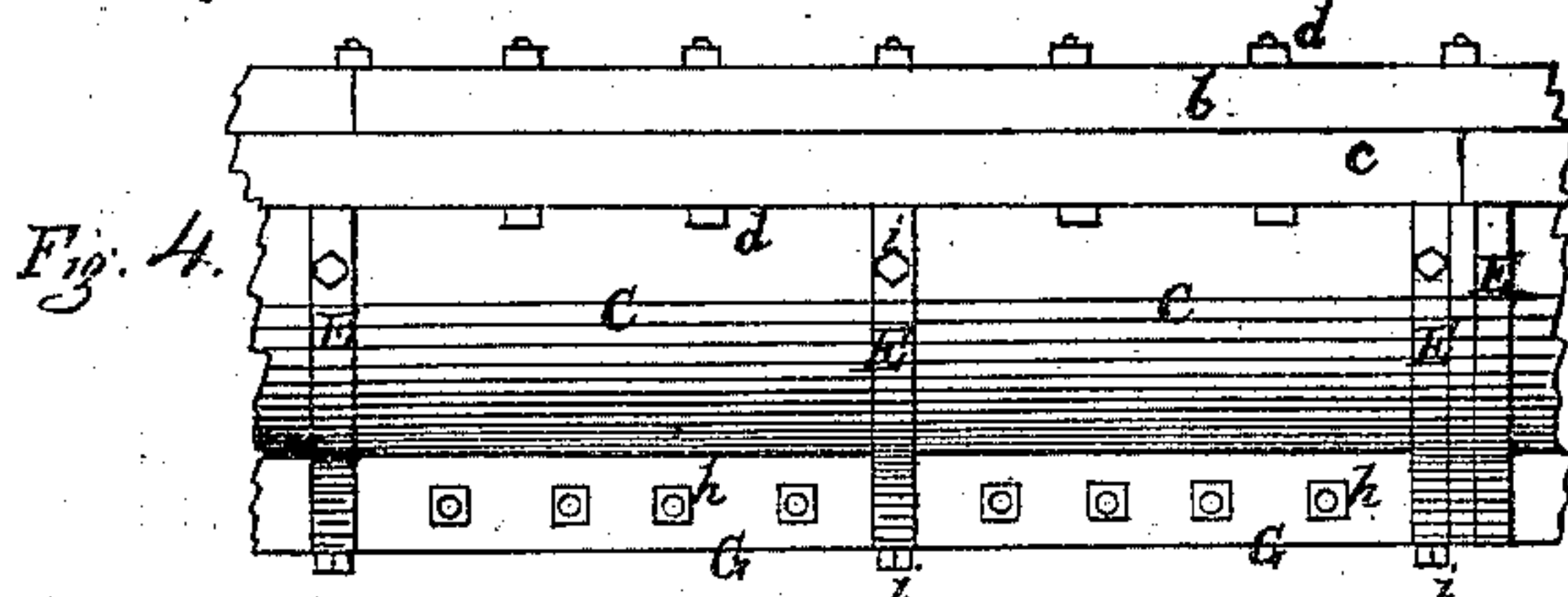
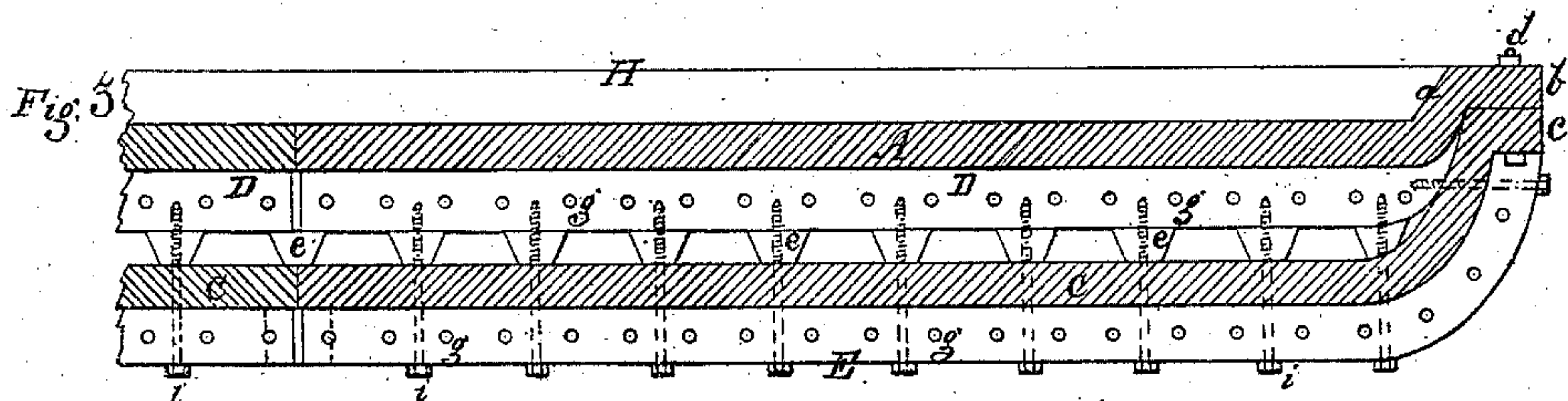
