June 26, 1934. G. L. BENNETT 1,963,966

VENEERING OF BUILDING STRUCTURES

Filed Feb. 13, 1932

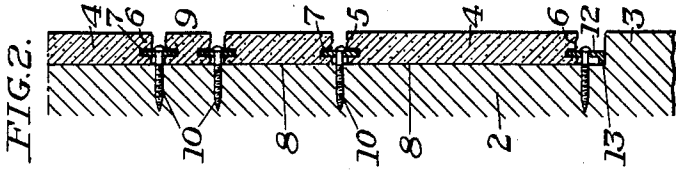


FIG. 2.

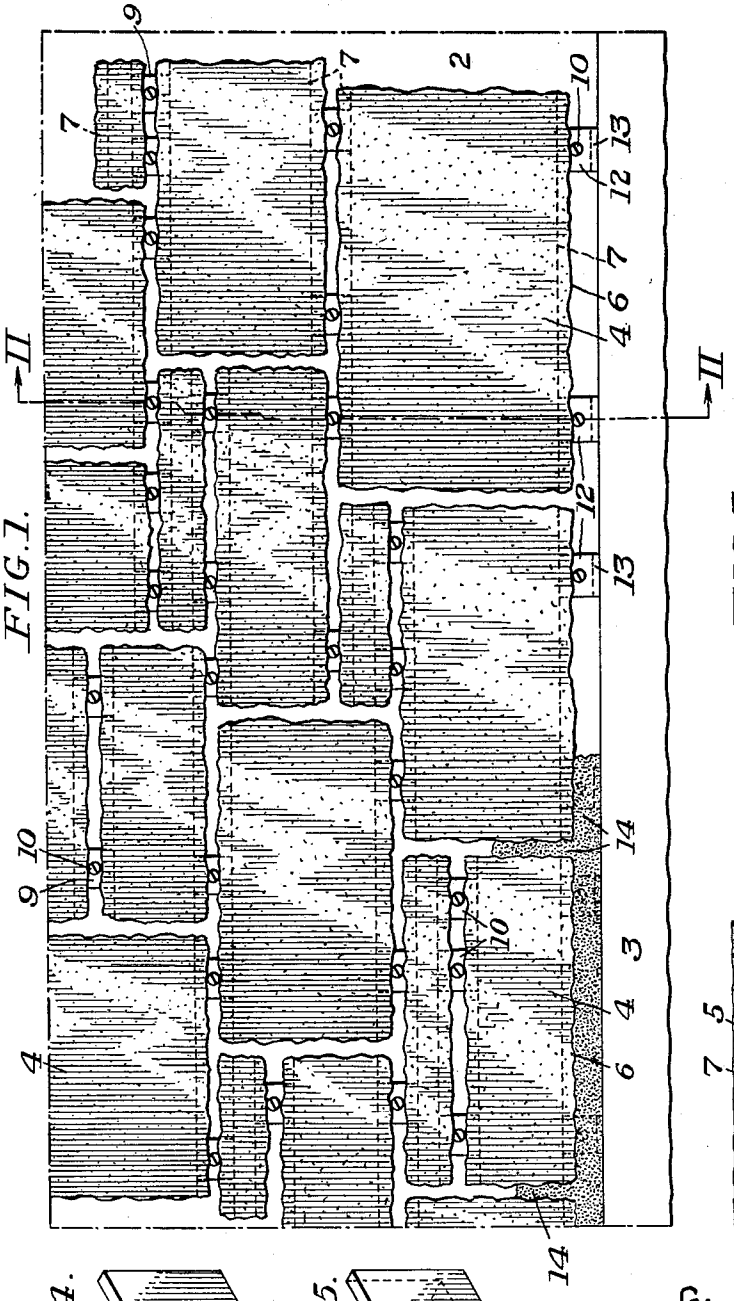


FIG. 1.

