R. HARTENBERGER.

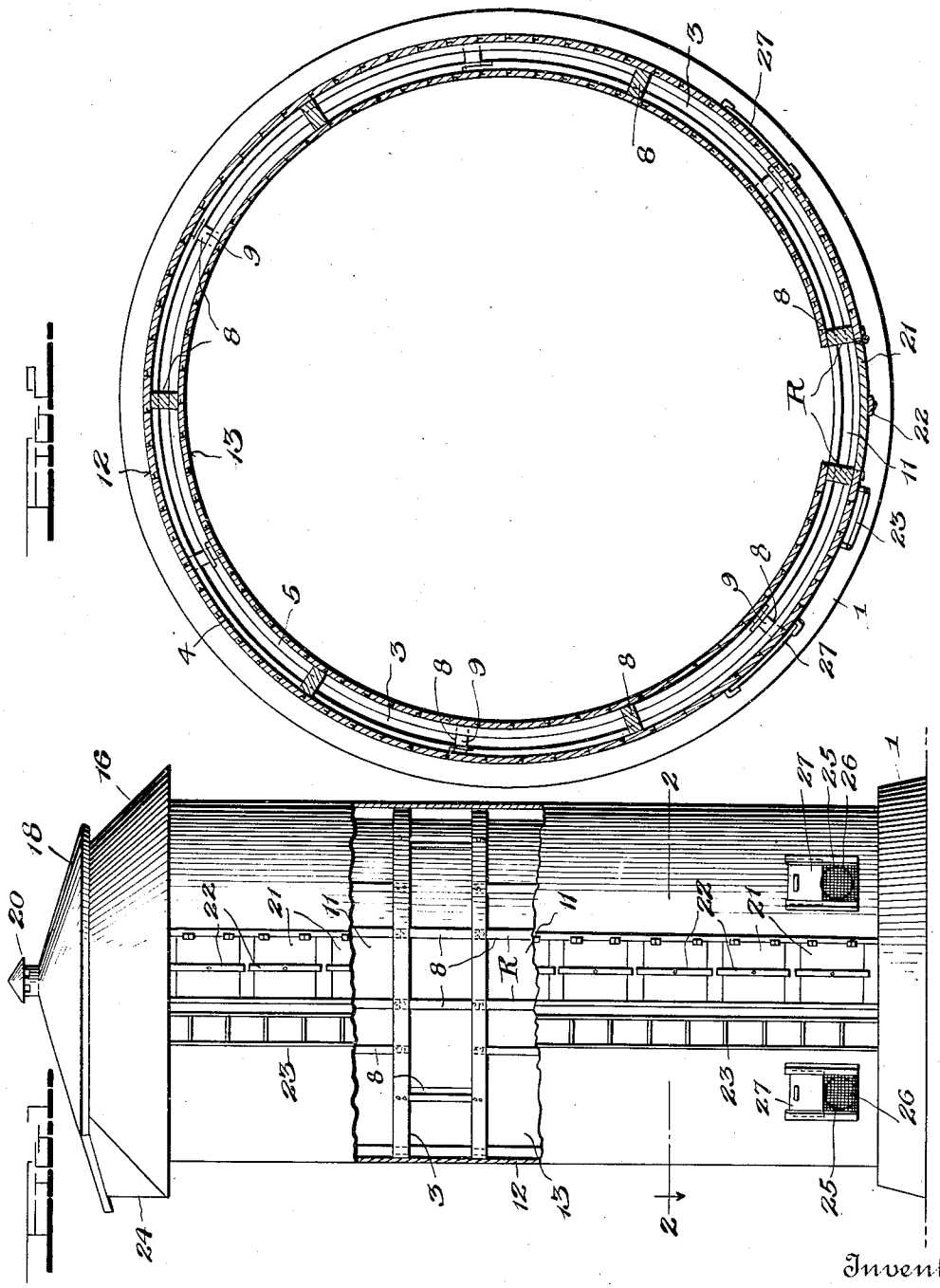
SILO.

