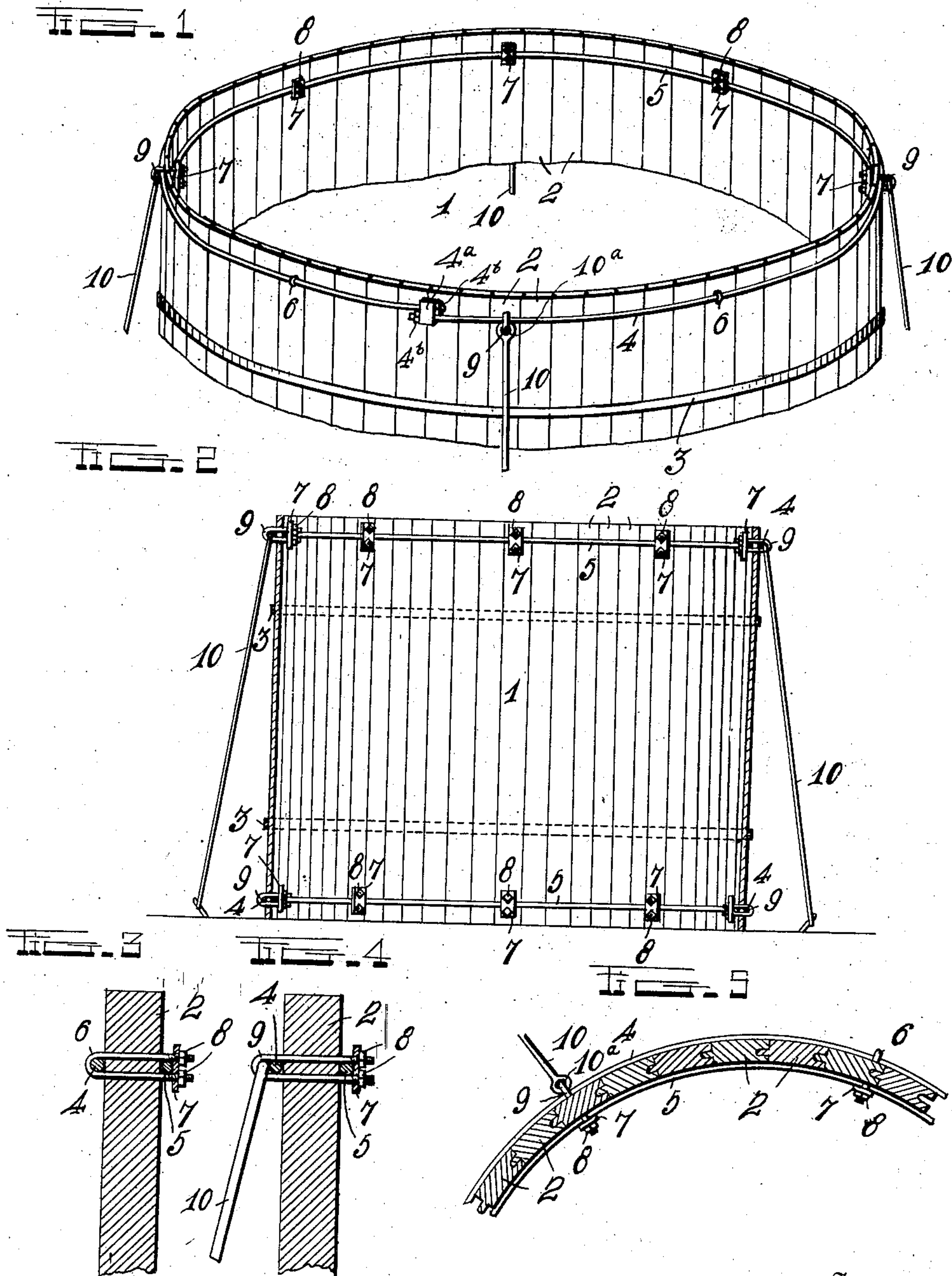


P. B. NAYLOR.
SILO.
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973,687

Patented Oct. 25, 1910.



