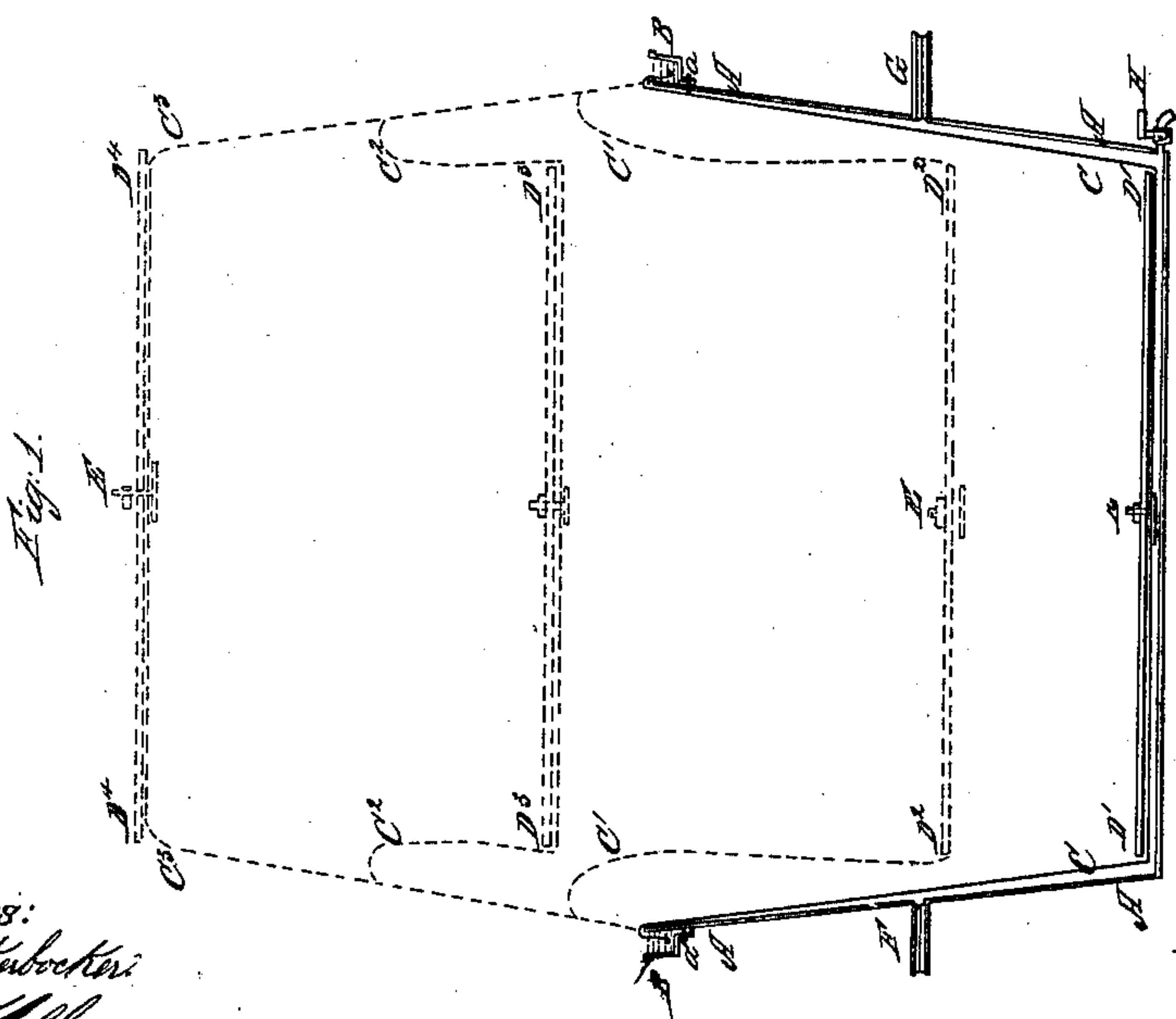
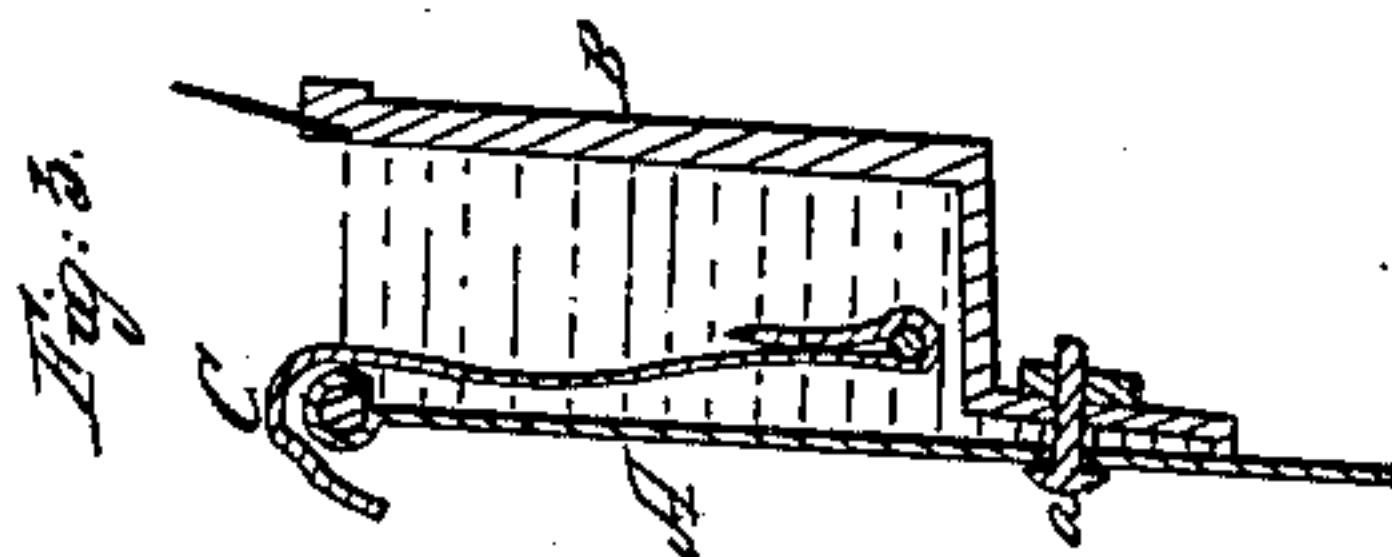
