

F. J. VAN COTT.
 SILO STRUCTURE AND ANCHORING SYSTEM THEREFOR.
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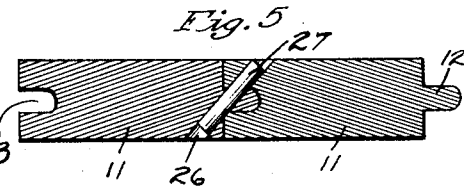
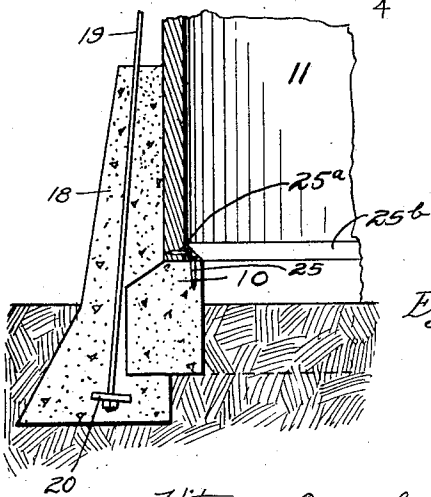
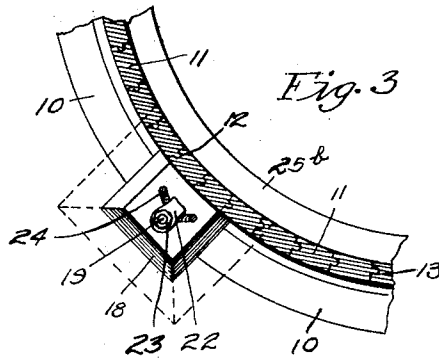
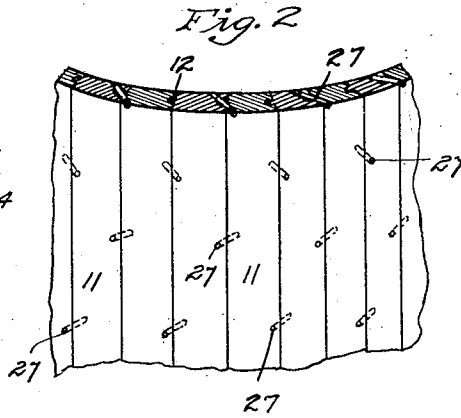
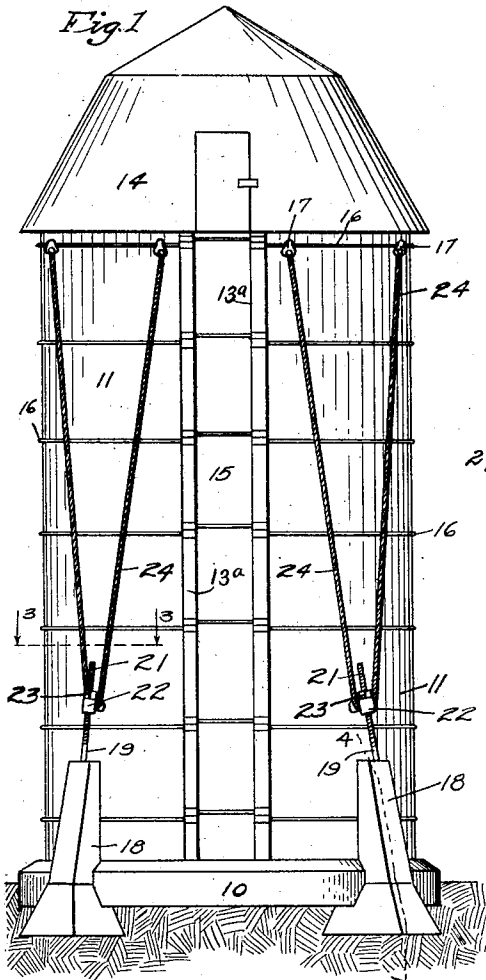


Fig. 4

Inventor
 Frank J. Van Cott

By *Bair & Freeman*

Attorneys

Witness, *Lynn Latta*

UNITED STATES PATENT OFFICE.

