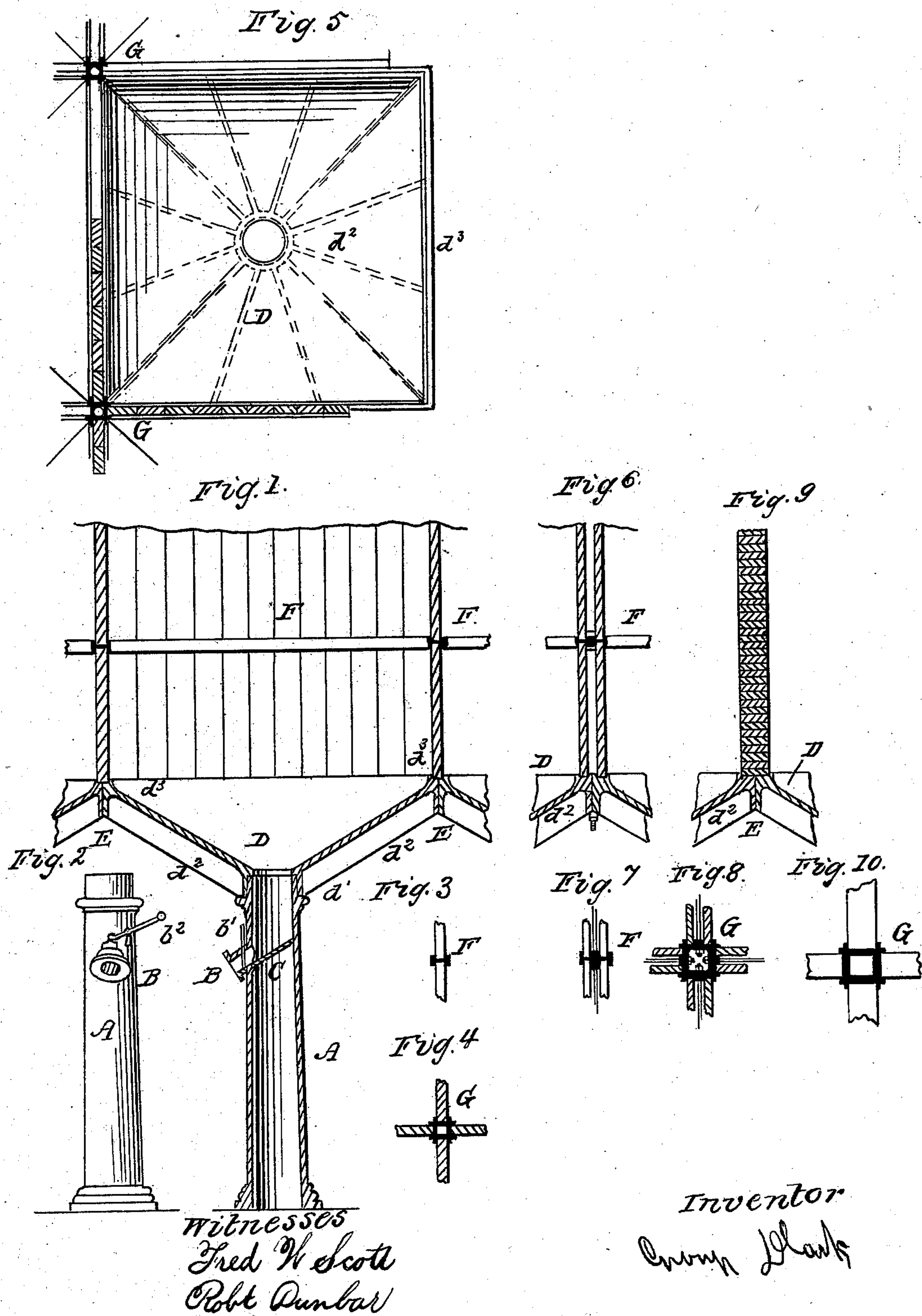


G. CLARK.  
Grain Storehouse.

No. 87,634.

Patented March 9, 1869.





# United States Patent Office.

GEORGE CLARK, OF BUFFALO, NEW YORK.

Letters Patent No. 87,634, dated March 9, 1869.

## IMPROVEMENT IN GRAIN-STOREHOUSES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, GEORGE CLARK, of the city of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in the Construction of Grain-Storehouses, or elevator-buildings; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a vertical section of the lower portion of a grain-bin.

Figure II is an elevation of the supporting-column.

Figure III is a cross-section of the horizontal binders shown in Fig. I.

Figure IV is a cross-section of one of the vertical corner-posts.

Figure V is a top plan view of the hopper, forming the bottom of the grain-bin.

Figure VI is a vertical section, showing a modification in the construction of the wall of the grain-bin.

Figure VII is a cross-section of the binder, shown in Fig. VI.

Figure VIII is a cross-section of the corner-post used with the modification represented in Fig. VI.

Figure IX is a vertical section, showing another modification in the construction of the wall of the grain-bin.

Figure X is a cross-section of a corner-post.

