

No. 703,042.

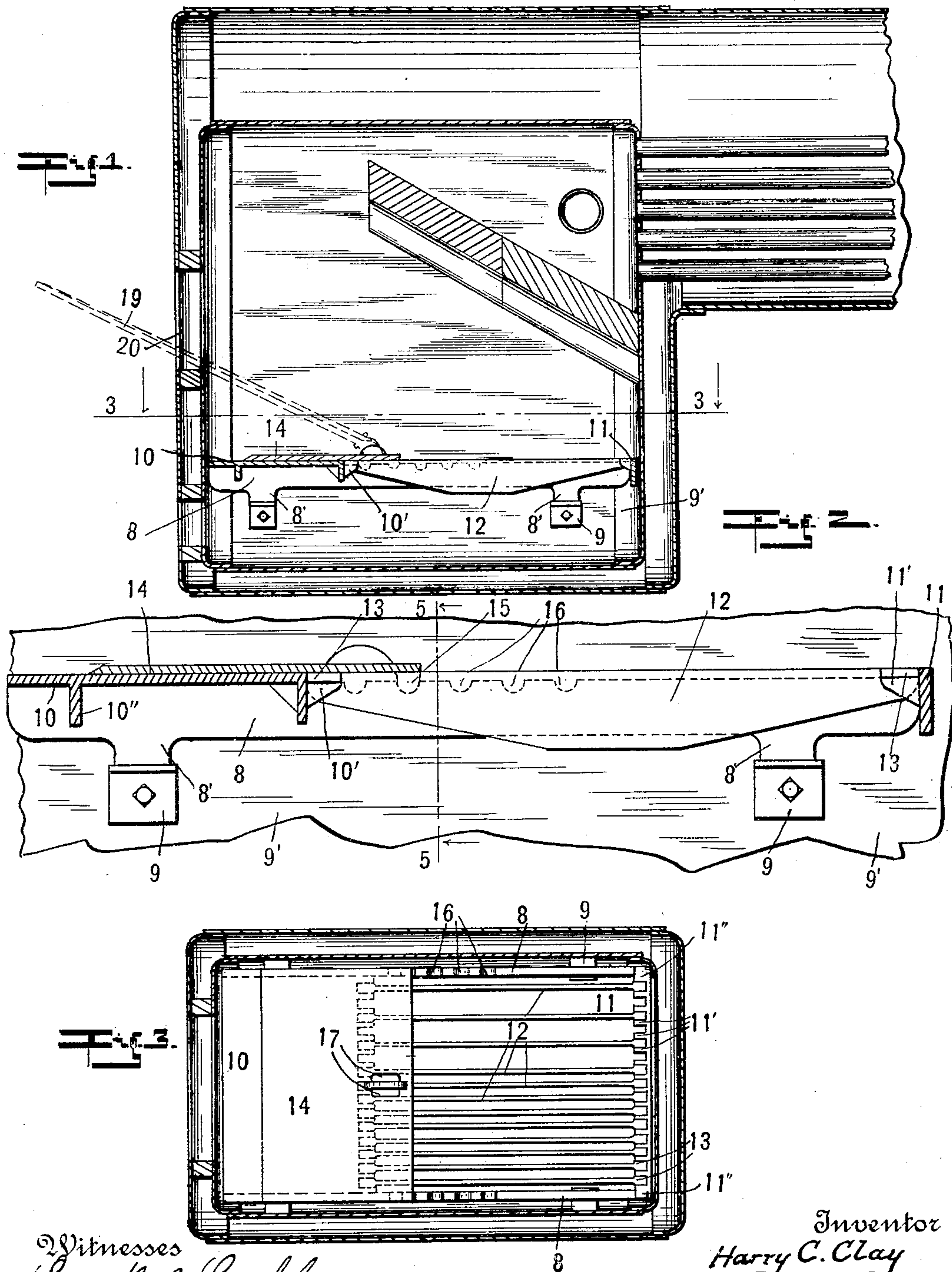
Patented June 24, 1902.

