May 6, 1969 L. J. BERLIK 3,442,261

WIRE GRATES FOR STOVES

Filed Aug. 15, 1967 Sheet 1 of 2

Fig. 1.

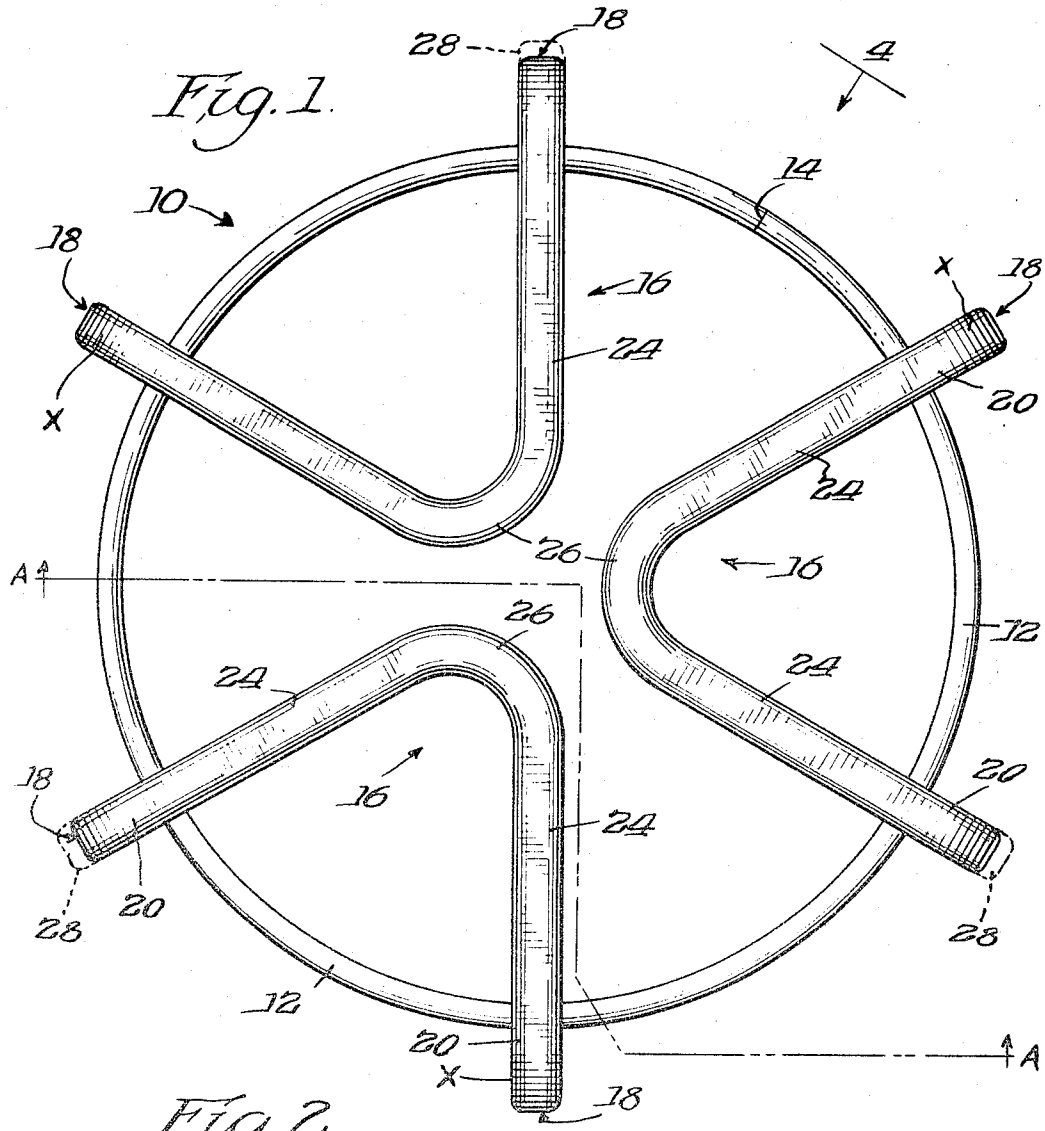
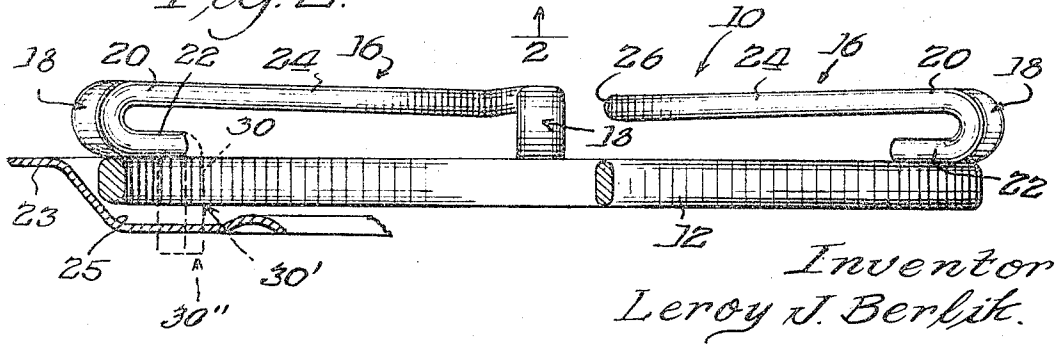


