E. F. WIEDERHOLDT.

WALL FOR SILOS AND THE LIKE.

APPLICATION FILED APR. 30, 1909.

992,835.

Patented May 23, 1911.

FIG. 1.

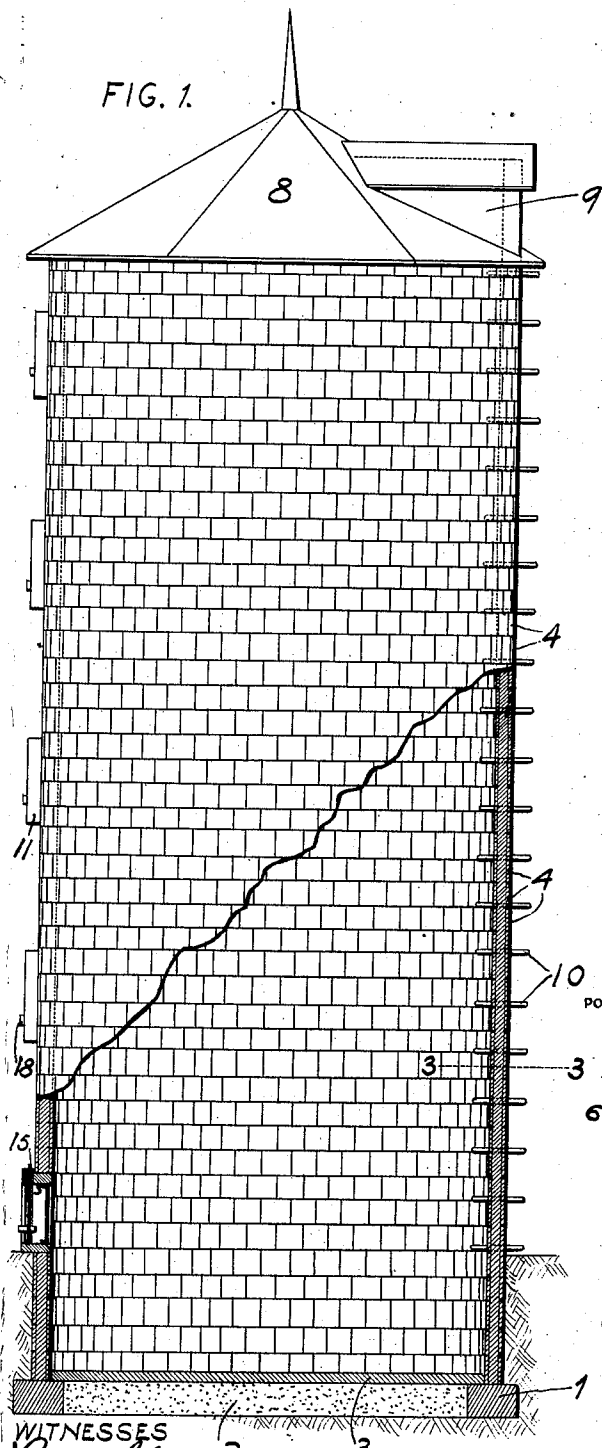


FIG. 2.

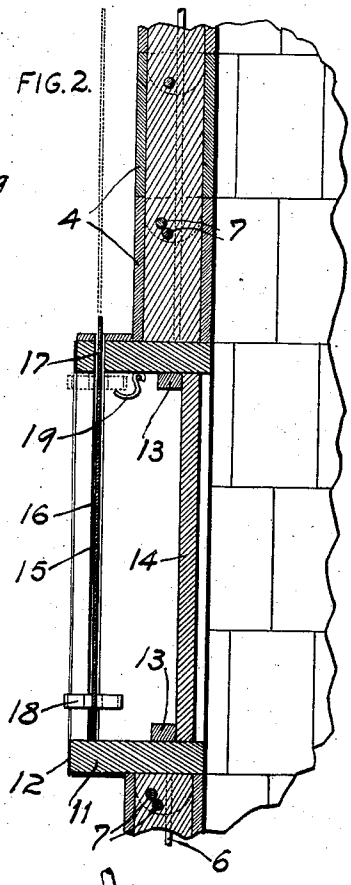
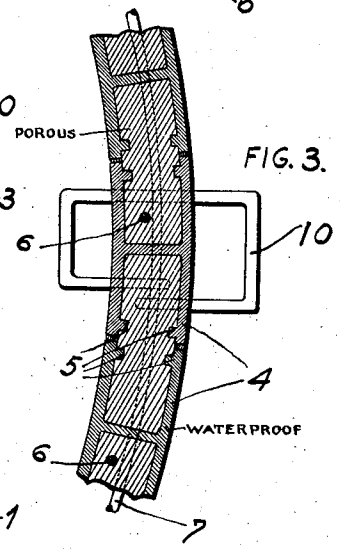


FIG. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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WALL FOR SILOS AND THE LIKE.

992,835. Specification of Letters Patent. Patented May 23, 1911.

Application filed April 30, 1909. Serial No. 493,089.

To all whom it may concern:

Be it known that I, ERNEST F. WIEDERHOLDT, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Walls for Silos and the Like, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a silo of my improved construction, with the lower portion shown in vertical section; Fig. 2 is an enlarged vertical section taken through the center of one of the doors or openings in the wall of the silo; Fig. 3 is an enlarged horizontal section taken on the line 3—3 of Fig. 1.

My invention relates to walls for silos and the like, my principal object being to construct a wall composed of hollow blocks or tiles, same being filled with concrete or analogous hardened plastic material which is reinforced with vertical and horizontal rods.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts hereinafter more fully described and claimed.

