

1,208,983.

Patented Dec. 19, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

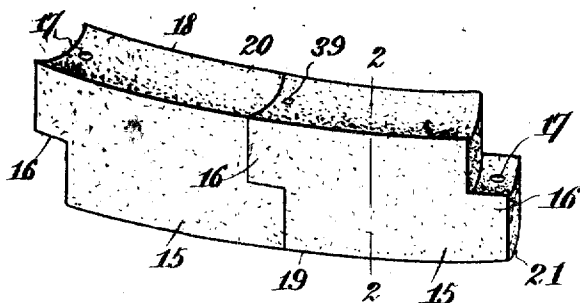


Fig. 2.

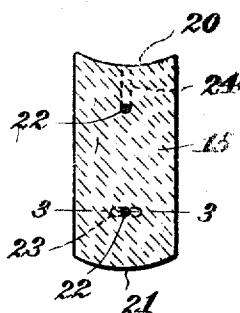


Fig. 3.

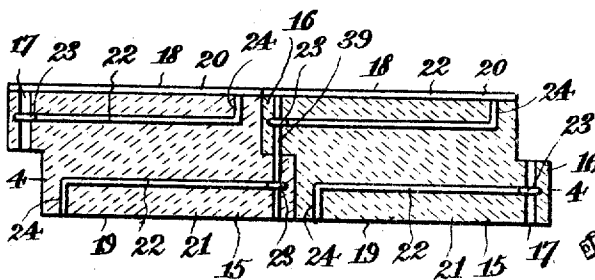


Fig. 4.

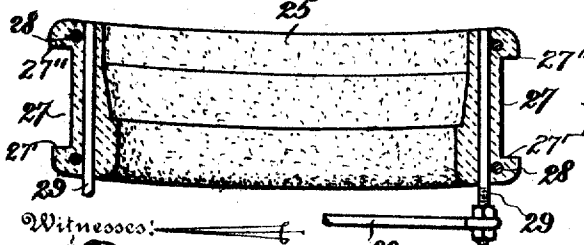
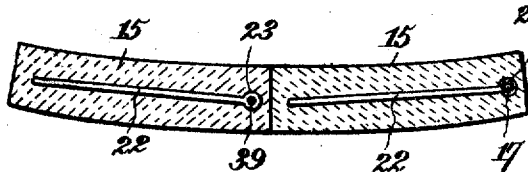


Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 6

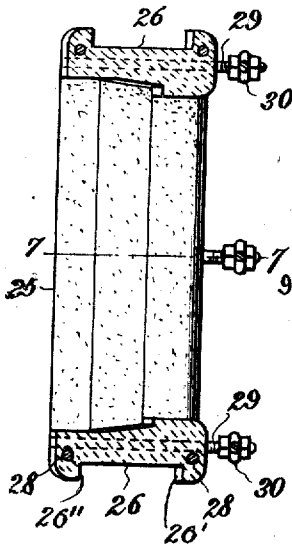


Fig. 8.

