Aug. 13, 1940. W. H. SPAULDING 2,211,521

BUILDING UNIT

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Fig. 1.

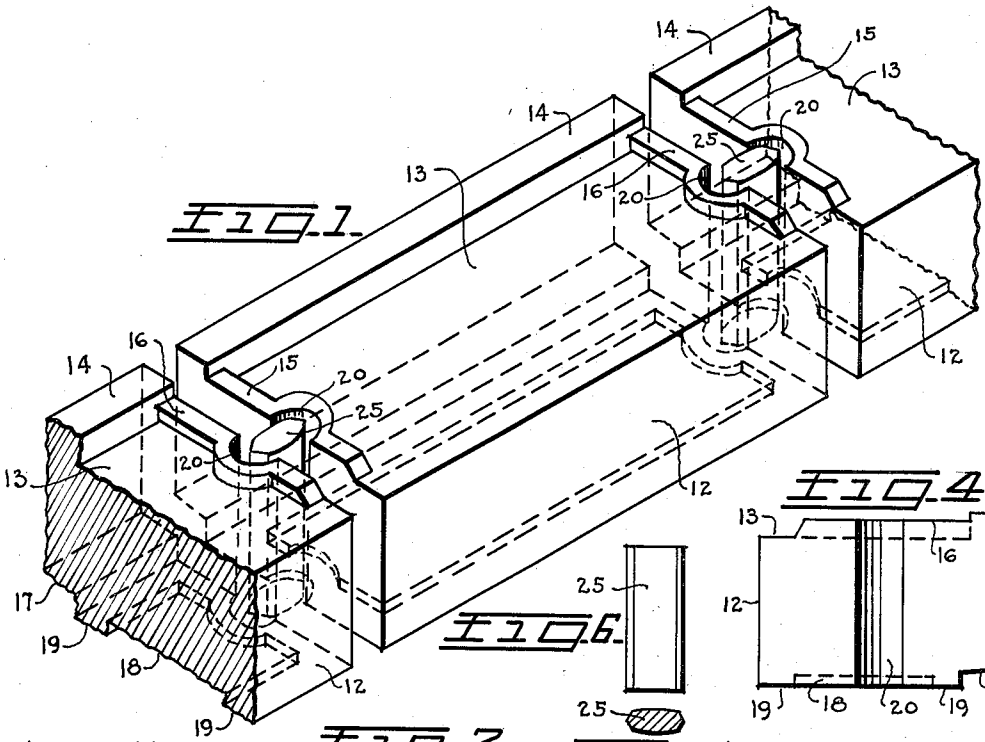


Fig. 6.

Fig. 4.

Fig. 2

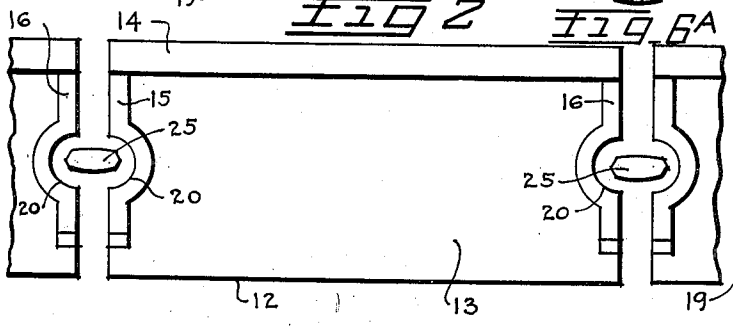


Fig. 6A

Fig. 5.

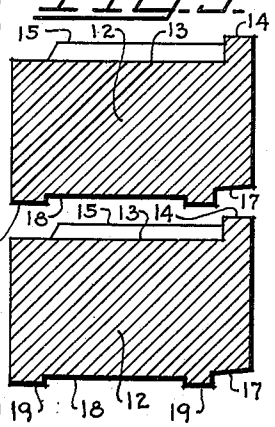
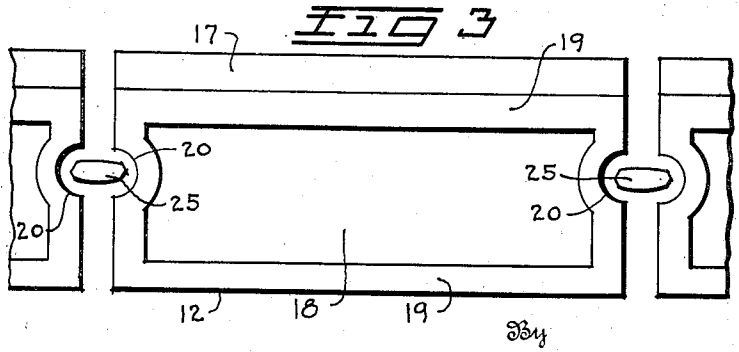


