An extendable oven rack assembly includes an oven rack adapted for positioning in an oven cavity. The rack is supported on two telescoping extension slides shaped for being received in support slots or ledges of an oven cavity. The telescoping extension slides are made of at least a first section received in fixed position within an oven. At least a second section is slidable in relationship to the first section and can be extended out of the oven. The second section supports the oven rack thereon.
FIG. 1
EXTENDABLE OVEN RACK ASSEMBLY

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to an extendable oven rack assembly for use in an oven. More particularly, the invention relates to an extendable oven rack including telescoping slides for use in an oven cavity and for maximum extension, out of the oven.

[0003] 2. Discussion of the Prior Art

[0004] In cooking appliances such as ovens, or free standing ranges which include ovens, the oven cavity is typically populated with one or more racks to support food items being cooked in the oven. The oven cavities include a plurality of sets of slots, ledges or wire rack supports (hereinafter “oven supports”) in the opposite side walls thereof which allow the oven racks to be slidably received within the oven cavity. The oven supports also typically include an upward projection near the front of the oven cavity which often serves as a stop against a corresponding projection both in the front and in the back of an oven rack to prevent the oven rack from being pulled completely out of the oven when supporting food thereon, and to prevent the oven rack from being pushed too far back into the oven to avoid contact between the rear of the oven rack and the interior back wall of the oven cavity.

[0005] In these types of arrangements, due to the fact that the oven rack must be supported over a substantial portion thereof by the oven supports of the oven cavity, the amount which the rack can be extended out of the oven cavity is limited. This results in difficulty in positioning food items on such racks or in removing the food items from the rack. This also creates a danger that the person removing or replacing such items on the oven rack may inadvertently contact the hot walls of the oven cavity.

[0006] More recently, in order to avoid these problems, there have been designed extendable rack arrangements for use in an oven cavity which allow a rack to be extended well out of an oven cavity, including so-called over extension racks. One design involves a rack assembly which includes a rack extendable upon a primary rack frame, which is itself mounted for sliding movement relative to the oven cavity. The rack is supported upon guides carried by the rack frame with multiple sets of rollers. While desirable from the perspective of allowing greater extension of the oven rack out of the cavity of the oven, this type of arrangement takes up a substantial amount of additional space within an oven cavity due to the fact that it is essentially a double rack arrangement, with each rack separated from each other by a space consuming roller mechanism. As such, while desirable from the perspective of allowing a rack to be extended outside of the oven cavity, this type of rack arrangement substantially decreases the useable volume in an oven cavity, particularly when multiple rack assemblies of this type are used.

[0007] While providing a more simplified arrangement than a double rack assembly, this design still suffers from the requirement of having a compound rack system wherein two racks are required, one being a wire frame rack and the other being the actual rack that holds the food being cooked in the oven.

[0008] In accordance with the invention, the problems of the extendable oven racks in current use are avoided, and an oven rack assembly is provided which allows full over-extension of an oven rack outside of an oven cavity, ensures that the oven rack is securely held by the rack supports of the oven cavity, and avoids the disadvantages of additional space consumed by current extendable oven rack assemblies.

BRIEF SUMMARY OF THE INVENTION

[0009] In one aspect, there is disclosed an extendable oven rack assembly. The oven rack assembly includes an oven rack adapted for positioning in an oven cavity. Two telescoping extension slides are shaped or have attachment features thereon for being received in the rack supports in the walls of an oven cavity. The slides include a first section for being received in fixed position in a corresponding rack support of the oven cavity and at least a second section in sliding relationship to the corresponding first section. Each one of the second sections have the oven rack supported thereon.

[0010] In a more specific aspect, there is provided an extendable oven rack assembly which includes an oven rack adapted for positioning in an oven cavity. The rack includes support extensions extending the length of the sides of the oven rack. Each support extension has at least one engagement section. The two telescoping extension slides, a respective one corresponding to one of the support extensions, also include engagement sections for receiving the oven rack thereon through engagement between the oven rack engagement section and that of the telescoping extension slides. The telescoping extension slides are made up of at least two sections. A first section is constructed for being received in fixed position within the oven cavity in the rack supports on the side walls of the oven cavity. A second section is slidably engaged with the first section and supports the oven rack for allowing the oven rack to be slidably moved out of the oven cavity.

