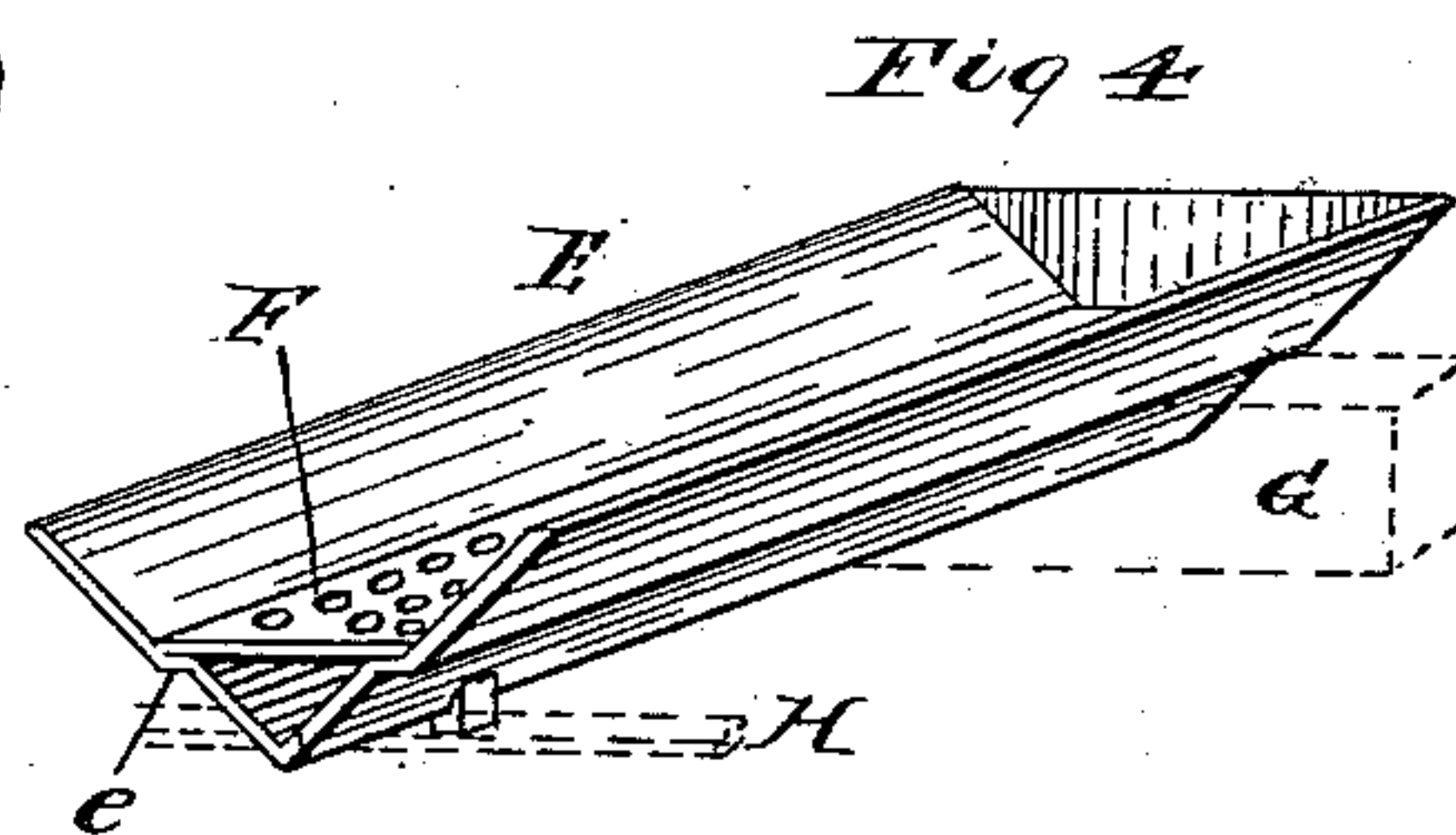
