

1,360,408.

Patented Nov. 30, 1920.  
2 SHEETS—SHEET 1.

FIG. 1

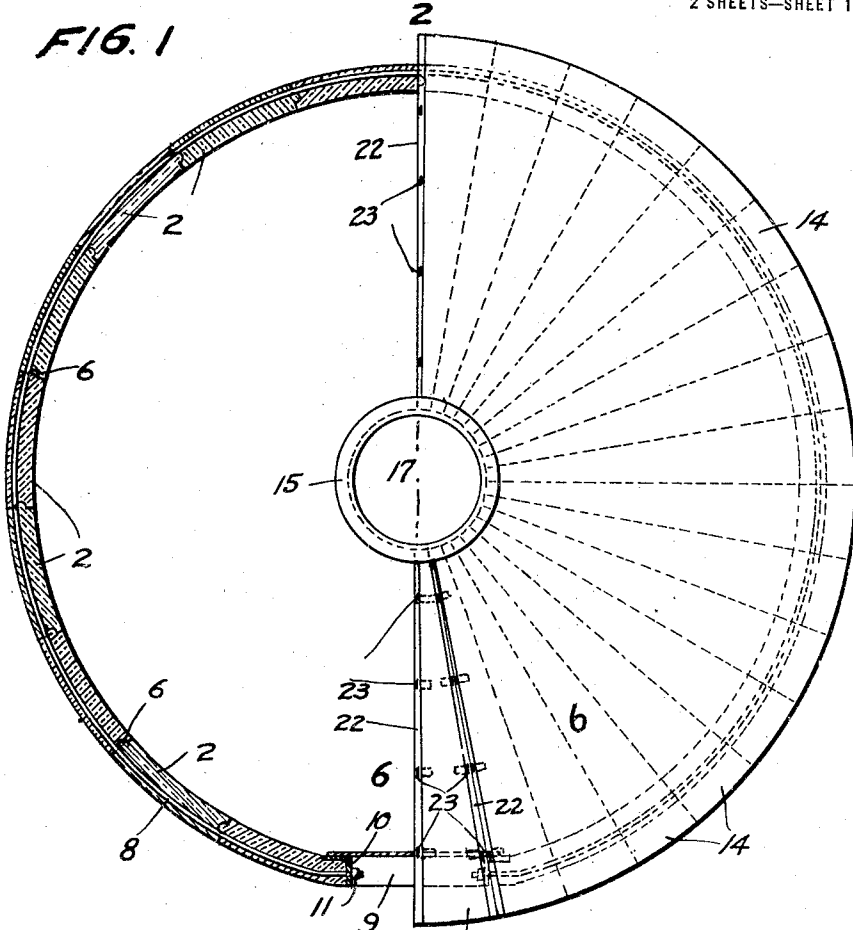


FIG. 7

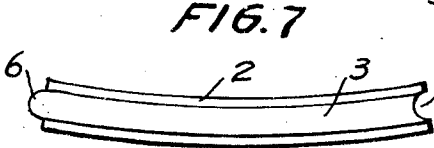


FIG. 6.

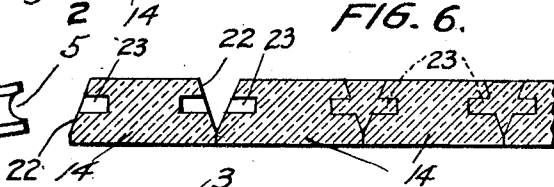
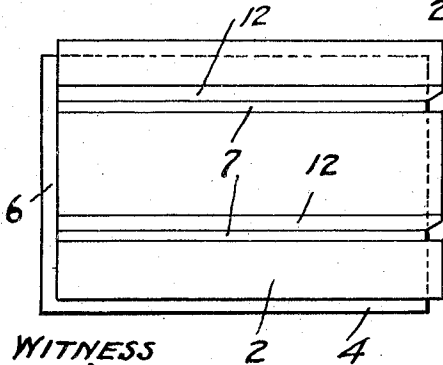


FIG. 8



WITNESS  
J. Jensen

FIG. 9

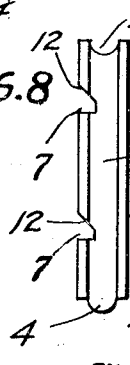
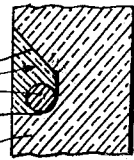


