

Jan. 25, 1944.

G. R. DODSON

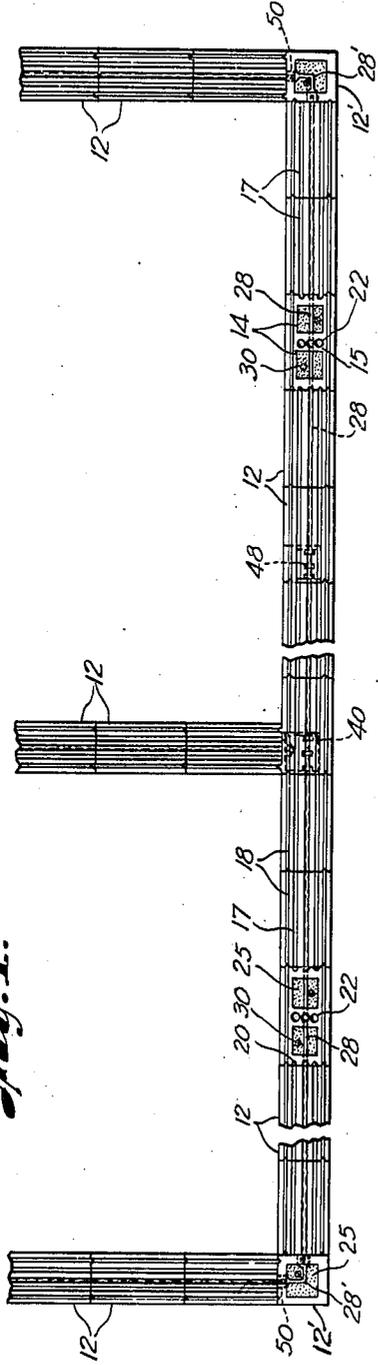
2,340,263

WALL CONSTRUCTION

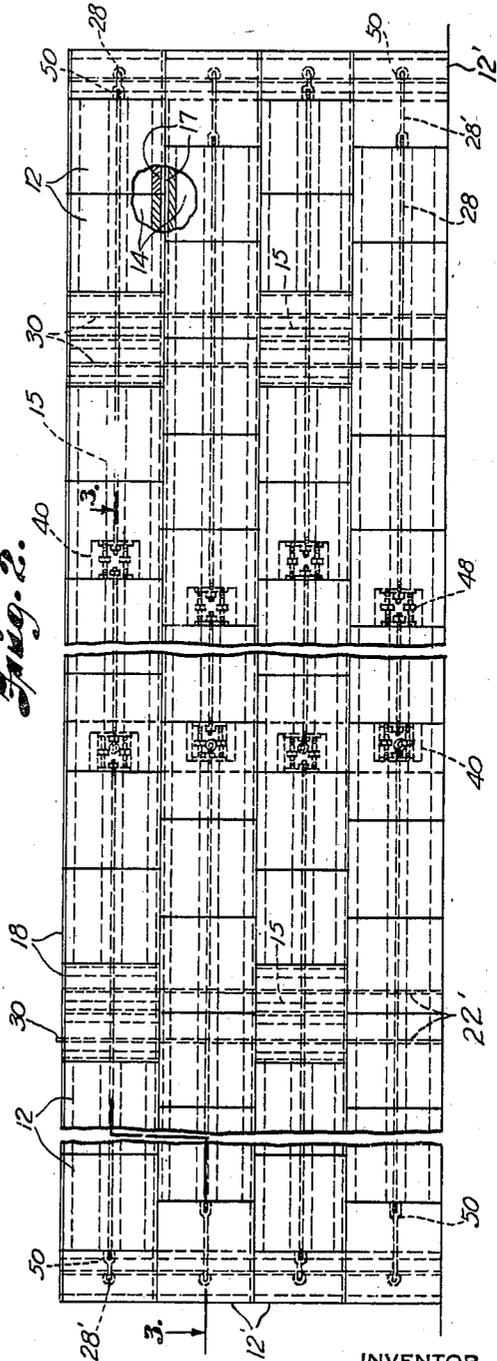
Filed Jan. 18, 1941

3 Sheets-Sheet 1

*Fig. 1.*



*Fig. 2.*



INVENTOR  
G. R. Dodson,  
BY *Chas. W. Guard,*  
ATTORNEY



Jan. 25, 1944.