My improved silo is illustrated in the form of a silo which is of cylindrical form of any height or diameter desired, and to support the circular wall forming the body of the silo I provide a suitable foundation 1, which may be of metal, natural stone or concrete, and which is preferably located a short distance below the surface of the ground. A body of concrete 2 is located in the space within the foundation 1, and arranged on said body of concrete is a flooring 3 of suitable material. The hollow blocks or tiles 4 which form the wall of the structure are approximately H-shaped in horizontal section, and the tops of the centrally disposed webs or cross-pieces between the sides of said blocks or tiles 4 being recessed in order to receive the horizontally disposed reinforcing bars or rods. The blocks or tiles 4 are segmental in horizontal section in order to form the circular wall of the structure, and formed integral with the inner faces of the side walls of said blocks or tiles are vertically disposed ribs 5 which materially assist in anchoring the filling of concrete or cement which is poured into the blocks or tiles as the wall is built up. The blocks or tiles are laid one on top of the other, and I prefer that the meeting ends of each horizontal row of tile break joints with the tile forming the adjacent rows.

The peculiar shape of the tile and the manner in which they are laid, establishes communication between the spaces in the ends of the tile, and between said spaces and the spaces in the ends of the adjacent tile, both above and below and at both ends, as the successive courses are laid one upon the other. When these spaces are later filled with the plastic concrete or other self hardening material, the same runs freely from one space to another, completely filling all of said spaces, and thus the body of concrete is practically continuous throughout the entire structure. Thus a reinforced monolithic structure is formed which is especially desirable in building silos, chimneys and other circular wall structures, and which construction is not possible where the transverse walls of the hollow blocks or tiles are in vertical alinement with each other, or where a series of vertical wells are formed in the wall extending from the top to the bottom thereof, and which wells are filled with concrete or the like.

Vertically disposed reinforcing rods 6 are arranged at suitable distances apart throughout the circular wall formed of the hollow blocks or tiles and concrete, and a horizontally disposed reinforcing rod 7 is arranged in each horizontal row of blocks or tile and occupies a position in the recesses formed in the tops of the cross-pieces or webs of each row of blocks or tile. The wall so constructed is built up to the desired height, and when the concrete or cement has become set or hardened, a very strong and substantial monolithic structure is formed. A suitable cover or roof 8 is provided for the upper end of the structure, and if desired, a door 9 is arranged on said roof or cover.

To form a ladder for the structure, I provide metal bars which are bent into rectangular loops 10, and a vertical row of said loops is arranged in the wall of the structure, said loops being positioned between the horizontal rows of the hollow blocks or tiles 4, with the central portion of each loop embedded in the concrete or cement wall

filler. Thus, the outer portions of the loops project beyond the inner and outer surfaces of the wall to form fixed ladders on the interior and exterior of the structure. In some instances, and particularly where a smooth inner wall surface is desired, the loops 10 are so formed and arranged in the wall as to project only from the exterior thereof.

Suitable openings are formed in the wall of the structure, preferably one above the other at regular distances apart, and arranged in each opening is a frame 11 the projecting portion of which is sheathed with metal 12 or other fire-proof material. Fixed within this frame 11 are cleats 13, and positioned thereagainst is a removable door or panel 14.

15 designates a sliding door or panel the side edges of which operate in grooves 16 formed in the inner faces of the side rails of the frame 11, said door or panel operating through an opening 17 formed in the top of said frame. Loops 18, which perform the function of handles, are fixed to both the inner and outer faces of this door or panel 15 at a point adjacent the lower end thereof, and depending from the top of the frame 11 is a hook 19 which is adapted to engage the innermost one of said loops when the door or panel 15 is elevated. The openings and closures therefor, as just described, provide means whereby access may be had to the interior of the structure, and when desired the panels 15 may be elevated and the panels 14 forced inward in order to fill the silo or remove the contents thereof. Two or more of the horizontally disposed reinforcing rods 7 are arranged in the rows of hollow blocks or tile immediately above and below each of the door openings, thus reinforcing the wall of the structure adjacent the points occupied by the door openings. In some instances it may be found desirable to form the frames 11 of metal or fire-proof material, and where such construction is carried out the cleats 13 and panel 14 are also formed of metal or suitable fire-proof material.

My improved structure is very strong and durable, can be erected at a comparatively low cost, and while particularly adapted for use as a silo for the ensilage of fodder and the like, it can be utilized as a container or storage tank for grain and the like, and if desired, a structure without doors or openings in the wall can be readily utilized as a chimney.

The H-shaped tiles used in constructing my improved silo are preferably burned to such an extent that they have closed surfaces, the joints between them being pointed up with a water-proof or other cement having little or no absorptive powers, so far as moisture is concerned. In this way the silo is watertight, being in the nature of an earthen jar with openings at varying heights and when the ensilage is stored therein, the juices and water entering therefrom will be retained in the silo and not absorbed by the walls thereof. Furthermore, when all the openings are closed, there is little or no evaporation of moisture, and the heat of fermentation is retained in the silo, which is very beneficial to the ensilage in that it practically cooks the ensilage and destroys the germs therein.

I claim:

A wall for silos and the like composed of porous cementitious material, and a tiled facing, the exposed surface of said tiled facing being glazed, and the joints between said glazed surfaces being pointed up with water proof material to prevent liquid from passing through the porous material.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 26th day of March, 1909.

ERNEST F. WIEDERHOLDT.

Witnesses:

F. R. CORNWALL,

LENORE CLARK.