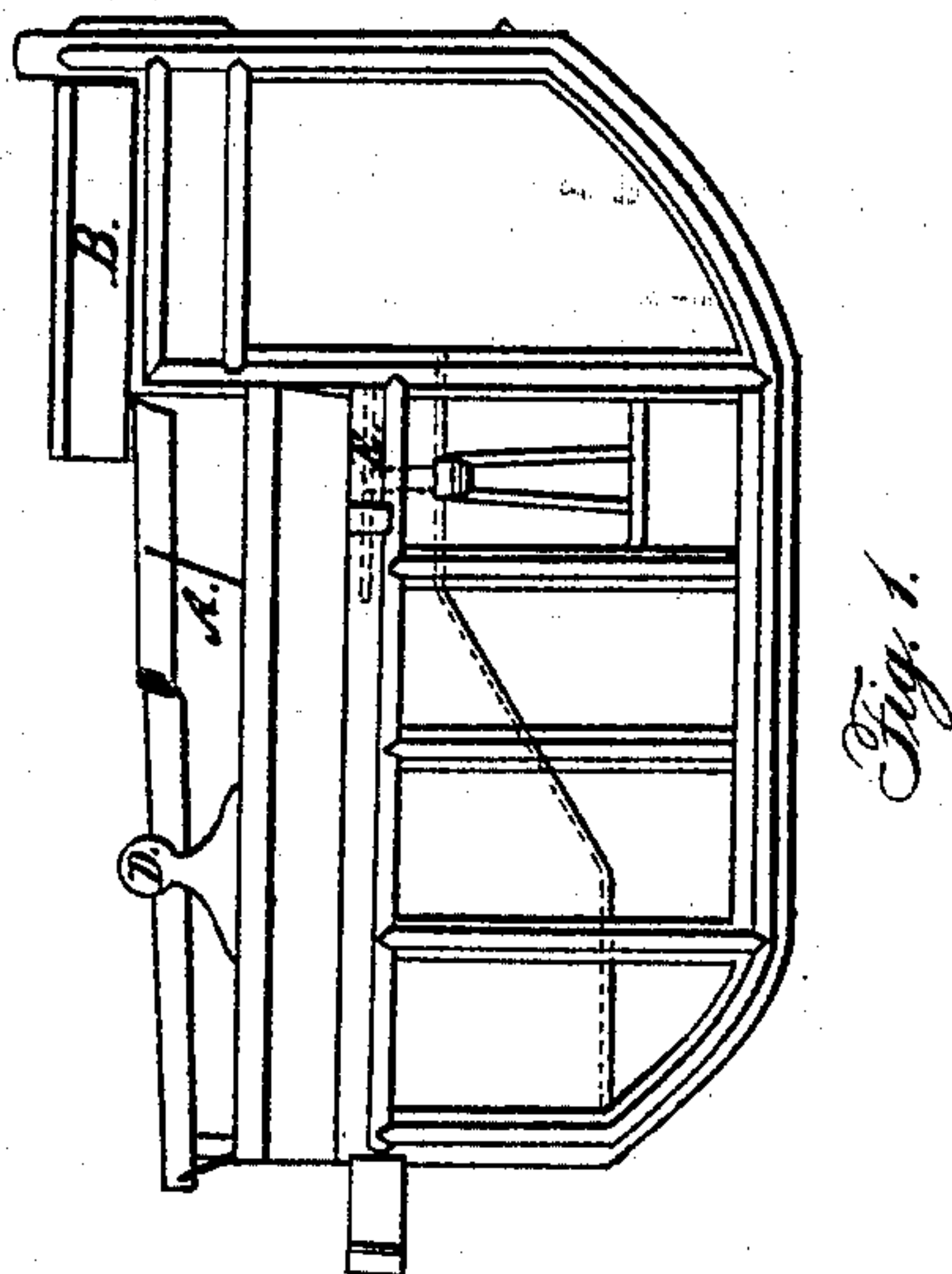
