

W. S. SAMPSON.

Grain Bin.

No. 37,139.

Patented Dec. 9, 1862.

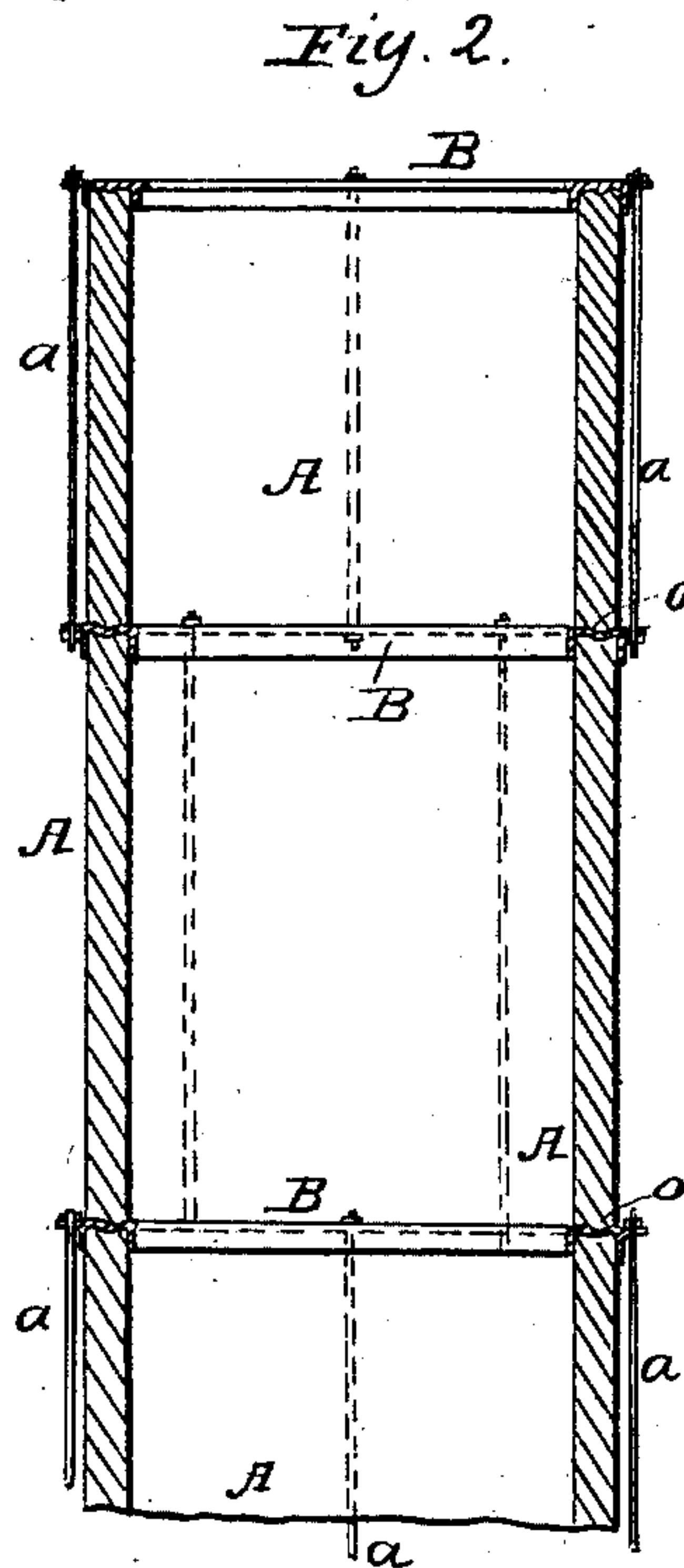
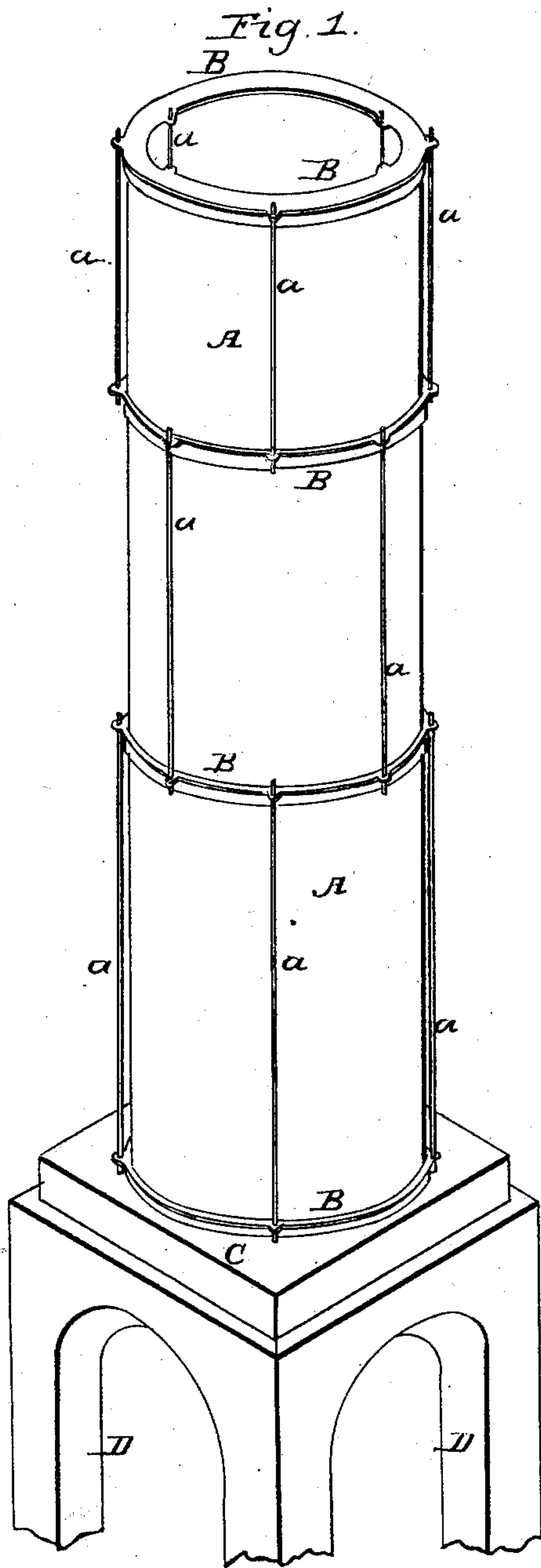