[0011] In a preferred aspect, the extension slides are made up of three sections. Two sections are slideable in relation to each other, and with respect to the first section which is held in fixed position in the oven cavity.

[0012] Yet still further, the oven rack assembly includes a tab extending from at least one of the first sections in proximity to the rear thereof. A corresponding spring clip extends from at least one of the slideable sections for engaging the tab when the oven rack assembly is fully retracted in the oven cavity. This serves to inhibit the oven rack from sliding out of the oven cavity without a person pulling on the rack. Yet still more preferably, a second tab extends from at least one of the first sections in proximity to the front thereof for engaging the spring clip for retaining the oven rack in position when the extendable oven rack assembly is in substantially fully extended position.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0013] Having briefly described the invention, the same will become better understood from the following detailed description, made with reference to the appended drawing, wherein:
FIG. 1 is a perspective view of a disassembled telescoping oven rack assembly embodiment of the present invention;

FIG. 2 is a top plan view of the oven rack of FIG. 1;

FIG. 3 is a bottom plan view of the telescoping oven rack assembly of FIG. 1;

FIG. 4 is a front view of the telescoping oven rack assembly;

FIG. 5 is a rear view of the oven rack of the telescoping oven rack assembly;

FIGS. 6A and 6B are perspective views of two spring clip element embodiments located at the area shown as circle A of FIG. 1;

FIG. 7 is a perspective partial view of the spring clip of FIG. 6A attached to a telescoping extension slide;

FIG. 8 is a perspective partial view of the telescoping extension slide shown partially extended; and

FIG. 9 is a perspective partial view of the front portion of one of the telescoping extension slides.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 is a perspective view of a disassembled telescoping rack assembly 11 in accordance with the invention. The rack assembly 11 includes an oven rack 13 having a pair of extensions 15 along the side thereof. The extensions 15, when the oven rack assembly 11 is assembled, rest on one section of a telescoping extension slide 17 on each side of the oven rack 13 respectively. The extensions 15 include respective slots 19 which receive respective projections 21 of the telescoping extension slide 17 as they are assembled together. In addition, the front of each one of the telescoping extension slides 17 include a cap 31, so that the open front end 20 is not exposed to catch food particles or clothing. The front ends 20 each also include a securing hole 22, which matches with corresponding holes 24 in the slides 17. The slides 17 and the extensions 15 can be attached to one another through the holes 22, 24, such as by rivets or other fasteners.

The telescoping slides 17 also include feet 23 and 25, which serve to support the telescoping slides 17 on the support rails in the side walls of an oven (not illustrated) in which the rack assembly 11 is received, and whose structure and function will be described in greater detail hereinafter.

The oven rack assembly 11 also includes a tab 27 within the region identified as circle A, on at least one of the telescoping extension slides 17, and preferably on both. The function of the tab 27 is also discussed in greater detail hereinafter.

FIG. 2 is a top plan view of the oven rack 13 of the invention. As illustrated in both FIGS. 1 and 2, the oven rack 13 includes a pair of upwardly extending wire members 29 at the rear of the rack 13 which serve to prevent food articles and/or plates from falling off the back of the rack 13. The rack 13 is of otherwise conventional construction in a grid pattern made up by substantially perpendicular fixedly attached wire members 33 and 35.

As further shown in FIG. 3, a first section of each of the telescoping extension slides 17 include the feet 23 and 25, and the tab 27. The feet 23 and 25 serve to allow the oven rack assembly 11 to be supported in a fixed position within an oven cavity on the support racks therein. The telescoping extension slides 17 include at least one other section in telescoping sliding relationship relative to the first section. This is more clearly shown in FIG. 8 which shows a first section 26 and a second section 28. In a more preferred embodiment, the telescoping extension slides 17 are three part slides with two of the parts in sliding relationship to section 26 for allowing the rack 13 to be extended substantially outside of the oven cavity in the so-called over extension position. The sliding relationship is provided by internal rollers (not illustrated) between the sliding sections.

