Dec. 29, 1936. G. L. BENNETT 2,065,510

WALL STRUCTURE AND METHOD OF MAKING THE SAME

Filed May 10, 1932 2 Sheets-Sheet 1

Fig. 1.

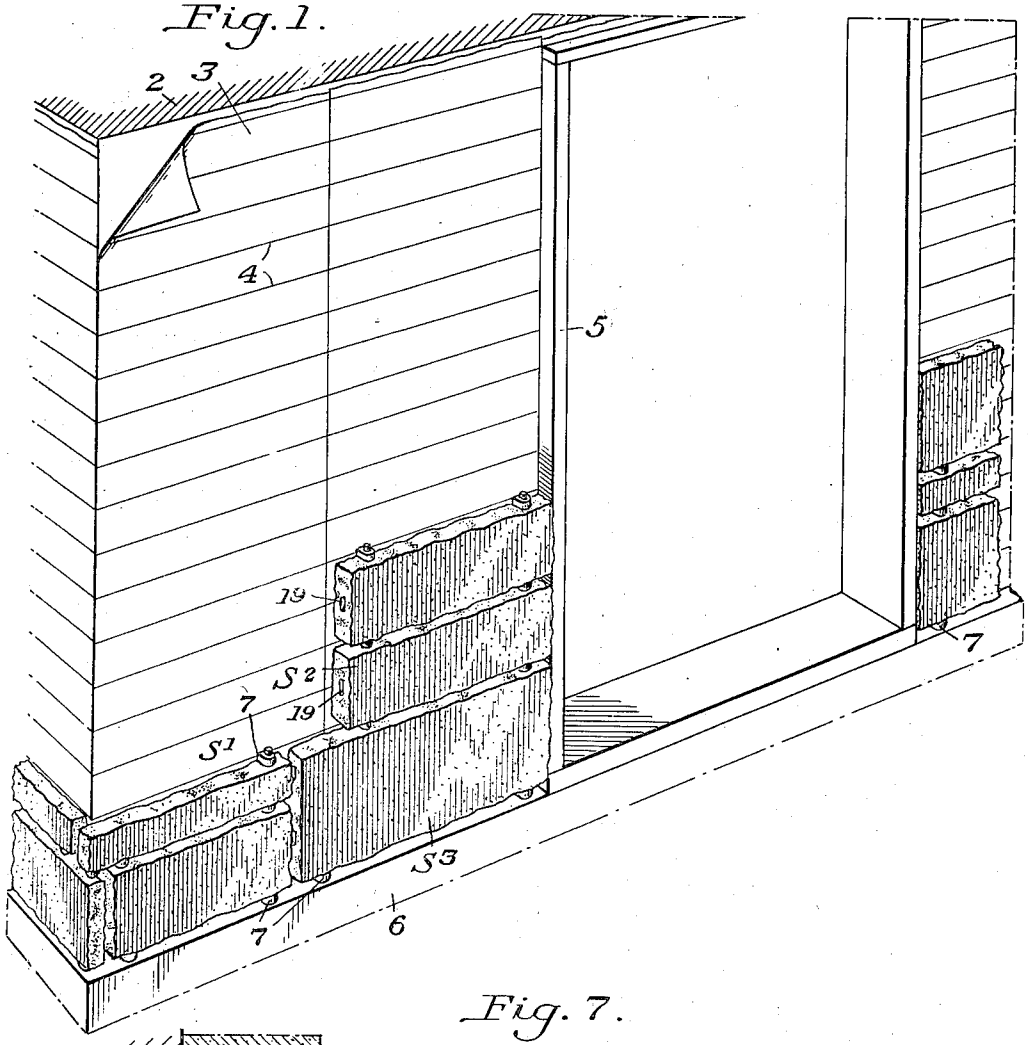
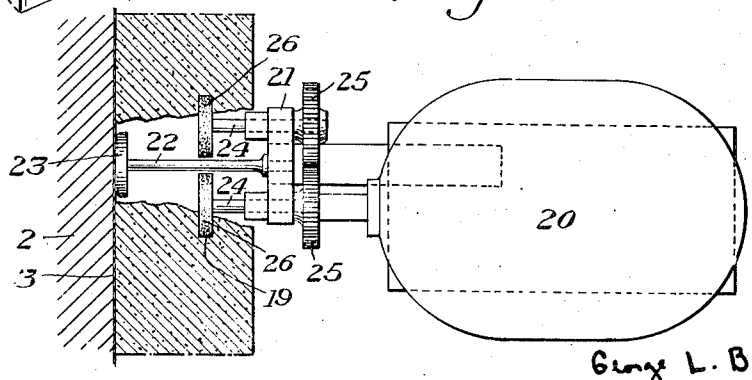


Fig. 7.