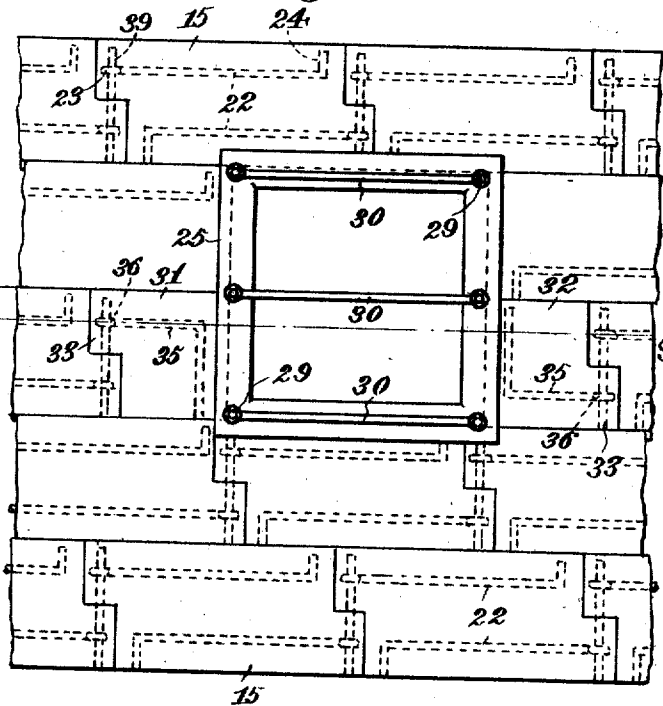


Fig. 10.

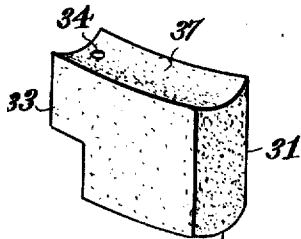


Fig. 9.

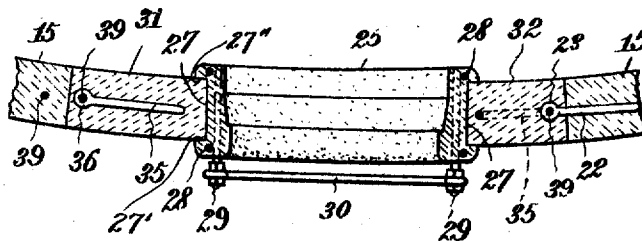
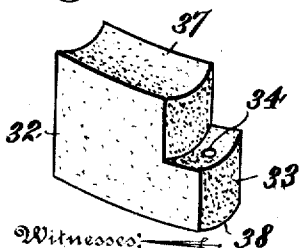


Fig. 11.



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# UNITED STATES PATENT OFFICE.

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## SILO CONSTRUCTION.

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Specification of Letters Patent.

Patented Dec. 19, 1916.

Application filed November 30, 1915. Serial No. 64,291.

*To all whom it may concern:*

Be it known that I, LOUIS J. KREBS, a citizen of the United States, residing at Coffeyville, in the county of Montgomery and State of Kansas, have invented new and useful Improvements in Silo Constructions, of which the following is a specification.

This invention relates to the construction of walls for storage structures such as silos and the like, and it has for its object to produce a simple and improved wall structure made of concrete blocks.

A further object of the invention is to produce reinforced concrete blocks of a simple and improved construction whereby the same are particularly adapted to be utilized in the building of an arcuate wall structure.

A further object of the invention is to simplify and improve the manner of constructing and assembling the blocks to produce an arcuate wall structure.

A further object of the invention is to produce a wall structure of the character described having door openings of a simple and improved construction whereby great strength is secured and displacement of the building blocks adjacent to the door opening is rendered practically impossible.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claim.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claim may be resorted to when desired.

In the drawings, Figure 1 is a perspective view showing two of the building blocks utilized in the improved wall structure ready to be assembled. Fig. 2 is a vertical transverse sectional view taken on the line 2—2 in Fig. 1. Fig. 3 is a vertical longitudinal sectional view taken on the line 3—3 in Fig. 2. Fig. 4 is a horizontal sectional view taken on the line 4—4 in Fig. 3. Fig. 5 is a perspective view of one of the door frames. Fig. 6 is a vertical sectional view

of the same taken on the line 6—6 in Fig. 5. Fig. 7 is a horizontal sectional view taken on the line 7—7 in Fig. 6. Fig. 8 is an elevation of a portion of a wall constructed in accordance with the invention. Fig. 9 is a horizontal sectional view taken on the line 9—9 in Fig. 8. Figs. 10 and 11 are perspective detail views of two half blocks of special construction used adjacent to the door frame.

Corresponding parts in the several figures are denoted by like characters of reference.

