

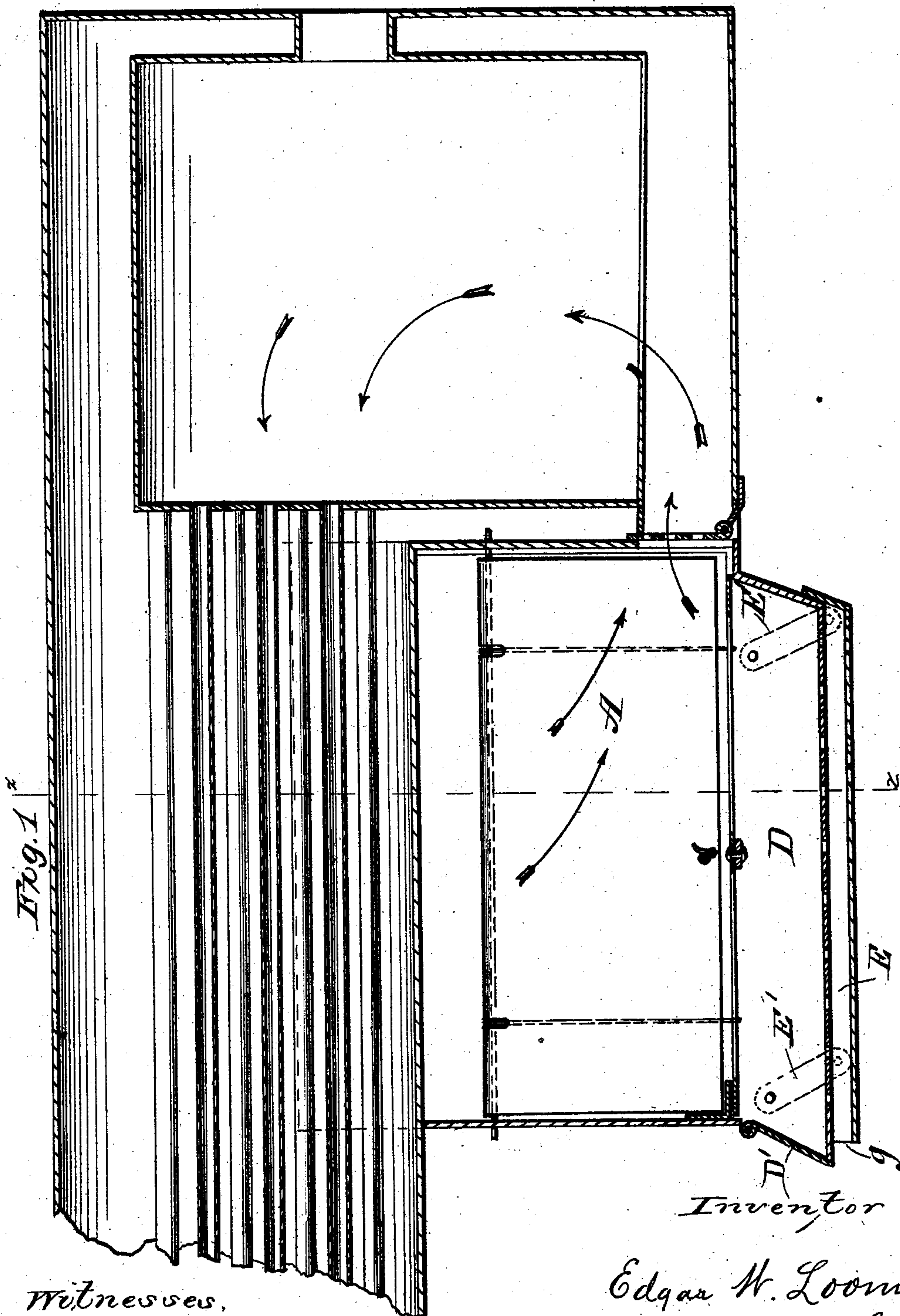
(No Model.)

2 Sheets—Sheet 1.

E. W. LOOMIS.  
FURNACE FOR BURNING STRAW.

No. 248,046.

Patented Oct. 11, 1881.



Witnesses,  
P. L. Orr and  
Chas. S. Hyer:

Inventor  
Edgar W. Loomis  
by Charles W. Lee  
Atty

(No Model.)

