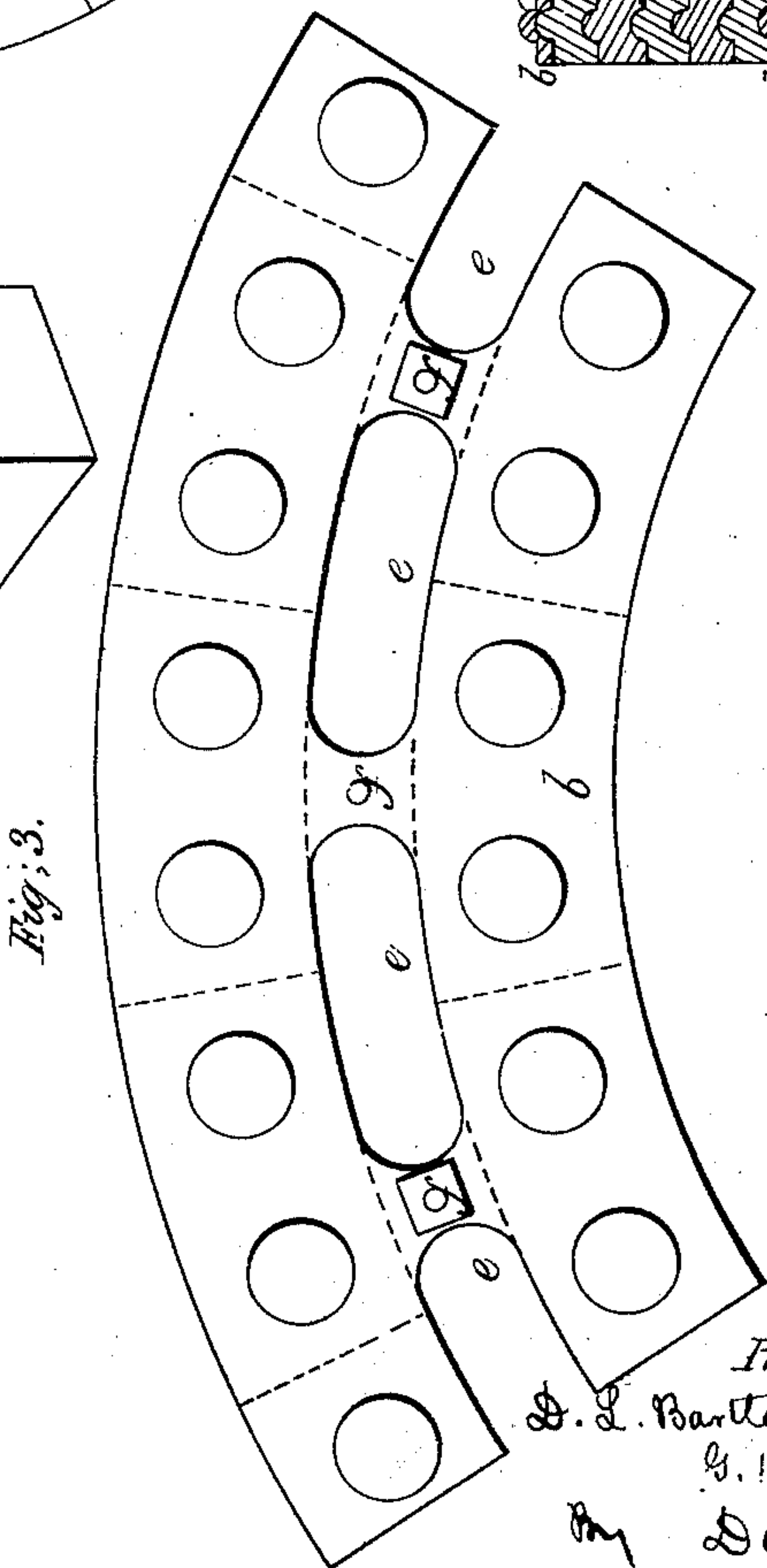