FRANK J. VAN COTT, OF UNADILLA, NEW YORK.

SILO STRUCTURE AND ANCHORING SYSTEM THEREFOR.

1,400,251.

Specification of Letters Patent.

Patented Dec. 13, 1921.

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To all whom it may concern:

Be it known that I, FRANK J. VAN COTT, a citizen of the United States, and a resident of Unadilla, in the county of Otsego and State of New York, have invented a certain new and useful Silo Structure and Anchoring System Therefor, of which the following is a specification.

The object of my invention is to provide a silo structure and anchoring system therefor which is of comparatively simple, durable and inexpensive construction.

More particularly my invention relates to an anchoring system for silos and the like, wherein the silo will be prevented from twisting, and will maintain its rigidity at all times.

Still another object is to provide in combination with a silo having a wall composed of staves having their adjacent edges provided with co-acting tongues and grooves, a means extended diagonally through the adjacent edges of the staves for preventing up and down movement of the staves relative to each other.

Still another object is to provide piers placed adjacent to the lower edge of the silo wall, to which may be anchored anchoring cables for holding the silo upright; the piers forming a strong efficient means to which the anchoring cables may be fastened; at the same time making the anchoring cables high enough so that they are not likely to be rubbed against or come in contact with animals which are likely to be near the silo.

Still another object is to provide anchoring cables having their ends immovably fixed to the silo near its upper edge, and having its center anchored to piers extending along the side of the silo, the ends of the cables being spaced apart so that the cables extend upwardly from their centers and form a substantial V. A saddle device is used for anchoring the centers of the cables to the piers, the saddle device being of the construction set forth in my Patent Number 1,311,141 issued to me July 22nd, 1919.

Still another object is to provide in combination with a silo including vertical staves, an anchoring system comprising cables fixed at their ends to the upper end of the silo and at their centers to reinforcing piers; and the staves being provided at their abutting edges with diagonally ar-

ranged members for preventing up and down movement of the staves. The diagonally arranged members being also staggered relative to each other for preventing movement of the staves in any direction whatsoever.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a front elevation of a silo with my improved anchoring system shown thereon.

Fig. 2 is a sectional view in perspective taken through some of the staves, showing the diagonally arranged members for preventing movement of the staves.

Fig. 3 is a horizontal, sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1, showing the pier to which the cables are anchored; and

Fig. 5 is a detail, sectional view taken through two of the staves showing the diagonal members extended through their abutting edges.

In the accompanying drawings I have used the reference numeral 10 to indicate an ordinary base of a silo and 11 to indicate the silo wall, which is composed of a number of vertical staves. The staves being provided with co-acting tongues and grooves 13. The staves are of the ordinary construction used in silo buildings. A door frame 13^a is provided in the silo wall for permitting access into the interior of the silo.

A roof 14 is provided for the silo. A door opening 15 permits access into the interior of the silo.

Extending around the silo are the silo hoops or bands 16. The upper band 16 of the silo has fixed to it clamping members 17.

Formed adjacent to the lower edge of the silo wall and extending alongside of the base 10 and downwardly therefrom are the piers 18. The piers 18 form a reinforcing means for the lower end of the silo, and also form a means to which the anchoring cables may be fixed.

The piers 18 are provided with a rod 19 having a plate or the like 20 fixed to its lower end and embedded in the pier 18.

The upper end of the rod 19 is screw threaded as at 21. Slidably mounted on the rod 19 are the saddle devices 22 similar in construction to the saddle devices mentioned in my Letters Patent Number 1,311,141, issued July 22nd, 1919.

A nut 23 is fixed to the screw threaded end 21 of the rod 19 whereby the saddle devices may be adjusted on the rod 19. Anchoring cables 24 are provided which have their ends fixed to the clamping device 17 near the upper end of the silo and having their centers extended around the guide portions of the saddle devices 22. The anchoring cables 24 extend upwardly and outwardly from their centers as illustrated in Fig. 1 of the drawings.