Fig. 3.

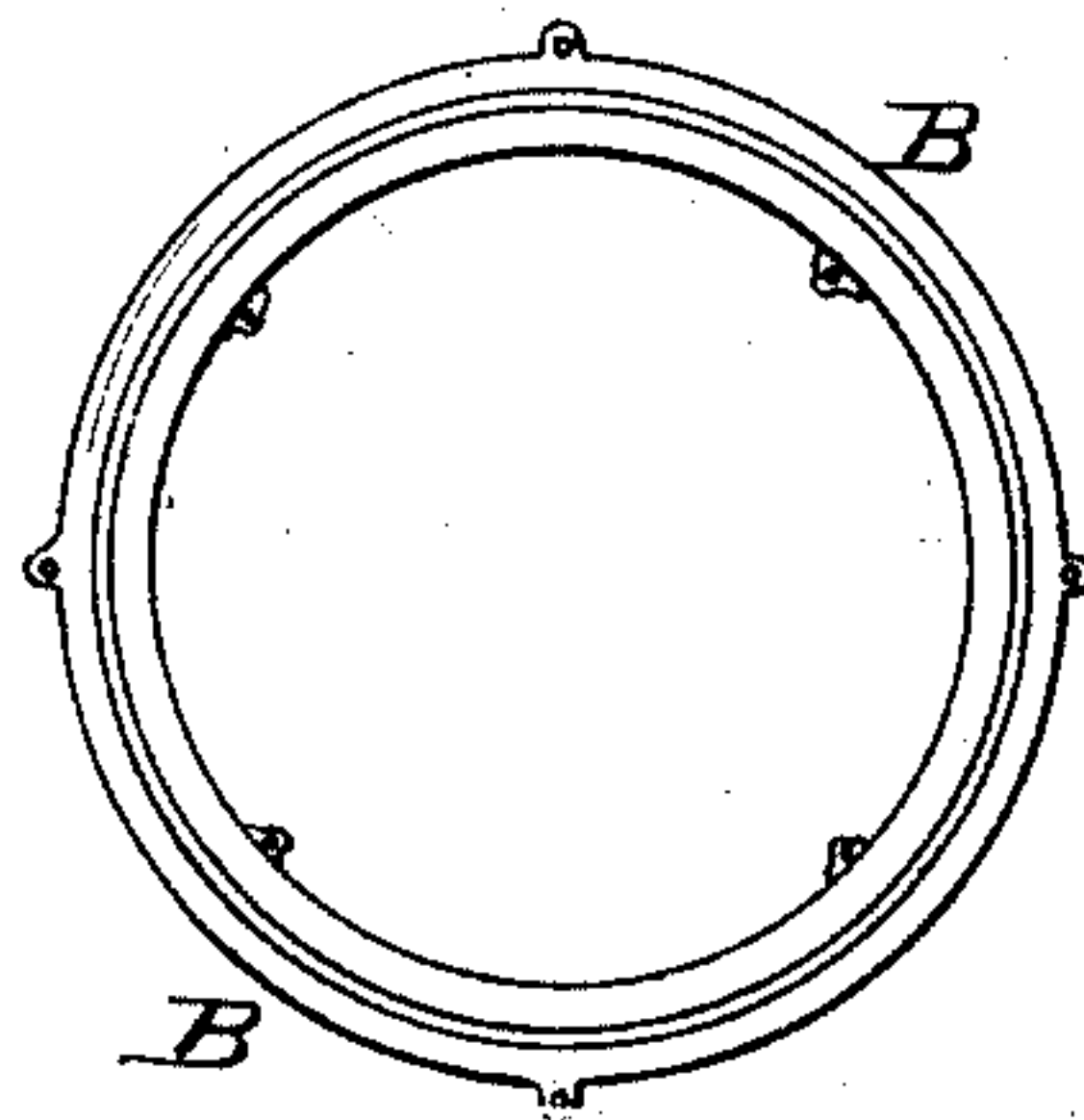
