April 27, 1965 G. PERSAK, JR 3,180,059

BUILDING BLOCKS

Filed Oct. 20, 1961 2 Sheets-Sheet 1

FIG. 1.

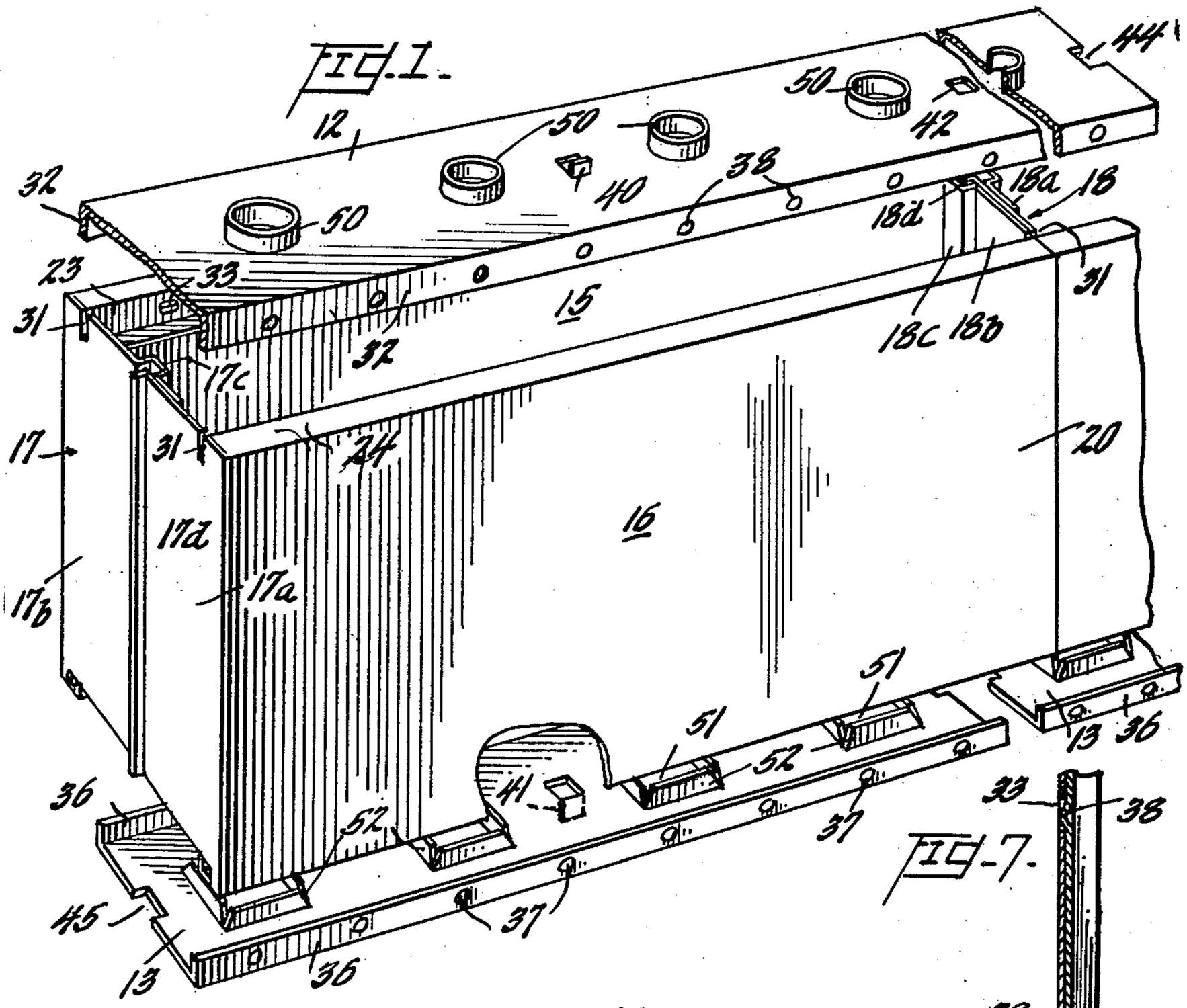


FIG. 7.

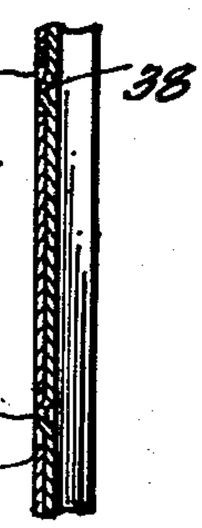


FIG. 2.

