

No. 848,410.

PATENTED MAR. 26, 1907.

J. H. TROMANHAUSER.  
STORAGE BIN.

APPLICATION FILED OCT. 15, 1904. RENEWED JAN. 29, 1907.

2 SHEETS—SHEET 1.

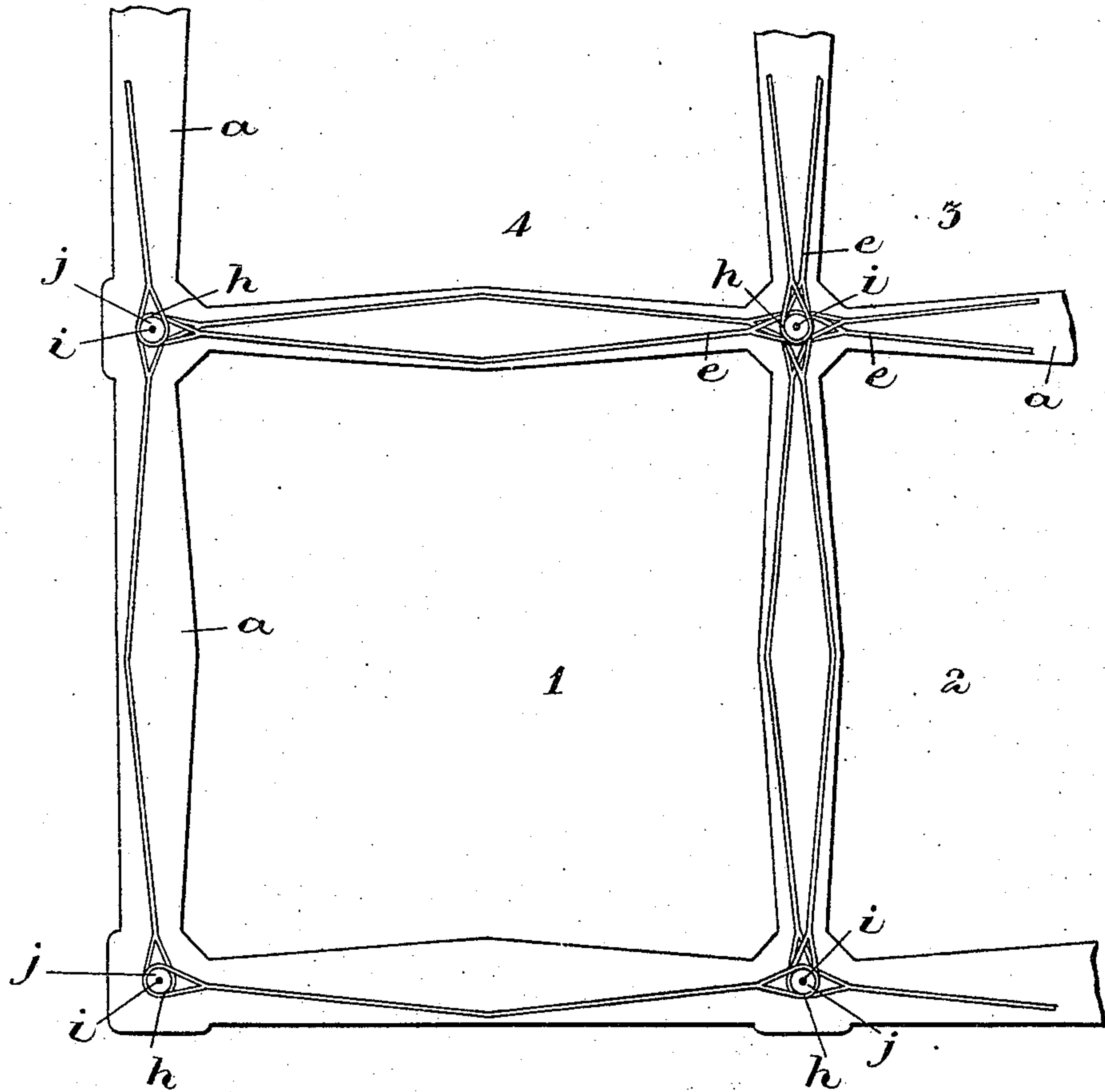


Fig. 1.