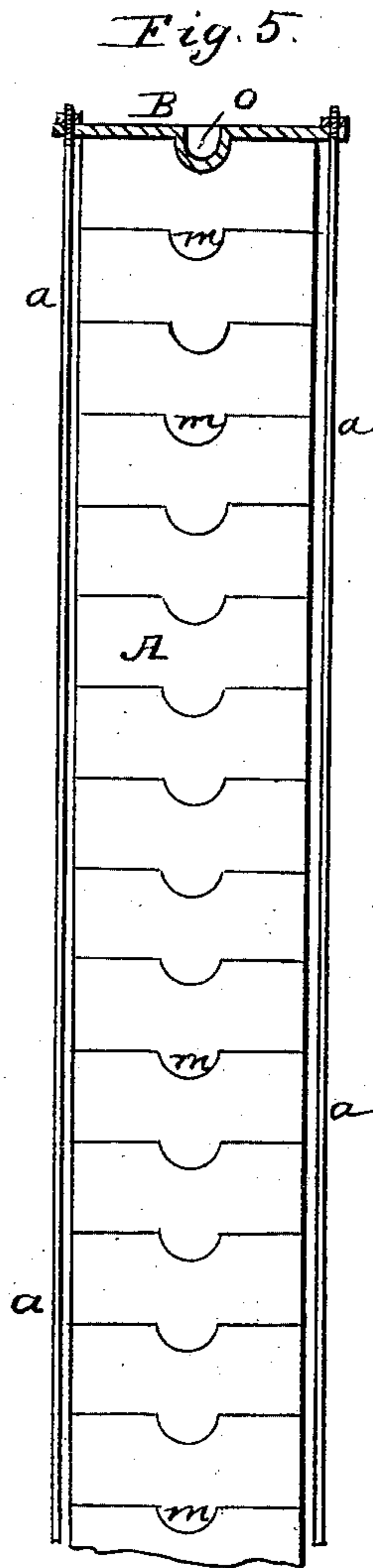
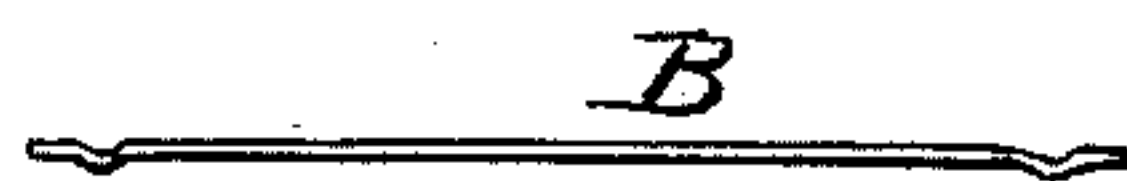


