Dec. 10, 1935. V. A. BARNHART 2,023,987

BUILDING BRICK

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Fig. 1.

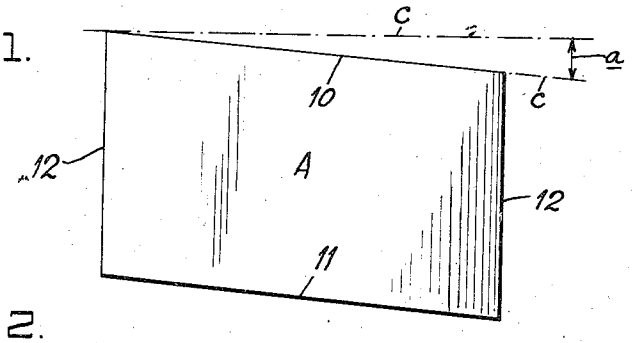


Fig. 2.

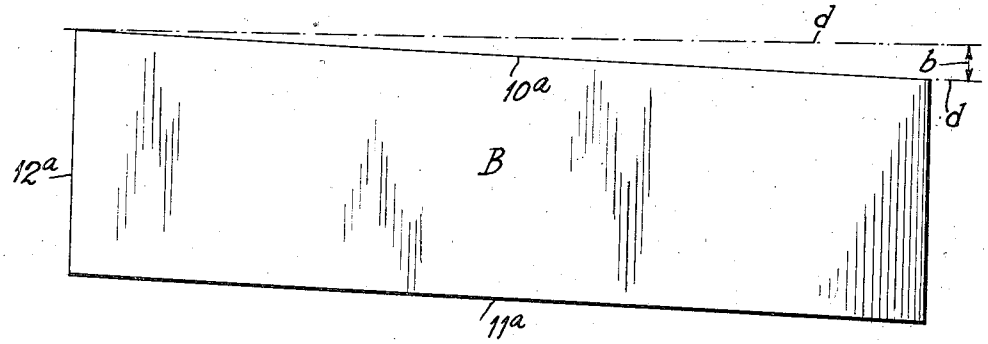


Fig. 3.

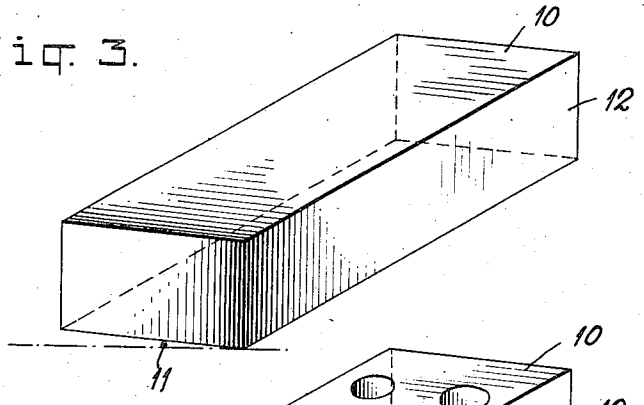
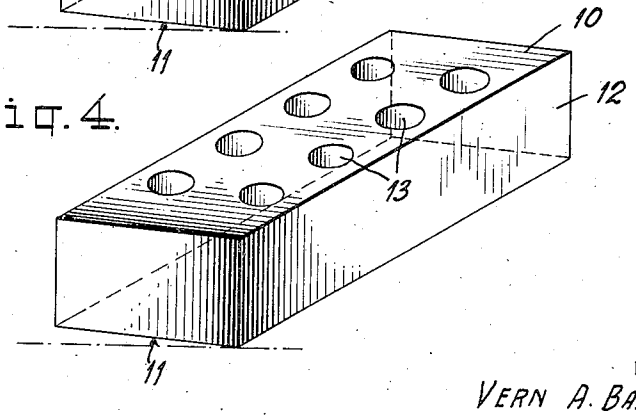


Fig. 4.



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Fig. 5.

