Feb. 16, 1932. K. MÜLLER ET AL 1,844,970

STEAM COOKING APPARATUS AND CLOSURE THEREFOR

Filed May 9. 1929

FIG. 1.

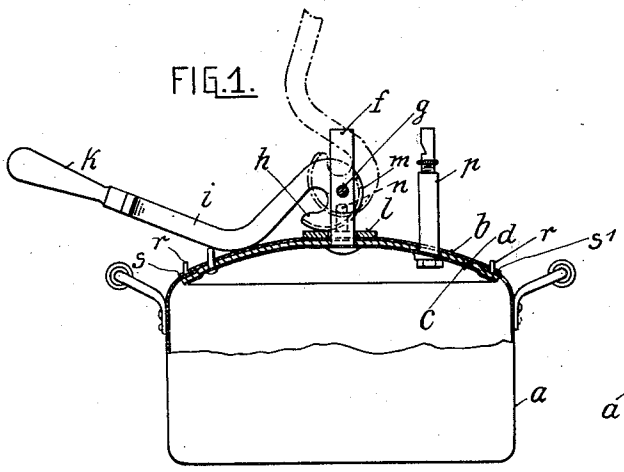


FIG. 2.

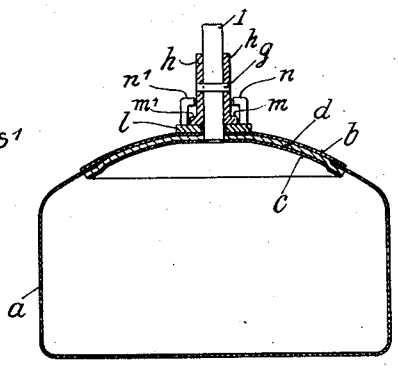


FIG. 5.

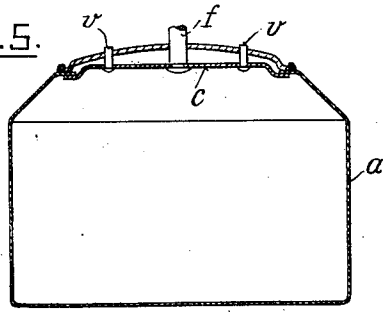


FIG. 3

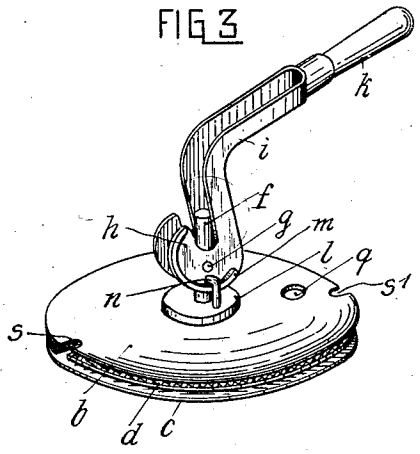
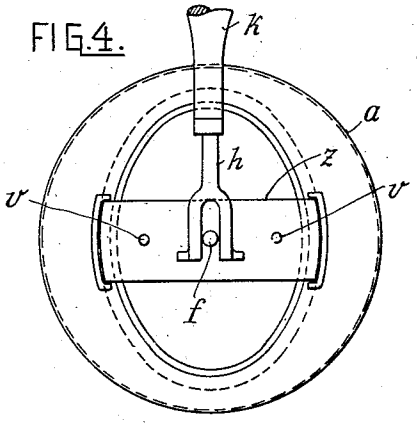


FIG. 4.



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UNITED STATES PATENT OFFICE

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STEAM COOKING APPARATUS AND CLOSURE THEREFOR

Application filed May 9, 1929, Serial No. 361,810, and in Germany May 11, 1928.