Fig. 4.



Witnesses:
H. H. Harvey
W. H. Doherty

Inventor:
W. S. Sampson, By J. H. Smith

UNITED STATES PATENT OFFICE.

WILLIAM S. SAMPSON, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
G. H. JOHNSON, OF SAME PLACE.

IMPROVEMENT IN GRAIN-BINS.

Specification forming part of Letters Patent No. **37,139**, dated December 9, 1862.

To all whom it may concern:

Be it known that I, WILLIAM S. SAMPSON, of New York, of the county of New York, in the State of New York, have invented certain new and useful Improvements in the Construction of Fire-Proof Grain-Bins; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to a new method of constructing grain-bins for holding grain in large quantities, and has for its object the employment of incombustible material in such a manner as to produce the most economic and advantageous results.

Previous to my invention, fire-proof grain-bins have been constructed, and Letters Patent have been granted for iron grain-bins in various combined arrangements, to constitute large storage-compartments, and a large establishment has lately been completed in the city of Brooklyn, with an arrangement of a series of vertical tubular bins of iron, and capable of containing about four hundred thousand bushels of grain, and with suitable machinery for receiving and discharging the grain into and from the bins. An establishment of this kind accomplishes the great desideratum of precluding all fire risk, and is also more durable than the wooden grain-houses. But in the employment of iron it is found that the cost is so very great as to counterbalance the great advantages attained.

It is well known to those who are familiar with the nature of grain-storage bins that the great strength requisite to withstand the pressure—say, in a bin ten feet in diameter and forty feet high—precludes any ordinary or heretofore known construction of wall of brick or other similar material, as a substitute for the fire-proof iron bins; but I have discovered a new mode of constructing a wall for a bin of brick and iron braces, whereby I am enabled to produce a bin capable of sustaining any pressure which can be brought against it, and one which will cost only about one-half as much as an iron bin of the same capacities. Thus I am enabled to combine the two great desiderata necessary to a successful and desirable substitute for the wooden grain-bins—viz., non-combustibleness and economy.

The nature of my invention consists in forming the bin or reservoir of bricks or their equivalents, so formed as to interlock laterally, in combination with retaining-plates of iron and tie-rods for holding the brick-work together vertically, as hereinafter more fully explained.

In the accompanying drawings, forming part of this application, Figure 1 is an isometrical perspective view of one of my improved bins. Fig. 2 is a partial vertical section of the same. Figs. 3 and 4 are detailed views of bond-plates; and Fig. 5 is a partial sectional view on an increased scale, showing the peculiar construction and arrangement of bricks.

In the several figures the same letter of reference indicates the same part of the apparatus.

To enable those skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, referring by letters to the above-mentioned figures of the drawings.

