

N. Clouse.

Sorghum Evaporator.

N^o 72267

Patented Dec. 17, 1867.

Fig. 1.

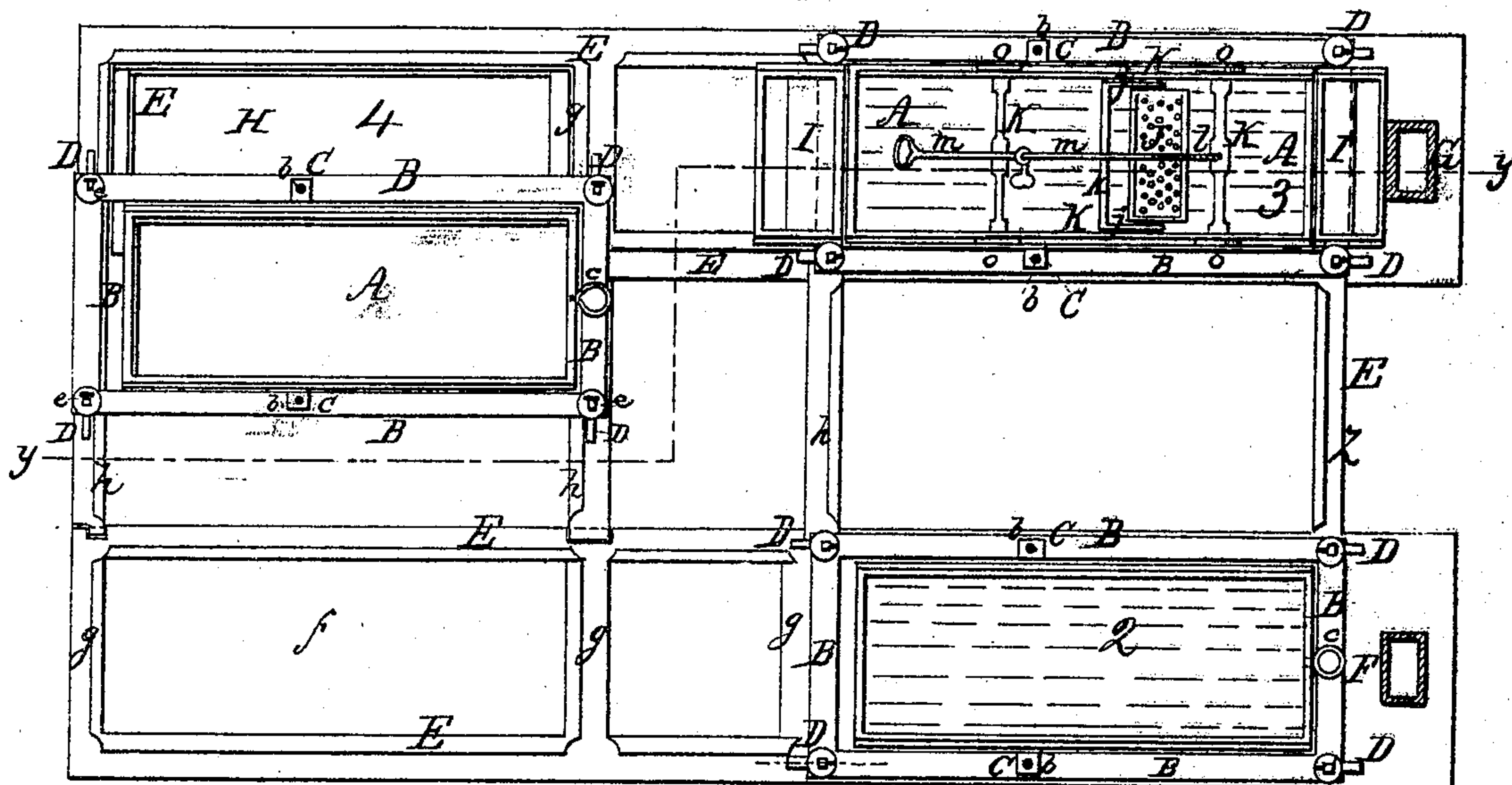
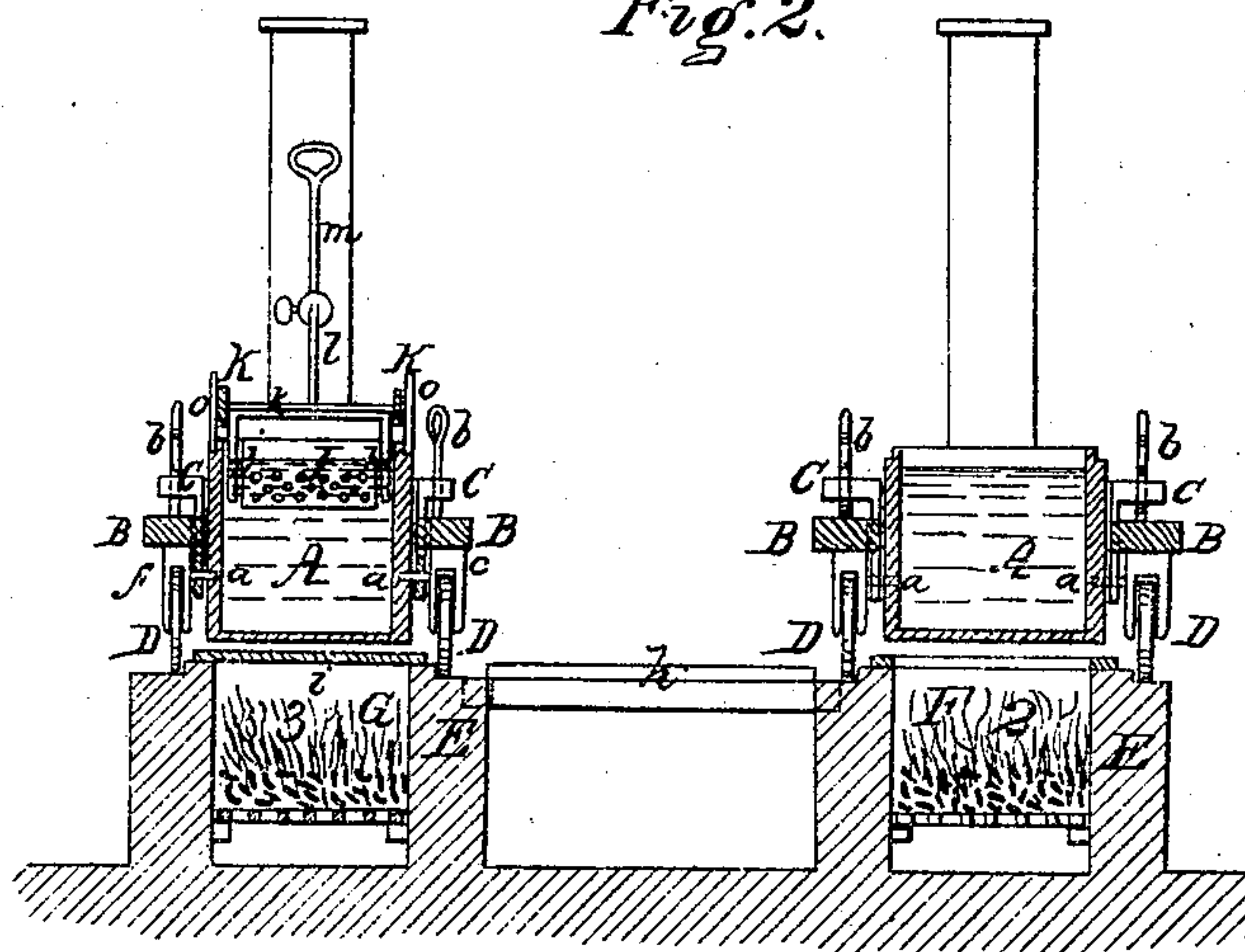