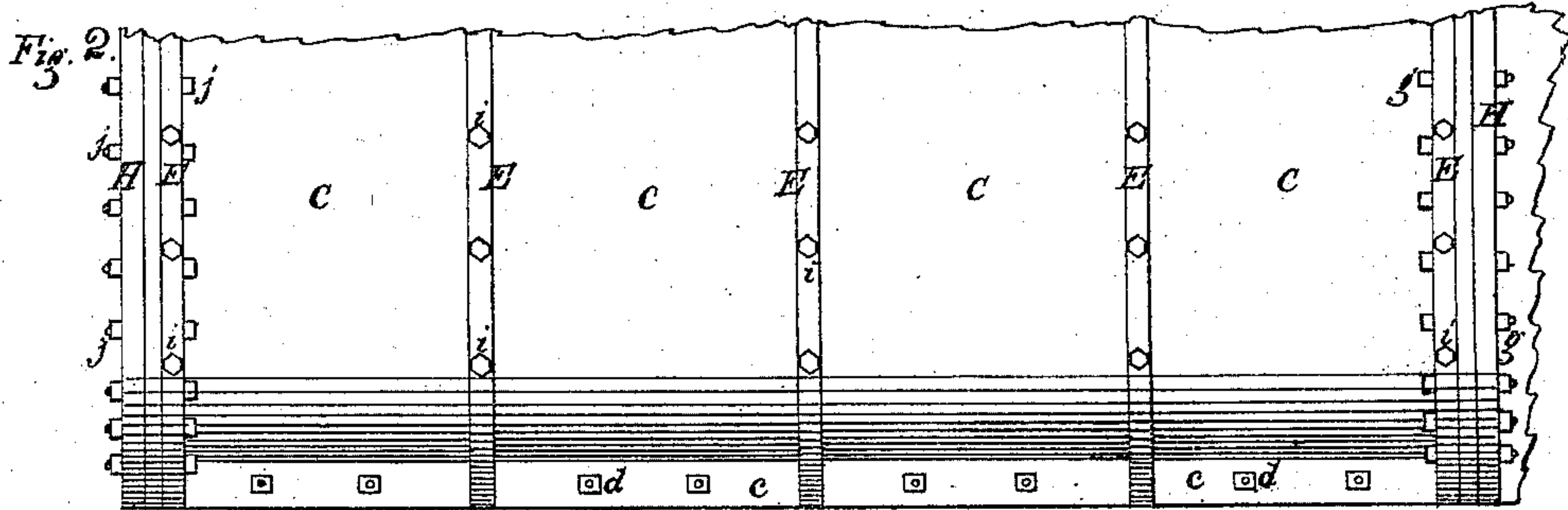
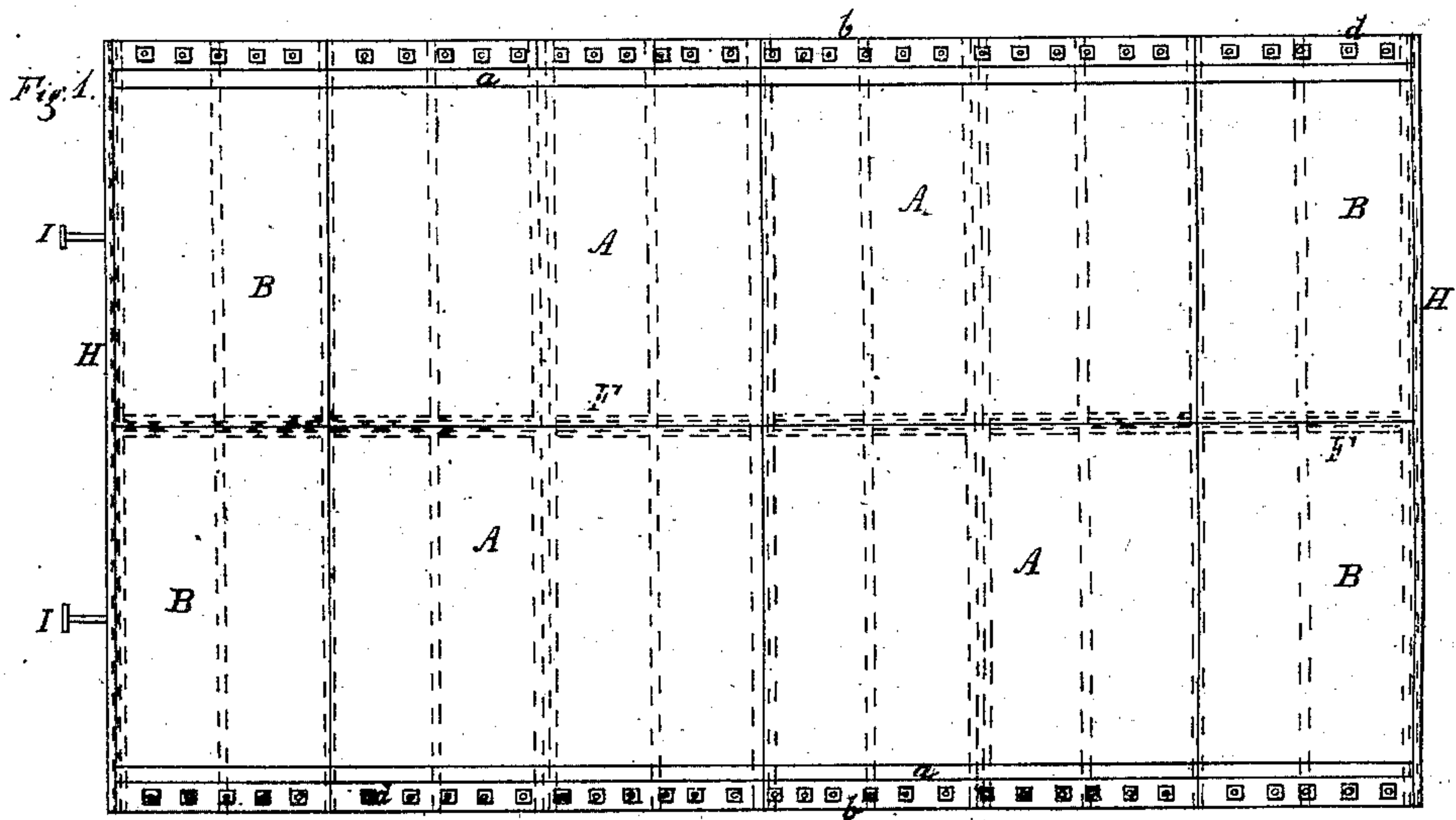