Fig. 3



Inventor

Wellington H. Spaulding

By Marcus & Lewis

Attorneys

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BUILDING UNIT

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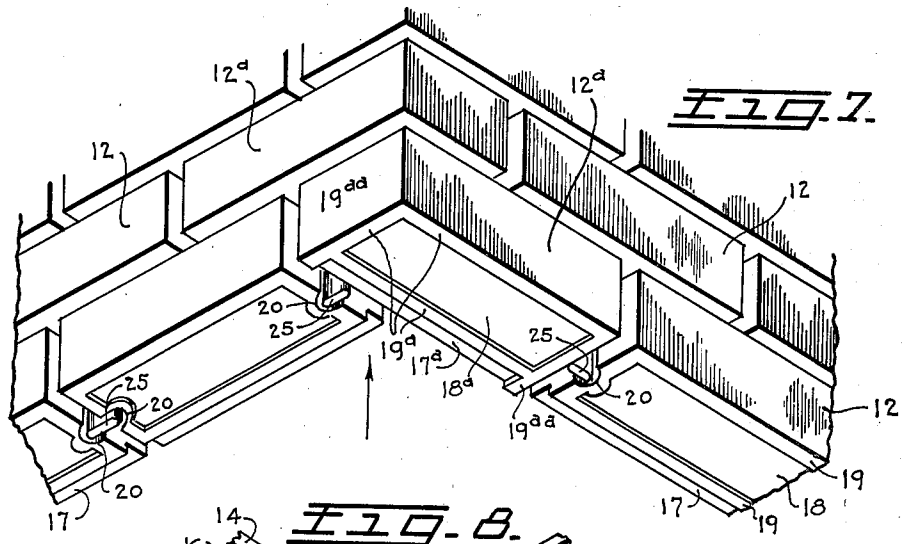


Fig. 7.

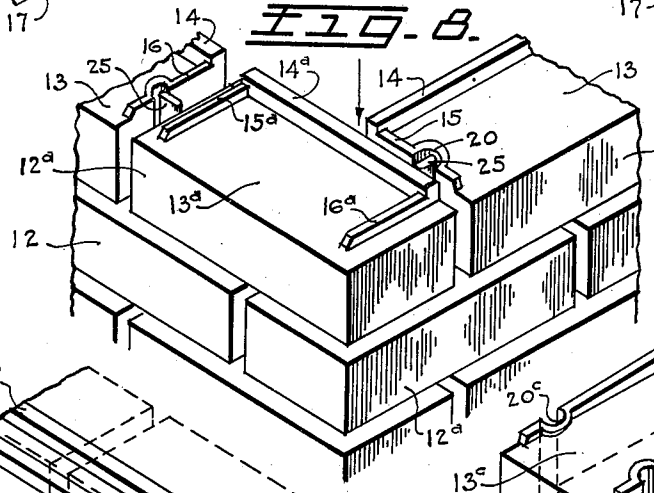


Fig. 8.

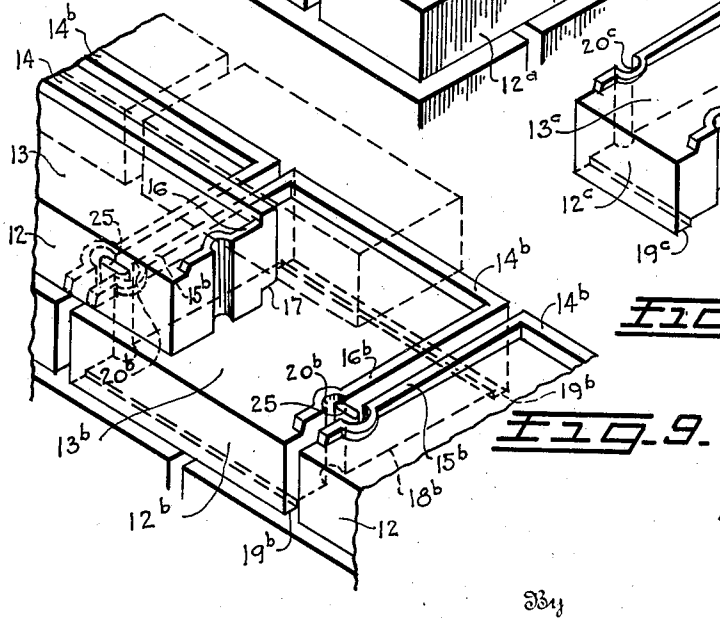


Fig. 9.

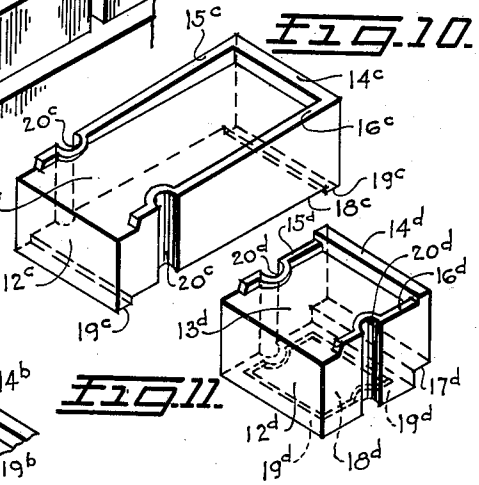


Fig. 10.

Fig. 11.

Inventor

Wellington H. Spaulding

By Mauro & Lewis

Attorneys

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BUILDING UNIT

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FIG. 12.