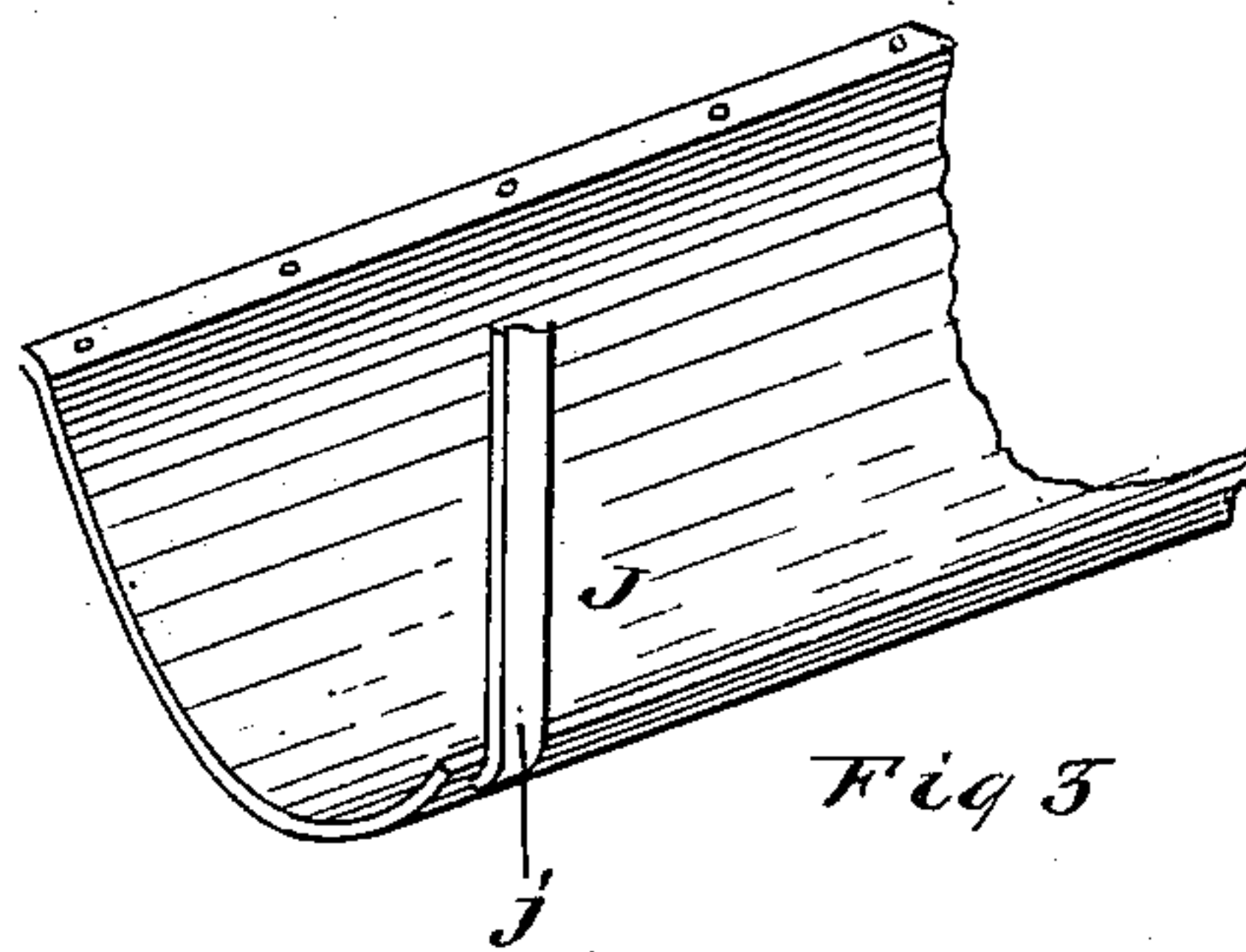