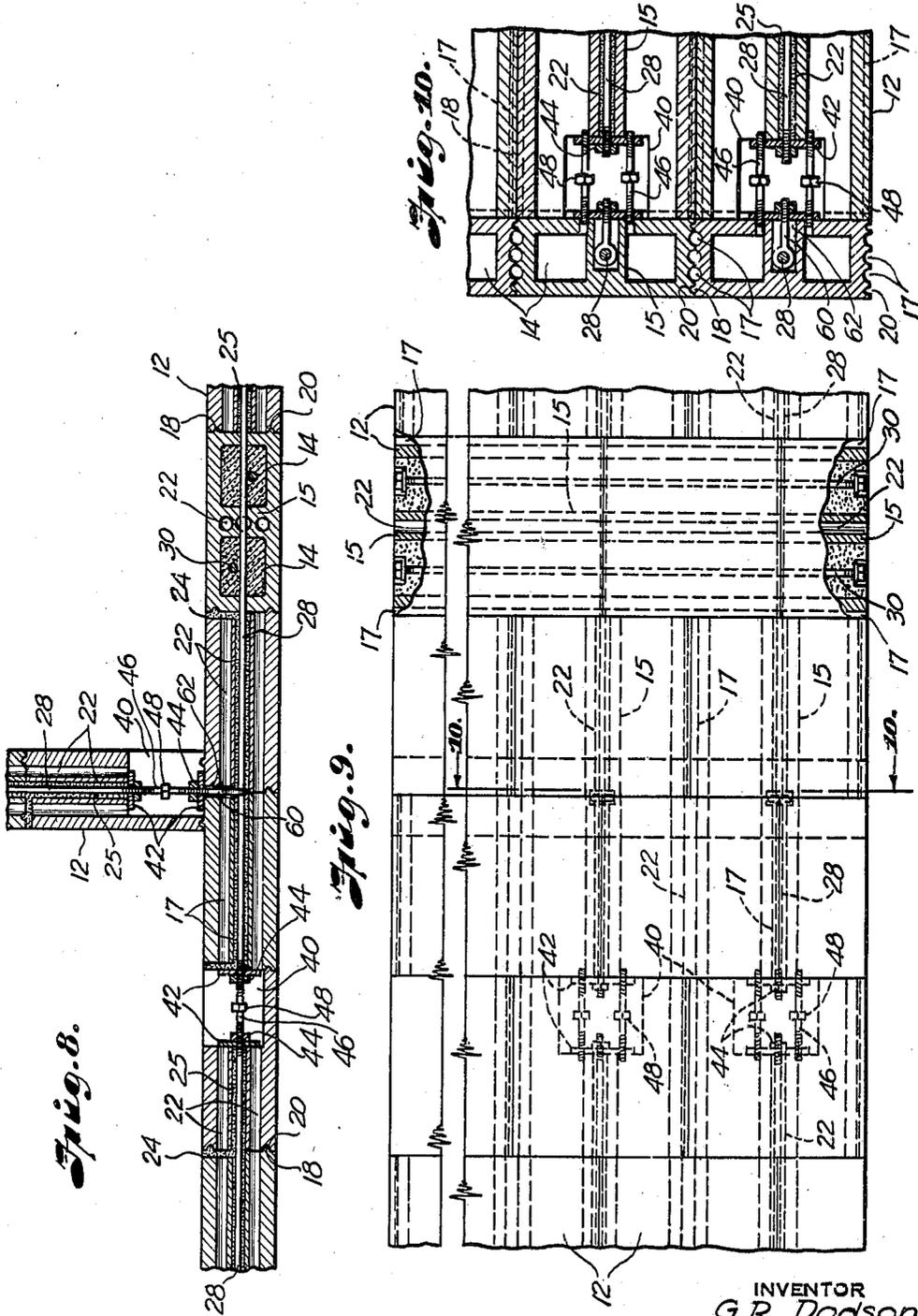
G. R. DODSON

2,340,263

WALL CONSTRUCTION

Filed Jan. 18, 1941

3 Sheets-Sheet 3



INVENTOR  
G. R. Dodson,  
BY *Charles Girard,*  
ATTORNEY

# UNITED STATES PATENT OFFICE

2,340,263

## WALL CONSTRUCTION

Glenn R. Dodson, Wichita, Kans., assignor of  
one-half to Leon A. Dodson, Wichita, Kans.

