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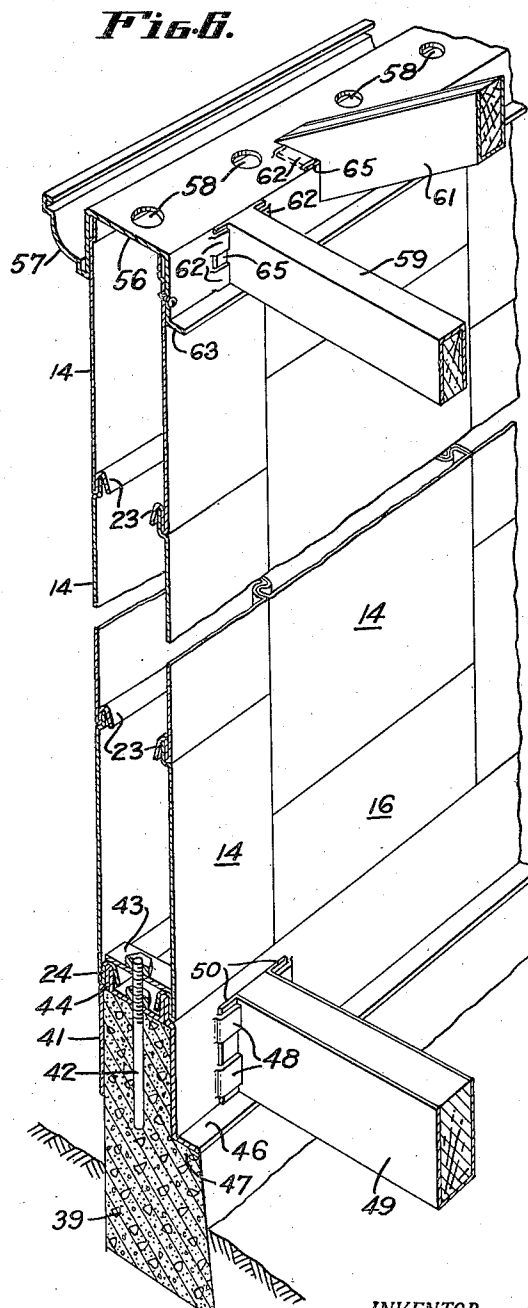
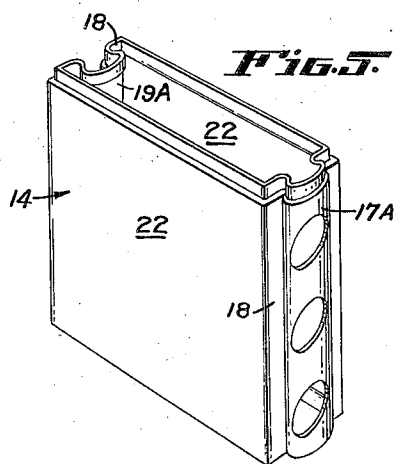
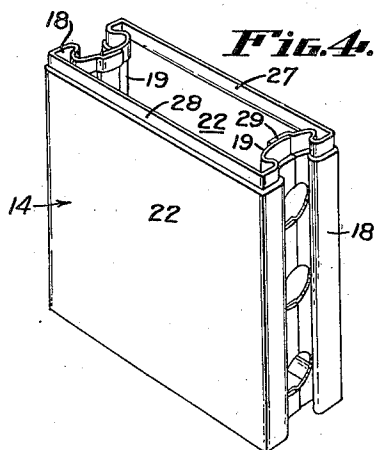
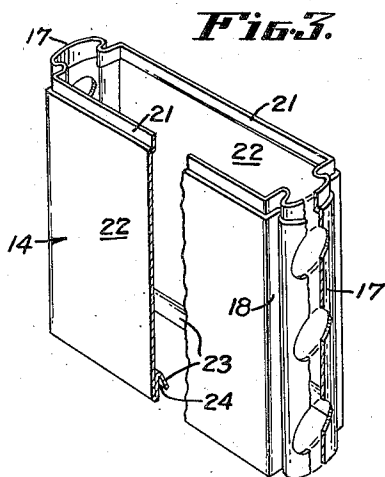
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2,205,730

BUILDING CONSTRUCTION

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BUILDING CONSTRUCTION

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The invention, in general, relates to low cost housing. More particularly, the invention relates to home and other building construction embodying pre-formed building blocks, preferably fabricated of sheet metal or molded plastic material, and enabling the erection of the building for the most part with unskilled labor.