H. C. CLAY.  
STRAW BURNING FURNACE.

(Application filed Nov. 23, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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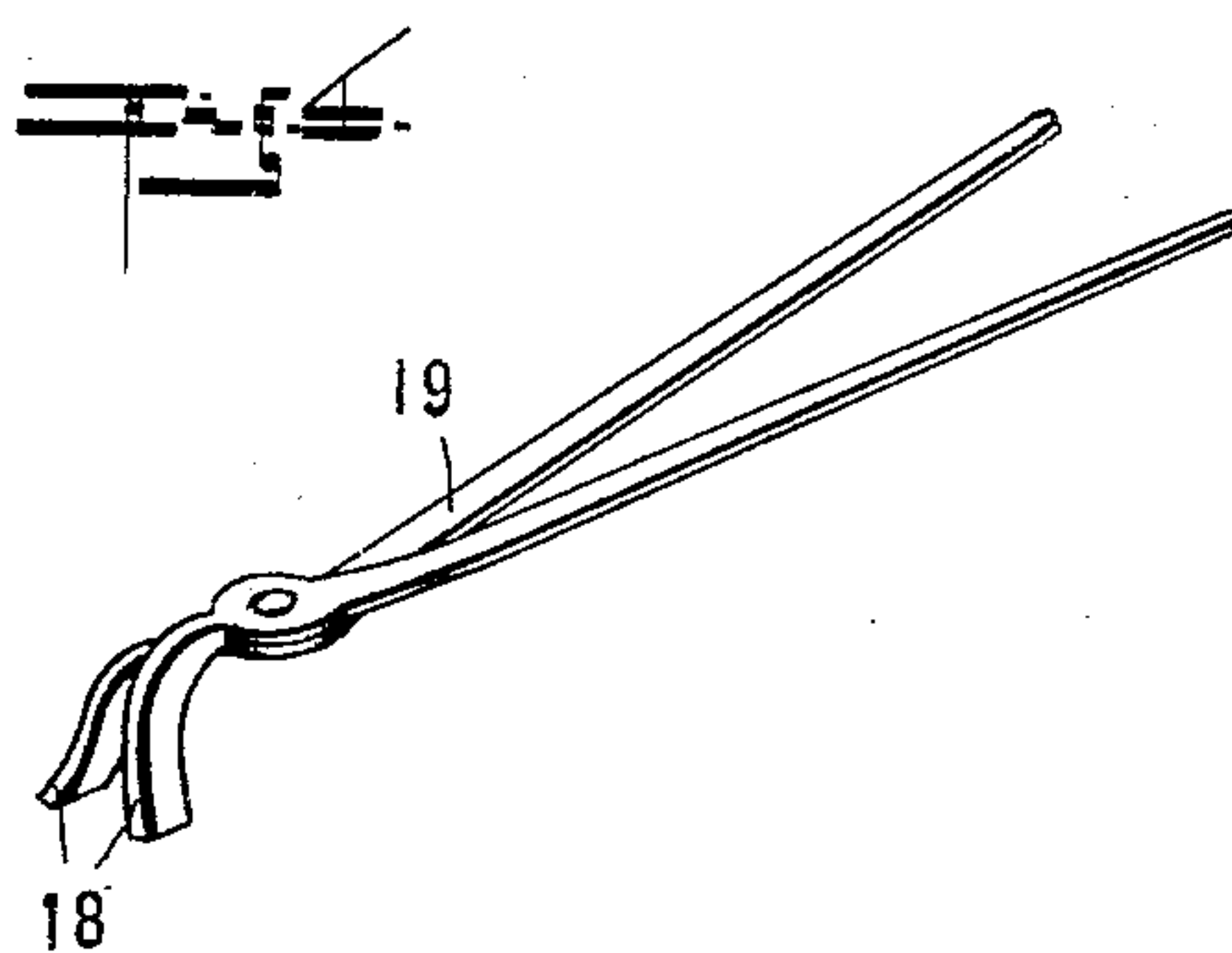
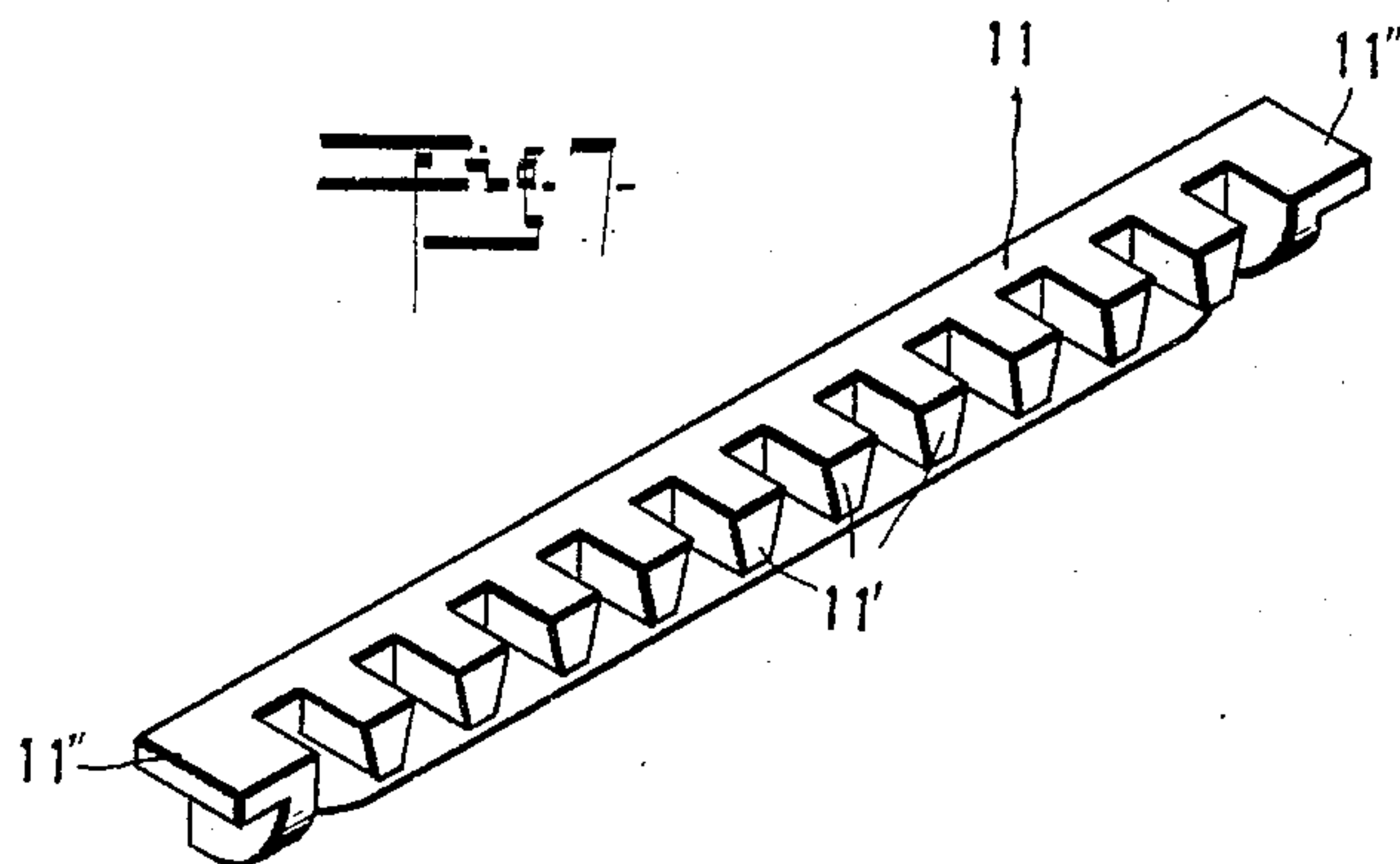
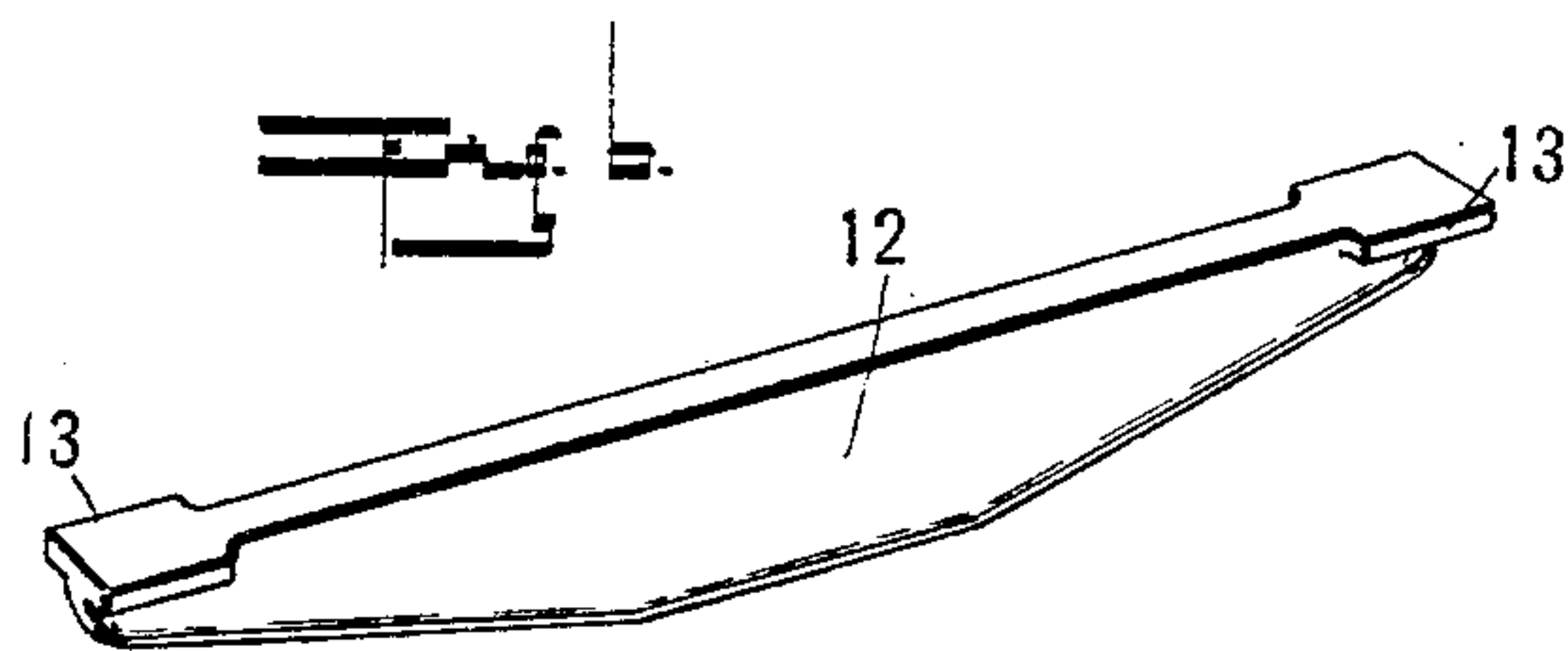