The improved building block 15, which is of arc-shape to correspond with the curvature of the wall structure to be erected, is provided at diagonally opposite corners with projecting lugs or extensions 16 having vertical perforations 17 extending therethrough. The block 15 is molded of concrete or cement composition in substantially the shape shown having upper and lower substantially parallel horizontal walls 18, 19, one of which is provided with a longitudinal groove 20, while the other horizontal wall is curved or rounded to produce a rib 21 meshing with the groove 20 of a proximate block. Embedded in each block are two horizontal reinforcing rods 22, each having a terminal eye 23 coinciding with the aperture 17 in one of the extensions 16. Each reinforcing rod 22 is bent at its opposite end to form an angular projection or hook 24 which serves to prevent longitudinal displacement of the rod relatively to the material of which the block is composed.

The door frames 25 used in connection with the improved wall structure are molded of concrete or cement composition, each of said door frames being of rectangular form and provided in the top and bottom portions thereof with grooves 26 having front and rear walls 26', 26'', and in the side portions thereof with similar grooves 27 having front and rear walls 27', 27''. Each concrete frame 26 is of a thickness considerably exceeding the thickness of the building blocks, and the grooves 26, 27 are made of a width coinciding with the thickness of the building blocks which are received in said grooves between the front and rear walls thereof. Embedded in each concrete frame are rectangular metallic reinforcing frames 28 and a plurality of bolts 29, said bolts having threaded portions that protrude beyond the forward face of the door frame,

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said bolts serving for the attachment of ladder rungs 30 such as are commonly used in silos and similar structures.

For use adjacent to the sides of the door frames, in order to enable the courses of blocks to be properly laid in such fashion that the blocks of alternate courses will break joints, there is provided half blocks 31, 32 of special construction, each of said  
10 blocks having a lateral lug or extension 33 at one corner thereof, said extension or projection being provided with a vertical aperture 34. Each of the half blocks is provided with an angular reinforcing rod 35  
15 having an eye 36 coinciding with the aperture 34. The horizontal faces of the half blocks are provided, respectively, with a groove 37 and a rib 38, corresponding to the grooves 20 and the ribs 21 of the  
20 blocks 15.

In assembling the blocks to form a wall structure, the said blocks are laid in regular courses, the projections 16 of the blocks in each course being overlapped, thus bringing the apertures 17 of the respective projections into registry, the blocks being then  
25 connected by a rod or wire 39 which is dropped through the apertures of the overlapped projections, such rod being obviously engaged with the eyes 23 of the reinforcing  
30 rods 22. Thin cement or mortar, commonly known as "runny" may be poured into the perforations to cause the rods to become firmly embedded. The blocks of each course  
35 are arranged to break joints with the blocks of the course below, and said blocks are, furthermore, assembled by the interengagement of the ribs and grooves in the horizontal meeting faces of the blocks of the several  
40 courses. Obviously, mortar or cement may be used where desired. The door frames are preferably made of such dimensions as to correspond in height with the height of the multiple of block units, the width being

equal to the width of a single block unit, although this may be varied as found desirable and practicable. The half blocks are used adjacent to the door frames, as may be found necessary to preserve the proper  
45 alignment of the blocks in the several courses, and the blocks and half blocks adjacent to each door frame are engaged with the grooves in the side and top portions of said door frames, which latter will thus be  
50 held with perfect security with respect to the building blocks, while the forward or rearward displacement of said blocks will likewise be prevented.

When properly laid and assembled a complete circular or cylindrical wall structure  
60 will be produced by the improved building blocks, said blocks being assembled in such a fashion as to be capable of resisting a very heavy internal pressure without liability of cracking or being disassembled or otherwise injured.

The construction is simple and inexpensive and thoroughly practical and useful for the purposes for which it is intended.

Having thus described the invention, 70 what is claimed as new, is:—

A building block of arcuate shape having horizontal top and bottom faces and provided with projections at diagonally opposite corners thereof, said projections having  
75 vertical perforations, and horizontally disposed reinforcing rods embedded in said block, each rod having a terminal eye coinciding with the vertical aperture in one of the projections, and each rod having its opposite end bent to form an angular projection.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS J. KREBS.

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