

Feb. 12, 1952

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2,585,767

KETTLE

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2 SHEETS—SHEET 1

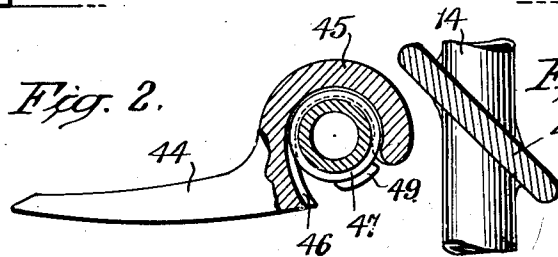
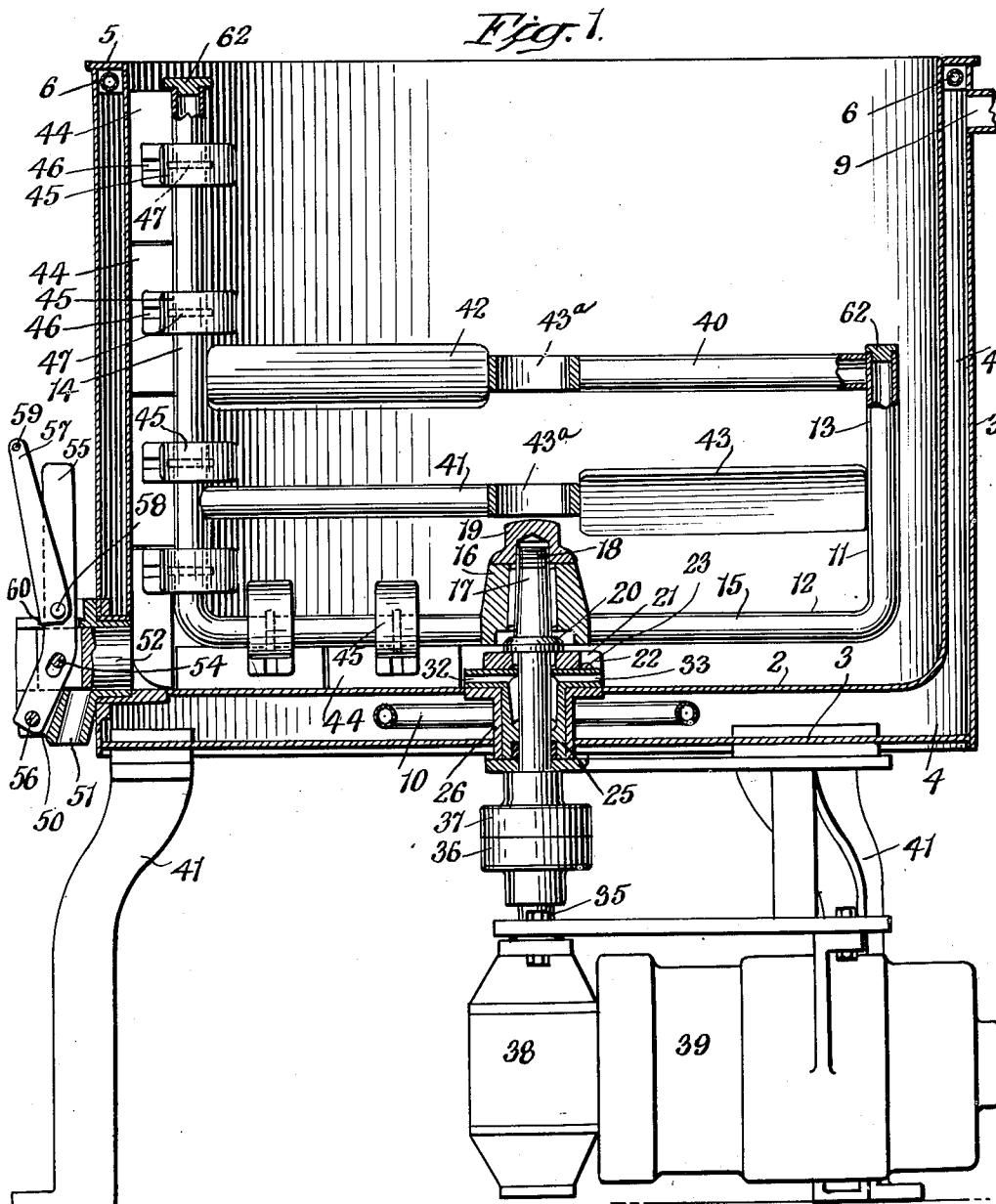