It is a primary object of my invention to provide an improved building construction which is characterized by the assembly of building blocks which in themselves form bearing units resisting bending and contortion both horizontally and vertically.

Another object of my invention is to provide a building construction of assembled building blocks affording in themselves unbroken vertical joints representing structural upright supports.

A still further object of the invention is to provide a novel building construction of the aforementioned character which is termite-proof, fire-proof, earthquake-proof, sound-proof and heat and cold proof as well as durable.

Another object of the present invention is to provide a novel building block assembly which is adapted to variations in building design for meeting all vertical and horizontal space requirements to take care of doors, windows, partitions, etc.

A still further object of my invention is to provide a building construction of pre-formed building blocks which presents walls of flush interior and exterior surfaces and thus lend themselves to any desired type of finishing including painting, stuccoing or canvassing, trimming and the like.

Another object of my invention is to provide means for erecting low cost dwellings and other buildings largely with unskilled labor and with substantially uniform building units.

Other objects of the invention, together with some of the advantageous features thereof, will appear from the following description of a preferred embodiment of my invention illustrated in the accompanying drawings. It is to be understood that while I have shown a preferred embodiment of the invention in the drawings, I am not to be limited to the precise embodiment shown, as my invention, as defined in the appended claims, can be embodied in a plurality and variety of forms.

Referring to the drawings:

Figure 1 is a front elevation of an embodiment of my invention, portions thereof being broken away to show the interlocking joints and un-

broken columnar formation of the vertical joints.

Figure 2 is a sectional plan view of a typical arrangement of wall construction embodying my invention.

Figure 3 is a partial perspective view of a building block embodying the invention.

Figure 4 is a perspective view of another building block embodying my invention.

Figure 5 is a perspective view of still another building block embodying the invention.

Figure 6 is a perspective view, partly in section, illustrating a typical building wall assembled in accordance with my invention.

Figure 7 is an enlarged cross-sectional view of two interlocked building blocks containing insulation means.

In its preferred form, the building construction of my invention, as adapted to the walls and partitions of a building, preferably comprises an assembly in columns and rows of a plurality of building blocks of hollow box section form presenting flush interior and exterior surfaces, the alternate rows of blocks of the assembly preferably being in horizontal alignment and the successive columns of blocks of the assembly being in vertical alignment, means on the end faces of each block for effecting interlocking joints on a horizontal plane between adjacent blocks, and means on the side faces of each block for effecting interlocking joints on a vertical plane between adjacent blocks; said assembly presenting a structure of broken horizontal joints and unbroken vertical joints, the latter presenting structural upright supports in the form of tubular columns.

The present invention affords the construction of any type or design of building or dwelling since the dimensions of the building blocks, as to height and width, are variable permitting the assembly of the building with both whole and fractional blocks thus meeting all horizontal and vertical space requirements. In Figure 1 of the drawings, a typical assembly of a wall 11 of a building is illustrated with provision for a window 12 and a door 13. As shown, the successive columns of blocks 14 of the wall 11 are in vertical alignment while the alternate rows of blocks, from top to bottom, are in horizontal alignment and, to effect this latter result, I provide in the alternate columns of the wall both whole blocks 14 and fractional blocks 15. To meet requirements for the window 12 and door 13, the vertical columns of blocks may include a greater number of fractional blocks 15 than those

of the adjacent vertical columns where no windows or doors are specified. Not only can the fractional blocks 16 be of varied height to take care of vertical space requirements but they can be of varied widths to take care of horizontal space requirements.

