby the upper and lower sides of corresponding and compatible blocks will interfit and whereby the ends of compatible blocks will interfit.

An important objective is attained by constructing the intervening rib on the lower side of a lesser depth than the intervening groove on the upper side so that when corresponding and compatible blocks are fitted one on top of the other, there is a space between such rib and groove. This space constitutes a part of a pattern of trapped air insulation medially and longitudinally around each block of the building wall.

Another important object is achieved by the provision of a water-proof gasket on the inverted substantially W-shaped upper side of the building block which seals

with the corresponding inverted substantially W-shaped lower side of the vertically adjacent blocks.

Yet another important object is realized by forming a building block of a specific construction having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween, an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a bottom rib therebetween, and substantially W-shaped ends tapered from one of the sides to the other, at least one end forming a pair of end grooves with an end rib therebetween, the end grooves extending between the top ribs and bottom grooves, and the end rib extending between the top groove and bottom rib.

An important object is to provide another coacting block of specific construction having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween, an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a bottom rib therebetween, and substantially W-shaped ends tapered from one of the sides to the other, at least one end forming a pair of end ribs with an end groove therebetween, the end ribs extending between the top ribs and bottom grooves, and the end groove extending between the top groove and bottom rib.

Another important objective is to provide a building wall that can be quickly and easily constructed by utilizing a plurality of blocks of two types arranged in superimposed rows, the blocks of one type interfitting endwise with laterally adjacent blocks of the other type in the same row, interfitting with subjacent and superjacent blocks of the same type, and partially interfitting with the blocks of different type laterally adjacent the said subjacent and superjacent blocks of the same type.

An important object is attained by a building wall constructed of a plurality of blocks arranged in superimposed rows, each block having a pair of longitudinal top ribs on its upper side with a corresponding longitudinal top groove therebetween, a pair of longitudinal bottom grooves in its lower side with a corresponding longitudinal bottom rib therebetween, the bottom grooves receiving the top ribs and the bottom rib interfitting the top groove of the subjacent block of the next row, and each block having a plurality of ribs and grooves upon its ends extending between the upper and lower sides and interfitting with the end ribs and end grooves of laterally adjacent blocks of the same row.

Another important objective is achieved by tapering the opposed ends of each block from one side to the other, the blocks being alternately disposed in end-to-end relation in each row with the tapers reversed.

It is an important object to provide building blocks that are simple and durable in construction, economical to manufacture and assemble, and which can be utilized by anyone with little or no instruction to construct a building wall.

The foregoing and numerous other objects and advantages of the invention will more clearly appear from the following detailed description of a preferred embodiment of a building wall and of the building blocks used to construct such wall, particularly when considered in connection with the accompanying drawings, in which:

FIG. 1 is a fragmentary, perspective view of a building wall, partially assembled;

FIG. 2 is a perspective view of a first type of building block;

FIG. 3 is a perspective view of a second type of building block;

FIG. 4 is a cross sectional view of the first type of building block disposed one on the other as seen in a transverse vertical plane;

FIG. 5 is a fragmentary, cross sectional view of the building wall as seen in a longitudinal vertical plane;

FIG. 6 is a top plan view of the first type of block;

FIG. 7 is a side elevational view of the first block;

FIG. 8 is a bottom plan view of the first block;

FIG. 9 is an end elevational view of the first block;

FIG. 10 is a top plan view of the second block;

FIG. 11 is a side elevational view of the second block;

FIG. 12 is an end elevational view of the second block, and

FIG. 13 is a bottom plan view of the second block.

Referring now by characters of reference to the drawings, and first to FIG. 1, it will be understood that the building wall is constructed primarily of two types of building blocks generally indicated at **10** and **11** disposed alternately in superimposed rows, and disposed so that blocks of the same type are located in vertical alignment. The ends of the building wall are completed by suitable end blocks referred to at **12**, the end blocks **12** being preferably anchored so as to prevent lateral displacement.