Witnesses.

H. L. Trimble.  
L. F. Brock

Inventor.

Jesse H. Tromanhauser  
by Charles H. Riche  
his attorney

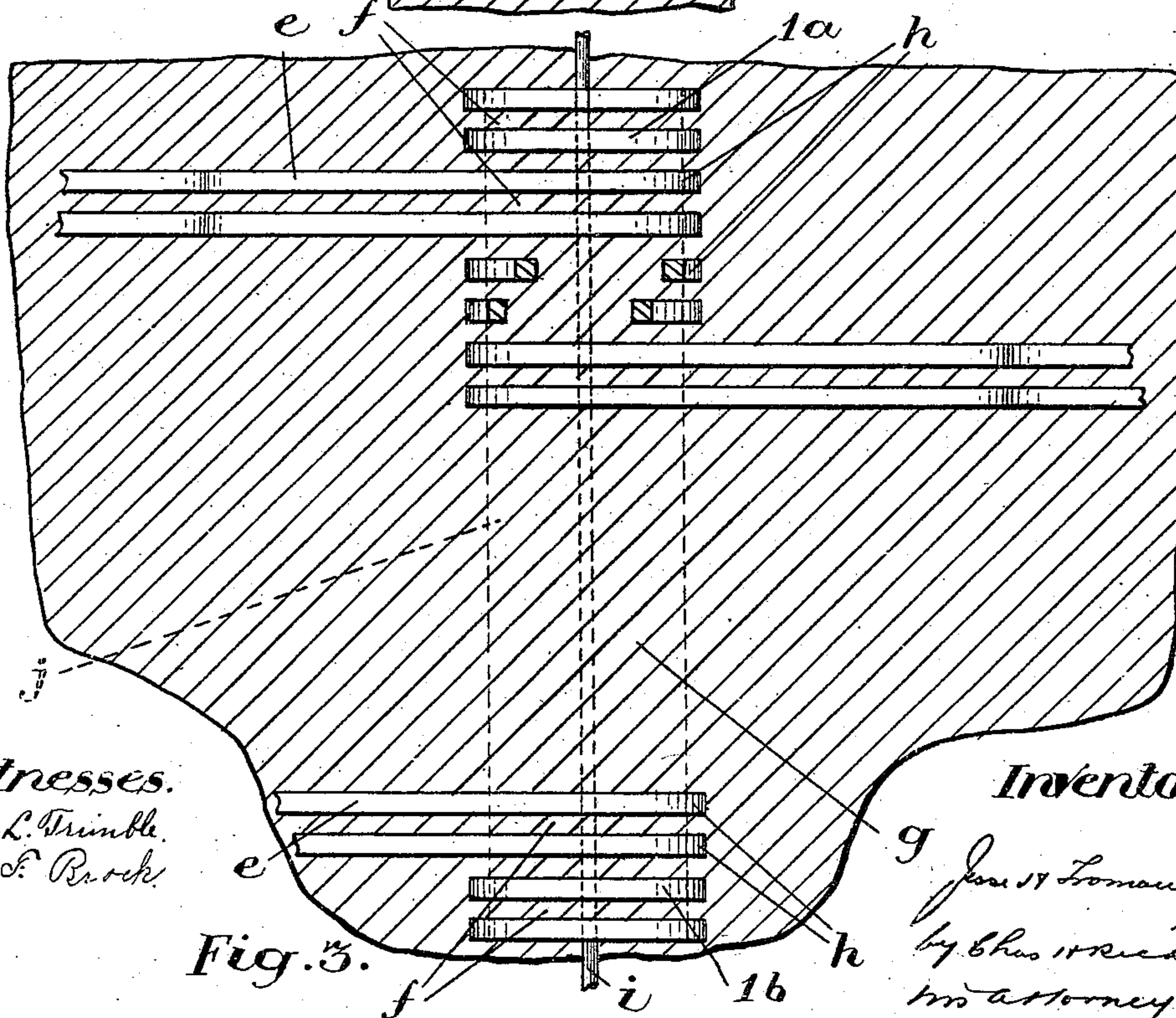