This invention relates to steam cooking apparatus and closures therefor, and consists essentially in providing a reliable and effective pressure actuated closure for the aperture of the container of such apparatus, said aperture being preferably of oblong or elliptical conformation and formed by inward bending of the rim of the container in such a manner that the outer surface of said rim will be sloping, while the edge of said rim which forms the aperture of the container is essentially of flat conformation and not provided with any thickened parts, re-inforcements or the like.

A futher object of our invention consists in so arranging said closure as well as the packing associated therewith to come in engagement with both sides of the inwardly bent rim of the container, so that the pressures exerted upon said rim will fully counteract each other, thus doing away with all kinds of one-sided mechanical strains which would otherwise be imposed upon the container or the rim portions thereof.

A still further object of our invention consists in providing a two-part closure and a common pressure organ for actuating both parts of the closure to come in engagement with opposite surfaces of the inwardly bent rim of the container, in such a manner that both parts of the closure will be simultaneously brought into and out of tightening engagement with said rim on the outer and inner peripheral surface portions thereof.

A further feature of our invention consists in employing a pressure lever as actuating organ for both parts of the closure, said pressure lever being mounted on the inner part of the closure in such a manner that the outer and inner part of the closure may be pressed against the outer and inner surfaces of the inwardly bent rim of the container to firmly engage with said rim on both sides thereof.

Further features of our invention will be apparent from the accompanying drawings, which show two preferred forms of closures constructed according to our invention.

In the drawings, Fig. 1 is a vertical section, partly in view, of a steam cooking apparatus equipped with a closure constructed according to our invention, Fig. 2 another vertical section perpendicular to the section of Fig. 1, Fig. 3 a perspective detail view showing the inner and outer parts of which the closure is composed together with the pressure lever which serves for actuating the closure, Fig. 4 a vertical section through a modified form of closure for a steam cooking apparatus according to our invention, and Fig. 5 a vertical section through the apparatus shown in Fig. 4.

Referring now more particularly to the drawings, the cylindrical container *a* is provided with an oblong, preferably elliptical, aperture adapted for the reception of the closure. According to our invention the closure consists of two main parts, viz: an upper or outer cover *b* and an under or inner cover *c*, a packing *d* being interposed intermediate said two parts of the closure. A guide-rod *f* is fixed to the under cover *c* and projects through a bore provided centrally on said upper cover. This guide-rod may also be constructed in the form of a tube and a safety-valve or the like may be provided in said tube to protect the apparatus against excessive pressures.

The pressure lever *h*, *i* is fulcrumed by means of a bolt *g* to the guide-rod or tube *f*, and the end *i* of said lever is preferably provided with a handle *k*. By means of the lever *h*, *i* a pressure may be exerted either directly upon the upper cover *b* or by the intermediary of a pressure disk or washer *l* or the like which is seated on said upper cover. The lever *h*, *i* as may be seen particularly from Fig. 3, is of the form of a fork which is provided around its fulcrum point with projecting flanges *m* and m^1 which engage from below with bent pins *n* and n^1 fixed to the upper part *b* of the closure. A safety-valve *p* may be provided in the usual manner on the under cover, said safety-valve being either of the simple acting or multiple acting type and passing through a bore provided in the upper cover *b*. The rim of the aperture of the container may further be equipped with one or more pins or stops *r* and r^1 which engage with recesses

s and s^1 provided on the upper cover b and eventually also on the under cover c.

After filling the container, the closure which is composed of the two covers b and c hinged to the forked pressure lever h, i with the handle k thereon is introduced transversely into the oblong or elliptical aperture of the container a. During so introducing the closure into the container, the upper cover b will be supported by means of the pins n and n^1 engaging with the curved flanges m and m^1 at a proper distance from the under cover c permitting to introduce the inwardly bent rim of the container a into the space intermediate the two covers b and c. Now the closure is turned into proper position with respect to the oblong aperture of the container a and eventually the recesses s and s^1 are brought into engagement with the stops or pins r and r^1. Now the pressure lever i, h is actuated to press the under cover c and the cover b from both sides against the inwardly bent rim of the aperture of the container along the entire edge of said aperture. The steam cooking apparatus is now in condition ready for use and the safety valve will indicate in the usual manner all irregularities which may arise during the process of cooking. In order to remove the closure from the container the aforedescribed manipulations are made in the reversed order.

