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SUPPORTING MEANS FOR BIN HOPPER BOTTOMS

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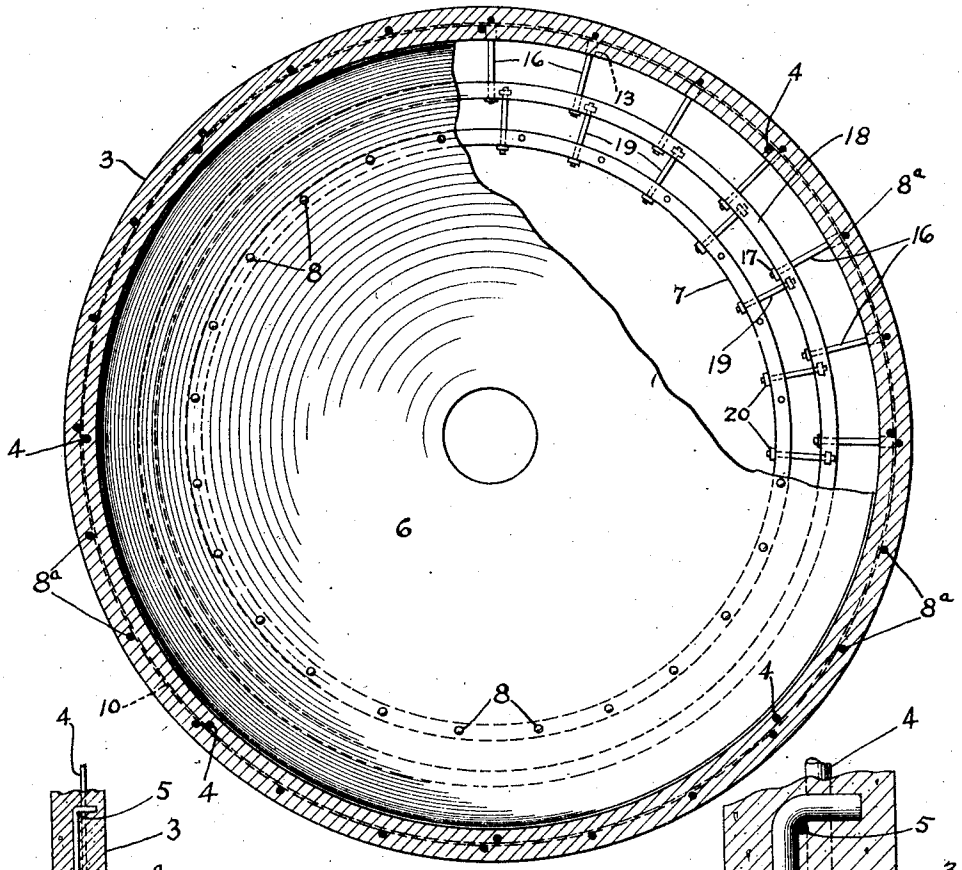


FIG. 1

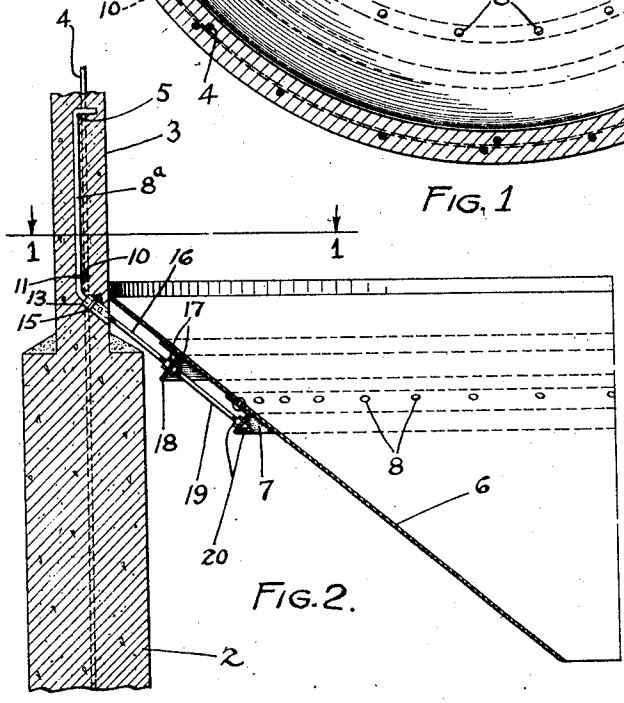


FIG. 2.

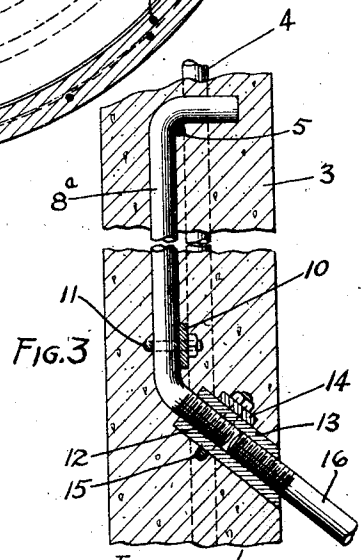


FIG. 3

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UNITED STATES PATENT OFFICE.

FRANK L. HAGUE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO FEGLES CONSTRUCTION COMPANY, OF FORT WILLIAM, ONTARIO, CANADA, A CORPORATION OF CANADA.

SUPPORTING MEANS FOR BIN-HOPPER BOTTOMS.

Application filed September 18, 1922. Serial No. 588,992.