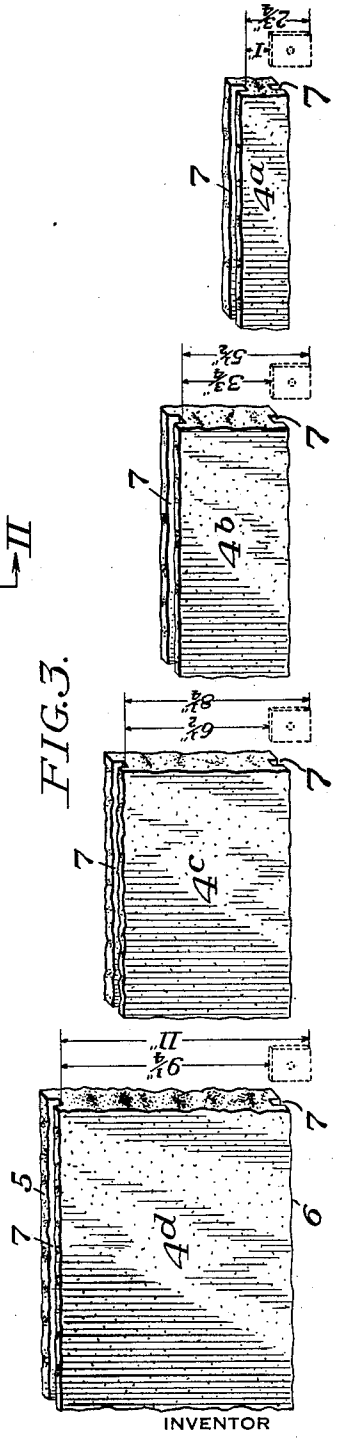


FIG. 3.

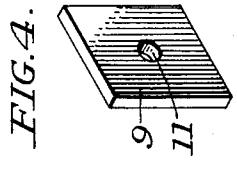


FIG. 4.

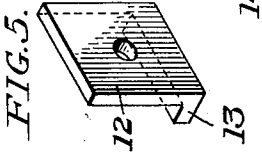


FIG. 5.

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VENEERING OF BUILDING STRUCTURES

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15 Claims. (Cl. 72—19)

This invention relates to the veneering of building structures and provides a construction and a series of veneering units whereby highly desirable effects may be obtained at relatively low cost.

In the past there have been two general plans of covering a building wall with a veneer of stone, brick, tile or the like. According to the first method, the veneers are self-sustaining and are simply tied to the main wall of the building by anchors, or headers of veenering material, extending into the backing wall proper; while in the second method, the veeners are cemented to the backing wall, provision sometimes being made for metal ties, or the like, which aid in holding the veneer in place. It is quite common in either practice to disregard substantially entirely any assumption as to accuracy of the backing wall, and to look to the veneering proper for obtaining a truly vertical face. In the case of stone, artificial stone, brick, and sometimes terra cotta, the veneering materials are usually of considerable thickness, say, 4 inches, and are spaced out from the backing wall by an inch or more to allow for their own lack of uniformity and to make possible the setting of the veneering in such a way that the outer face is a vertical plane.

Where thin veneers bedded in cement are employed, the same general attitude prevails, the cement employed being sufficiently thick to accommodate any variations in thickness of the veneers. In all forms considerable reliance for support is placed upon the mortar between horizontal courses. For example, in the case of thin veneers reliance is placed upon the mortar in the horizontal joints to relieve the cement behind the veneer of some of the load of the facing material. In the case of thick veneering, such as brick, the weight of the newly set facing units is carried by the mortar in which it is set and each stone is levelled when put in place. In the great majority of cases, the stones are set in courses or horizontal runs which must match up at all the architectural vertical lines, as, for example, the corners of the building, and must also show continuity where they meet over windows, doors and the like. As an example, if the top course at the left-hand side of a doorway comes flush with the top of the opening, the top course on the other side must also be flush therewith or the building will look out of level. By reason of the fact that a large number of courses will usually be employed, considerable skill is required in setting. The difficulties of proper setting are increased where the shapes employed are anything other than strictly geometrical. Where bricks are being laid they are all of uniform thickness, and their proper laying is within the skill of a good mason. However, where any forms of irregular shape are employed, and because of appearance such forms have become increasingly desirable, it is necessary to employ men highly skilled in their craft in order to get a construction which will be pleasing to the eye and at the same time will not depart from the requirements of good construction. The work is slow and expensive and where, as is ordinarily the case with such irregular shapes, the weight of the veneering is transmitted through the horizontal joints, definite limitations are imposed. The mortar must not be too thin, else the weight of the stones will cause it to flow out and the setting of the stone will be affected. The wall cannot be built up too rapidly as time must be given for the mortar to harden. In many, if not in most cases, considerable cutting, shaping and selecting of the stones is necessary, resulting in an increase in cost of material, freight and haulage.

I eliminate all these defects and provide a veneering which may be applied with semi-skilled labor. I do not rely upon the mortar for supporting the stones, but, on the contrary, I employ spacers between them which transmit the weight of one veneering unit to that immediately below. The entire wall may be erected before the mortar is filled into the spaces between the veneering units. While the veneers are of irregular widths so as to get desirable artistic effects, I make provision for exactly positioning the several units so that their aggregate height is a multiple of a predetermined unit distance. Preferably I arrange the units with faces for engagement by the spacers, which faces are accurately spaced a predetermined distance on any veneer unit. I prefer to form slots in the top and bottom edges of each unit, the bottoms of the two slots being parallel and uniformly spaced. The spacers fit into these slots and bear against their bottoms, so that the several courses of veneering units are spaced in a manner which is independent of the outside dimensions of the veneer but is dependent rather upon the distance between the bottoms of the slots.