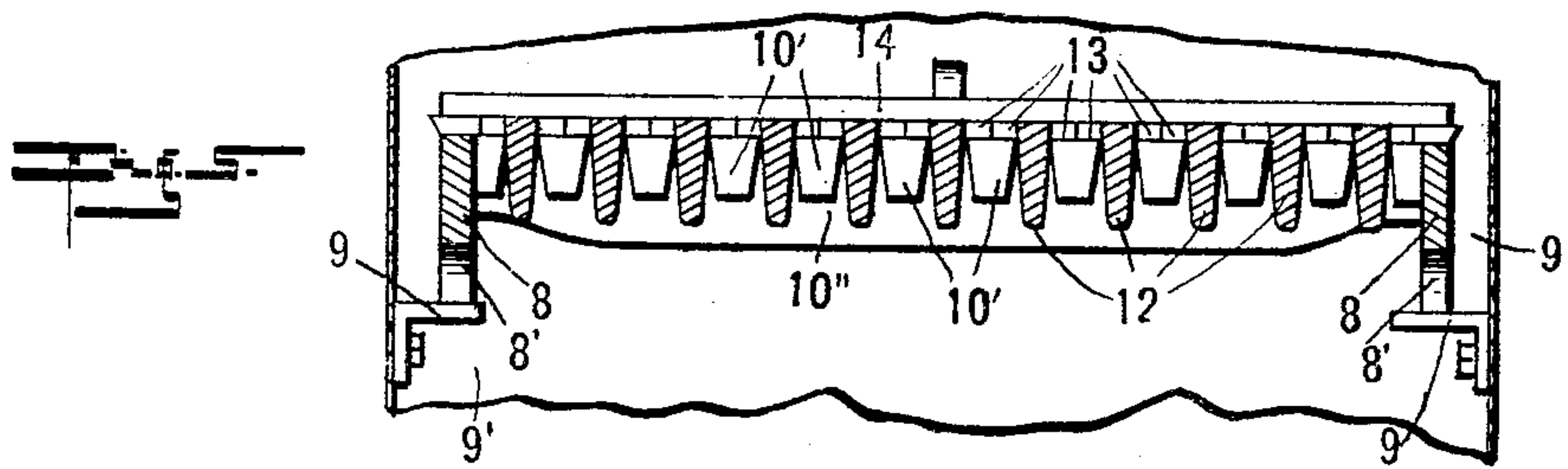
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# UNITED STATES PATENT OFFICE.

