

March 6, 1934.

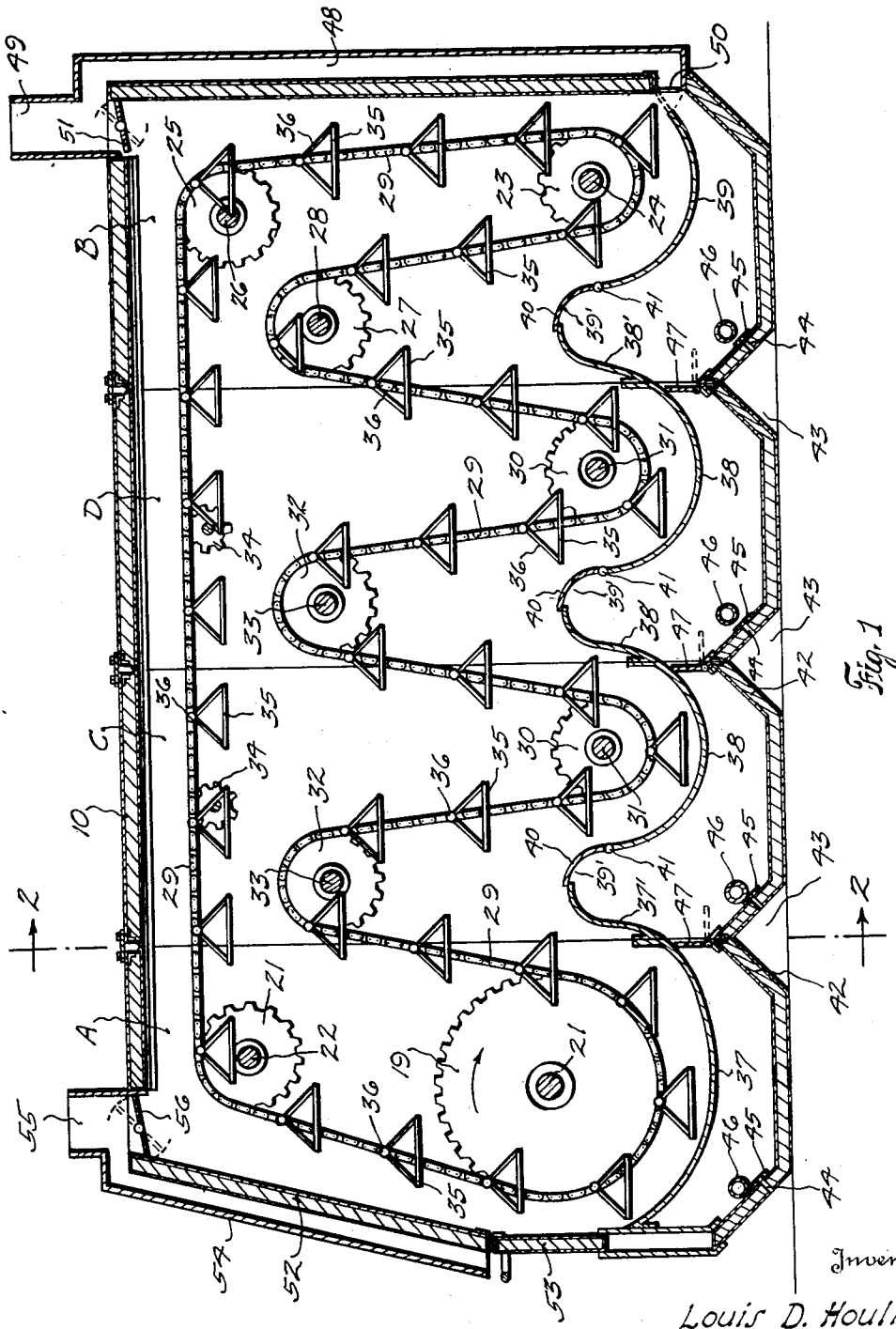
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SECTIONAL BAKING OVEN