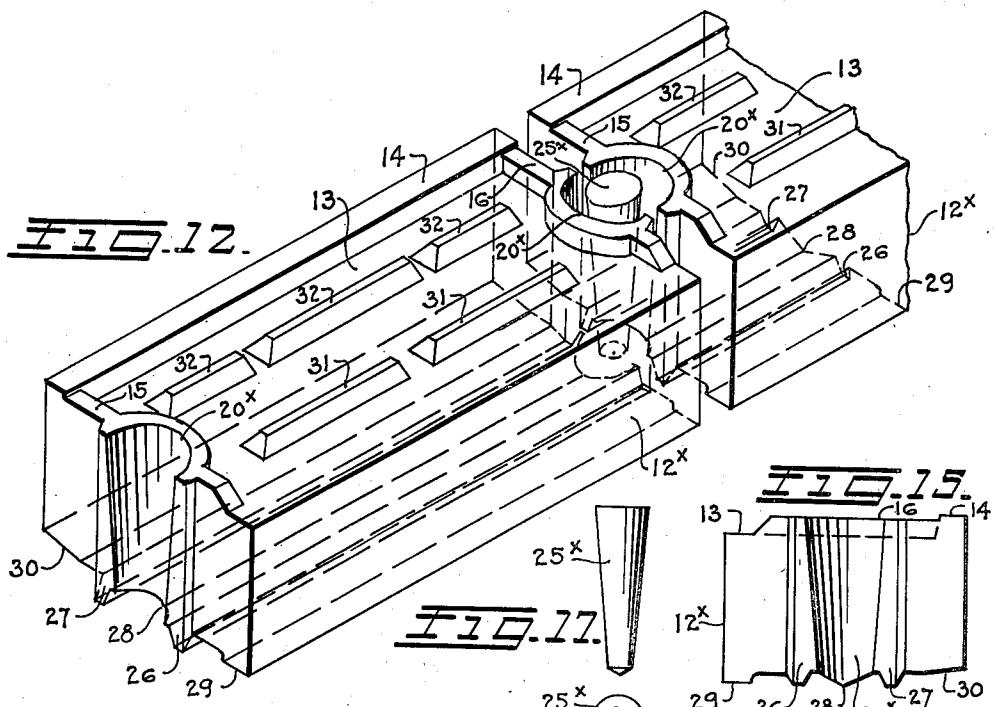


FIG. 17.

FIG. 15.

FIG. 13. FIG. 17A

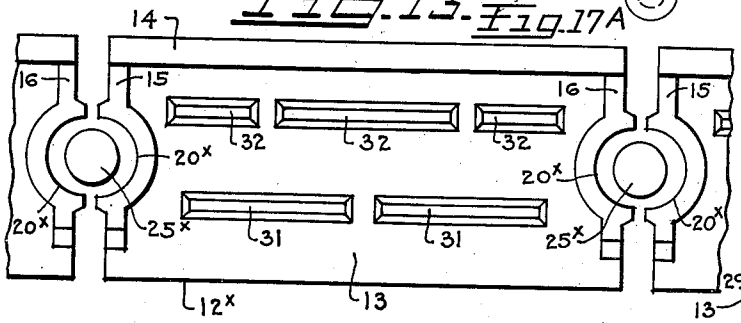


FIG. 16.

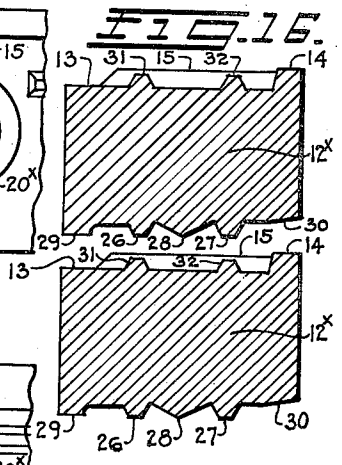
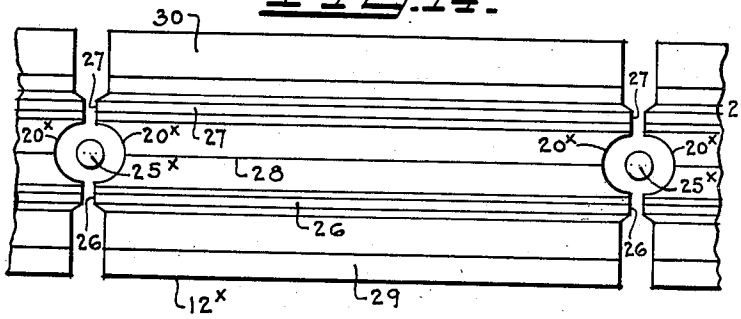


FIG. 14.



Inventor

Willington H. Spaulding

By Mauro & Lewis

Attorneys

Patented Aug. 13, 1940 2,211,521

UNITED STATES PATENT OFFICE

2,211,521

BUILDING UNIT

Wellington H. Spaulding, West Hempstead, Long Island, N. Y.

Application April 8, 1939, Serial No. 266,880

19 Claims. (Cl. 72—37)

This invention applies to pre-formed building units of various sizes and shapes, constructed of various materials including clay products such as bricks, tile, terra cotta blocks, etc., cement products such as bricks, blocks, tile, etc., artificial stone, glass, etc., used in constructing exterior walls of buildings and adapted to be laid in horizontal courses in single units in depth or in combination with other back-up units or construction, with superposed courses breaking vertical joints with adjacent courses below, and with bonding material, such as mortar, cement mixture, or the like, interposed between the horizontal courses and between the vertical end surfaces of adjacent units—the units being thus disposed in relationship to each other and to the interposed bonding material in a manner similar to bricks or blocks in ordinary masonry walls.

It is to be understood that the term "Building unit" as used herein refers to all units such as the aforesaid irrespective of their specific dimentions, materials of which made, etc.

Seepage or percolation of water or moisture through ordinary masonry walls from the exterior surface to the interior thereof usually occurs at the horizontal and vertical joints between the individual units, blocks, or bricks, and is due principally to shrinking of the bonding or joining material or is due to inferior workmanship in failing to fill properly all of the joints, etc. Furthermore, such seepage or percolation of water is increased by wind pressure.