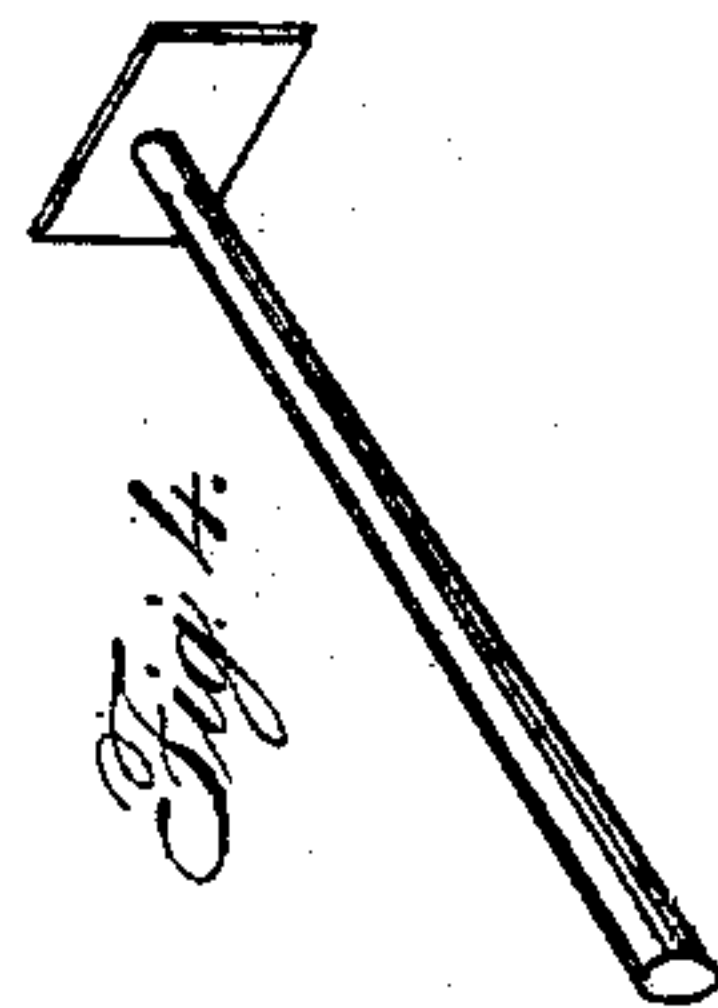
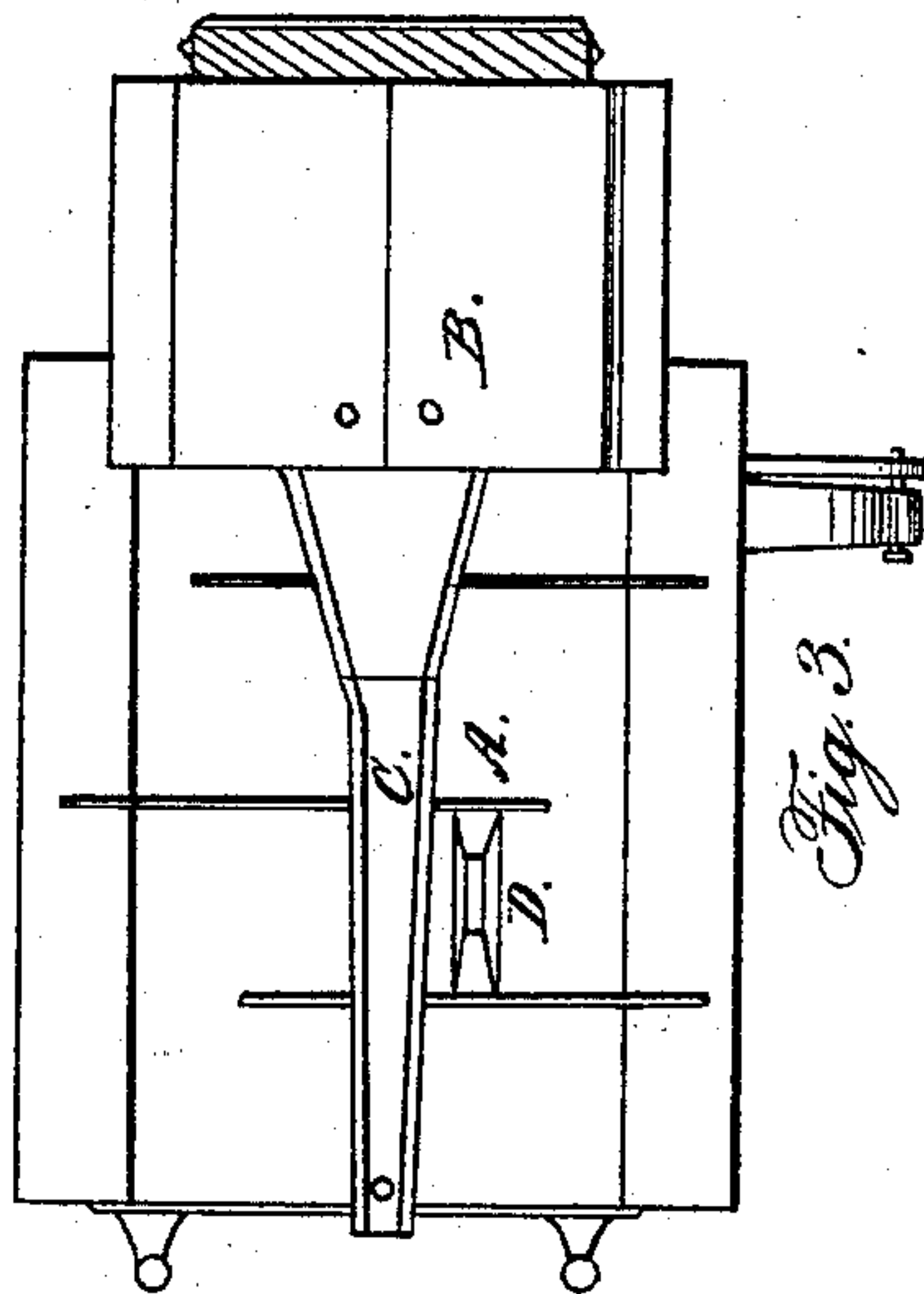