Filed Jan. 14, 1932

2 Sheets-Sheet 1



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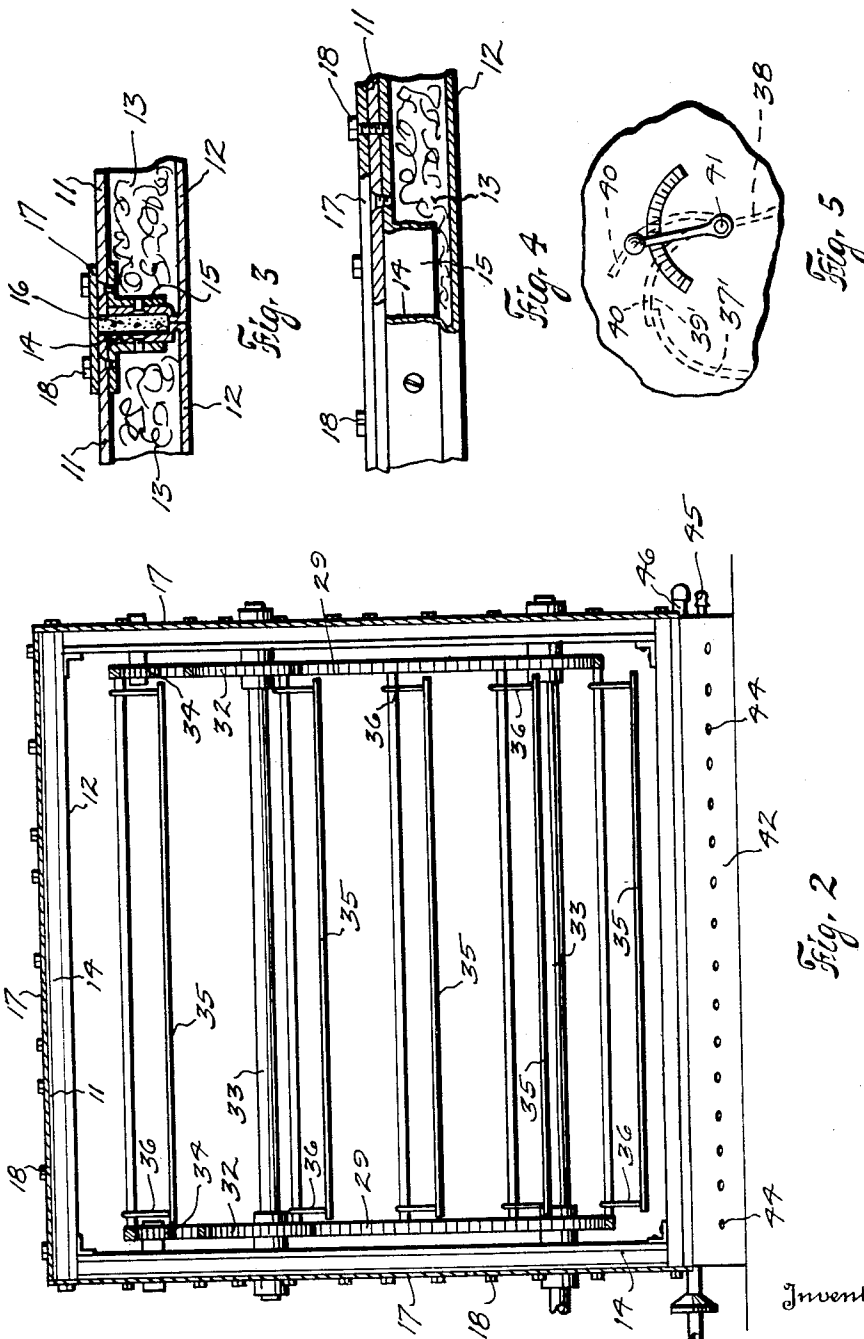
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UNITED STATES PATENT OFFICE

1,949,684

SECTIONAL BAKING OVEN

Louis D. Houlis, Dallas, Tex.

Application January 14, 1932, Serial No. 586,494

8 Claims. (Cl. 107—57)

This invention relates to new and useful improvements in sectional baking ovens.

One object of the invention is to provide an improved baking oven of the traveling conveyor type, which includes interchangeable and removable sections, whereby the capacity of the oven may be increased or decreased as desired.

A further object of the invention is to provide an improved oven constructed in sections, whereby it may be elongated or contracted; and also arranged so that the sections will register and properly fit together when one or more sections are removed or added; and still further whereby the front and back sections may be fitted together when the intermediate sections are removed.