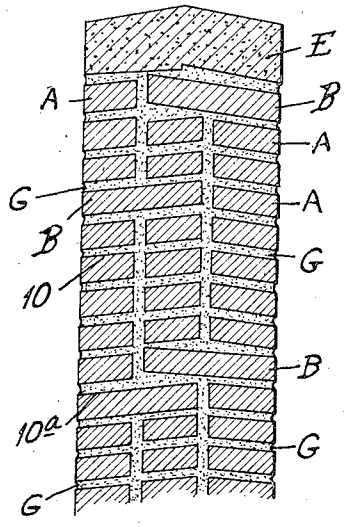


Fig. 6.

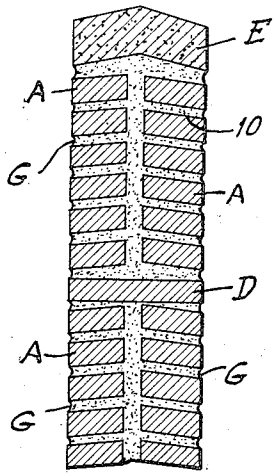


Fig. 8.

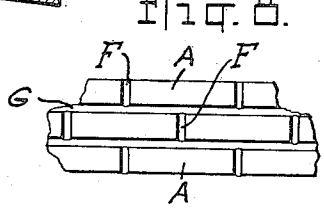
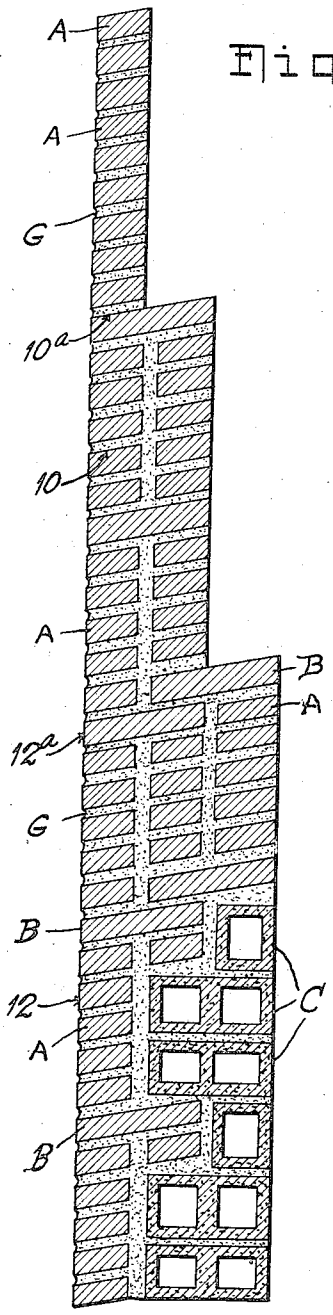


Fig. 7.



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BUILDING BRICK

Vern A. Barnhart, Jester Lake, Milton, N. J.

Application October 10, 1933, Serial No. 692,951

4 Claims. (Cl. 72—37)

My invention relates to building bricks and more particularly to bricks used in the construction of walls to form a facing or an exposed surface thereof. Experience has demonstrated the fact that in standard brickwork water and moisture easily enters the masonry and results in injury and damage of varying degree and at all times harmful and injurious. It has further been shown that the vertical joints in such standard brickwork are seldom completely filled with mortar, this being due to the time required by the bricklayers to effect perfect filling and the resulting high cost of labor, and to the tendency of the mortar in the vertical joints to drop and shrink in its wet condition and thereby produce open vertical joints which, because of the staggered setting of the bricks, lie over and above the customary flat surfaces of the bricks below. When water or other moisture, whether wind driven or not, finds its way into such open vertical joints, it very readily and quickly finds its way to the interior of the wall. It is further true that the bonds between the mortar and the bricks in adjacent courses, as far as being watertight, are defective, and result in cracks and crevices between bricks and mortar when the latter contracts as it sets, through which water and other moisture easily enters the wall. Because of these major faults ordinary bricks of existing type are losing and have lost their popularity particularly as facing materials and are being constantly replaced by substitutes. The object of the present invention is to overcome the aforesaid difficulties and disadvantages and to provide a brick of novel form designed to deflect and conduct such water or other moisture as may seep into the wall, in a manner to cause it to promptly run off and out and not into said wall. Other more specific objects of the invention will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawings which illustrate examples of the invention without defining its limits, Fig. 1 is an end view of a stretcher brick embodying the novel features; Fig. 2 is a side elevation of a header brick including said novel features; Fig. 3 is a perspective view on a reduced scale of the brick shown in Fig. 1; Fig. 4 is a perspective view of a special form of said brick; Figs. 5, 6 and 7 are fragmentary sectional views illustrating examples of walls including the novel bricks, and Fig. 8 is a face view of a section of one of the walls shown in Figs. 5, 6 and 7.