FIGS. 4 and 5 illustrate in greater detail the wire members 29 which keep food items from falling off the back of the oven rack 13. The side extensions 15 are also shown as being of generally L-shape to sit on the telescoping extension slides 17, for securing thereto in this embodiment. The side extensions 15 also could just include upstanding parallel portions 26 and the extensions 15 could be attached to the side walls of the slide 17 with the parallel portions 26 (not illustrated) omitting the top portions 30 (FIG. 5).

As shown in greater detail in FIG. 9, the feet 23 also include on one side a cutout portion 32 which serves to engage a projection within the supporting channel or support slot (not illustrated) in an oven to keep the telescoping extension slide 17 from being inadvertently pulled out of the oven cavity. The feet 23 also include the tab 27 on the side facing the inside of the oven which will serve as the engagement tab 27 for the spring 37 shown in FIG. 6A, and discussed hereafter.

The spring 37 in FIG. 6A is not shown in the area identified as circle A in FIG. 1, but is more clearly shown in operation in FIGS. 7 and 8. The spring 37 has a first portion 39, which preferably is integrally formed with a connecting portion 41 formed at a substantially right angle thereto and with a spring tab portion 43 formed at an angle to the first portion 39. More specifically, when the telescoping extension slide 17 is fully retracted into the oven, the spring tab portion 43 passes behind the tab 27 and serves as the structure for providing resistance to the oven rack 13 and sections 28 of the telescoping slide 17 to prevent the oven rack 13 from moving easily out of the oven cavity by itself. More specifically, when it is desired to pull the oven rack 13 out of the oven, as shown in FIG. 8, the spring tab portion 43 is brought out of engagement with the tab 27 and the section 28 of the telescoping extension slide by a person pulling firmly on the oven rack 13 to overcome the spring resistance. The slide 17 then moves easily relative to section 26, to move the oven rack 13 supported thereon out of the oven cavity.

Thereafter, when the telescoping extension slide 17 is in fully extended position with the section 28 and the oven rack 13 is fully extended (over-extended) out of the oven, the tab portion 43 of the spring element 37 comes in contact with the tab portion of the feet 23 at the front of the portion of the telescoping slide 17 to abut against that portion, and provides a means to retain the oven rack 13 in an outwardly extended position. The person then pushes against the rack 13 to overcome the resistance of the spring tab portion 43 and move the oven rack 13 back into the oven when desired.
Referring now to FIG. 6B, an alternate spring element 37\(^{1}\) is illustrated. The alternate spring element 37\(^{1}\) includes the same elements as the spring element 37, but in a more simple configuration. The spring 37\(^{1}\) also has a first portion 39\(^{1}\), which again preferably is integrally formed with a connecting portion 41\(^{1}\), but in this embodiment the two portions 39\(^{1}\) and 41\(^{1}\) are formed planar with one another. The first portion 39\(^{1}\) again has a spring tab portion 43\(^{1}\) formed at an angle to the first portion 39, which functions identically to the spring tab portion 43, as previously described.

The extendable oven rack assembly 11 of the invention is preferably made of steel, more preferably stainless steel, of a nature and quality, which is resistant to the highest temperatures of an oven in which it is used without suffering substantial deterioration as a result of exposure to such temperatures. Other parts of the oven rack 13 can be made of coated carbon steel. The telescoping extension slides 17 may contain grease therein between the sections thereof to facilitate sliding movement between the various parts. The grease, as will also be appreciated to those of ordinary skill in the art, will be of a nature and type also capable of resisting normal oven baking temperatures without deterioration.

Having thus generally described the invention, the same will become better understood from the appended claims from which it is set forth in a non-limiting manner.

