T. S. HOLLAND.

SILO.

APPLICATION FILED DEC. 19, 1912.

1,129,677.

Patented Feb. 23, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

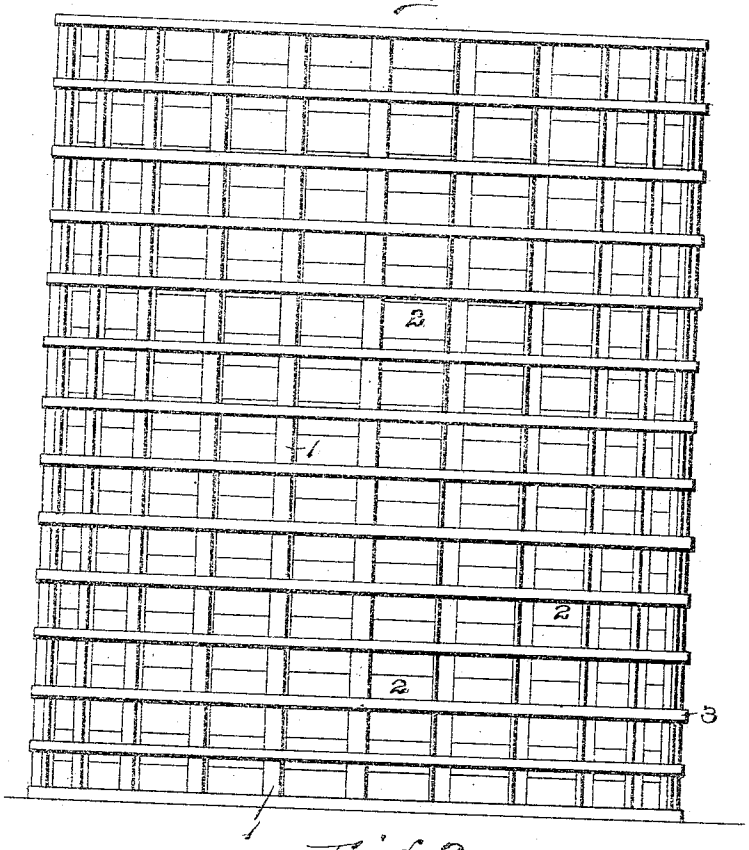


Fig. 3.

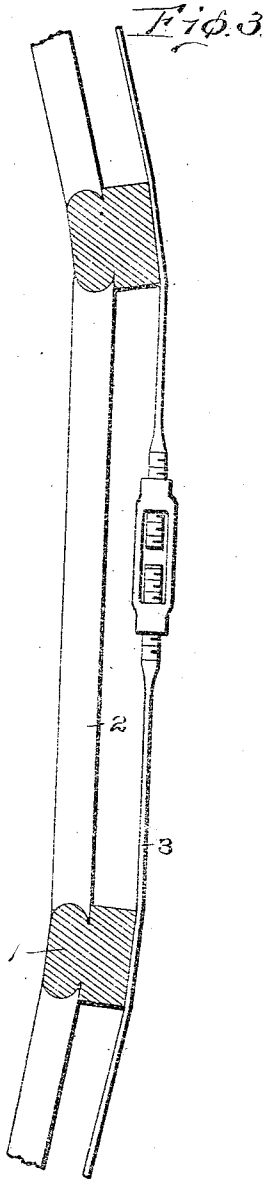
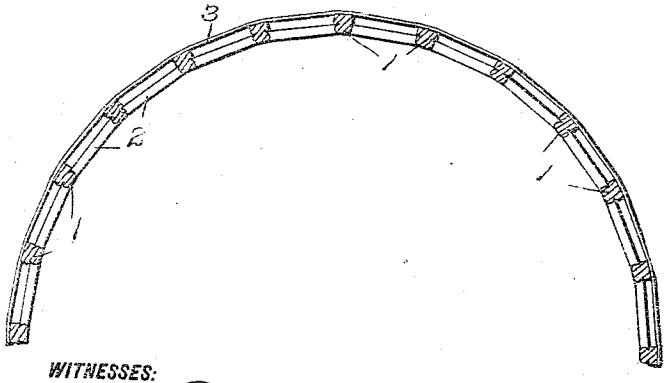


Fig. 2.



