Nov. 8, 1932. E. STRANSZKY 1,887,219

ELECTRICAL COOKING APPARATUS

Filed Dec. 5, 1928 3 Sheets-Sheet 1

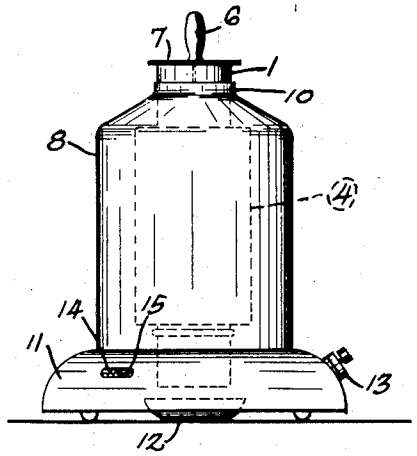


Fig. 1

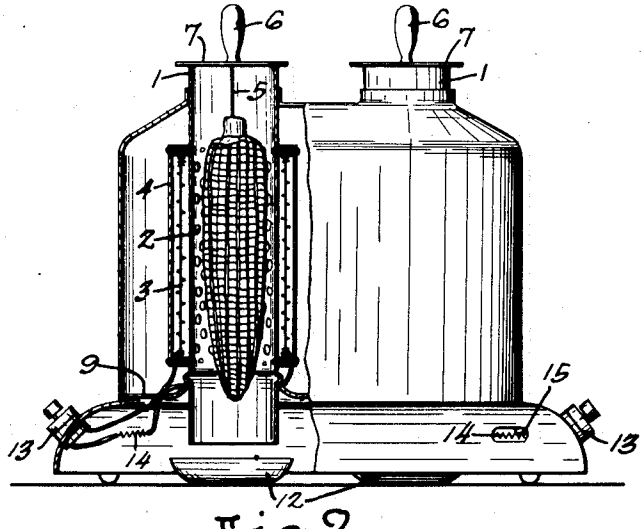


Fig. 2

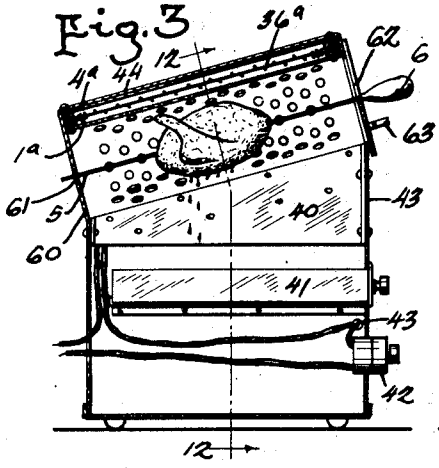


Fig. 3

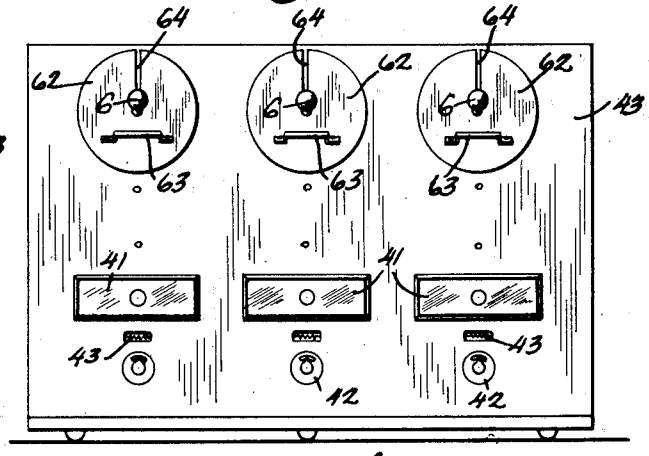


Fig. 4

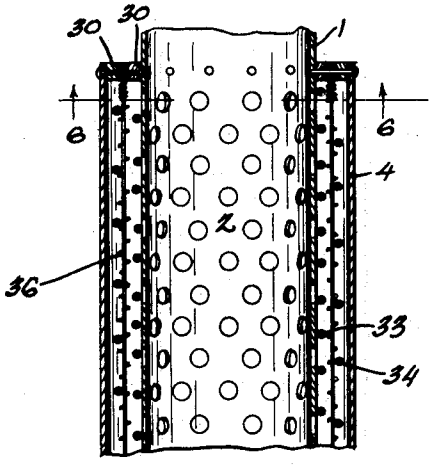


Fig. 5

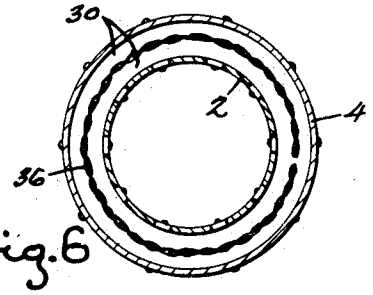


Fig. 6

Emil Stranszky
Inventor
by Smith and Freeman
Attorneys

Nov. 8, 1932. E. STRANSZKY 1,887,219

ELECTRICAL COOKING APPARATUS

Filed Dec. 5, 1928 3 Sheets-Sheet 2

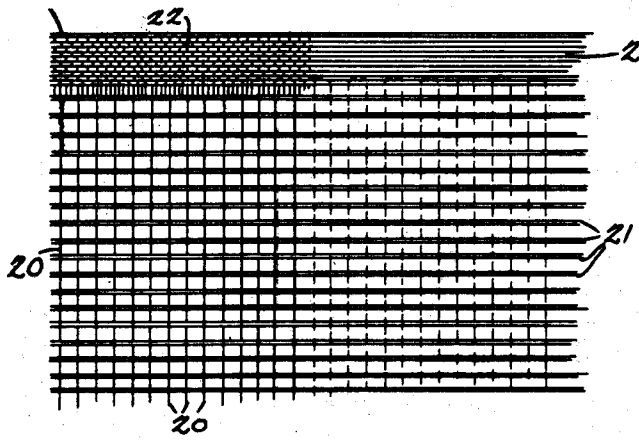


Fig. 8

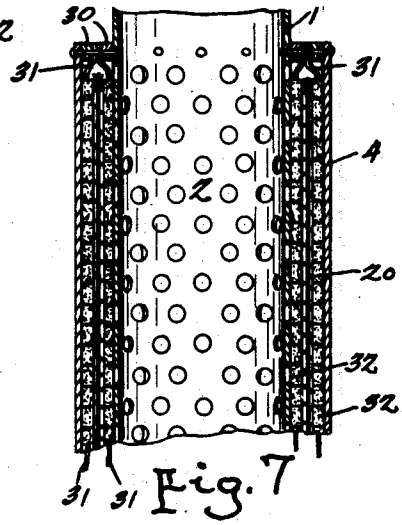


Fig. 7

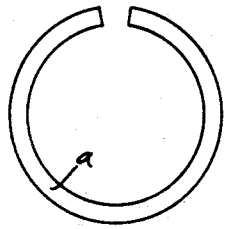


Fig. 9

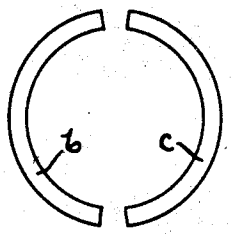


Fig. 10

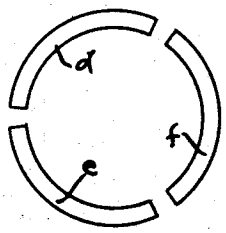


Fig. 11



Fig. 13

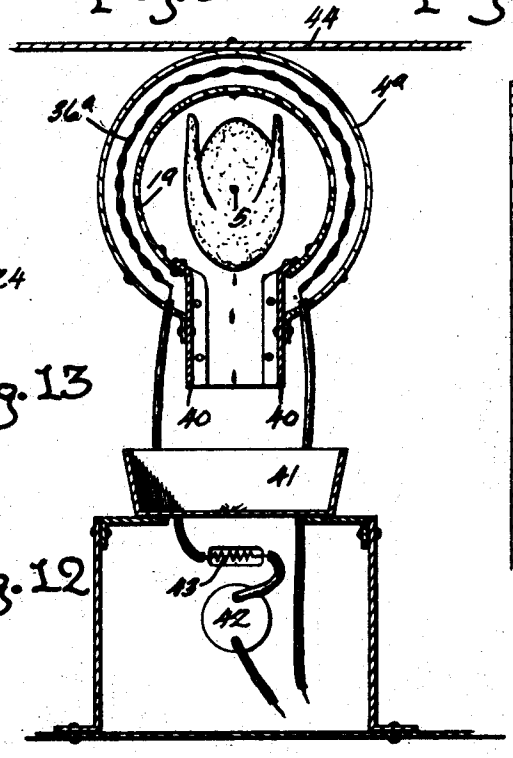


Fig. 12

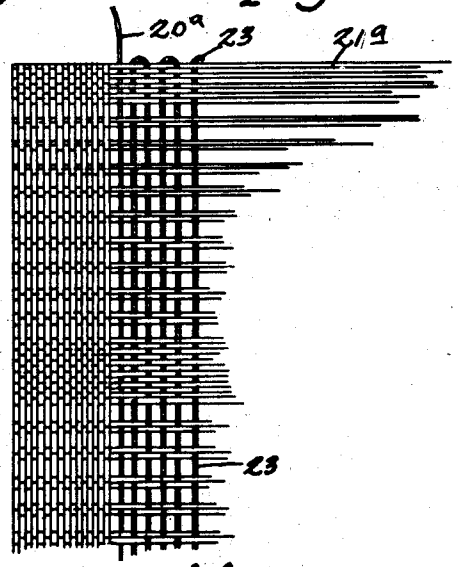


Fig. 14

Emil Stranszky
Inventor
by Smith and Freeman