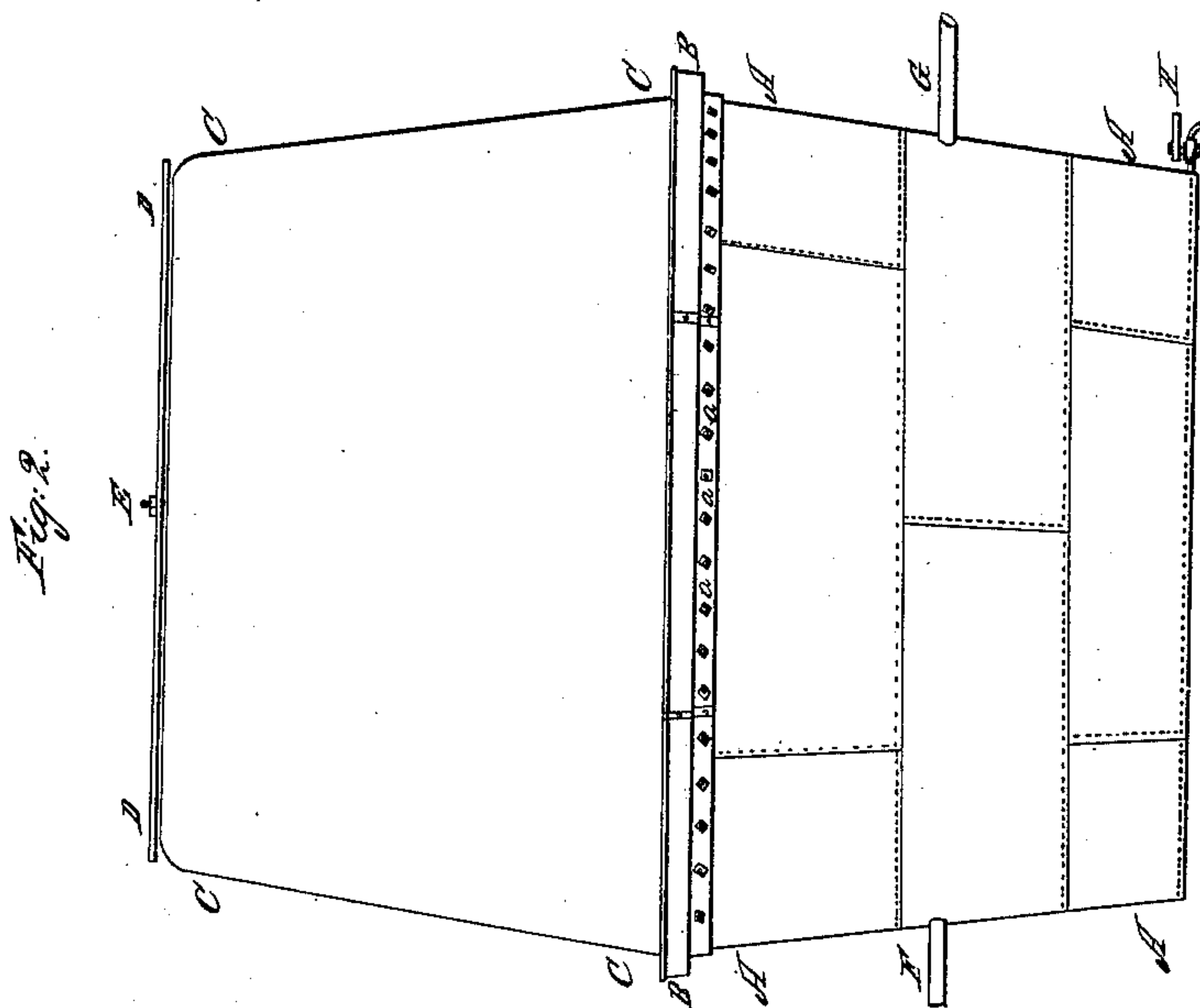