Witnesses

C. R. Hardy
C. H. Giesbauer

Inventor
P. B. Naylor

By *A. B. Wilson & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

PAUL B. NAYLOR, OF KANSAS CITY, MISSOURI.

SILO.

973,687.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PAUL B. NAYLOR, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Silos; and I do 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 improvements in silos, bins and like receptacles.

The object of the invention is to provide an improved construction of silo, bin or similar receptacle having means whereby the staves forming the sides of the same will be securely held together and braced.

Another object is to provide an improved fastening device for holding the hoops of the receptacle in position.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a detail perspective view of the upper portion of a silo constructed in accordance with the invention; Fig. 2 is a central vertical section of the silo complete; Fig. 3 is an enlarged vertical section through one of the staves showing the manner of fastening the hoops thereto; Fig. 4 is a similar view showing the connection between one of the hoop fastening bolts and one of the brace rods of the silo, and Fig. 5 is a detail horizontal section through a portion of one side of the silo taken immediately above the hoops and their fastening devices.

In the embodiment illustrated, 1 denotes a silo which is constructed of a series of staves 2, and which may be of any desired size or height. The silo is of circular form and the edges of the staves are provided with tongue and groove connections, thereby providing an air tight closure between the same. The silo is provided with the usual hoops 3 and in addition thereto is provided, adjacent to its upper and lower ends, with outer hoops 4 and inner hoops 5, said hoops being preferably in the form of round metal rods, the ends of each of which are connected together by a member 4^a in the form of a block having vertically spaced apertures therein through which the ends of the

rod are passed in opposite directions. These ends are each threaded and provided with a nut 4^b for tightening or loosening the hoop when desired. The outer and inner hoops 4 and 5 at the upper and lower ends of the silo are arranged opposite each other and are held in position by a series of U-shaped bolts 6 which are passed over the outer hoops 4 and through apertures formed in the staves and have their ends engaged with the inner hoops 5. The inner ends of the bolts are threaded and on said threaded ends are arranged clamping plates 7 and nuts 8. The nuts, when screwed up on the threaded ends of the bolt, draw the clamping plates 8 into tight engagement with the inner hoops 5 and the looped ends of the bolts into engagement with the hoops 4 on the outer side of the silo, thereby holding the hoops in place and securely fastening the hoops and staves together. Any suitable number of bolts 6 may be provided and in practice a bolt will probably be provided for each stave, thus independently fastening all of the staves to the hoops. In addition to the bolts 6 at the upper end of the silo, I preferably provide similar bolts 9 which are arranged at intervals between the bolts 6. The bolts 9 are of somewhat greater length than the bolts 6 and with the upper looped ends of said bolts 9 are engaged the eyes 10^a at the upper ends of brace rods 10 which extend from the upper end of the silo to the ground where they are suitably anchored, thus holding the silo in an upright position.

By constructing a silo of staves having tongue and groove joints and provided with inner and outer hoops to which the staves are secured as herein shown and described, it will be impossible for the staves to drop out or for the silo to fall down from the shrinkage of the staves which frequently occurs during the summer season in silos of the ordinary or usual construction.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

Having thus described my invention, what I claim is:—

1. A silo formed of a series of staves having tongue and groove joints, outer hoops arranged around said staves at the upper and lower ends of the silo, inner hoops engaged with the inner sides of the staves at the upper and lower ends of the silo, a series of U-shaped clamping bolts inserted through said staves and engaged with said outer and inner hoops, clamping plates and nuts arranged on the inner ends of said bolts, a series of brace rods arranged at intervals around the outer side of the silo, said rods being anchored at their lower ends and having eyes at their upper ends engaged with the cross bars of said U-shaped bolts.

2. A silo formed of a series of vertically-

arranged staves, adjustable hoops engaging the inner and outer faces of the staves for securing the staves in position, anchoring rods for steadying the silo and means for securing the upper ends of the anchoring rods to the silo and retaining in position the stave-positioning hoops, said means comprising a substantially U-shaped threaded bolt adapted to extend through the staves on opposite sides of the adjustable hoops and clamping nuts engaging the threaded ends of said bolt.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PAUL B. NAYLOR.

Witnesses:

OSCAR T. HALLEY,
JOSEPH E. SANDERSON.