The novel bricks in all of their forms may be made in accordance with standard dimensions or in any special sizes as may be required and include opposed parallel vertical faces and parallel top and bottom faces extending in oblique relation to said vertical faces. In the stretcher brick A shown in Fig. 1 the top face 10 and the bottom face 11 extend in oblique relation to the vertical side faces 12 of the brick, it being understood that the opposite end faces of said brick may be of any customary form or special shape as may be desired or found necessary. In the header brick B shown in Fig. 2, the top face 10^a and the bottom face 11^a extend in oblique relation to the end faces 12^a of said brick, the side face of the latter being of any customary or special form as may be desired. While the bricks illustrated in Figs. 1 and 2 are not accurately drawn to any particular scale, the arrows *a* and *b* in conjunction with the dotted lines *c*, *d*, indicate diagrammatically the pitch of the respective faces 10—11, 10^a—11^a; it is to be understood that the degree of pitch of the faces mentioned is always sufficient to cause water or other moisture to easily flow downwardly along the top surfaces 10 or 10^a. In order to prevent the novel bricks from slipping upon the mortar beds when the latter are in a wet condition, the bricks may in some instances be provided with recesses or apertures 13 which in the illustrated example extend vertically through said brick as indicated in Fig. 4. When the bricks provided with such apertures 13 are laid upon the wet mortar the latter will enter said apertures 13 to form projections or keys which positively prevent any shifting of said bricks relatively to the mortar.

As shown in Figs. 5, 6, 7 and 8, the novel stretcher bricks are laid in the customary manner in superimposed courses with side faces 12 of said bricks A located in vertical alignment to form the outer surface of the wall, the latter being provided at intervals with the novel header bricks B having one of their end faces 12^a located in the plane of said outer surface of the wall in registry with the previously mentioned side faces 12 of the stretcher bricks A. The novel bricks A and B may also be used to build other parts of the wall which also may include hollow tile as indicated at C in Fig. 7 and header bricks D of customary form as indicated in Fig. 6. If the bricks are used in the construction of parapet walls, the latter may be crowned or topped with copings E of suitable form as illustrated in Figs. 5 and 6. As clearly shown in Figs. 5, 6 and 7 when the novel bricks are embodied in the wall, the upper surfaces 10 of the stretcher bricks and 10^a of the header bricks slope downwardly toward opposite

exposed surfaces of the parapet walls shown in Figs. 5 and 6 and toward the exposed surface of the wall shown in Fig. 7. The bricks are laid in the customary manner with the vertical joints F in one course staggered relatively to the vertical joints F of the next adjacent course as shown in Fig. 8 so that the sloping upper surfaces 10 or 10a of the bricks always lie beneath and in registry with said vertical joints F as indicated in said Fig. 8.

It will be obvious from the illustrations in Figs. 5, 6, 7 and 8 that any water or other moisture which may penetrate through defective vertical mortar joints F will naturally pass downwardly to the upper surface 10 or 10a of the next adjacent brick located immediately below the same, and because of the downwardly sloping tilt of such upper surface, will be deflected thereby toward the outer surface of the wall and thus quickly disposed of, without harm or injury to any part of said wall; the same is true of any water or other moisture which may pass through defective or leaky horizontal joints G.