From the construction of the parts just described it will be seen that by rotating the nut 23 on the screw threaded portion 21 of the rod 19, it will cause the saddle device to be moved, which will permit the cables 24 to either be loosened or fastened, as is desired for firmly anchoring the silo.

When the base 10 is poured bolts or the like 25 are placed therein with their heads projecting above the upper surface of the base. The silo wall is provided with nails or the like 25^a which extend adjacent to the bolts or the like 25. In order to prevent air from passing in between the base and the silo wall I pour a cement filler 25^b which rests upon the base and against the inner side of the silo wall. The nails 25^a and bolts 25 are thus used for holding the filler 25^b in position for the purposes stated.

In order to prevent up and down movement of the staves of the silo relative to each other which causes the silo to become twisted and to incline, I provide the following described means. The abutting edges of the staves 11 of the silo are provided with openings 26. The openings 26 are arranged diagonally through the abutting edges of the silo, and are adapted to register with each other so that a dowel pin 27, may be extended through the diagonally arranged opening 26 for preventing up and down movement of the staves relative to each other.

The arrangement of the dowel pins 27 diagonally through the joints of the silo not only prevents up and down movement of the staves, but also prevents movement toward or from the adjacent staves.

The openings 26 may be staggered relative to each other as illustrated in Fig. 2 of the drawings. This forms a criss cross locking means for positively eliminating any movement of the staves relative to each other; and for always maintaining the silo in its true form, and rigid.

It will be understood that a silo preferably

of the wooden type must withstand wind pressure from the exterior, and pressure from the interior caused by silage.

It will also be understood that a silo is filled only a part of the year, and for that reason unequal pressures are applied to the walls at various times.

Again the contracting and expansion of the wooden staves, caused by atmospheric conditions, causes the joints of the silo to become loose, which permits up and down movement of the staves, and which in turn causes the twisting and inclination of the silo.

The arrangement of the dowel pins or members 27 diagonally through the joint gives an anchoring means for the staves which is efficient and which prevents undesired movement of the silo walls.

It will be understood that while I have shown the opening 26 extending clear through the silo wall, from its exterior to its interior, it will be understood in this connection that the opening need not extend clear through the silo wall.

The arrangement of the piers 18 near the base of the silo makes it possible to anchor the cables at such a height that it substantially assures them against contact with the animals usually around the silo.

It will be understood that animals rubbing against the cables cause them to become loosened which permits inclination of the silo, a result not desirable.

The piers 18 absolutely eliminate such danger as well as form an additional reinforcing and anchoring means for the entire silo.

It will be seen that my device is comparatively simple, and is very effective for walls maintaining the desired position of the silo, and for holding it against any undesired movement.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure, or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. The combination of a silo, a door frame, a plurality of vertical staves having co-acting tongues and grooves on their adjacent edges, an anchoring system for preventing the twisting of the silo comprising a member extended from the outer to the inner surface of the silo wall and diagonally through the tongue and groove of the adjacent staves.

2. The combination of a silo, a door frame, a plurality of vertical staves having co-acting tongues and grooves on their adjacent edges, an anchoring system for preventing the twisting of the silo comprising members

extended from the outer to the inner surface of the silo wall and diagonally through the tongues and grooves of the adjacent staves.

3. The combination of a silo, a door frame, a plurality of vertical staves having co-acting tongues and grooves on their adjacent edges, an anchoring system for preventing the twisting of the silo, said anchoring system including means extended from the outer to the inner surface of the silo wall and diagonally through the joint of the staves and said means having its ends received in the adjacent staves for the purposes stated.

4. The combination with a silo comprising a door frame, plurality of vertical staves having their edges abut against each other, and a base therefor, of an anchoring system comprising a plurality of dowel pins extended from the outer to the inner surface of the silo wall and diagonally through the abutting edges of the adjacent staves for preventing the twisting of the silo and maintaining its rigidity for the purposes stated.