The general object of this invention is to provide building units, blocks, bricks, or the like, which when used in constructing a wall will prevent seepage or percolation of water or moisture from passing from the exterior surface of the wall to the interior thereof.

The aforesaid and other objects and advantages realized by this invention will be further understood by reference to the accompanying drawings which show illustrative embodiments of the features thereof in units, blocks, or bricks, using for the purpose of illustration a unit of the general dimensions of ordinary brick.

This application is a continuation-in-part of my copending application, Ser. No. 230,333, filed Sept. 16, 1938.

In said drawings:

Fig. 1 is an isometric view of a unit, block, or brick with accompanying dam;

Fig. 2 is a top plan view of the same;

Fig. 3 is a bottom plan view of the same;

Fig. 4 is an end elevation of the same;

Fig. 5 is a transverse section through two units showing their relative positions in a wall structure, the mortar or other bonding material occupying the horizontal space and the back-up units or construction not being shown;

Fig. 6 is an elevation of the dam;

Fig. 6*a* is a cross section thereof;

Fig. 7 is an isometric view, looking upward in the direction of the arrow and from the exterior of the corner of a wall structure, the mortar or other bonding material between horizontal courses of units and between the end faces of adjacent units in the same courses not being shown;

Fig. 8 is an isometric view corresponding to Fig. 7, but looking downward in the direction of the arrow;

Fig. 9 is an isometric view looking downward showing a full bond double face header the mortar or bonding material not being shown;

Fig. 10 is an isometric view of a full bond ordinary header; and

Fig. 11 is an isometric view of a short header.

Figs. 12 to 17*a* inclusive illustrate another embodiment of the invention, whereof

Fig. 12 is an isometric view of a unit, block, or brick with an accompanying dam;

Fig. 13 is a top plan view of the same;

Fig. 14 is a bottom plan view of the same;

Fig. 15 is an end elevation of the same;

Fig. 16 is a transverse section through two units showing their relative positions in a wall structure, the mortar or other bonding material occupying the horizontal space and the back-up units or construction not being shown; and

Fig. 17 is an elevation of the dam;

Fig. 17*a* is a top plan view thereof.

Referring to Figs. 1 to 9 of the drawings **12** is the main body of a unit of parallelepiped outline intended to be of the general dimensions of an ordinary brick, that is, eight inches long and two and one-quarter inches thick at the front face of the unit, and of a width (distance between front and rear faces) of three and three-quarters of an inch. **13** is the top surface of the unit. **14** is a longitudinal ridge or flange projecting upwardly on the unit near or contiguous to its rear edge or face and to the rear of top surface **13**. **15** and **16** are transverse ridges or flanges projecting upwardly on the unit near or contiguous to its end edges or faces respectively. At their rear ends the transverse ridges **15** and **16** join the ends respectively of the longitudinal ridge **14**, as shown, for example, in Fig. 1. At their forward ends transverse ridges **15** and **16** terminate a short distance back of the forward edge or face of the

unit. The longitudinal and transverse ridges are formed as integral parts of the unit and act as barriers to the passage of water or moisture off the top surface 13 at the back or ends thereof, thus substantially restricting the escape of moisture or water to passage off the forward edge of surface 13.

It is desirable that the area of the surface 13 be relatively large as compared with the combined areas of the top surfaces of flanges 14, 15 and 16; say preferably 82% to 18%.

At each end face of the unit there is a vertical groove or channel 20, preferably of semi-circular cross-section. 17 is a longitudinal recess or groove at the under side of the unit near or contiguous to its rear side or face. The bottom surface of the unit forward of said recess 17 is depressed or dished at 18 forming a surrounding rim or border 19.

In Fig. 5 two units 12, 12 are shown in transverse cross-section and as positioned in superposed relationship separated by a space which would be filled by suitable bonding material or mortar in an actual wall structure, said material extending upward into the depression 18 and longitudinal recess or groove 17 on the under side of the upper unit.

Figs. 6 and 6*a* show an elevation and cross-section in plan of what is termed herein a "dam" 25, preferably elliptical on two sides and tapered two sides, of a length approximately equal to the vertical thickness of the units, which in the type of building unit illustrated is intended to be two and one-quarter inches, and of the same material as the unit or of metal. As illustrated in Figures 1, 2, 3, 7, 8 and 9 this dam is to be inserted into the bonding material (not shown) between the end faces of the two units including the space formed by the opposite vertical channels or grooves 20, 20 in the end faces of the units, thereby compacting the bonding material and forcing the displaced portions into the cross-joints, which strengthens the wall by interlocking and uniting the units at each cross joint.

Fig. 7 shows an isometric view (looking upward) of a fragmentary portion of a corner of a wall constructed of units of this invention. The under sides of the units of the lowermost course of units are shown as if the portion of wall were suspended in space and the bonding material or mortar between units omitted. Fig. 8 is another isometric view looking downward of a similar fragmentary portion of a corner of a wall, the top sides of the uppermost courses of units being shown with the bonding material or mortar omitted. As shown in these Figs. 7 and 8, the units 12*a* which are positioned at the very corner of the wall are of slightly different design from the regular unit 12. The end faces of units 12*a* are plane; that is, the vertical grooves or channels 20 of units 12 are omitted. At the under side of each unit 12*a*, as shown in Fig. 7, there is a longitudinal recess or groove 17*a*, a depression 18*a*, and rims 19*a*, corresponding to 17, 18 and 19 of unit 12; but there are extensions 19*aa*, 19*aa* of rim 19*a* across the ends respectively of groove 17*a*. At the upper surface of each unit 12*a*, as shown in Fig. 8, there is a top surface 13*a*, a longitudinal ridge 14*a*, and transverse ridges 15*a* and 16*a*, all corresponding to 13, 14, 15 and 16 of unit 12; but the longitudinal ridge 14*a* in this instance terminates slightly back of the end faces of the unit 12*a* and the transverse ridges 15*a* and 16*a* are also likewise located slightly back of said end faces.