Fig. 2.



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Fig. 3

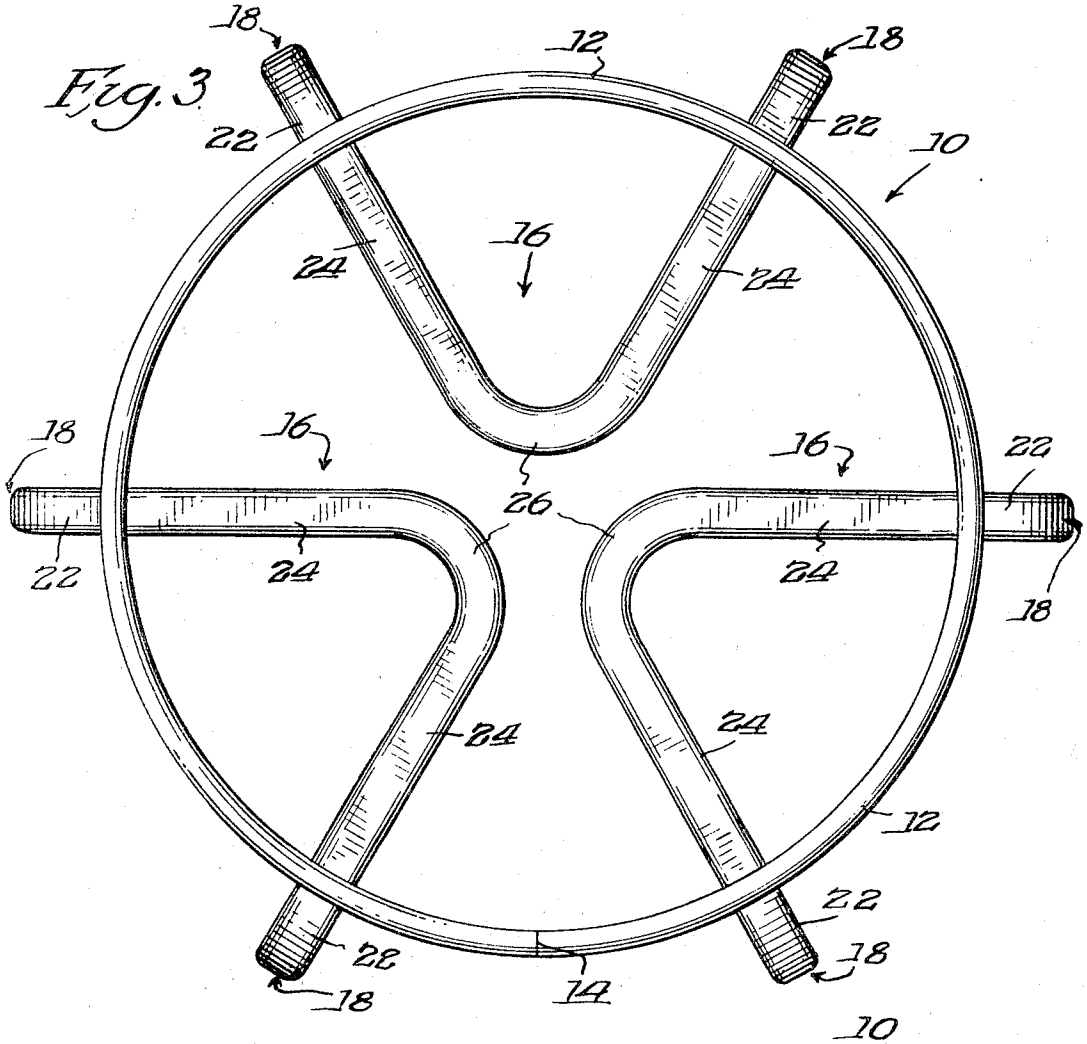
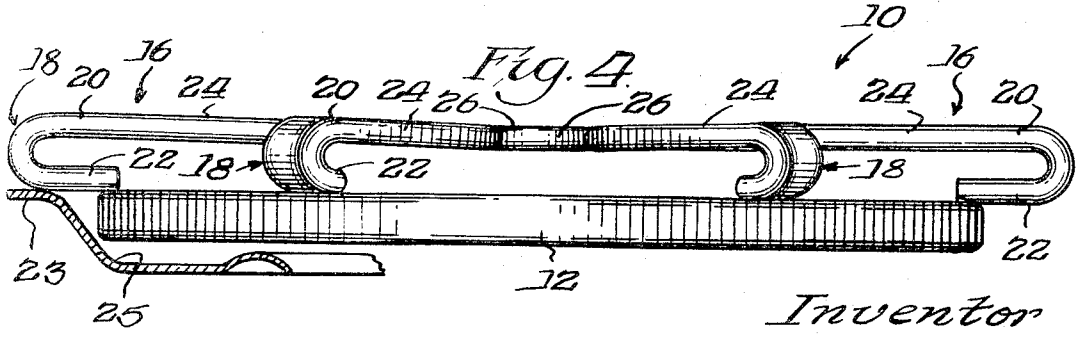