The detailed construction of the first block **10** is best shown in FIGS. 2 and 6 through 9. The block **10** includes substantially flat and parallel front and rear surfaces **13** and **14** respectively. Any one or both of these surfaces **13** and **14** may be curved or arcuate in order to provide a curved outer and/or inner surface to the building wall when assembled.

The block **10** includes an inverted, substantially W-shaped upper side **15** defining a pair of longitudinal top ribs **16** and **17** and a longitudinal top groove **20** therebetween. A water-proof gasket **21**, such as rubber, plastic or impregnated paper including asphalt-impregnated asbestos, is attached to the W-shaped upper side **15** in order to provide a more effective seal.

The block **10** has an inverted, substantially W-shaped lower side **22** defining a pair of longitudinal bottom grooves **23** and **24** with a longitudinal bottom rib **25** therebetween. The block **10** includes opposed, substantially W-shaped ends **26** tapered downwardly from the upper side **15** to the lower side **22**. Each of these ends **26** defines a pair of end grooves **27** and **28** with an end rib **30** therebetween. The end groove **27** extends between and interconnects the top rib **16** with the bottom groove **23**. The end groove **28** extends between and interconnects the top rib **17** with the bottom groove **24**. The end rib **30** extends between and interconnects the top groove **20** with the bottom rib **25**.

As will be apparent from FIGS. 4 and 5, the bottom rib **25** of the first block **10** is of a lesser depth than the top groove **20** of a corresponding block **10** in which it fits upon assembly so as to provide an air space **31** extending the length of the block **10** from end-to-end. This space **31** constitutes a portion of an air insulation pattern provided in the interior of the building wall, as will become apparent upon later description of parts and assembly.

Formed vertically through the first block **10** are a pair of spaced holes **32** extending through the upper and lower sides **15** and **22** respectively at the longitudinal axis of such block **10**. Specifically, the holes **32** are tapered slightly downwardly and have openings communicating with the top groove **20** and with the bottom rib **25**.

The second type of block **11** is best illustrated in FIGS. 3 and 10 through 13 inclusive. This second block **11** includes opposed, front and rear surfaces **33** and **34** respectively. In the embodiment disclosed, these front and rear surfaces **33** and **34** are substantially flat and parallel.

It will be understood that these surfaces **33** and **34** can be curved or arcuate to conform or blend with any corresponding configuration of the surfaces **13** and **14** of the first block **10** to provide a curved outer and/or inner wall face upon assembly of the blocks **10** and **11** into a building wall.

The second block **11** includes an inverted, substantially W-shaped upper side **35** defining a pair of longitudinal top ribs **36** and **37** with a longitudinal top groove **40** therebetween. In addition, the block **11** includes an inverted, substantially W-shaped lower side **41** having a pair of longitudinal bottom grooves **42** and **43** with a longitudinal bottom rib **44** therebetween.

The block **11** has a pair of opposed, substantially W-shaped ends **45** tapered upwardly from the lower side **41** to the upper side **35**. Each substantially W-shaped end **45** defines a pair of end ribs **46** and **47** with an end groove **50** therebetween. The end rib **46** extends between and interconnects the top rib **36** with the bottom groove **42**. The end rib **47** extends between and interconnects the top rib **37** with the bottom groove **43**. The end groove **50** extends between and interconnects the top groove **40** with the bottom rib **44**.

A water-proof gasket **51**, of a material such as rubber, plastic or impregnated paper including asphalt-impregnated asbestos, is fixed to the upper side **35** and each of the ends **45** to provide a more effective seal upon assembly of the two types of blocks **10** and **11** in a building wall.

The bottom rib **44** of each block **11** is of a lesser depth than the top groove **40** of the same type of block **11**, and is of a lesser depth than of the top groove **20** of the first block **10** into which such bottom rib **44** interfits upon assembly of the blocks **10** and **11** into the wall construction. This particular structural arrangement provides the longitudinal air space **31** between the bottom rib **44** and the top grooves **20** and **40** of blocks **10** and **11** respectively upon assembly.