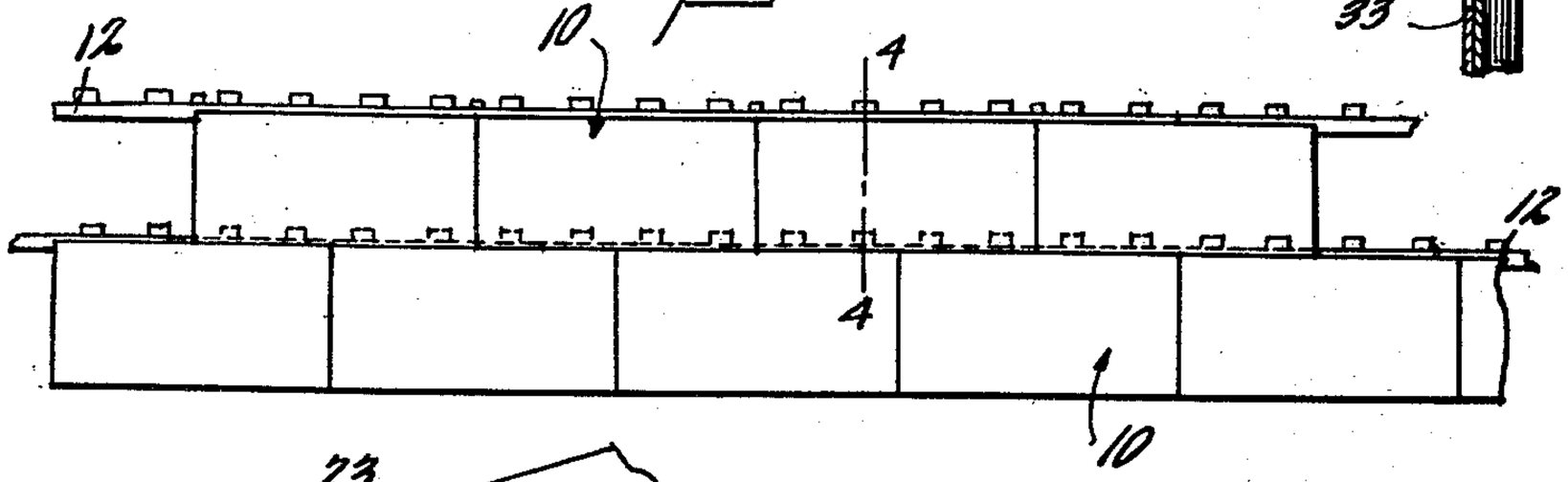
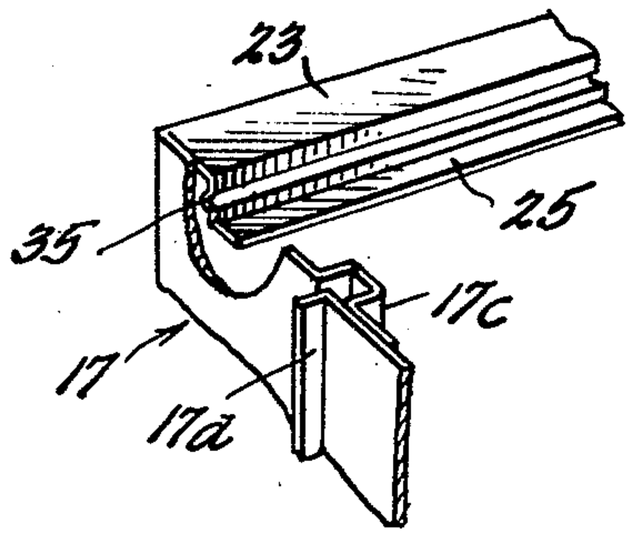


FIG. 8.



INVENTOR

George Persak, Jr.,

BY Samuel Steamans

ATTORNEY

April 27, 1965 G. PERSAK, JR 3,180,059

BUILDING BLOCKS

Filed Oct. 20, 1961 2 Sheets-Sheet 2

FIG. 3.

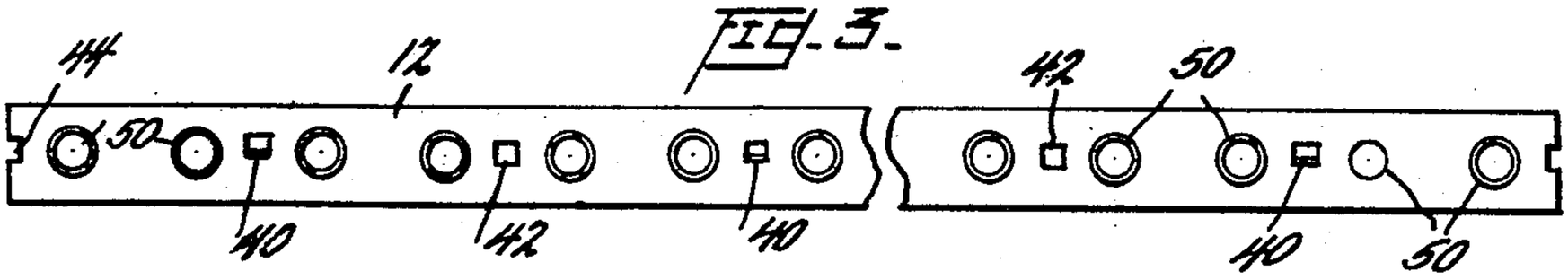


FIG. 9.

