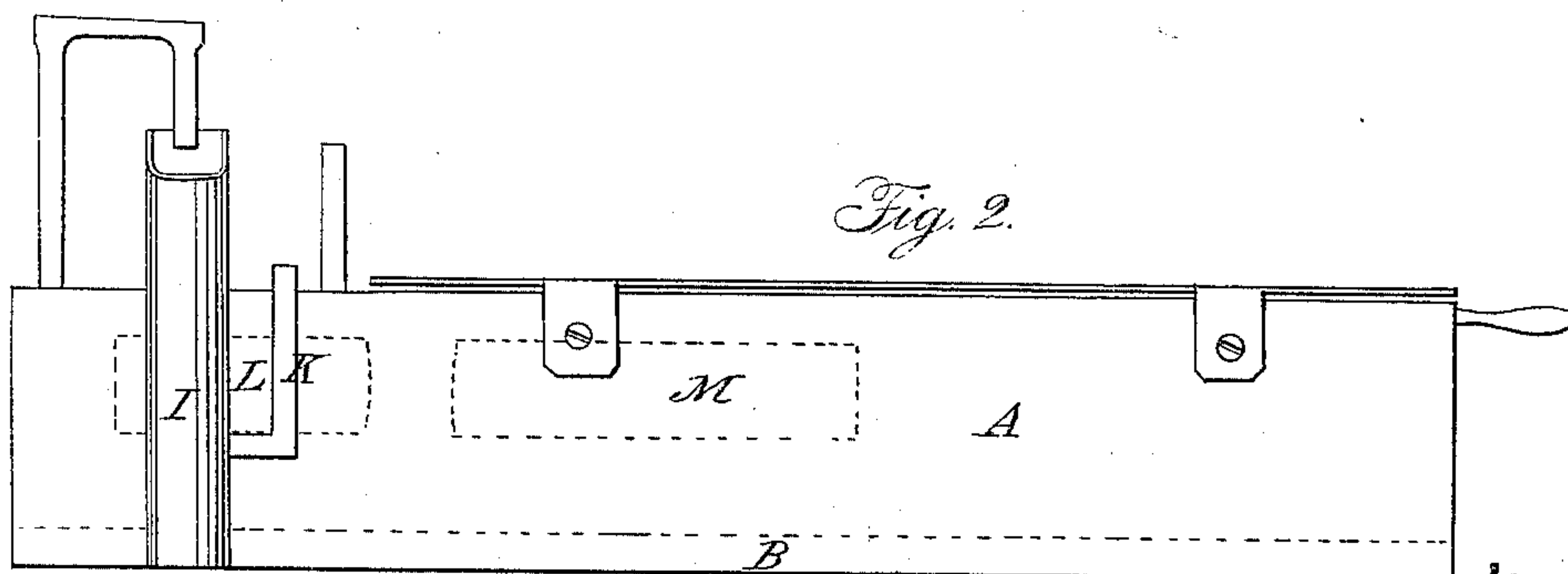
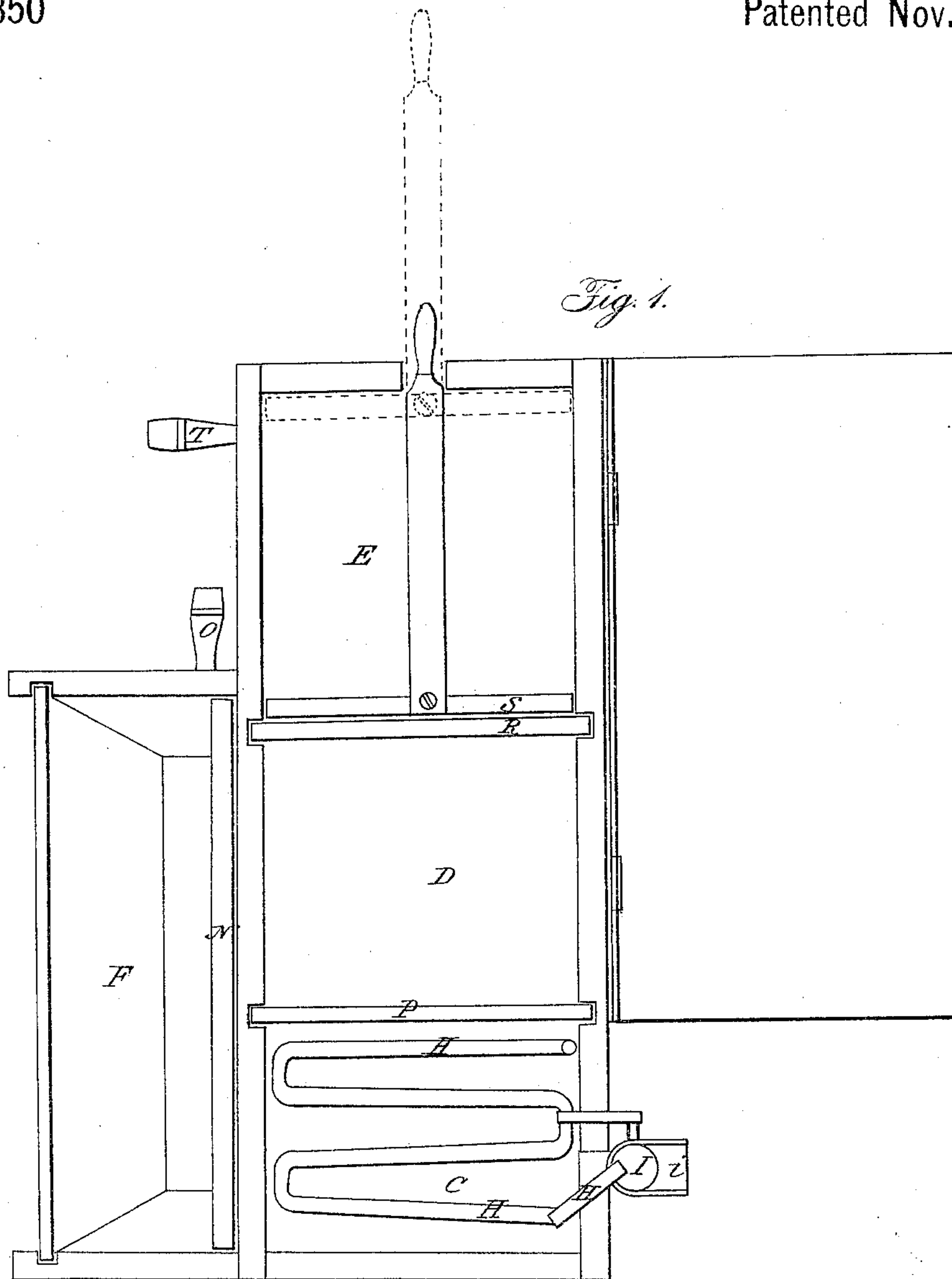


