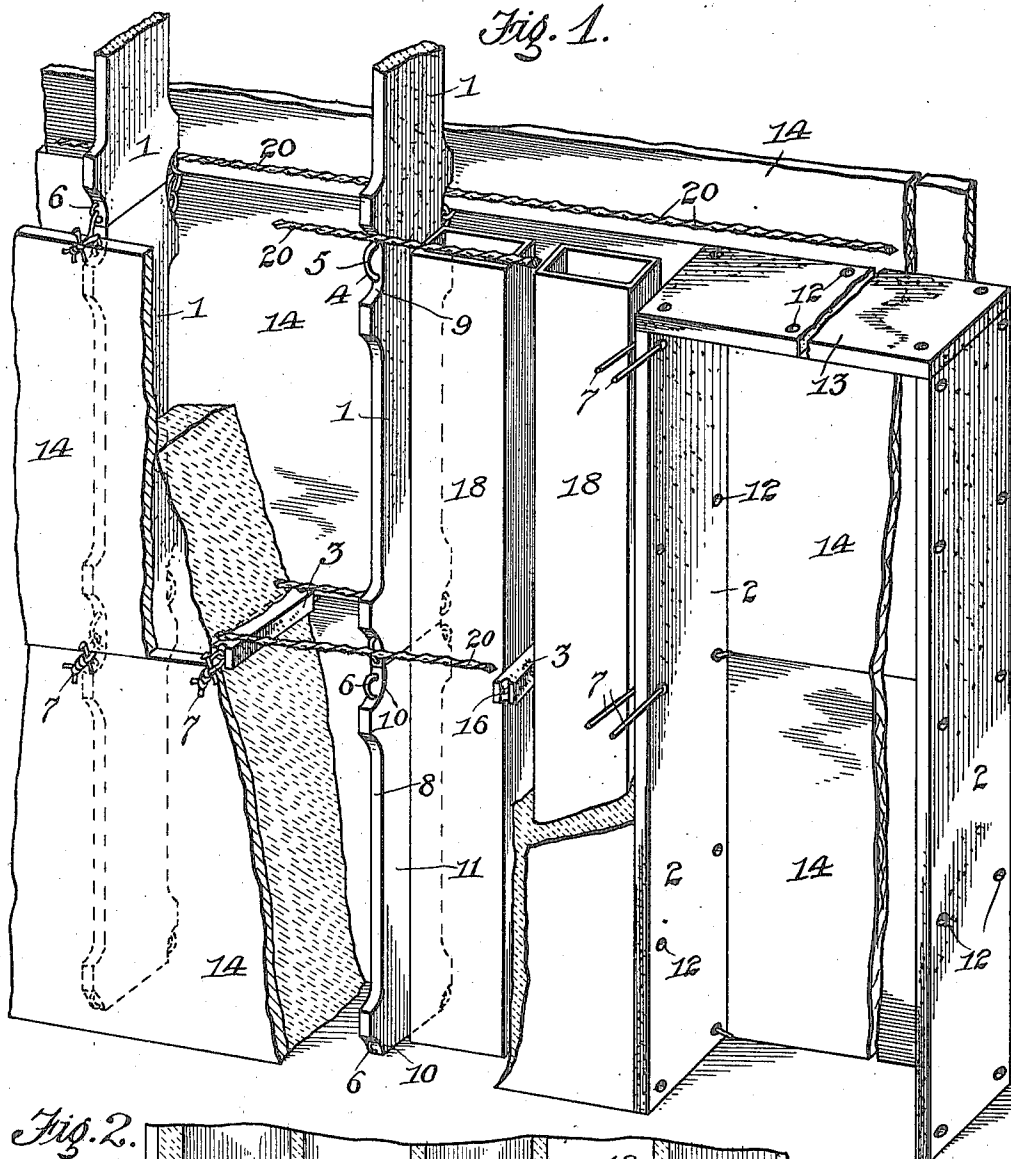
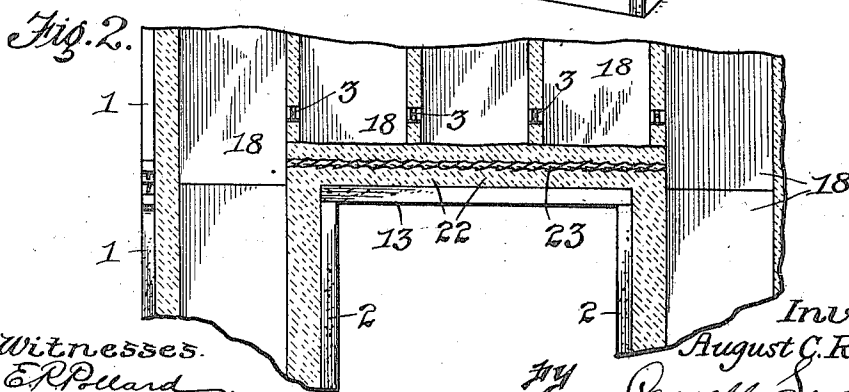


1,233,508.