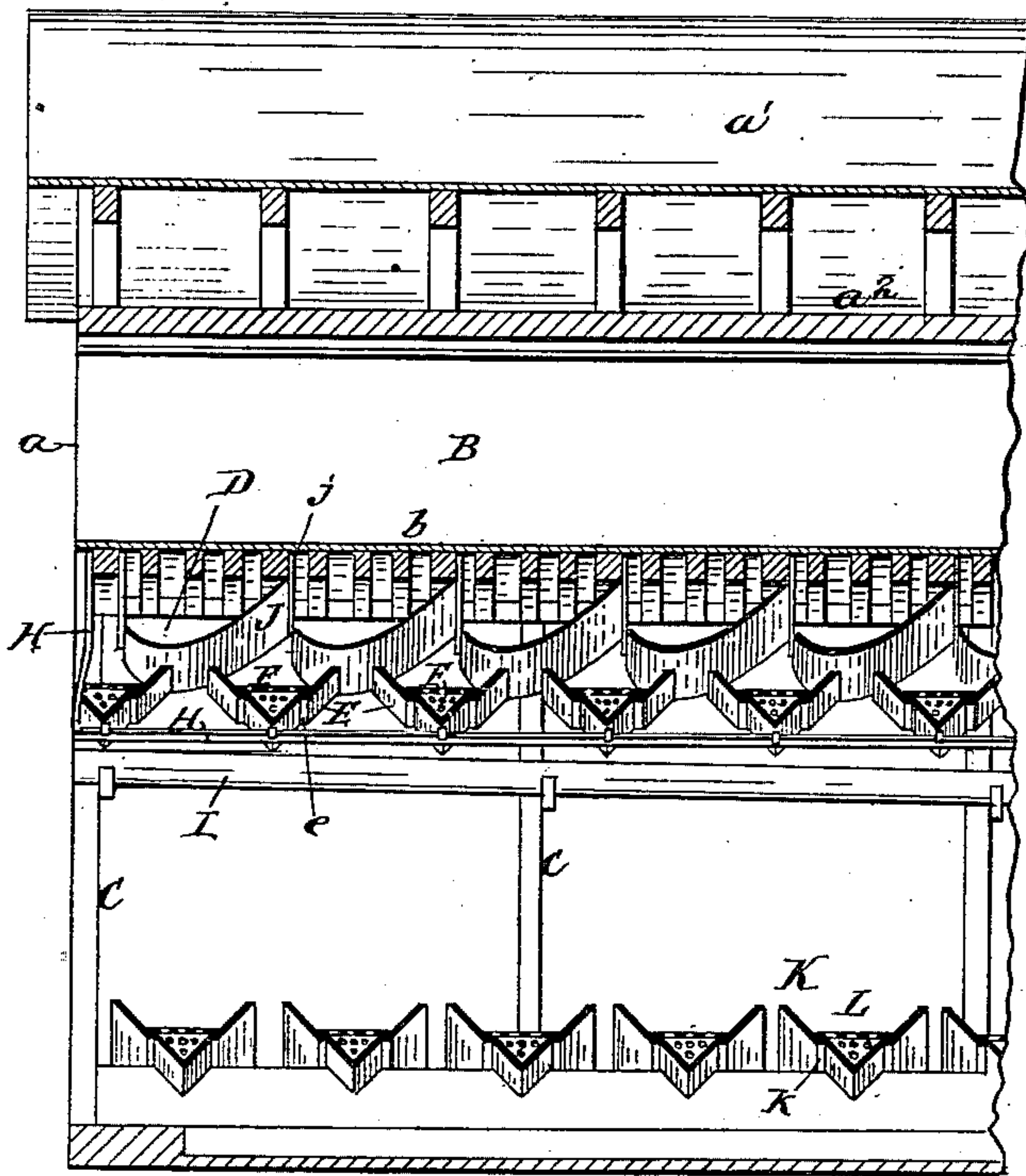