Fig. 9 shows an isometric view (looking downward) of a fragmentary portion of a wall showing a full bond double face header, unit 12*b*. At the upper surface of each unit 12*b* there is a top surface 13*b*, a longitudinal ridge 14*b*, and transverse ridges 15*b* and 16*b*, these transverse ridges being the same height at their rear as longitudinal ridge 14*b*, otherwise all corresponding to 13, 14, 15 and 16 of unit 12. At the under side of unit 12*b* there is a depression 18*b* and a rim 19*b*, 19*b* at front and rear edges only, the longitudinal recess or groove at rear and the rims at ends being omitted in this unit. At each end face there is a vertical channel or groove 20*b*, 20*b* corresponding to 20, 20 of unit 12.

Fig. 10 shows an isometric view (looking downward) of a full bond ordinary header unit 12*c*. At the upper surface of unit 12*c* there is a top surface 13*c*, a longitudinal ridge 14*c* and transverse ridges 15*c* and 16*c*, all corresponding to 13*b*, 14*b*, 15*b* and 16*b* of unit 12*b*. At the under side of unit 12*c* there is a depression 18*c*, and a rim 19*c*, 19*c* at the front and rear edges only, all corresponding to 18*b* and 19*b*, 19*b* of unit 12*b*. At each end face there is a vertical channel or groove 20*c*, 20*c* corresponding to 20*b*, 20*b* of unit 12*b*.

Fig. 11 shows an isometric view (looking downward) of a short header unit 12*d*, corresponding to a snap header in ordinary masonry. At the upper surface of unit 12*d* there is a top surface 13*d*, a longitudinal ridge 14*d* and transverse ridges 15*d* and 16*d* all corresponding to 13, 14, 15 and 16 of unit 12. At the under side of unit 12*d* there is a longitudinal recess or groove 17*d*, a depression 18*d*, rims 19*d* (at front, ends and rear) and vertical channels or grooves 20*d*, 20*d*, all corresponding to 17, 18, 19, and 20, 20 of unit 12.

With the units laid in courses and with the superposed courses breaking vertical joints with adjacent courses as shown in Figs. 7, 8 and 9, seepage or percolation of water or moisture through the vertical joints between ends of units is prevented by the dam 25 from passing into the interior. Seepage or percolation of water or moisture through the joints between horizontal courses will be prevented from passing into the interior by the longitudinal ridge 14 of the units and will be stopped or prevented from passing or flowing off the ends of the unit by the transverse ridges 15 and 16. Such water as has entered the vertical joints and which has been stopped by the dam 25 will gravitate downward to the top surface 13 of the unit below and will be prevented from passing into the interior in like manner. Furthermore, as this surface 13 is unrestricted at the front edge of the unit, water or moisture from seepage or percolation collecting on this surface will gravitate to the outer surface or face of the wall. This prevents the accumulation of any appreciable amount of water within the wall as each individual unit will receive and dispose of any seepage or percolation which may occur in the joints above it.

Units 12*a*, 12*b*, 12*c* and 12*d* having the same features as unit 12, will function in like manner but are of different design to fulfill specific uses as illustrated.

Referring to Figs. 12 to 17*a*, 12^x (corresponding to 12 of Figs. 1–11) is the main body of the unit of parallelepiped outline intended to be of the general dimensions (hereinbefore given) of an ordinary brick. The top surface 13, longitudinal ridge or flange 14, transverse ridges or flanges 15

and 16 are the same as parts designated by those reference numerals in Figs. 1–11.

At each end face of the unit there is a vertical groove or channel 20x (corresponding to groove 20 in Figs. 1–7), of semi-circular cross-section tapering from top to bottom, the radius at the top being greater than at the bottom.

26 and 27 are two projections or barriers, preferably formed as integral parts of the unit, projecting from the end faces and bottom of the unit, and extending continuously from the top surface of transverse ridge 15 down the left-hand end face of the unit, around the bottom corner, along the full length of bottom, around the bottom corner of the right-hand end face and up that end face to the top surface of the transverse ridge 16. 28 is a V-shaped surface extending longitudinally along and projecting downwardly from the bottom surface of the unit between and parallel to the two barriers 26 and 27. 29 is a longitudinal ridge projecting downwardly on the bottom surface of the unit contiguous to its front edge. 30 is a sloping surface at the rear of the bottom surface of the unit, which decreases the height of the rear face of the unit so that when units are laid in courses the thickness of the rear face of the horizontal joint between units is approximately the same as the front face of the joint, thus facilitating the laying of the units in courses.