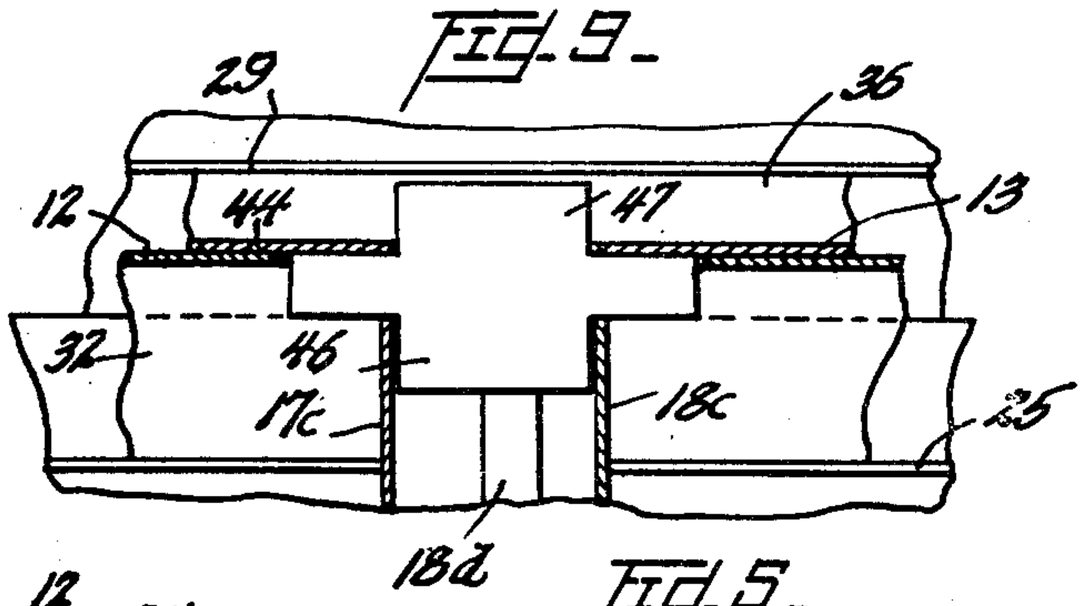


FIG. 4.

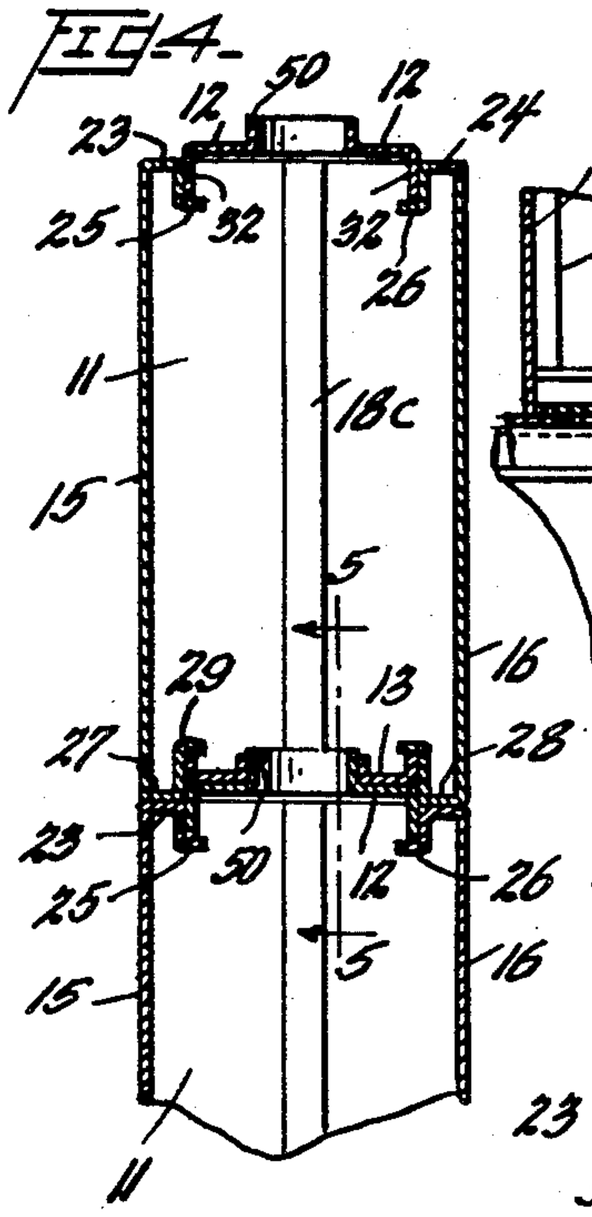


FIG. 5.

