

UNITED STATES PATENT OFFICE

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MASHER

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8 Claims. (Cl. 146—175)

The present invention relates to mashers.

It is known there exists mashers having a flat bottom acting as a sieve and in which the compression of the matter against that sieve is obtained by means of a portion of a helical surface rotating about an axis at right angles to the central part of the flat sieve. The upper edge of that surface which is apart from said sieve catches, by being rotated, the matter to be sieved, while the lower edge that limits said surface is in contact with the flat sieve. Owing to that arrangement the matter caught between the helical surface and the flat sieve is progressively compressed and must forcibly pass through the sieve which is scraped by the lower edge of said surface. However, in an apparatus of that kind, the helical surface is substantially as wide as the container that forms the masher; in other words, the peripheral edge of said helical surface is substantially in contact along the whole of its length with the inner wall of the container. It results therefrom that if the matter to be sieved, which is compressed between the sieve and the compressing helical surface, has a relatively high resistance, the rotation of said compressing surface becomes difficult and even sometimes impossible, since no escape is provided for the release of that matter.

On the other hand it is known that some mashers are provided with a conical bottom forming the sieve, against which the matter to be sieved is compressed by a suitable compressing organ, moving substantially in the direction of the axis of the cone.

Experience has taught that on the one hand conical sieves greatly facilitate the passage of the matter to be sieved through them, and on the other hand the rotary helical surfaces forming progressively acting compressing organs, can work with a minimum of effort.

The masher according to my invention is characterized by the chief following features which may exist either separately or in combination:

(a) The portion of helical surface that forms the compressing surface mounted in a rotary manner on a spindle provided at the centre of the sieve, is disposed in such manner that its peripheral edge, which is substantially in contact at its bottom when the inner wall of the container is progressively getting away from said wall as it comes up nearer to the upper edge of said surface that catches the matter, so that said compressing surface leaves between itself and the wall of the container an outlet interval which diminishes gradually from the upper radial edge of that surface down to its lower edge which is

substantially in contact with both the wall of the container and the sieve.

Owing to that arrangement, the matter to be sieved is caught by the compressing surface over only a portion of the radius of the container that forms the masher, while the final pressure exerted on said matter by the rotary compressing surface is applied substantially over the whole of said radius.

It results therefrom that if the matter to be sieved offers too high a resistance, said matter can, in the course of its compression by the first part of said surface, escape between its peripheral edge and the wall of the container. The effort to be exerted is in this case usefully reduced. On the other hand when the matter to be sieved has a certain homogeneity (when vegetables to be mashed are fibrous such as cabbages, turnips or others) the helical peripheral edge of the compressing surface forms, owing to its gradually getting closer to the wall of the container, a knife that progressively cuts the matter to be sieved and detaches from the whole of said matter the part thereof that is in direct contact with the compressed surface.

(b) The bottom of the container that forms the sieve is convex, the convexity being directed towards the inside of said container; the lower radial edge of the helical compression surface and the portion of said surface that is close to said edge is so shaped as to fit substantially on said convex sieve.

Owing to that arrangement the masher according to my invention includes in combination the advantages of known mashers having a conical bottom and of the mashers, also known, having a helical compressing surface.

(c) The helical compressing surface is provided at its lower end with a scraper disposed in such manner as to rub against the lower portion of the wall of the container so as to detach therefrom the matter to be sieved.

(d) The rotary spindle that supports the helical compressing surface is mounted in a boss or bearing secured through any suitable means to the centre portion of the sieve and underneath it. Said boss is of suitable length for avoiding any lateral play of the spindle. A compression spring is disposed between said boss and a stop rigidly fixed to the spindle.

My invention further comprises other features that will be apprehended from the following description.

Preferred embodiments of my invention will be hereinafter described with reference to the ap-

pended drawings given merely by way of example, and in which:

Fig. 1 is a perspective view of the masher according to my invention disposed on a culinary container;

Fig. 2 is a similar view, a portion of the lateral walls and of the bottom of the masher being cut away;

Fig. 3 is a plan view of the masher;

Fig. 4 is an axial sectional view thereof;

Figs. 5, 6 and 7 are axial sectional views of three other embodiments of a masher according to my invention;

Fig. 8 is a plan view of the helical compressing surface of the apparatus shown in Fig. 1;

Fig. 9 is a detail of the support of the spindle.