The second block **11** includes a pair of longitudinally spaced vertical holes **32**, similar to the holes **32** formed in block **10**. These vertical holes **32** are slightly tapered downwardly and extend between and communicate with the upper and lower sides **35** and **41** respectively. More specifically, the holes **32** in block **11** have openings communicating with the top groove **40** and with the bottom rib **44**.

From FIGS. 5, 8 and 10, it will be understood that the end rib **30** of each end **26** of the first block **10** is of a lesser depth than the coacting end groove **50** of each end **45** of the second block **11** so as to provide an air space **52** between the rib **30** and groove **50**. This air space **52** extends the entire height of the laterally adjacent blocks **10** and **11** from the upper sides **15** and **35** respectively to the lower sides **22** and **41**. As will be apparent from FIG. 5, these end air spaces **52** interconnect the lengthwise longitudinal air spaces **31** at the top and bottom of each block so that a continuous, peripheral air space is formed about each block **10** and **11** at a center vertical and longitudinal plane of the building wall. This continuous peripheral air space about each of the blocks **10** and **11** is formed by the intersecting air spaces **31** and **52**. Moreover, it will be importantly noted from FIG. 5 that when the blocks **10** and **11** are assembled in a building wall, the continuous, peripheral air spaces about each block intersect to provide an open pattern of communicating air spaces about each and every block. This air space pattern is enhanced by the vertically aligned holes **32** formed in the blocks **10** and **11**, the holes **32** interconnecting and communicating the air spaces **31** at the top and bottom of each block in the wall assembly.

To build a wall with the two types of blocks **10** and **11**, each row is constructed by alternately placing the blocks **10** and **11** in laterally adjacent and interfitting

relation, the end ribs **46** and **47** of each end of each second block **11** being received in the end grooves **27** and **28** of each adjacent first block **10**, and the end rib **30** of each end of each first block **10** being received in the end groove **50** of each adjacent second block **11**. Upon engagement of these laterally adjacent blocks **10** and **11** in interfitting relation, as described previously, the gasket **51** will provide an effective seal therebetween. The ends of each row are completed by suitable end blocks **12** that are preferably anchored to prevent any longitudinal displacement of the building blocks **10** and **11** from their interfitting endwise engagement.

In placing additional rows of blocks in superimposed relation, it will be noted that the second blocks **11** are in vertical alignment. In other words, each of the second blocks **11** of each row is disposed above and seated on a corresponding second block **11** of the subjacent row. Similarly, the first blocks **10** are in vertical alignment. In other words, each first block **10** of each row is disposed above and seated on a corresponding first block **10** of the subjacent row.

For example, upon seating a second block **11** on top of a corresponding second block **11** of a subjacent row, the upper ribs **36** and **37** of such subjacent block **11** will be received in the compatible bottom grooves **42** and **43**, while the top groove **40** of such subjacent block **11** will receive the bottom rib **44**. Upon interfitting connection of the lower side **41** with the upper side **35** of the subjacent block **11**, an effective seal is realized therebetween, such seal being enhanced by the engagement of the water-proof gasket **51** on the upper side **35** of the subjacent block **11**.

In addition, portions of the lower side **41** of the second block **11** will overlap and seat on the upper sides **15** of the first blocks **10** laterally adjacent the supporting subjacent second block **11**, the top ribs **16** and **17** of the subjacent first blocks **10** being received in the bottom grooves **42** and **43**, while the top grooves **20** of the subjacent first blocks **10** receive the bottom rib **44**. The interconnection of these portions of blocks **10** and **11** creates a seal that is enhanced by the water-proof gasket **21** on the upper side **15** of the subjacent first block **10**.

Each of the first blocks **10** is supported and seated on a corresponding first block **10** of the subjacent row. The lower side **22** of the first block **10** interfits and engages the upper side **15** of the subjacent block **10**. More particularly, the top ribs **16** and **17** of the subjacent block **10** are received in the compatible bottom grooves **23** and **24** respectively, while the top groove **20** of the subjacent block **10** receives the compatible bottom rib **25**. This interfitting engagement between the vertically aligned blocks **10** provides an effective seal therebetween, such seal being enhanced by the provision of the water-proof gasket **21** on the upper side **15** of block **10**.

