June 2, 1931. J. H. FRIEDEL 1,808,215

TURNOVER FOR AUTOMATIC COOKING APPARATUS

Filed June 21, 1930

FIG. I.

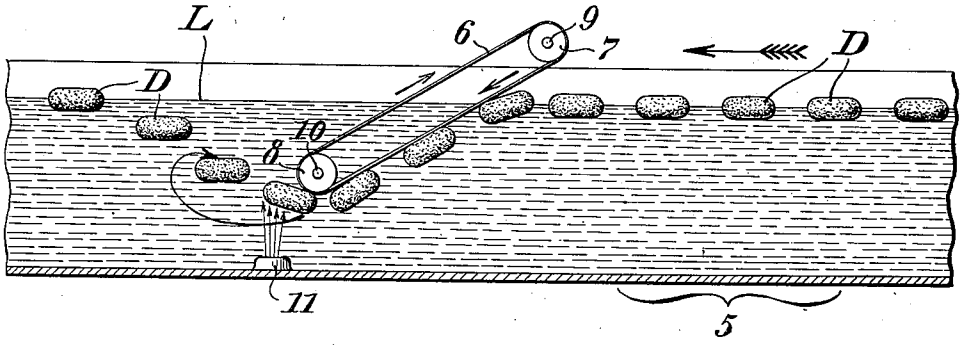
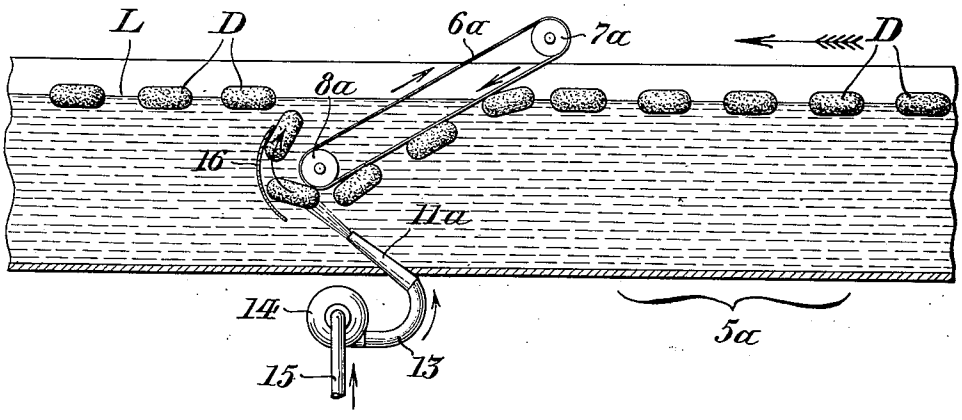


FIG. II.



WITNESSES

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Patented June 2, 1931 1,808,215

UNITED STATES PATENT OFFICE

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TURNOVER FOR AUTOMATIC COOKING APPARATUS

Application filed June 21, 1930. Serial No. 462,723.

This invention relates to turnover means useful in connection with automatic apparatus for cooking articles such as doughnuts and the like in hot cooking liquor; and it has reference more particularly to turnover devices for apparatus wherein the articles are cooked by flotation.

The object of my invention is to provide a simple, reliable and efficient means capable of turning the doughnuts over after they have been progressed through a portion of the apparatus afloat on one of their sides in the liquor, for flotation on their other sides during further progression in the apparatus until fully cooked, and which is moreover capable of accomplishing the foregoing without injuring the doughnuts or marring them in any way.

In the drawings, Fig. I is a view showing, more or less diagrammatically in longitudinal section, a portion of an automatic doughnut cooking apparatus with turnover means conveniently embodying my invention in one form; and

Fig. II is a view similar to Fig. I showing a modification of my invention.

Referring first to Fig. I of these illustrations, the numeral 5 designates an elongated cooking receptacle which is kept filled with the cooking liquor to the level L, and in which the doughnuts designated by the letter D are continuously progressed afloat in the direction of the arrow, by suitable means not shown. Either gas or electric means (not shown) may be employed to maintain the liquor L at the proper cooking temperature in a manner known to those skilled in the cooking arts.

To invert the doughnuts after they have been progressed along substantially half the length of the receptacle 5 afloat on one of their sides in the liquor L, I provide a turnover means which includes an inclined endless belt 6. This belt is trained about pulleys or rollers 7, 8 secured on shafts 9, 10, and is driven in the direction indicated at a surface speed corresponding to the rate of progression of the doughnuts in the apparatus, through power applied to the shaft 9. Immediately adjacent the submerged end of the depressing belt 6, a conventionally indicated electric heating device 11 functions to set up an upward current in the liquor L as indicated by the arrowed lines in the drawings. If desired or found more convenient in practice, any other type of heating device may of course be employed, for example, a gas burner beneath the receptacle, with maintenance of a "hot" spot to induce localized upward circulation of the liquid at the desired region.

