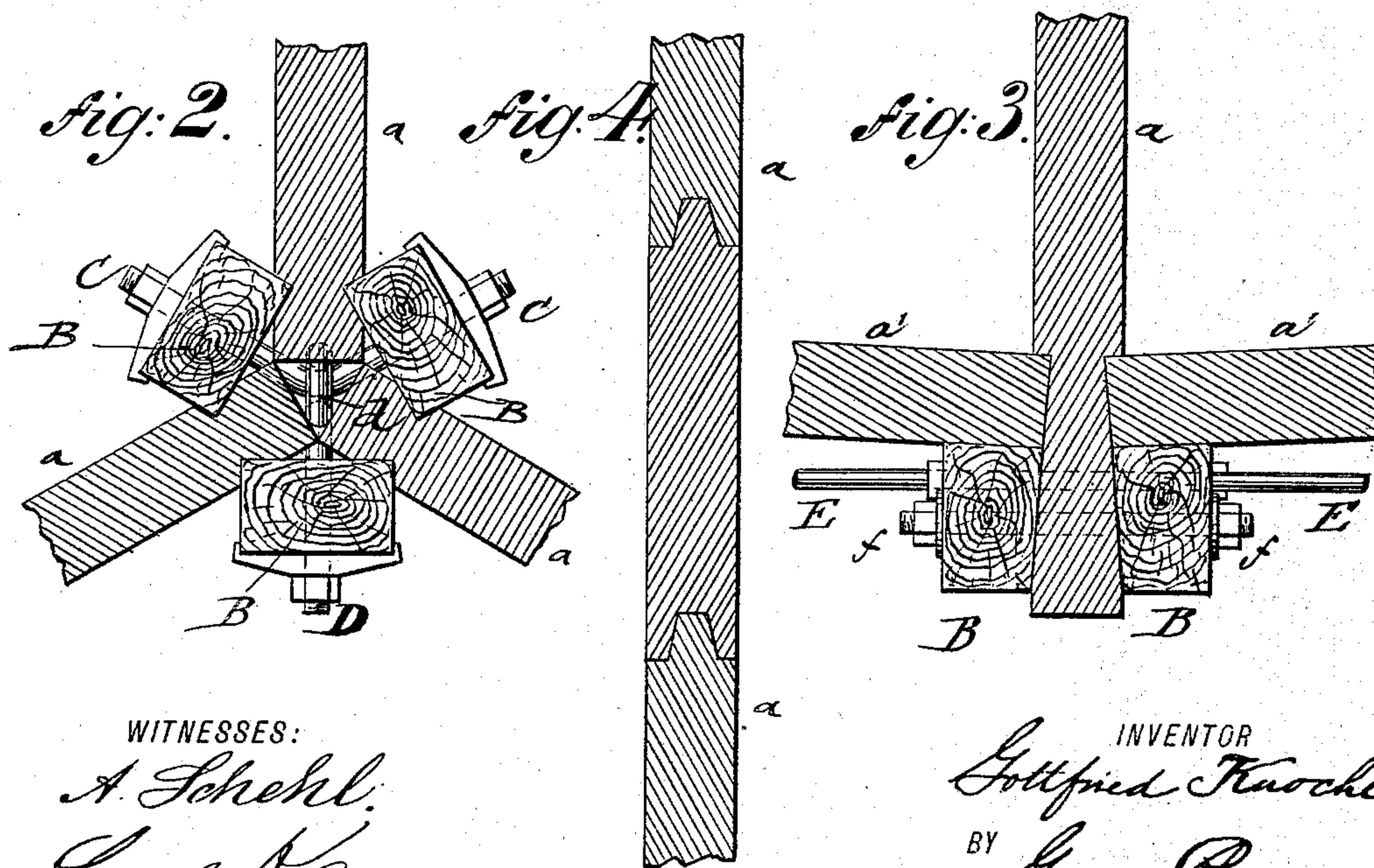