APPLICATION FILED MAY 25, 1916.

1,220,106.

Patented Mar. 20, 1917.

2 SHEETS—SHEET 1.



Inventor

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2 SHEETS—SHEET 2.

Fig. 3.

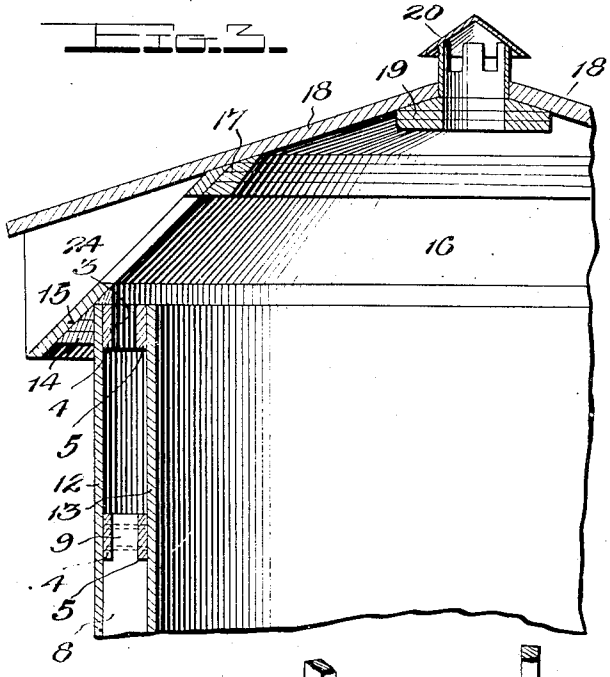


Fig. 4.

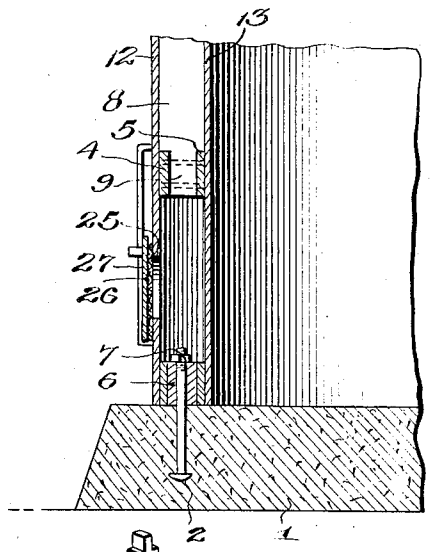
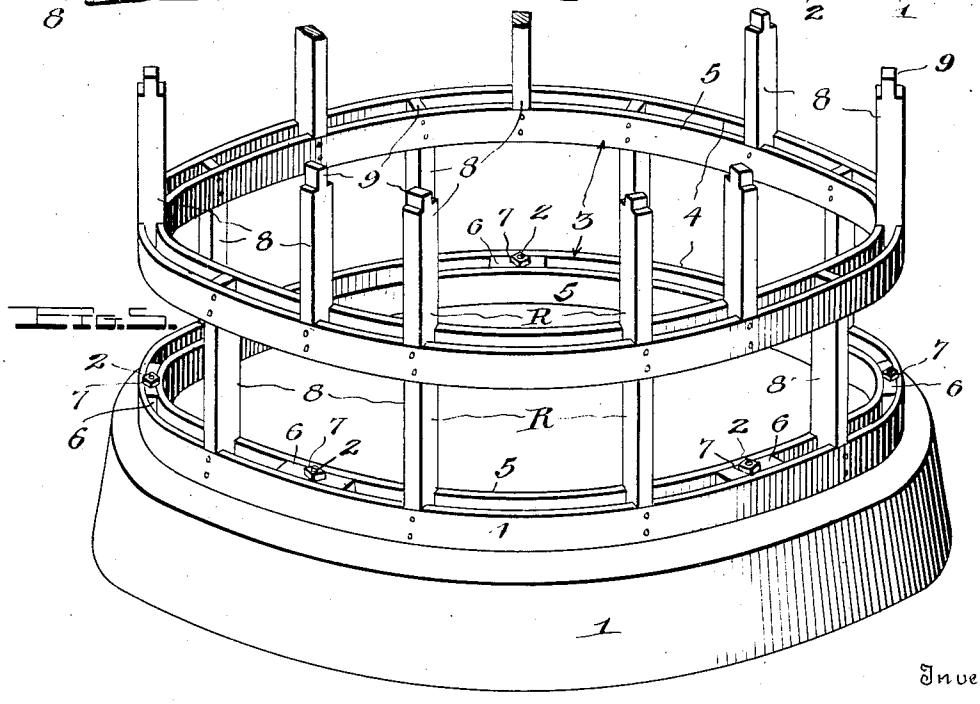