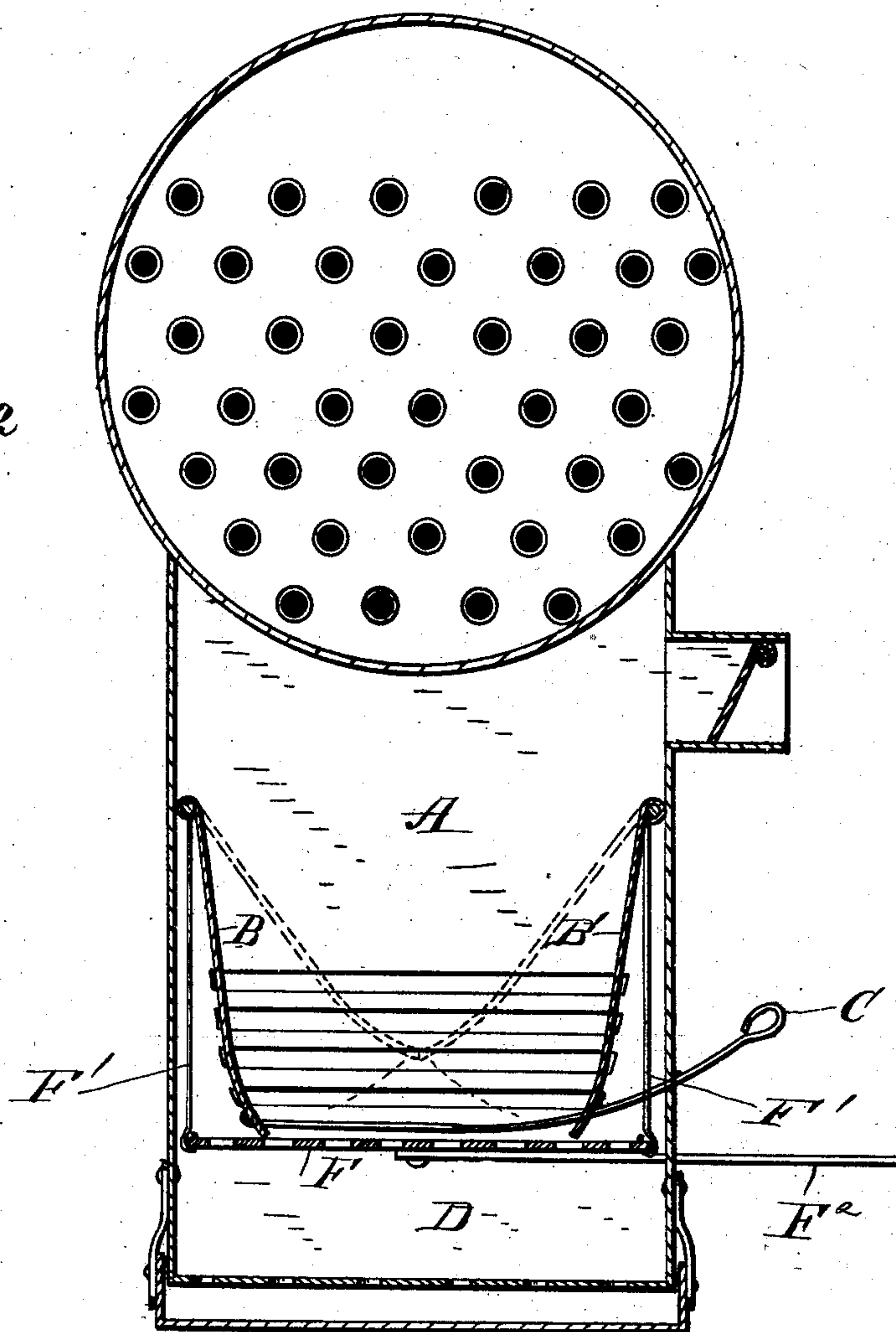
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Fig. 2



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# UNITED STATES PATENT OFFICE,

EDGAR W. LOOMIS, OF RACINE, WISCONSIN, ASSIGNOR OF ONE-HALF TO  
THE J. I. CASE THRESHING MACHINE COMPANY, OF SAME PLACE.

## FURNACE FOR BURNING STRAW.

SPECIFICATION forming part of Letters Patent No. 248,046, dated October 11, 1881.

Application filed June 1, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR W. LOOMIS, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Furnaces for Burning Straw; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to an attachment to steam-boilers of the locomotive-boiler type, intended for use in burning straw and similar material for the generation of steam, consisting, in the main, of an auxiliary or supplementary fire-box placed against the ordinary fire-box and under the waist of the boiler, so that the flash-flame and direct heat from the straw fuel are directed against the waist of the boiler, while the products of combustion are caused to travel through the ordinary fire-box on their way to the flues of the boiler.