31, 31 and 32, 32, 32 are barriers or projections projecting from the top surface 13 of the unit, and extending parallel to the rear and front faces thereof, barriers 32, 32, 32 being to the rear and in three sections, the middle barrier 32 being about twice the length of the two end barriers 32, 32. Barriers 31, 31 are located toward the front of the unit and are of equal lengths. These barriers 31 and 32 are located back from the front and rear edges of the unit at about the same distances respectively as the end barriers 26 and 27, so that when the units are laid in courses, barriers 31 will be in approximate alinement with and below barrier 26 of units above, and barriers 32 will be in approximate alinement with and below barrier 27 of units above.

In Fig. 16 two units 12x, 12x are shown in transverse cross-section and as positioned in superposed relationship separated by a space which would be filled by suitable bonding material or mortar in an actual wall structure. Figs. 17 and 17*a* show an elevation and top plan view of what is termed herein a "dam" 25x (corresponding to dam 25 of Figs. 1–7), conical in shape and of a length approximately equal to the vertical thickness of the units, and of the same or similar material as the units, or of metal. As illustrated in Figs. 12, 13 and 14, this dam is to be inserted into the bonding material (not shown) in the circular, tapering space formed by the opposite vertical channels or grooves 20x, 20x in the end faces of the units.

Continuing with particular reference to Figs. 12 to 17*a*, the first paragraph of the introduction to "A Study of the Properties of Mortars and Bricks and their Relation to Bond" (Research Paper RP 683, Part of Bureau of Standards Journal of Research, vol. 12, May, 1934) reads as follows: "It has been the consensus of opinion among recent writers that the points in brickwork most accessible to the entrance of water are the junctures of brick and mortar. Laboratory data as well as field observations have supported this view."

The usual procedure in laying the present types of clay or cement bricks, building blocks, etc., is to spread a layer of mortar one unit wide on the wall or structure upon which the bricks are to be laid. The end of the brick which comes in contact with the brick previously laid is "buttered" with mortar, the brick is then embedded in the mortar and placed in position by using preferably a sliding or shoving motion toward the brick previously laid. Any excess mortar which is forced out of the face of the mortar joint being "struck" or cut off with a trowel. The purpose of this shoving action is to cause the mortar to adhere more firmly to the bottom of the brick and also to partially fill the end or vertical joint between the adjacent bricks. This procedure is repeated for all bricks in the outer faces of the wall. If the wall is more than two units in thickness the inner course is laid in a similar manner, except that the end is usually not "buttered" and there is no excess mortar to be "struck" or cut off. In some classes of work the exposed joints are "struck" or compressed with a special tool after the mortar has partially set. In practice the above method often has the following unfortunate results:

The end of the brick is not completely covered with the proper thickness or amount of mortar by "buttering", therefore the vertical joints are not completely filled, leaving a hollow space or void in the majority of vertical joints. Also due to the placing or "buttering" of the mortar on one brick and this mortar contacting the brick previously laid only by being placed or pushed against it, there is a tendency for this side of the vertical joint to open, due to lack of bond, shrinkage of the mortar in setting and as the results of atmospheric temperature changes. In actual construction it is very difficult to induce the mechanics to employ the proper shoving action with the ordinary form of brick, also in lining up the face of the outside bricks with those previously laid the brick is often moved after being placed on the mortar bed. This lack of, or improper shoving or moving of the brick results in a poor or defective bond between the mortar bed and the brick, thus forming a defective or weak point in the wall through which water may pass. In order to make easier the laying of the bricks in a bed of mortar, it is common practice for the mechanic after the bed mortar is laid, to work the point of his trowel down the center of the mortar bed, forming a V-shaped depression in the mortar, so that when the brick is laid it contacts mortar only near its two edges. This leaves a hollow space or void in the bed joint under each brick resulting in another weak joint due to partial contact, similar to the hollow vertical joint previously described.

The mortars used are almost universally a combination of Portland cement and sand with admixtures of lime and/or other materials. In setting Portland cement mortars have an appreciable shrinkage, the shrinkage being in proportion to thickness. Due to the comparatively stiff or dense mortar mixtures necessarily used, the joints must be of a reasonable thickness. The shrinkage of mortar in joints of this thickness is generally sufficient to cause a minute crack. This crack usually occurs at the surface having the poorest adhesion or bond to the brick, generally at the bottom of the brick in the horizontal joints and at the "unbuttered" side in the vertical joints. Due to the flat surfaces of ordinary bricks or building blocks this crack is a straight

plane through the thickness of the unit. The shrinkage of the mortar on the exposed face of the wall is apparently increased by exposure to the air and its consequent rapid drying. Consequently where hollow spaces or voids exist in either the vertical or horizontal joints the water which penetrates through the cracks between the brick and the mortar at the exposed face collects in these voids and eventually penetrates through the wall or in freezing weather freezes, expands and further ruptures the mortar joints thereby increasing the openings for greater future penetration.

The foregoing description of the common faults and resulting weakness explains the principal reasons for water penetrating ordinary brick or block walls. These weaknesses are increased with the passage of time due to the effects of atmospheric temperature changes which causes the wall to expand, thereby increasing the cracks in the vertical joints, and the freezing and consequent expansion of the water which has entered the wall which ruptures the mortar in the joints, further increasing the openings in and through the joints.

One of the commonly observed effects of water entering a wall is the formation of efflorescence on the face of the wall, disfiguring its appearance. This is often emphasized at joints where metal flashings are located due to the water which has entered through the many small faults in the face of the wall over, descending within the wall, concentrating on the top surface of the flashing and being forced to the face of the wall by the flashing.