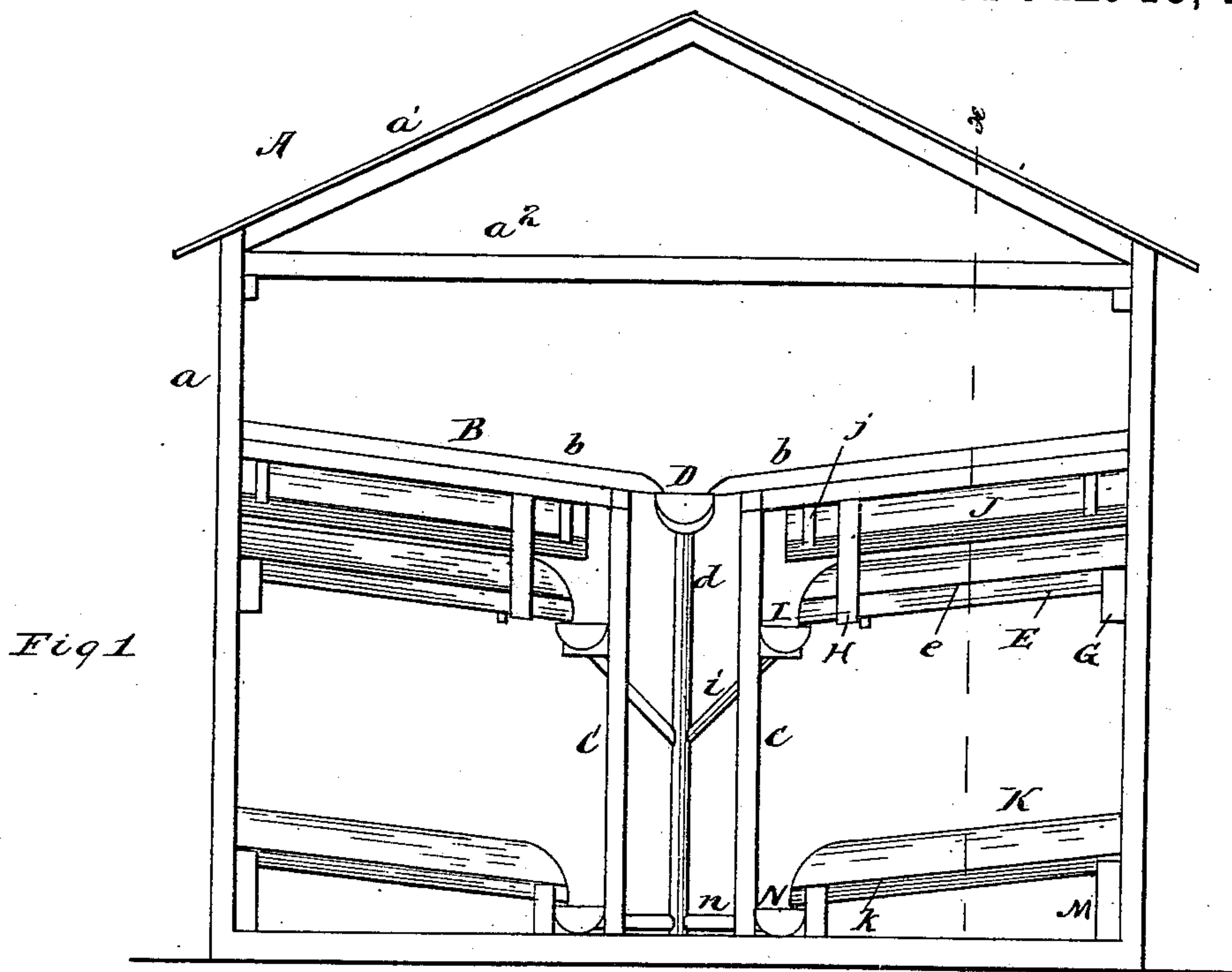