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Fig. 2.

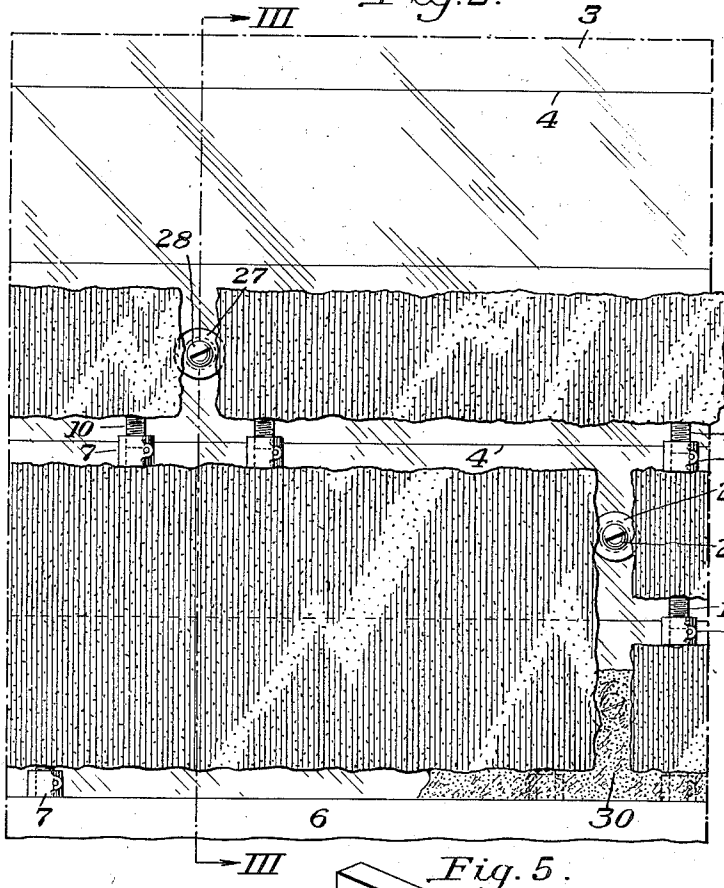


Fig. 3.

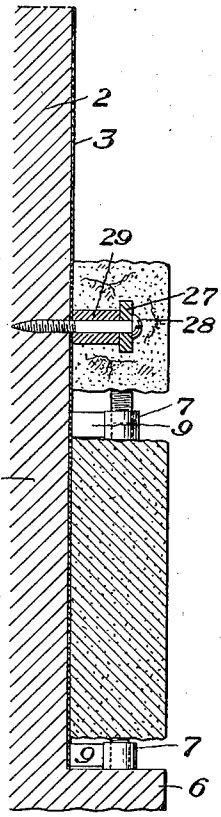


Fig. 4.

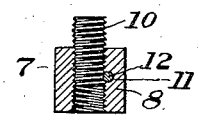


Fig. 5.

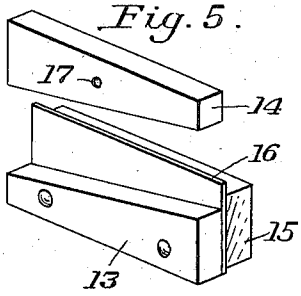
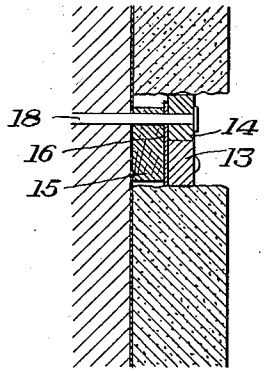


Fig. 6.



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UNITED STATES PATENT OFFICE

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WALL STRUCTURE AND METHOD OF MAKING THE SAME

George L. Bennett, Terre Haute, Ind.

Application May 10, 1932, Serial No. 610,337

9 Claims. (Cl. 72—20)

This invention relates to wall structures and a method of making the same, and is herein described as employing natural stone for veneering the exterior face of a building. It will be understood, however, that this is but one application of the invention, and further that the word "stone" as employed herein is a word of general definition and not of limitation.