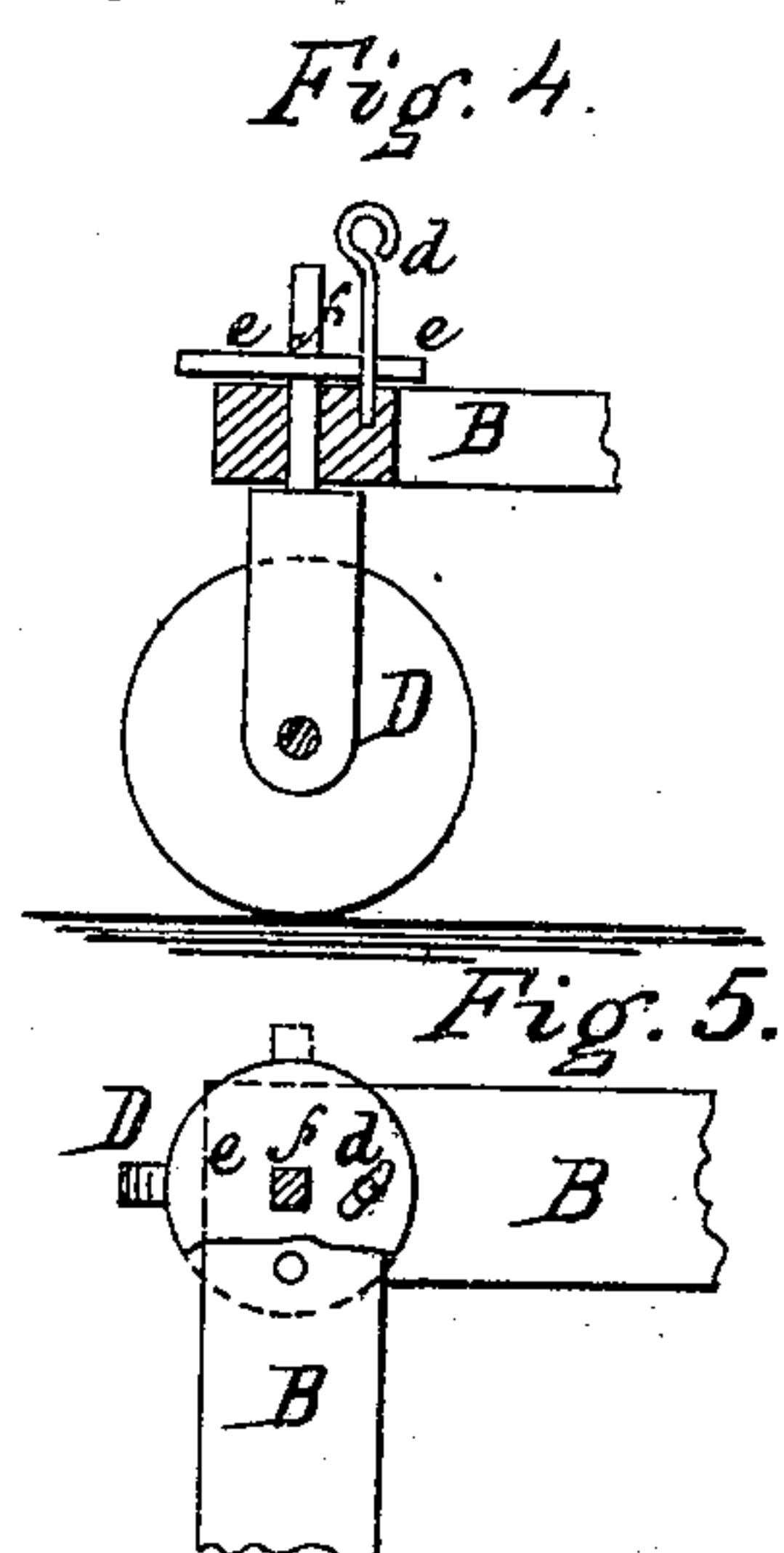
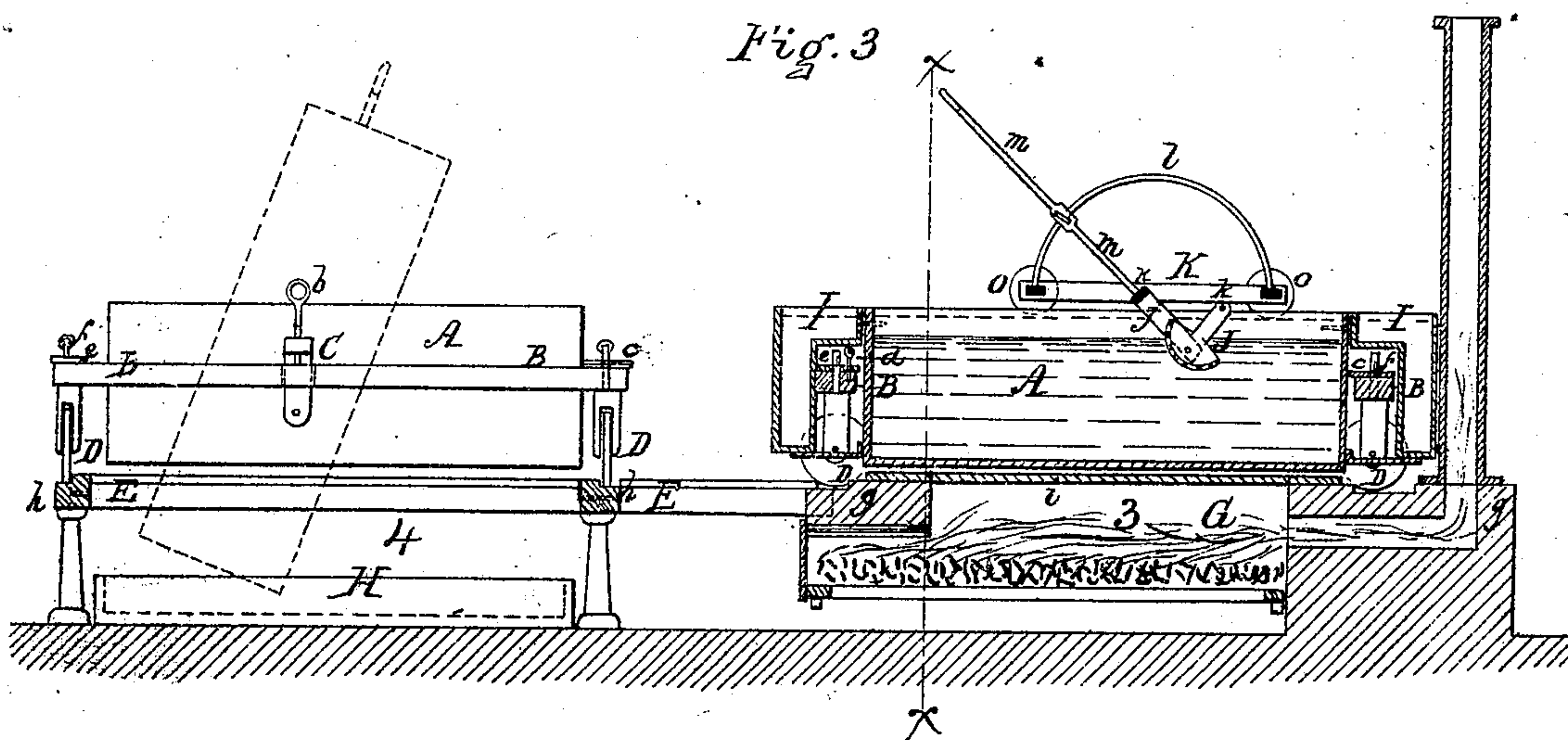
Fig. 2.