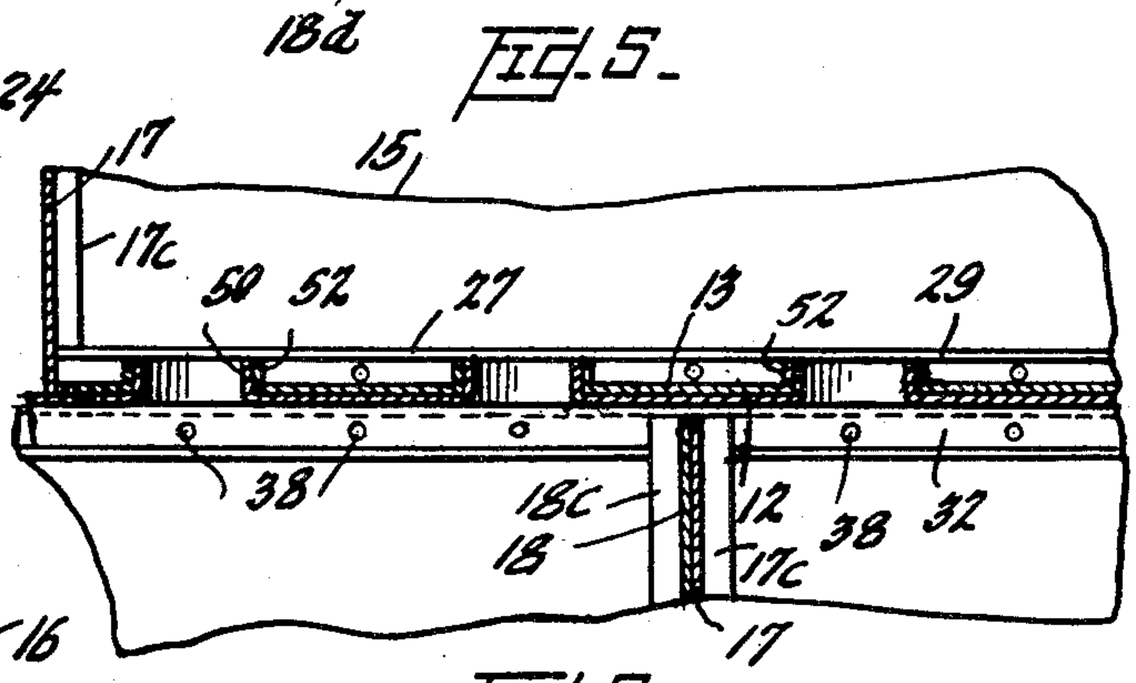
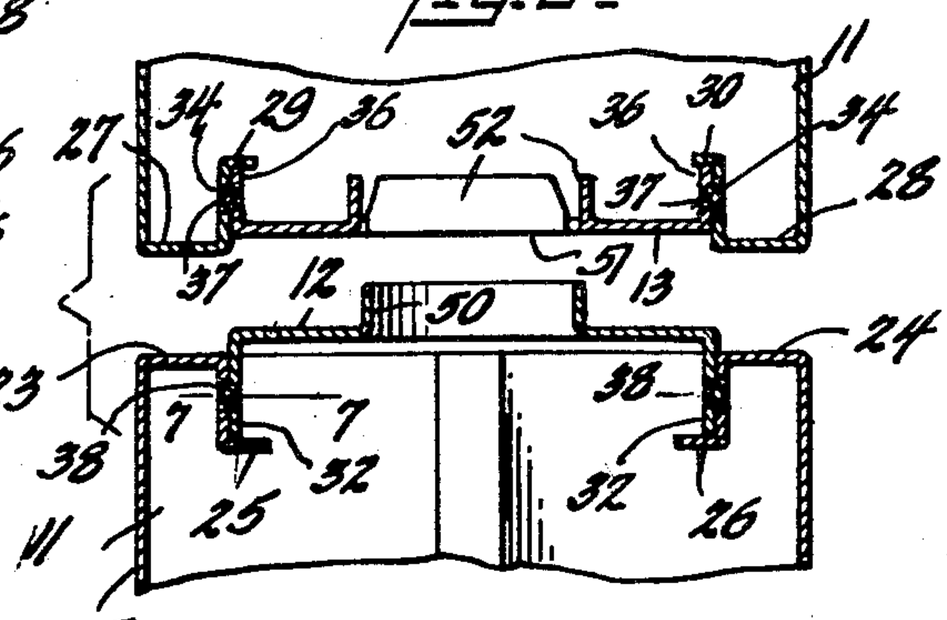


FIG. 6.



INVENTOR

George Persak, Jr.,

BY Samuel Steamman

ATTORNEY

United States Patent Office

3,180,059
Patented Apr. 27, 1965

3,180,059

BUILDING BLOCKS

George Persak, Jr., Verona, N.J., assignor to Henry P. C. Keuls, New York, N.Y.