Attorneys

Nov. 8, 1932. E. STRANSZKY 1,887,219

ELECTRICAL COOKING APPARATUS

Filed Dec. 5, 1928 3 Sheets-Sheet 3

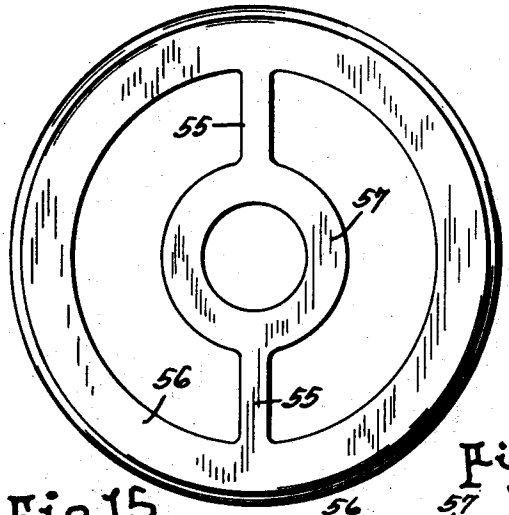


Fig. 15

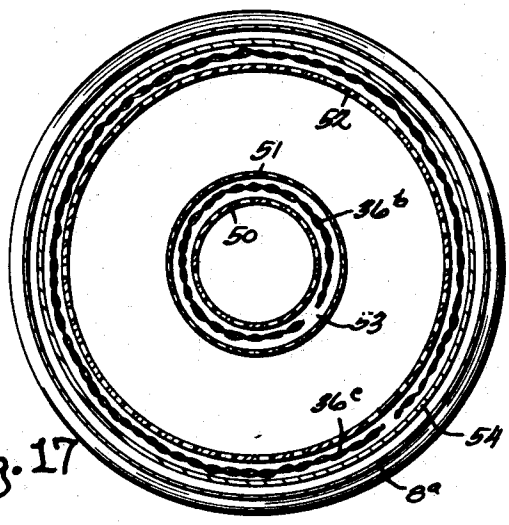


Fig. 17

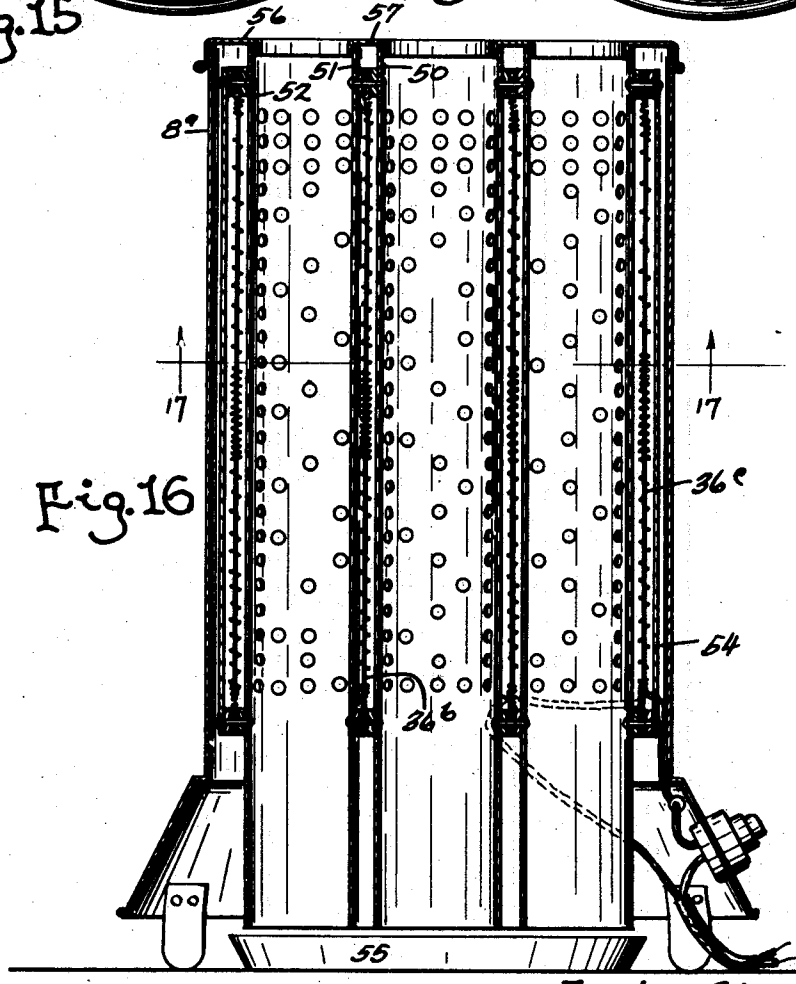


Fig. 16

Emil Stranszky
Inventor
by Smith and Freeman
Attorneys

Patented Nov. 8, 1932 1,887,219

UNITED STATES PATENT OFFICE

EMIL STRANSZKY, OF WARREN, PENNSYLVANIA, ASSIGNOR TO GERRIT VAN DAAM, OF BUFFALO, NEW YORK

ELECTRICAL COOKING APPARATUS

Application filed December 5, 1928. Serial No. 323,991.

This invention relates to electrical cooking apparatus and has for its object the provision of a simple, reliable, and inexpensive apparatus for roasting small portions of certain favorite viands, particularly for the use of small families, apartment house dwellers, and such commercial concerns as cater to the transient and occasional trade, e. g. wayside lunch rooms. The objects of the invention are the provision of