Patented July 17, 1917.

2 SHEETS—SHEET 1.



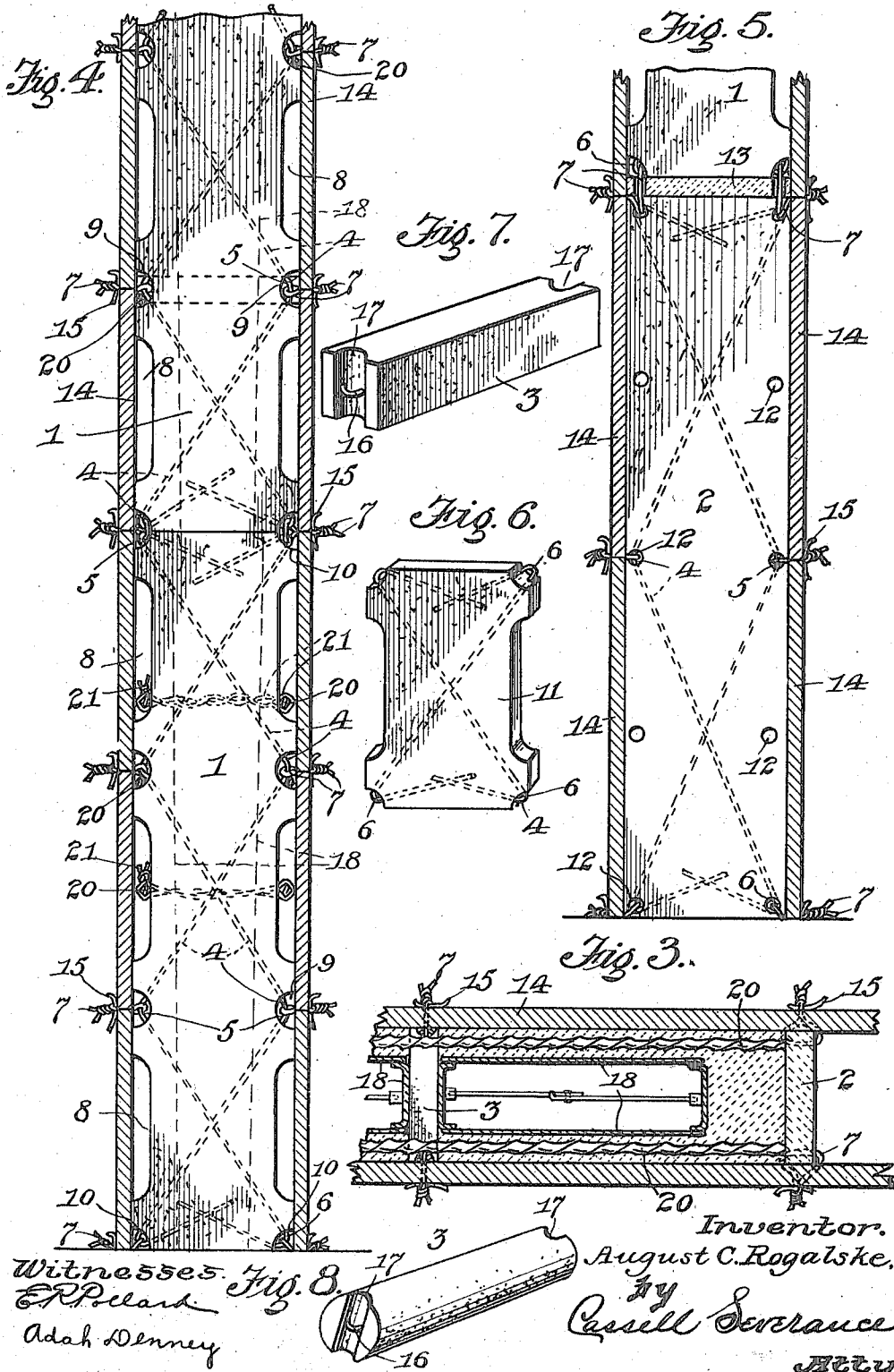
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CONCRETE CONSTRUCTION.
APPLICATION FILED MAY 7, 1913.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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CONCRETE CONSTRUCTION.