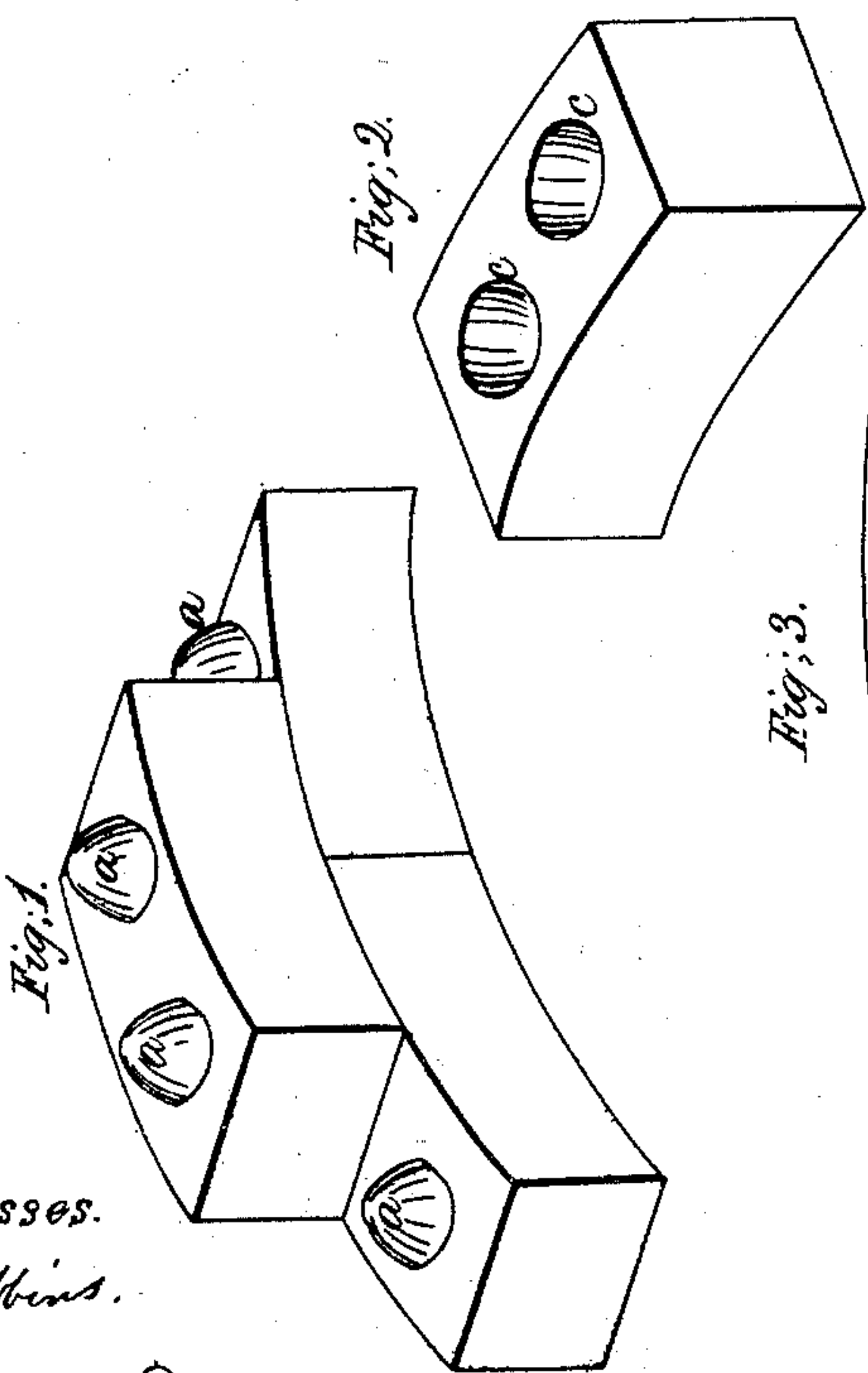
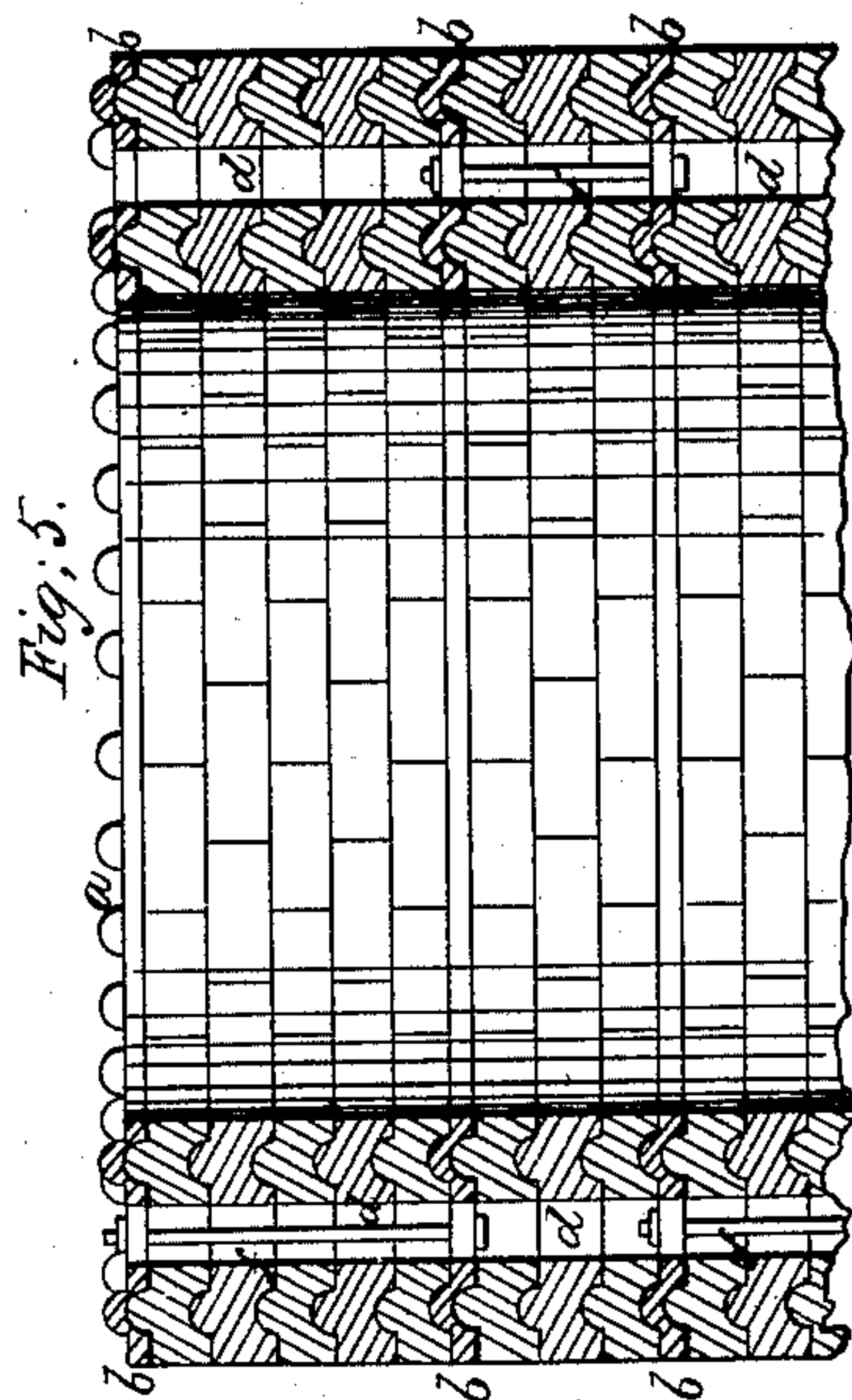