(No Model.)

J. W. KEPLER.
REFRIGERATING BUILDING.

No. 259,401.

Patented June 13, 1882.



Witnesses
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Fig 2

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UNITED STATES PATENT OFFICE.

JOSEPH W. KEPLER, OF CHICAGO, ILLINOIS.

REFRIGERATING-BUILDING.

SPECIFICATION forming part of Letters Patent No. 259,401, dated June 13, 1882.

Application filed April 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. KEPLER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Refrigerating-Buildings, fully set forth in the following specification, in which—

Figure 1 represents an end elevation of a building containing my improvements, the end
10 wall being removed; Fig. 2, a vertical section of the same, taken on the line $x x$, Fig. 1, looking inward; Fig. 3, a perspective view of one of the drip-troughs, and Fig. 4 a similar view of a trough of special construction for holding
15 a deliquescent.

My invention relates to certain improvements in refrigerator structures, being especially intended for cold-storage buildings in which it is important to keep the air as dry as
20 possible and provide ample protection from injury by drip. I will proceed to describe in detail the construction and application of my improvements in practical form, and will then point out definitely in the claims the special im-
25 provements which I believe to be new and desire to protect by Letters Patent.

In the drawings, A represents a building designed for cold storage, constructed in general after any plan adapted or suitable for this pur-
30 pose, the side walls, a , and the roof a' and ceiling a'' being of ordinary construction, not requiring further description here.

Below the ceiling is arranged an ordinary ice-floor, B, running the entire length of the
35 building, and preferably made in two sections, b , one on each side of the room and sloping inward toward the center, as shown in Fig. 1 of the drawings. This ice-floor is of any suitable construction and rests on supports at the sides
40 of the room, while near the center of the room there are two rows of posts or columns, C, arranged respectively to support the floor-sections at their inner edges.

A trough, D, is arranged lengthwise of the
45 building just underneath the inner edges of the ice-floor, under each of which it extends somewhat, so that the waste runs from the inclined floor into this trough, by which it is carried to a waste-pipe, d , extending down through
50 the building, either at the center or at one end thereof, as may be desired. The ice-floor is

tight, and the edges of the trough are joined to the bottom of the floor, so that there is no circulation of air from the lower or cooling
apartment up into the ice-chamber. In struct- 55
ures of this description, however, it is obvious that the air, coming in contact with the cold ice-floor, will be condensed, and gradually moisture will be formed on the under surface of the
60 floor, producing in time drip.

One of the most important problems in the success of cold-storage buildings is the effective discharge of this drip and the maintenance of a comparatively-dry atmosphere within the
65 apartment.

The articles usually placed in buildings of this description for keeping are of a very perishable nature, and any drip falling upon them will produce greater or less injury; and it is a
70 well-known fact that the drier the surrounding atmosphere the less difficulty is found in the preservation of articles of this kind.

Now, in order to overcome the difficulties mentioned, I first provide a series of troughs, E, arranged in two rows, one underneath each
75 section of the ice-floor, the troughs running from the sides of the room inward and sloping in the same direction. These troughs are of triangular shape, as shown in Fig. 4 of the drawings, and a little distance from the bottom are
80 provided with offsets, e , in their sides, which serve as seats for perforated plates F, one of which is placed in each trough, running the length thereof. These troughs may be made of
85 metal, wood, glass, or any other suitable material. If made of metal, they can be very cheaply constructed, for they may be struck up with the offsets in the sides formed at one operation. They are supported by any suitable de-
90 vices. In the drawings their outer ends rest upon suitable strips, G, attached to the sides of the building, while their inner ends are supported by hangers H, attached to the ice-floor; but these special means are of no particular
95 importance. In these troughs I place a suitable deliquescent, which is placed in any desired quantity upon the perforated plates, which serve as a false bottom for this purpose. The material which I prefer to employ for this
100 purpose is chloride of calcium, for it is easily obtained and is exceedingly cheap. The construction of these troughs and the arrange-

ment of the deliquescent therein are of special importance, for it will be seen at once that the moisture absorbed from the air and the drip formed from the slow liquefaction of the material will not be held in the mass, so as to keep it wet, but will drip through the perforated plates into the bottom of the troughs, whence it is conducted down to drip-troughs I, arranged respectively under the inner ends of the two rows of troughs, extending the length of the room and provided with waste-pipes *i*, connecting with the main waste-pipe heretofore described. In this way the waste from the deliquescent is carried off continuously and as fast as formed, so that the material is kept substantially dry and requires no attention except suitable replenishing to keep up the quantity. These troughs are arranged some little distance apart, so that there will be open spaces between them for the free circulation of the air. Now, of course, moisture will be formed on the under side of the ice-floor over these spaces, and may drip down through them upon the articles stored below. To prevent this I suspend a series of curved troughs, J, from the ice-floor, arranged a little distance above the deliquescent-troughs and alternating with them, so as to completely protect the open space between them. These troughs are of a peculiar construction, though not new with me. They are attached at one side only to the joists of the floor or any other suitable support, and from this edge of attachment are curved downward and to one side, as shown in Figs. 2 and 3 of the drawings, the opposite edge, however, being considerably lower than the attaching edge.

