

UNITED STATES PATENT OFFICE.

JONAS M. FRINK, OF CORAL, ILLINOIS.

IMPROVED FURNACE FOR BURNING BAGASSE.

Specification forming part of Letters Patent No. 38,666, dated May 26, 1863.

To all whom it may concern:

Be it known that I, JONAS M. FRINK, of Coral, in the county of McHenry and State of Illinois, have invented a new and Improved Furnace for Burning Bagasse; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a front elevation of my improved furnace; Fig. 2, a transverse vertical section thereof just back of the front side or through the fire-grate.

Like letters designate corresponding parts in both the figures.

The usual fire-grate, A, ash-pit *a*, evaporator H, and chimney I, composing the main portions of an evaporating apparatus to which I intend principally to apply my improvements need no description, as there is nothing peculiar in them. At one side of the grate A, I locate an inclined grate or set of grate-bars, B, leading down to the said grate A, substantially as shown. This inclined grate forms the greater part of the bottom of a hopper-like chamber, M, into and through which the bagasse is introduced for burning. This chamber is closed at the top *f*, and at the sides and in its upper end is a feed-hole, C, closed by a lid or door, *m*, and having a self-acting or swinging valve, *c*, to close the opening with certainty and prevent the escape of smoke, &c., thereby. Beneath the inclined grate B are located shafts *d e*, (there may be one, two, or more, as required or desired,) running transversely close under the bars thereof, and to these shafts are attached arms or projections D D on two sides, or E on one side only, generally one arm or pair of arms for each intermediate bar-space. These arms are so located that they may either remain entirely below the grate or be raised up between the grate-bars, as seen in Fig. 2. They may be curved backward somewhat, so as not to grapple the

stalks of bagasse in turning. The shafts *d e* extend through the front side of the furnace, and have respectively cranks *h i* thereon for turning the arms by the attendant. Thus, by turning these arms below the surface of the grate, they leave the grate as if they were not appended; but on turning their shafts the arms are raised between and above the grate-bars and serve to shake out the fast-accumulating cinders and to lighten up the bagasse, and thus cause them to burn freely. This is repeated as often as necessary. The arms also serve to feed the bagasse gradually down to the main grate A. Under this inclined grate is an inclosed chamber, G, of considerable capacity separated from the ash-pit *a* by a partition, in which the air becomes heated, and thereby supports the combustion in a freer and more perfect manner. A door, *g*, Fig. 1, opens to this chamber, and air may be supplied thereby to the chamber G, or by any other inlet. The air in this chamber is partly heated from the ash-pit *a*, wherein the hot embers are continually falling by radiation through the dividing-partition and partly by the hot cinders falling from the grate B into the chamber itself.

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

1. The revolving or vibrating arms D D E, arranged and operating in combination with the inclined grate B, substantially as and for the purposes herein specified.

2. The separate hot-air chamber G, in combination with the ash-pit *a* and grate B, for the purpose herein set forth.

The above specification of my improved method of preparing and applying bagasse as fuel for evaporating cane-juice, &c., signed by me.

JONAS M. FRINK.

Witnesses:

F. SAFFORD,

IRA ROZEL CURTISS.