No. 32,676.

PATENTED JULY 2, 1861.

N. AUBIN.  
DRY GAS HOLDER.



Witnesses:  
Charles Knickerbocker

*[Signature]*

Inventor:

*N. Aubin*

# UNITED STATES PATENT OFFICE.

N. AUBIN, OF ALBANY, NEW YORK.

## DRY GAS-HOLDER.

Specification of Letters Patent No. 32,676, dated July 2, 1861.

*To all whom it may concern:*

Be it known that I, N. AUBIN, of Albany, in the county of Albany and State of New York, have invented a new and useful  
5 Improvement in Gas-Holders; and I do hereby declare that the same is described and represented in the following specification and drawings.

The nature of my invention consists in  
10 making a dry gas-holder the construction and advantage of which are hereinafter described.

The gas holders in ordinary use are composed of a metallic vessel open at one end,  
15 and inverted in a tank or cistern full of water. Such an apparatus occupies more than twice the space required for holding a given quantity of gas; must be protected against frost, and from the great weight of the tank,  
20 must be placed on the ground, which in many localities is of great value for other purposes, and often not to be obtained at all. To overcome these difficulties I have constructed a gas-holder partly of metal, and  
25 partly of a flexible material, connected together and so arranged as to form a gas-holder which receives, stores, and expels the gas, without the necessity of using water or other liquid, and which requires but one half  
30 the space occupied by the ordinary gas-holders.

To enable others skilled in the art to make and use the same, I will proceed to describe its construction and use, referring to the  
35 drawings in which the same letters indicate like parts in each of the figures.

Figure 1st is a perpendicular section across the center of the gas-holder. Fig. 2nd is an elevation of the same when inflated with gas. Fig. 3d shows on a larger  
40 scale, the method of attaching the flexible material to the metallic part of the gas-holder.

A A A A is a vessel made of metal or  
45 other solid substance, of either circular or other form; that of an inverted truncated cone being the most convenient or economical. It is closed at the lower and smaller end, and open at the other. The upper edge  
50 is provided with a groove B, B, made of cast iron, or otherwise concentric with the vessel A A.