I also prefer to make the veneers in different sizes bearing a predetermined relationship with one another. The relationship is not between the extreme dimensions of the units for, as stated, it is desirable for purposes of appearance that the unit be of somewhat irregular configuration. However, such units are provided with recesses on opposite sides, the recesses being of

such depth that the total spacing between the bottoms of the recesses is a uniform and predetermined distance for each nominal unit size, the distances for the several nominal sizes in the series being a unit distance or a multiple thereof less a distance which corresponds to the size of the spacers employed.

The units will be drawn against the base wall, contrary to usual practice, and will usually be of the same thickness. However, if desired, the units may be of irregular thickness, or present split faces, and the like.

In the accompanying drawing, illustrating a present preferred embodiment of the invention, Figure 1 is a side elevation of part of a building wall showing a stone veneering applied thereto;

Figure 2 is a vertical section taken on the line II—II of Figure 1;

Figure 3 is a view showing in perspective a series of units such as I may employ;

Figure 4 is a perspective view of one of the spacers employed; and

Figure 5 is a similar view showing another form of spacer for use with the top-most and bottom-most courses.

The drawing shows a stone veneer, as, for example, limestone, such as may be employed for the outside of a building. For convenience of description I hereinafter refer to the veneering units as stones, but it will be understood that this is used as a word of general definition and not of limitation.

The structure shown in Figures 1 and 2 comprises a backing or base wall, indicated generally by the reference character 2, which wall may be of wood, concrete, hollow tile, or any other desired material. It is shown with an offset 3 at the base from which the veneering is built up. The veneering consists of a series of stones 4 having top and bottom edges 5 and 6 of irregular character such as would result from the breaking of the stone. In the present case the stones are shown with a thickness of about 1¼ inches.

Slots 7 are formed in the top and bottom faces 5 and 6. These slots are spaced a predetermined distance from the inner faces 8 of the stone and are carefully cut. Their bottoms are plane and parallel and are spaced a predetermined amount. Although there may be considerable irregularity in the faces 5 and 6, and although these faces may depart markedly from the truly horizontal direction, this has no bearing on the setting of the stones, as the bottoms of the slots 7 are relied upon to insure accurate positioning.

The slots 7 accommodate spacers 9, one of which is shown in detail in Figure 4. These spacers are made of metal and are exact as to height. They are made thinner than the width of the slots 7 so that there is no danger of their being wedged in place and failing to reach the bottoms of the slots 7. The slots may, for example, be ¼th inch wide and the spacers $\frac{3}{16}$ths inch thick. In Figures 1 and 2 the spacers are shown as being connected to the base wall 2 by means of screws 10 extending through holes 11 in the spacers. It will be understood, of course, that wood screws are employed where the base wall is of wood, for example, wood sheathing, but that other fastening means may be employed where a base wall of a different character is used. Each stone transmits its weight through the spacers engaging its bottom slot to the stone immediately therebelow, and in this fashion the weight is carried down to the offset 3 in the base wall. In Figures 2 and 5 there is shown an L-shaped spacer 12 having a flange 13 extending inwardly to engage the base wall so that when its attaching screw is drawn up tight the flange will prevent the spacer from being tilted. The flange also provides additional bearing surface on the offset 3.

As above stated, the spacers are narrower than the slots. It will be noted that this permits of the spacers being positioned slightly out of the vertical. Any slight irregularities of the base wall therefore will not affect the construction, for if one stone is held outwardly a slight amount by reason of some local irregularity in the base wall the drawing up of the screw 10 simply tilts the spacer slightly. The pressure of the spacer against the sides of the slots 7, which pressure holds the stones tightly against the base wall, is thus evenly divided between the two stones and the vertical alinement is for all practical purposes unaffected.

It will be noted from Figure 1 that two or more spacers are provided for each stone, and that these spacers are not in any fixed relative positions. They will be located according to the size of the stones employed and the manner of placing them; for example, if the stones are in random lengths, as will usually be the case, the spacers may be irregularly positioned, as shown in Figure 1, so as to best support the stones. The slots permit of their being positioned at any point along the top or bottom of any particular stone, without in any way affecting the vertical positioning thereof.