A is the bin, which I have shown as, and propose to make, cylindrical. This bin is made with a suitable means of discharging its contents at its bottom in the usual manner, and may be supported by suitable arches, D, surmounted by a platform, C. The bin A is formed of brick-work of a peculiar kind, and locked vertically together in sections by means of cast-iron bond-plates B B B B and tie-rods of iron. (Seen at *a*.) I have colored the brick portion of the bin red and tinted the iron-work blue in the drawings, so as to illustrate perfectly.

At Fig. 5 I have shown on an increased scale the peculiar shape of the bricks of the bin A. It will be seen at Fig. 5 that the lower side of each brick has formed in it a longitudinal tongue, *m*, while the upper side of each has a correspondingly-shaped groove. The brick thus shaped are laid in courses, breaking joints, as usual in brick-work, with their tongues and grooves matching together, as illustrated at Fig. 5. It will be understood that these peculiarly-shaped brick when laid will present on the upper side, or surface of each course, an annular groove; and it will be seen that the cast-iron plates B are formed with an annular depression, *o*, to fit into said groove in the brick, and also to receive the tongues *m* of the bricks laid on top of said plates B. These cast-iron plates B are ar-

ranged between the courses of brick, as seen at Fig. 2, and divide the brick-work into sections or short cylinders, and are formed with lugs or ears, through which pass the iron-rods *a*, which latter are furnished with suitable male and female screws, by which they are made to connect the several plates, B B, &c., together. The arrangement of the plates B and rods *a* is such as that not only the courses of each section of brick-work are clasped vertically together, but also so that the several tubular sections of brick-work are effectually tied together, as shown at Figs. 1 and 2.

It will be understood that a tubular bin formed of bricks, shaped as described and shown, and held together by the plates B and rods *a*, will sustain any amount of pressure less than the weight which will crush the material or substance of the brick, for the joints being broken the thrust is the same as if each course were formed of one annular brick, with an annular tongue and groove locking into those of the courses above and below it; and if the courses be held together so that they cannot move from their horizontal plane, it is evident that the wall cannot give way except by the crushing of the material of the brick.

It will be understood that the proportions of the tongue and groove of the brick may be almost infinitely varied without departing from my invention. Indeed, the brick may be formed with one entire side convex, and the other opposite one concave, in lieu of the tongue and groove, with a similar result to that already described.

In Figs. 1 and 2 I have shown the cast-iron plates B, with vertical flanges coming against the inner and outer surfaces of the brick-work; but these flanges are not material, and the said plates may be employed without any, as seen at Figs. 3, 4, and 5.

As I have before remarked, the great end accomplished by my invention is a mode of

construction involving great strength, employing fire-proof materials, and embodying great economy.

Upon careful investigation and practical calculation, based on the most reliable data, I can assert that I can construct my improved fire-proof bins at a cost certainly not exceeding half that of the iron bins—that is to say, I can build an establishment possessing all the advantages of and equal capacity with that constructed at Brooklyn, which cost one hundred and seventy odd thousand dollars, for seventy-five thousand dollars. It will thus be seen how great a result is accomplished by the new method of construction involved in my invention, by which the brick-work is made capable of sustaining the pressure to which it may be subjected.

I do not wish to limit myself in carrying out my invention, to any details of design so long as the mechanical method of construction involved is followed. It may be found expedient to put the plates B much nearer together, as more frequently during the lower portion of the bin than in the upper part, to give increased stability to that portion of the bin which bears the greatest strain.

Having fully described the construction of my improved combined brick and iron bin, what I claim as new, and desire to secure by Letters Patent, is—

Forming the bricks or block of composition with tongues and grooves or their equivalents, substantially as described, in combination with the plates B and rods *a*, as and for the purposes hereinbefore fully described.

In testimony whereof I have hereunto set my hand and seal this 25th day of October, 1862.

WM. S. SAMPSON. [L. S.]

In presence of—

J. N. MCINTIRE,
ANDREW J. TODD.