FIG. 10



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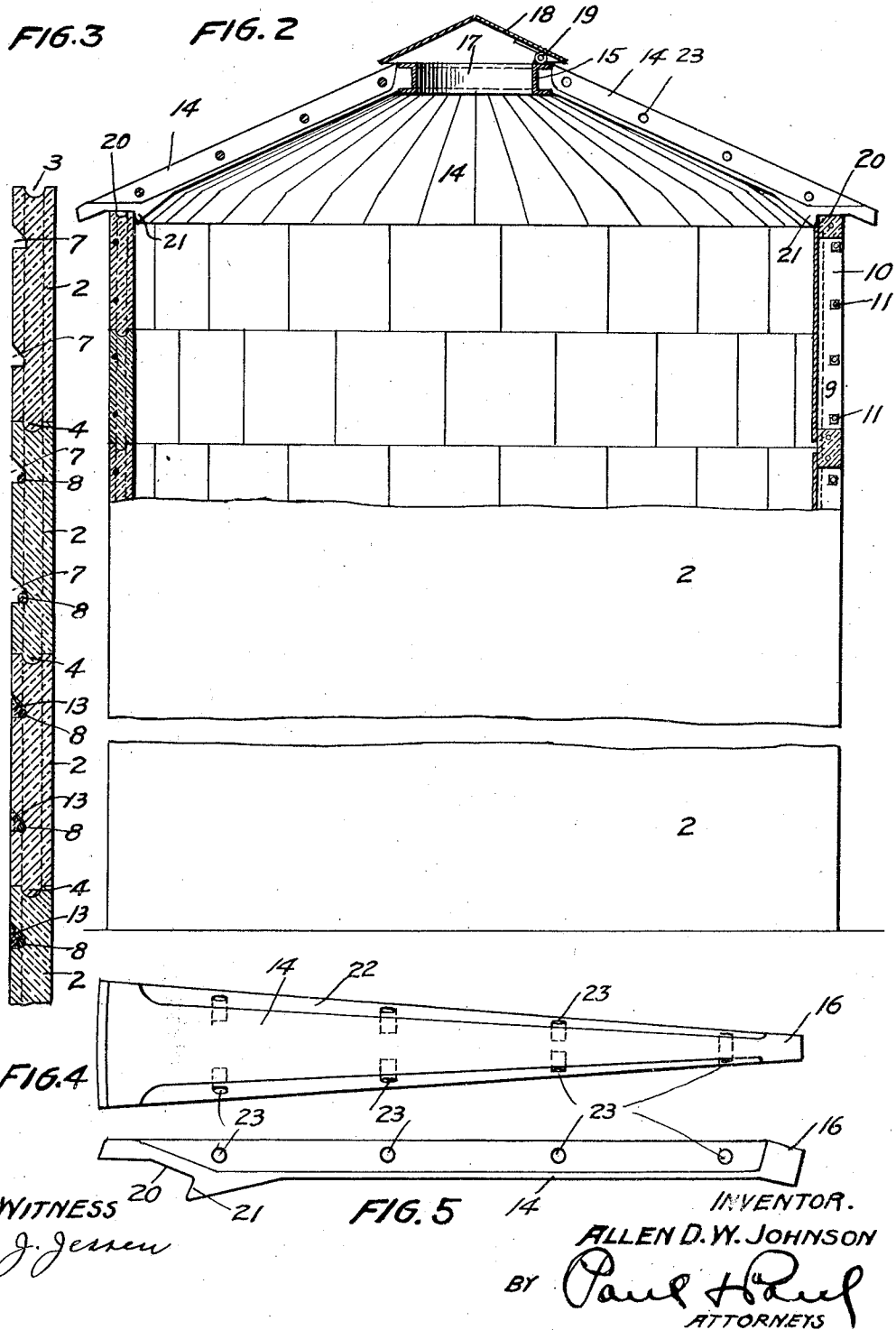
SILLO.

APPLICATION FILED APR. 18, 1919.

1,360,408.

Patented Nov. 30, 1920.

2 SHEETS—SHEET 2.



# UNITED STATES PATENT OFFICE.

ALLEN D. W. JOHNSON, OF ANOKA, MINNESOTA.

## SILLO.

1,360,408.

Specification of Letters Patent.

Patented Nov. 30, 1920.

Application filed April 18, 1919. Serial No. 291,150.

*To all whom it may concern:*

Be it known that I, ALLEN D. W. JOHNSON, a citizen of the United States, and a resident of Anoka, county of Anoka, State of Minnesota, have invented certain new and useful Improvements in Silos, of which the following is a specification.

My invention relates to a block silo, preferably of concrete construction, and the object of the invention is to provide a silo of such construction that the blocks can be assembled and set up without the employment of skilled labor and without the use of mortar, cement, or other binder in the joints between the blocks.

A further object is to provide improved means for clamping or binding the blocks together to form a solid wall for the silo.

A further object is to provide an improved roof construction which will be inexpensive to build and be strong and durable.

Other objects of the invention will appear from the following detailed description.