It will be importantly noted that each of the blocks **10** or **11** has an interfitting locking engagement with six other blocks **10** and **11** about its periphery. Moreover, because of the particular construction of the building blocks **10** and **11**, and their specific arrangement in the building wall, any load applied to the top of such wall will be distributed vertically downward by each of the blocks **10** and **11**, while the first blocks **10** operate to distribute such force laterally or horizontally in each row, thereby distributing the load throughout the wall and creating an even tighter interfitting connection both horizontally and vertically between all of the blocks.

Although the invention has been described by making detailed reference to preferred embodiments, such detail is to be understood in an instructive, rather than in any restrictive sense, many variants being possible within the scope of the claims hereunto appended.

I claim as my invention:

1. A building block comprising:

(a) a body having an inverted substantially W-shaped upper side forming a pair of longitudinal ribs with a corresponding longitudinal groove therebetween

(b) an inverted substantially W-shaped lower side forming a pair of longitudinal grooves with a corresponding longitudinal rib therebetween,

(c) the body having its ends tapered from one of said sides to the other of said sides, and

(d) each end being of substantially W-shape forming ribs and grooves extending between the upper and lower sides and adapted to interfit reversely formed substantially W-shaped ends of a compatible block and

(e) an equal number of ribs being provided at each end of the body, corresponding ribs at opposite ends having substantially aligned apices.

2. A building block comprising:

(a) a body having an inverted substantially W-shaped upper side forming a pair of longitudinal ribs with a corresponding longitudinal groove therebetween,

(b) an inverted substantially W-shaped lower side forming a pair of longitudinal grooves with a corresponding longitudinal rib therebetween,

(c) the intervening rib on the lower side being of a lesser depth than the intervening groove on the upper side so that when corresponding blocks are fitted one on top of the other, there is a continuous, free air space between the last said rib and groove,

(d) the body having its ends tapered from one of said sides to the other of said sides,

(e) the ends being of substantially W-shape forming ribs and grooves extending between the upper and lower sides and adapted to interfit reversely formed substantially W-shaped ends of a compatible block, and

(f) an equal number of ribs being provided at each end of the body, corresponding ribs at opposite ends having substantially aligned apices,

(g) end ribs being adapted to be of lesser depth than the grooves of such compatible block to provide a continuous air space between said ribs and grooves and around the block as a whole.

3. A building block comprising:

(a) a body having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween,

(b) an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a bottom rid therebetween,

(c) substantially W-shaped ends tapered from one of said sides to the other, and

(d) each end forming a pair of end grooves with an end rib therebetween, the end grooves extending between the top ribs and bottom grooves, and the end rib extending between the top groove and bottom rib.

4. A building block comprising:

(a) a body having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween,

(b) an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a bottom rib therebetween,

(c) substantially W-shaped ends tapered from one of said sides to the other, and

(d) each end forming a pair of end ribs with an end groove therebetween, the end ribs extending between the top ribs and bottom grooves, and the end groove extending between the top groove and bottom rib.

5. A building block comprising:

(a) a body having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween,

(b) an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a bottom rib therebetween,

(c) substantially W-shaped ends tapered from the upper side to the lower side, each end forming a pair of end grooves with an end rib therebetween, the end grooves extending between the top ribs and bottom grooves, and the end rib extending between the top groove and bottom rib,

(d) the bottom rib on the lower side being of lesser depth than the top groove on the upper side so that when corresponding blocks are fitted one on top of the other there is a space between the last said rib and groove, and

(e) a water-proof gasket attached on the inverted substantially W-shaped upper side.

6. A building block comprising:

(a) a body having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween,

(b) an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a bottom rib therebetween,

(c) substantialy W-shaped ends tapered from the lower side to the upper side, each end forming a pair of end ribs with an end groove therebetween, the end ribs extending between the top ribs and bottom grooves, and the end groove extending between the top groove and bottom rib,

(d) the bottom rib on the lower side being of lesser depth than the top groove on the upper side so that when corresponding blocks are fitted one on top of the other, there is a space between the last said rib and groove, and

(e) a water-proof gasket attached on the substantially W-shaped upper side and ends.