Suitable hangers, *j*, depending from the ice-floor, support this lower edge. This construction permits the free circulation of the air, so as to reach the cold ice-floor, for obviously there will be wide open spaces between the lower edge of each trough and the under surface of the next one. These troughs, being arranged above the deliquescent-troughs, also permit the free circulation of air up between and around the latter and through the openings between the former and the ice-floor, as will be seen in Fig. 2 of the drawings. The troughs J also slope inward from the sides of the building, and are of sufficient length to discharge the drip which may be caught therein into the troughs I, as shown in Fig. 1 of the drawings.

I also propose in some instances to arrange a second series of troughs, K, for deliquescent material in the lower portion of the room. When this is done I prefer to arrange them alternately with the similar troughs above, as shown in Fig. 2 of the drawings. These troughs are constructed like those already described above—that is, they are provided with a perforated plate or false bottom, L, resting on offsets *k*. They are supported in any suitable way; but in the drawings I have shown them resting on strips M, arranged on the floor of the building, and each series is provided

with a waste-trough, N, having pipes *n* connecting with the main waste-pipe, by which all drip discharged into them is carried off. This lower series of troughs I intend to use only where great dryness of the atmosphere is desired for the preservation of certain articles which are quickly affected by moisture in the atmosphere.

With these improvements in the cold-storage room it is obvious that articles placed therein in the space below the upper deliquescent-troughs will be exposed continually to a cold dry air circulating freely throughout the room. The moisture is taken up from the air as it circulates freely around and over the deliquescent in the troughs, is kept at the desired low temperature by coming into free contact with the ice-floor, and at the same time the articles stored are effectually protected from all drip, as the latter, wherever it is formed, is conducted off into waste troughs and pipes.

The support of the deliquescent material upon perforated false bottoms permits the material to drip dry, substantially, whereas if it were held in the receptacle without provision for dripping it would soon become a slushy mass and would lose its beneficial effect.

With these improvements I am enabled to preserve even very perishable articles of food and other like substances in cold-storage rooms for a comparatively long time.

The construction and arrangement of all the parts herein specified and shown are not necessarily limited to details as stated in the description, but changes may be made in different structures and to suit different circumstances, provided always that the results which I have sought to obtain, and which are above set forth, are accomplished substantially as stated.

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

1. In a refrigerating structure, a tight ice-floor, above which the ice is located, in combination with a series of troughs containing a deliquescent arranged underneath the entire surface of the ice-floor, with open spaces between the several troughs and between the series and the ice-floor for the free circulation of air, substantially as and for the purposes set forth.

2. In a refrigerating structure, the ice-floor B, composed of two sections, *b*, sloping inward from the sides of the building, in combination with the troughs E, containing a deliquescent, arranged in separate series underneath and a little below the ice-floor sections and sloping inward to correspond with the inclination of said ice-floor, substantially as described.

3. In a refrigerating structure, the tight ice-floor, in combination with troughs containing deliquescent material arranged in series a little below the ice-floor and separated from each other, and drip-troughs arranged above the

deliquescent - troughs and alternating there-
with so as to cover the open spaces between
them, substantially as and for the purposes set
forth.

5 4. In a refrigerating structure, the tight ice-
floor B, in combination with the series of deli-
quescent-troughs E and a series of drip-troughs,
J, all arranged and operating substantially as
described.

10 5. In a refrigerating structure, the troughs
E for holding a deliquescent, provided with a
perforated false bottom, F, on which the deli-
quescent rests, substantially as and for the
purposes set forth.

15 6. The deliquescent - troughs E, provided
with offsets e in their sides, in combination
with the perforated false bottoms F, substan-
tially as and for the purposes set forth.

20 7. The troughs E, in combination with per-
forated false bottoms F, on which the deliques-
cent is placed, and the waste trough or troughs

I, substantially as and for the purposes set
forth.

8. The ice-floor B, in combination with the
deliquescent-troughs E, drip-troughs J, and 25
waste-troughs I, all arranged and operating
substantially as described.

9. In a refrigerating structure, a tight ice-
floor, B, in combination with a series of deli-
quescent-troughs E, arranged in the upper por- 30
tion of the store-room and extending under-
neath the ice-floor, a series of similar deliques-
cent-troughs, K, arranged at the bottom of the
room, a series of drip-troughs, J, and waste-
troughs arranged to catch the waste and drip 35
from the several series of troughs, substan-
tially as and for the purposes set forth.

JOSEPH WM. KEPLER.

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