1,233,508.

Specification of Letters Patent.

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Application filed May 7, 1913. Serial No. 766,077.

To all whom it may concern:

Be it known that I, AUGUST C. ROGALSKE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Concrete Constructions, of which the following is a specification.

This invention relates to improvements in concrete constructions and especially such as are adapted for the production of building structures, walls or the like.

It is an object of the invention to construct a self supporting wall or like structure having supports or studs adapted to become a part thereof.

It is also an object of the invention to form a building structure having concrete uprights or studs adapted to be incorporated in the said structure as an integral part thereof.

It is a still further object of the invention to provide a wall structure having concrete supporting and spacing slabs or studs adapted to become integral parts thereof.

It is also an object of the invention to form a building or wall structure comprising spacing slabs having reinforcing means embedded therein and provided with means for holding side or shaping boards in position, and a cement filling run between said slabs and boards so as to form a reinforced wall including the said slabs.

With these and other objects in view the invention consists in certain other novel constructions, combinations and arrangements of parts as will be hereinafter described and claimed.

In the accompanying drawing forming a part of this specification,

Figure 1, is a perspective view of a portion of a wall structure made in accordance with this invention, parts being broken away and shown in section, to show the position of the slabs or studs, spacing pieces, cores and reinforcing bars.

Fig. 2, is a fragmentary sectional view through the portion of a wall structure about the upper end of a door or window opening.

Fig. 3, is a detail horizontal sectional view through a portion of the wall structure and the side boarding for holding the cement in place when it is poured, the section being taken adjacent to a wall opening.

Fig. 4, is a vertical sectional view through

a portion of a wall showing the cement slabs employed at intermediate parts thereof and showing the boards fastened to the edges thereof, in readiness for receiving the cement concrete filling of the wall.

Fig. 5, is a similar vertical sectional view, but taken through one of the wall openings, as for instance a door opening, and showing the style of spacing slab or stud employed at such openings.

Fig. 6, is a detail perspective view of a short intermediate spacing slab.

Fig. 7, is a detail perspective view of an intermediate spacing piece or bar employed in the wall structure.

Fig. 8, is a similar perspective view of a cylindrical spacing piece or bar.

The subject matter of the present invention is designed to afford a method and means for constructing a building or wall structure of any desired type which shall have supporting studs incorporated therein in such a manner that side boarding or shaping means may be attached for facilitating the formation of the wall of cement concrete, the said concrete being flowed into position between the boarding and about the slabs or studs, so that the said slabs or studs, and other spacing means become integral parts of the structure when the concrete sets and becomes hard. The structure is such that the shaping boards do not have to be cut or fastened together preparatory to the formation of the wall structure and the spacing slabs and other pieces can be made to hold the boards in place before the cement concrete is put in place.

In the accompanying drawing the preferred arrangement and use of the spacing pieces, slabs and other parts has been illustrated, though it will be understood that said parts may be arranged in various ways and so as to be adapted for the formation of various kinds of walls and building structures, all within the spirit and scope of the present invention. The details and features of the invention will now be more specifically described, reference being had to said drawing.

In the drawing 1 indicates an intermediate slab or stud, 2 a slab or stud such as is used at a door, window or other opening of the wall and 3 indicates an intermediate spacing bar or piece to assist in holding the boards in position which are employed in the formation of the wall. The slabs 1 are

preferably made of cement concrete and usually have reinforcing rods or pieces 4 incorporated therein. The said rods 4 may be arranged in any desired manner within the concrete of the slabs but are preferably so arranged as to afford projecting loops at 5 and 6 for engaging boards securing wires 7. The edges of the slabs are formed with recesses at 8, 9 and 10 to permit the concrete in its plastic condition to flow about the slabs, inside the forming boards. The said slabs may be made of different lengths but are usually made of the height to which sections of the wall are carried from time to time during the course of its formation. Shorter slabs as 11 are also preferably provided for building shorter heights of the wall and also for permitting of the setting of the slabs so that the joints of superposed slabs will not come opposite each other. Such an arrangement of the intermediate slabs 1 and 11 is illustrated in Fig. 1. As shown in said Fig. 1 a short slab 11 is placed at the bottom of the wall in one vertical course of slabs and a long slab 1 is placed at the bottom in the next vertical course of slabs, thus permitting of the breaking of joints in adjacent slab courses.