cooking apparatus which shall be very light in weight, of small heat capacity, and inexpensive first cost, whereby single small orders of meat or vegetables, such for example as sausages, sweet corn, fish, chicken, or whole potatoes can be cooked rapidly and individually, and preferably directly in front of the guest; the provision of certain new and useful improvements in electrical heating apparatus capable of wider use; the provision of certain new and useful improvements in electrical resistance elements; while further objects and advantages of the invention will become apparent as the description proceeds.

In the drawings accompanying and forming a part of this application I have illustrated certain physical embodiments of my inventive idea. Fig. 1 is a side elevation of a single compartment broiler embodying my improvements; Fig. 2 is a side elevation partly in section of a two-compartment broiler of vertical type; Fig. 3 is a vertical sectional view through one compartment of a modified design of broiler; Fig. 4 is a front elevation of a plural compartment broiler comprising the features of Fig. 3; Fig. 5 is an enlarged vertical sectional view through a part of one of the broiler compartments and its heating element; Fig. 6 is a horizontal sectional view corresponding to the line 6—6 of Fig. 5; Fig. 7 is a modification of the device shown in Fig. 6; Fig. 8 is a development of a preferred form of heating elements; Figs. 9, 10, and 11 are diagrammatic horizontal sectional views showing three alternative arrangements of heating elements; Fig. 12 is a sectional view corresponding to the line 12—12 of Fig. 3; Fig. 13 illustrates an alternative form of insulating strand; Fig. 14 illustrates another form of resistance heating element; Fig. 15 is a top plan view showing another shape and arrangement of cooker; Fig. 16 is a vertical sectional view of the device shown in Fig. 15; and Fig. 17 is a horizontal sectional view on the line 17—17 of Fig. 16.