Filed Oct. 20, 1961, Ser. No. 146,542
4 Claims. (Cl. 50—405)

This invention relates to building blocks for use in building exterior or interior walls, partitions, room-dividers, and the like.

More particularly, the invention is concerned with building blocks for the above-mentioned purposes, constructed so as to enable them to be used in erecting a wall or partition without the necessity of employing mortar or other cementitious material for bonding together the adjacent blocks composing the wall or partition.

Still more particularly, the invention is concerned with a building block of the aforesaid character, constructed in the form of a hollow, substantially rectangular portion having relatively elongated front and back walls connected by end walls parallel to one another, a separate horizontal top wall and a separate horizontal bottom wall, the former being provided with upwardly projecting male elements which frictionally engage vertically aligned openings in the bottom wall of the blocks of a superposed row, thereby to interlock the blocks of each row with those of the rows next below and next above.

The principal object of the invention is to provide a building block of the character above set forth, so constructed as to enable adjacent blocks of each horizontal row to be connected to one another.

Another object of the invention is to provide a building block of the aforesaid construction, which will permit a number of adjacent blocks of each row to be connected to one another without requiring the use of any member or part additional to those composing the blocks per se.

Yet another object of the invention is to provide a building block as aforesaid, constructed so as to enable several rows of several blocks each, to be pre-assembled as a unit, the adjacent blocks of the pre-assembled unit being interlocked with blocks of a vertically adjacent row as well as horizontally within each row.

Still another object of the invention is to provide a building block of the character aforesaid, so constructed as to enable it to be manufactured by automation processes, and hence at greatly reduced cost.

A still further object of the invention is to provide building blocks as aforesaid, which may be readily utilized in erecting a wall, partition, or the like, by relatively unskilled labor.

Stated briefly, the objects of the invention may be achieved by providing as the horizontal top wall for the hollow, rectangular body portion of the blocks, a member having a length corresponding to a multiple of the length of each block, and arranged so that it will serve to connect a number of adjacent blocks in a horizontal row to one another.

Further, in accordance with the invention, the top member is provided with means cooperating with means formed adjacent the upper-most edges of the front and back walls of the hollow body portion of the blocks, for effecting a firm interlock between the member and the several blocks of a row which it connects to one another.

The invention will be more readily understood from the following detailed description, and from the accompanying drawing, in which:

FIG. 1 is an expanded view, in perspective, of a building block constructed according to a preferred embodiment of the invention;

FIG. 2 is a view, in front elevation, of a portion of a wall, partition, room-divider or the like, composed of a number of superposed rows of blocks embodying the invention;

FIG. 3 is a plan view of a top wall member for connecting several blocks of a row as shown in FIGS. 1 and 2;

FIG. 4 is a view in cross-section, on an enlarged scale, taken along line 4—4 of FIG. 2;

FIG. 5 is a cross-section taken along line 5—5 of FIG. 5;

FIG. 6 is an expanded view on an enlarged scale, of the parts shown in FIG. 4;

FIG. 7 is a view in cross-section taken along line 7—7 of FIG. 6;

FIG. 8 is a fragmentary view, in perspective, showing a modification of one of the parts; and

FIG. 9 is a view, in vertical cross-section showing a modification of another of the parts.

The invention in its preferred form is herein illustrated as embodied in a building block constructed as described and claimed in my companion application Serial No. 146,609, filed on even date herewith.

Referring more in detail to the drawings, the building block of the invention is indicated as a whole by numeral 10. As will be seen from the drawing, it is composed of three separate parts, namely, a substantially rectangular hollow body portion 11, a separately formed top wall member 12, and a bottom wall member 13, preferably also separately formed.

Each of these three parts of the block may be made of any suitable material which can readily be shaped to the desired form. Preferably, they are made of metal of, say 22 to 28 gauge sheet steel. If desired, however, particularly in the case of blocks to be used for interior partitions or room-dividers which are not required to be load-supporting, the parts may be formed from suitable synthetic resinous plastic material of commercially available types, such as polystyrene, polypropylene, or copolymers such as acrylonitrile-butadiene-styrene, or the like, which may be formed in the desired shape by injection molding, extrusion, vacuum-forming, or other suitable forming processes.

If desired, the body portion may be made of a material different than that of which the top and bottom members are made. Thus, the body portion may be of metal, glass, or resinous plastic, whereas the top and bottom members are made of sheet metal, or vice versa.

In terms of practical dimensions, the blocks may be of a length of, say, twelve to thirty-six inches or more, a width of, say, two to six inches, and a height of, say, six to ten inches.

The body portion 11 comprises a pair of relatively elongated front and back walls 15, 16 joined at their respective ends by transversely extending, parallel end walls 17, 18.