Fig. 3.

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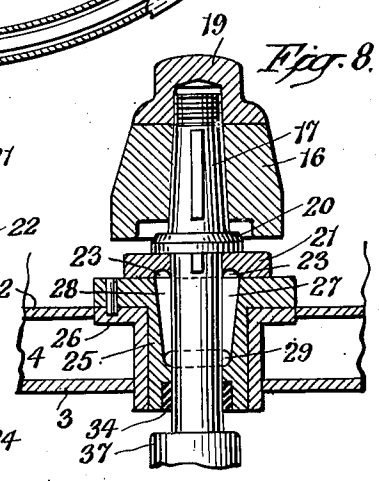
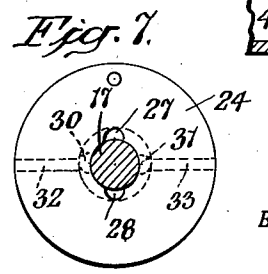
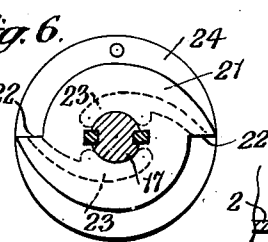
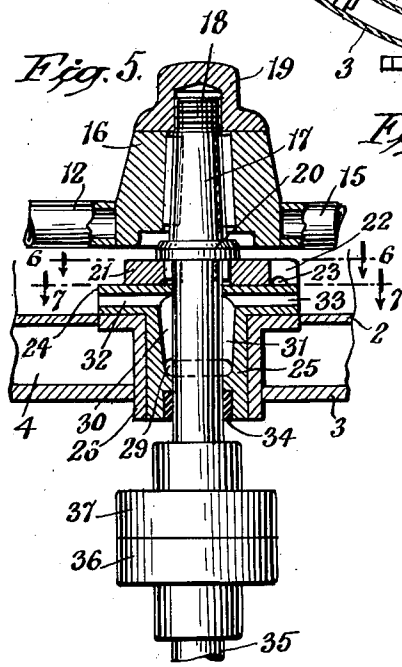
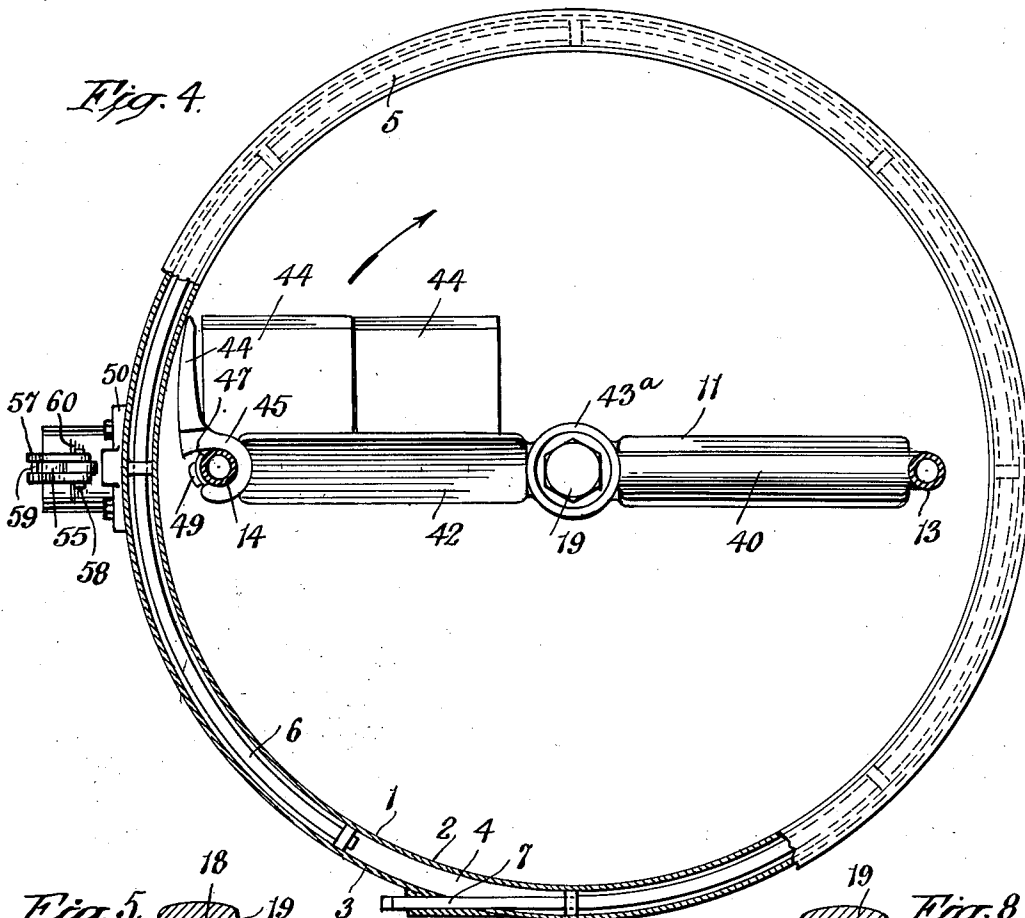
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2 SHEETS—SHEET 2