My improved cooking apparatus comprises essentially in each case a hollow metal tube 1, perforated at least through the middle part of its length as indicated at 2, and surrounded by an electrical resistance element 3 suitably spaced and insulated therefrom, the latter being in turn surrounded by an outside imperforate, metallic shield 4 whereby the heat of the element is conserved and reflected inwardly. The food to be cooked is held upon a wire skewer or spit 5 provided with a suitable handle 6 and the tube is closed by means of a removable cover 7 which is traversed by the spit.

In its simplest form my improved cooker comprises merely a single tube, as shown in Fig. 1, mounted vertically in a suitable external casing 8 which may be enameled or plated as desired. The upper and lower ends of the tube 1 are preferably left imperforate and employed to support and steady the same, in the present embodiment by being mounted on a bottom plate 9 located inside the casing and steadied by a suitable collar 10 formed at the upper end of the casing. I have shown the lower end of the casing as formed with an enlargement 11 to improve its appearance and also to form a space for the reception of a suitable dish 12 which may be set beneath the tube 1 to catch the drip from the cooking food. A suitable switch 13 is provided for each element and also preferably a fuse 14 which, if located as here shown in series between the switch and resistance element, and in front of a window 15, also constitutes a pilot light and indicates even from a distance which of the compartments are in operation. It will be understood, of course, that the function of the pilot can either be omitted or delegated to a different element not having any fuse function without departing from my invention in other respects.

The heating element which I preferably employ is that illustrated in Fig. 8 and is

made of a woven fabric having a warp and weft, one of which is resistance wire and the other consists essentially of asbestos or some other flexible mineral having the herein-essential properties of asbestos. In the form shown in Fig. 8 the vertical elements 20 are of wire and the horizontal elements 21 of asbestos cord. Furthermore I have shown the upper and lower margins or selvage-portions 22 as made wholly of asbestos to facilitate the mounting of the resistor. In referring to this heating element as made in part of asbestos, I do not limit myself to the employment of pure and unchanged asbestos since as hereafter described it is not only within my invention but is in some cases important to treat this material so as to increase its resistance to heat, and it may be that, strictly considered, this treatment results in a substance which is no longer properly entitled to be termed "asbestos". All that is essential within the purview of my invention is that the fabric be originally woven with elements of flexible non-conducting, heat-resisting, mineral substance. Preferably, also, for practical reasons this fabric is wound in a long strip, the asbestos strands 21 being the longitudinal elements and the wires 20 the transverse elements; though it is also within my invention to make both the longitudinal elements 21^a the longitudinal and transverse elements 20^a of flexible mineral substance as shown in Fig. 14, the metallic member consisting of a fine wire 23 wound about one of the mineral cords as shown in Fig. 13. Any one of these cords instead of being made of pure asbestos can be made with a core 24 of cotton, hemp, jute, sisal, hair or other organic substance wrapped about with a coating 25 of asbestos or other mineral.

However the fabric be made, it is cut into proper length for the purpose in view and may be wrapped about the tube 1 in one section as shown at *a* in Fig. 9 or two sections *b*, *c*, as shown in Fig. 10 or three sections *d*, *e*, *f*, as shown in Fig. 11, depending upon whether series or parallel operation be required by the current conditions available, or other conditions.

When the upper and lower selvages of the resistance fabric are of insulating material as shown in Fig. 8, the fabric is most easily supported by having these selvage portions gripped and riveted between spacing rings 30—30 interposed between the tube 1 and jacket 4. When the insulating selvage portions are omitted it is sometimes desirable to locate in the space between the tube and jacket two concentric cages of vertical wires 31, 31 as shown in Fig. 7, the resistance fabric being interposed between them and kept from metallic contact by beads or short tubes 32 of insulating material threaded on the wires.

With the construction shown in Figs. 5 and 6, however, it is also desirable to reinforce against short circuiting by additional insulation, such for example, as asbestos cord 33 wound at intervals about the tube 2 and other asbestos cord 34 wound about the exterior of the resistance web.