For the purpose of conveniently cleaning and emptying the container it is preferable to use only a small curvature at the inwardly bent rim of the container so that said rim will present an outer sloping surface.

The advantages of the closure constructed according to our invention consist in the first place therein that owing to the use of a two-part closure and the pressure-lever herein described a pressure may be exerted in central direction to said closure to provide for the necessary tightening all around the edge of the aperture of the container and to cause the tightening pressure to be most favorably distributed all over the inwardly bent rim of the container.

The curved flanges m m^1 provided on the pressure lever to co-operate with the bent pins n and n^1 will further have the effect that during opening of the closure there will at once be present the proper distance between the upper and under cover, to permit easy introduction and removal of the closure, without entangling with the contents of the container.

It may especially be noted that on account of the resiliency of the two covers there will be required only a small effort for actuating and releasing the pressure lever so that springs, guide rollers or the like on said lever may be entirely dispensed with.

In some cases it may be preferable to use a clip of relatively small width instead of the full outer cover b, said clip engaging preferably with the rim of the oblong aperture of the container in the direction of its smaller diameter. In this case during closing the container the pressure lever engages with said clip. This clip, moreover, may be of plane or arched conformation.

According to our invention the last-mentioned form of construction which is connected with advantages, both as regards the manufacture of the apparatus as well as regards its manipulation, may further be improved by the provision of guide means whereby said clip may be secured rectangularly to the pressure lever and in proper position with respect to the inner cover, said guide means consisting preferably of pins v or the like. A construction of this kind is shown in Figs. 4 and 5. According to Figs. 4 and 5 the cylindrical container a is provided with an aperture preferably of eliptical form which aperture is covered up by the closure. The closure in the present case is composed of a full cover c adapted to come in engagement all around with the inwardly bent rim of the container, and a clip-shaped upper member z which as shown in the drawings is of slightly arched conformation and engages with the elliptical aperture of the container only in the direction of the smaller diameter of said aperture. The lever l may be brought into engagement with the clip z by the intermediary of the pin f and in order to secure the clip z in a position perpendicular to the direction of the lever, special guides v are connected to the under cover c to permit resilient motion of the clip z in perpendicular direction and to prevent rotation around the axis of the container.

We claim:

1. A closure for steam cooking apparatus having a container with an inwardly bent and outwardly sloping rim which forms an oblong or elliptical aperture for said container, said closure consisting of an inner and outer cover, said inner and outer cover adapted to come into closing engagement with said rim on the inner and outer marginal surface portions thereof, respectively, a pressure lever fulcrumed to said inner cover by the intermediary of a supporting member which is centrally fixed on said inner cover and passing through a central bore in said outer cover, said pressure lever having a pressure surface positioned eccentrically to the fulcrum between said pressure surface of said lever when in operative position, and said outer cover.

2. A cooking apparatus comprising, with a container having an aperture surrounded by a rim, a closure for the aperture cooperating with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, the inner member having an upright post projecting upwardly through and freely working through an opening in the outer member, a swingable pressure lever

on the post arranged for coacting with the outer member to put both of said members under constraint and cause them to grip the rim tightly between them, and guide means on the rim cooperating with the outer member to maintain the latter in the position in which it is to be put under constraint.

3. A cooking apparatus comprising, with a container having an aperture surrounded by a rim, a closure for the aperture cooperating with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, a post on the inner member projecting upwardly through and freely working through an opening in the outer member, a swingable pressure lever on the post above the outer member, and connections between the lever and outer member adapted, on swinging the lever in one direction, to put both of said members under constraint against the rim, said connections comprising an eccentric part on the lever and a pin on the outer member engaging said eccentric part.