H. BUTLER.
Evaporating Pan.

No. 44,850

Patented Nov. 1, 1864.



Witnesses:

G. Breed
A. Brown

Inventor:

Harlow Butler
by Daniel Breed
Att'y

UNITED STATES PATENT OFFICE.

HARLOW BUTLER, OF CHESTERFIELD, OHIO.

IMPROVED SUGAR-EVAPORATOR.

Specification forming part of Letters Patent No. 44,850, dated November 1, 1864.

To all whom it may concern:

Be it known that I, HARLOW BUTLER, of Chesterfield, in the county of Fulton and State of Ohio, have invented a new and useful Improvement in Sugar-Boilers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the manufacture of sugar and sirup it is difficult and laborious to separate the scum and other impurities from the cane-juice.

The main object of my invention is to overcome these difficulties, and especially in the manufacture of sirup and sugar from sorghum, which is now attracting great attention.

My invention consists in the use of a tall vessel for receiving the heated juice and separating the scum and sediment, and in a peculiar combination with such receiver.

In the accompanying drawings, Figure 1 is a top view of my sugar-boiler, the cover being thrown open. Fig. 2 is a side view or elevation of the same.

The boiler or box A may be made with double bottom, leaving a space, B, Fig. 2, for the introduction of steam. It is divided into three chambers, C D E, there being also a dead-shelf or scum and precipitate separator, F, at one side, as seen in Fig. 1. In the chamber C is a coiled tube or worm, H, which, when the boiler is in operation, is mostly immersed in boiling sirup. The juice coming from the mill is introduced into this worm at *h*, Fig. 2, and flows out of the worm at *h'*, Fig. 2. The heat of the worm coagulates the albumen of the juice, which, as it flows into the tall narrow receiver I, is rapidly clarified, the albumen, with entrapped impurities, rising to the top of the receiver, while the precipitate or heavy sediment falls to the bottom. The scum flows off by the spout *i*, Fig. 1, and the sediment may be removed by occasionally emptying the clarifying-receiver. The juice thus clarified flows through the discharge-tube K into the chamber C of the evaporator. This tube K draws the clear juice from the clarifying-receiver, always leaving the sediment at

the bottom and the scum at the top. The process of evaporation commences in the chamber C. As the boiling proceeds the scum accumulates on the dead-shelf or scum and precipitate separator F, which, not being exposed to so great heat as the boiler, is not kept in ebullition, and therefore allows the scum to settle. This dead-shelf is in fact a side chamber, and receives the overflow from the boiler through openings L and M, Fig. 2, dotted lines, in the sides of chambers C and D. This overflow may be drawn off by the faucet O, and after filtration the sirup or juice returned to the boiler. Before drawing off the contents of chamber F the openings L and M should be closed by the slide N. The juice flows from chamber C into chamber D through opening in the bottom of the partition P, so that these two chambers act together, the scum flowing from both into the scum-separator F. When the scum is removed and the juice sufficiently concentrated, the latter is brought into the finisher E by raising the slide R, and thus opening passages in partition between chambers D and E. In the finisher E the heat is continued until the sirup is finished or ready to cool for the crystallization of sugar. When the evaporation is completed, the sirup is drawn off by means of faucet T, the operation being facilitated by means of the sliding partition or scraper S.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The use of the clarifying-receiver I, or a tall narrow vessel for receiving and clarifying the already-heated juice, the scum rising and flowing off by a spout, while the precipitate falls below the insertion of the discharge-pipe for the thus clarified juice, substantially in the manner and for the purposes set forth.

2. The combination and arrangement of the worm H, the receiver I, with discharge-tube K, and the evaporating-chamber C, substantially as specified.

HARLOW BUTLER.

Witnesses:

J. R. WEITZEL,
DANIEL SCHLOTTNER.