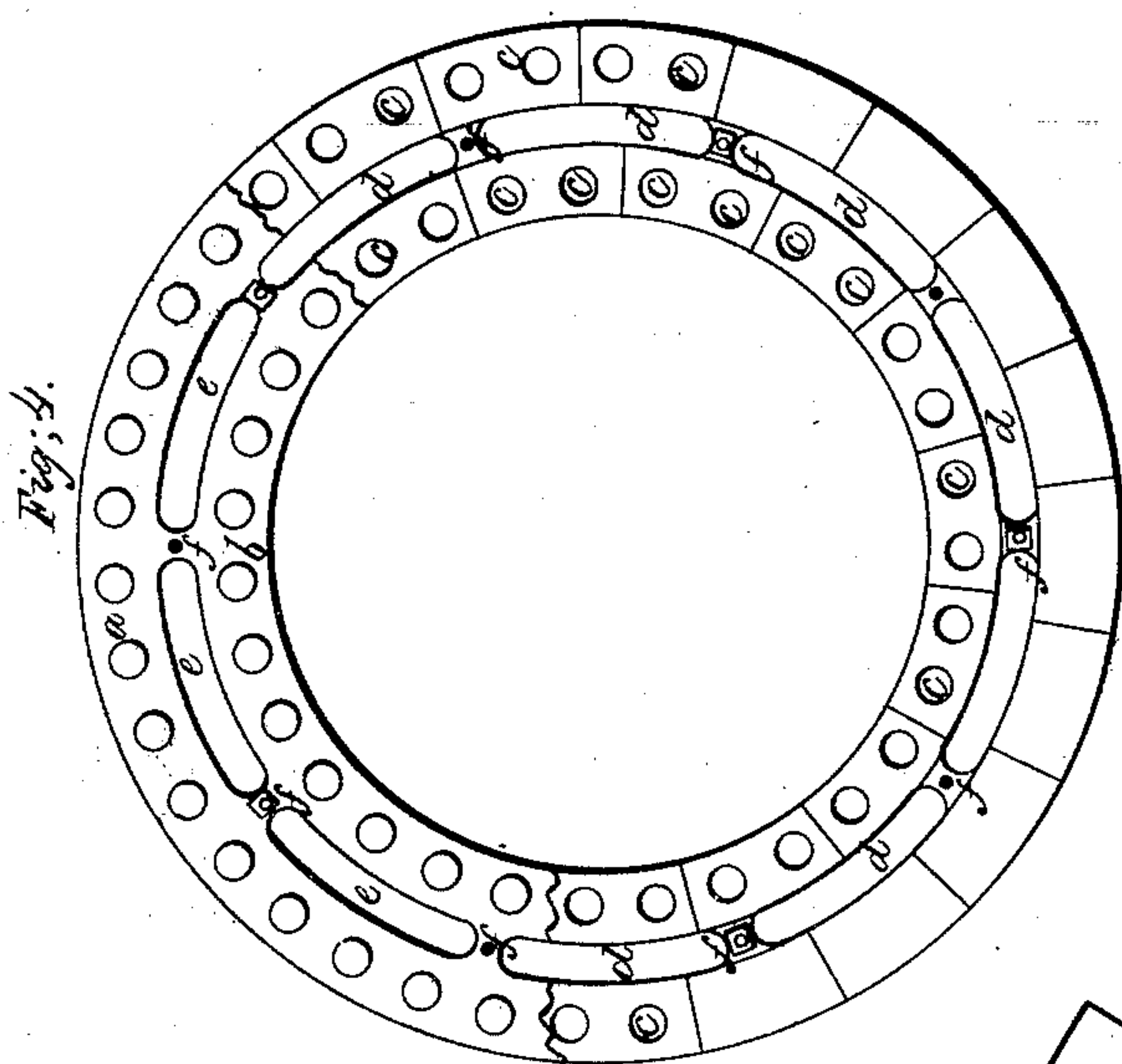