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SILO.

1,220,106. Specification of Letters Patent. Patented Mar. 20, 1917.

Application filed May 25, 1916. Serial No. 99,841.

To all whom it may concern:

Be it known that I, ROBERT HARTENBERGER, a citizen of the United States, residing at Sheboygan Falls, in the county of Sheboygan and State of Wisconsin, 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.

My invention relates to improvements in silos and more particularly to those usually constructed of wood and comprising a lining and a sheathing secured respectively to the interior and exterior of a supporting frame. Heretofore, in so far as I am advised, it has been common practice when building silos of this class to employ a number of superimposed wooden rings with studs extending between them, this structure constituting the frame above referred to. Experience has taught, however, that this construction is prone to rot in view of the fact that the space between the sheathing and lining cannot be sufficiently aerated or ventilated to prevent the prevalence of moisture not only from weather conditions but from the material within the silo. It is therefore the object of my invention to so alter the construction of silos of the class mentioned as to allow a free circulation of air between the sheathing and lining from the lower end of the silo to the upper end thereof.

With this general object in view, the invention resides in certain novel features of construction and in unique combinations of parts to be hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings which constitute a part of this application and in which:

Figure 1 is a side elevation of the improved silo with parts broken away to more clearly illustrate the construction of the supporting frame;

Fig. 2 is a horizontal section taken on the plane indicated by the line 2—2 of Fig. 1;

Fig. 3 is an enlarged vertical section through the upper end of the silo;

Fig. 4 is a similar view cut through the lower end thereof;

Fig. 5 is a perspective view of a portion of the frame.

In specifically describing the construction shown in the drawings above briefly described, similar characters will be placed on corresponding parts throughout the several views and reference will be herein made to the numerous elements by their respective indices. To this end, the numeral 1 designates a foundation which will preferably, though not necessarily be constructed of cement, the lower portions of a plurality of upright bolts 2 being embedded in said foundation during its course of construction.

Resting on the foundation 1 is the lowermost of a plurality of horizontal superimposed wooden rings 3, each of which comprises an outer annular section 4 and a similar inner section 5, the two sections 4 and 5 being spaced from each other to allow for the free passage of air therebetween. Spacing blocks 6 are secured at intervals between the inner and outer sections 4 and 5 of the lower ring 3, said blocks having bores formed vertically therethrough for the reception of the projecting upper ends of the bolts 2, nuts 7 being threaded on said bolts whereby the entire frame structure will be rigidly anchored to the foundation.

A plurality of studs 8 extend vertically between the numerous rings 3, said studs having tenons 9 on their upper and lower ends which are received between the inner and outer sections of said rings, nails, screws or the like being driven through said sections and into the tenons. This forms a much more rigid joint than the usual one which consists in allowing the studs to merely rest on the rings, said studs being secured in place by toenailing. The studs 8 are for the most part disposed in staggered relation to render the frame more rigid and durable, but two vertical rows R of studs are provided at the front of the silo, the spaces between these last named studs and the rings at the upper and lower ends thereof constituting door openings 11 by means of which access may be had into the interior of the silo at any one of a number of levels.

