W. D. PUGH.

COMBINATION WOOD AND CONCRETE SILO.

APPLICATION FILED MAY 23, 1913.

1,089,010.

Patented Mar. 3, 1914.

Fig. 1.

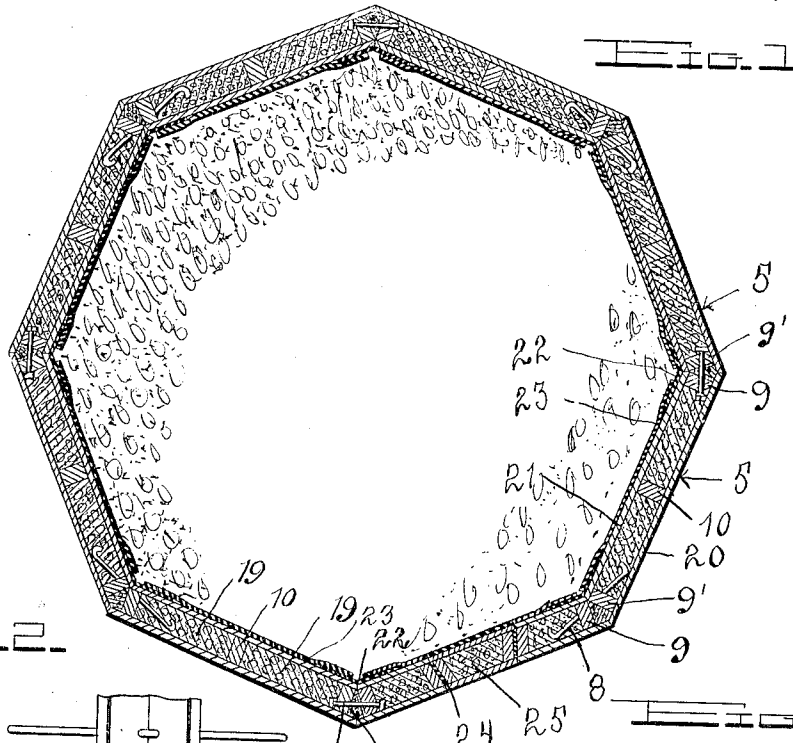


Fig. 2.

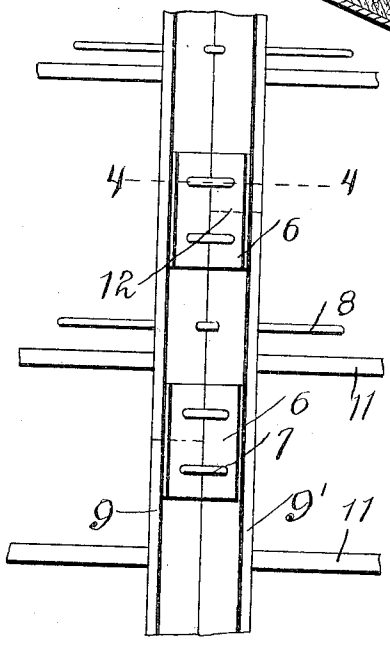


Fig. 3.

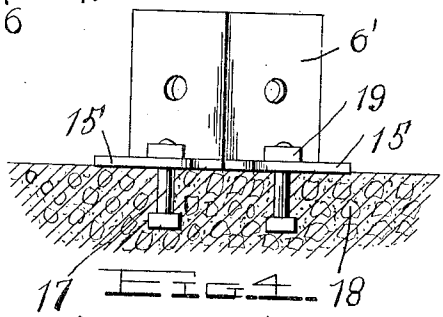
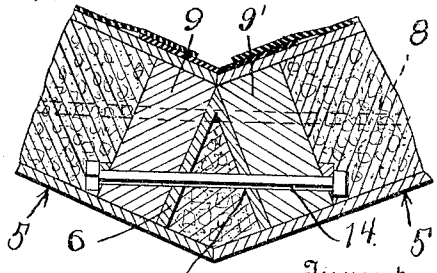


Fig. 4.



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COMBINATION WOOD AND CONCRETE SILO.

1,089,010. Specification of Letters Patent. Patented Mar. 3, 1914.

Application filed May 23, 1913. Serial No. 769,526.

To all whom it may concern:

Be it known that I, WILLIAM D. PUGH, a citizen of the United States, residing at Fletcher, in the county of Comanche, State of Oklahoma, have invented certain new and useful Improvements in Combination Wood and Concrete Silos; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to silos, and it more particularly relates to an improved combination wood and concrete silo.

An object of the invention is to provide a silo of this character which is stronger and more durable than an all wood silo, and which is less expensive and better than an all concrete silo; a very important advantage consisting in the elimination of breakage on account of freezing.

Another object of the invention is to provide a silo of this character which is of such simple construction that it may be built by inexpert and inexperienced persons.

Other objects and advantages may be recited hereinafter and in the claims.

In the accompanying drawings, which supplement this specification: Figure 1 is a horizontal section through an improved silo constructed in accordance with my invention; Fig. 2 is an enlarged detail view, in side elevation, of a corner of the silo, the outer covering being eliminated. Fig. 3 is an enlarged detail view showing the manner of anchoring the wall of the silo to the concrete floor thereof, and Fig. 4 is an enlarged detail view, illustrating the manner of applying the inner lining, (see line 4—4).