This concentration of water within a wall caused by metal flashing pans or courses often results in leaks in brick walls due to the fact that when the brickwork above the flashing permits enough water to enter, descend and accumulate on the flashing, which cannot drain outward to the face of the wall as fast as it collects, it will rise over the back of the flashing and enter the inside of the wall.

The purpose of the embodiment of the present invention which is particularly illustrated in Figs. 12 to 17*a*, is to overcome the foregoing difficulties without changing the established methods of laying bricks, blocks, etc. Each of the features of this invention has a distinct part and serves a unique purpose in overcoming some faults in ordinary construction methods resulting in the penetration of moisture and water.

As with the ordinary brick or block these units are to be laid with a sliding or shoving motion toward the unit previously laid. Due to the decreased friction caused by the projecting surfaces of barriers **26** and **27** and beveled surface **28**, the mechanic is encouraged to use the preferred method of shoving the bricks in a proper manner. This shoving and rubbing action of the deformed shapes and surfaces on the mortar bed creates better adhesion to the mortar thereby resulting in a more perfect bond to the bottom of this unit. This bond is also increased by the increased area due to this deformed surface. This deformed surface also facilitates the proper bedding of the brick as it offers spaces into which the mortar may be displaced, thus eliminating the need for forming a V-shaped depression with the trowel in the top of the mortar bed now commonly formed by mechanics in order more easily to bed the flat surface of the ordinary bricks, blocks, etc. This deformed surface also creates a more difficult and tortuous path to the passage of moisture or water.

Due to the barriers **31** and **32** being positioned approximately opposite to barriers **26** and **27** on the bottom surface of the unit above, the thickness of the mortar between these barriers which extend along about 80% of the top surface of the unit, is about one-half of the usual thickness of a mortar joint, thereby decreasing the shrinkage and consequent crack. Also as these restricted areas are within the interior of the mortar joints and protected from rapid drying the shinkage is reduced to a minimum.

These units are to have the end which is to contact the unit previously laid "buttered" with mortar as in ordinary bricklaying. This mortar will be placed on the two flat surfaces contiguous to the outer corners and then the unit shoved on its bed to its final position as previously described. The space formed by the two vertical channels or grooves is now partially filled with mortar and the dam **25x** pushed down into the mortar. This compacts and displaces some of the mortar causing it to squeeze out through the restricted spaces between barriers **26** and **27**. This displacement of mortar is designed to and creates better adhesion between the mortar and the surfaces of channels **20x**, **20x** and barriers **26**, **27**, also the complete filling of the vertical joint is assured. This is especially vital as the principal troubles with brickwork is due to the failure to fill, or improper filling of, the vertical joints. Due to the restricted spaces between barriers **26** and **27** and between the dam **25x** and the channels **20x**, **20x**, which are about one-third of the width of the vertical joint, the shrinkage at these points will be about one-third the shrinkage of an ordinary mortar joint. These restricted mortar spaces are in the interior of the joint and protected from rapid drying, thereby reducing the shinkage to a minimum. These deformed surfaces also present a more difficult and tortuous path to the passage of moisture or water.

Barriers **26** and **27** on ends and bottom of the unit extend continuously around the bottom corners of the unit thus preventing water creeping along the bottom corners of the unit into the interior of the joint. This is one of the most common avenues of entry for moisture or water in ordinary brickwork due to the junction of the cracks formed by shrinkage at the end and bottom of the brick.

On the top surface **13** of the unit are barriers **31**, **31** and **32**, **32**, **32**, and transverse ridges **15** and **16** which in conjunction with barriers **26** and **27** on the units over, form restricted spaces in the horizontal joints. The openings between barriers **32**, **32**, **32** and **31**, **31** are to permit the escape of water which may collect on the top surface due to absorption of moisture by the mortar or unit over. Due to the action of the top surface of each individual unit in restricting the escape of moisture or water to passage off the forward edge of surface **13** as hereinbefore described, the amount of water to be thus restricted is small, i. e. only that which can enter the joint immediately over the individual unit. This prevention of moisture from entering a wall in turn would greatly reduce the amount of efflorescence.

Due to the barriers, restricted passages, etc., hereinbefore described, it can be readily seen that the penetration of moisture or water is restricted to the outer third of the unit and that such mois-

ture as may penetrate this distance is collected at each individual unit and returned to the outer face thereof, preventing concentrations within the wall and at flashing courses, etc. Also the features which prevent the penetration of moisture are so located within the interior of the wall that the mortar at these points is protected from too rapid drying.

These units are designed to be laid by mechanics skilled in wall construction, using the usual methods, in any bond desired, with exposed joints struck in any form desired, in any number of units in depth or bonded to any of the usual back-up materials or to form a veneer on masonry, concrete or frame construction or in one unit in depth or thickness. Walls constructed of these units have the same appearance as walls of similar materials of the ordinary forms. These units can be manufactured of any material that is moulded, cast, cut or formed that is suitable for the purpose. It being understood that changes in form, proportion, size, minor details, special shapes as are required as headers, corner units, etc., incorporating the same principles may be made within the scope of the specification and claims, without departing from the spirit or sacrificing any of the advantages of this invention. These units are designed for use in constructing exterior walls or walls where protection from moisture is required.

Application of this invention to various sizes and shapes and to various materials will necessitate variations in the proportions of the dams, depressions, ridges, grooves, etc.

What is claimed as new is:

1. A building unit having a top surface extending to the forward edge or side of the unit; a longitudinal ridge or flange projecting upwardly from the unit higher than said top surface and located near the rear edge of the unit; and transverse ridges or flanges projecting upwardly from the unit near the end edges or sides respectively of the unit.

