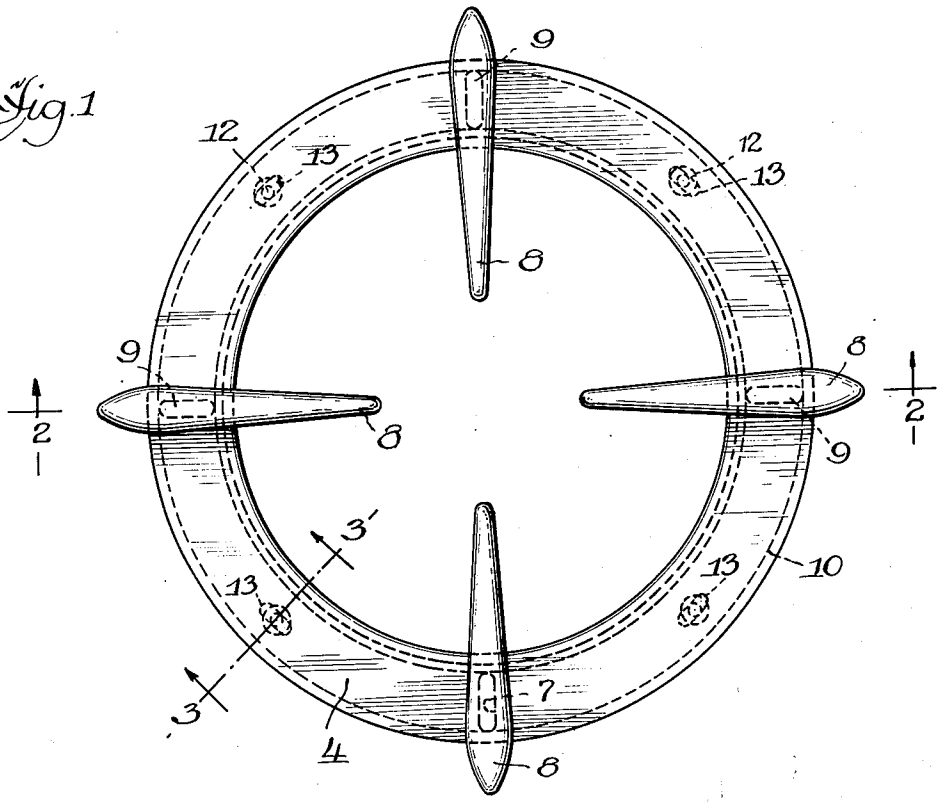
May 18, 1954 W. E. WILLIAMS 2,678,643

TOP BURNER GRATE

Filed Nov. 10, 1948

Fig. 1



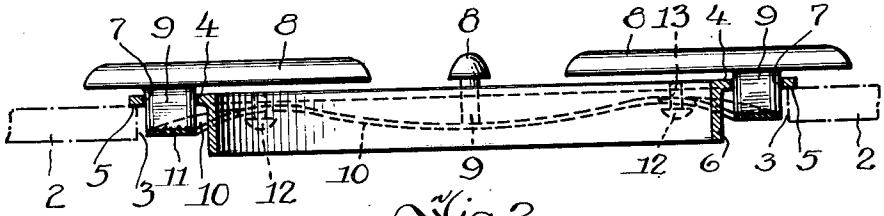


Fig. 2

Fig. 4

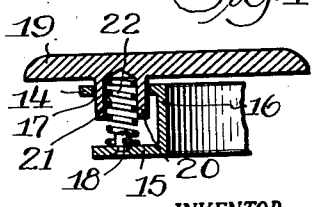
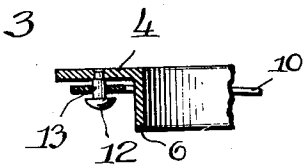


Fig. 3



INVENTOR.

Willis E. Williams,

BY

Schneider & Dressler,

Attys.

Patented May 18, 1954 2,678,643

UNITED STATES PATENT OFFICE

2,678,643

TOP BURNER GRATE

Willis E. Williams, Shelbyville, Ind., assignor to Chambers Corporation, a corporation of Indiana

Application November 10, 1948, Serial No. 59,371

10 Claims. (Cl. 126—214)

1

This invention relates to a top burner for cooking stoves, and particularly to means for automatically leveling the grate by the weight of a cooking vessel, to support the cooking vessel on a horizontal plane when it is placed on the grate.

Top burner grates as heretofore constructed have been rigid, so that if a grate or cooking vessel becomes warped, or if the cooking stove is not precisely level, cooking vessels do not have a horizontal surface to rest upon. The tilting of the cooking vessel may be sufficient to cause the vessel to slide off from the grate with, perhaps, spilling of the contents.

It is contemplated, in accordance with this invention, to construct a top burner grate for cooking stoves embodying a plurality of grate fingers that will automatically be raised or lowered by the weight of a cooking vessel, with or without its contents, so as to level the vessel in all directions when it is on the grate.