Application January 18, 1941, Serial No. 374,934

5 Claims. (Cl. 72—30)

The present invention relates to building construction and aims to provide various efficient improvements, such as the provision of a wall structure with pre-cast units designed to be laid in mortar but having the added advantageous feature of monolithic concrete strength due to the use of steel reinforcing rods (either horizontal, or vertical or both) placed inside and through the wall, and subjected to tension in the process of construction of the wall.

Another feature of the invention is the provision of a wall construction of the character indicated with appropriate spaces whereby so-called grouting may be forced in and around the previously tensioned reinforcing rods, thus permanently embedding and fixing the rods in solid concrete or grouting material, to the end that the differences in expansion or contraction of the steel and concrete materials may be compensated for, thus eliminating to a very great extent the cracking tendencies in the wall itself.

One special feature of the means for applying tension to the reinforcing rods is the provision for tightening the rods and also counteracting the separating effect of such tightening action upon adjoining wall sections, which are thereby drawn toward each other and held snugly together for obtaining a solid homogeneous wall structure and in which each reinforcing rod, throughout its length, will carry only its own individual load.

In the same relation it is a further object of the invention to permanently embed and anchor vertical reinforcing rods in block units assembled in such a relation as to provide continuous spaces for accommodating both the rods and cement material, whereby a highly efficient and strong, durable column or pilaster structure is produced.

Additional objects of the invention are to provide improved corner structures for walls of the type indicated, including joints between main and intersecting or partition walls, in which precast masonry units provide the elements for such corner construction, together with the improved reinforcing and tying features incorporated therein.

It is also sought to provide improved elements of wall construction adapted to be made up of precast units of various different sizes or dimensions, but with provision for accommodating the improved features as to reinforcing rods, etc., according to the conditions or requirements of varying wall designs for which such units of dif-

ferent sizes or thickness are adapted to be assembled.

With the foregoing general objects in view, as well as various minor objects as will appear in the course of the detail specification, the invention will now be described by reference to the accompanying drawings illustrating several suitable forms of embodiment of the improved features of construction constituting my invention, after which the various features and combinations thereof which are deemed to be novel and patentable will be particularly set forth and claimed.

In the drawings—

Figure 1 is a plan view illustrating a building wall construction embodying certain features of the present invention (portions of the wall being broken away);

Figure 2 is a front elevation of the same;

Figure 3 is a horizontal sectional view, illustrating a section taken on the line 3—3 of Figure 2;

Figure 4 is a sectional view, representing a section taken on the line 4—4 of Figure 3;

Figure 5 is a sectional view, representing a section taken on the line 5—5 of Figure 4;

Figure 6 is a perspective view of one of the building block units;

Figure 7 is a sectional view, representing a section taken on the section line 7—7 of Figure 3;

Figure 8 is a horizontal sectional view illustrating a modified method of assembly of the block units for producing an effectively reinforced but dry wall type of construction;

Figure 9 is a side elevation of the same; and

Figure 10 is a vertical sectional view, representing a section taken on the section line 10—10 of Figure 9.

Referring now to the drawings in detail, and more particularly to Figures 1 to 7, the wall construction is therein illustrated as made up of a plurality of precast block units 12 having for the most part a substantially uniform type of construction, such as shown in Figure 6, and also certain somewhat modified types of units as hereinafter described.

These block units 12 are formed with interior spaces or chambers 14 separated by an intervening partition 15, and also with top and bottom grooves or channels 17 for registering with corresponding channels or passages of adjoining units (see Figure 10). Furthermore the opposite ends as well as tops and bottoms of these block units are formed with ribs 18 and grooves 20 which are likewise adapted for matching corre-

sponding structure of adjoining blocks when the same are assembled in wall formation. Moreover the partitions or intermediate portions 15 of the block units are formed with sets of longitudinal passages 22 adapted to be brought into register as the blocks are assembled, to provide for the use of steel reinforcing rods as hereinafter explained.