What is claimed is:

1. An extendable oven rack assembly, comprising:
   an oven rack adapted for positioning in an oven cavity;
   two telescoping extension slides shaped for being received in support slots in walls of an oven cavity, and
   having a first section for being received in fixed position in a corresponding support slot of an oven cavity and at least one second section in sliding relation to a corresponding first section; and
   each one of said at least one second section having said oven rack supported thereon.

2. The extendable oven rack assembly of claim 1, further including resistance means for retaining the oven rack in position to prevent movement thereof when in substantially fully retracted position.

3. The extendable oven rack assembly of claim 2, further including resistance means for retaining the oven rack in position to prevent movement thereof when in substantially fully extended position.

4. The extendable oven rack assembly of claim 2, wherein said resistance means includes a spring clip extending from said second section in proximity to the rear thereof, and a first tab extending from said first section in proximity to the rear thereof for being engaged by said spring clip.

5. The extendable oven rack assembly of claim 4, wherein said lock means include a second tab extending from said first section in proximity to the front thereof for being engaged by said spring clip when said oven rack is substantially in fully extended position.

6. The extendable oven rack assembly of claim 1, wherein said oven rack assembly is made of steel capable of resisting the highest temperature of an oven in which it is used without suffering substantial deterioration thereof as a result of use at said temperature.

7. The extendable oven rack assembly of claim 6, further including grease applied between said first sections and said second sections to facilitate sliding engagement therebetween, said grease being of the type capable of withstanding normal oven baking temperatures without substantial deterioration.

8. An extendable oven rack assembly, comprising:
   an oven rack adapted for positioning in an oven cavity, and
   having support extensions extending the length of the oven rack at each side thereof, and each support extension having at least one first engagement section thereon;
   two telescoping extension slides, a respective one corresponding to one of said support extensions and each having at least one second engagement section for receiving said oven rack thereon through engagement between said at least one first engagement section of said support extensions and a corresponding one of said at least one second engagement section of a corresponding one of said two telescoping extension slides; and
   said two telescoping extension slides, each comprised of at least two sections, a first section constructed for being received in fixed position within the oven cavity in respective support slots in side walls of the oven cavity, and at least a second section slidably engaged with said first section, for supporting said oven rack, and for allowing the oven rack to be slidably moved out of the oven cavity.

9. The extendable oven rack assembly of claim 8, wherein said telescoping extension slides include three slide sections, two of said sections slidable in relation to each other and with respect to said first section.

10. The extendable oven rack assembly of claim 8, wherein said oven rack includes at least one raised wire section at the rear thereof for preventing articles supported thereon from sliding off the rear of the rack.

11. The extendable oven rack assembly of claim 8, further including a tab extending from at least one of said first sections in proximity to the rear thereof, and at least one corresponding spring clip extending from at least one of said second sections for engaging with said tab when said oven rack assembly is fully retracted in the oven cavity for preventing the oven rack from sliding out of the oven cavity.

12. The extendable oven rack assembly of claim 8, wherein said first engagement section is a slot and said second engagement section is a raised projection for being received within said slot.

13. The extendable oven rack assembly of claim 8, made of steel of a type capable of withstanding maximum temperatures of an oven without substantial deterioration thereof.

14. The extendable oven rack assembly of claim 13, wherein said two telescoping extension slides are coated with heat resistant grease at locations to facilitate relative sliding between said at least two sections thereof.

15. The extendable oven rack assembly of claim 11, further including a second tab extending from said first section in proximity to the front thereof for engaging said spring clip for retaining said at least one of said second oven sections in position relative to said at least one of said first sections when said extendable rack assembly is in substantially fully extended position.
16. The extendable oven rack assembly of claim 8, further including a foot extending downwardly from each one of said first sections of said telescoping extension slides, said foot having a cutout therein for engaging a projection in support slots in side walls of an oven cavity for preventing said first sections from sliding out of the oven cavity when said oven rack is moved outward from the oven cavity.