The body member 11, particularly when made from sheet metal, is preferably fabricated, as by stamping the same, from two separate pieces thereof. Thus, as shown in the drawing, particularly FIG. 1 thereof, one of these pieces, indicated by numeral 20, is formed to provide a central portion constituting the front wall 16 of the body, and is bent at a right angle, at one end of the central portion to provide a portion 17*a* of the end wall 17. It is similarly bent at the opposite end of the central portion to provide a portion 18*b* of the end wall 18. Similarly, the other piece 21 is formed to provide the back wall 15 of the body, the portion 17*b* and the portion 18*a* of the end wall 18. As will be seen from the drawing, the central portion of each of the pieces 20 and 21 is of somewhat greater transverse dimension than that of the

portions **17***a*, **17***b*, **18***a*, **18***b*, and the longitudinal dimension of each of the portions **17***b* and **18***b* is somewhat greater than that of the portions **17***a* and **18***a*.

Adjacent the marginal edge of each portion **17***b*, **18***b*, there is formed an inwardly directed groove or depression **17***c*, **18***c*, respectively, extending transversely from one longitudinal edge of the respective portions to the other thereof. At the marginal edge of each portion **17***a*, **18***a*, there is formed an outwardly directed flange **17***d*, **18***d*, respectively, extending transversely from one longitudinal edge thereof to the other, in a plane preferably at a right angle to the plane of the respective portions **17***a*, **18***a*, and lying slightly offset with respect to the axis of the grooves **18***c*, **17***c*, respectively.

When the two pieces **20**, **21** as thus formed are joined at their opposite ends, as by spot welding, along the overlapping margins of the portions **17***a*, **17***b* and **18***a*, **18***b*, the hollow rectangular body member **11** of the block will result.

As will be seen, when one of the blocks is positioned with each of its end walls abutting the correspondingly opposite end walls of adjacent blocks in a horizontal row of blocks, the flanges **17***d*, **18***d* of each block will, respectively, be disposed in the grooves **18***c*, **17***c* of the adjacent blocks in the same row. The thus partially overlapped flanges in the vertical joints between the adjacent blocks will thereby preclude the passage of light through the joints from one face of the wall or partition to the other.

The central portion of each of the pieces **21**, **20** is formed along one of its opposite longitudinal margins with inwardly directed right-angular return-bent portions **23**, **24** terminating in flanges **25**, **26**, respectively. The flanges **25**, **26** each extend at a right angle to the outer leg of the respective return-bent portions. At the opposite longitudinal margin of each of the pieces **21**, **20** there is formed a similar return-bent portion **27**, **28**, terminating in right-angularly extending flanges **29**, **30**, respectively.

For a purpose to be hereinafter more fully described, the end walls **17** and **18** of the body portion **11** are each provided at the junctures between these walls and the depending legs of the return-bent portions **23**, **24**, with vertical slots **31** extending down from the upper edges of the end walls a distance substantially equal to the height of the depending legs of the return-bent portions.

For that purpose also, the depending legs of the return-bent portions **23** and **24** are each formed with a series of openings **33**, which may be either of elliptical or circular outline, and spaced from one another at suitable distances. Similar openings **34** may be formed in the upwardly directed legs of return-bent portions **27** and **28**.

The bottom wall member **13** of the block may likewise be fabricated by stamping the same from sheet metal, and is of a length substantially equal to the longitudinal dimension between the end walls **17** and **18** of the body portion **11**. Member **13** is formed along its opposite longitudinal margins with right-angularly extending flanges **36**, extending the full length of the member and being spaced transversely from one another a distance such as to provide a snug fit when this member **13** is inserted between the legs of the return-bent portions **27**, **28** at the bottom of the body portion **11**. The transverse dimension of each of the flanges **36** is such that when the bottom member is inserted between the legs of return-bent portions **27**, **28** at the bottom of the body portion **11**, and the longitudinal terminal edges of the flanges **36** have been brought into contact with the bottom surfaces of the flanges **29**, **30**, the bottom horizontal surface of member **13** will be disposed in a plane lying about $\frac{1}{16}$ to $\frac{1}{8}$ inch above the longitudinal and transverse bottom edges of the body portion **11**.

Formed along each of the flanges **36**, as by punching the same, is a series of spaced, outwardly extending knobs **37**, preferably of semi-spherical shape. The knobs **37** are

disposed so that each of them will be received in one of the openings **34** in the upwardly directed legs of return-bent portions **27**, **28** when member **13** is positioned properly at the lower open end of body portion **11**. Thus, the bottom wall member **13**, when inserted between the legs of return-bent portions **27**, **28**, will not only be held in place by frictional engagement of the flanges **36** with the legs of the return-bent portions, but will be firmly locked in place by engagement of each of the knobs **37** with one of the openings **34**.