In the operation of the apparatus, the doughnuts D are progressed slowly but continuously from the right hand end of the receptacle 5 afloat on one of their sides, and, in encountering the lower run of the belt 6, are depressed in the liquor against their buoyancy for a short distance of travel along the receptacle. As the doughnuts are released from the submerged end of the belt 6 passing around the pulley 8, their forward ends are projected into the path of the upward current of liquor set up by the auxiliary heating means 11. As a result, the doughnuts are turned over in the manner indicated by the curved arrow in the drawings incident to rising to the surface of the liquor L, and float on their other sides during progression in the liquor along the remaining half of the receptacle.

In the modification shown in Fig. II, an upward current of the cooking liquor is induced adjacent the delivery end of the belt 6*a* by a submerged spray nozzle 11*a* from which a jet of cooking liquor is discharged. The cooking liquor so discharged is delivered to the nozzle 11*a* through a pipe 13, by a pump 14; and said pump may draw the liquor through a pipe 15 leading either from the receptacle 5*a*, or from a separate source of supply, as convenient or desirable. As shown, the spray nozzle 11*a* discharges its jet at an upward inclination toward a fixed deflector plate 16 which is curved concentrically with the axis of the belt roller 8*a*.

In the operation of the modified form of my invention, as the doughnuts are released from the belt 6*a*, they are turned over through cooperation of the nozzle 11*a* with the curved deflector plate 16 as shown by the arrow in Fig. II, incident to rising to

the surface of the cooking liquor L for subsequent flotation on their opposite or uncooked sides during further progression through the apparatus as in the first described embodiment.

Having thus described my invention, I claim:

1. Turnover means useful with automatic apparatus for cooking articles such as doughnuts afloat in hot liquor, comprising means for temporarily depressing the articles against their buoyancy in the liquor incident to progression in the apparatus; and means for setting up an upward current in the liquor locally at the point of release of the articles by the depressing means to turn the articles over.

2. Turnover means useful with automatic apparatus for cooling articles such as doughnuts afloat in hot liquor, comprising means for temporarily depressing the articles against their buoyancy in the liquor incident to progression through the apparatus; and a heating means at the region of release of the articles from the depressing means for setting up a localized upward current in the liquor to turn over the doughnuts.

3. Turnover means useful with automatic apparatus for cooking articles such as doughnuts afloat in hot liquor, comprising an inclined endless belt for temporarily depressing the articles against their buoyancy in the cooking liquor incident to progression through the apparatus; and means for setting up an upward current in the liquor at the point of release of the articles by the depressing means to turn the doughnuts over.

4. Turnover means useful with automatic apparatus for cooking articles such as doughnuts afloat in hot liquor, comprising means for temporarily depressing the articles against their buoyancy in the liquor incident to progression through the apparatus; and a submerged nozzle for directing a jet of the cooking liquor upward against the articles to turn them over upon release by the depressing means.

5. Turnover means useful with automatic apparatus for cooking articles such as doughnuts afloat in hot liquor, comprising means for temporarily depressing the articles against their buoyancy in the liquor incident to progression through the apparatus; a deflector at the region of release of the articles by the depressing means; and means for setting up a localized upward current in the liquor to cooperate with the deflector in turning the articles over.

6. Turnover means useful with automatic apparatus for cooking articles such as doughnuts afloat in hot liquor comprising an inclined endless belt for temporarily depressing the articles against their buoyancy in the cooking liquor incident to progression through the apparatus; a curved deflector plate concentric with that end of the depressing belt from which the doughnuts are released; and means for setting up a localized upward current in the liquor to cooperate with the curved deflector plate aforesaid in turnng the articles over.

7. Turnover means useful with automatic apparatus for cooking articles such as doughnuts afloat in hot liquor; an inclined endless belt for temporarily depressing the articles against their buoyancy in the cooking liquor incident to progression through the apparatus; a deflector plate curved concentrically with that end of the depressing belt from which the articles are released; and a submerged nozzle for directing a jet of the cooking liquor upward at an angle toward the deflector plate to cooperate with the latter to turn the articles over.

In testimony whereof, I have hereunto signed my name at New York city, New York, this 17th day of June, 1930.

JACOB H. FRIEDEL.