At the places in the wall structure where door, window or other openings are to be formed, the solid slabs 2 are employed, the said slabs 2 being constructed like the slabs 1 with the exception that they do not have the cut-a-way portions at the edges and are only provided with small holes 12 to receive the board attaching wires 7. At such an opening, as for instance the door opening shown in Figs. 1 and 2, two vertical slabs 2 are used as the jambs and a transverse slab 13 of the same structure is employed at the top as a lintel. These solid slabs fill completely the spaces between the boarding so as to prevent the plastic concrete from flowing by them and into the space which is to form the door opening.

In forming the wall, the intermediate slabs 1 are set up at suitable intervals, and ordinary boards as 14 are applied along the side edges thereof. The securing wires 7 are looped through the various projecting portions of the reinforcing wires 4 and are laid between the boards, after which nails, rods or other pieces as 15 are applied across the meeting edges of the boards and the wires 7 are twisted around them so as to draw the boards tightly against the slabs, as clearly shown in the drawing. At the door openings the boards need not be cut but are merely permitted to extend across said openings and the concrete will be prevented from entering said openings by the solid slabs 2 and 13. The securing wires 7 are passed through the openings 12 to fasten the boards 14 and hold them tightly against the edges of the slabs 2 and 13.

At intermediate points between the principal slabs 1 and 2, intermediate spacing pieces or bars 3 are interposed for further securing the boards and preventing them from bulging when the weight of the cement bears against them. The spacing pieces 3 may be made square or cylindrical in contour as shown in Figs. 7 and 8 and are preferably constructed of cement concrete having reinforcing wires or rods embedded therein, said reinforcement being looped to provide wire engaging projections 16. The ends of the spacing pieces 3 are also usually recessed at 17 to accommodate the looped projection 16 as shown in Figs. 7 and 8. As shown in Figs. 1 and 3 the spacing pieces 3 are generally located opposite the cracks between boards 14 at places about half way between the adjacent vertical slabs and the securing wires 7 are placed through the loops 16 extending between boards and engaging nails or other securing devices as in other instances.

The wall may be constructed with solid formation or may be made hollow as preferred and in the latter case any suitable cores 18 may be made and set in position between the spacing slabs or studs. The cores 18 may be of any desired construction and may be collapsible or not as preferred. As shown in the drawings the core boxes are generally of such a width that a thickness of cement concrete will be interposed between them and the boards 14. Where two or more core boxes are placed between slabs in the wall, they are usually spaced apart by one or more of the intermediate spacing pieces 3. The core boxes are preferably of such a formation, being made either slightly tapering as indicated in dotted lines in Fig. 4 or collapsible, as shown in Fig. 3, that they may be drawn lengthwise from the cement after it has partially set.

The construction of the supporting slabs is such also that reinforcing means extending in horizontal directions may be embedded in the concrete of the wall. Thus bars of twisted or other metal as at 20 may be laid in the recesses formed in the edges of the slabs 1. The said bars are usually placed to one side of the securing loops 5 and 6 when applied in the recesses occupied by said loops, as clearly shown in Figs. 1 and 4 of the drawing. The bars may also be applied in the elongated recesses 8 formed in the edges of the said slabs 1, in which event they are generally tied transversely of the wall by tie wires 21, as indicated in Fig. 4.

In constructing a wall or building structure in accordance with present invention, slabs 1 of a desired length to form the first portion of the wall, are set up at suitable intervals and boards 14 are secured upon the opposite edges thereof by means of the

wires 7. At the openings for the doors and windows, the slabs 2 and 13 are put in place, the boarding being permitted to extend across them and being secured thereto by the fastening wires 7 and the pieces 15. Reinforcing bars or rods 20 are then put in place resting against the slabs 1 and secured where desired by tie wires 21. If the wall is to be of the hollow type, core boxes 18 are put in place and spacing pieces 3 are also put in position between the cores and at any other points where it is necessary to additionally secure the boards 14. The cement concrete in suitable plastic condition is then run into the space between the boards and allowed to fill in around the slabs, cores, reinforcing rods and spacing pieces. The solid slabs 2 and 13 about the door or window openings, of course exclude the concrete from those openings. After one course or portion of the wall has thus been formed, the wall can be carried higher by superposing additional concrete slabs 1 above those already in place and by adding more cores and spacing pieces, boards 14 being also applied and secured by the wires 7. The wall may thus be built to any height and it is found in practice that the concrete slabs and spacing means so strengthen and support the structure that additional weight may be placed above each section or portion constructed without waiting for the cement to thoroughly harden. The wall is also so self-supporting by reason of the strengthening and supporting slabs or studding that the wires 7 may be cut and the boards 14 removed before the wall is entirely hard without endangering its formation. The boards may thus be used over and over and as already intimated they do not need cutting or especial shaping for the construction of the wall. Above the door, or window openings, a course of cement concrete as indicated at 22 is placed usually having reinforcing bars or rods 23 embedded therein, before the structure above the same is put in place. Core boxes may then be put in position upon the said concrete course 22 and the spacing or other slabs set up for continuing the wall structure above such openings, as clearly shown in Fig. 2 of the drawing.