There is a demand, particularly in buildings of the residential type, for a stone veneer wherein the stones are of irregular configuration rather than being formed to exact size and geometrical shape. In the laying of such irregular veneers numerous difficulties are encountered and usually they are laid only by masons of the highest skill, for if unskillfully laid they are not satisfactory from the standpoint of appearance. The general line of the joints must be substantially horizontal and proper matching over doors and window openings and at corners must be had if a proper appearance is to be secured. Where these stones are laid by skilled masons the expense of laying is high because the erection must proceed slowly. The erection is also slowed up because it has heretofore been customary, particularly in veneers of natural stone or brick, to place no reliance on the base wall for accuracy, the veneering being erected in such manner as to stand clear of the base wall a small distance, the mason leveling up the veneering as he goes and tying it into the base wall at intervals.

I provide a novel wall structure and method of making the same which permit of obtaining artistic and architecturally correct bonds with semi-skilled employees and at a minimum of expense. By my improved system the veneers may be rapidly put in place with the assurance that the lines of the joints will be correct, and proper matching up at corners and around wall openings will be had. In carrying out my method I associate indicia with the base wall to indicate the position of joints between the stones and place the stones in spaced relation at locations determined by such indicia. Preferably I use as indicia horizontal lines spaced a unit distance apart and place the stones in such fashion that the indicia show between them. In this fashion while the joints may have the desirable irregularity which lends so much to the visual effect, the general line of the joints is preserved.

It is not to be understood, because of the use of lines spaced a unit distance apart, that there will be corresponding joint lines at all of the index lines. On the contrary, the stones are preferably made of different widths corresponding to the unit distance or multiples thereof, less a desired amount for joint clearance. Thus, the narrowest stones might lie between two adjacent index lines, leaving such lines showing, one above and one below. The next size may be two units wide less clearance, thus covering up one line but showing, say, the first and third lines on the base wall. The next size in the series may be three units wide, less clearance, thus exposing when positioned on the wall but before the joints are filled with mortar, the first and fourth lines and covering the second and third lines. By thus using a series of stones of nominal widths corresponding to the unit distance or multiples thereof, highly desirable effects may be obtained without in any way complicating the problem of placing the veneering and making it architecturally correct.

The indicia may be formed on the wall in any one of a variety of ways. They might be marked directly thereon or on plaster or some other material. Stencils may be used to form the indicia on the base wall or an overlying coat of plaster or other material. I prefer, however, to use previously marked sheet material, such, for example, as building paper. This paper can be readily placed over and secured to the base wall and will aid in insulating it and reducing air infiltration. The paper may have parallel lines on its surface and the adjacent strips or sheets of the paper will be secured to the wall in such fashion as to match up the lines. Thus, when the base wall has been entirely covered, there will be presented over the entire surface to be veneered a set of index lines which guide the workmen in placing the stones. Preferably the stones will be placed in direct contact with the paper, as this most definitely assures accuracy in their placing. The base wall is relied upon for vertical and lateral truth, and while, if desired, shims or the like may be placed behind some of the stones, this will ordinarily prove unnecessary. Generally speaking, it will be desirable to erect a considerable area of the veneering without using any mortar, the stones being mechanically held in position and the mortar being applied afterward for the purpose of filling the joints. This is a faster operation than setting the individual stones in mortar and relying on it to carry the weight of the stones.

I employ spacers which lie in the joints and which are ultimately embedded in the mortar. These spacers are preferably made adjustable as to height so that irregularities in the stones may be compensated for. I may use screw jacks,

wedges, or other types of adjustable spacers. Since the stones will usually be relatively thin, I also prefer to employ mechanical means for tying them into the base wall. Since one of the great advantages of my invention lies in the freedom given to the workmen to select such stones as they deem best for any particular portion of the wall, while at the same time holding them to definite limits in the placing of the stones, it is desirable that the means for holding the stones against the base wall be applicable to any stone as it is placed. I preferably form recesses in situ in the edges of adjacent stones, engage these recesses by a holding member, and secure it to the base wall. The recesses may be formed by a portable cutting or grinding device handled by one of the workmen.