The nature of this invention consists—

First, in supporting the bins of a grain-storehouse upon hollow columns, placed centrally underneath the hopper forming the bottom of each bin, in such manner that the grain may be discharged from the bin into the top of the hollow column, and thence carried off through an aperture upon one side thereof.

Second, in the combination, with said hollow supporting-column, of a cast-iron hopper, which is provided with strengthening-ribs, and the upper edges of which are so constructed as to form a suitable support for the walls, or partitions, between the bins.

Third, in supporting each bin of a grain-storehouse upon an iron column placed centrally underneath the hopper composing the bottom of the bin.

Letters of like name and kind refer to like parts in each of the figures.

In the accompanying drawings—

A represents the hollow cast-iron column, upon which the grain-bins are supported.

It is provided with a discharge-spout projecting from one side thereof, as shown at B, and with a hopper-plate, C, for the purpose of guiding the grain as it passes down the hollow column from the top, into the said discharge-spout B.

A vertical slide, or gate,  $b^1$ , may be used and operated by means of a lever,  $b^2$ , or other suitable device, for the purpose of opening or closing the discharge-spout B.

D represents the hopper, which forms the bottom of the bin; and is made of cast or wrought-iron.

A sleeve, or circular flange,  $d^1$ , at its lower extremity, fits over the top of the column, in a manner to form a firm and secure connection of the two parts.

In lieu of the hollow column A, two or more solid columns may be used as a central support of grain-bins, the discharge-spout B being made part of or connected to the hopper D, and the columns grouped around the same, and connected thereto in any convenient and practicable manner.

The under side of the hopper D is provided with a series of strengthening-ribs,  $d^2$ , which may be arranged radially, as shown by dotted lines in Fig. V, or in any other manner to insure sufficient strength to support any weight which may be placed upon it.

The upper edges of the hopper, which are rectangular, are provided with one or more projecting flanges  $d^3$ .

In Fig. I, where a single-plank wall is represented, there is only one flange, and the planks are held between the flanges of the two contiguous hoppers. In Fig. VI, there are two flanges upon the edge of each hopper, on account of there being a double-plank wall; and in Fig. IX, which represents the old and well-known manner of planking bin-walls, as applied to my improvement, only one flange is required, the same as in the single-plank wall.

E represents a rim, projecting downwardly from the top edges of the hopper. Each side of the rim of each hopper rests against the rim of the hopper next adjoining, and may be secured thereto by means of bolts, which should be passed through slots made in the rims, so as to allow for settling of the walls.

Upon the edges of these cast-iron hoppers, the walls of the bins are erected. As above indicated, I contemplate building them up in three different ways:

The first, shown in Fig. I, shows the planks set upon end, edge to edge, the lower ends being held between the flanges  $d^3$ , while the upper ends are secured by means of the horizontal binders, or flanged sills, F. Upon the top of these, a second tier of upright planks is erected, and their upper ends again secured by a second line of binders, and so on until the required height of the bin is reached. The binder used in this first mode of constructing the walls of the bins is shown in cross-section in Fig. III.

A modification in the construction of the walls is shown in Fig. VI. There I erect two walls, instead of one, side by side, each formed of upright planks, like the first, but held by one common binder, a cross-section of which is shown in Fig. VII. This second mode of construction admits of a circulation of air between the separate walls of the contiguous bins, that portion of the binders which is located between the two walls being perforated, to extend the circulation of air through all the tiers, from top to bottom. The special advantage gained by this construction consists in preventing the grain in one bin from being spoiled by a lot of heated or unsound grain in the bin adjoining, which is liable to occur in single-plank bins.

The third mode of constructing the walls is well



known, and represented in Fig. IX. It consists of the planks being laid flat, one upon the other. The binders, or sills, are, in this case, dispensed with entirely.

At the point where the walls of a group of bins intersect each other, as well as at the corners of the outside bins, cast-iron posts G are erected in sections extending from the bottom to the top of the bins. These posts are provided with longitudinal flanges, or ribs, between which the planks composing the walls are fitted. The shape of these posts must, of course, depend upon the shape and construction of the walls. Figs. IV, VIII, and X, represent cross-sections of the posts used in the three different modes of construction of the walls, shown in Figs. I, VI, and IX, respectively.

In order to give additional strength to the structure, either kind of walls, but more especially the double-plank wall, may be provided with vertical or horizontal tie-rods, or both. They are represented by red lines in Figs. VI, VII, and VIII.

The object of this invention is to render grain-storehouses and elevator-buildings comparatively fire-proof at a less expense than has ever been done heretofore.

The first story of the building consisting of a stone or brick floor, a cast-iron ceilings, formed by the hoppers, and a number of cast-iron columns between both, the place most exposed to the various causes of conflagration is thus effectually protected, and rendered fire-proof, while the simplicity and economy displayed in the construction of its parts, permit the erection of fire-proof grain-storehouses at a less expense than has ever heretofore been effected.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Supporting grain-bins upon one central column, in the manner substantially as and for the purpose described.

2. The hollow cast-iron column A, with the discharge-spout B and hopper-plate C, constructed in the manner and for the purpose substantially as herein set forth.

3. The hopper D, constructed substantially as described, in combination with one central supporting-column, for the purposes herein set forth.

Witnesses:

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