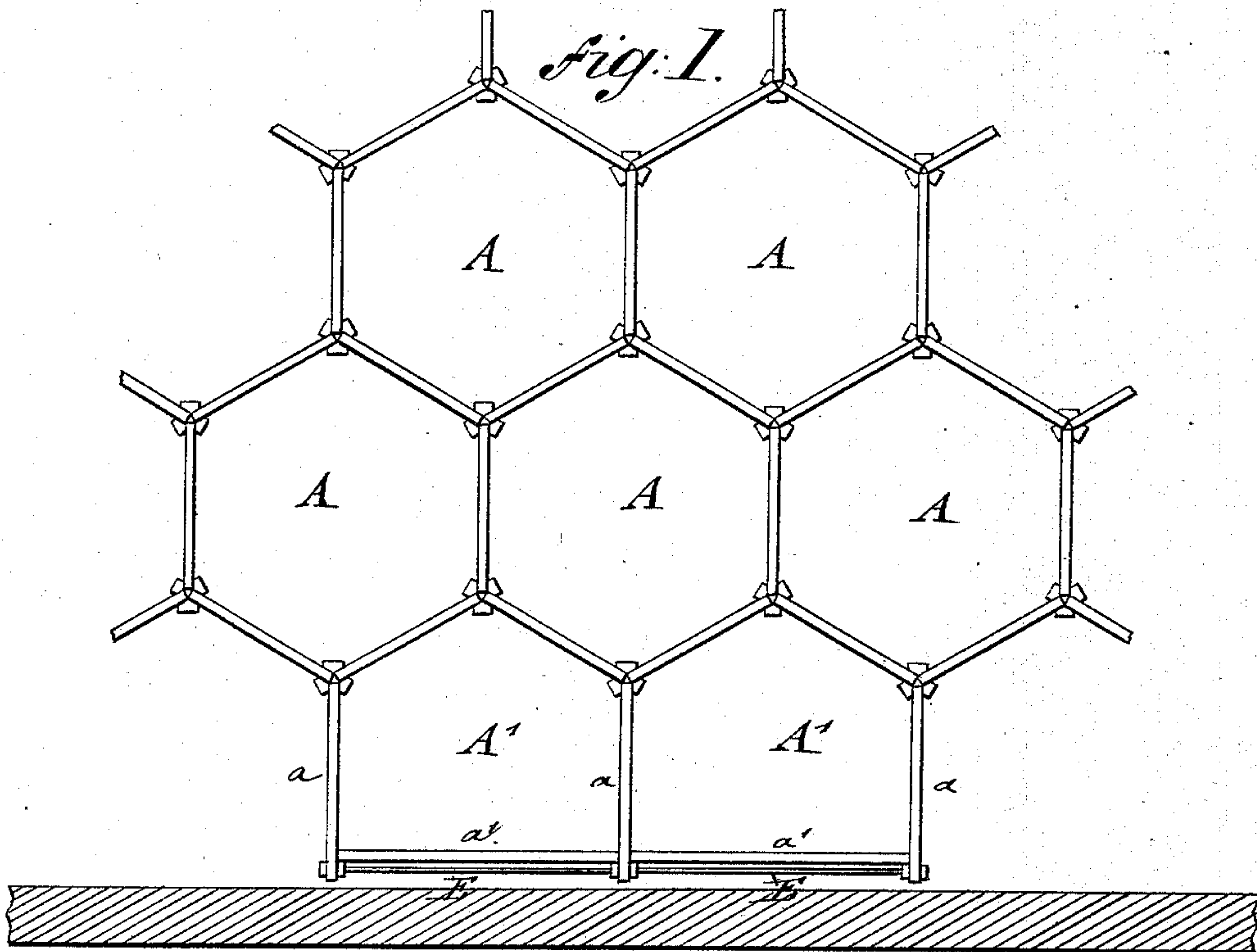


