Nov. 15, 1966 M. J. SMITH 3,285,160

ROTARY ROAST RACK

Filed March 2, 1964

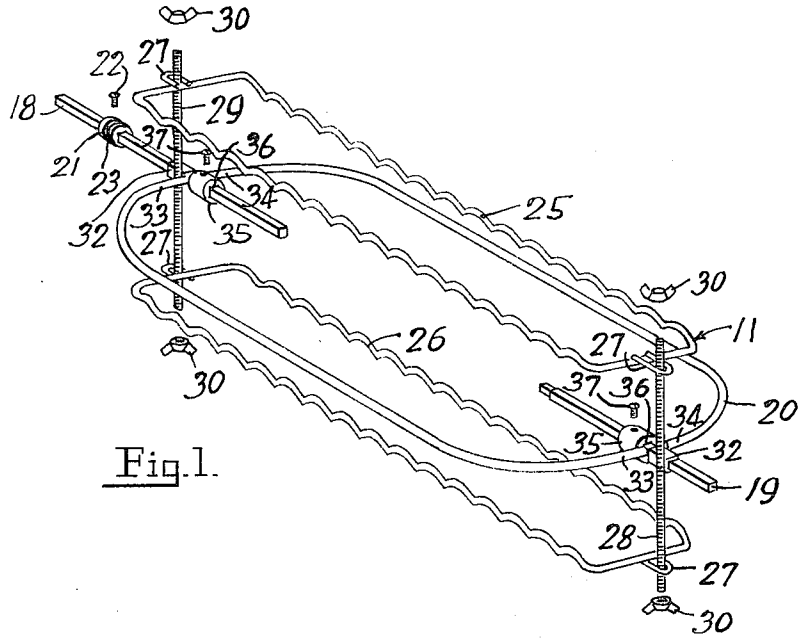


Fig. 1.

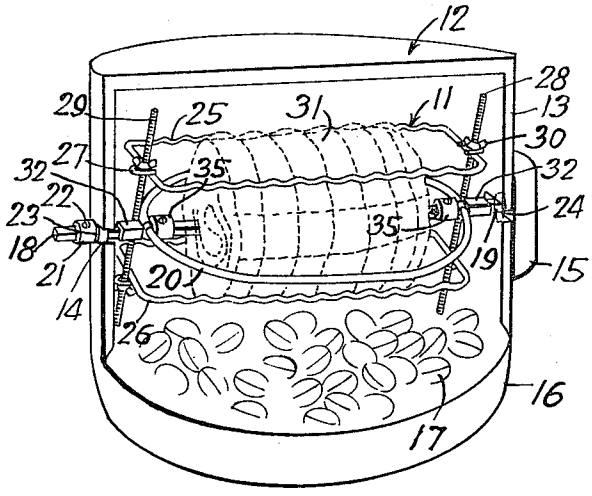


Fig. 4.

Fig. 2.

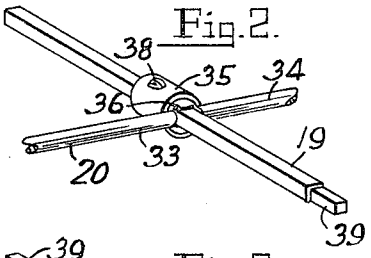
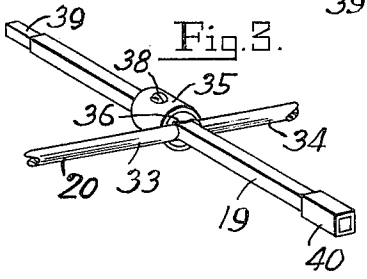


Fig. 3.



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ROTARY ROAST RACK

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This invention relates to a rotary roast rack for use in the broiling and roasting of meats and other foods over an open fire, as in a brazier in outdoor broiler units, the present construction being particularly adapted for the barbecuing of roasts, turkeys, chickens, and the like.