L. R. CORNELL.

Evaporating-Pans for Salt, Sugar, &c.

No. 135,630.

Patented Feb. 11, 1873.



Witnesses.

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LEFFERT R. CORNELL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN EVAPORATING-PANS FOR SALT, SUGAR, &c.

Specification forming part of Letters Patent No. 135,630, dated February 11, 1873.

To all whom it may concern:

Be it known that I, LEFFERT R. CORNELL, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Evaporating-Pans, of which the following is a specification:

Nature and Object of the Invention.

This invention relates to the construction of cast-metal pans which are made in sections; and consists in the mode of construction hereinafter described, by which a firm and reliable evaporating-pan is secured, in which there are no bolts extending up through the bottom to cause leaks.

Description of the Accompanying Drawing.

Figure 1 is a plan of an evaporating-pan constructed according to my invention, those joints which are below the upper surface being represented by dotted lines. Fig. 2 is an under-side view of a portion of the pan. Fig. 3 is a transverse section of a portion of the pan, showing the manner of joining some of the principal parts. Fig. 4 is a side view of a portion of the pan.

General Description.

The evaporating-pan represented in the drawing is a double-bottomed pan, designed to be heated by superheated steam introduced between these two bottoms, and both the upper and lower parts are cast in sections and half sections A B C, as shown in the drawing, the upper sections and half sections being so arranged as to break joints with the lower sections so far as the transverse joints are concerned, as shown. A A are the upper whole sections and B B the upper half sections of the pan. These sections and half sections extend from the side of the pan to the middle longitudinally thereof, and are provided with elevated edges *a a* to give the necessary depth to the pan, and are also provided with rims *b b*, which are secured firmly to corresponding rims *c c* on the lower sections C of the pan by means of bolts *d d*. Said sections and half sections A and B are also provided with ribs D D, cast in the same piece with each section and half section, to give them additional stiffness and for other purposes, and also with lugs *e e*, which rest upon surfaces of the sections C C, leaving