In the accompanying drawings forming part of this specification,

Figure 1 is a plan view of a silo, partially in section, embodying my invention,

Fig. 2 is a vertical sectional view of the same,

Fig. 3 is a vertical sectional view through the silo wall,

Fig. 4 is a detail view of one of the segment blocks of which the roof is composed,

Fig. 5 is an edge view of the same,

Fig. 6 is a detail sectional view showing the manner of locking the roof slabs together,

Fig. 7 is an edge view of one of the blocks composing the wall of the silo,

Fig. 8 is an outside elevation of the block,

Fig. 9 is an end view,

Fig. 10 is a detail view of one of the grooves in the block showing the rod therein.

In the drawing, the silo is shown composed of molded blocks, preferably concrete, arranged end to end in horizontal courses. 2 represents the block, which is curved slightly from end to end to conform to the curvature of the wall of the silo and one longitudinal edge of the block has a groove 3 therein to receive a correspondingly shaped tongue 4 provided on the abutting longitudinal edge of the adjacent block. This tongue and groove construction is in the center of the edges of the abutting blocks, with flat surfaces on each side which

fit snugly against one another and dispense entirely with the usual mortar or cement filler. One end of each block has a vertical groove 5 therein and the other end a tongue 6 to fit into the groove of the adjacent block so that when the blocks are assembled, the joints will be closed and the entrance of air between the blocks will be prevented.

The outer faces of the blocks are provided with longitudinal grooves 7, there being preferably two in each block, and so arranged that when the blocks are assembled in a wall the grooves in the outer face of one block will register or be in alinement with the corresponding grooves of the other blocks, thereby forming a continuous annular recess extending entirely around the silo and, as shown in Fig. 3, there are two of these recesses, preferably near the top and bottom of each course of blocks. In these recesses I arrange metallic rods or hoops 8 and on each side of the door opening 9 leading into the silo I provide upright angle bars 10 forming the frame of the doorway. The ends of the rods 8 project through one flange of these frames and are threaded and provided with lock nuts 11 by means of which the rods may be drawn up snugly within the grooves in the blocks for binding or locking the blocks together in the wall. When the blocks are assembled, and the rods put in place and tightened, a homogeneous wall will be formed capable of resisting wind pressure and impervious to the passage of air.

To protect the rods and provide a finished appearance for the outside of the silo, I prefer to bevel one end of each groove in the block, as at 12, and fill the groove with a plastic material 13 which will entirely conceal the rods and be flush with the outer face of the blocks. The grooves in the blocks are of sufficient width to allow the plastic material to flow in around the rods and lock itself in the grooves. The lower surfaces of the grooves are preferably flattened to aid in holding the plastic material therein, while the beveled upper edges allow for the convenient insertion of the plastic material into the grooves.

The roof of the silo is preferably composed of a series of segments 14 molded preferably of concrete. A ring 15, preferably a channel bar, is provided and the bars 14 have ends 16 fashioned to fit this ring, which forms the center of the roof and provides

an opening 17 through which access may be had to the top of the silo for filling purposes. A cover 18 is hinged at 19 on the ring and normally closes the opening 17.

5 The ends 16 are angled slightly with respect to the longitudinal axis of the segments 14 to fit snugly within the channel 15 and the outer ends of the segments 14 have flat surfaces 20 to rest upon the top of the wall of the silo and shoulders 21 are formed on said segments to bear on said walls and prevent outward movement of the segments thereon. The segments are provided with longitudinal beveled edges 22 having lateral recesses 15 23 and when the segments are assembled in the roof, these beveled edges will form V-shaped recesses between the segments which are filled by pouring concrete therein and allowing it to flow to the bottom of the depressions and laterally into the recesses 23, 20 where it will harden and form lugs for holding the segments of the roof securely together and form one continuous, homogeneous roof member.

25 The silo may, of course, be made in va-

rious sizes, and in various ways the details of construction may be modified and still be within the scope of my invention.

I claim as my invention:

A silo wall having horizontal grooves in 30 its outer surface extending around the silo and rods fitting within said grooves, the lower walls of said grooves being substantially flat and the upper walls thereof flaring upwardly and outwardly from the inner 35 walls to provide wide filling openings for the grooves, said rods fitting the angles between the inner walls of said grooves and the lower walls thereof, comparatively wide gaps being provided between said rods and 40 said upper flaring walls, a material in plastic form filling said grooves and flowing through said gaps to the inner walls of the grooves in the rear of said rods and between said rods and the flat lower walls of said 45 grooves and when set being securely locked to said rods.

In witness whereof, I have hereunto set my hand this 5<sup>th</sup> day of April 1919.

ALLEN D. W. JOHNSON.