The principal object of my invention is to provide improvements on the constructions disclosed in my prior Patents 3,049,072 and 3,084,615, and more specifically in the following areas:

(1) The threaded studs, onto which two open rectangular wire meat clamping frames that turn with the larger open rectangular wire main frame of the rack and are adjustably secured by wing nuts threaded on studs carried on opposite ends of the main frame to clamp the meat firmly therebetween, have sleeves of square cross-section that are slidably inwardly over the two coaxially arranged square shafts which are adapted to be rigidly secured on opposite ends of the main frame, so that these studs when not in use can be removed and turned at right angles and disposed in parallelism with the main frame with the other two frames for compact storage and, what is more important, for much more compact packaging of the roast rack in the first instance, so that a much smaller and cheaper package can be used than was heretobefore required;

(2) The main frame carries collars on opposite ends each slidably receiving a square shaft of suitable length, both adapted to be secured in place by means of set screws when the desired overall length of rack is obtained by proper adjustment of said shafts endwise in the collars, thereby insuring universal adaptability of the roast rack to different sizes of braziers, one of these shafts having driving connection with a motor on one end wall of the hood of the broiler, while a collar adjustably secured on the other shaft on the other end of the rack provides a good bearing in the slot in the other end wall of the hood, the shafts by virtue of the collars, being also slidable inwardly within the dimensions of the main frame, so as to further reduce the overall size of carton required and effect a further saving in packaging cost and reduce the space required in storage of the rack when not in use, and

(3) That one of the shafts connectable with the motor is preferably provided with a reduced end portion to suit an installation where it is necessary to reduce from a 5/16 square shaft to a 1/4 inch square shaft to fit a 1/4 inch receptacle on the motor and, if desired, I may provide an additional adapter sleeve to fit on one end of the same shaft to increase from a 5/16 inch square shaft to a 3/8 inch square shaft for drive connection with a 3/8 inch receptacle.

The invention as illustrated in the accompanying drawing, in which—

FIG. 1 is an exploded perspective view of the rotary roast rack of my invention removed from the broiler to better illustrate its construction;

FIGS. 2 and 3 are perspective views of the driven end portion of the rack on a larger scale showing the square shaft inserted two different ways in the collar for connection with a 1/4 inch receptacle in FIG. 2 by use of the reduced end portion, and a 3/8 inch receptacle in FIG. 3, by use of an adapter sleeve applied over the other end portion of the shaft, and

FIG. 4 is a perspective view of an outdoor broiler showing my rotary roast rack installed therein.

The same reference numerals are applied to corresponding parts throughout the views.

Referring to the drawing, the reference numeral **11** designates the rotary roast rack of my invention generally, shown installed in an outdoor barbecuing unit **12**, the hood or cover portion **13** of which has a bearing slot **14** in one end wall thereof and a motor **15** mounted on the outer side of the opposite end wall having the usual reduction gearing in the housing thereof to enable slow speed driving of the rack **11** over the brazier **16** containing the glowing briquets **17** for the roasting or broiling of whatever meat is clamped in the rack. The rack is supported by coaxially aligned square shafts **18** and **19** on opposite ends of the main frame **20** for rotation on a horizontal axis while driven by motor **15**, shaft **18** having a bearing collar **21** slidably adjustable secured thereon by means of a set screw **22**, the collar having an annular groove **23** fitting in the slot **14** for bearing support on the hood **13**, while shaft **19** is detachably engaged in a socket in a receptacle **24** forming a part of a slow speed drive gear driven by motor **15**. The rack **11**, similarly as in my two prior patents, 3,049,072 and 3,084,615, comprises the previously mentioned main wire frame **20**, which is generally rectangular, from the opposite ends of which the shafts **18** and **19** extend on the longitudinal center line thereof, and opposed smaller rectangular wire frames **25** and **26** on opposite sides of frame **20** which have projecting U-shaped loops **27** engaging over threaded studs **28** and **29** disposed in right angle relationship to the frames **20**, **25** and **26** and shafts **18** and **19** and having wing nuts **30** threaded thereon and bearing against the projections to force the frames **25** and **26** towards each other to clamp the meat, such as a roast indicated at **31** in FIG. 4 firmly between these frames broiling thereof.