In the erection of bins such as are used for grain or other materials, where the walls are composed of reinforced concrete, it has been found desirable to make the hopper bottoms of the bins of sheet metal of suitable gauge instead of providing an entire concrete construction. The bin walls are first erected and then the hopper bottom put in place, and some means provided for suspending the bottom from the side walls.

The object of my invention is to provide a simple inexpensive device for this purpose which can be easily and quickly put in place, and when properly adjusted will support the hopper bottom with an even distribution of the load thereon.

A further object is to provide a supporting means of simple inexpensive construction, and one which can be easily applied to the bin walls and the bottom.

The invention consists generally in various constructions and combinations all as hereinafter described and pointed out in the claims.

In the accompanying drawings forming part of this specification:—

Figure 1 is a horizontal sectional view through a reinforced concrete bin embodying my invention.

Figure 2 is a detail sectional view showing the manner of anchoring the hopper bottom to the bin wall.

Figure 3 is a detail view on an enlarged scale illustrating the preferred manner of mounting the anchor in the concrete wall of the bin.

In the drawing, 2 represents the base wall of the bin, 3 the upper walls thereof having the usual upright reinforcing rods 4, and the horizontal rods 5. 6 represents the metallic hopper bottom having on the under side thereof a ring 7 of angle bar with one flange secured to the bottom by suitable means such as rivets 8.

During the erection of the wall, I place therein horizontally around the bin at the desired elevation, a series of anchor rods 8^a preferably having their upper ends inwardly turned, and resting upon one of the horizontal reinforcing rods 5. A band 10 is imbedded in the concrete, and U bolts 11 pass through this band and around the rod 8^a and bind them firmly together.

At the lower end, each rod 8^a has an inwardly and downwardly inclined end section 12 that is exteriorly threaded to enter the upper end of a sleeve 13, that is also imbedded in the concrete and held therein, preferably by means of a band 14 in angular relation to the band 10 and U bolts 15 which pass through said band and around the sleeve 13. The sleeve extends to the inner face of the wall and is beveled at the end to be flush with the wall surface, and is interiorly threaded at this point, and when the bin is erected, this end of the sleeve will be filled with oakum or grease, or some material which will protect the threads from the concrete and prevent the sleeve from being filled up with foreign substance until the workmen are ready to install the hopper bottom.

At this time, the threaded ends of the sleeves will be cleaned out and the threaded ends of the bolts 16 inserted therein. The other ends of said bolts are secured by lock nuts 17 to a floating ring 18 preferably composed of angle bar with one flange seated on the under side of the hopper bottom without being secured thereto. Bolts 19 connect the flange rings 7 and 18 and are provided with adjusting nuts 20 by means of which the proper relation may be maintained between the supporting rings. When these bolts are assembled and adjusted, the hopper bottom will be securely supported, and through the adjustable feature of the bolts and the loose supporting ring, the bottom can be properly aligned and the load evenly distributed thereon.

I prefer to make one of the rings under the hopper bottom loose or floating as described, as it permits the load to be more uniformly distributed on the bolts and is desirable where the bolts have a threaded connection with the anchor in the wall. I do not, however, confine myself to the use of the floating ring, as some other form of anchor might be devised which would render a floating ring unnecessary.

I claim as my invention:—

1. In combination with bin walls, a hopper bottom fitting within said walls, a member secured to the under surface of said hopper bottom near the upper edge thereof, and extending circumferentially thereon, and rods secured at intervals to said member at one end and having their other ends anchored in said bin walls.

2. In combination with bin walls, an an-

choring means imbedded therein, a hopper bottom, ring seated against the under side of said bottom at the outer portion thereof, and supporting bolts connected at one end with said rings, and at the other end with said anchoring means.

3. In combination with bin walls, an anchoring means imbedded therein, a hopper bottom, flanged rings seated against the under side of said bottom, one of said rings being secured thereto and the other loose thereon, bolts adjustably connecting said rings, and bolts connecting one of said rings and said anchoring means.

4. In combination with concrete bin walls, anchoring means imbedded therein, sleeves connected with said rods and having lower interiorly threaded ends forming sockets on the inside walls of the bin, a hopper bottom and means engaging the threaded ends of said sleeves and connected with said hopper bottom.

5. In combination with concrete bin walls having reinforcing means therein, rods having inwardly turned threaded lower ends, sleeves imbedded in the concrete and engaging the threaded lower ends of said anchor rods, bands imbedded in the concrete and having means for engaging said rods and said sleeves, the lower ends of said sleeves being flush with the inner surface of the bin wall and interiorly threaded, rods engaging the interiorly threaded ends of said sleeves, and a hopper bottom having means engaging said rods.

6. In combination with concrete bin walls, an anchoring means imbedded therein, a sheet metal hopper bottom, angle bar rings seated against the under side of said hopper bottom, the lower ring having one flange secured to said bottom, the upper ring being loose and free to adjust itself on said bottom, bolts connecting said rings one with the other, and bolts mounted at one end in said loose ring and adjustable therein, and connected at their opposite ends with said anchoring means.

7. In combination with bin walls, a hopper bottom fitting within said walls and having a ring on the under side of its outer portion, a series of rods extending under said hopper bottom and secured at one end to said ring and having their outer ends anchored in said bin wall.

8. In combination with bin walls, a hopper bottom, an angle bar secured to the under side of the outer portion of said hopper bottom, and means mounted at one end in a depending flange of said bar and having its other end anchored in said bin walls.

9. In combination with bin walls, a hopper bottom, angle bars having a flange secured to the under side of said hopper bottom at the outer portion thereof, and means mounted in the depending flanges of said angle bars and projecting outwardly therefrom and anchored in said bin walls.

In witness whereof, I have hereunto set my hand this 15th day of September 1922.

FRANK L. HAGUE.