The apparatus shown in Figs. 1 to 4 inclusive comprises a container consisting of a conical bottom 1 provided with a plurality of small holes so as to form a sieve, and around the edges of which are provided cylindrical walls 2. A boss or bearing 3 of sufficient length is rigidly fixed to the central portion of sieve 1. A spindle 4 provided at its upper end with a crank 5 extends throughout said boss and also through the sieve. On said spindle and immediately above the conical sieve 1 is keyed a portion of a substantially helical surface 6. The lower radial edge 7 of said surface is of a length substantially equal to that of the generatrix of cone 1, and it is in constant contact with said cone. The upper radial edge 8 of that surface is shorter than the generatrix of cone 1 and it is suitably held apart from said cone. The peripheral edge 9 of said surface consists in this embodiment of a conical helix.

The lower radial edge 7 of said compressing surface 6 is maintained in constant elastic contact with the upper face of sieve 1 through the action of a spring 10 wound about the lower end of spindle 4 between boss 3 and a nut 11 screwed on said spindle. A blade 12 fixed to surface 6 through any suitable means is so disposed as to form a scraper that rubs slightly against wall 2 of the container and thus detaches from said wall the matter to be sieved.

The wall 2 of the container is provided with lugs 13 for fitting said container on any kitchen vessel.

The operation of the apparatus is as follows:

The matter to be sieved is placed in a container and surface 6 is given, through crank 5, a rotary movement in the direction of arrow F.

In this action the upper radial edge 8 of said surface catches the matter which is progressively compressed between said surface and the conical sieve. As a result of said compression, most of the matter passes through the sieve, while, if it offers too high a resistance a portion of said matter can escape between the wall 2 of the container and the peripheral edge 9 of the compressing surface.

The amount of matter that is thus allowed to escape necessarily decreases as edge 9 is getting closer to the lower radial edge 7.

It should be noted that the length of boss 3 makes it possible to support and guide spindle 4 without the latter being maintained at its upper part (as is the case with most devices of that type) by an interfering cross member carried by the upper part of the wall of the container. On the other hand, the position of boss 3 and its sufficient length, and also the fact that compressing spring 10 is disposed below the sieve, are made possible by the conicity of sieve 1 which

leaves underneath it sufficient space for lodging these parts.

In the different embodiment shown in Fig. 5, sieve 14 is of spherical shape. The lower part 15 of the helical surface is slightly curved so as to be closely applied upon said sieve.

In the embodiment of Fig. 6, sieve 16 is of plane shape; the lower portion 17 of the helical surface is also plane and at right angles to its axis of revolution, so as to be also maintained in contact with the sieve.

The cylindrical wall 2 of the container extends at 18 below the sieve so as to form sufficient housing for boss 3, spring 10 and nut 11.

In the embodiment illustrated in Figs. 7 and 8, the lateral wall 19 of the container widens out in the shape of a truncated cone, and sieve 1 is conical as in the embodiment shown in Figs. 1 to 4. The lower portion of the helical surface is therefore similar to that shown in said figures, but its upper radial edge 20 is of the same length as its lower radial edge 21. The peripheral edge 22 of said compressing surface therefore constitutes a cylindrical helix, which leaves between itself and the conical wall 19, a progressively widening interval for the escape of the matter, according to my invention, said feature being obtained owing to the conical shape of wall 19.

In Fig. 9 nut 23 that serves to adjust the pressure of spring 10 consists of the lower portion of a sleeve 24 engaging boss 3 with an easy fit, and therefore adapted to protect these organs against any possible soiling. Said sleeve is preferably of hexagonal outer cross section at 25 so as to facilitate its adjustment. It may be applied optionally on all the apparatus according to my invention.

Of course in all of the apparatus that has been described, the sieves may be optionally either of plane or of convex shape, for instance conical or spherical, the helices being devised in accordance.

While I have disclosed what I deem to be practical and efficient embodiments of my invention, it should be well understood that I do not wish to be limited thereto as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of my invention as comprehended within the scope of the appended claims.