In Figures 3 to 5 inclusive of the drawings, I have illustrated in enlarged perspective views the improved building blocks 14 of my invention. It is apparent that the wall or partition block assembly of the building can be constructed by employing the types of blocks shown in Figures 3 and 4. In the block shown in Figure 3, I provide a male dove-tail member 17 on each end face 18 of the block for interlocking engagement with female dove-tail members 19 provided on the end faces 18 of the blocks 14 of the type shown in Figure 4. As an alternative, however, the building blocks 14 of Figure 5 can be utilized. The latter block preferably comprises a male dove-tail member 17A on one end face 18 of the block and a female dove-tail member 19A on the other end face 18 of the block. By the provision of three forms of building blocks 14, one may make such changes as required so as to present the desired key for engaging complementary dove-tail members on the adjacent blocks of the assembly at any point in the erection of the building. As indicated particularly in Figures 1, 3, 4 and 5 of the drawings, the upper extremity of each of the dove-tail members on the ends of blocks 14 is intumed to provide an exterior shoulder on each dove-tail member. The blocks 14 also are provided with offset tongues 21 extending inwardly and preferably from the upper extremity of each side face 22 of the block as well as intumed flanges 23 extending from the lower extremities of the side faces 22 to form grooves 24 for receiving the off-set tongues 21 of adjacent blocks 14 in the assembly, see especially Figure 6 of the drawings. Thus every edge of every block 14 of the assembly engages and interlocks with complementary members on the edges of an adjacent block. It is to be especially observed that the interlock between overlying and underlying blocks 14 of the assembly constitutes telescopic interlocks between the dove-tail members on the end faces of such adjoining blocks by virtue of the intumed upper extremities of the dove-tail members forming the exterior shoulders thereon. The blocks, in place, provide a wall that presents flush surfaces on both sides and is not unlike in appearance to a squared stone surface. The end faces 18 of each block 14 preferably are provided with spaced openings 26 for passing electrical conduits and plumbing pipes, not shown. Since the blocks 14 are open at the top and bottom, piping may conveniently be passed vertically.

As shown particularly in Figure 4 of the drawings, the blocks 14 may be formed of two parts 27 and 28 meeting in lapped joints 29 at the ends which can be conveniently welded together to form the completed blocks. Any mode, other than that indicated, may be employed for forming the blocks into a hollow box section shape. Preferably, the blocks 14 are fabricated of sheet steel, although other sheet metal may be employed as desired. Moreover, the blocks may be formed into units with molded plastic material, if desired. The male and female dove-tail joints preferably are formed to the shape illustrated in the drawings to insure a tight wedge fit between the complementary members of the adjacent blocks in the assembly.

As an indication of the adaptability of the

building block of the assembly of my invention to any desired plan or design, reference is made to the sectional plan view of Figure 2 of the drawings wherein is illustrated, among other showings, a corner block 31 having a rounded exterior face 32. If desired, of course, the corner block 31 can be so shaped to furnish a square exterior corner, as indicated by the dot and dash lines 33 of Figure 2. The particular corner block 31 shown in this view is provided with a male dove-tail member 34 as well as a female dove-tail member 36 for interlocking engagement with adjoining blocks 14. Of course, if both blocks 14 adjacent to the corner block 31 present male dove-tail members facing into the corner, a corner block 31 having only female dove-tail members would be utilized at such corner for interlocking engagement with the complementary members of the adjacent blocks. And it follows also that if both of the adjoining blocks to the corner block presented female dove-tail members facing the corner, a corner block 31 would be used having complementary male dove-tail members. Figure 2 of the drawings also illustrates a partition block 37 in the assembly for affording the erection of a partition 38 as may be detailed in the plans of the proposed building. Variations in dove-tail members on the partition block 37 correspond to the variations indicated above with respect to the corner block 31, depending of course upon the dove-tail members that may face the partition blocks.

The building construction of my invention, as adapted to the erection of a typical dwelling, is particularly detailed in Figure 6 of the drawings. In accordance with conventional practice, a concrete foundation 39 for the dwelling is first poured, the concrete form conveniently being made to a shape for receiving a foundation plate 41 which preferably is fabricated of relatively heavy pressed steel. The plate 41 is aligned on the foundation 39 and levelled carefully, and is fixedly secured in position by suitable foundation anchor bolts 42 and metal shims 43, as shown. The foundation plate 41 is provided with a pair of spaced locking seams 44 for interlocking engagement with the grooves 24 formed on the lower edges of the sides of the first or starter blocks 14 and 16 of the wall. It may be observed that the exterior wall construction of a dwelling may commence at a door, at a corner or at any point desired and, as indicated above, whole blocks 14 and fractional blocks 16 are alternately disposed along the foundation plate or cap 41. These blocks are slid together with a light driving fit to interlock the male and female dove-tail members on the end faces of the adjoining blocks. Wherever the plan of the proposed dwelling calls for a partition 38, a partition block 37 is inserted, such partition block presenting locking male and female dove-tail members for receiving the complementary interlocking members of the regular blocks 14 that are to comprise the partition walls, see Figure 2 of the drawings. Likewise, corner blocks 31 are placed on the foundation plate or cap 41 at the indicated points, the corner block used having the requisite key or interlocking dove-tail members on its end faces for effecting interlocking engagement with adjoining regular blocks 14. As suggested above, wherever the plans of the proposed dwelling indicate that the various corners are to be rounded, corner blocks to meet such requirements are employed.