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KETTLE

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7 Claims. (Cl. 259—108)

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This invention relates to kettles, and particularly to those of the character employed in the confectionery-manufacturing art and in which chocolate and other preparations are mixed or tempered.

An object of the present invention is to provide a kettle of this character having improved mixing or agitating means; with improved and simplified scraping devices carried by said agitating means and operative to smoothly clean the wall and bottom surfaces of the kettle; with a novel rotative mounting for the agitator and means by which the material being mixed or agitated will serve as a lubricant for said rotative mounting, and of various other features co-operating in the production of a kettle of relatively light weight, simple and decidedly useful construction.

Another object of the invention is to provide improved means for heating or cooling the contents of the kettle, and to provide an improved type of outlet valve readily maintained in a clean and sanitary manner and avoiding the accumulation of chocolate or other material around it or between its operating parts.

Still another object of the invention is to provide an improved agitator, and means thereon for receiving and holding scraping devices of improved construction, said agitator being arranged to obviate the use of the central post or spindle commonly employed in kettles of this character.

These and other objects are attained by the invention, a more particular description of which will be hereinafter set forth and pointed out in the claims appended hereto.

In the accompanying drawings, wherein an illustrative embodiment of the invention is disclosed, Fig. 1 is a vertical sectional view through the kettle; Fig. 2 is a top plan view, with parts in section, of one of the scraper blades and the tubular arm of the agitator on which the blade is mounted; Fig. 3 is a sectional view through one of the agitator blades; Fig. 4 is a top plan view of the kettle; Fig. 5 is a vertical sectional view through the central support for the agitator; Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5, looking in the direction of the arrows; Fig. 7 is a sectional view taken on the line 7—7 of Fig. 5, looking in the direction of the arrows; and Fig. 8 is a sectional view through the structure shown in Fig. 5, but taken at right angles thereto.