5. The combination with a silo comprising a door frame, a plurality of vertical staves having their edges abut against each other, and a base therefor, of an anchoring system comprising a plurality of dowel pins, the abutting edges of the staves being provided with registering openings, said openings being arranged diagonally across the joint of the abutting staves, said dowel pins being received in said openings for preventing the twisting of the silo and maintaining its rigidity for the purposes stated.

6. A silo wall construction including a series of vertical staves having their edges abut against each other, the abutting edges of said staves being provided with registering openings, each of said openings being arranged diagonally across the joint of the abutting edges and adapted to receive a dowel pin, whereby up and down movement and sideward movement of the staves relative to each other will be prevented.

7. A silo wall construction including a series of vertical staves having their edges abut against each other, the abutting edges of said staves being provided with co-acting tongues and grooves and registering openings, each of said openings being arranged diagonally across the joint of the abutting edges and through the co-acting tongues and grooves and adapted to receive a dowel pin, whereby up and down movement, and sideward movement of the staves relative to each other will be prevented.

8. The combination of a silo including a wall of vertical staves having co-acting tongue and groove portions on their edges, a door frame and a base therefor, of an anchoring system including piers extended upwardly from the base along the side of the silo, a saddle device secured to each of said piers, cables fixed to said saddle devices and

having their ends fixed to the upper edge of the silo and means extending diagonally through the co-acting tongue and groove portions for preventing any up and down movement of the staves relative to each other and for holding the silo against twisting.

9. The combination of a silo including a wall of vertical staves having co-acting tongue and groove portions on their edges, a door frame and a base therefor, of an anchoring system including piers extended upwardly from the base along the side of the silo, a saddle device secured to each of said piers, cables fixed to said saddle devices and having their ends fixed to the upper edge of the silo, and means extended diagonally through the co-acting tongue and groove portions for preventing any up and down movement of the staves relative to each other, said last means including dowel pins extended through registering openings arranged diagonally through the joint of the adjacent staves.

10. The combination of a silo including a wall of vertical staves having co-acting tongue and groove portions on their edges, a door frame and a base therefor, of an anchoring system including piers extended upwardly from the base along the side of the silo, a saddle device secured to each of the upper ends of said piers, cables having their ends immovably fixed to the silo near its upper edge, the center of said cables being received in said saddle devices and said cables being extended upwardly and outwardly from their centers, and means extended diagonally through the co-acting tongue and groove portions for preventing any up and down movement of the staves relative to each other, said last means including dowel pins extended through registering openings arranged diagonally through the joint of the adjacent staves.

11. The combination of a silo including a wall of vertical staves having co-acting tongue and groove portions on their edges, a door frame and a base therefor, of an anchoring system including piers extending upwardly from the base along the side of the silo, a saddle device secured to each of said piers, cables having their ends immovably secured to the upper end of the silo wall and having their centers received in said saddle devices, said cables being extended upwardly and outwardly along the silo wall, said saddle devices being adjustably mounted on said piers whereby they may be moved downwardly for drawing the silo wall downward and crowding it toward the piers all for the purposes stated.

12. The combination of a silo including a wall of vertical staves having co-acting tongue and groove portions on their edges, a door frame and a base therefor, of an an-

choring system including piers extended upwardly from the base along the side of the silo, a saddle device secured to each of said piers, cables having their ends immovably secured to the upper end of the silo wall and having their centers received in said saddle devices, said cables being extended upwardly and outwardly along the silo wall, said saddle device being adjustably mounted on said piers whereby they may be moved down-

ward for drawing the silo wall downward and crowding it toward the piers, and dowel pins extended diagonally through the co-acting tongue and groove portions of the staves for preventing their up or down movement relative to each other all for the purpose stated. 15

Des Moines, Iowa, February 15, 1921.

FRANK J. VAN COTT.