In order to meet requirements for floor joists, I preferably provide the foundation cap 41 with

an interiorly extending flange 46 which is adapted to seat on an interior shoulder 47 formed in the concrete foundation 39, and I also provide struck-out portions on the interior side faces of the foundation plates 41 at longitudinally spaced intervals to form slots 48 for receiving tongues 50 provided on the ends of metal floor joists 49. As shown in Figure 6 of the drawings, the bottoms of the floor joists 49, adjacent the tongued ends thereof, seat upon the interior flange 46 of the foundation plate, thus providing an effective support for the floor joists. Upon placing of the several floor joists in position, as indicated, the rough flooring can then be laid.

After the starter or first whole blocks 14 and fractional blocks 16, alternately disposed, have been placed all around the foundation plate 41, the erection of the exterior walls and partitions can proceed rapidly by superimposing block upon block, in interlocking engagement with adjoining blocks on all edges, until the desired height is reached. Of course, wherever doors and windows are specified, the fractional blocks 16 are interposed to meet the vertical and horizontal space requirements. When each wall is erected, it will present an assembly as indicated in Figure 1 of the drawings with the blocks in vertically aligned columns presenting unbroken vertical joints and, in effect, tubular supporting columns. A two or more story dwelling merely requires heavier blocks on the lower floors. It may be observed that interior partitions 33 are preferably assembled upon a channeled shape foundation plate or cap, not shown, having locking seams similar to the locking seams 44 of the foundation plate 41 for interlocking engagement with the members on the bottoms of the first or starter blocks 14 which are to comprise the partition.

While details for doors and windows are variable to suit the particular design, a desirable arrangement of assembly of the blocks and fractional blocks is to provide female dove-tail members facing the door and window jambs. The female dove-tail members are designated by the vertical dotted lines of Figure 1 of the drawings. After the header or lintel height is reached, keyed door jambs 51 are slid into place for interlocking relationship between the male dove-tail members on the jambs 51 and the female dove-tail members on the adjacent blocks. A header 52 is then inserted and the assembly of the blocks is proceeded with as above indicated. In window construction, upon reaching sill heights a sill member 53 is interposed prior to the insertion of the window jambs 54. All sill members, jambs and headers are provided with dove-tail key members for interlocking engagement with adjacent complementary dove-tail members on the end and side faces of the blocks adjoining the sills and jambs and headers.

When all walls have been erected to the specified height, a ceiling cap 55, preferably fabricated of relatively heavy metal, is fitted over the wall, see Figure 6 of the drawings, and secured thereto in any desired manner such as by small screws and nuts. Preferably, the ceiling cap 55 incorporates a roof gutter 57 and the cap is provided with openings 58 for passing electrical conduits and piping which are passed vertically through the blocks 14 and 16. A convenient means for mounting ceiling joists 59 and rafters 61 is provided in the same manner as the mounting of the floor joists upon the foundation plate 41, by forming slots 62 in the side and top faces of the ceiling cap, as indicated. Slots 62 receive tongues

65 provided on the ends of the ceiling joists and rafters, and the ceiling cap is formed with an interior flange 63 for supporting the ceiling joists. The struck-out portions of the side faces of the cap 55 can be clipped on top, after placing of the ceiling joists, to prevent dislodgment of the joists when the ceiling is fastened to the wood filler of the joists exposed on their under sides. It may be observed that the ceiling joists 59 key at their interior ends to interior partition caps, not shown, in the same manner as fitted to the ceiling cap 56. The rafters 61 preferably are of U-shaped metal with wood fillers and can be notched at their lower ends, as shown, for fitting to the ceiling cap. All rafters can be supported by light metal struts or in whatever manner desired over the interior walls and ceiling and, of course, any desired pitch of roof may be employed in the dwelling.

Since the building blocks of the assembly are of hollow box section form, the structure can be rendered not only sound-proof but also hot and cold proof by the insertion therein of insulation material 64 preferably of granulated form. Likewise, the ceilings conveniently may be covered on the attic side with suitable insulation material, such as wool batting.