Referring to the drawings, 1 indicates generally the body of the kettle, the same being of steel or of non-corrosive metal and of double-walled construction and thus being provided with the inner wall and inner bottom 2 and outer wall and

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outer bottom 3, a space 4 being provided between the walls for the reception of cooling or heating fluid. The space 4 is closed at the top by the annular plate or flange 5, and directly below the flange is located a single coil or loop 6 of tubing through which a cool fluid, such as water, is forced. The tubing 6 is provided in its under side with perforations through which the water will flow to fall down along the wall 2 and fill the space 4 between the walls of the kettle and thus heat or cool the contents of the kettle. The tubing 6 has a tangentially-extending end 7 readily connected to a source of water. The single turn of tubing is readily cleaned out by the insertion of a slender brush through it.

An overflow outlet is provided at 9 and the water in the space 4 can be heated or maintained at a desired temperature by means of steam pipes 10 provided between the bottoms of the kettle. A thermostatic control of any known type may be employed to keep the water in the space 4 at any required temperature.

The agitator for the chocolate or other materials to be mixed or agitated, is generally indicated at 11 and the same includes a substantially U-shaped frame 12 preferably made of tubing and being provided with the vertical arms 13 and 14 connected by the integral cross-piece 15. Each of said arms is closed or capped at the top by a closure cap 16. At the center of the cross-piece 15 is provided a hub 16 which is keyed upon the upper end portion of a vertical shaft 17. Said shaft is threaded at the top as at 18, to receive a nut 19, to hold the hub and hence the agitator against rising movement.

Below the hub 16 a collar 20 is provided on the shaft 17, and keyed on the shaft 17 below said collar 20 is a rotor 21 which acts to force the chocolate or other material in the tank toward and around the shaft 17 to cause said material to serve as a lubricant in a manner to be described.

The rotor 21, shown in detail in Figs. 5 and 6, is provided with the two wings 22 forming shoulders, and in its under sides and leading inwardly from each wing 22 is a curved groove 23. The rotor 21 is rotative upon the disk-like head or upper end 24 of a bearing 25 supported and fixedly mounted in the sleeve 26 at the center of the bottom of the kettle. Close to the opening in said bearing through which the shaft 17 extends, is a pair of vertical grooves 27, 28, seen in Figs. 7 and 8. The lower ends of these grooves 27 and 28 are in communication with an annular groove 29 provided in the bearing 25. Between the grooves 27 and 28 is a second pair of vertical

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grooves in the bearing 25, said grooves being indicated respectively at 30 and 31. These grooves 30 and 31 have their lower ends in communication with the annular groove 29 and their upper ends respectively in communication with horizontal passages 32 and 33 extending radially from the center of the bearing 25 and leading out of its peripheral edge, as seen in Fig. 5. When the shaft 17 and the rotor 21 thereon is rotated, the wings or shoulders 22 on the rotor 21 will cause the chocolate or other material being agitated in the tank to be forced into the grooves 23 in the lower face of the rotor and forced inwardly through said grooves 23 toward the shaft 17. The grooves 23, being in communication with the vertical grooves 27 and 28, will cause the chocolate or other material to be forced down through the vertical grooves 27 and 28 to reach the annular groove 29 and from there to be moved therefrom up through the vertical grooves 30 and 31 and out through the passages 32 and 33 to re-enter the kettle. This circulation of the chocolate or other material around the shaft 17 and through the bearing 25 therefor is such as to provide lubrication for the shaft by the material being agitated. A packing 34 is provided in the lower end of the bearing sleeve 25 around the shaft 17.

The lower end of the shaft 17 is connected to a drive shaft 35 by means of joined coupling members 36, 37. Drive shaft 36 is rotated at the required speed from a reducing gearing of known character contained in the housing 38 and driven from the electric motor 40 located below the kettle. The kettle is supported by the legs 41.

The vertical arms 13 and 15 of the agitator are connected by cross members 40 and 41, each of which is provided with an inclined or angular mixing blade. The blade on the cross member 40 is indicated at 42, while that shown on the cross member 41 is indicated at 43. These blades are inclined or tilted oppositely and are located on opposite sides of the vertical center line of the agitator, so that a stirring or mixing is attained when the agitator is rotated. Each of the cross bars 40 and 41 is provided at the center with an open ring 43a permitting easy access to the nut 19 for removal or tightening of the same, and also allowing for the placement of a thermometer or other temperature-determining device in the center of the mixture without interference from the rotating agitator.