The member **12**, constituting the top wall of the blocks, may be fabricated by stamping the same from sheet metal. In accordance with the invention, member **12** is of a length substantially equal to a multiple of the length of each block, and is so constructed as to enable it to connect that multiple number of adjacent blocks in a horizontal row to one another. In the preferred embodiment illustrated in the drawing, particularly FIGS. 1, 2 and 3 thereof, member **12** is of a length substantially equal to four times the length of each block.

At each of its longitudinal margins, member **12** is formed with a right-angularly depending flange **32**, these flanges extending the full length of the member and being spaced transversely from one another a distance such as to provide a snug fit when the thus formed member is inserted between the depending legs of the return-bent portions **23**, **24** at the upper open end of body portion **11**.

The height or transverse dimension of each of the flanges **32** is somewhat greater than that of the flanges **36** of the bottom member **13**, being substantially equal to the height of the slots **31**, and such that when the top member is inserted at the upper open end of body portion **11**, with the longitudinal terminal edges of flanges **32** resting upon the upper surfaces of the flanges **25**, **26**, the upper horizontal surface of member **12** will be disposed in a plane lying above the uppermost longitudinal and transverse edges of body portion **11** a distance substantially equal to that by which the bottom horizontal surface of the member **13** extends above the lowermost edges of the body portion **11**.

Thus, as will be seen from the drawing, particularly FIGS. 4 and 6 thereof, when the blocks are properly positioned in superposed rows, passage of light from one face of the wall or partition to the other, along the horizontal joints between adjacent rows of blocks, will be precluded.

Formed as by punching the same, along each of the flanges **32** is a series of outwardly projecting knobs **38** spaced from one another at distances equal to the spacing between the openings **33** in the return-bent portions **23**, **24** of the body **11**.

When member **12** is properly positioned to constitute the top wall member of several adjacent blocks in a row, the flanges **32** thereof will be disposed within the aligned slots **31** formed in the end walls of the blocks and be frictionally held therein. At the same time, member **12** will be frictionally held by the engagement of the flanges **32** with the inner surfaces of the depending legs of return-bent portions **23**, **24**, and will be firmly locked in place by engagement of each of the knobs **38** with one of the openings **33**. By positioning each member **12** so that its ends are offset longitudinally with respect to one end of the several blocks which it is to serve, as illustrated in FIG. 2, the joints between abutting ends of adjacent members **12** will be offset with respect to the vertical joints between abutting ends of adjacent blocks.

In lieu of the openings **33** in the return-bent portions for receiving and interlocking with the knobs **38**, the depending legs of the return-bent portions may each be formed with an outwardly directed, longitudinally extending groove **35**, as shown in FIG. 8.

In order to preclude the passage of light from one face of the wall or partition to the other, along the corners of the blocks, i.e., those places where the vertical

joints between abutting blocks in a row intersect the horizontal joints between the rows of blocks immediately thereabove and therebelow, the horizontal central portion of member **12** is formed with a series of suitably spaced tabs **40** extending upwardly therefrom along the longitudinal median line of the member, and with a series of intervening openings **42**, preferably of square shape, each disposed symmetrically with respect to the longitudinal median line. At its opposite ends, member **12** is formed with rectangular shaped notches **44**, similarly disposed and extending inwardly of these ends a distance equal to one-half the dimension of the sides of the openings **42**.

A downwardly directed tab **41**, similar to the tabs **40**, is formed midway along the longitudinal median line of the bottom member **13** of each block. Each of the bottom members is also formed at its opposite ends with a rectangular notch **45** similar to the notches **44**.

The tabs **40** and **41** are located in the respective members **12**, **13** so as to span across each point of intersection of the horizontal and vertical joints between the blocks. In other words, each tab **40** is disposed so as to be received between the lower ends of flanges **17***d*, **18***d* of two horizontally abutting blocks in the row next above; and each tab **41** is disposed so as to be received between the upper ends of flanges **17***d*, **18***d* of the abutting blocks in the row next below, being accommodated for such reception by the opening **42** overlying the upper end of the vertical joint.

In lieu of the tabs **40** and **41** formed in top and bottom members **12** and **13**, respectively, the latter may be formed with rectangular-shaped openings for cooperation with separate insert plates **46** as shown in FIG. 9. The plates **46** each comprises a flat piece of material configured in the shape of a cross having an overall length such as to be accommodated in the space between the transverse edges of opposite notches **44** at the upper and lower ends of the vertical joints between adjacent blocks. The plates **46**, positioned in a vertical plane at the upper and lower ends of each of the vertical joints, will have one of their arms **47** disposed between flanges **17***d*, **18***d*, either at the upper or the lower end of the vertical joints, while the other arm **47** thereof is disposed in an opening either in member **13** of the superposed block or in member **12** of the subjacent block, as the case may be.