Fig. 4



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WIRE GRATES FOR STOVES

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U.S. Cl. 126—215 7 Claims

ABSTRACT OF THE DISCLOSURE

An article of manufacture, for use as a stove grate, comprising a base member and utensil supporting members having recurved mounting portions for accommodation of bending stresses, for side ventilation and for other purposes.

Brief description of the invention

This invention relates to an article of manufacture for use as an improved stove grate of the class comprising a base member combined with a plurality of utensil supporting members, the latter hereinafter being sometimes referred to as "support members."

Stove grates of this class conventionally are made of cast iron or steel, often covered with fused porcelain enamel. Metallurgical bonding, such as welding, conventionally is the expedient used for providing seams in base members and for mounting the support members by their one ends to the base members, with the other ends of the support members extending toward the center of the base. Because the base member and the support members are separate pieces mounted together, they may be fashioned easily and economically from wire or bar stock which has been suitably bent. For this reason stove grates of this class are often preferred over stove grates of a type which are cast or made of a single piece having many bends.

Accordingly it is the principal object of this invention to provide an improved stove grate comprising a base member and a plurality of generally V-shaped or U-shaped support members each having two recurved mounting portions including U-shaped elements which serve to elevate the support members from the base member. Thus there is provision for side ventilation of the burner to prevent or sharply reduce the partial smothering effect which otherwise might be caused by the placing of a large-bottomed utensil on the stove grate. Also, there is provided a partial spring effect so that if heavy objects are set on or dropped on the supports, or the grates are dropped and land on their supports, there is less possibility of cracking the welded joints. It is preferred that three such support members be provided regularly spaced about a generally circular base member.