As stated, the preferred form of my invention employs parallel index lines, it being left to the workmen to select stones of different unit widths and position them as determined by the index lines. It would, of course, be possible to otherwise outline the bond on the surface of the paper. For example, the configuration of each individual stone might be preliminarily marked. Ordinarily, however, this plan suffers from the defect that the design inevitably will repeat itself at rather close intervals, and the freedom and variety of the bond will be minimized. If it is desired to mark out the configuration of each stone the sheets of paper can still be matched up on the base wall, although difficulty may be encountered at corners and adjacent wall openings.

In the accompanying drawings illustrating a present preferred embodiment of the invention,

Figure 1 is a perspective view illustrating a base wall with my improved veneering system applied thereto;

Figure 2 is a view to enlarged scale showing some of the stones in place;

Figure 3 is a section taken on the line III—III of Figure 2;

Figure 4 is a vertical section through one of the adjustable spacers employed;

Figure 5 is a perspective view of a modified spacer;

Figure 6 is a view corresponding to Figure 3 but showing the use of the spacer of Figure 5; and

Figure 7 is a more or less diagrammatic view illustrating a mechanism for forming recesses in adjacent stones to accommodate a hold-down member.

Figures 1 to 3 inclusive illustrate a building structure comprising a base wall 2 having a stone veneer thereover. The base wall 2 is first covered with a layer of paper 3 which may be similar to ordinary building paper but which has index lines 4 printed or otherwise formed on the surface. This paper may be tacked on to the base wall, if the same be of wood, or otherwise secured if it be of tile or other construction. It will be noted from Figure 1 that the paper 3 is in strip form and it may, of course, be made up in rolls the same as ordinary building paper. When the strips are placed the index lines 4 are matched up, care being taken to insure that the lines are all horizontal. Figure 1 illustrates a wall opening, the window frame 5 being shown as projecting outwardly from the base wall a distance such that the outer face of the veneering will be substantially flush with the outer face of the frame. Because of the fact that it is customary to have the frames project beyond the base wall, it is frequently very difficult for a stone mason to aline the courses on opposite sides of the wall opening so that the finished wall will present the right appearance and the courses will match up above the top of the opening. With the use of the lined paper which I employ, this difficulty is minimized because if the strips of paper are accurately matched up above the wall opening the paper extending downwardly on either side thereof will have the lines properly positioned to insure that the joints over the entire wall area will be correctly placed.

The stones employed for the veneering will be of different widths corresponding to the unit distance between the index lines 4, or a multiple thereof, less a suitable amount to provide the desired width of joint. In Figure 1 I have illustrated a stone S_1 which is one unit wide, a stone S_2 which is two units wide, and a stone S_3 which is three units wide. The stones may be supplied from the quarry in random lengths and broken to such lengths as conditions may require or may seem desirable to the workman. In any case, however, it is merely necessary to so place the stones against the paper that one line shows above the stone and one shows below it. This is best illustrated in the elevation of Figure 2. As there shown the veneering is started from a suitable footing 6 and built up over the building paper 3 having the index lines 4 thereon. The stones are supported and spaced apart by adjustable spacers indicated generally by the reference character 7. Each spacer comprises a body portion 8 having an extension 9 thereon which locates the spacer a proper distance from the base wall 2. The body portion 8 is internally threaded to receive a screw 10 which may be threaded in or out of the body by hand so as to give the desired vertical height to the spacer. Each spacer 7 is also provided with an opening 11 to receive a nail 12 (see Figure 4). After the spacers have been placed nails are driven through the holes 11 to secure them to the base wall. As shown in Figure 4 the holes 11 are so located that the nails 12 engage a thread or threads of the screw 10 and, distorting them, hold the screws in the positions to which they have been adjusted.

Figure 2 shows some of the stones in place, and it will be noted that the index lines 4 lie substantially in the middle of the horizontal joints, the spacers 7 having been so adjusted as to properly place the stones.

Figures 5 and 6 illustrate a modified form of spacer consisting of a wedge 13 and a coacting wedge 14. The wedge 13 is secured to a strip 15 which properly spaces the wedges from the base wall (see Figure 6). A sheet of thin soft metal 16 is placed between the wedge 13 and the strip 15, and a nail hole 17 is provided in the wedge 14. In using this form of spacer the wedge 13 will be placed on top of a stone, and the wedge 14 will be slipped along it until the desired spacing is obtained. A nail 18 will then be inserted in the hole 17 and driven into the base wall. In driving the nail it perforates the sheet 16, thus holding the wedges against relative movement and securing them both to the base wall. The strip 15 is shown in this particular embodiment of the invention as being made of wood. The wooden strip is narrower than the spacer so as to insure that the spacer rather than the strip will determine the spacing between the stones. It is, however, sufficiently wide to back up the thin metal sheet 16 and permit of properly driving the nail through it. The nail also extends through the wood as shown in Figure 6.