Bartlett & Johnson

Fire Proof Building.

N^o 57,462.

Patented Aug. 28, 1866.



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H. H. Young.

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UNITED STATES PATENT OFFICE

D. L. BARTLETT AND GEORGE H. JOHNSON, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN THE CONSTRUCTION OF DOUBLE CYLINDRICAL STRUCTURES.

Specification forming part of Letters Patent No. 57,462, dated August 28, 1866.

To all whom it may concern:

Be it known that we, DAVID L. BARTLETT and GEORGE H. JOHNSON, of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in the Construction of Fire-Proof Cylinders for Grain-Bins, Reservoirs, and other purposes; and we do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of our improved bricks, and illustrates the manner of combining the same. Fig. 2 is a perspective view of a single brick, showing the lower side thereof. Fig. 3 is a plan view of one of our improved bond or tie plates, with red dotted lines illustrating relative position of bricks when combined therewith. Fig. 4 is a horizontal section of a cylinder constructed after our invention, illustrating, in part, the bond-plates in position, and in part the same removed, leaving a course of bricks exposed to view. Fig. 5 is a central vertical section through the cylinder illustrated by Fig. 4.

Similar letters indicate like parts in all of the figures.

The nature of our invention consists of a novel mode of constructing fire and vermin proof cylindrical structures for grain-bins, reservoirs, towers, and other purposes, by a new combination of interlocking bricks with peculiar metallic tie-plates in double concentric walls.

