April 16, 1929. B. C. ZUHARS 1,709,105

DOOR AND DOOR FRAME STRUCTURE FOR OVENS

Filed Dec. 24, 1927

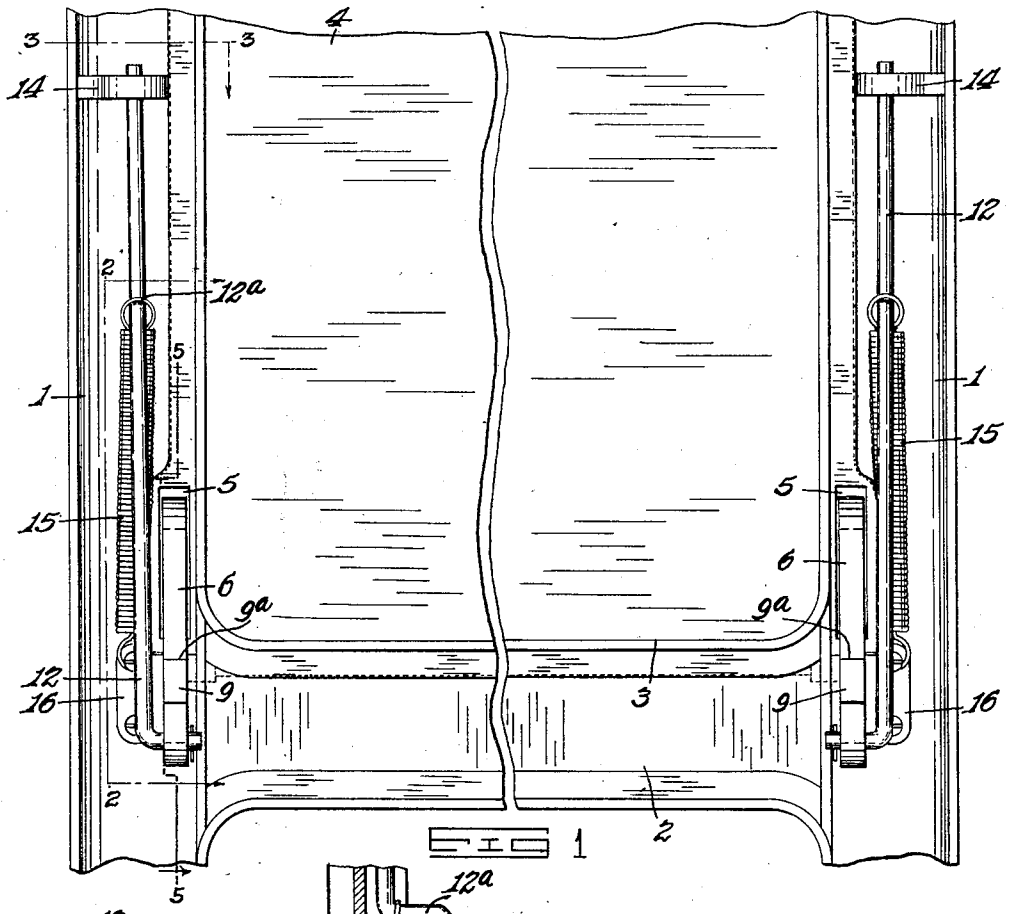



FIG 1

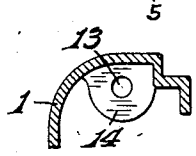



FIG 3

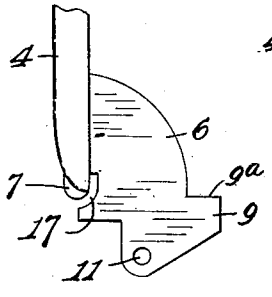



FIG 4

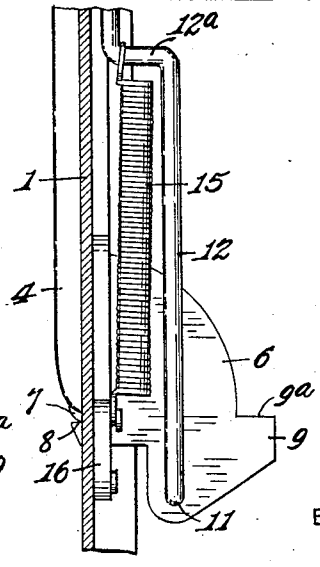



FIG 2

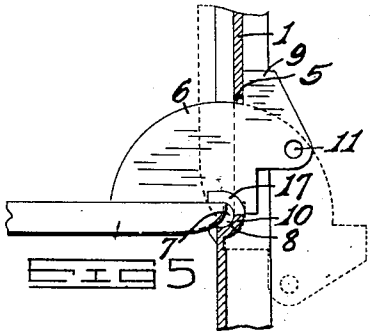



FIG 5

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Patented Apr. 16, 1929. 1,709,105

# UNITED STATES PATENT OFFICE.

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## DOOR AND DOOR-FRAME STRUCTURE FOR OVENS.

