F. E. MILLS & C. CLAGER.
Steamer or Boiler for Feed.

No. 203,636. Patented May 14, 1878.

Fig. 1.

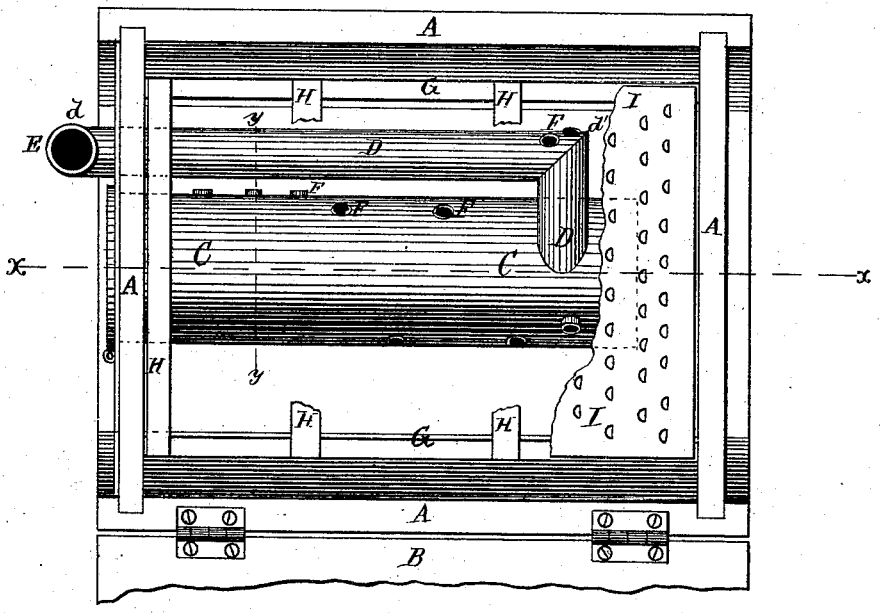


Fig. 2.

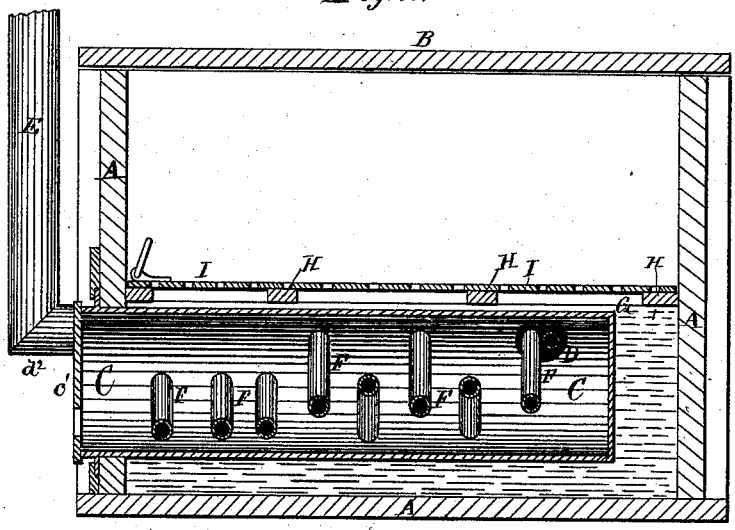
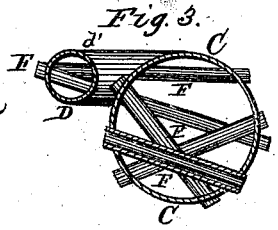


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK E. MILLS AND CHARLIE CLAGER, OF ANN ARBOR, MICHIGAN.

IMPROVEMENT IN STEAMERS OR BOILERS FOR FEED.

Specification forming part of Letters Patent No. **203,636**, dated May 14, 1878; application filed February 28, 1878.

To all whom it may concern:

Be it known that we, FRANK ELMER MILLS and CHARLIE CLAGER, of Ann Arbor, in the county of Washtenaw and State of Michigan, have invented a new and useful Improvement in Steamer or Boiler for Feed, &c., of which the following is a specification:

Figure 1 is a top view of our improved apparatus, the cover being removed and parts being broken away to show the construction. Fig. 2 is a vertical longitudinal section of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a detail cross-section of the heating apparatus, taken through the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved apparatus for steaming or boiling grain, vegetables, hay, corn-stalks, straw, &c., for feed and for laundry and other uses, which shall be simple in construction and convenient and effective in use, and which may be readily moved from place to place.

A is water-tight wooden tank or box, of any desired size, which may be made with vertical sides and ends, or with flaring sides and vertical ends, or with flaring sides and ends, as may be desired, and which is provided with a closely-fitting cover, B. C is a furnace or fire-chamber, which is placed in the lower part of the tank A in such a position as to be entirely surrounded with water. The forward end of the furnace C is secured in an opening in the forward end of the tank A, so that its door *c'* may be outside of the said tank.

In the side of the furnace C, at or near its inner end, is formed an opening, in which is secured the end of the smoke-flue D. The smoke-flue D is made with an elbow, d^1, at its inner end, and passes forward parallel with the furnace C, and out through the front of the tank A, and is connected with the smoke-pipe E by an elbow, d^2.

F are small tubes, open at both ends, which pass through and are secured in the sides of the furnace. The tubes F are set at an inclination, so that the heat of the fire may induce a current of water through them, and so that any sediment that may enter them may settle and drop out to the bottom of the tank A. The tubes F, in the foremost part of the furnace C, are set nearer the bottom of said furnace, and at a less inclination than the others, so that they may serve as a grate to support the fuel.

To the sides of the tank A, at about the level of the top of the furnace C, are attached cleats G, upon which rest the ends of a number of cross-bars, H. Upon the cross-bars H is placed a false bottom, I, which is perforated with numerous small semicircular holes to allow steam to pass through freely, but which are made of such a size that kernels of grain cannot pass through, while their form prevents them from being choked by the said kernels of grain.

In using the apparatus, the substance to be steamed is placed upon the false bottom I, enough water is put in to cover the furnace C and the smoke-flue D, the cover B is closed, and the fire is applied. When the substance is to be boiled a greater quantity of water is put in.

This construction enables the apparatus to be mounted upon wheels or runners, so that it can be readily drawn from place to place—as, for instance, it can be drawn into a barn or other place where the material to be steamed or boiled is kept, charged, drawn out to a safe distance, and fired up, and, when the material is cooked, drawn to the place where it is to be fed out.

I am aware that is is not, broadly, new to use inclined or crossing tubes in a boiler; but

What I claim is—

A submerged furnace provided with crossing inclined pipes F, a portion of them being placed near the bottom of furnace and at a less inclination, to adapt them for use as a grate, and the others are at a greater inclination and elevated, to be in line with the draft, as shown and described.

FRANK ELMER MILLS.
CHARLIE CLAGER.

Witnesses:
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