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NOAH CLOUSE, OF BUFFALO VILLAGE, PENNSYLVANIA.

Letters Patent No. 72,267, dated December 17, 1867.

IMPROVED SORGHUM-EVAPORATOR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, NOAH CLOUSE, of Buffalo Village, in the county of Washington, and State of Pennsylvania, have invented a new and improved Sorghum-Evaporator; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 represents a plan or top view of my improved sorghum-evaporator.

Figure 2 is a vertical transverse section of the same, the plane of section being indicated by the line *x x*, fig. 3.

Figure 3 is a longitudinal vertical section of the same, the plane of section being indicated by the line *y y*, fig. 1.

Figure 4 is a side view of the wheels, which are fitted to the boiler-frames.

Figure 5 is a plan or top view, partly in section, of a corner of the boiler-frame and wheel-attachment.

Similar letters of reference indicate corresponding parts.

This invention relates to a new sorghum-evaporator, which is so arranged that the sorghum goes through the whole process in separate vessels, so that each vessel can be cleaned after it has been emptied, and can be made ready for further operation without stopping or retarding the process in the other vessels.

The invention consists in arranging two furnaces, one for boiling the liquid to the required consistency, and the other for keeping a slow fire, to keep the liquid at the required temperature while it is being skimmed the second time. The vessels in which the liquid is contained are rectangular boxes, hung in carriages, which run on castor-wheels, a suitable track being arranged above the furnaces and on their sides, to allow the vessels to be moved from place to place. When a vessel is over either of the furnaces the liquid is skimmed by a skimmer, fitted to a carriage, which can be moved on the edges of the vessel, to deposit the scum from the vessel containing the molasses, to a proper scum-receptacle.