In the building trades it is a well known fact that the three most serious problems facing the architect, owner and builder are first, what type of brick and mortar to use in order to secure the most watertight result and the desired permanent beauty; second, after the brick and mortar has been selected to determine which of the various existing expensive methods of water and damp proofing to use in order to protect the plaster and costly interior decorations against leakage due to faults in said brick and mortar both before and after the building is complete, and third, what type of wall flashing to use at necessary points to protect outside trim against discoloration from moisture and the iron girders and spandrel beams which abut exterior walls against injury from water and moisture which may seep through.

Exhaustive tests involving over three hundred panels and requiring more than two years in its completion made at the Mellon Institute of Industrial Research, the report of which entitled "Watertight brick masonry" was published in "The Architectural Record" of September 1931, clearly showed the seriousness of the problems above referred to. This report among other things stated that even with impervious brick and watertight mortar it is not always possible to secure a perfectly tight wall because of the human element involved in bricklaying. Therefore, for walls exposed to severe conditions, provision should be made in design to allow rapid removal of any moisture that does get in. This requirement is clearly met in a most efficient manner by the novel brick described herein. The novel brick is particularly adapted for the building of parapet walls which, experience has shown, are most susceptible to injury and disintegration because of the entrance of water or other moisture. With the novel brick set forth herein the architect, owner and builder, without loss of valuable time, may select a brick of any desired color which is structurally satisfactory and be absolutely assured of the driest possible masonry wall without any additional cost over an ordinary brick wall, thus saving the cost of and necessity for expensive water and damp proofing of exterior and interior walls and costly flashings, all of which are now necessary. With the novel brick, it will furthermore be unnecessary for the contractor to return time and time again to locate and repair leaks and to redecorate and repair injuries resulting from leaky walls as is now universally the case wherever walls constructed of ordinary brick or with ordinary brick facings are subjected to the effects of water or moisture; as a result of this, disputes and lawsuits between architect, owner and builder will be avoided with a resulting great saving of time and expense.

In many existing building operations it has been customary to have weep holes at each floor line in the brickwork for the water which enters through imperfections therein to run out; this water in such cases generally runs down the back of the brick facing to the floor line so that this method produces unsightly results in addition to being expensive. With the novel brick illustrated and described herein each brick is designed to quickly shed water or other moisture and prevent it from penetrating to the rear of the brick facing and to quickly remove any water that may get into the wall and thereby prevent said water from collecting on the inside of the wall. In practice the novel brick will function perfectly in combination with ordinary bricks of existing type and will make it possible, in masonry walls which are two or three bricks in thickness, to incline the bed joints of two courses both downwardly and outwardly or with three courses, to have two inclined downwardly and outwardly in one direction and one in the other direction. If it is desired to use plaster on the one side of the brick wall, the novel brick may be laid at random and a rough or keyed wall may be produced without difficulty. The novel brick is further particularly adapted for the building of the side walls of natatoriums which have always presented a difficult problem to the architect desiring to use brick in the construction of such side walls; in such cases all courses of the bricks could be inclined toward the interior of the natatorium or the novel brick may be used for one exposed face course of such walls and ordinary bricks for the other courses if desired. The novel brick referred to herein, by inclining all horizontal joints, enables flashing to be built in the form of an outwardly inclined joint and thereby obviates the possibility of leakage in the wall at these points.