My improvement upon such attachment consists in providing the supplementary fire-box with pivoted flaps, which can be worked from the outside of the fire-box, to shake up the body of straw fuel above the grate.

It further consists in hanging a pan under the ash-pit of the supplementary fire-box, the open end of which pan, when lowered, may admit air to continue the combustion of the straw fuel when the ash-pit door is closed, the bottom of the ash-pit being perforated, to permit the air from the pan to reach the grate and fuel thereon.

It further consists in suspending the grate by links, so that it may be shaken from time to time.

In order that my invention may be clearly understood, I have illustrated in the annexed drawings, and will proceed to describe, the best form thereof at present known to me.

Figure 1 is a longitudinal section of a portable locomotive-boiler with the straw-burning fire-box attachment embodying my invention.

Fig. 2 is a transverse section thereof, taken in the plane indicated by the broken line *x x* of Fig. 1.

The supplemental fire-box A is placed under the waist of the boiler and against the ordinary fire-box thereof, substantially in the way illustrated and known to persons skilled in this branch of the useful arts. This general combination of a supplementary straw-burning fire-box is not of my invention, and is shown simply for the purpose of illustrating my improvements.

At each side of the supplementary fire-box is pivoted or hinged a flap, (marked B and B', respectively,) preferably curved about as shown, and extending from the hinge down to near the upper surface of the grate.

To the lower end of the flap B' is pivoted a curved rod, C, which passes through a hole in the flap B, and through another hole in the side of the fire-box, terminating in a handle, by which it may be conveniently operated. Normally the flaps and rod are in the position shown in full lines in Fig. 2; but on pulling the rod outwardly both flaps are simultaneously swung toward each other. The straw fuel will rest on the grate-bars between the flaps B and B', so that it may be shaken up by the operation of the flaps.

It is obvious that other means than the curved rod C may be used for operating the flaps.

The drawings illustrate the flaps as solid plates; but they may be perforated, so as to permit air entering behind them to pass through their perforations into the straw fuel.

The ash-pit D is provided with a door, D', as usual. A pan, E, is suspended from the ash-pit by links E', which admit of the said pan being either elevated, so that its bottom will hug the bottom of the ash-pit, or lowered, so that a space will then exist between the bottom of the ash-pit and the bottom of the pan. The end of the pan adjacent to the door of the ash-pit is open, as at *g*, so that air can freely pass into it when lowered. The bottom of the ash-pit is perforated, permitting air entering the pan to pass up to the grate and fuel thereon. Thus the supplementary fire-box can be supplied with air for combustion either through

the ash-pit door or through open end of the lowered pan, or through both the ash-pit door and the open end of the lowered pan, as circumstances may require or make expedient.

5 The grate F is suspended by links F', and is provided with a lever, F<sup>2</sup>, fulcrumed in the wall of the supplemental fire-box, and terminating in a handle, by which it may be operated to shake the grate. In this instance the pintles  
10 of the hinged flaps B and B' serve also for suspending the links F' of the grate.

Sufficient space must be left between the grate and the walls of the supplemental fire-box to provide for the play of the grate in shaking it.

15 Any part of my invention may be used without the other parts. For instance, the flaps may be used in a fire-box having a fixed grate. The pan may be open at both ends, so that air may enter at both ends when it is lowered.

20 Having thus described my invention, what I claim as new is—

1. The combination, substantially as before set forth, of the supplemental fire-box and the vertically-suspended hinged flaps therein  
25 for shaking the straw fuel.

2. The combination, substantially as before set forth, of the supplemental fire-box, the vertically-suspended hinged flaps therein for shaking the straw fuel, and the curved rod for simultaneously operating said flaps.

30 3. The combination, substantially as before set forth, of the supplemental fire-box, the ash-pit constructed with a perforated bottom, and an imperforate suspended pan open at one or both ends, for the admission of air and to prevent the falling cinder from escaping.

4. The combination, substantially as before set forth, of the supplemental fire-box and the suspended grate thereof, together with the links for suspending and the hand-lever for  
40 shaking said grate.

In testimony whereof I affix my signature in presence of two witnesses.

EDGAR W. LOOMIS.

Witnesses:

BYRON B. BLAKE,  
JOHN TAPLEY.