Application filed December 24, 1927. Serial No. 242,478.

This invention relates broadly to cook stoves or ranges, and more specifically to an oven-door attachment for ranges.

The primary object of the invention is to provide a front frame and oven-door structure for ranges embodying novel and improved attaching means for said door.

A further object is to provide a vertically swinging door and door-frame structure for range-ovens having concealed attaching means which perform the function of hinges and which provide free and easy movement of the door to and from its closed position.

A still further object is to provide a door of the character mentioned having associated therewith attaching means which normally tends to maintain the door in its upright closed position and which positively prevents said door from dropping, or falling violently, to its horizontal open position.

With these and other objects in view, the invention resides in the features of construction, arrangement of parts and combinations of elements which will hereinafter be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a rear side elevation of the front frame structure of an oven with a vertically swinging oven door mounted thereon and occupying its upright closing position, illustrating my invention;

Figure 2 is a vertical section on line 2—2, Fig. 1;

Figure 3 is a cross section of the frame on line 3—3, Fig. 1;

Figure 4 is an edge view, on a reduced scale, of the lower end of the door, detached, showing the integral tongue; and—

Figure 5 is a section taken substantially on line 5—5, Fig. 1, showing the door occupying its lowered position and omitting the rod and spring.

Referring to said drawings, 1 designates each of the opposite upright side members of a cast metal front frame for ovens, 2 indicates an integral transverse member connecting said side members and defining the lower edge of the door opening 3 which is provided between said side members, and 4 indicates a door adapted for vertically swinging movement to and from closing relation to said opening.

Provided in each of the side members 1 adjacent to the rearwardly-directed longitudinal flange $1^a$ thereof and with its lower end located approximately in the horizontal plane of the lower end of the door opening 3 is a vertical slot 5; and carried on the inner face of the door 4 adjacent to each of the opposite lower corners thereof is an inwardly extending tongue 6. Said tongues are directed through, and are movable in, said slots as the door is swung to and from its upright position, as is best illustrated in Fig. 5 in which the open position of the door is shown in full lines and the closed position in dotted lines.

Formed on the lower edge of the door adjacent to each of its lower corners is a supporting lug 7 which has a rounded end and which seats within a recess 8 provided therefor in the transverse frame member 2.

Each tongue 6 has a downward and inward inclination from the door and has formed on its inner edge portion adjacent to its free end a projecting nose 9 having an upper horizontal edge $9^a$ which is adapted to seat upon the inner face of the adjacent side member 1 of the frame at a point directly above the slot 5 when said door occupies its horizontal lowered position, as shown in Fig. 5. Thus, said nose serves as a stop which limits the extent of downward swinging movement of said door.

The metal of the transverse frame member 2 is curved inwardly and upwardly at the rear of each seat 8 to form a guide 10, as shown in Fig. 5, and provided between each lug 7 and the adjacent tongue 6 is a curved slot 17, open at its lower end, within which said guide 10 is received when the door occupies its upright position.

Provided in each tongue 6 adjacent to its inner end is a hole 11 in which is removably mounted the angularly disposed lower end of a substantially upright rod 12 which has its upper end vertically movable through a hole 13 provided therefor in a guide lug 14 formed on the inner side of the frame member 1 at a suitable point. Attached to said rod at a suitable point, as to a right angularly bent portion $12^a$ of said rod located intermediate the ends of the latter, is the upper end of a retractile coil spring 15 which is disposed substantially parallel to said rod and which has its lower end attached to said frame member 1 at a suitable point, or to a bracket 16 which is mounted on said frame member.

The springs 15 exert a force which serves normally to maintain the rods 12 depressed for holding the tongues 6 depressed and the

door in its elevated position, as shown in Figs. 1 and 2 and as shown in dotted lines in Fig. 5. Obviously, the door must be swung to its lowered, open position against the tension of said spring. The weight of the door and the strength of said springs are relatively proportioned, however, to cause the door to rest in its horizontal position following lowering thereof. When said door is elevated slightly from its said fully lowered position, the springs exert a force which is approximately sufficient to elevate the door to its closed position.

What is claimed is:—

In an oven, a door frame having sides formed with vertical slots, and having a bottom formed with upwardly and inwardly curved parts forming guides and also forming outwardly facing curved seats, a door having a bottom formed with downwardly extending rounded lugs rotatable in said seats, tongues carried by the door and movable through said slots, said tongues being formed with curved slots having open lower ends for receiving said guides therein and having parts engageable with the sides of the door frame to limit outward swinging of the door, and yieldable tension means connected to the tongues to normally hold the door in closed position, and with the curved slots receiving the curved guides therein.

In testimony whereof I affix my signature.

BENJAMIN C. ZUHARS.