WITNESSES:

J. M. S. Fowler Jr.

Lewis A. Merle

INVENTOR

Thomas S. Holland

BY

Fay, Dickerson & Co.

ATTORNEY

T. S. HOLLAND.

BOAT.

APPLICATION FILED DEC. 19, 1913.

1,128,677.

Patented Feb. 23, 1915.

2 SHEETS—SHEET 2.

Fig. 4.



Fig. 5.



Fig. 6.

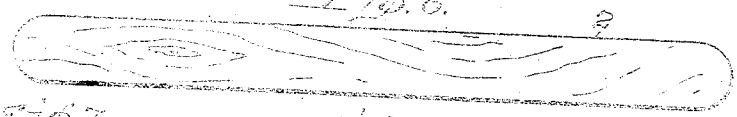


Fig. 7.

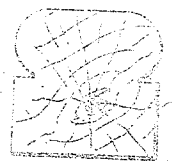


Fig. 8.

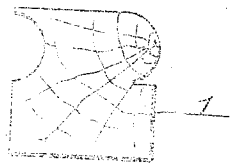


Fig. 9.

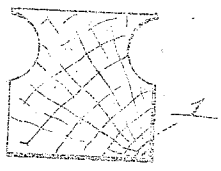


Fig. 10.

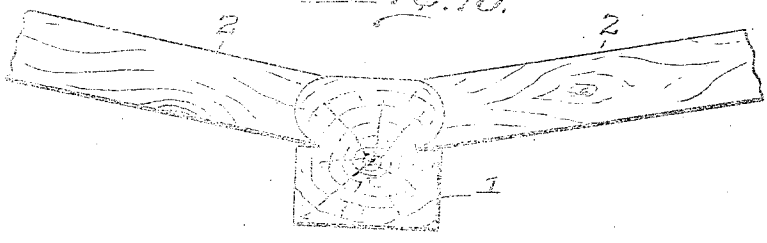


Fig. 11.

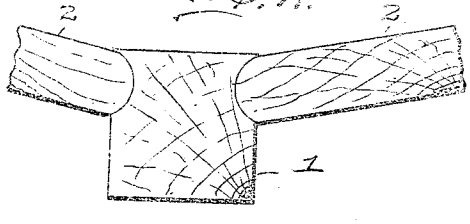
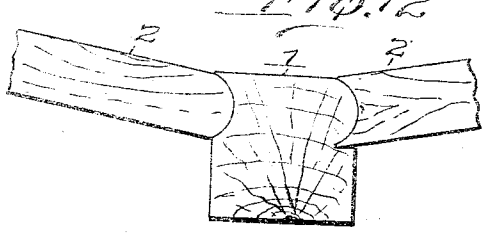


Fig. 12.



WITNESSES:

J. W. Fowler Jr.

David A. Reed

INVENTOR

Thomas S. Holland

BY

Mygatt & Mygatt

ATTORNEY

UNITED STATES PATENT OFFICE.

THOMAS S. HOLLAND, OF TACOMA, WASHINGTON.

SILO.

1,129,677. Specification of Letters Patent. Patented Feb. 23, 1915.

Application filed December 19, 1912. Serial No. 737,684.

To all whom it may concern:

Be it known that I, THOMAS S. HOLLAND, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Silos, of which the following is a specification.

This invention relates to silos or tanks and it relates particularly to the construction of silos.

In the use of silos the material of which it is constructed is subjected to wide variations of expansions and contraction. When filled with ensilage the material is saturated with moisture and in consequence is expanded to its utmost extent; when empty, which usually occurs in warm dry weather, the moisture evaporates and it becomes dry and therefore contracts. In the usual construction of silos, staves vertically arranged, with the grain extending longtudinally are employed, and the alternate contraction and expansion to which they are subjected require constant attention either in tightening or loosening the means for retaining them in position to compensate for the changes due to varying conditions.

Silos as a rule are from thirty to forty feet high, and if erected from staves vertically arranged and extending the whole length of the structure require the employment of clear lumber which in these or approximately these lengths is very expensive and unnecessarily adds to the cost of the building.

The object of my invention is to provide a silo of such construction that panels of short and uniform length can be used in forming structures of widely varying diameters.