In the form of the invention shown in Figs. 5, 6, and 7 the resistance fabric is shown at 36, and subtends substantially the entire circumference. In the form of the invention shown in Figs. 3 and 12 the tube 1^a instead of being completely cylindrical, is slotted at one side and there formed with parallel, outwardly-projecting, lips 40—40 so as to define a drip passage when the axis of the tube is held horizontal or nearly horizontal. The outer shield or jacket 4^a is also slotted at this point, and the resistance element 36^a is located in the space between the tube 1^a and jacket 4^a as before, the tube being preferably perforated through its median portion as shown in Figs. 2 and 5. As many of these tubes are collected into a single casing as may be desired, three of the same being shown in Fig. 4, a separate slidable drawer 41 being located beneath each of the tubes to catch drip. A separate switch 42 is carried by the front of a casing for each resistor, which is also provided with a pilot or fuse 43. The front of the casing is shown at 43 in Figs. 3 and 4 and its top at 44 in Figs. 3 and 12.

In Figs. 15, 16, 17, I have illustrated another form my invention may take, wherein 50, 51, and 52 represent three concentric, cylindrical, perforated tubes mounted in an upright casing 8^a with their common axis vertical. The diameter of the tubes 50 and 51 differs only slightly, thereby defining a narrow annular chamber 53 in which is located the resistance element 36^b. Outside the exterior tube 52 is located another similar resistance element 36^c, and outside of said element in turn a metal jacket 54. The upper and lower ends of both tubes are left open excepting for such bridging members illustrated at 55 in Fig. 15 as are necessary to hold the parts in alignment. I have shown these members as radial arms connecting together the sheet metal rings 56 and 57 which overlap and cover the upper ends of the tubes. A drip pan 55 is supported beneath the lower ends of the same. This device provides two concentric chambers so as to enable several articles to be cooked at one time, by being suspended therein.

When the perforated tube is mounted in inclined or horizontal position as shown in Fig. 3, one end is permanently closed by means of a wall 60 formed with a socket or aperture 61 for the reception of the tip of the spit. The other end is closed by a removable cover 62 here shown as separable from the spit and itself having a handle 63, although it can be carried right on the spit and manipulated by

one handle as shown in Fig. 2. This is not so convenient in the case of a large cover, although the cover preferably supports the spit in any case and may be slotted as at 64 to enable separate manipulation.

Some features of the resistance element herein shown are set forth in the Letters Patent of Friedrich Schniewindt, No. 1,031,204, issued July 2, 1912; although I have found certain additional features desirable to its successful employment for the purpose in view.

Asbestos cords, even if made of the best and toughest asbestos cannot alone be used successfully at the high temperatures required by such a device; and when for purposes of economy I use a short-fiber asbestos 25 wound about or intermixed with one or more cords 24 of vegetable fiber as shown in Fig. 13. In order to render this material more heat resistant I wash or wet or paint or spray the same with a suitable solution or suspension or mixture containing additional silica, together with a suitable basic material, the silica being preferably in excess. For example I have had excellent success with the following:

(1)	Sodium silicate	1
	Silica	1
	Water	2
(2)	Sodium silicate	2
	Soda ash	1
	Silica	2 to 5
	Water	5 to 10
(3)	Soda ash	1 to 3
	Silica	5
	Water	5 to 10

The water soluble portions are dissolved in the water, the silica suspended therein, and the resistance fabric after being properly bent and mounted in its final position is wetted with one of these mixtures or some modification thereof, and after drying, (which can sometimes be expedited by applying a gentle current to the resistance element) is subjected to a temperature at least as high as it will ever be called upon in use to undergo, whereupon a chemical action takes place between the silica, the asbestos (or other mineral), and the basic ingredient, producing a new and non-flexible and highly refractory polysilicate. I prefer to use sodium silicate as at least a part of the basic material because this material assists in holding the silica in suspension and also causes it to adhere to the asbestos or mineral even before the final current is turned on. The same ultimate result is obtained by the use of soda ash and silica provided these ingredients be held in proper contact with the resistor fabric until heating is effected.