It is also preferred that the support members be slightly depressed at their radially inner parts with respect to their outer parts such that a slightly dished effect is provided. With a small uptensil this tends to promote at least in a small way the centering of such utensil on the stove grate and tends to reduce slightly the tendency of the utensil to shift about on the stove grate. Only a slight dishing of from 1% to 2% is needed.

It is a further object of my invention to so dimension and position certain portions of each support member relative to other portions that, with three support members being used, a three point non-rocking support is provided for the utensil. Since it is difficult to assure a completely level supporting plane when the plane is defined by more than three points, such arrangement reduces the precision necessary to fabrication of the

article, thus adding to the ease and economy of manufacture.

Some grate structures have the radially inner ends of the utensil supporting members secured together by welding to a small center ring. This has several disadvantages, namely, additional fabrication and cost, interference with the use of a centrally disposed thermostatic unit, and likely destruction or distortion of the supports since their welded junctions (centrally and peripherally) are differentially heated. I avoid the foregoing by having no central interconnection of the utensil supporting members. This provides a further advantage if the grate has a porcelain enamel coating since the spalling of the enamel is more likely to occur when the rod structure is subject to distortion as the result of differential heating.

Furthermore, as a result of the recurved configuration of the mounting portions which join the support members to the base, heat must travel through the rod structure a greater distance to reach the welded connections than with prior grates, and the rod structure is disposed so as to pass through regions which receive greater cooling effect than is possible in prior grates. Preferably the lower leg of each recurved mounting portion of a support member is tangentially mounted to the base. The ruggedness of this article is augmented by the provision of two mounting portions for each tongue member rather than one.

If desired, the terminal ends of the mounting portions may be extended from their horizontal engagement, tangentially, with the upper surface of the base so that they wrap around the base 90° and extend vertically downwardly and have an additional tangential welding engagement with the radially inner side of the base. Alternately, the latter welding engagement could substitute for the welding engagement at the top surface of the base.

It is conventional for the stove top, bowl or other part with which a stove grate is associated to be provided with at least one aperture adapted to receive a positioning lug extending from the stove grate. Thus, where useful, a grate according to the preferred design may be characterized further by at least one of the generally vertical terminal portions being extended to form a positioning lug.

In the event the base is designed with a diameter to permit it to rest on the stove top rather than in the bowl in the opening in the stove top, then the vertical terminal extensions just mentioned can serve as means for retaining the grate in position relative to the bowl by fitting within the bowl adjacent its periphery.

These and other objects, features, and advantages of this invention should be evident from the following description, in accordance with the annexed drawings, of a preferred embodiment thereof.

FIGURE 1 shows a top plan view of an article of manufacture, for use as a stove grate, which constitutes a preferred embodiment of this invention, comprising generally a base member and three support members.

FIGURE 2 shows an elevation view of the article of FIGURE 1, taken in the direction of arrow 2 of FIGURE 1. A portion of the base member cut by section plane A—A of FIGURE 1 is removed to disclose certain details of one support member.

FIGURE 3 shows a bottom plan view of the article of FIGURE 1, turned from the position of FIGURE 1.

FIGURE 4 shows an elevation of the article of FIGURE 1, taken in the direction of arrow 4 of FIGURE 1.

Referring now to the drawings, the grate of my invention is indicated generally by the reference numeral **10** and comprises a base **12** formed of a single length of wire or rod and curved to a circular form and welded

at 14. Connected to the base 12 are utensil supporting members 16 (which will be referred to for brevity as "support members"), three being preferred and each being of the same configuration as the other so that a description of one will describe them all. The base 12 and support members 16 are formed of wire or rod of the same cross section which, as shown in the drawings, is of an oblong nature having a pair of parallel sides joined by semi-circular ends. It will be appreciated that other cross sectional shapes may be employed including a circular cross section.

