My invention pertains to a door control appliance and more particularly to a counterweighted roller connection between a stove oven door and the frame which defines the entrance to the oven and to which the door is not elsewhere hinged.

My many years' manufacturing experience with domestic stoves has made me aware of the highly developed state of the art as disclosed in part by United States Patents Nos. 1,405,290; 473,978; 475,269; 574,941.

The object of my invention is to apply the counterweighted door control principle in a more satisfactory manner. The use of springs to control oven doors has the disadvantage that the temper, and hence efficacy of the spring, is unfavorably affected when employed in a heated zone. While counterweights have long been employed their restraining or controlling action has not been uniform throughout the arc of movement of the door and they have usually involved an excess of gravitational influence at some stage of their swinging movement to cause a thumping or slamming of the door. My invention eliminates hitherto obtaining objections by providing what might be termed a continuously uniform restraint to the swinging action of the door in either direction. I accomplish my object by providing control arms with arcuate surfaces which are concentric with the swing axis and which constantly rub or bear against anti-friction rollers.

It is to be realized that the scope of my invention comprehends many equivalent constructions. The showing of the drawing and the particular description are merely a specific exemplification of a plurality of mechanical embodiments and arrangements.

Adverting to the drawing:

Figure 1 is a rear or inside elevation of a stove oven frame and door carried thereby after the manner of my invention and showing the door in its closed position.

Figure 2 is a vertical section on line 2—2 of Figure 1 looking in the direction of the indicating arrows.

Figure 3 is a view corresponding to Figure 2, but showing the door swung to its open position.

Figure 4 is an enlarged section on line 4—4 of Figure 1 to more clearly show certain details of construction, the door being shown in partly open position.

A frame 1, which may be considered as constituting a part of the front of a stove oven, defines an opening 2 through which access to the confines of the oven is to be had when the door is open. Opposite lateral sides of the frame 1 are provided near the lower corners of the frame with vertically elongated slots 3 and just below each of the slots 3 the frame 1 carries a pair of spaced inwardly projecting ears 4, through both of which pairs a cotter pin 5 is passed. Rotatably mounted on each of the pins 5 is a composition anti-friction roller 6.

A door 7 provided with a handle 8 is adapted to close the opening 2 in the frame. Rigidly carried by the inside of the door 7 at points correspondingly spaced and in the same vertical planes as the slots 3, are a pair of peculiarly formed arms 10 which project rearwardly through the slots 3 respectively. The lower sides or edges 11 of the arms 10 conform to circular arcs which are concentric with the axis about which the door is to swing and are adapted constantly to bear against the rollers 6, as clearly appears in Figure 4. The inner extremities of the arms 10 are abruptly bent at 12 toward the plane of the door 7 and each detachably carries a counterweight 13 through the agency of a securing pin 14, which is purposed to fix the counterweights in a selected position with respect to the extremities 12. As disclosed in Figure 3, the arrangement is such that the points of attachment of the counterweights about the pairs of ears 4 when the door reaches its full open or substantially horizontal position. It should be understood, that the chosen operative relation of the parts and the disposition of the mass of the counterweights, is so predetermined as to insure substantial uniformity in the exercise of the controlling action, during the swinging movement between the two limits illustrated in Figures 2 and 3. To the realization of this desired object, the rolling engagement between the arcuate edges 11 and rollers 6 are a contributing factor...
which is believed to be novel as well as useful. The need of a conventional type of hinges along the lower edges of the door has been proven to be quite unnecessary, the constantly balanced support of the door on the outside and the weights on the inside effecting an entirely satisfactory though sole gravita- tional suspension of the door.

I claim:

1. In a door control appliance, the combination of a frame defining an opening and itself fashioned on opposite sides with slots and also with inwardly projecting lugs near the lower ends of said slots, anti-friction rollers carried by said lugs, and a door carrying on each lateral side a peculiarly shaped arm, said arms projecting through said slots and having their lower edge surfaces conforming to circular arcs about points on a straight line as centers, said lower edge surfaces of the arms constantly engaging said rollers respectively, the extremities of said arms being abruptly bent and adapted to abut said lugs and limit the downward swing of the door to a substantially horizontal position.

2. In a door control appliance, the combination of a frame defining an opening and itself fashioned on opposite sides with slots and also with inwardly projecting pairs of spaced ears near the lower ends of said slots, an anti-friction roller carried between each pair of said ears, a door carrying on each lateral side a peculiarly shaped arm, said arms projecting through said slots and having their lower edge surfaces conforming to circular arcs about points in a straight horizontal line as centers, said lower edge surfaces of the arms constantly engaging said rollers respectively, the extremities of said arms being abruptly bent and adapted to abut said ears and limit the downward swing of the door to a substantially horizontal position and counterweights adjustably carried by the bent ends of said arms.

Signed by me, this 11th day of April, 1928.

HENRY TRENKAMP.