Another object of the invention is to provide transverse ventilating channels in the bottom of the oven between the sections.

A still further object of the invention is to provide a novel damper arrangement, whereby the heated air currents and the direction of flow of said air currents may be controlled.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings in which an example of the invention is shown, and wherein:

Figure 1 is a longitudinal vertical sectional view of an oven constructed in accordance with the invention,

Figure 2 is a transverse vertical sectional view taken on the line 2—2 of Figure 1,

Figures 3 and 4 are details of the wall structure and joints between the sections, and

Figure 5 is a detail of one of the damper regulators.

In the drawings the numeral 10 designates the oven housing or casing, which is illustrated as having a front section A, a rear section B and intermediate sections C and D. One of the objects of the invention is to make these sections so that they are interchangeable. The sections C and D may be removed and the sections A and B fastened together, or either of the sections C or D may be removed and the housing fastened together, or additional sections may be added.

The wall of the housing should be suitably made and I propose to build it of outer metal sheets 11 and inner metal sheets 12, with a filler 13 of suitable heat insulating material disposed therebetween. The adjoining edges of each section are made as shown in Figures 3 and 4. The inner

metal sheet is provided with an offset flange 14 extending across the end of the section to the front sheet 11. A reinforcing angular bar 15 is fastened to the inner sides of the flange and the front sheet. When the sections are brought together, the offset flanges provide a space 16 therebetween and this space is filled with suitable cement. The cemented space is covered and the sections are secured together by bottom strips 17 and screw bolts 18.

In the section A, I fasten a pair of driving sprockets 19 on a shaft 20 in the lower portion of said section, and this shaft is driven in any suitable way so as to revolve the sprockets in a clockwise direction. Idler sprockets 21, smaller in diameter, are mounted on a transverse shaft 22 in the upper portion of the section A. In the section B, I mount lower sprockets 23 on shafts 24 and upper sprockets 25 on shafts 26. Just below the upper sprockets and offset therefrom sprockets 27 are mounted on a shaft 28. Endless chains 29 are carried by the sprockets on each side of the housing. These chains are of the detachable link type which are in common use and which may be lengthened and shortened as desired.

Each of the sections C and D has lower sprockets 30 mounted on shafts 31 in a similar location to the sprockets 23, and upper sprockets 32 mounted on shafts 33 in a similar location to the sprockets 27. Each chain passes over one of the sprockets 19 upwardly over one of the sprockets 21 and through the sections to one of the sprockets 25. Small idler sprockets 34 may be mounted in the upper portions of the sections C and D to support the top run of each chain. Each chain passes downward from the sprocket 25 under the sprocket 23 and is looped back and forth over and under the sprockets 27, 30 and 32.

It will be seen that when one or more of the sections C or D is removed, the sprockets 27 will occupy the same position as the sprockets 32 of the removed section or sections, it being merely necessary to shorten the chains by removing links therefrom. If other sections are added, then it is merely necessary to add links to lengthen the chain. Chains of this character are quite common in baking ovens. Baking trays 35 are suitably supported between the chains by pivoted hangers 36 attached to the chains in the usual way.

False bottoms 37, 38 and 39 are mounted transversely in the lower ends of the sections A, C, D and B, respectively. These bottoms are curved so as to somewhat conform to the path taken by

the trays 35 as the same pass under the lower sprockets. These bottoms are preferably formed of sheet metal and the bottom 37 has a curved extension 37', which is mounted in the section C. The bottoms 38 have extensions 38' which are mounted in the sections D and B. By this arrangement, it is obvious that when the sections are interchanged the bottoms will probably register, because their adjacent curvatures are the same.

It is preferable to supply heat below the bottoms 37 and 38 and it will be noted that transverse openings 39' are provided between the extensions of one bottom and the adjacent edge of the next bottom. Curved dampers 40 mounted on transverse shafts 41 are arranged to open and close these openings. The dampers are at the upper portions of the bottoms and the heat currents are deflected into the arches formed by the extensions and the dampers so as to readily enter the upper portion of the oven when said dampers are opened or to follow the under sides of the bottoms when said dampers are closed.