The foregoing description pertains only to the erection of exterior walls and interior partitions. Details of interior finishing are variable but any type of finishing is adaptable to the assembly of my invention. For example, all building blocks for bath and kitchen walls can be provided with baked enamel surfaces for pleasing and sanitary effects and wherever soap receptacles are desired, one or more of the building blocks may be formed with pressed recesses. Registers for heating facilities may be afforded by providing the base blocks with a baffle and grilled face at the time of erection of the wall. All medicine cabinets, ironing boards and the like may constitute an integral part of the wall by insertion into the keying slots of the wall as the wall is assembled. For coolers, grilled screened openings may be provided in certain of the exterior wall blocks. If it is desired to provide fire places of metal in the structure above described, lined fire bricks can be utilized and the chimneys formed of the block units of my invention which can surround a flue of terra cotta. These chimney units may conveniently be filled with asbestos fibre. Exterior door thresholds may be of metal and attached to the foundation plate 41. Of course, to adapt the invention to varieties of design, unusual shaped building blocks can be substituted to form unique arches, gable ends, etc., or any part of the building where the standard blocks cannot be employed.

The erection of the whole structure is simplicity itself, as no welding or bolting is necessary nor are structural members required. Moreover, the major construction work can be carried out for the most part with unskilled labor. Every member has its own particular place in the structure, which may be indicated on the floor plan by some simple identifying legend. It is to be appreciated that the exterior walls of the building construction lend themselves to a variety of finishes, as the flush surfaces of the blocks can be either painted, sand finished, stucco dashed, or plastered on chicken wire held in place by sheet metal screws or suitable furring devices. Interior walls and partitions may be faced with baked enamel, painted, canvassed and painted, tinted, plastered or papered. Ceilings admit of any desired treat-

ment and roofs may be of metal or wood. Any wall treatment exemplified in extra trim, fixtures, etc., may be readily attached to the walls or partitions by methods now in universal practice in the sheet metal art. Moreover, the completed assembly of my invention provides home security in that it is termite-proof, fire-proof, earthquake-proof, sound-proof, heat and cold proof, and as durable as steel, all at a saving over any other method of construction heretofore presented.

While the foregoing description pertains to the erection of a typical home, wherein variations in gauge of sheet metal may be employed even as low as 18 to 20 gauge with effective results, it is to be appreciated that my invention is also entirely suitable for the construction of large and relatively high office buildings, it merely being necessary to provide heavier and larger building blocks, especially on the lower floors, for supporting the increased loads. Moreover, the building construction of my invention is equally adaptable to the erection of many other types of buildings and structures including silos, and water-tanks of arcuate surfaces as well as for the construction of tunnel interiors and like structures.

In addition to the foregoing, my invention contemplates miniature structures as my fundamental and underlying inventive concept in the assembly of building blocks of hollow box section form having broken interlocking horizontal joints and unbroken, interlocking vertical joints forming tubular supporting columns is especially suitable for the erection by children of various types of doll houses or other play houses. In these miniature structures, a relatively light gauge sheet metal can be employed in fabricating the blocks and the dimensions of the blocks can be reduced.

It is to be understood that the appended claims are to be accorded a range of equivalents commensurate in scope with the advance made over the prior art.

I claim:

1. A building construction comprising a foundation, a foundation plate fixedly secured upon said foundation, a pair of upwardly extending locking seams on said foundation plate, a plurality of whole and fractional building blocks of hollow box section form alternately disposed around said foundation plate, means on the end faces of each of said blocks for effecting interlocking engagement between adjacent blocks on said foundation plate, means on the side faces of each of said blocks for effecting interlocking engagement between said blocks and said foundation plate, an assembly of a plurality of building blocks of hollow box section form disposed in overlying relationship upon said whole and fractional blocks spaced around said foundation plate, means on all edges of said overlying building blocks for effecting interlocking engagement with adjacent blocks including the whole and fractional blocks on said foundation plate, and means on the end faces of said whole and fractional blocks for effecting telescopic interlocking joints between adjoining super-posed and sub-posed blocks in the assembly.

2. A building construction for multi-storied office buildings and the like, said construction comprising a foundation, an assembly in rows and columns of a plurality of relatively light and relatively heavy building blocks of hollow box section form disposed upon said foundation presenting flush interior and exterior surfaces, the successive columns of said building blocks being in vertical

alignment and the heavier blocks of said assembly being disposed adjacent said foundation, means on each of said blocks for effecting interlocking joints between adjacent blocks disposed end to end in said assembly, and means on the end faces of each block in the assembly for effecting telescopic interlocking joints between adjoining super-posed and sub-posed blocks in the assembly said joints in a vertical plane being unbroken and constituting tubular columns.

3. In a building construction, a foundation, a foundation cap on said foundation, said cap having a top surface and a plurality of spaced slots below said top surface, a plurality of floor joists, a tongue on the end of each floor joist for insertion into said slots of said foundation cap, a pair of upwardly extending locking seams on said cap, and a plurality of whole and fractional building blocks of hollow box section form alternately disposed upon said foundation cap and in interlocking engagement with said cap through the medium of said locking seams on said cap.