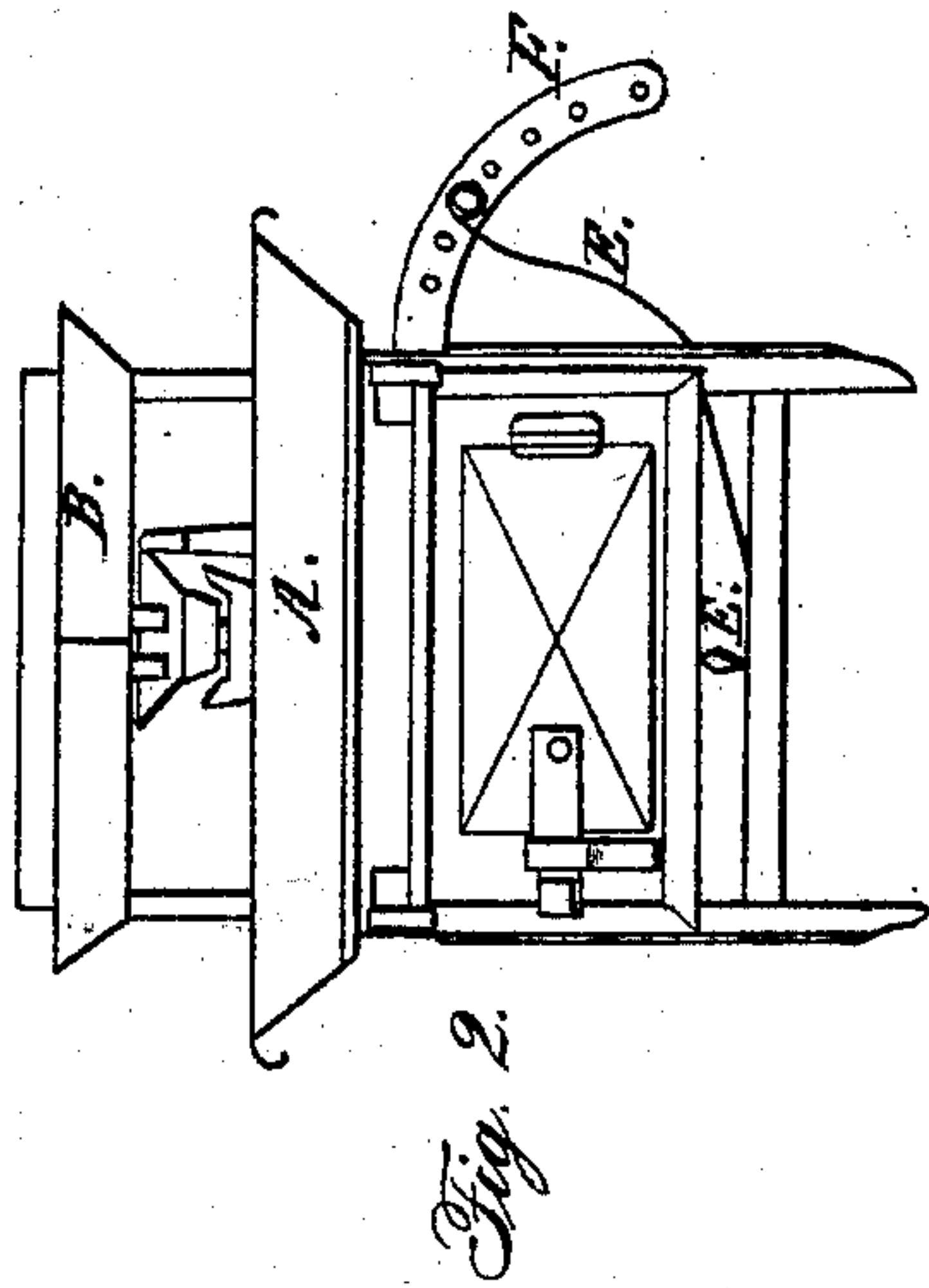