In the embodiment shown, the longer vertical arm 14 and the lower cross member 15 of the agitator carries a plurality of scraper blades 44, the shape and construction of which will be observed in Fig. 2. These blades might also be provided on the shorter arm 13, if desired. Each blade 44 is provided at its inner end with a hook portion 45 formed on its inner or concave side with a groove 46 that engages over an annular rib 47 formed on the vertical arm 14, or in the case of the lower or bottom scrapers, on the cross arm 15. The hooked portions of the several scrapers fit around the arm 14 and cross member 15 and are held against sliding movement along these parts by the engagement of the grooves 46 with the ribs 47. As the agitator is rotated, in the direction of the arrow in Fig. 4, the free ends of the scraper blades are held by pressure of the material being agitated against the wall and bottom of the kettle, and force the material toward the center of the kettle, thus keeping the wall and bottom of the kettle free from accumulated materials. Inward rotative movement of the scraper blades is prevented by a stop or abutment

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49 provided on each of the ribs 47, and shown in Fig. 2.

The outlet from the kettle and from which the contents of the kettle may be drained, consists of the tubular housing 50 located in the side wall of the kettle at the junction of said wall with the bottom. The housing 50 is formed with a downwardly-directed outlet spout 51 normally closed at the top by the slidable plug valve 52, mounted and slidable in the member 50. In Fig. 1 the plug valve 52 is shown in its inner or closed position, at which time it will be noted that its inner end is substantially flush with the inside surface of the kettle. The rear or outer end of the plug valve 52 is slotted, and pivoted in said slot on the pin 54 is a slotted lever 55, having its lower end pivoted at 56 in a slotted lower portion of the valve housing 50. This arrangement is such that the valve 52 may be slidably moved back and forth to either open or closed position, by movement of the operating lever 55 in the required direction. A locking means for the operating lever consists of a pair of latches 57 connected together at the top by the pin 59, and pivoted on the operating lever 55 by the pin 58. Provided in the top of the housing 50 is a notch 60, so arranged that when the valve is in its closed position, as shown in Fig. 1, the latches will pivot by gravity to thus engage in the notch 60 and hold the valve against outward or opening movement likely to be caused by pressure of the contents of the kettle against the inner end of the valve. To open the valve, the operating lever and the latches are gripped together in a manner to raise the lower ends of the latches out of the notch 60, thus permitting pivotal movement of the lever 55 and outward sliding movement of the valve 52 to open position. When the valve is slid inward to closed position and pressure on the lever 55 and on the latches 57 pivoted thereon, is then released, the latches will drop into the notch 60 and hold the valve closed until again manually operated to open it.

From the foregoing, the operation of the improved kettle will be readily understood. In the tempering of chocolate or the mixing of agitation of other materials, the temperature of the materials can be readily controlled by the liquid contained between the walls of the kettle. The agitator can be readily replaced and removed by means of the described construction and when rotated, its easily-removed blades will effectively scrape the walls and bottom and direct the displaced material inwardly or toward the center of the kettle. The lubrication of the shaft and bearing therefor by the material being agitated is effective and useful and the outlet valve employed prevents accumulation of the material in and around the outlet. The kettle and its parts are so arranged that dismantling, assembly and replacement of parts is a simple and readily-performed task and the structure is one which can be easily cleaned and kept in a sanitary condition at all times.

Having described one embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to cover all structures coming within the scope of the annexed claims.

What we claim is:

1. In a kettle of the character described, a kettle body having a central bearing, a shaft rotative in said bearing, means located below the kettle body for rotating said shaft, passages 75 provided in the bearing, a rotor carried by the

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shaft and having a grooved under face, means on said rotor for directing fluid material from within the kettle body into the grooves in the rotor and through the passages in the bearing to thereby lubricate the shaft and bearing by such material, the passages in the bearing carrying said material back into the kettle, and an agitator carried on said shaft and rotative within the kettle.