I have also found that when one of these compositions of matter is applied to the naked resistor wire it becomes hardened and burned thereon to form an infusible adherent enamel which shields the metal from the destructive effect of fats and other cooking fluids. Hence these improvements are applicable to naked resistors as well as to resistance elements built up of webbing as described in the Schniewindt patent above mentioned; and are applicable to the hardening and protection of asbestos products wherever found and not merely in the relation described; and the resistance element can be used otherwise than in connection with the described type of cooking apparatus.

As a resultt of my improvementts it is possible to make these resistance elements very cheaply, to render them very strong and reliable at all temperatures and to employ asbestos or insulating mineral of comparatively cheap quality since even if supported by a cotton thread at the beginning, the reaction with the silicate ingredient provides the necessary amount of strength. Also the cooking apparatus I have described is so inexpensive and simple that it can be employed lavishly so as to enable individual cooking for each person served. It will be understood, however, that a great many changes in design, arrangement, composition, and use can be made within the scope of my inventive idea and I do not limit myself in any wise except as specifically recited in my several claims which I desire may be construed broadly each independently of limitations contained in other claims.

Having thus described my invention what I claim is:

1. A cooking device comprising a hollow metal tube having a foraminous wall, a naked resistance wire supported in embracing relation about that wall, means insulating said wire from said wall, and an axial spit removably held in said tube.

2. In a cooking device, in combination, a resistance element formed in the shape of a segment of a cylinder, said resistance element comprising a looped wire and an insulating substance, and a spit located inside the cylindrical surface defined by said segment and parallel to the axis of said surface and in radiating relation therewith, the wire being naked at least in part.

3. A cooking device comprising a resistance element consisting of a netted fabric having a warp and a weft, one of wire and the other of a heat resistant mineral substance, formed in the shape of a segment of a cylinder, a spit located inside the cylindrical surface so defined, and means for supporting said resistance element and said spit.

4. A cooking device comprising a resistance element consisting of a netted fabric having a warp and a weft, one of wire and the other of a heat resistant mineral substance, formed in the shape of a segment of a

cylinder, a cylindrical metal jacket surrounding and spaced slightly from said element, and a spit located inside the cylindrical surface so defined and parallel to its axis.

5. A cooking device comprising a foraminous-walled cylindrical tube, a sheet metal jacket surrounding and spaced from said tube and defining therewith an annular chamber, an electrical resistance element comprising a wire supported in said chamber and insulated from the walls thereof, and a spit located in said tube in the path of radiation from said wire.

6. A cooking device comprising a casing, a foraminous-walled tube secured inside said casing, said tube having in addition to its foramina a vertical drip passage, a drip receiver below said tube, a spit removably located inside said tube, and an electrical resistance element embracing said tube at a little distance.

7. A cooking device comprising a casing, a foraminous-walled tube secured inside said casing, said tube having in addition to its foramina a vertical drip passage, a sheet metal jacket surrounding said tube and defining therewith an annular chamber, an electrical resistance element located in said chamber and spaced from its walls, a spit removably supported inside said tube and located in the path of radiations from said element, and a drip receiver below said tube.

8. A cooking device comprising a casing, a cylindrical-walled tube having its ends secured in said casing, the tube wall being perforated between its ends, a radiation-type electrical heating element located inside said casing and alongside the perforated part of said tube, a removable cover for one end of said tube, a spit traversing said cover and supported in the path of radiations passing through said perforations from said element, and means for catching drip.

9. A cooking device comprising a hollow tube open at both ends and perforated at its sides, a casing surrounding said tube and supporting it in upright position, a drip catcher beneath said tube, a radiation type electrical heating device surrounding said tube, a removable cover for said tube, and a spit depending into said tube.

10. A cooking device comprising a hollow tube open at both ends and perforated at its sides, a sheet metal jacket surrounding the perforated part of the tube and defining an annular chamber therewith, a radiation-type electrical resistance heating element located in said chamber, a removable cover for said tube, and a spit traversing said cover and projecting into said tube.

11. A cooking device comprising a foraminous-walled tube, an electrical resistance heating element surrounding said tube, a cover for said tube, and a spit traversing said cover and projecting longitudinally into said tube.

In testimony whereof I hereunto affix my signature.

EMIL STRANSZKY.