Each supporting member 16 is formed at a radially outer end with a U-shaped mounting portion 18 having upper and lower legs 20 and 22. The lower leg 22 is generally horizontal and is welded tangentially to the top surface of the base 12. The lower legs 22 rest on the top surface of the stove 23, indicated fragmentarily in FIGURES 2 and 4, and the base 12 fits loosely within the burner bowl 25. It will be seen that each support member 16 has a pair of such mounting portion 18 and the upper legs 20 of each mounting portion are integrally formed with what I shall refer to as "beam" portions 24 which extend radially inwardly, relative to the base 12, and converge. Their radially inner ends are integrally joined by an arcuate portion 26.

The beam portions 24 of each suport member 16 preferably slope downwardly a small amount (1° to 2°, for example) from their radially outer ends toward the radially inner ends which has the advantage of a slight centering action for smaller utensils resting on the supporting members and also avoids the necessity of having to so precisely form the grate that the top surface of the supporting members are all in exactly the same plane. Trying to provide such a perfect plane, though not impossible, is difficult and expensive. I prefer to construct the support members so that a three point contact is provided for a utensil. One way this may be done is to provide different heights for the top surface of the upper leg portions 20 of each U-shaped mounting portion 18. For example, in FIGURE 1 at "X" the height of the top surfaces could be 1/32" higher than the top surfaces of the adjacent upper leg portions 20. If desired, one of each pair of beams 24 can be formed so that it is lower or slopes a slightly greater amount than the other beam whereupon three beams will be the sources of contact with the base of a utensil. If all beams plus adjacent upper leg portions slope the same amount then alternate leg portions can be made to extends slightly farther out radially, as indicated in dotted lines at 28 in FIGURE 1, whereby a three point support will be provided.

The arcuate ends 26 of the support members are spaced apart and are not interconnected, thereby simplifying and rendering less expensive the construction of the grate. By having such an open area between the arcuate ends 26 there is no interference with the use of a thermostatic unit or other structure which may be desired for association with the utensil which will rest on the grate.

It can be readily seen that the welding junctions are all equally spaced from the center of the grate so that there will be little or no difference in heating or cooling of these junctions such as would tend to cause cracking of the bonds or warping of the grate. Furthermore, because the cross section of the supporting members is uniform over their length, each support member can carry heat from the burner area toward the outer extremities of the support member in a uniform manner so that there will be little tendency of any porcelain enamel which might be applied to the grate to spall due to substantial variations in temperature along the support member.

It will be observed that the U-shaped mounting portions 18 of each support member extend radially outwardly from the welded junction with the base 12 and then recurve back by means of the upper leg 20 and then cross over the base 12 at an elevation above that base, and then the beam portion 24 extends radially inwardly

toward the central area outlined by the base, with the slight downward sloping mentioned above. Whether the base 12 is seated within the burner bowl, shown fragmentarily in FIGURE 2 or is shown seated on the stove top around the periphery of the bowl, the elevation provided to the beam portions of the support members prevents the cutting off of air to the flame such as can occur when a large utensil would be seated on a grate which lacks that elevation of the support members above the base. The U-shaped mounting portion, or recurve portion, 18 has the further advantage of providing a spring-like structure so that if heavy utensils or objects are dropped on the grate, or if the grate is removed from the stove and is accidentally dropped, there will be less tendency of the welded junctions to be damaged or broken.

It will be further observed that this U-shaped portion provides additional length to the rod or wire of which the support member is formed and extends outwardly beyond the burner bowl thereby having the advantage of supporting not only larger vessels but also permitting the rod or wire to have portions which lie a greater distance away from the heat of the flame of the burner so that there is a greater distance for the heat to travel to reach the welded junctions and, furthermore, portions of the rod or wire will be exposed to areas where a cooling of the rod or wire may more readily take place.