In the assembly of the block units 12 in successive courses to construct a wall as illustrated in Figures 1 to 3, said units are of course brought into overlapping relation by the staggered arrangement shown in Figure 2; and the matching of the ribs and channels results in an interlocking arrangement, due to the interengagement of the ribs 18 and the channels 20, as represented in Figures 1, 2 and 3.

The passages 17 provide spaces for the use of mortar in the laying of a mortar wall, in which case the block units are alined in the consecutive courses, as represented in Figures 1 to 3; whereas the passages 22 are provided for the use of horizontal steel reinforcing rods 28, since said passages 22 are also brought into register by the laying of the consecutive courses. (The passages 17 may, however, also function as spaces for reinforcing rods in so-called dry wall construction—as later explained in connection with Figures 8 to 10.)

Moreover, use may be made also of vertical reinforcing rods 30 at suitable intervals by upending certain of the blocks 12 and assembling them at right angles to the adjoining blocks, thereby bringing the spaces 14 of alternately staggered blocks into continuous vertical alinement for accommodating said rods 30, after which the alined spaces 14 may be filled with concrete material 25 and thus form a vertically reinforced column construction as illustrated in Figure 2. In the case of these upended block units, additional passages 22' are provided at right angles to its other passages 22 and for registering with the passages of adjoining blocks and thereby forming continuous horizontal passages for accommodating said horizontal reinforcing rods 28 as shown.

At appropriate intervals spaces 40 are provided in certain of the block units to provide space for the connections and operations necessary for securing together the sections of horizontal steel reinforcing rods 28 as illustrated in Figures 3, 4 and 7. Adjoining ends of the rod sections are projected into one such space 40 and through vertical plates 42, and are fitted with nuts 44 for securing the rods 28 under tension, by clamping engagement with the plates 42. These rod sections may be subjected to suitable tension by any appropriate means—as simply by the screwing on of the nuts 44. Such tension obviously tends to spread and separate the block structure at these joints or connections, and accordingly additional connections are provided between each pair of the plates 42 for overcoming such spreading or separating tendency. These additional connections comprise a pair of bolts 46, each having right and left threads at its opposite ends for engagement with the plates, and a wrench head 48 for engagement in manipulating the same after the tightening of the nuts 44.

At the outer corners of the wall construction the horizontal reinforcing rods 28' are formed with bends to make the turns, and with terminal sockets 50 for threaded engagement with the straight rods 28—as shown in Figures 1 and 3. The corner units 12' are formed with the necessary passages for said bent rod sections 28', as

well as with registering spaces 14 for concrete material 25, with the result that a continuous vertical column or pilaster construction is produced at each corner in addition to the intermediate reinforced column structure already described.

It may also be stated that these corner units 12' serve to close the otherwise open or exposed ends of the passages 17 and 22 and thereby provide a smooth exterior finish and seal the interior of the block units against weathering.

It will be seen that the block structure and the method of assembly are equally well adapted for the building of partition walls, by simply providing angle plates 43 for the anchoring of the horizontal tie or reinforcing rods 28 of such partition walls, as illustrated in Figures 1, 2, 3 and 7.

In Figures 8 to 10 is illustrated a wall construction showing the adaptability of the same type of units as already described for a dry wall construction, with the blocks arranged in the form of vertically superposed panels or tiers, and in vertically staggered relation instead of a horizontally staggered arrangement, as clearly appears in Figure 9. By the method of assembly illustrated, the openings or passages 22 for the horizontal reinforcing rods 28 of two vertical series or panels are brought into register with the openings or passages 17 of an intervening vertical series, and the ends of the rods are secured together by the same anchoring means as already described and illustrated in Figures 4 and 7.

In Figures 8 to 10 is also shown a modified method of securing or anchoring the walls together at a corner or partition. This method comprises the use of the same type of plates 42 and bolts 46 as already referred; but for cooperating with the horizontal tie rods 28 of one of the walls the reinforcing rods of the other wall are provided with eye bolts 60 for which spaces 62 are provided in the corresponding blocks for enabling the bolts 60 to be connected up with the appropriate plate 42 and also anchored thereto by bolts 44.

It will be at once apparent that the improved block structure provides a means for the assembly of a vertical panel structure as illustrated, in which the same tie or reinforcing elements may be incorporated as in the wall construction shown in Figures 1 to 3.