What I claim is:

1. A masher of the type described including in combination, a container having the shape of a surface of revolution; a sieve fixed inside said container so as to leave a certain space between its central part and the lower part of the container, a bearing rigidly fixed to the central part of said sieve and extending downwardly therefrom, a spindle extending throughout said sieve and said bearing, a crank at the upper end of said spindle, a helical surface keyed on said spindle above said sieve, the lower radial edge of said surface being of a length equal to the radial section of the sieve, and conforming in shape to the radial section thereof; the upper radial edge of said surface being shorter than the radius of said container and being placed at a certain distance above said sieve, and the peripheral edge of said surface gradually connecting the outer end of said lower radial edge to the outer end of the upper radial edge, and means for applying the lower radial edge of said surface against said sieve.

2. A masher of the type described including in

- combination, a cylindrical container, a convex shaped sieve inside said container, a bearing rigidly fixed to the central part of said sieve and extending downwardly therefrom, a spindle extending throughout said sieve and said bearing, a crank at the upper end of said spindle, a helical surface keyed on said spindle above said sieve, the lower radial edge of said surface being of a length equal to the radial section of the container, and conforming in shape to said radial section, the upper radial edge of said surface being shorter than the lower radial edge thereof and being placed at a certain distance above said sieve, and the peripheral edge of said surface gradually connecting the outer edge of said lower radial edge to the outer end of the upper radial edge, and means for applying the lower radial edge of said surface against said sieve.
3. A masher of the type described including in combination, a cylindrical container, a conical sieve inside said container extending up from the lower edge thereof, a bearing rigidly fixed to the central part of said sieve and extending downwardly therefrom, a spindle extending throughout said sieve and said bearing, a crank at the upper end of said spindle, a helical surface rigidly keyed on said spindle above said sieve, the lower radial edge of said surface being rectilinear and of a length equal to the generatrix of the conical sieve, the upper radial edge of said surface being shorter than the lower radial edge thereof and being placed at a certain distance above said sieve, and the peripheral edge of said surface gradually connecting the outer end of said lower radial edge to the outer end of the upper radial edge, a projection at the lower end of said spindle, and a spring interposed between said bearing and said projection for applying the lower radial edge of said surface against the sieve.
4. A masher according to claim 3 further comprising a small plate fixed to the outer end of the lower radial edge of said surface and adapted to rub against the cylindrical walls of the container, so as to detach the matter therefrom.
5. A masher according to claim 2 in which the sieve is of spherical shape.
6. A masher according to claim 1 in which the sieve is of plane shape.
7. A masher according to claim 1 in which the last mentioned means consists of a sleeve screwed on the lower end of said spindle and engaging said bearing with an easy fit, and a spring interposed between the bottom of said sleeve and the lower end of said bearing.
8. A masher of the type described including in combination, a container having the shape of an upwardly flaring cone, a sieve inside said container having the shape of a downwardly flaring cone coaxial with the first mentioned one, a bearing rigidly fixed to the central part of said sieve and extending downwardly therefrom, a spindle extending throughout said sieve and said bearing, a crank at the upper end of said spindle, a helical surface keyed on said spindle above said sieve, the lower radial edge of said surface being rectilinear and of a length equal to the generatrix of the second mentioned cone, the upper radial edge of said surface being of a length substantially equal to that of the lower radial edge and being placed at a certain distance above said sieve, and the peripheral edge of said surface gradually connecting the outer end of said lower radial edge to the outer end of the upper radial edge, and means for applying the lower radial edge of said surface against said sieve.
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Fig. 1