Referring now to FIGURE 2, there is shown in dotted line a modification of one of the U-shaped mounting portions 18 in the form of a terminal extension of the lower leg 22. This extension 30 may take a quarter turn from the free end of the lower leg 22 and pass generally vertically down alongside the radially inner side wall of the base 12. It may extend vertically downwardly to 30', that is, as far as the plane of the lower edge of the base 12, or it may extend a greater length to 30" in the event that such downward extension to 30" is desired either for fitting in an aperture in the stove top for purposes of locating the grate, or for fitting in the burner bowl adjacent its periphery in those instances when the base 12 is seated on the stove top rather than in the burner bowl. In the latter event several lower legs 22 will be provided with the downward extension to 30" to permit the extension or lugs 30 to seat within the bowl and jointly provide a centering function. Extensions 30 may be welded tangentially to the adjacent vertical walls of base 12 to supplement the welding of the legs 22 to the top of the base or as a substitute for welding the leg portions 22 to the top of the base.

While I have shown particular shapes, configurations and cross sections and other details to illustrate the preferred form of my invention, I do not intend to be limited to them except insofar as the following claims are so limited, since modifications will occur to one skilled in the art having my disclosure before him.

I claim:

1. An article of manufacture, for use as a stove grate, comprising a base member and a plurality of support members, each support member comprising: a first and a second mounting portion mounted to the base member, each mounting portion being generally U-shaped and having a lower leg and an upper leg; a first and a second beam portion, the first beam portion having an outer end communicating with the upper leg of the first mounting portion and an inner end, the second beam portion having an outer end communicating with the upper leg of the second mounting portion and an inner end; and an intermediate portion having a first end communicating with the inner end of the first beam portion and a second end communicating with the inner end of the second beam portion; the top surface of one of the mounting portions extending radially outwardly a greater distance than the top surface of the other mounting portion of each support member.

2. The article of claim 1 wherein the generally U-shaped mounting portions extend radially outwardly from

the base and then recurve upwardly and back toward the base but at a level above the base, wherein the top surface of the upper leg of one of the mounting portions extends radially outwardly a greater distance than the top surface of the upper leg of the other mounting portion of each support member and wherein the support members slope slightly downwardly and radially inwardly toward the center of the base.

3. An article of manufacture, for use as a stove grate, comprising a base member and a plurality of support members, each support member comprising: a first and a second mounting portion mounted to the base member, each mounting portion being generally U-shaped and having a lower leg and an upper leg; a first and a second beam portion, the first beam portion having an outer end communicating with the upper leg of the first mounting portion and an inner end, the second beam portion having an outer end communicating with the upper leg of the second mounting portion and an inner end; an intermediate portion having a first end communicating with the inner end of the first beam portion and a second end communicating with the inner end of the second beam portion; the top surface of one side of each support member being lower than the top surface of the other side.

4. The article of claim 3 wherein the top surface of the upper leg portion of one of the mounting portions of each support member is higher than the top surface of the upper leg portion of the other mounting portion.

5. An article of manufacture, for use as a stove grate, comprising a base member and a plurality of support members, each support member comprising: a first and a second mounting portion mounted to the base member, each mounting portion being generally U-shaped and having a lower leg and an upper leg; a first and a second beam portion, the first beam portion having an outer end communicating with the upper leg of the first mounting portion and an inner end, the second beam portion having an outer end communicating with the upper leg of the second mounting portion and an inner end; an intermediate portion having a first end communicating with the inner end of the first beam portion and a second end communicating with the inner end of the second beam portion; the top surface of one side of each support member sloping downwardly toward the center of the base more than the other side.

6. An article of manufacture, for use as a stove grate, comprising a base member and a plurality of support members, each support member comprising: a first and a second mounting portion mounted to the base member, each mounting portion being generally U-shaped and having a lower leg and an upper leg; a first and a second beam portion, the first beam portion having an outer end communicating with the upper leg of the first mounting portion and an inner end, the second beam portion having an outer end communicating with the upper leg of the second mounting portion and an inner end; an intermediate portion having a first end communicating with the inner end of the first beam portion and a second end communicating with the inner end of the second beam portion; at least one mounting portion of each support member further including a generally straight terminal element vertically and tangentially mounted to the base member and connected with the lower leg of the mounting portion.

7. The article of claim 6 wherein the base member is of a diameter whereby it is adapted to seat on the stove top around a burner bowl and at least one of the generally straight terminal elements is extended to form a positioning lug which is adapted to seat within the burner bowl.

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