It will be noted that the spacers are positioned substantially in the median vertical plane of the veneer. They are thus best positioned to sup-

port the weight, and by reason of frictional engagement they will aid greatly in holding the veneering against the wall. I prefer, however, to use additional holding means and to this end form recesses 19 in the adjacent faces of the stones. These recesses are preferably formed in situ and this may be accomplished by the use of a portable tool such as illustrated in Figure 7. This tool comprises a motor 20 having a bearing block 21 secured thereto and carrying a stem 22 and foot 23 which may be inserted in the joint space between adjacent stones. The bearing block 21 carries two spindles 24 connected by gearing 25 and driven by the motor 20. The spindles 24 carry small grinding wheels 26. When the foot 23 is inserted into a joint the device is held so that both of the grinding wheels 26, which are of smaller diameter than the width of the joint space, lie in such joint space. When the foot 23 is pressed against the base wall 2 or the paper covering it, the grinding wheels 26 are thereby spaced a desired distance from the base wall, and if the device is pressed inwardly so as to hold the foot 23 in position and at the same time rotated about the axis of the stem 22, the wheels 26 cut out recesses 19 in the form of segments of circles. A hold-down member, such as a washer 27, may be fitted into these cooperating recesses, and a screw 28 placed therethrough and screwed into the base wall. If desired, a collar 29 may be used between the hold-down member 27 and the base wall. These hold-down members securely fasten the veneers to the base wall and lie entirely within the joints.

After a desired area of veneering has been placed, the joints are filled with mortar, as indicated at 30 in Figure 2. This mortar is preferably tamped well into the joints so as to completely embed the spacers and the hold-down devices. The mortar may be relatively thin despite the width of the joints because it does not need to support any of the weight of the stones while it is setting.

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. In the method of veneering a wall structure with stones of irregular configuration, the steps consisting in erecting stones against a base wall with spacers vertically therebetween to provide a self-supporting structure, thereafter mechanically binding the stones to the base wall, and filling the joints with mortar to embed the spacing means.

2. In the method of veneering a wall structure with stones of irregular configuration, the steps consisting in erecting stones against a base wall, placing adjustable spacers therebetween and so adjusting the spacers as to properly aline the joints.

3. In the method of veneering a wall structure with stones of irregular configuration, the steps consisting in erecting stones against a base wall, placing extensible spacers therebetween and so adjusting the spacers as to properly aline the joints and locking the spacers in adjusted position.

4. In the method of veneering a wall structure with stones of irregular configuration, the steps consisting in associating indicia with a base wall to indicate the position of joints between the stones, placing the stones in spaced relation in locations determined by such indicia, forming recesses in adjacent edges of the stones in situ, and engaging the recesses in such manner as to secure the stones to the base wall.

5. In the method of veneering a wall structure with stones of irregular configuration, the steps consisting in erecting stones over a base wall, forming recesses in situ in the edges of the stones, and engaging the recesses in such manner as to secure the stones to the base wall.

6. A wall structure comprising a base wall, a veneer therefor made up of stones of irregular configuration, some at least of the stones having isolated opposed recesses in adjacent edges, and means lying in and engaging the recesses and effective for securing the stones to the base wall.

7. A method of veneering a wall structure, comprising building up alternately along a base wall veneering units and spacers to space the same apart, and after adjacent veneering units have been built up treating the same to receive fastening means, and then applying fastening means and fastening the same to the base wall.

8. A masonry structure comprising superimposed building units and adjustable spacing means therebetween comprising cooperating members so constructed and arranged as to transmit the weight of an upper unit to a lower unit, the members being extensible with respect to one another so as to make the spacing means adjustable as to height.

9. A method of making a masonry structure, comprising emplacing a building unit against a base wall, positioning adjustable spacing means in contact with said unit, adjusting said spacing means and locking the same in adjusted position and fastening the same to the base wall, and emplacing another building unit against the base wall and in contact with said spacing means so that the spacing between said building units is determined by said spacing means.

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