4. A cooking apparatus comprising, with a container, having an aperture surrounded by a rim, a closure for the aperture cooperating with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, the inner member having an upright post projecting upwardly through and freely working through an opening in the outer member, a pressure lever fulcrumed to the post and provided with flanges positioned eccentrically to the fulcrum point of said lever, and suspension means fixed on the outer member and overlapping said flanges, said suspension means permitting said outer member to be suspended at a proper distance from the inner member, when introducing said closure into the aperture of the container.

5. A cooking apparatus comprising, with a container having an aperture surrounded by a rim, a closure for the aperture cooperting with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, the inner member having an upright post projecting upwardly through and freely working through an opening in the outer member, a pressure lever provided with a forked end fulcrumed to the post, two laterally projecting flanges provided on the forked end of said pressure lever eccentrically to the fulcrum point thereof, and a pair of bent pins fixed on said outer member and adapted to come into engagement with the interior surface of said flanges for the purpose of keeping said inner and outer members at a proper distance from each other during introduction of said closure into the aperture of the container.

6. A cooking apparatus comprising, with a container having an aperture surrounded by a rim, a closure for the aperture cooperating with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, the inner member having an upright post projecting upwardly through and freely working through an opening in the outer member, a pressure lever provided with a forked end fulcrumed to the post, the forked end of said pressure lever having pressure surfaces eccentrically to the fulcrum point, laterally projecting flanges on said pressure surfaces, and a pair of bent pins fixed on said outer member and adapted to engage with the interior surfaces of said flanges so as to permit said outer member to be kept in suspended condition by means of said flanges and said pins at a proper distance from said inner member in the inoperative condition of said pressure lever.

7. A cooking apparatus comprising, with a container having an aperture surrounded by a rim, a closure for the aperture cooperating with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, the inner member having an upright post projecting upwardly through and freely working through an opening in the outer member, a pressure lever having a forked end fulcrumed to the post, a pair of pressure surfaces on the forked end of said lever, said pressure surfaces being positioned eccentrically around the fulcrum point of said lever and adapted to come into pressure engagement with said outer member in the operative condition of said pressure lever and thus to press said outer member against said inner member with the rim of the container interposed therebetween, flanges laterally projecting from said pressure surfaces, and a pair of bent pins fixed on said outer member and overlapping said flanges for maintaining a proper distance between said inner and outer members to receive the rim of the container, when introducing said closure in the aperture of the container.

8. A cooking apparatus comprising, with a container having an aperture surrounded by a rim, a closure for the aperture cooperating with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, the inner member having an upright post projecting upwardly through and freely working through an opening in the outer member, a swingable pressure lever on the post arranged for coacting with the outer member to put both of said members under constraint and cause them to grip the rim tightly between them, guide members provided intermediate the inner member and outer member, said outer member being of clip-shaped form, said guide members permitting between said inner member and said clip-shaped member a motion necessary for engagement with and dis-engagement from the rim of the container, said guide members being further adapted to prevent rotation between said inner member and said outer clip-shaped member.

9. A cooking apparatus comprising, with a container having an aperture surrounded by a rim, a closure for the aperture cooperating with the rim, consisting of inner and outer members adapted to engage opposite sides of the rim, the inner member having an upright post projecting upwardly through and freely working through an opening in the outer member, a swingable pressure lever on the post arranged for coacting with the outer member to put both of said members under constraint and cause them to grip the rim tightly between them, guide pins fixed on the inner member and extending through bores in the outer member, said outer member being of clip-shaped form to permit between said inner member and outer member a motion necessary for engagement with and dis-engagement from the rim of the container, said guide pins being further adapted to maintain a pre-determined relative position between said inner member and said outer clip-shaped member.

In testimony whereof we affix our signatures.

KARL MÜLLER.
PAUL ARNOLD.