HARRY C. CLAY, OF COLUMBUS, INDIANA, ASSIGNOR TO REEVES & COMPANY, OF COLUMBUS, INDIANA, A CORPORATION OF INDIANA.

## STRAW-BURNING FURNACE.

SPECIFICATION forming part of Letters Patent No. 703,042, dated June 24, 1902.

Application filed November 23, 1901. Serial No. 83,373. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY C. CLAY, a citizen of the United States, residing at Columbus, in the county of Bartholomew and State of Indiana, have invented a new and useful Straw-Burning Furnace, of which the following is a specification.

My invention relates to an improvement in furnaces, especially for portable boilers adapted for the use of fuels of different characters.

The object of my invention is to so construct the grate that by very slight changes of adjustment which may be readily made by the ordinary operator the furnace may be converted from a coal-burning to a straw-burning furnace, or vice versa, and by which the amount of grate-surface may be varied quickly to adapt the furnace for the use of different conditions of fuel.

The accompanying drawings illustrate my invention.

Figure 1 is a vertical section of a furnace embodying my invention. Fig. 2 is a similar section of the grates and adjacent dead-plates on a larger scale. Fig. 3 is a plan on line 3 3 of Fig. 1. Fig. 4 is a perspective view, on a greatly reduced scale, of a pair of tongs suitable for readily adjusting the movable dead-plate. Fig. 5 is a section on line 5 5 of Fig. 2. Fig. 6 is a perspective of one of the grate-bars. Fig. 7 is a perspective of the end bar.