2. In a kettle of the character described, a kettle body having a central bearing, a shaft rotative in said bearing, an agitator secured on said shaft above the bearing, a rotor secured on the shaft below the agitator and rotative with the shaft, the rotor being grooved, the bearing provided with passages, some of said passages being in communication with the grooves in the rotor, the rotor having other passages in communication with the interior of the kettle body, whereby fluid material contained within the kettle body will be forced by the rotor through its grooves and into the passages and through the same back into the kettle body and the shaft and bearing therefore will be lubricated by said material.

3. In a kettle of the character described, a jacketed kettle body, a central bearing in the body, a U-shaped agitator, a shaft mounted in the bearing and attached to the agitator, means for lubricating the shaft and bearing by contents of the kettle, said means including a circulating system for circulating such material through the bearing and returning the material into the kettle, agitating blades carried by the agitator, scrapers carried by the agitator, hooks on the scrapers fitted about parts of the agitator, interengaging ribs and grooves on the agitator and hooks, and an outlet valve for the tank.

4. In a kettle of the character described, a kettle body, a shaft rotatively mounted in a bearing located in the center of the bottom of the kettle body, an agitator having a substantially U-shaped frame provided with vertical arms connected by a plurality of cross members, each of said cross members having an inclined mixing blade and each cross member having a central open loop, one of the vertical arms being of greater height than the other, said arm carrying a plurality of scraper blades.

5. In a kettle of the character described, a kettle body, a vertical shaft rotatively mounted in a bearing located in the center of the kettle body, an agitator including a substantially U-shaped frame having a pair of vertical arms connected by a plurality of cross members, each of the cross members carrying an inclined mixing blade and each cross member having a central open loop, the axis of each loop being in

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vertical alignment with the axis of the shaft, the agitator being carried by the shaft, one of the vertical arms of the agitator being of greater height than the other and having its upper end located near the top of the kettle body, said arm carrying a plurality of scraper blades, some of said blades being arranged upon the longer arm above the uppermost cross member of the agitator.

6. In a kettle as provided for in claim 5, wherein the longer arm is provided with a plurality of spaced annular ribs, each of the scraper blades being provided at one end with a hook, the hook having a groove in its inner face fitting over one of the ribs and permitting limited rotative movement of the scraper blade on the arm and holding said blade against vertical movement, and a stop on each rib for limiting the rotative movement of the scraper blade on said rib.

7. In a kettle of the character described, a kettle body, a vertical shaft rotatively mounted in a bearing located in the center of the bottom of the kettle body, an agitator mounted on the shaft and including a substantially U-shaped frame provided with vertical arms connected by a plurality of cross members, each of the cross members having an inclined mixing blade and each cross member having a central loop, the loops having their axes in vertical alignment and in alignment with the axis of the shaft, at least one of the vertical arms carrying a plurality of scraper blades held against the inner wall surface of the kettle body by rotative movement of the agitator.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
313,760	Packer	Mar. 10, 1885
787,266	Bivins	Apr. 11, 1905
969,016	Willmann	Aug. 30, 1910
1,154,772	Hollstein	Sept. 23, 1915
1,579,390	Peaden	Apr. 6, 1926
1,736,966	Delaval-Crow	Nov. 26, 1929
1,808,029	Frame	June 2, 1931
1,842,081	Durbin	Jan. 19, 1932
1,995,465	Bigelow et al.	Mar. 26, 1935
2,113,025	Jeppsson	Apr. 5, 1938
2,196,012	Gilbert	Apr. 2, 1940
2,249,036	Peters	July 15, 1941
2,347,195	Huff	Apr. 25, 1944
2,470,691	Erickson et al.	May 17, 1949
2,481,731	Dubin	Sept. 13, 1949