It will be noted that no reference has been made to the use of mortar. It is desired that no mortar be employed while the stones are being positioned against the base wall 2. This for the reason that the spacers must, if the best results are to be obtained, engage the bottoms of the slots 7. This is practically impossible if any mortar is initially placed therein, as a certain amount of mortar is bound to get in the bottom of a slot in such manner that the spacer cannot get it out of the way. The stones are, therefore, set up in the first instance without the aid of any mortar whatever, and after the screws 10 are drawn up tight, the wall presents the appearance of spaced stones extending over the surface, but with open joints. The width of the joints will vary from point to point depending upon the local irregularities in the edges thereof, but the aggregate height of the several courses will be an exact distance and the general alinement of the stones in their horizontal courses will be satisfactory.

After the entire veneering has been put in place, the joints are filled with mortar as indicated at 14 in Figure 1. It will be understood, of course, that if desired a workman may closely follow up the men who are placing the veneer and fill the joints immediately. The mortar need only be stiff enough to stay in place without sagging while it sets up, as there is no load of stones on it. It may, therefore, be made of an original consistency better adapted for tight sealing of the joints than is often the case where it necessarily transmits the weight of the stones. The mortar is preferably crowded into the joints so as to extend inwardly to the backing wall 2. It thereby gets into the slots 7 and is keyed in place when hard. It also protects the metal spacers 9 and the screws 10 from corrosion.

Figure 3 shows a series of units such as I may employ, these being numbered 4*a*, 4*b*, 4*c* and 4*d*.

The several units are all of the same thickness and each has slots 7 in its top and bottom, the bottoms of the slots being plane and parallel. In the unit 4*a*, the bottoms of the slots are placed 1 inch apart; in the unit 4*b*, 3¾ inches apart; in the unit 4*c*, 6½ inches apart, and in the unit 4*d*, 9¼ inches apart. These particular units are intended for use with a spacer 9 having a height of 1¾ inches, and therefore if units 4*a* were laid one on top of the other with such spacers in between, the effective spacing (center to center of spacers) would be 2¾ inches. It will be noted that the corresponding spacing for the units 4*b* is 5½ inches, for units 4*c*, 8¼ inches, and for the units 4*d*, 11 inches. The effective spacing of the several units in the series therefore increases in an arithmetical progression, and it will be observed that the several units in the series can be employed together and that when erected the aggregate height of the courses, regardless of how the units are disposed, will be equal to a multiple of the basic distance of 2¾ inches.

The advantages of my invention arise from the provision of a veneering system which may be safely entrusted to semi-skilled labor for erection. The weight of the veneering is in the main transmitted to the foundation through the spacers 9 and does not depend for vertical support upon the base wall 2. However, this desirable result is obtained without the necessity of setting the individual stones in mortar when they are placed, and the placing of the stones may be safely entrusted to workmen who lack the skill of the masons ordinarily used for structures of this sort. Despite the fact that the stones employed are of irregular form, the desired general level of the courses is maintained and the aggregate height is always accurate, thus insuring architectural fitness.

I have illustrated and described a present preferred embodiment of the invention. It will be understood, however, that it is not limited to the form shown but may be otherwise embodied or practiced within the scope of the following claims.

I claim:

1. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the spacers being effective for transmitting the weight of the unit thereabove to the unit therebelow and being of such height that the aggregate height of the several units with their spacers is a multiple of a predetermined unit distance, and means for securing the spacers to the base wall in spaced relation thereto.

2. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, and spacers secured to the base wall in spaced relation thereto and lying between vertically adjacent units and holding them in spaced relation, the spacers being effective for transmitting the weight of the unit thereabove to the unit therebelow and being of such height that the aggregate height of the several units with their spacers is a multiple of a predetermined unit distance.

3. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the units having a plurality of faces for engagement by the spacers, which faces are accurately spaced apart a predetermined distance whereby the aggregate height of the several units is a multiple of a predetermined distance, and means for securing the spacers to the base wall in spaced relation thereto.

4. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the units having a plurality of faces for engagement by the spacers, which faces are accurately spaced apart a predetermined distance whereby the aggregate height of the several units is a multiple of a predetermined distance, means for securing the spacers to the base wall in spaced relation thereto, and mortar lying between the units and embedding the spacers.

5. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the units having a plurality of faces for engagement by the spacers, which faces are accurately vertically spaced by predetermined distances, there being units of different widths, the faces on different units being spaced distances equivalent to a desired unit distance or a multiple thereof, less the height of a spacer, whereby the different width units, when employed with the spacers, form a wall whose height is a multiple of the unit distance, and means for securing the spacers to the base wall in spaced relation thereto.

6. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the units having recesses in their top and bottom surfaces, the bottoms of such recesses constituting faces for engagement by the spacers, the faces being accurately vertically spaced by predetermined distances, there being units of different widths, the faces on different units being spaced distances equivalent to a desired unit distance or a multiple thereof, less the height of a spacer, whereby the different width units, when employed with the spacers, form a wall whose height is a multiple of the unit distance, and means for securing the spacers to the base wall in spaced relation thereto.

7. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the units having recesses in their top and bottom surfaces, the bottoms of such recesses constituting faces for engagement by the spacers, the faces being accurately vertically spaced by predetermined distances, there being units of different widths, the faces on different units being spaced distances equivalent to a desired unit distance or a multiple thereof, less the height of a spacer, wherby the different width units, when employed with the spacers, form a wall whose height is a multiple of the unit distance, and means for drawing the spacers toward the base wall, and retaining them in spaced relation thereto.

8. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction,

spacers lying between vertically adjacent units and holding them in spaced relation, the units having recesses in their top and bottom surfaces, the bottoms of such recesses constituting faces for engagement by the spacers, the faces being accurately vertically spaced by predetermined distances, there being units of different widths, the faces on different units being spaced distances equivalent to a desired unit distance or a multiple thereof, less the height of a spacer, whereby the different width units, when employed with the spacers, form a wall whose height is a multiple of the unit distance, and means for drawing the spacers toward the base wall and retaining them in spaced relation thereto, the spacers being rockable with respect to said means.

9. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the units having slots in their top and bottom surfaces, the bottoms of which slots are plane and parallel, the bottoms of the slots constituting faces for engagement by the spacers, which faces are accurately vertically spaced by predetermined distances, there being units of different widths, the faces on different units being spaced distances equivalent to a desired unit distance or a multiple thereof, less the height of a spacer, whereby the different width units, when employed with the spacers, form a wall whose height is a multiple of the unit distance, and means for securing the spaces to the base wall in spaced relation thereto.

10. A building structure comprising a base wall, a covering made up of units, individual units being of irregular width in the vertical direction, spacers lying between vertically adjacent units and holding them in spaced relation, the units having recesses in their top and bottom surfaces, which recesses are equally spaced horizontally from the base wall, the bottoms of the recesses constituting faces for engagement by the spacers, which faces are accurately vertically spaced by predetermined distances, there being units of different widths, the faces on different units being spaced vertical distances equivalent to a desired unit distance or a multiple thereof, less the height of a spacer, whereby the different width units, when employed with the spacers, form a wall whose height is a multiple of the unit distance, and means for securing the spacers to the base wall in spaced relation thereto.

11. A building structure comprising a base wall, a covering made up of superimposed units, individual units being of irregular width in the vertical direction, spacers lying between said units and holding them in spaced relation, the units having recesses formed in their top and bottom surfaces, the bottoms of the recesses constituting faces for engagement by the spacers, which faces are accurately vertically spaced by predetermined distances, and means for securing the spacers to the base wall in spaced relation thereto.

12. A building structure comprising a base wall, a covering made up of superimposed units, individual units being of irregular width in the vertical direction, spacers lying between said units and holding them in spaced relation, the units having recesses formed in their top and bottom surfaces, the bottoms of the recesses constituting faces for engagement by the spacers, which faces are accurately vertically spaced by predetermined distances, and means for securing the spacers to the base wall in spaced relation thereto, the spacers being of equal height.

13. A building structure comprising a base wall, a covering made up of units, individual units being of irregular dimension, the units having recesses formed therein, the recesses being substantially equally spaced horizontally from the base wall, and spacers extending from a recess in one unit to a recess in an adjacent unit, the spacers being secured to the base wall but spaced therefrom and effective for holding the units thereagainst in desired vertical spaced relation.

14. A unit for facing or veneering a building structure having recesses formed in the upper and lower edges thereof adapted to cooperate with like recesses in other units above and below the unit in question through the medium of load transmitting and securing spacers, the recesses being of such depth that the total spacing between the bottoms of the recesses in the edges of the unit in question is a uniform fixed distance, the edges of the unit, however, being irregular so that the recesses are of non-uniform depth.

15. A series of facing units for the veneering of building structures, the several units having recesses formed in opposite edges thereof adapted to cooperate with like recesses in other units above and below the unit in question through the medium of load transmitting and securing spacers, the recesses being of such depth that the total spacing between the bottoms of the recesses of such edges is a uniform and predetermined distance for each width of unit, there being units of different nominal widths, the distances between the bottoms of the recesses in the several units being a unit distance or a multiple thereof less a distance corresponding to the height of a spacer, the edges of the several units being irregular so that the recesses are of non-uniform depth.

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