J. E. KENDALL.

Sorghum Evaporator.

No. 44,199. Patented Sept. 13, 1864.

Fig. 3,

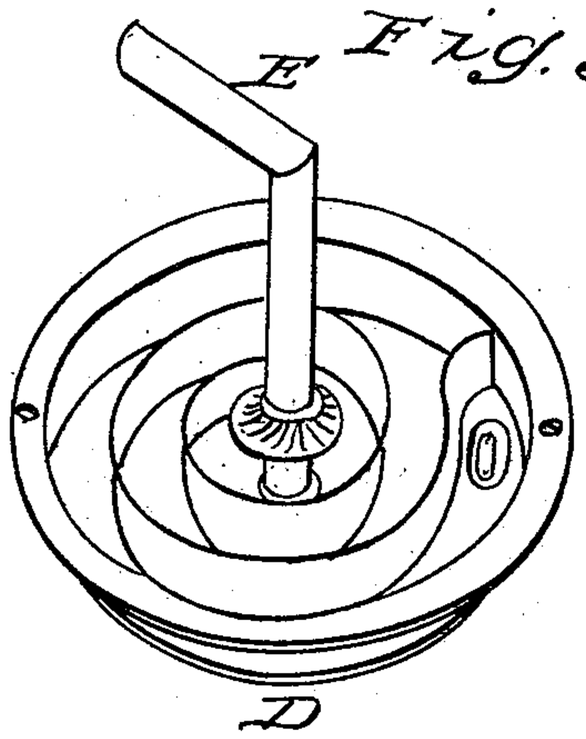


Fig. 2,

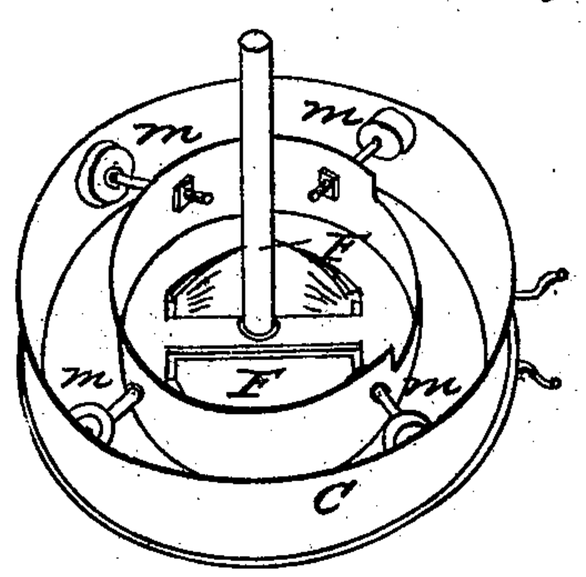
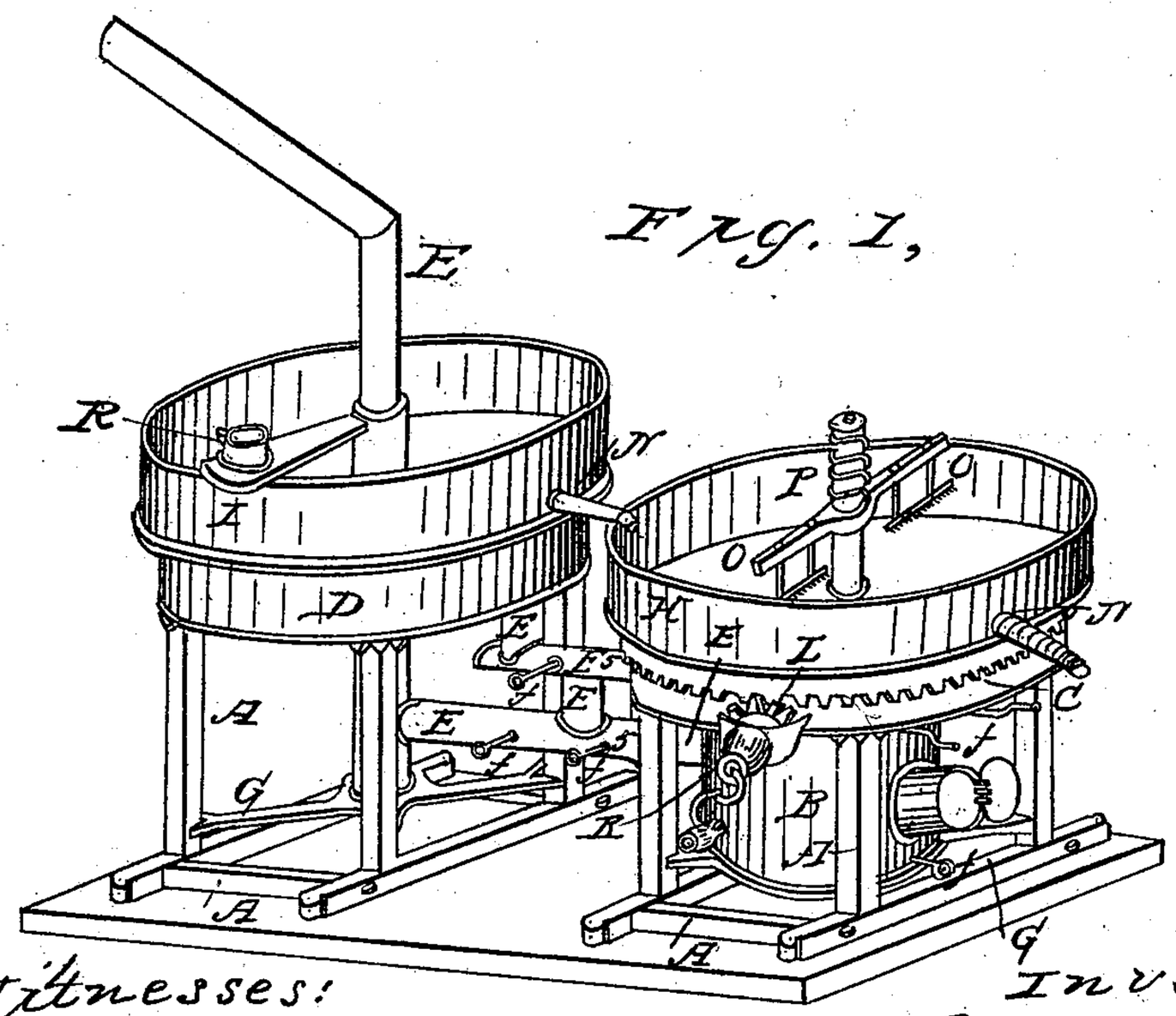