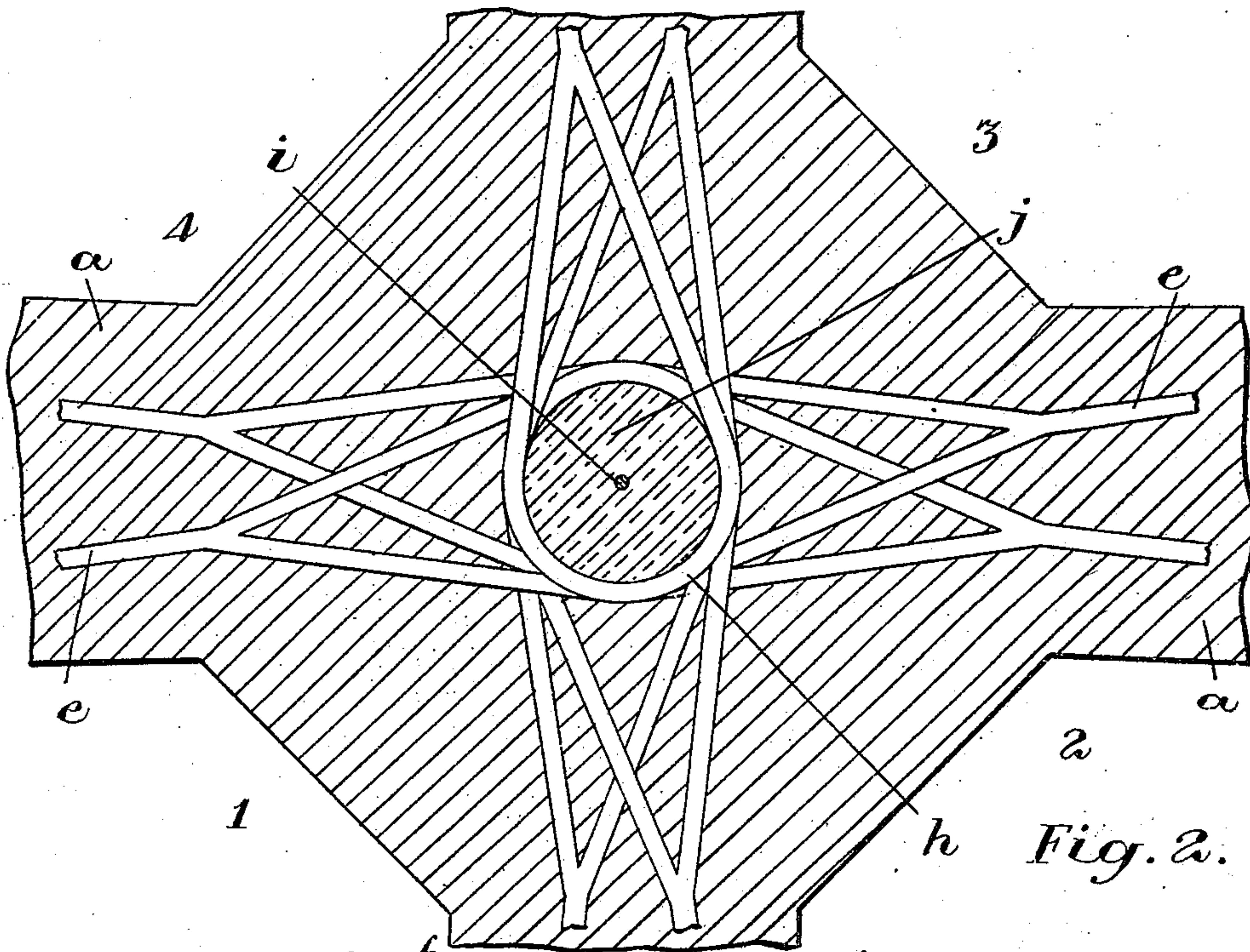
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2 SHEETS—SHEET 2.