In accordance with the present invention:

(1) The threaded studs **28** and **29** are welded at the midpoints thereof to one side of square sleeves **32** which are slidably engaged on shafts **18** and **19**, thereby enabling easy removal from and replacement of the studs on the shafts, so that the studs can be laid flat in the plane of the frame **20** along with frames **25** and **26** in the storage and shipment of the rotary roast rack, and a much smaller package can be used than would otherwise be necessary and a sizable saving is effected without causing any inconvenience for the user of the rotary roast rack;

(2) the main frame **20** is made from two generally U-shaped pieces of heavy wire, the extremities **33** and **34** of which are welded onto the ends of collars **35** disposed inside the frame **20** and having square bores **36** provided therein in which the shafts **18** and **19** are slidably adjustable endwise and adapted to be secured in adjusted position by means of set screws **37** threaded in radial holes **38** provided in the collars, thus permitting sliding the shafts **18** and **19** inwardly to the point where the carton for shipment of the rotary roast rack need not be much longer than the frames **20**, **25** and **26**, thereby realizing a further sizable saving in packaging costs, and, of course, reducing the space required in the storage of the rotary roast rack when not in use, and

(3) To make the rotary roast rack universally adaptable to different makes of broilers having different sized sockets or receptacles **24** on the drive motors **15** I provide the shaft **19** with a stepped end **39** to reduce from a 5/16 inch square shaft to a 1/4 inch square shaft to fit a 1/4 inch receptacle **24**, the shaft **19** being shown reversed end for end in FIG. 2 in relation to the way it is shown in FIG. 1 where the 5/16 inch end is shown disposed for engagement in a 5/16 inch receptacle, while FIG. 3 shows the same set-up as in FIG. 1 but having a 3/8 inch square sleeve **40** mounted on the end of shaft **19** opposite the reduced end **39** to permit driving the rotary roast rack with a motor having a 3/8 inch receptacle **24**, so that with only the one

shaft **19** and a small sleeve **40** I am enabled to apply the roast rack with equal facility to three different sizes of receptacles, namely ¼ inch, 5/16 inch, and ⅜ inch.

In operation, the shafts **18** and **19** are first adjusted endwise relative to collars **35** and then the set screws **37** are tightened and studs **28** and **29** are mounted on the shafts and frames **25** and **26** are applied to clamp the meat for broiling. It is a simple matter during the broiling to stop the motor **15** and tighten the nuts **30** to compensate for shrinkage and/or correct for an unbalanced condition.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. In a rotary roast rack comprising a substantially horizontal generally rectangular open main frame, a pair of substantially vertical threaded studs disposed on the longitudinal center line of said main frame at opposite ends thereof, a pair of substantially horizontal meat clamping frames of generally rectangular form having stud encircling loops projecting outwardly horizontally from their opposite ends on their longitudinal center lines and loosely slidably engaged on the studs to mount said frames thereon above and below the main frame for movement inwardly toward one another to clamp meat or other food therebetween, and nuts threaded on said studs against said stud encircling loops to apply the clamping pressure on said meat clamping frames, the improvement which consists in the provision of a pair of collars rigidly secured to the opposite ends of the main frame on the center line thereof in coaxial relationship to one another, a pair of shafts removable from the slidably adjustable endwise in said collars in coaxial relationship to one another, one of said shafts being adapted to be connected with rack drive means while both shafts are adapted to support said rack for rotation on a horizontal axis, and sleeves rigidly secured to said studs intermediate their ends and supported by telescoping engagement with said shafts.

2. A device as set forth in claim **1** wherein the main frame comprises two coplanar generally U-shaped wire parts disposed in opposed relation with the arms at each end of the frame aligned and in end to end relation and secured at their extremities to the respective collars.

3. A device as set forth in claim **1** wherein the collars are disposed inside the main frame and secured at their outer ends to the end portions of said frame, whereby to reduce the overall length of said main frame to a minimum.

4. A device as set forth in claim **1** wherein at least one of said shafts is of polygonal cross-section for driving connection with the drive means, said shaft being reversible end for end and one end portion being different from the other end portion so as to permit use interchangeably of whichever end portion will fit a socket provided in a given drive means.

5. A device as set forth in claim **1** wherein at least one of said shafts is of polygonal cross-section for driving connection with the drive means, said shaft being reversible end for end and one end portion being of smaller size than the other end portion so as to permit use interchangeably of whichever end portion will fit a socket provided in a given drive means.

6. A device as set forth in claim **1** wherein at least one of said shafts is of polygonal cross-section for driving connection with the drive means, the device including an adapter sleeve of polygonal cross-section adapted to fit over one end of said shaft to fit a socket in a drive means of larger size than will fit the end portion of said shaft.

7. A device as set forth in claim **1** including means for securing one of said shafts against endwise movement relative to the collar in which it is engaged.

8. A device as set forth in claim **1** including means for securing said shafts against endwise movement relative to said collars.

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