Fig. 1,



Witnesses:
John W Palmer
Nathan Dickerson

Inventor
J. E. Kendall

UNITED STATES PATENT OFFICE.

JOSEPH E. KENDALL, OF PLYMOUTH, INDIANA.

IMPROVED SORGHUM-EVAPORATOR.

Specification forming part of Letters Patent No. **44,199**, dated September 13, 1864.

To all whom it may concern:

Be it known that I, JOSEPH E. KENDALL, of the town of Plymouth, in the county of Marshall and State of Indiana, have invented a new and useful Machine for Manufacturing Maple, Sorghum, and Cane Sugar and Molasses, called "Kendall's Portable Sorghum and Sugar-Cane Boiler, Heater, and Evaporator Combined;" and I do hereby declare that the following is a clear, full, 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 perspective view of the machine when ready to operate. Fig. 2 is nearly a bird's-eye view of the air-chamber C; and Fig. 3 is nearly a bird's-eye view of the air-chamber D, separated and detached from the machine.

The shaded parts of the drawings represent those parts of the machine made of sheet and cast iron. That portion not shaded is made of wood.

The frame (lettered A) is of wood, the posts and sills of sufficient size to give the required strength. In a machine with boiler six feet in diameter, four by four inches is large enough for the timbers.

The fire-box (lettered B) is a common round or square sheet-iron fire-box, with valves or dampers and grate, as shown, properly fastened under air-chamber C.

The air-chambers (lettered C and D) are round shallow boxes made of sheet-iron, on which the boilers are set. The flues in the air-chambers are made by the bottom of the boilers fitting closely on the sheet-iron partitions in the chambers, those in air-chamber D being spiral, and so made as to convey the heat either from the outside to the center into the smoke-stack, or from the center outside, as may be required, as shown in Fig. 2. The air-chambers are connected by flues, (lettered E,) and the passage of the heated air through them and through the air-chambers is regulated and controlled at the pleasure of the operator by means of the valves. The valves, six in number, (lettered F,) are placed in the positions shown in the model and drawings, and regulate the supply and direction of the heat. The flues and the fire-box are held in position by the strong iron frames, (lettered G), on which they rest, and the flues are so made as to easily disconnect at 5, thus entirely disconnecting the two boilers and adding much to the portableness of the machine.

The boilers H and I are shallow round pans, made of sheet-iron, of any required diameter and depth, and are made so as to fit closely on the air-chambers C and D. Boiler H is a rotary boiler, its rotating motion being given by working the crank K, which connects with a cast-iron gearing, L, around the outside of the boiler, as shown in the drawings and model. The boiler H rests partially on rollers M, which serve to lessen the friction and give a smooth even motion to the boiler while it is revolving. The boilers are made of sufficient size to project about four inches over the air-chambers, thus giving a narrow, cool surface underneath outside of the air-chambers, which causes the flow of the boiling sap or juice to be always from the center toward the circumference, bringing the scum within easy reach of the operator, and remedies in a great degree the danger from boiling or running over. The boilers are not fastened to the air-chambers, but are held in position by their weight and small pins, as shown in the model. Boiler I is raised on the frame enough higher than boiler H to permit the liquid to run freely through the spigot N into it, and in operating, boiler I is used as the heater, and H as the evaporator.

O is a double-wire brush, fastened and held stationary, as shown in the drawings and model, and when in operation it is pressed down evenly on the bottom of the inside surface of the boiler H by the spiral spring P. The brush is to prevent the formation of a hard crust on the bottom of the evaporator, generally so troublesome to sugar and sorghum manufacturers.

R is a vessel, with a double strainer in the bottom, as shown in the model, through which the juice or sap passes into the heater to remove foreign substances.

What the inventor claims, and desires secured to him by Letters Patent, is—

1. The rotating boiler or pan, constructed in the manner described, which rotates entirely around from right to left or left to right at the will of the operator, while the whole fire-surface is continually exposed to the heat, if desired.

2. The arrangement of the flues and valves and the formation of the circular and spiral flues in the air-chambers, as in the model and drawings shown.

3. The manner of constructing the wire brush and the particular application of the same, for preventing the formation of crust on the bottom and sides of the boiler, as shown in the drawings.

4. The manner of holding up, supporting, and connecting the fire-box, air-chambers, and boilers by the wood and iron frame-work and flues, as described and shown in the specification and drawings.

5. The particular arrangement and combination of the fire-box, air-chambers, boilers, flues, valves, and gearings, or their equivalents, and the manner of constructing the same, in the manner and for the purpose set forth in the drawings and in the above specification, so as to make one complete machine.

JOSEPH E. KENDALL.

Witnesses:
I. I. VINALL,
J. W. PALMER.