It will be observed that in a concrete wall of this construction, the slabs strengthen the same in practically the same way that the usual wood studs in a frame building strengthen and support a frame structure. The concrete slabs and spacers in the wall structure of the present invention become integral portions of the wall and always act as reinforced stiffening and strengthening means therein.

Such a structure is well adapted for the production of small houses or inclosures as well as for large buildings or structures of

any kind. The cement slabs are formed of a suitable concrete mixture and having the reinforcing rods or bars embedded therein, the cement being allowed to harden and thoroughly set before the wall structure is commenced. It will be readily understood that the structure may be readily adapted to any building operations and that the method is especially economical in the use of lumber, since ordinary boards may be employed and since they do not have to be cut up or especially shaped and can therefore be used over and over again. It will be understood also that cores of any desired construction may be employed in producing a hollow wall structure, without departing from the spirit of the invention.

What is claimed is:

1. A wall structure made up of studding slabs built up end to end approximately the height of the wall, said slabs being embedded in plastic concrete, the slabs rendering it self supporting until the plastic cement has hardened and having reduced body portions adapted to be surrounded by concrete and having forming board spacing projections at intervals.

2. A wall structure comprising vertical studding slabs having narrow portions and wider forming board spacing portions, said slabs being set end to end to form continuous wall studs, means for fastening the adjacent ends of the studding slabs to hold them in position and a concrete body portion arranged to include the wall studs and allowed to harden thereon, whereby the whole structure becomes a monolithic structure, the concrete faces becoming the inner and outer faces of the wall, except where the wider portions of the studs project through to the surfaces.

3. A concrete building structure comprising walls having intermediate spacing slabs with portions narrower than the thickness of the walls, and door and window opening slabs of the width of the wall thickness throughout, means for holding forming boards to the edges of said slabs, and a cement concrete filling for joining the slabs and binding them together in an integral structure, the narrow portions of the intermediate slabs permitting the concrete to flow around them in forming the walls while the door and window slabs prevent the plastic material from passing them at the openings.

4. A wall structure having vertically arranged studding, of a width approximately that of the wall thickness, said slabs having reduced portions for facilitating the embedding of the slabs in the body portion of the wall, fastening means projecting from the said reduced portions so as not to project from the surface of the completed wall, means engaging said fastening means for

fastening adjacent end to end slabs together and a concrete wall body portion arranged in plastic condition to envelop the said slabs and the said fastening means, the whole structure becoming a monolithic wall when the plastic material hardens.

5. A concrete wall structure having supporting slabs embedded therein, said slabs being provided with recessed edge portions, whereby the concrete of the structure may surround the said slabs, and means carried by the slabs for holding forming and centering boards in place until the wall is formed.

6. A cement concrete wall structure having supporting cement studs embedded therein, the said studs having reinforcing means projecting at its edges to afford securing loops, and fastening wires adapted to engage said loops and to hold forming boards upon said studs in shaping the concrete wall.

7. A concrete wall structure having rein-

forced concrete slabs embedded therein and provided with securing loops, intermediate spacing bars having securing loops at their ends, said loops being adapted to engage fastening means for removably holding shaping boards in position while the concrete wall is being formed, and cores adapted to be placed between said slabs to produce a hollow wall structure.

8. A concrete wall structure comprising intermediate strengthening slabs and opening edge slabs, reinforcing bars carried by said intermediate slabs, intermediate spacing bars and cores, all adapted to be embedded in the concrete of the wall structure while in plastic condition.

In testimony whereof, I have hereunto set my hand, in presence of two witnesses.

AUGUST C. ROGALSKE.

Witnesses:

DANIEL P. KENDRICK,
CASSELL SEVERANCE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."