The anchoring of the reinforcing or tie rods, under tension, is further carried out by the injection of the grout or cement material 25 into the spaces 22 and 17 through by-pass spaces opening upon one of the side faces of the blocks, as indicated at 24, which latter openings 24 may be formed either in the molding or casting of the blocks or later by simply chipping the block material at the necessary points to produce such spaces 24 and thus provide ports for the injection of the cement or grout material into the spaces 22 and 17 from either side of the blocks—as will be readily understood.

The provision of the sets of channels 17 and passages 22 is also designed to enable block units of somewhat different thickness to be assembled together in rod-reinforcing relation, inasmuch as it is obvious that the blocks may be so arranged as to register the channels or openings equidistant from one side of the wall, thereby resulting in bringing the faces of the blocks on that side of the wall into properly flush relation.

It will therefore be apparent that I have devised an improved wall building block and construction having the various advantages set out in the foregoing, including the new and efficient

form of block structure which readily enables the erection of a wall to be carried out with ample provision for not only the proper reinforcement of same but also the formation of vertical reinforced columns or pilasters at the required points. The method of securing and anchoring the reinforcing or tie rods in sections and maintaining the same permanently under tension also has the important advantages already pointed out, as to protecting the wall against cracking tendencies, and assuring that each rod section merely carries its own load, i. e., throughout only its own length and no further. This further enables the reinforcing construction to be peculiarly adapted for carrying such loads over openings or spans and to considerable widths without the requirement of the usual lintel members.

Accordingly, while I have illustrated and described what I now regard as a practical and efficient form of construction and arrangement for carrying out the various desired objects of the invention, it is apparent that the same is susceptible of minor changes or modifications within the scope of the actual invention, and I therefore desire to be understood as expressly reserving the right to make all such changes or modifications as may be fairly construed to fall within the spirit and scope of my invention as defined by the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A wall construction comprising successive courses of blocks in superposed relation, sectional tie or reinforcing rods extending through each course of said blocks, separate and independent means at adjoining ends of the rod sections in each of said courses for anchoring said ends and maintaining the rods under constant tension, and additional means in each course comprising adjustable connections with said first means at the joints between certain blocks for counteracting any separating tendency of the blocks between said rod sections.

2. A wall construction comprising successive courses of blocks in superposed relation, sectional reinforcing rods extending through each course of said blocks, separate and independent means at adjoining ends of the rod sections in each of said courses for anchoring said rods and maintaining the same under constant tension, separate adjusting means in each course coacting with said first means at the joints between cer-

tain blocks for counteracting any spreading tendency of the blocks at the joints between the rod sections, and grout or cement material embedded about said rods within said blocks for cooperating with said anchoring means to maintain the tensioned condition of said rods.

3. A wall construction comprising successive courses of blocks in superposed relation, sectional tie or reinforcing rods extending through each course of said blocks, means including an anchoring plate and nut for each of the adjoining ends of the rod sections and securing the rod sections under tension at corresponding joints between said blocks, and bolts each having right and left screw threads engaging each pair of anchoring plates and thereby operative to counteract the spreading tendency of the blocks at the joints between said rod sections.

4. A wall construction comprising superposed courses of building blocks and including a main or outside wall and a corner or partition wall, sectional reinforcing rods extending through each course of said blocks, an anchoring plate and nut for each of the adjoining ends of the rod sections and securing said rods under tension at corresponding joints between said blocks, and bolts each having right and left screw threads engaging each pair of anchoring plates and operative to counteract any spreading tendency between the blocks at the joints between rod sections, one of said anchoring plates at each joint opposite the corner or partition wall being of angle form with one leg thereof serving as anchoring means for the corresponding rod of the partition wall.

5. A wall construction comprising superposed courses of building blocks and including walls extending at an angle to each other, sectional reinforcing rods extending through each course of said blocks, spaced anchoring plates and nuts for adjoining ends of the rod sections and securing the rods under tension, and bolts each having right and left screw threads connecting each pair of said anchoring plates and operative to counteract any separating tendency of the blocks at the joints between said rod sections, and connections between the rods of the respective walls including an eye-bolt having its eye portion traversed by one of said reinforcing rods.

GLENN R. DODSON.