C. C. C. C is a vessel made of flexible material rendered gas tight by being covered  
55 with pliable varnish or otherwise. This vessel is slightly more conical than vessel A

and of dimensions such as to cover its interior surface, and its edge of sufficient circumference, as to allow of its being drawn  
outside of the upper edge of the metallic  
60 vessel A, and to dip into the groove B to which it is secured firmly, and made gas tight by pouring a cement of rosin, mixed with wax or oil, and liquefied by heat. Plaster made liquid with water or other such  
65 substance will answer the same purpose. An inspection of Fig. 3 will suffice, to understand the arrangement. It will be seen that the rivets or bolts *a* by which the groove  
is attached to the side of the metallic vessel  
70 are made gas tight by the same cement which secures the flexible material to the vessel A. Other means may be used to obtain that result, but I indicate the method adopted by me, and which is cheap, convenient,  
75 and effectual.

D. D is a disk of wood or metal placed on the bottom of the flexible vessel C. Its object is to secure by its weight a constant and regular pressure on the gas, so as to force it  
80 to flow in an even manner to the burners. That disk has therefore to be of a weight proportionate to the desired pressure. Thus if it is required to have a pressure estimated at 1 inch of water as indicated usually in  
85 the water pressure gage well known to gas engineers, the disk has to be made of a weight equal to that of a quantity of water necessary to cover one inch deep, an area equal to that of the disk. If a greater pressure  
90 is required, the disk must be of proportionate additional weight. This arrangement is simple and does away with the necessity of guides, pulleys, and counterweights.  
95

E is a bolt with wide washer or plate by which the disk is secured in its center to the flexible material.

F is an inlet pipe through which the gas is introduced into the gas-holder.  
100

G is the outlet leading to the service mains and burners.

H is a cock to withdraw the liquids which condense in the gas-holder.

I am aware that W. Knapton has obtained  
105 a patent in England for a dry gas-holder, by suspending an ordinary gas-holder over a platform, and replacing the water by a flexible material to close the lower end of the vessel, and expel the gas, when the gas-holder  
110 descends over the platform. That device, which is a very crude and inefficient one, has



never probably been practically used, as it is much more complicated than the ordinary wet gas-holder. His metallic vessel has to be carefully guided between pillars and counterbalanced by weights, cords or chains, and pulleys. It also requires as much room, as the gas-holder suspended in a water tank, and nearly double the space of my gas-holder. It has besides, another, and very grave inconvenience: the flexible material forming the lower portion of the apparatus, the liquids which condense in gas-holders, and which are usually compounds of tar, naphtha, benzole etc. (all more or less active solvents of the varnishes or gums used for rendering flexible materials gas tight) would collect over it, and soon injure it. His platform has to be erected on elevated pillars of the height of the gas-holder, with the inlet and outlet pipes attached to it, necessitating tar wells and drips as with the ordinary water gas-holders: all which complexity and difficulties are avoided in my arrangement, which is therefore distinct from that, and from all others used before.

My gas-holder constructed as above described, has the further advantage of filling and emptying without exposing the flexible material to sharp creases or folds. The different parts of the interior surface of the flexible material, never coming in contact, are not exposed to be deteriorated by agglutination, as was the case with gas-holders

made in the form of bellows or of accordions, when left some time partially empty. An inspection of Fig. 1 will suffice to understand that peculiarity. When the gas-holder is empty, the disk is at  $D'$  and the side of the flexible vessel lays flat against the side of vessel A. When it is partially inflated, the disk is raised to  $D^2$  and the flexible material bends as shown at  $C' C'$ . When more gas is introduced, the disk is at  $D^3$  and the flexible material bends at  $C^2 C^2$ . When the gas-holder is full of gas, the disk is at  $D^4$  and the flexible material is straight as shown at  $C^3 C^3$ . As the gas is expelled, the vessel C assumes the same positions indicated above, until the disk descends to the bottom of vessel A.

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

A dry gas holder composed of a lower and rigid vessel and an upper flexible vessel attached each to the other and constructed and operating substantially in the manner described by the combined action of the pressure of the gas and that of a disk or weight, and this I claim irrespective of the precise method of attaching the edge of one vessel to the edge of the other.

N. AUBIN.

Witnesses:

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