Each section has an inclined bottom panel 42 and these panels form transverse air ducts 43 between the sections. In the front panel 42 of each section, I provide a transverse row of air openings 44 for admitting air from the ducts and from the front of the oven to the heating spaces below the false bottoms. Slide dampers 45 are mounted on the inner sides of the panels for controlling said openings. By this arrangement fresh air may be admitted to the fire chambers or heating spaces formed below the false bottoms.

I prefer to mount above the openings 44 within each section a transverse burner 46 employing a suitable fuel for heating the oven. In the sections C, D and B these burners are located below the arches formed by the extensions 37' and 38' and the dampers 40, so that the heat currents have a tendency to rise directly into these arches; however, the currents are also induced to flow under the false bottoms, particularly when the dampers 40 are closed. At the upper ends of the panels 42 transverse dampers 47 are pivoted so as to engage the under sides of the false bottoms and close off the heating space or fire chamber of one section from that of the next section. By closing the dampers 47, the heat currents generated in each section may be prevented from passing to the fire chamber of the next section.

It is obvious that various damper and control arrangements may be made and the invention is not to be limited to such details. It is desirable to form a vertical by-pass 48 on the rear side of the rear section B connected at its lower end with the fire chamber below the bottom 39 and connected at its upper end with an outlet flue 49. The bottom 39 terminates short of the rear wall of the section B and a damper 50 may be adjusted either to direct the heat currents into the oven above the bottom 39 or into the by-pass 48. A damper 51 at the top of the section B may be adjusted to prevent the escape of the heat currents or to permit their escape into the outlet 49.

The upper front wall 52 of the front section A is inclined above a sliding door 53. A hood 54 is placed over this front wall so that when the door is lowered, the hot air currents will tend to pass up through the hood and escape into a flue 55 at the top of said section. A damper 56 controls communication between this flue and the top of the section A.

It will be seen that the invention provides for a very flexible oven. Should the user desire a com-

paratively small oven he may erect the sections A and B and fasten them together. If he needs more capacity, he can then separate the sections A and B and add either the section D, or the sections C and D, or more sections. This prevents discarding any part of the oven or losing any portion of the initial investment therein. It is pointed out that the whole oven is portable and that the sections may be readily moved about and handled. In order to remove or add sections, it is merely necessary to take out the bolts 18 and remove the strips 17.

Various changes in the size and shape of the different parts, as well as modifications and alterations, may be made within the scope of the appended claims.

Having illustrated and described a preferred form of the invention, what I claim, is:

1. In a baking oven, a housing composed of interchangeable portable sections, each section being complete in itself means for fastening the sections of the housing together, an endless conveyor traveling in the sections of the housing, and false bottoms disposed in the sections and registering with each other, whereby fire chambers are provided below said bottoms.

2. A baking oven as set forth in claim 1, and dampers connected with said false bottoms for controlling the passage of heat currents to the upper portions of the sections.

3. In a baking oven, a housing composed of interchangeable portable sections, means for fastening the sections of the housing together, transverse air ducts between the lower ends of the sections, said sections having inlets from said ducts, and an endless conveyor traveling in the sections of the housing.

4. In a baking oven, a portable housing, an undulating endless conveyor, sprockets in the lower portion of the housing under which the conveyor passes, false bottoms arranged in successive order in the housing below the sprockets and curved to conform to the path of the conveyor, and fuel burners below the false bottoms.

5. An oven as set forth in claim 4, in which the false bottoms are provided with arches having openings, and dampers for opening and closing the openings of said arches.

6. In a baking oven, a housing comprising a plurality of interchangeable upright sections, means for detachably connecting the sections of the housing, sprockets mounted in the upper and lower portions of each section so as to occupy correlated positions when the sections are interchanged, an endless conveyor including chains traveling on said sprockets, each section having a false bottom arranged to register with the false bottoms of the other sections in the interchangeable positions of said sections, and fuel burners located in the sections below said bottoms.

7. In a baking oven, a housing composed of interchangeable portable sections each complete in itself, the sections carrying as parts thereof overhanging complete connections for bolting to the next adjacent section, burners in the bottoms of the sections, an endless conveyor traveling through the sections, and sprockets in each section supporting said conveyor, the conveyor including detachable chain links, whereby the chains may be shortened or lengthened, the sections being arranged so as to be added or removed without adding additional parts.

8. In a baking oven, a housing composed of interchangeable portable sections each complete in

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