2. A building unit such as defined in claim 1, having vertical channels or grooves at each end face of the unit.

3. A building unit such as defined in claim 1, having vertical channels or grooves at each end face of the unit, and dams adapted to be located in said channels or grooves.

4. A wall construction including in combination, a plurality of building units each having a top surface extending to the forward edge or side of the unit, a longitudinal ridge or flange projecting upwardly from the unit higher than said top surface and located at or near the rear of the unit, transverse ridges or flanges projecting upwardly from the unit near the end edges respectively thereof, and a vertical groove or channel at each end face of the unit, said units being laid in courses with the vertical grooves at adjacent end faces of the units positioned opposite each other; and dams located respectively in the spaces formed by said opposed vertical grooves and embedded in bonding material interposed between the end faces of the units.

5. A building unit such as defined in claim 1, having projections or barriers on the top surface thereof, said projections or barriers being located lengthwise of the unit a distance from the forward and rearward edges of said top surface, and terminating a distance from the said transverse ridges or flanges.

6. A building unit such as defined in claim 1, having one or more vertical or approximately vertical channels or grooves at one or more vertical faces of the unit, and one or more vertical or approximately vertical projections or barriers at or near one or both edges of said channels or grooves.

7. A wall construction including in combination a plurality of building units laid in a bonding material each having a top surface extending to the forward edge or side of the unit, a longitudinal ridge or flange located at or near the rear edge of said top surface and transverse ridges or flanges located at or near the end edges respectively of said top surface, said longitudinal and transverse ridges or flanges projecting upwardly from the top surface of the unit, two rows of intermittent projections or barriers projecting upwardly from the top surface of the unit, and two continuous barriers or projections extending around the ends and bottom of the unit, a vertical tapering groove or channel at each end face of the unit located between said two continuous barriers, said units being laid in courses with the vertical barriers and grooves at adjacent end faces of the units positioned opposite each other, and dams located in the tapering circular spaces formed by said vertical barriers and grooves and embedded in the bonding material interposed between the end faces of the units.

8. A wall construction including in combination a plurality of building units laid in a bonding material with opposing vertical surfaces of adjacent units forming vertical joints, said units having two or more approximately vertical barriers projecting from at least one of said opposing surfaces, and dams located in the spaces formed between said barriers and embedded in said bonding material, said barriers and said dams preventing the passage of moisture through said vertical joints.

9. A wall construction including in combination, a plurality of building units laid in a bonding material, said units having one or more longitudinal barriers on their top and bottom surfaces respectively, said top barriers being in register with said bottom barriers.

10. A wall construction including in combination, a plurality of building units laid in a bonding material, said units having one or more approximately vertical barriers on one or more of the vertical faces of said units which form vertical joints with adjacent units, said barriers on one unit being in register with those on an adjacent unit.

11. A wall construction including in combination, a plurality of building units laid in a bonding material, said units having one or more longitudinal barriers on their top and bottom surfaces respectively, and one or more approximately vertical barriers on the vertical surfaces of said units which form vertical joints with adjacent units, the said top and bottom barriers and the approximately vertical barriers of adjacent units being in register.

12. A wall construction including in combination a plurality of building units laid in a bonding material, said units having one or more faces forming vertical joints with opposing faces of adjacent units, one or more of said faces having an approximately vertical channel or groove therein and projecting vertical barriers located at or near either side of said grooves or channels; and dams embedded in said bonding material located in the spaces formed by said channels and barriers.

13. A wall construction according to claim 12,

the said channels being tapered, and the said dams being conical.

14. A building unit having a surface adapted to form a vertical joint with an adjacent unit in a wall construction, said surface having an approximately vertical channel therein and an approximately vertical barrier located directly adjacent to said channel.

15. A building unit having a surface adapted to form a vertical joint with an adjacent unit in a wall construction, said surface having an approximately vertical channel therein and an approximately vertical barrier adjacent said channel, said unit having also a longitudinal barrier on its bottom surface.

16. A wall construction including in combination a plurality of building units laid in a bonding material with opposing vertical surfaces of adjacent units forming vertical joints, said units having an approximately vertical channel extending from top to bottom of at least one of said vertical surfaces, the width of said channel diminishing from the top downwards, and tapered dams embedded in the bonding material, located in the spaces formed by said vertical channels.

17. A building unit having projections or barriers located lengthwise of the bottom surface and disposed a distance from the front and rear edges thereof, said projections or barriers consisting of a pair of barriers and a V-shaped projection located between said barriers and preventing the passage of moisture when the unit is laid in a wall construction.

18. A building unit having a surface adapted to form a vertical joint with an adjacent unit when laid in a wall construction, said surface having one or more vertical or approximately vertical barriers projecting therefrom, joined to and continuous with one or more longitudinal projections or barriers on the bottom surface of the unit, said barriers being disposed a distance from the front and rear edges of the unit.

19. A building unit having a top surface extending to the forward edge or side of the unit, a longitudinal ridge or flange projecting upwardly from the unit higher than said top surface at or near the back edge thereof, and transverse ridges or flanges projecting upwardly from the unit higher than said top surface, each of said transverse ridges or flanges having an end connected to said longitudinal ridge or flange, the said ridges or flanges together providing means to oppose the passage of moisture beyond the area of said top surface bounded thereby.

WELLINGTON H. SPAULDING.