In the preferred embodiment of the present invention, each grate finger is individually mounted in an annular supporting ring and all of the grate fingers are supported by a common annular spring, so that if one grate finger projects above the other grate fingers it will be forced downwardly by the weight of the cooking vessel. The pressure on the annular spring caused by the downward movement of the one grate finger will move the other grate fingers upwardly until the pressure on each grate finger is equalized and the cooking vessel will be held on a true horizontal plane.

Although the grate is designed primarily for gas ranges, it will be obvious that the advantages inherent in the structure hereinbelow described may also be utilized in the construction of top burner grates for any other type of cooking stove. The structure by which the above advantages are attained will be described in the following specification, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a top elevation of a top burner grate embodying the invention, showing the annular spring in dotted lines;

Fig. 2 is a cross sectional view, taken along the line 2—2 of Fig. 1;

Fig. 3 is a cross sectional view, taken along the line 3—3 of Fig. 1; and

Fig. 4 is a fragmentary cross sectional view showing a modified embodiment of the invention wherein a plurality of coiled compression springs is substituted for the single annular flat spring.

In the drawings, the reference numeral 2 indicates the top of a cooking stove having an opening 3 positioned over a gas burner or similar heating unit. An annular supporting ring 4 is positioned in opening 3 with its outer edge resting on top 2, as indicated at 5. Annular supporting ring 4 preferably has a web 6 depending from its inner circumferential edge. Web 6 may be integral with ring 4, or it may be rigidly secured thereto, as by welding.

2

A plurality of apertures 7 extend through ring 4. Apertures 7 are spaced circumferentially around ring 4 to coincide with the number of grate fingers 8 to be provided on the grate. Apertures 7 are preferably non-circular so that grate fingers 8 will be held in proper alignment by the interengagement with each aperture 7 of a projection 9 which depends from the underside of each grate finger. Apertures 7 are illustrated as being of substantially rectangular area, but any non-circular shape will prevent the grate fingers from rotating in the apertures.

Projections 9 are usually integral with grate fingers 8, but they may be formed separately and secured to the grate fingers by welding or in any other suitable manner. The projections are of a size and shape to fit snugly in apertures 7 with just enough clearance to permit them to move vertically freely in the apertures. The length of projections 9 is great enough to allow each grate finger 8 to move vertically in either an upward or downward direction so that all the grate fingers can be adjusted vertically by the weight of a cooking vessel, with or without its contents, until they lie in the same horizontal plane. This feature of the structure herein described is essential to the present invention and is of paramount importance whenever the grate or grate finger, or the cooking vessel becomes warped, or whenever the cooking stove becomes tilted for any reason.

The means enabling any grate finger 8 to be moved automatically in a vertical direction to level all the grate fingers in a common horizontal plane under the weight of a cooking vessel placed on the grate comprises a flat annular spring 10 positioned below supporting ring 4 and welded to the bottom surface of each projection 9, as indicated at 11. The welding of the annular spring to each projection 9 has the effect of ganging all the grate fingers into a unit and preventing any slipping movement between any grate finger 8 and annular spring 10. This unity insures proper equalizing movement by all other grate fingers whenever any one grate finger is moved vertically.

Spring 10 is loosely secured to the undersurface of ring 4 by means of a plurality of button head

rivets 12. The apertures 13 in spring 10, through which the shanks of rivets 12 pass, are elongated to permit a slight degree of circumferential movement of spring 10 when any of the grate fingers are moved vertically.

The resilience of spring 10, chosen to accommodate it to the usual run of cooking vessels used on a cooking range, makes the spring have a tendency to return to its original shape whenever it is distorted out of that shape due to the weight of the vessel thereon. As shown in Fig. 2, spring 10 dips between adjacent rivets 12 to pass under the bottom of depending projections 9. Pressure on any grate finger 8 increases the amount of dip adjacent that finger, thereby causing spring 10 to move circumferentially, as permitted by elongated aperture 13, and decreases the amount of dip adjacent other grate fingers 8, moving them upwardly. A balance is reached when each grate finger is in contact with the bottom of a cooking vessel placed on the grate and the cooking vessel is held on a true horizontal plane.

In the embodiment of the invention illustrated in Fig. 4, the annular supporting ring comprises a pair of vertically spaced horizontal flanges 14 and 15 joined by a vertical web 16 integral therewith. Upper flange 14 is wider than lower flange 15 and is adapted to rest on top 2 of the cooking stove. A plurality of apertures 17, similar to apertures 7, extend through upper flange 14. An upstanding stud 18 is riveted to lower flange 15 directly underneath each aperture 17. Each grate finger 19 has a depending projection 20 fitting into one aperture 17 in the same manner that projections 9 fit into apertures 7.