4. A building construction for the walls and partitions of buildings, said construction comprising an assembly in rows and columns of a plurality of building blocks of hollow box-section form presenting flush interior and exterior surfaces and having interlocking members on the end faces thereof, adjoining blocks disposed end to end in the assembly being connected together in interlocking joints on horizontal planes through the medium of said interlocking members, and adjoining blocks in super-posed and sub-posed relationship in the assembly being connected together in telescopic interlocking joints through the medium of said interlocking members on the end faces of the blocks; said interlocking connections presenting unbroken vertical joints in the form of tubular structural supporting columns.

5. A building construction for the walls and partitions of buildings, said construction comprising an assembly in rows and columns of a plurality of whole and fractional building blocks of hollow box-section form presenting flush interior and exterior surfaces and having interlocking members on the end faces thereof, alternate columns of the assembly having said fractional blocks as the bases thereof; the adjoining blocks placed end to end in the assembly being connected in interlocking joints on horizontal planes through the medium of said interlocking members, and the adjoining blocks in super-posed and sub-posed relationship in the assembly being connected in telescopic interlocking joints through the medium of said interlocking members on the end faces of said blocks; said assembly presenting a structure of broken horizontal courses and unbroken vertical joints in which the latter constitute structural supports in the form of tubular columns.

6. A building block formed from a continuous length of sheet material, said block comprising a pair of side walls, a pair of end walls, dove-tail members on said end walls, and an offset portion on each dove-tail member defining a shoulder thereon; said dove-tail members serving to effect interlocking joints on a horizontal plane with adjoining blocks disposed end to end therewith and having complementary dove-tail members thereon, and also serving to effect telescopic interlocking joints on a vertical plane with adjoining super-posed and sub-posed blocks having similar dove-tail members thereon.

7. In a building construction, the combination

with a suitable foundation of an assembly of building blocks each consisting of a unit formed from a continuous length of sheet material and having a pair of side walls, an off-set intumed tongue extending from the upper extremity of each of said side walls, an intumed, turned-over flange defining an interior groove at the lower extremity of each side wall; said tongues and grooves serving to effect interlocking joints on a vertical plane between adjoining super-posed and sub-posed blocks in the assembly, a pair of end walls, dove-tail members on each end wall, and an intumed, off-set portion at the upper extremity of each dove-tail member defining an exterior shoulder; said dove-tail members serving to effect interlocking joints on a horizontal plane between laterally adjoining blocks in the assembly and also to effect telescopic interlocking joints on a vertical plane between adjoining super-posed and sub-posed blocks in the assembly.

8. A building construction comprising a foundation, a foundation plate secured upon said foundation; said plate including a top portion lying upon the top of said foundation as well as a pair of sides lying against the sides of said foundation, a pair of locking seams extending upwardly from the top portion of said plate adjacent to the lateral edges thereof, a plurality of whole and fractional building blocks alternately disposed upon said plate, means forming a part of each of said blocks for effecting interlocking engagement between adjacent blocks end to end on said plate, and means forming a part of each of said blocks for effecting telescopic joints between each of said blocks and said foundation plate through the medium of said locking seams.

9. In a building construction, a foundation, a foundation cap secured upon said foundation;

said cap including a top portion lying upon the top of said foundation as well as a pair of sides lying against the sides of said foundation, a pair of locking seams extending upwardly from the top of said cap adjacent the lateral edges thereof, a plurality of whole and fractional building blocks alternately disposed upon said top portion of said cap, the outer surfaces of the sides of said blocks being substantially flush with the outer surfaces of the sides of said cap, and means forming a part of each of said blocks for effecting telescopic interlocking joints between said blocks and said cap through the medium of said locking seams.

10. A building construction for the walls and partitions of buildings, said walls and partitions having openings therein at predetermined locations; said building construction comprising the combination defined in claim 1 and including a plurality of building blocks in said assembly bounding each of said openings at said predetermined locations, and interlocking members on each of said last named blocks exposed to said openings for receiving in interlocking engagement complementary interlocking members on elements for closing said openings.

11. A building construction for the walls and partitions of buildings, said walls and partitions having window and door openings, respectively, therein at predetermined locations; said building construction comprising the combination defined in claim 1 and including a plurality of building blocks in said assembly bounding said window and door openings, and interlocking members on each of said last named blocks for receiving in interlocking engagement complementary interlocking members on window sills and door jambs.

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