The bricks which we use are made either straight or of a segmental form, (by preference the latter,) in the ordinary manner, of the usual materials, but are so fashioned in molds as that each brick shall be provided with two semi-spherical lugs or bosses, *a a*, Fig. 1, formed centrally between its side edges on one face thereof, each, respectively, at points halfway between the center of the brick and its ends, so that the distances between the bosses in a course of bricks laid end to end shall all be equal, and with recesses or concavities *c c*, counterparts of the bosses, in the same relative position on the opposite side thereof. The curve imparted to each brick will, of course, vary with the size or diameter of the cylinder

to be constructed therewith, each brick being so formed as to be a segment of the inner circumference of such cylinder.

With the segmental bricks of the form herein described, we construct fire and rat proof structures for the storage of grain, by building them up in two concentric walls having an air-space, *d*, Figs. 4 and 5, between them, in combination with courses of segmental metallic tie-plates *b*, Figs. 3 and 5, whose width is such as that they will extend entirely over both walls and the intervening inclosed air-space. These tie-plates are laid between the courses of brick at regular intervals, embracing a larger or smaller number of courses, as may be found expedient, and are provided with bosses and recesses upon their opposite sides, coinciding exactly in form and arrangement with those of the bricks with which they are to be used. These plates, consequently, interlock with the bricks, as do the bricks with each other.

Central extended slots *e e* are provided in each of the metallic tie-plates *b*, for the purpose of allowing a free passage of air between the spaces divided by the tie-plates, said slots coinciding in position with the inclosed air-chamber *d* between the walls. Tie-rods *f* are also inserted between the courses of metallic plates within the air-chamber *d*, through apertures formed for the purpose in the plates between the slots *e e*, as seen in Figs. 3, 4, and 5. These tie rods or bolts *f* are headed at one end, and are tightened and secured by nuts at the other in the usual manner. (See Fig. 5.)

By thus placing the tie-rods in the center of the tie or bond plates, an equal pressure is exerted thereby over the entire width of the plates, and upon the section of wall included between them, while the interior of the cylinder is left entirely free and unobstructed.

Our improved form of bricks enables us to obtain all the advantages of interlocking joints in building circular walls, without the difficulty attending the forms of tongue-and-groove bricks which have been heretofore designed for the purpose, as the projecting bosses, with corresponding recesses, are more readily made to coincide and adjust than an extended curved tongue and groove can possibly be, and are formed at far less expense.

Although we deem the semi-spherical form of bosses to be the best, we contemplate other equivalent forms. We also design forming these bosses upon the ends as well as upon the upper and lower faces thereof.

By thus interlocking the bricks in a circular wall we obtain great strength therein; but in order to obtain that degree of strength required in resisting the great pressure exerted outwardly in a cylindrical structure filled with grain, or with liquids, we combine with our walls of masonry the tie-plates, which, by interlocking with the course of bricks above and below them, bind and hold them securely against such pressure, and which are so fastened and tied together by the tie-rods as to give immense strength to the walls in the opposite direction.

By forming the walls double we encircle the cylinder with an air-chamber, whereby all moisture absorbed by the bricks from grain, &c., stored within the cylinder is at once carried off, and the grain preserved in a dry and wholesome condition.

Where petroleum and similar oils, &c., are to be stored, the encircling chamber *d* may be filled with water to render the interior chamber leak-proof.

We are aware that grain-bins have heretofore been constructed of single cylindrical walls of tongued-and-grooved bricks in combi-

nation with metallic tie-plates; but in all such structures the bricks or blocks of which they are constructed are formed with central curved tongues and grooves, coinciding with the sides of the brick and extending its entire length, requiring extreme care in their manufacture, and which are easily rendered useless, and the bins themselves are single with auxiliary ventilating-flues, costly in construction, having their internal area broken and encumbered with the vertical tie-rods required to secure the walls. Our invention obviates the most serious objections and disadvantages in the present plans of constructing these structures.

We contemplate its application to the erection of light-houses, shot-towers, monuments, and other forms of cylindrical buildings.

Having fully described our invention, we claim as new and desire to secure by Letters Patent—

Granaries, reservoirs, towers, &c., constructed of bricks formed substantially as herein described, and laid in double concentric walls, in combination with metallic tie-plates, substantially in the manner herein set forth.

D. L. BARTLETT.
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Witnesses:

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