Witnesses.

H. L. Trimble.  
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Inventor.

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# UNITED STATES PATENT OFFICE.

JESSE H. TROMANHAUSER, OF MINNEAPOLIS, MINNESOTA.

## STORAGE-BIN.

No. 848,410.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed October 15, 1904. Renewed January 29, 1907. Serial No. 354,674.

*To all whom it may concern:*

Be it known that I, JESSE HERLIN TROMANHAUSER, of the city of Minneapolis, in the county of Hennepin and State of Minnesota, one of the United States of America, have invented certain new and useful Improvements in Storage-Bins; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a storage-bin constructed of a concrete mixture of cement and refractory material having its walls bonded together at the corners and braced to resist the lateral crushing strains upon them by truss-rods having truss-rod anchors engaging with concrete columns extending through the truss-rod anchors and uniting at the intervals between the truss-rod anchors with the concrete material forming the corners and walls; and the invention further relates to the formation of the truss-rod anchors and to the disposition of the truss-rods in the walls, as hereinafter more fully set forth and more particularly pointed out in the claims.

For a full understanding of the invention reference is to be had to the following description and to the accompanying drawings, in which—

Figure 1 is a plan view of part of a four-bin structure, showing the disposition of the truss-rods. Fig. 2 is a horizontal section of the corner of four adjacent bins, showing the arrangement of the truss-rod anchors and a concrete column extending through them. Fig. 3 is a vertical section of the construction shown in Fig. 2.

Like characters of reference indicate like parts throughout the specifications and drawings.

The walls *a* of the bins 1, 2, 3, and 4 are constructed of concrete material and braced by truss-rods *e* embedded therein during the erection of the walls and arranged in sets 1<sup>a</sup> and 1<sup>b</sup> with intervening spaces *f* between the truss-rods of each set and larger spaces *g* intervening between the sets. At the ends of each truss-rod are truss-rod anchors *h*, preferably of a loop-shape formation with semicircular ends, the truss-rods for each wall being of the same length and the semicircular part of the loop-shaped ends of the same diameter.

During the erection of the bins the truss-rods are embedded in the material with the truss-rod anchors located at the corners of the walls and correctly positioned by center-

ing-rods *i* of comparatively diminutive gage extending vertically through them. Surrounding the centering-rods *i* and engaging with the truss-rod anchors *h* are concrete columns *j*, which unite at the intervals *f* between the truss-rods and at the intervals *g*, between the sets of truss-rods, with the concrete material forming the walls and corners. These columns *j* form an integral part of the bin walls and corners and constitute the anchorages for the truss-rod anchors to maintain the truss-rods in their set position and effect the distribution of the lateral strains on the walls of one bin to the adjoining walls of the other bins and by uniting with the material of which the walls and corners are constructed prevent the impairment of the strength of the bin structure.

By arranging the anchor-loops and concrete material as above described I am able to dispense with the use of metal columns for the purpose of anchoring the truss-rods at the corners of the walls, and thus avoid impairing the strength of the structure.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A storage-bin having its walls constructed of concrete material, truss-rods embedded in the walls, anchor-loops at the ends of the truss-rods positioned at the corners of the walls to embrace a considerable quantity of concrete material, said anchor-loops being vertically alined and separated by intervening intervals, and concrete columns extending through the anchor-loops and uniting at the intervals between the latter with the concrete material forming the walls.

2. A storage-bin having its walls constructed of concrete material, truss-rods embedded in the walls, anchor-loops at the ends of the truss-rods positioned at the corners of the walls to embrace a considerable quantity of concrete material, said anchor-loops being vertically alined and separated by intervening intervals, concrete columns extending through the anchor-loops and uniting at the intervals between the latter with the concrete material forming the walls and comparatively diminutive centering-rods extending through the concrete columns.

Toronto, October 4, 1904.

J. H. TROMANHAUSER.

In presence of—

C. H. RICHES,  
H. L. TRIMBLE.