spaces between said lugs for the passage of the steam, so as to allow it to circulate with sufficient freedom between the upper and lower parts of the pan. The lower sections C are also strengthened similarly to the sections and half sections A and B by ribs E E cast with each section, which ribs are so located upon the sections C as to correspond with and be directly under the ribs upon the sections and half sections A and B; and where there are joints in either the upper or lower sections the ribs are so arranged that one of the ribs of the joint shall be either over or under a rib upon the part which is continuous, so that the upper and lower parts can be there secured together by top bolts, in the manner already described. The sections A A and half sections B B are also provided with ribs F F, cast in the same piece with each, by which they are joined together longitudinally with the pan by means of bolts, said ribs being located about an eighth of an inch on the edge of the section, so as to give room for the necessary filling to form a wrist-joint between the said ribs. Similar ribs G G are also cast upon the sections C C for the purpose of joining them in the same way. The ribs D D and E E, which are at the ends of the sections, are also located about an eighth of an inch back from the extreme edge of the main portion of the section for the same purpose as that already described with reference to the ribs F F, and they, as well as the ribs G G, are also bolted together in the same way by bolts *g g* and *h h*. In constructing my improved evaporating-pan I plane the edges of these sections wherever they meet each other or meet any other part, and also plane the rims *b b* where they meet the rims *c c*, which latter I also plane on their upper surface. I also plane the edges of the sections C in the same manner as that described with relation to the sections and half sections A and B, so that they may be brought together to form perfect joints, and also plane lugs *e e* to fit upon the upper surface of the sections C. The edges of the sections and half sections A and B, wherever they meet each other, are brought together with what are known as surface-joints, the only packing placed between them being a very thin mixture of red lead and linseed-oil or some equivalent. The same remark applies to the joints formed by the meeting of the edges of

the sections C C, and also to the joining of the rims *b b* to the rims *c c*, and also to the junction of the lugs *e e* with the upper surfaces of the sections C. To further guard against leaking at this last point I apply red-lead putty under the heads of the bolts *i i*, which are tapped through the lugs *e e* into the ribs D D, as shown. H H are the ends of the pan, which ends are planed where they meet the sections and half sections B and C, and are joined to them by surface-joints already described, and secured to cross-ribs D and E by bolts *j j*, the spaces between the said end pieces H H and the ribs D D, to which they are secured, being packed with neat joints. I I are induction-pipes for the admission of steam. There may be also separate pipes to draw off the water of condensation.

It is obvious that the depth of the pan and also of the steam-chamber may be varied at will to adapt them to the particular work to be performed.

The pan above described is well adapted to the evaporation of saccharine juices or sirups, and is especially adapted to the evaporation of saline water, particularly as it furnishes a strong and durable pan having no bolts extending up through the bottom of the evaporating-pan, nor bolt-heads projecting above it to be disturbed by the rough usage to which such pans are usually subjected in removing therefrom the sediment which generally forms upon the bottom of such pans.

In this construction no very large castings are necessary, and hence the losses from warping of the castings in cooling or from other defects to which large and especially long and broad castings are particularly subject are avoided. This construction also furnishes a pan having great strength to resist the pressure of the steam introduced for the purpose of evaporating the brine or whatever is to be evaporated.

In using this pan I prefer to heat it with superheated steam introduced through the induction-pipes I I, though steam not superheated may be used. The openings between the lugs *e e* admit the steam to all parts of one side of the space between the upper and lower sections of the pan, thus making this space in one sense one continuous steam-chamber; but it is obvious that the ribs D D and the lugs *e e* will form partial obstructions between the portions thereof, especially when a very light pressure of steam is admitted; hence, if it is desirable

for any purpose to heat that part of the steam-chamber next the induction-pipes hotter than those portions more remote from them, this may be done by only admitting a very light pressure of steam, which will evidently act first on the chambers which it first enters, and will become thereby partially cooled before it reaches those more remote.

The size of the pan may be varied by adding or diminishing the number of internal sections, and it is obvious, also, that half sections may be made for the lower tier as well as the upper tier of sections, or for both, so that with one set of patterns pans of various sizes and with small differences as regards size may be made.

By dividing the sections longitudinally of the pan, and thereby dividing the steam-chamber through the center, I also have a pan one side of which can be heated hotter than the other, should that be desirable.

Claims.

I claim as my invention—

1. An evaporating-pan made up of sections running transversely of the said pan and secured by bolts extending horizontally through ribs or their equivalent attached to the same, substantially as hereinbefore set forth, whereby the length of the pan may be increased or diminished by adding or removing internal sections, substantially as described.

2. The combination of the sections and half sections A and B with the sections C in the manner described, whereby the said sections and half sections A and B are made to break joints with the sections C C, substantially as described.

3. The combination of the upper and lower sections and the bolts *i*, substantially as described, whereby the said upper and lower sections are firmly secured together without extending the said bolts through the upper sections.

4. Dividing the sections A, B, and C longitudinally and securing them together by flanges and horizontal bolts and flanges, substantially as described, whereby the size of the sections transversely of the pan is reduced and two separate steam-chambers longitudinally of the pan are formed, substantially as hereinbefore set forth.

Witnesses: LEFFERT R. CORNELL.

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ARTHUR E. TAMPLET.