(No Model.)

G. KNOCHE.
GRAIN OR MALT BIN.

No. 413,370.

Patented Oct. 22, 1889.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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GRAIN OR MALT BIN.

SPECIFICATION forming part of Letters Patent No. 413,370, dated October 22, 1889.

Application filed January 30, 1889. Serial No. 298,051. (No model.)

To all whom it may concern:

Be it known that I, GOTTFRIED KNOCHE, of the city, county, and State of New York, a citizen of the Empire of Germany, have invented certain new and useful Improvements in Grain or Malt Bins, of which the following is a specification.

This invention relates to an improved grain and malt bin, the entire construction of which is accomplished without nails, so that the bins can be put up and taken down easily and without loss of material and at a considerable saving as compared to the constructions heretofore in use; and the invention consists of a grain or malt bin the side walls of which are provided with dovetailed recesses at both sides near their ends and supported by upright posts, each being set into the recesses of two adjoining side walls and connected by screw-bolts with their posts.

The invention consists, further, of a grain and malt bin in which the side walls of the bins next to the main walls of the building are provided with dovetailed recesses at both sides and near their ends and connected with the end walls, which are set into said recesses by means of upright posts, which are secured to the recessed ends of the side walls and connected by tie-rods extending from the posts of one corner of the bin to the posts at the opposite corner.

In the accompanying drawings, Figure 1 represents a plan of my improved grain and malt bin. Fig. 2 is a horizontal section drawn on a larger scale, showing the connection of the side walls of three adjoining bins. Fig. 3 is a detail horizontal section drawn on a larger scale, showing the tie-rod connection of the upright posts of the end bins arranged next to the main walls of the building; and Fig. 4 is a detail vertical transverse section through one of the side walls of the bins, showing the tongue-and-groove connection of the planks or boards of the same.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a number of hexagonal or other bins, the side walls *a a* of which are formed of planks or boards, which are connected by tongue-and-groove joints, as shown in Fig. 4. The side walls *a* of the bins A are supported at the

corners of the bins by upright posts B B, which are set into dovetailed recesses *b* at both sides, near the ends of the side walls, and tied together by iron screw-bolts C and D, as shown in Fig. 2. One of the connecting screw-bolts C is formed of an obtusely-bent rod threaded at both ends and passed through two of the posts B B, while the second tie-bolt D is provided at its inner end with an eye *d*, which engages the bent bolt C at the apex of the bent portion midway between the posts B B. The outer threaded ends of the bolts C and D are applied by washers and screw-nuts *e* to the posts B B, as shown clearly in Fig. 2. The upright posts B support the side walls of the bins rigidly in position in such a manner that the tensile strength of the planks is relied on instead of their resistance against pressure. When the bins are filled, the posts have the tendency to spread, to prevent which the tensile strength of the planks is used, and the same thereby secured from breaking. The hexagonal shape of the bins also assists in exerting a tensile strength on the material, which is the main object of my invention. The bins A', which are arranged alongside of the main walls of the building, are not made hexagonal, but for the purpose of saving space with five sides, of which two are parallel with each other, while the end wall *a'* is parallel with the main wall of the building, as shown in Fig. 1. The connection of the end walls with the parallel side walls *a a* is made in the manner shown in Fig. 3, the posts B B being connected by screw-bolts *f* to the dovetailed ends of the side walls. The end walls, which are made, preferably, in the shape of an arch, are stiffened by iron tie-rods E, which connect the posts of one corner with the posts of the other corner of each bin, as shown in Fig. 3. The iron screw-bolts and tie-rods which connect the upright supporting-posts of the bins are at a distance of from three to five feet from each other, according to the height of the bins.

It is obvious that all the parts of the bins can be made ready for shipment and quickly put up at the point of erection, while they can also be taken down again, if required only for temporary use, and put up again at another place, there being no loss of nails or other material in the putting up of the bins,

while the construction of the same is superior, as the walls can be built much lighter, as they have not to resist the pressure of the charge, but resist by the tensile strength of the planks, whereby a considerable saving in material and a simple construction of the bins are obtained.

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

10 1. The combination, in a grain and malt bin, of the side walls of the same, said side walls having dovetailed recesses at both sides near the ends, upright supporting-posts, each of which is set into the recesses of two ad-
15 joining side walls, and tie-bolts connecting said posts, substantially as set forth.

2. In a grain and malt bin, the combination of the side walls of the bin having dovetailed recesses at both sides near the ends, upright
20 posts set into said recesses, a bent screw-bolt connecting two of said posts, and a second

tie-bolt having an eye for connecting the bent bolt with the third post, substantially as set forth.

3. The combination, in a grain and malt 25 bin, of bins located next to the main walls of the building, said bins having side walls with dovetailed recesses at both sides and ends, end walls set into said recesses, upright posts secured to the recessed ends of the side walls 30 outside of the end walls, and tie-rods connecting the posts at one corner of the bin with the posts at the opposite corner, substantially as set forth.

In testimony that I claim the foregoing as 35 my invention I have signed my name in presence of two subscribing witnesses.

GOTTFRIED KNOCHE.

Witnesses:

PAUL GOEPEL,
MARTIN PETRY.