With this object in view the invention consists of a silo having the generic and specific features of construction and arrangement of the parts substantially as hereinafter described and claimed.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of a silo incorporating the novel features in my invention; Fig. 2 is a transverse sectional view through one side of the silo shown in Fig. 1; Fig. 3 is an enlarged detail sectional view showing two uprights or posts, panels arranged in proper relation thereto, and means for securing the parts together; Figs. 4, 5 and 6 are plan views of panels having the ends thereof of varying forms adapting them to constitute part of the silo; Figs. 7, 8 and 9 represent posts or uprights of forms adapting them to be combined with panels having the forms illustrated in Figs. 4, 5 and 6; and Figs. 10, 11 and 12 are plan views each showing joints formed between posts or uprights and panels of one of the different forms shown.

In these drawings 1 represents posts or uprights which are of a length corresponding to the height of the silo of which they form parts. Those portions of each post or upright which when the parts are assembled are toward the interior of the silo have on each side thereof curved faces formed by providing the faces with a longitudinal groove curved in cross section; by forming on the faces projecting ribs the faces of which are curved; or by forming one side with a groove of the form described and the opposite side with a rib. The posts or uprights are arranged in any suitable way on a support or foundation and are maintained in vertical positions at short distances apart. Located between each two adjacent posts or uprights and abutting against the curved faces thereof, are a vertical series of panels 2 each of which has its ends so shaped as to conform to those portions of the posts against which they bear. The edges of the panels which contact with those of adjacent panels are so formed that a tight joint between the parts results.

In Fig. 4 of the drawing I have shown a panel having each end thereof grooved, thus adapting it to abut at each end against a post or upright of the shape shown in Fig. 7, to form when the parts are in place a joint between the parts as shown in Fig. 10. In Figs. 5, 8 and 11, respectively, I have shown a panel having a curved groove at one end and a rib having a curved face at the other end; a post or upright having a groove on one side and a rib on the opposite side; and a joint formed by the aggroupment of the parts so shaped. In Figs. 6, 9 and 12 respectively, the panels are shown as formed at each end with a rib having a curved outer face; the post is shown as provided on each side with a groove or channel curved in cross section; and the joint is shown as formed by placing the ends of the panels against the indented faces of the posts.

The constructions of all the forms of posts and panels, which are considered the equivalents of each other, are such that when the ends of the panels formed as described are brought into contact with correspondingly shaped sides of the posts or uprights, the inner faces of the panels are coincident with the inner faces of the posts thus insuring a smooth interior surface of the completed structure.

By forming and joining the parts as described, it will be clear that the posts and uprights may both be made in one stock or standard size, and that from these parts a building of the kind described may be made in greatly differing diameters by varying the angles at which the panels are arranged relatively to the posts or uprights. The joint formed at the juncture of the parts will obviously be equally tight irrespective of their relative arrangement.

A material advantage attained by the described construction is that it permits the use of short sections of boards, of little or no commercial value, for the panels or filling between the posts. Further by the use of these panels composed of short sections with the grain extending horizontally, the expansion or contraction to which they are subjected is very slight and therefore little compensating adjustment of the means for maintaining them in place is required, while the danger of collapse in the absence of adjustment is very slight.

The parts of the silo formed as described may be held together by any suitable means which will permit of rapid and easy adjustment to allow of the parts being drawn together or of being allowed to expand. For this purpose the means herein shown which consists of bands or rods 3 bearing upon the outer faces of the posts or uprights and having in them devices such as turnbuckles for shortening or lengthening them has been found well adapted for the purpose. The hoops thus formed are preferably arranged at short distances apart in order to lend rigidity to the silo.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being understood, however, that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of this invention and without departing from the spirit or sacrificing the efficiency of the same.

I claim;

1. A silo comprising uprights and horizontal panels having the ends thereof abutting against the uprights, the meeting edges of the parts being curved, those of one part being concave and those of the other being convex, the shape of both sides of the uprights and that of both ends of the panels being the same.

2. A silo comprising uprights and horizontal panels abutting against such uprights, the uprights being provided on each side with a longitudinal convex rounded rib, and the ends of the panels being provided with concave ends receiving and conforming to the shape of the ribs, whereby a blunt bearing surface between the parts is provided.

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

THOMAS S. HOLLAND.

Witnesses:
A. V. PEDERSEN,
H. J. INVIEN.

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