Referring to these drawings, in which similar reference characters correspond with similar parts throughout the several views:— The silo consists of a polygonal frame comprising a series of plane frame elements 5, angle irons 6, securing bolts 7 and reinforcing and anchoring members 8. Each frame section 5 consists of vertical beams or studs 9, 9′ and 10, connected together by horizontal beams or struts 11. There may be one or more of the studs 10, or these intermediate studs may be entirely eliminated, according to the size and design of silo to be formed by the frame sections 5. The studs 9 and 9′ are different in length, so as to provide interlapping angular joints, as indicated at 12. The horizontal joints between the superposed studs 9 and 9′ are connected by means of the angle irons 6, which are substantially V-shaped in cross section, said angle irons being secured to the contiguous end portions of the studs by means of the bolts 7; these bolts being of sufficient length to pass through the registering apertures 13 and 14, of the studs and angle irons respectively, so as to bind the adjacent ends of said studs securely in fixed relation with each other and with the V-shaped connecting irons 6. The lower V-shaped connecting irons 6′ are provided with apertured flanges 15, adapted to receive bolts or studs 17 which are anchored in the concrete silo floor 18, and suitable nuts 19 may coact with the bolts 17 for anchoring said lower connecting irons to said floor. The lower ends of the studs 9 and 9′ are secured to the upstanding angular element of said lower connecting members or angle irons, by means of bolts 7, such as used in connection with the angle irons 6.

At suitable intervals, I provide the horizontal reinforcing rods 8, and these rods may be provided with hooked ends, as illustrated, or they may be provided with any suitable roughened or irregular elements for engagement with the concrete wall sections 19 so as to connect the otherwise separated concrete sections 19, thereby coacting with the elements 7 and 11 for preventing movement of the sections relative to each other. An outer wall 20, which may be of wood, sheet metal, or other suitable material, is nailed or otherwise secured upon the outer faces of the studs 9 and 9′; while an inner wall 21 of suitable material is secured to the inner surfaces of said studs. Therefore, it will be seen that as the silo is built up, the concrete which forms the sections 19 is poured into the chambers which are formed between the substantially vertical studs, the inner and outer walls and the struts 11; the reinforcing bars 8 having been previously placed, so that each end is embedded in one of the adjacent concrete sections 19.

In order that the silo may be rendered airtight, and in order that the angle irons may be protected from the acids and gases from the ensilage, I may provide any suitable material for lining the silos, and I preferably apply the said material in sheets or strips 22 and 23. This lining is preferably formed of sheet rubber, or some of the rubber compositions or imitations, and I apply one of the

strips 22 to each of the vertical joints between the adjacent frame sections 5, and I may employ any suitable means for securing these strips 22 in place. The opposite edges of each strip 22 overlap the contiguous portions of the frame sections 5 so as to effectually break the joint between said sections.

The lining sheets 23 may be approximately equal in width to that of each frame section 5, and the opposite edge portions of these sheets 23 overlap the edge portions of the strips 22, and any suitable means may be employed for securing these lining sheets in place.

I may provide suitable inlet openings 24 at suitable intervals, and I may place these inlet openings at any desired places around and up and down the wall of the silo, and I may apply sheets of rubber or other suitable material to the doors 25 which close these inlet openings, so as to effectually prevent the escape of gases from the doors after the ensilage has been placed in the silo and the doors have been closed.

From the foregoing, it will be seen that I have provided a device of this character, which is fully capable of attaining the foregoing objects, in a thoroughly practical and efficient manner.

I do not limit my invention to the exact details of construction, combinations and arrangement of parts, as herewith illustrated and described, but my invention may only be limited by a reasonable interpretation of the claims.

I claim:

1. A silo consisting of frame sections each formed of vertical beams of different lengths at opposite sides, struts connecting the vertical beams of each frame section, said frame sections being fitted together so that the relatively long vertical beam of one section overlaps the relatively long vertical beam of the superposed section and is contiguous to the relatively short vertical beam of the juxtaposed section, angle irons fitted between the vertical sides of the adjacent end sections of said vertical beams, and bolts extending through said angle irons and through said adjacent end portions.

2. A silo consisting of a series of superposed and juxtaposed frame sections each comprising vertical beams of different lengths connected together in spaced relation, the upper end portions of two juxtaposed frame sections being connected to the lower end portions of two other juxtaposed frame sections by means of angle irons fitted against the meeting end portions of said juxtaposed and superposed frame sections, and means rigidly connecting the angle irons to the said meeting end portions.

3. The combination in a silo having a concrete floor, of anchoring means embedded in the concrete floor, angle irons secured to the anchoring means and extending upward from the concrete floor, wooden frame sections each including vertical beams of different lengths having their respective lower ends secured to the said angle irons in such relation that each said angle iron connects two adjacent frame sections, other frame sections having vertical beams with their lower ends in lapped relation with the upper ends of the first said frame sections, and means mutually contributing to unite the adjoining ends of the juxtaposed and superposed frame section.

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

WILLIAM D. PUGH.

Witnesses:
J. H. LINSON,
E. R. DEMPSEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."