In the drawings, 8 8 indicate a pair of side bars each provided with a pair of feet 8', which are arranged to rest upon supports 9, secured to the sides of the furnace 9'. Extending between the rear ends of bars 8 is a dead-plate 10, which is provided at its forward end with a series of projecting fingers 10', the upper faces of which lie slightly below the upper face of the plate. The sides of the dead-plate 10 rest upon the side bars 8, and said bars are held separated by means of strengthening-ribs 10'', formed upon the under side of the dead-plate. Extending between the forward ends of the side bars 8 is an end bar 11, which is provided on one face with a series of fingers 11', which are similar in shape and arrangement to fingers 10'. Bar 11 is provided with an ear 11'' at each end, which is adapted to lie upon the end of the adjacent side bar 8. The grate-bars 12 are provided

at each end with projecting ears 13, which are adapted to rest upon adjacent fingers 10' or 11', the grate-bars being thus supported by the dead-plate 10 and the end bar 11 and at the same time serving to keep said two parts separated. Laid upon the dead-plate 10 is a supplemental dead-plate 14, the forward end of which is adapted to lie upon the rear ends of the grate-bars 12. At each side of the forward end of the supplemental dead-plate 14 I provide a lug 15, (shown in dotted lines in Fig. 2,) which is adapted to be received in any one of a series of notches 16, formed in the upper edge of each side bar 8.

For the purpose of easily adjusting the supplemental dead-plate 14 I form therein, near its forward end, a pair of notches or openings 17, in which may be inserted the ends 18 of a pair of tongs 19, the said tongs being so formed that they may be inserted through the firing-door 20. When straw or other similar fuel is to be burned, the grate-bars 12 are placed only between alternate pairs of fingers 10' and 11', as shown at the upper side of Fig. 3, while if harder fuel is to be burned the grate-bars are arranged as shown at the lower side of Fig. 3. By adjusting the supplemental dead-plate 14 the amount of grate-surface may be readily increased or diminished, so as to provide the proper grate-surface for the particular fuel used.

It has heretofore been customary in straw-burning furnaces to make the grates of a length somewhat greater than that best adapted for burning straw, the usual length being an approximation between that best adapted for straw and that adapted for harder fuel. As a consequence the light fuels, such as straw, are burned up too rapidly, while the harder fuels are not burned with sufficient rapidity. By my construction the grate-bars are made of sufficient length for burning hard fuels, such as coal, and the rear ends thereof are then covered by the supplemental dead-plate, so as to bring the effective length of the grate-bars down to that best adapted for burning the lighter fuels, such as straw.

I claim as my invention—

1. In a furnace, the combination with a series of grate-bars, of a dead-plate mounted at one end of the grate-bars, a supplemental



dead-plate mounted upon the main dead-plate and movable longitudinally thereof and along the grate-bars, and means for holding said supplemental plate in various positions  
5 of longitudinal adjustment on the grate-bars.

2. In a furnace, the combination of a pair of independent side bars, a dead-plate adapted to rest upon and between said side bars at one end, an end bar adapted to rest upon  
10 and between the opposite ends of the said side bars, a series of fingers carried by the dead-plate and end bar, a series of grate-bars extending between the dead-plate and end bar and resting upon the fingers thereof, an  
15 auxiliary dead-plate mounted adjacent to the first plate and movable longitudinally of the grate-bars, and means for holding the auxiliary dead-plate in various positions of adjustment.

3. In a furnace, the combination of a pair 20 of independent side bars having a series of notches formed in the upper edges thereof, a dead-plate extending between said side bars at one end having its edges resting upon said bars, an end bar resting at its ends upon the 25 opposite ends of the side bars, a series of fingers carried by the dead-plate and the end bar, a series of grate-bars each having at each end a projecting ear adapted to rest upon said fingers, and an auxiliary dead-plate 30 mounted upon the first plate and provided with depending lugs adapted to enter the notches of the side bars, substantially as and for the purpose set forth.

HARRY C. CLAY.

Witnesses:

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