W. B. DAVIS.

HOLLOW BUILDING BLOCK STRUCTURE.

APPLICATION FILED OCT. 21, 1912.

1,067,804. Patented July 22, 1913.

Fig. 1.

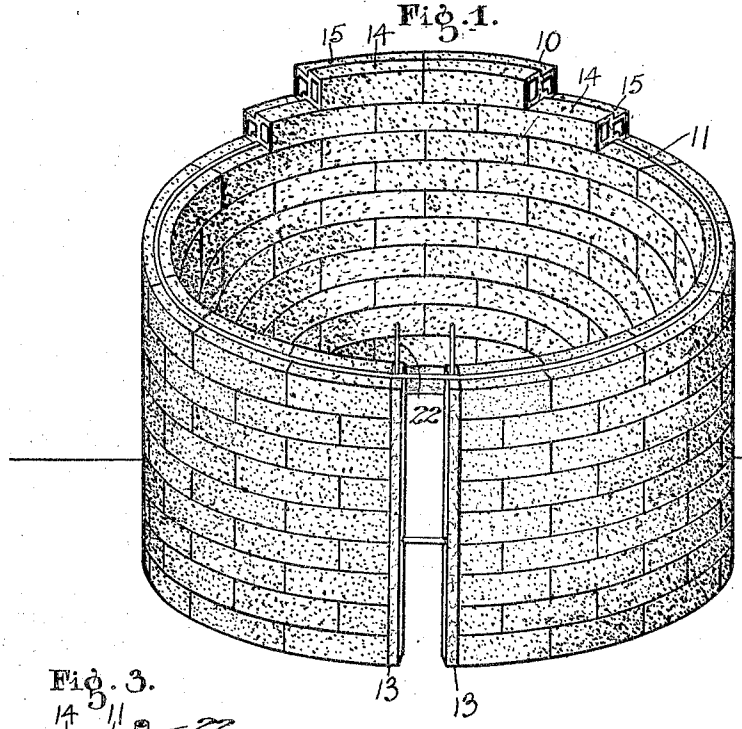


Fig. 3.

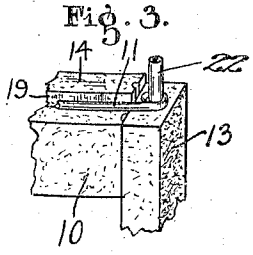
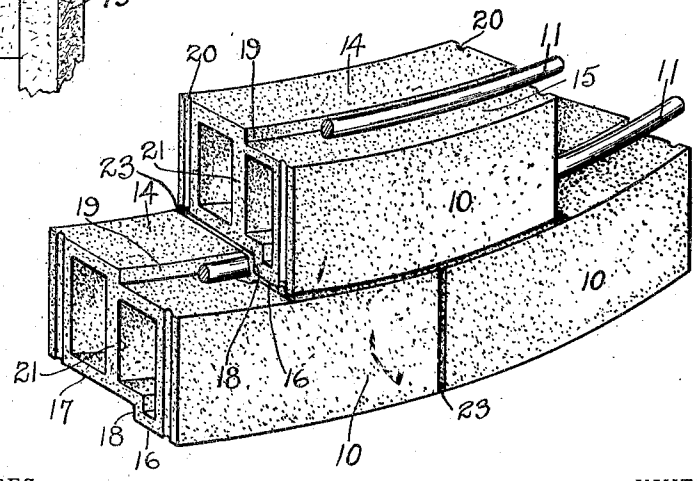


Fig. 2.



WITNESSES:

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HOLLOW-BUILDING-BLOCK STRUCTURE.

1,067,804. Specification of Letters Patent. Patented July 22, 1913.

Application filed October 21, 1912. Serial No. 726,980.

To all whom it may concern:

Be it known that I, WEAVER B. DAVIS, a citizen of the United States, and a resident of the county of Madison and State of Indiana, have invented a certain new and useful Hollow-Building-Block Structure; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

The object of this invention is to provide a strong and durable structure formed of hollow concrete blocks and tie bars lying between the series of blocks and interlocking shoulders thereof for tying the same together. It is preferably adapted for use in construction of silos and like hollow structures where there is an outward thrust or pressure and the structure is made to resist effectually this outward thrust or pressure. To that end the hollow blocks are all alike and are provided with an intermediate vertical longitudinal partition and a shoulder on one side in line with said partition and a shoulder on the other side offset somewhat from the partition so that when the blocks are laid upon each other there is a space between the shoulders of the adjacent blocks to receive a tie bar which surrounds and lies upon the outside of the series of shoulders which are in line with the intermediate partitions in the blocks. This makes it an extremely strong structure although built of hollow blocks and since the blocks are similar in form, they may be used anywhere in the structure.

The nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a perspective view of a silo embodying my invention, a portion thereof being broken away. Fig. 2 is a perspective on a larger scale, showing the relative positions of the blocks and the reinforcing rods. Fig. 3 is a perspective view of a portion of the structure adjacent the door where the circular tie rod does not extend through the door but is secured to the vertical rod through the door casing, parts being partially broken away.