In order to interlock the blocks of a row with those of the rows immediately above and below, the top member **12** may be provided with a series of suitably spaced protrusions **50**, preferably of hollow cylindrical form, disposed in longitudinal alignment with one another along the longitudinal median line thereof and projecting a distance of, say, ⅛ to ¼ inch above the upper surface of member **12**. The bottom member of each block is formed with a series of square-shaped openings **51** spaced longitudinally from one another along the longitudinal median line of the member so as to be disposed in axial alignment with the protrusions **50** of the member **12** when the latter is positioned as above described to connect a number of adjacent blocks of a row. The openings **51** have their sides of a length substantially equal to or slightly less than the outside diameter of the protrusions **50**. The protrusions **50** constitute male elements which interlock with the openings **51** in the bottom wall of a block or blocks of the row next above in erecting a wall or partition. This interlocking engagement of blocks of superposed rows is readily achieved by exerting relatively slight downward pressure upon each block (except those of the lowermost row in the wall or partition) so that the openings **51** engage the protrusions **50** of a superposed block or blocks. This downward pressure will cause a flexing or contraction of the protrusions **50** on the block or blocks therebelow until the block has reached its limit of movement, with the bottom member **13** in contact with the top surface of the

member **12** in the row of blocks therebelow. The slight flexibility or yieldability of the protrusions **50** enables them to spring or snap back to normal position after such limit of movement has been reached, thereby providing a very tight-fitting frictional interlocking of the blocks in each row with those of the rows immediately thereabove and therebelow.

If desired, the frictional engagement between the outer surface of the protrusions **50** and the edges of the openings **51** may be increased by forming the sides of the latter with flanges **52** extending inwardly of the bottom member at an angle toward the axis of the openings **51**.

Thus, as will now be readily understood, not only are several adjacent blocks of each row connected to and interlocked with one another by means of the member **12**, serving as the top wall for the several blocks, but the blocks of each row are interlocked with those of the rows next below and next above, by means of the protrusions **50** on the member **12** in cooperation with the openings **51** in the bottom member **13** of each block.

The invention thus makes it possible to erect a wall or partition possessing adequate structural strength and sturdiness without requiring the use of mortar or other cementitious material for bonding together the blocks composing the wall or partition. Moreover, the described interconnection of several blocks of each row with those of the rows next above and next below, also makes it possible to pre-assemble several rows of several blocks each to be handled as a unit for packaging or shipment or in the course of erecting a wall or partition.

I claim:

1. A building block adapted to be laid with other like blocks in superposed rows in erecting a building wall or partition without the use of mortar or other cementitious material between adjacent blocks, said block comprising:

(1) a hollow, substantially rectangular relatively elongated, body portion comprising:

(*a*) front and back walls;

(*b*) a pair of parallel end walls extending transversely with respect to said front and back walls and connecting the respective ends of said front and back walls to provide an open top and an open bottom for said body portion;

(2) a separable closure member for said open bottom of said body portion, said closure member being formed with a series of spaced, longitudinally aligned openings therein; and

(3) a separable closure member for said open top of said body portion, said last-named closure member being of a length which is a multiple of the length of said body portion and being formed with a series of spaced, longitudinally aligned protrusions projecting upwardly therefrom;

said closure members each having flanges extending substantially at right angles thereto along each of their respective longitudinal margins, each of said flanges being formed with a plurality of spaced knobs, said front and back walls each being formed with return-bent portions at their respective upper and lower ends, each of said return-bent portions at the lower end of said front and back walls being formed with means receiving and frictionally engaging said knobs on the flanges of said first-named closure member, each of said return-bent portions at the upper end of said front and back walls being formed with means receiving and frictionally engaging said knobs on the flanges of said second-named closure member for connecting a corresponding multiple number of blocks in a horizontal row of blocks, said protrusions on said second-named closure member being configured and dimensioned relative to the openings in the first-named closure member whereby each of said protrusions will be received in and frictionally engaged by an axially aligned one of said openings in a first-named closure member of blocks in a row of blocks superposed thereon, for interlocking

the blocks of said first-named row with those of said second-named row.

2. A building block as defined in claim 1, wherein each of said end walls is formed with a pair of spaced vertical slots extending downwardly from the upper edge thereof, each of said slots arranged to receive one of said flanges of said top member.

3. A building block as defined in claim 1, wherein said means for receiving said knobs comprises a series of spaced openings formed in each of said return-bent portions.

4. A building block as defined in claim 1, wherein said means for receiving said knobs comprises a groove extending longitudinally along each of said return-bent portions.

References Cited by the Examiner

UNITED STATES PATENTS

460,177	9/91	Cook	50—405
2,173,020	9/39	Kubach	50—453 X
2,241,169	5/41	Yokes	50—440 X
2,504,850	4/50	Lermer	220—60
2,565,823	8/51	Pool	46—25
2,887,868	5/59	Glidden	50—372 X

BENJAMIN BENDETT, *Primary Examiner.*

WILLIAM I. MUSHAKE, HENRY C. SUTHERLAND, JACOB L. NACKENOFF, *Examiners.*