7. In a building wall:

(a) a plurality of blocks arranged in superimposed rows,

(b) each block having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween,

(c) an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a corresponding longitudinal bottom rib therebetween.

(d) the bottom grooves receiving and the bottom rib interfitting respectively the top ribs and the top groove of the subjacent block of the next row.

(e) each block having opposed ends tapered from one of said sides to the other,

(f) the blocks being alternately disposed in end-to-end relation in each row with the tapers reversed,

(g) the ends of each block being of substantially W-shape forming ribs and grooves extending between the upper and lower sides and interfitting reversely formed W-shaped ends of laterally adjacent compatible blocks of the same row, and

(h) an equal number of ribs being provided at each opposite end of each block, corresponding ribs at opposite ends having substantially aligned apices.

8. In a building wall:

(a) a plurality of first and second types of blocks arranged in superimposed rows,

(b) the first and second types of blocks each having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween.

(c) an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a bottom rib therebetween, and

(d) substantially W-shaped ends tapered from one of said sides to the other, each end of each first type block having a pair of end grooves with an end rib therebetween, the end grooves extending between the top ribs and bottom grooves and the end rib extending between the top groove and bottom rib,

(e) each block of the second type having substantially W-shaped ends tapered from one side to the other side, opposite to the taper of the first type block, each end of each second type block having a pair of end ribs with an end groove therebetween, the end ribs extending between the top ribs and bottom grooves, and the end groove extending between the top groove and bottom rib,

(f) the two types of blocks being alternately disposed in end-to-end relation in each row with the tapers reversed,

(g) each type of block having its bottom grooves receiving and its bottom rib interfitting respectively the top ribs and the top groove of the subjacent block of the same type, and having its W-shaped ends interfitting the W-shaped ends of laterally adjacent blocks of the other type of the same row.

9. A building wall as defined in claim **8**, in which:

(h) each type block has the bottom rib on the lower side of lesser depth than the top groove on the upper side so that there is a space between the last said rib and groove of superimposed blocks of adjacent rows, and

(i) each first type block has its end rib at each end of lesser depth than the end groove at each end of each second type block so that there is a space between the last said rib and groove of laterally adjacent blocks of different types in the same row.

10. A building wall as defined in claim **8**, in which:

(h) a water-proof gasket is provided on the substantially W-shaped upper side of each block of the first type, and

(i) a water-proof gasket is provided on the substantially W-shaped upper side and ends of each block of the second type,

(j) the gaskets providing effective seals between the blocks when assembled.

11. In a building wall:

(a) a plurality of blocks of first and second types arranged in superimposed rows,

(b) each block of both types having an inverted substantially W-shaped upper side forming a pair of longitudinal top ribs with a corresponding longitudinal top groove therebetween, and

(c) an inverted substantially W-shaped lower side forming a pair of longitudinal bottom grooves with a corresponding longitudinal bottom rib therebetween,

(d) each block of the first type having ends tapered from the upper side to the lower side, each end being of substantially W-shape forming a pair of end grooves with an end rib therebetween, the end grooves extending between the top ribs and bottom grooves, and the end rib extending between the top groove and bottom rib,

(e) each block of the second type having ends tapered from the lower side to the upper side, each end being of substantially W-shape forming a pair of end ribs with an end groove therebetween, the end ribs extending between the top ribs and bottom grooves, and the end groove extending between the top groove and bottom rib,

(f) each block of the same type having its bottom grooves receiving and the bottom rib interfitting respectively the top ribs and the top groove of the subjacent block of the same type of the next row,

(g) the blocks of the two types being alternately disposed in end-to-end relation in each row with the tapers reversed,

(h) each block of the first type having its top ribs interfitting and its top groove receiving respectively

part of the bottom grooves and bottom rib of each block of the second type laterally adjacent the superjacent block of the same type of the next row, and the ribs and grooves of the substantially W-shaped ends of the block of each type interfitting the ribs and grooves of the ends of the laterally adjacent blocks of different types in the same row.

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