A A represent vessels for holding the molasses. The same are made of sheet metal or any suitable material, of any suitable size and shape. I prefer to make the same of rectangular form, as shown in the drawings. Each vessel is hung in a rectangular frame, B, by means of L-shaped plates C, as shown. The vertical arms of these plates slide in grooves provided in the inner sides of the frames B. The boxes are pivoted to pins, *a a*, formed in the inner sides of these vertical arms. The weight of the boxes is sustained on the frames by screws, *b b*, fitted through the horizontal arms of the plates C, their lower ends resting upon the surface of the frames. Each vessel A is pivoted to two plates C, which are arranged opposite to each other, upon the frames B. The plates C are arranged nearer to one end of each frame than to the other, and the boxes are thus not pivoted in their centres, nor are they thus balanced. To prevent the longer end of the vessel A from tipping over, a screw or pin, *c*, is fitted into that end of the box resting upon the frame B, as is clearly shown in fig. 3. These pins *c* thus uphold the weight of the longer ends of the vessels A. It will be easily understood, that by turning the screws *b b*, on each frame B, the vessel A, pivoted to such frame, can be raised or lowered at will. To keep the vessel level, while it is in this manner adjusted by the screws *b*, the pins *c* will have to be set in a different hole, provided for that purpose, in the end of the vessel A. The frames B B are provided with casters D D, fitted in or near their corners, so that the frames will thereby be transformed into carriages, which can be moved in either direction. If it is desired to lock the casters in any one position, a pin, *d*, may be fitted through a hole in a plate, *e*, which is formed on the upright caster-shaft; said pin *d* passing into the frame B, and thus locking the casters, and preventing them from turning around their upright shafts. This arrangement of the casters is clearly illustrated in figs. 4 and 5. For full-size machines, the upright shaft *f* of the casters may be extended above the plate *e*, and squared, so that the wheel can be turned by means of a suitable wrench. E is a stationary frame, supported upon suitable standards, and consisting of horizontal rails, upon which the carriages B can travel. Actually this frame E consists of two frames, of rectangular shape, arranged parallel to each other, with a passage between them. Each of such two frames is divided, by cross-rails *g g*, into three compartments, of which those at the ends are of similar size and shape as the vessels A. The cross-rails and end rails of such two frames E can, if desired, be connected by detachable rails *h h*, as shown in fig. 1. By this arrangement of the frame E, four sections are formed in the same, each of about equal area as the vessel A. These

four sections are marked respectively, 1, 2, 3, and 4. Under the sections 2 and 3 are built two furnaces, F and G, respectively. The furnace G, under the section 3, is covered by a plate, *i*.

The operation is as follows: Three or four vessels are used. When a vessel stands over the section 1 it is filled with sorghum, is then moved over the furnace F, and its contents boiled to the required consistency; thence it is moved on the rails of the frame E, over the furnace G, in which a slow fire is made. The sorghum is skimmed while over the furnace F, and again when over the furnace G. When the sorghum is sufficiently boiled and cleaned, the vessel is moved over the section 4, and is then dumped or emptied (see fig. 3,) its contents flowing into a cooling-pan, H. The vessel is then moved to section 1 again, and is there cleaned and scrubbed, so as to be prepared for another change of the liquid. When the vessel stands above the furnace F, two boxes, I I, are attached to its ends, to receive the scum, the upper edges of these boxes being on the same level with the surface of the vessels A. The manner of attaching these scum-boxes to the vessel can be varied at pleasure. The skimmer is a semi-cylindrical perforated vessel J, pivoted to the ends of the rods *j j*, which projects from a bar, *k*, having its bearings in the side walls of a carriage, K. The end pieces of the carriage are connected by a semicircular wire or bar, *l*, around which is fitted and whereon slides a lever, *m*, projecting from the bar *k*; the bar *k* being the centre from which the arc of *l* is struck. The wheels *o*, of the carriage K, rest upon the edge of the vessel A, and thus the said carriage can be easily moved on the vessel A, from end to end of the same. The skimmer J has a handle, *n*, by means of which it can be turned in its bearings. The skimmer is set, as shown in fig. 3, and moved from one end to the other of the vessel A. It is then emptied into the box I, at the end of the vessel, and then the position of the lever *m* is reversed on the arc *l*, and the carriage is moved to the opposite end of the vessel again. Over the furnace G the sorghum is skimmed again.

The main advantage of my invention are, that the sorghum can be rapidly skimmed while undergoing the evaporating-process, so as to be purified; that each portion of the sorghum is kept separate from the others, so that crude juice will not be mixed with partly or wholly finished sirup; that an opportunity is given, during each circuit, to wash and clean each boiler, thereby producing very pure molasses.

The height of the vessels A above the fire can be regulated by the screws *b*, and thereby also the amount of heat to which the liquid is subjected.

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

1. The manner herein shown and described of hanging the vessels A in the carriages B, by means of plates C, having pins *a* and screws *b*, and by means of steadying-pins *c*, as described.
2. The carriages E E, when provided with adjustable casters, having plates *e* on their upright axles, and secured, by pins *d*, in any desired position, as described.
3. The arrangement of the frame E, divided into sections to allow the easy transportation of the vessels A from one section to the other, as described.
4. A sorghum-evaporator, consisting of a series of separate vessels, A A, hung in carriages B B, and moved in succession from the filling-place, over the furnaces F and G, to the cooling-pan or discharge, substantially as described.

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Witnesses:

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