Secured to the outer sections 4 of the rings 3 is the usual sheathing 12 which will preferably consist of tongued and grooved stock as shown, said sheathing terminating at opposite sides of the door openings 11 as does also the lining 13 which will usually be constructed of the same material as said sheathing.

A wooden ring 14 composed of a number of layers of wood sawed to shape surrounds and is secured to the upper end of the sheathing 12, said ring having a beveled upper side 15, it being to this side that the lower ends of inclined roof boards 16 are secured, the upper ends of said boards being fastened to a second similarly constructed ring 17. The outer side of the last named ring is preferably beveled at two different inclines, the upper ends of the boards 16 being secured to the steepest of such bevels while the lower ends of other roof boards 18 are secured to the other bevel, said boards 18 being inclined less than those indicated at 16. The upper ends of the boards 18 are secured to the beveled upper side of a small peak ring 19, said ends being sawed off preferably flush with the inner side of the ring to allow the discharge of air from the interior of the silo. A hood 20, however, is provided to prevent rain, snow and the like from entering the silo at this point.

Hinged doors 21 are provided for closing the door openings 11, said doors being normally held closed by suitable locking bars 22, and for allowing a farm hand to enter the silo through any one of the doorways, a ladder 23 is provided adjacent said doorways.

In order that the silo may be filled with ensilage while all of the doors 21 are closed, an inlet 24 is provided near the lower edge of the roof, said inlet being of any suitable construction but preferably having its top closed by certain of the roof boards 18 which are of greater length than the others for this purpose.

The lower end of the sheathing is formed with one or more air inlet openings 25 over which screen wire or the like 26 is secured, slides 27 being provided for closing said openings when desirable.

By constructing the improved silo in the manner shown and described, air may enter the space between the sheathing and lining and may freely circulate between these parts throughout their lengths, this air being allowed to escape through the uppermost ring 19 to which the roof is secured. Particular emphasis is laid upon the specific construction of the rings 3 since this permits the free vertical movement of air and at the same time allows the studs to be provided with tenons which will effectively anchor the same and thus form an extremely rigid and durable supporting frame.

From the foregoing, taken in connection with the accompanying drawings, the construction, manner of operation and advantages of the improved silo will be readily understood without requiring a more extended explanation. In conclusion, however, I wish to state that although I have shown and described certain specific details for accomplishing probably the best results, numerous changes may be made within the scope of the invention as claimed without sacrificing the main advantages thereof.

I claim:

1. A silo comprising a supporting frame consisting of a plurality of superimposed rings and studs extending therebetween, said rings being each constructed of spaced inner and outer sections to allow the free passage of air vertically therethrough, a sheathing secured to the outer sides of said rings, and a lining secured to the inner sides thereof, means being provided for admitting air into the space between the lower ends of the sheathing and lining and for allowing the escape of such air from the upper end of said sheathing and lining.

2. A silo frame comprising a plurality of superimposed rings each formed of inner and outer annular sections spaced apart to allow the free circulation of air therebetween when the sheathing and lining of the silo are secured in place, and vertical studs extending between the aforesaid rings, said studs having tenons on their upper and lower ends secured between the inner and outer sections of said rings.

3. A silo frame comprising a plurality of superimposed rings each formed of inner and outer annular sections spaced apart to allow the free circulation of air therebetween when the sheathing and lining of the silo are secured in place, and vertical studs extending between the aforesaid rings, said studs having tenons on their upper and lower ends secured between the inner and outer sections of said rings, said studs at the front of the silo being disposed in two vertical rows to form door frames, while the other studs are disposed in staggered relation.

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

ROBERT HARTENBERGER.

Witnesses:
F. H. DENISON,
A. P. PAULY.