Each projection 20 is provided with a recess 21 extending upwardly from its bottom surface. Each recess directly overlies a stud 18. A coiled compression spring 22 is positioned in each recess 21 with its bottom encircling stud 18 directly below the recess. Each spring 22 exerts a constant force urging its grate finger 19 upwardly to a predetermined level. Pressure exerted on any grate finger by a cooking vessel when one grate finger projects above the other grate fingers or when a portion of the bottom of the vessel depends below the other portions, compresses the spring under that grate finger so that all grate fingers are held firmly against the bottom of the vessel and the contents are held in a horizontal plane.

Although two embodiments of the invention have been described in considerable detail, it will be understood that the description is intended to be illustrative, rather than restrictive, as many details may be modified or changed without departing from the spirit or scope of the invention. For example, a plurality of individual springs may be substituted for the annular spring, as disclosed in my co-pending application Serial No. 59,372, filed concurrently herewith which issued as Patent No. 2,632,436 on March 24, 1953. Accordingly, I do not desire to be restricted to the exact structure described.

I claim:

1. A top burner grate for cooking stoves comprising an annular supporting ring, a plurality of non-circular apertures in said annular supporting ring, a plurality of grate fingers each having a depending projection fitting in one of said apertures, a flat annular spring joined to the base of each of said depending projections, a pluraliy of apertures in said spring, and a rivet passing through each of said last mentioned apertures, each of said rivets being secured at one end to said annular supporting ring and being provided with a head larger than said last mentioned aperture.

2. A top burner grate for cooking stoves comprising an annular supporting ring, a plurality of apertures in said annular supporting ring, a plurality of grate fingers each having a depending projection fitting in one of said apertures, a flat annular spring joined to the base of each of said depending projections, a plurality of apertures in said spring, and a rivet passing through each of said last mentioned apertures, each of said rivets being secured at one end to said annular supporting ring and being provided with a head larger than said last mentioned aperture.

3. A top burner grate for cooking stoves comprising an annular supporting ring, a plurality of non-circular apertures in said annular supporting ring, a plurality of grate fingers each having a depending projection fitting in one of said apertures, a flat annular spring welded to the base of each of said depending projections, a plurality of apertures in said spring, and a button head rivet passing through each of said apertures and secured to said annular supporting ring.

4. A top burner grate for cooking stoves comprising an annular supporting ring, more than two grate fingers spaced about said ring and mounted thereon for individual movement, each of said grate fingers being spaced equally from one another, each of said fingers having a projection depending below the lower surface of said ring, and spring means positioned under each of said depending projections so that said fingers may yield individually under the weight of a cooking vessel positioned on said grate.

5. A top burner grate for cooking stoves comprising an annular supporting ring, more than two grate fingers spaced about said ring and mounted thereon for individual movement, each of said grate fingers being spaced equally from one another, each of said fingers having a projection depending below the lower surface of said ring, and spring means cooperating with each of said depending projections so that said fingers may yield individually under the weight of a cooking vessel positioned on said grate.

6. A top burner grate for cooking stoves comprising an annular supporting ring, a plurality of grate fingers mounted on said ring in spaced relationship, each of said fingers having a projection depending below the lower surface of said ring, and an annular spring secured to the undersurface of said ring, said spring engaging the bottom surface of each of said depending projections.

7. A top burner grate for cooking stoves comprising an annular supporting ring, a plurality of grate fingers mounted on said ring in spaced relationship, each of said fingers having a projection depending below the lower surface of said ring, and a flat annular spring welded to the bottom surface of each of said depending projections, said spring being loosely joined to said ring between adjacent projections.

8. A top burner grate for cooking stoves comprising an annular supporting ring, said ring consisting of a pair of parallel vertically spaced flanges connected by a web, the upper flange having a plurality of apertures, a plurality of individually mounted grate fingers each having a depending projection extending through one of said apertures, and a compression spring between

each of said projections and the lower flange of said ring.

9. A top burner grate for cooking stoves comprising an annular supporting ring, said ring consisting of a pair of parallel vertically spaced flanges connected by a web, a plurality of grate fingers individually mounted in the upper flange, each of said fingers having a projection depending below the lower surface of said upper flange, each of said projections having a recess extending upwardly from its lower surface, and spring means having one end positioned in said recess and its other end bearing against the upper surface of said bottom flange so that said fingers may yield individually under the weight of a cooking vessel positioned on said grate.

10. A top burner grate for cooking stoves comprising an annular supporting ring, more than two apertures in said ring, each of said apertures being spaced equally from one another,

spring means mounted on said supporting ring below said apertures, and a grate finger mounted separately and independently in each of said apertures, said fingers being engaged by said spring means and being individually yieldable under the weight of a cooking vessel placed on said grate.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
540,373	Werle	June 4, 1895
950,119	Ruby	Feb. 22, 1910
1,236,327	Mace	Aug. 7, 1917
2,234,550	Bridgeman	Mar. 11, 1941

FOREIGN PATENTS

Number	Country	Date
363,507	Germany	Nov. 10, 1922