While a silo is shown the invention is not necessarily limited to a silo, although it is of peculiar value in a silo or other circular structure.

The structure is made up of hollow concrete blocks 10 and tie bars 11 arranged as shown. The blocks are curved longitudinally to sufficient extent to suit the curvature of the structure and have an inner wall surface and outer wall surface and an intermediate vertical wall or partition 21. The block has two hollow chambers, one between the inner wall and intermediate partition and the other between the intermediate partition and the outer wall, said chambers opening at both ends of the block. There is an upper surface 14 above the inner chamber or opening and another upper surface 15 above the other chamber or opening, the upper surface 14 being elevated somewhat above the level of the surface 15 so as to leave a shoulder 19 which is in alinement with and constitutes a vertical continuation of the intermediate wall or partition 21. There is a downwardly extending surface 16 at the underside of the outer portion of the block with an inner shoulder 18 spaced somewhat out and away from the intermediate wall or partition 21 so that when the blocks are placed upon each other there will be a place left between the shoulders 18 and 19 of the adjacent blocks for the tie bars 11 which are shown herein as being round. At each end and near the outer and inner surfaces of each block there is a vertical groove 20 for plaster and interlocking points of the adjacent blocks.

In building a structure the blocks are placed upon each other like any other concrete blocks or bricks with plaster 23 uniting the joints. Thus one annular layer of blocks is put in place and then a circular tie rod 11 is placed upon said series of blocks about the shoulders 19. Every fifth tie rod is continuous and extends across the door opening, as shown in Fig. 1. The remaining tie rods are secured to vertical rods 22 which are embedded in the door casings 13. With this construction the tie rods cannot expand and the structure cannot enlarge and while they surround the shoulders 19 of the series of blocks, the structure will resist any outward thrust or stress arising from the contents of the silo or structure. Then plaster is placed upon the upper surface of the layer

of blocks and around the tie bar and the next layer of blocks is superimposed and plaster is placed on the ends of the blocks when they are fit together, and thus the process is continued until the structure is completed. The door of the silo has castings 13 through which the bars 11 project.

From the foregoing description it is obvious that an unusually durable structure can be built in the manner explained and with the blocks formed as set forth. The outward thrust or stress against the inner wall of the silo will press against the inner wall of the block and will be chiefly resisted by the tie bars 11 and since they lie against the shoulders 19 and these shoulders are in alinement with the intermediate partition 21 and the portion of the block lying inside of said shoulders is rectangular so that the strain is transmitted through the inner wall and the upper and lower walls and through the intermediate wall to said shoulder and tie bar, it is seen that such a structure is substantially as durable and strong as if the blocks were solid and it is the object of this invention to make a structure of the kind of hollow blocks which is as substantial as one of solid blocks and yet it is hollow so that the wall will readily dry. When silos are filled with ensilage there is considerable moisture or water in the same and this moisture or water, in blocks of this type, will not be transmitted to or reach the outer half or portion of the blocks so that they remain practically dry and as the ensilage is removed from the silo, the blocks will readily dry because they are hollow. Likewise being hollow, they are more easily built as one man can readily handle them.

I claim as my invention:

1. A circular structure formed of building blocks each of which is longitudinally hollow and is provided on one surface with a solid longitudinal shoulder on the upper and lower sides, one of said shoulders extending upwardly and the other extending downwardly and said shoulders being out of alinement with each other so that when built into a structure there will be a space between said shoulders, and a curved tie bar lying between the two series of said blocks and between the shoulders thereof, substantially as set forth.

2. A circular structure formed of building blocks having two lateral walls and an intermediate vertical partition with hollow chambers between them and with solid longitudinal shoulders on the upper and lower sides, one of said shoulders being substantially in alinement with the intermediate partition and the other shoulder being spaced away from said partition, and a curved tie bar lying between adjacent series of said blocks and between the shoulders thereof, substantially as set forth.

3. A circular structure formed of building blocks having two lateral walls and an intermediate partition with hollow chambers between them, a longitudinal upwardly extending shoulder in the upper surface of said block in alinement with the intermediate partition, a longitudinal downwardly extending shoulder on the lower surface of said block located at one side of said intermediate partition so that when the blocks are built together said shoulders will be opposite each other, and an endless tie bar lying between adjacent series of blocks and between the shoulders thereof, substantially as set forth.

4. A circular structure formed of building blocks each of which is longitudinally hollow and is provided with longitudinal shoulders on the upper and lower sides, and in alinement with each other so that when built into a structure there will be a space between said shoulders, an endless tie bar lying between some series of said blocks and between the shoulders thereof, substantially as set forth, vertical rods embedded in the structure, and other tie bars lying between other series of said blocks with their ends connected with said vertical rods.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

WEAVER B. DAVIS.

Witnesses:
J. H. WELLS,
E. H. MAYO.