J. BROCKWAY.  
Evaporating Pan.

No. 47,921.

Patented May 30, 1865.



**Witnesses:**  
J. C. Smith.  
Jesse B. Green.

**Inventor:**  
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His attys.

# UNITED STATES PATENT OFFICE.

JESSE BROCKWAY, OF OSWEGO, ILLINOIS.

## IMPROVED SORGHUM-EVAPORATOR.

Specification forming part of Letters Patent No. 47,921, dated May 30, 1865.

*To all whom it may concern:*

Be it known that I, JESSE BROCKWAY, of Oswego, in the county of Kendall and State of Illinois, have invented a new and useful Improvement in Sorghum-Evaporators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side view, Fig. 2 is a front perspective view, and Fig. 3 is a bird's-eye view, of the same.

The nature of my invention consists in providing means for the evaporation of sorghum-juice with greater neatness, expedition, and economy than has heretofore been known or practiced in that department of industry.

To effect these objects I construct a furnace in the usual form of brick, iron, stone, or clay, but having the rear part elevated about a foot higher than the front part thereof, as shown in the drawings.

I also construct one large iron pan having two or more compartments separated from each other by removable gates, or by gates that may be raised, lowered, or turned aside at the will of the operator. The sides of this large pan extend down over the sides of the furnace, overlap the same, and fit closely thereto, by which means the heat from the furnace is concentrated to a great extent upon the pan, and less of it is wasted than by the ordinary methods. I call this large pan the "evaporator."

I further construct a smaller iron pan divided into two compartments, which I place on the top of the rear part of the furnace, about a foot above the evaporator. This I call the "heater." It is provided with faucets or plug-holes and plugs, for the purpose of drawing the juice, when heated, into the evaporator, and a trough or conductor leads from the same to the front compartment of said evaporator, for said purpose.

On the drawings herewith presented the said evaporator is marked A, the heater is marked B, and the trough or conductor is marked C.

