

F. X. FISCHER.

STRAW-FEEDERS FOR FURNACES.

No. 178,518.

Patented June 13, 1876.

Fig. 1.

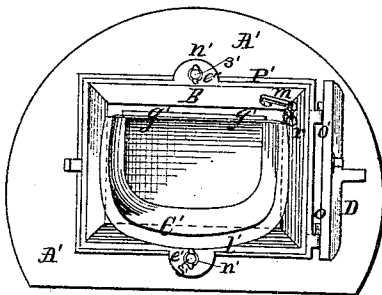


Fig. 2.

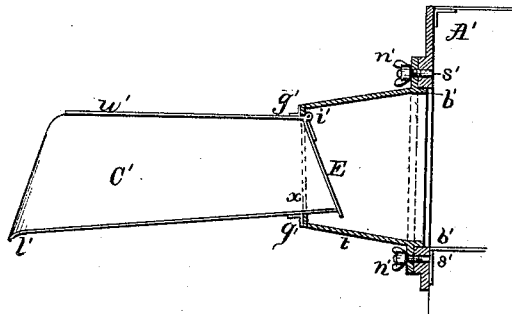


Fig. 3.

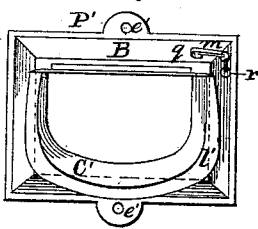


Fig. 4.

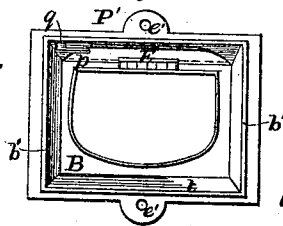
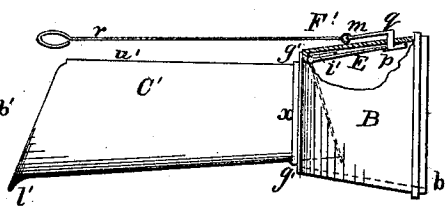


Fig. 5.



Witnesses:

Algernon S. Austen.
Robert, Ruling.

Inventor:

Frank X. Fischer.
Per Atty
Donald Varicay.

UNITED STATES PATENT OFFICE.

FRANK X. FISCHER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN STRAW-FEEDERS FOR FURNACES.

Specification forming part of Letters Patent No. 178,518, dated June 13, 1876; application filed February 10, 1876.

To all whom it may concern:

Be it known that I, FRANK X. FISCHER, of the city and county of San Francisco, State of California, have invented an Improved Straw-Feeder for Furnaces, of which the following is a specification:

My invention consists essentially of a square-shaped metallic box, open front and rear, and provided in front with a feeding chamber or nozzle, that may be separated from it by a drop-door, and in the rear with a flange constructed with eyes, for fitting the entire device to a furnace-door plate, provided with set-screws and nuts for the due adjustment of this flange; also, my invention comprises a lever and rod attachment to this box-shaped compartment, whereby the drop-door may be secured so as to leave free communication between both receiver and box, the object of my invention being to feed straw to a furnace by means of this nozzle-receiver, and ignite and burn the straw thus fed, while resting on the bottom of this box shaped chamber, so that the flame from the burning straw may be drawn from the draft from the grate through the flues, under and around the boiler, in its full force, and without the loss sustained, as in the case of straw burned, as in the ordinary way, on the grate itself.

Figures 1 and 2 are, respectively, a front elevation and longitudinal vertical section of the straw-feeder embodying my invention, and fitted in position to a furnace-door plate arranged for receiving the same. Figs. 3, 4, and 5 are a front, end, and side elevation, respectively, of this straw-feeder, represented detached from the furnace-door plate, and with its drop-door wide open.

B is the metallic box referred to, and consists of a square shaped chamber, open at both ends, the sides, top, and bottom being so inclined at an angle that the front is somewhat smaller than the rear end. To this end is attached a receiver or nozzle, C', which consists of a taper-shaped chamber, open at both ends, and constructed of sheet or cast metal, the top *w* being made flat, but the sides and bottom rounded off at their junction, so as to form a continuous curve. At the larger end these curved sides and bottom are bent over outward, so as to form a flange or lip, *v*, the

better to receive the straw as fed. The smaller end of this nozzle is attached to the smaller end of the box B by angle-iron strips, and is so arranged that the bottom and sides of the nozzle project somewhat within the compartment B. At the place of the junction of these chambers a drop-door, E, hinged to the top of the box when down, closes the communication between them by resting on and fitting to the projecting receiver or nozzle C'. The rear face of the box B consists of a plate, P', provided at the top and bottom with centrally-placed eyes *e' e'*, for the purpose of receiving set-screws *s' s'*, fitted at the top and bottom, respectively, of the furnace-door plate A' A', and close to the opening thereof, both being so placed and arranged that when this plate, forming part of the straw-feeder, is adjusted onto these set-screws *s' s'* by nuts *n' n'*, it may, by these and by a projecting flange or beading, *b' b'*, (which fits to the sides of the furnace-door opening,) close the same as effectually as the ordinary furnace-door D, but at the same time will not interfere with this door when in open position on its hinges, so that said door need not be detached when this feeding apparatus is adjusted into position in the manner described. In order to keep the drop-door E open when straw is being fed to the furnace through the nozzle or receiver C' and box B, a lever, *m p*, is pivoted at *q* onto the top of this box, so as to have one arm, *m*, without, and the other, *p*, within, the same. To the arm *m* a long rod, *r*, is attached, whereby this arm *m* may be actuated backward or forward, causing similar though opposite movements to the arm *p*. When, then, it is found necessary to keep this door open, the straw-fork is made to push it up close to the top of the box B, and the rod *r* is pushed so as to turn round this arm *p*, and thus hold the door up in that position. By this arrangement, the feeding apparatus having been adjusted into position onto the furnace-door plate, and the drop-door E opened and upheld by the lever *m p*, as described, straw may then be fed into the compartment B, so as to rest on the bottom *t* of it. When sufficient straw has thus been fed it is ignited, and the drop-door E is allowed to fall, so that the flame produced may cause the necessary draft through the grate.

This draft will be sufficient to draw the flame under the boiler all along the flues, and the full effect of such flame will be received. This method of burning straw on a plate, *t*, in a partially-confined vessel in advance of the grate, wherefrom the proper amount of oxygen for combustion is derived, is claimed as an improvement on the usual plan of igniting and burning the straw on the open grate itself, as it is found by experiment that the draft should not have free access to the burning straw, but to the flame which it generates, so that the full effect may be produced; also, it is found that, as a necessary consequence of this more perfect combustion, a corresponding economy of fuel used is insured.

I do not claim, broadly, a furnace-receiver for straw, as I am aware that this is not new; but What I claim as my invention, and desire

to obtain Letters Patent of the United States therefor, is—

1. The box B, provided with bottom igniting-plate *t*, feeding-nozzle *C'*, drop-door E, and face-plate *P'*, fitted with eyes *e' e'* and flange *b' b'*, arranged and constructed in the manner described, in combination with the furnace-door plate *A' A'*, provided with set-screws *s' s'* and nuts *n' n'*, substantially as and for the purposes herein set forth and specified.

2. The adjusting door-catch and rod *m p r*, fitted to the box B, provided with receiving-chamber *C'*, in combination with the drop-door E, substantially as and for the purposes herein set forth and specified.

FRANK X. FISCHER.

Witnesses:

PHILIP MAHLER,
LIONEL VARICÁS.