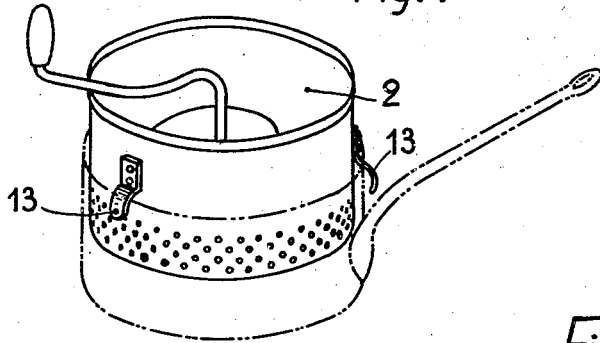


Fig. 4

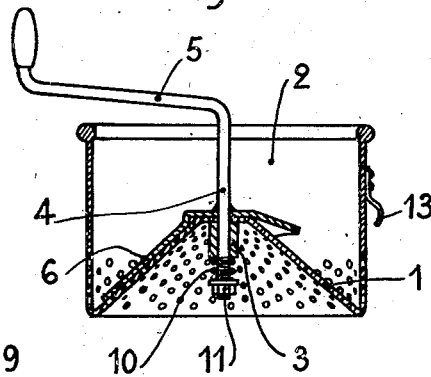


Fig. 2

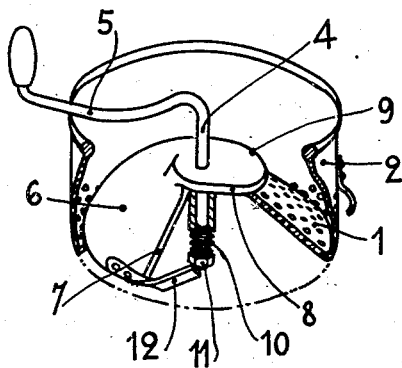
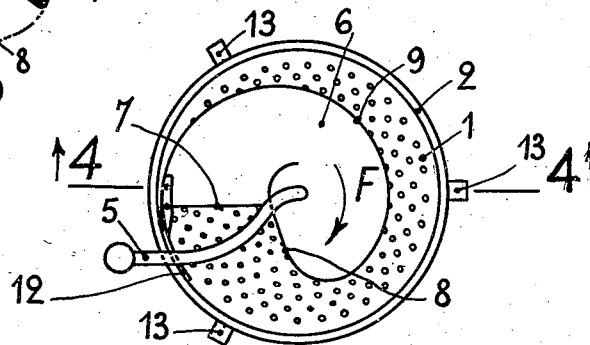


Fig. 3



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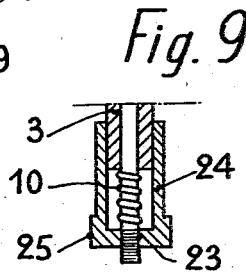
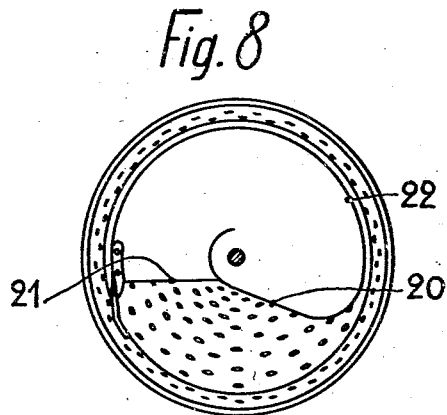
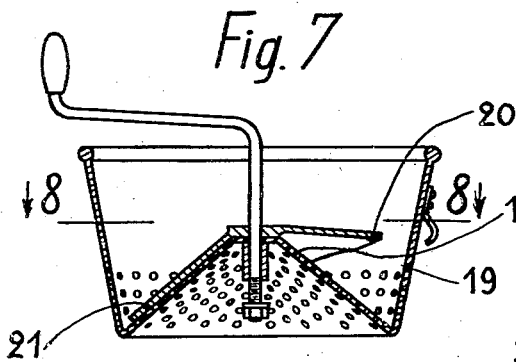
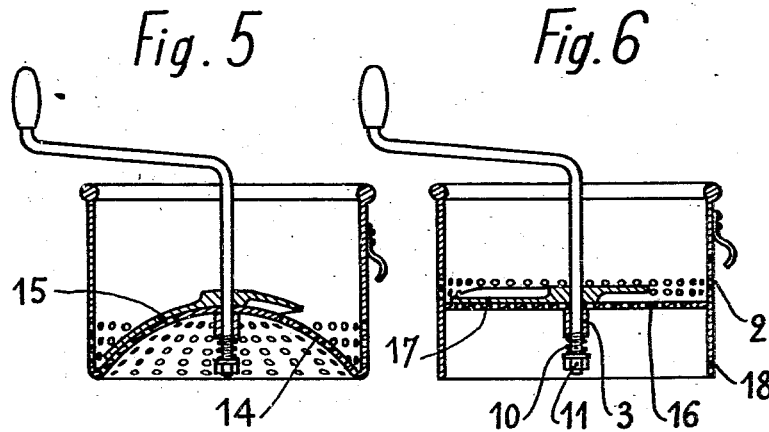
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