The office of the gates (one of which is represented on the drawings by the letter D) is to enable me to keep the juice or sirup in any compartment of the evaporator in just such depth and quantity as I may desire. Thus

while in the front compartment I prefer to keep the juice about two inches in depth. In the second compartment, after passing the first gate, I find it profitable to keep the juice only one inch in depth, and in the extreme rear compartment of the evaporator I reduce the same to half an inch in depth.

I find by careful experiment that the richness and purity of color in the molasses or sugar depends in a great measure upon the shallowness of the juice in the evaporator while in process of evaporation. I attribute this result to the fact that the impurities of the juice more readily find the surface in the form of scum (which must always be removed) when the juice is kept shallow while boiling.

In my evaporator the depth of the juice or sirup is always regulated at will by the gates D.

In order to regulate the amount of heat required for finishing the sirup in the rear compartment, I construct a damper (marked E) operated by a lever, as shown in the drawings. I usually place a post by the side of this lever, with suitable holes therein corresponding to the hole in the end of the lever, and I hold the damper in any desired position by means of a pin, which passes through the end of said lever and into such corresponding holes in the post. In the place of such post I sometimes prefer to use a stanchion of iron or wood, attached to the evaporator, as represented by the letter F on the drawings. The damper E is not designed to affect the draft of the furnace, but to regulate the heat upon the rear compartment of the evaporator, so as to enable the operator always to prevent burning the contents thereof while in process of being finished.

The object of the heater B is to first warm the juice to the boiling-point, and allow the same to be skimmed before passing into the evaporator, so that the process of evaporation need never be checked by cold juice, and the most impure of the saccharine matter, which always arises in the first scum, may be more easily kept by itself.

For the purpose of skimming the juice and removing the same from one compartment to another after it becomes thickened, I construct a tool which I call the "skimmer." On the drawings it is represented by the figure 4. This tool is somewhat in the form of a hoe and handle, and is made of the same width as the com-



partments in which it is worked; or it may be a little less in width.

The mode of operation by my said devices is as follows: I put a small quantity of juice in all the compartments of the evaporator, but only enough to prevent burning, and fill the heater nearly full. As soon as the juice in the heater begins to boil, I skim it and place the scum in a trough, which is placed by the side of the heater to receive the scum thereof. I then draw the juice from the heater, or from one compartment of it, as may be most desirable, by opening the faucets or plug-holes. The juice enters the conductor C and passes into the front compartment of the evaporator. In this front or first compartment the juice is again skimmed, and by means of the gate C is allowed to pass to the second. In that compartment, as in all the others, the same act is performed, and the scum is preserved in a trough placed for that purpose by the side of the evaporator. I thus allow the juice to flow from one compartment to another through the gates in just such quantities as I desire, and when the same becomes thickened in any compartment I move it easily, either backward or forward, with the skimmer.

The rear compartment I usually reserve for finishing the juice into molasses, and while doing so I find the damper E a very important auxiliary. When finished, I draw off the product through a faucet or plug-hole in the side of said compartment, and I am then ready to repeat the process till my juice is exhausted. When the day's work is ended, I pour water in the pans, to prevent them from burning.

It is the usual custom of persons engaged in the manufacture of sorghum-molasses to either throw away the scum of the juice or to cleanse and ferment it to vinegar. By my process and devices I am enabled to save the poorest of the scum, which always arises in the heater, for the manufacture of vinegar, and the richest and purest portions thereof, which is taken from the different compartments of the evaporator, I convert into a very tolerable article of molasses.

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

1. In combination with an evaporator, the heater B, constructed and operated as and for the purposes specified, substantially as described.

2. In combination with an evaporator, the damper E, constructed and operated as and for the purposes specified, substantially as set forth.

3. In combination with an evaporator having various compartments, the conductor C, when used as and for the purpose specified, substantially as set forth.

4. In combination with an evaporator having various compartments, the gates D, constructed and operated as and for the purpose specified.

5. An evaporator having sides that overlap the furnace upon which it rests and extending down the outside thereof, for the purposes specified, substantially as set forth.

JESSE BROCKWAY.

Witnesses:

C. W. SMITH,

THOS. STEWART.