In addition the novel brick does not require any costly or radical changes in present day manufacture and permits brick plants using wire cutting machines to simply cut on the bias instead of straight, and to require the factories using molds simply to provide new molds constructed to the design of the novel bricks, the manufacturing process otherwise remaining the same as for ordinary bricks now in use. When laid in a wall the faces of the novel bricks are identical with present day standards excepting that at the jamb or returns where wind driven rains may reach to the back of the brickwork, the horizontal bed joints will be slightly inclined downwardly toward the exterior. Because of these inclined mortar beds impervious bricks of the novel form, that is those with an absorbtion of less than approximately eight percent, may be provided with the apertures or recesses 13 shown in Fig. 4. When the novel bricks have an absorbtion of greater degree than that indicated above, the ordinary suction of such bricks is all that is required to properly bed said bricks and prevent them from slipping in inclined mortar beds. It will be understood that the apertures 13 shown in Fig. 4 may be replaced by mere surface recesses and that the upper and lower sur-

faces of the novel bricks when highly impervious to moisture may be roughened to effect the same stability against slippage. No particular skill beyond that required of the present efficient bricklayer is necessary in the laying and manipulation of the novel brick illustrated and described herein. The novel form and construction of the brick set forth herein does not require the brick to be laid in any special manner, and enables both faces of the brick to be used in building construction in the same manner as an ordinary brick.

In some cases it may be sufficient to utilize a header brick of the novel type only at predetermined intervals in a wall, which otherwise may be constructed of ordinary brick or in any other existing manner.

It is to be understood that the novel features may be incorporated in building blocks not commonly referred to as bricks and that the term "bricks" as used herein is intended to include such blocks.

Various changes in the specific forms shown and described may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. A wall including a plurality of upright columns of stretcher bricks laid in superimposed courses, at least one of said columns forming an exposed upright surface of said wall, said stretcher bricks in said one of said columns consisting of vertical faces located in the plane of said exposed surface, and top and bottom faces extending in oblique relation to said vertical faces, the upper faces of said stretcher bricks in said one of said columns sloping downward toward said exposed surface of said wall to deflect moisture on said stretcher bricks toward said surface, and header bricks located at intervals between courses of said stretcher bricks and projecting across two adjacent columns thereof.

2. A wall including a plurality of upright columns of stretcher bricks laid in superimposed courses, at least one of said columns forming an exposed upright surface of said wall, said stretcher bricks in said one of said columns consisting of vertical faces located in the plane of said exposed surface, and top and bottom faces extending in oblique relation to said vertical faces, the upper faces of said stretcher bricks in said one of said columns sloping downward toward said exposed surface of said wall to deflect moisture on said stretcher bricks toward said surface, and header bricks located at intervals between courses of said stretcher bricks and projecting across two adjacent columns thereof, said header bricks consisting of vertical faces located in the plane of said exposed surface and top and bottom faces extending in oblique relation to said vertical faces, the upper faces of said header bricks sloping downward toward said exposed surface of said wall to deflect moisture on said header bricks toward said surface.

3. A wall including a plurality of upright columns of stretcher bricks laid in superimposed courses to form opposite exposed upright surfaces of said wall, said stretcher bricks consisting of vertical faces located in the respective planes of said opposite upright surfaces, and top and bottom faces extending in oblique relation to said vertical faces, the upper faces of said stretcher bricks sloping downward in opposite directions in the respective columns toward said opposite upright surfaces of said wall to deflect moisture on said stretcher bricks toward said upright surfaces, and header bricks located at intervals between courses of said stretcher bricks and projecting across adjacent columns thereof with the end faces of said header bricks in the respective planes of said opposite upright surfaces of said wall.

4. A wall including a plurality of upright columns of stretcher bricks laid in superimposed courses to form spaced upright surfaces of said walls, at least one of said surfaces being exposed, said stretcher bricks consisting of vertical faces located in the respective planes of said spaced upright surfaces and top and bottom faces extending in oblique relation to said vertical faces, the upper faces of said stretcher bricks sloping downward toward said exposed surface to deflect moisture on said stretcher bricks toward said surface, and header bricks located at intervals between courses of said stretcher bricks and projecting across adjacent columns thereof with the end faces of said header bricks in the respective planes of said spaced upright surfaces of said wall, the upper faces of said header bricks sloping downward toward said exposed surface to deflect moisture on said header bricks toward said surface.

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