

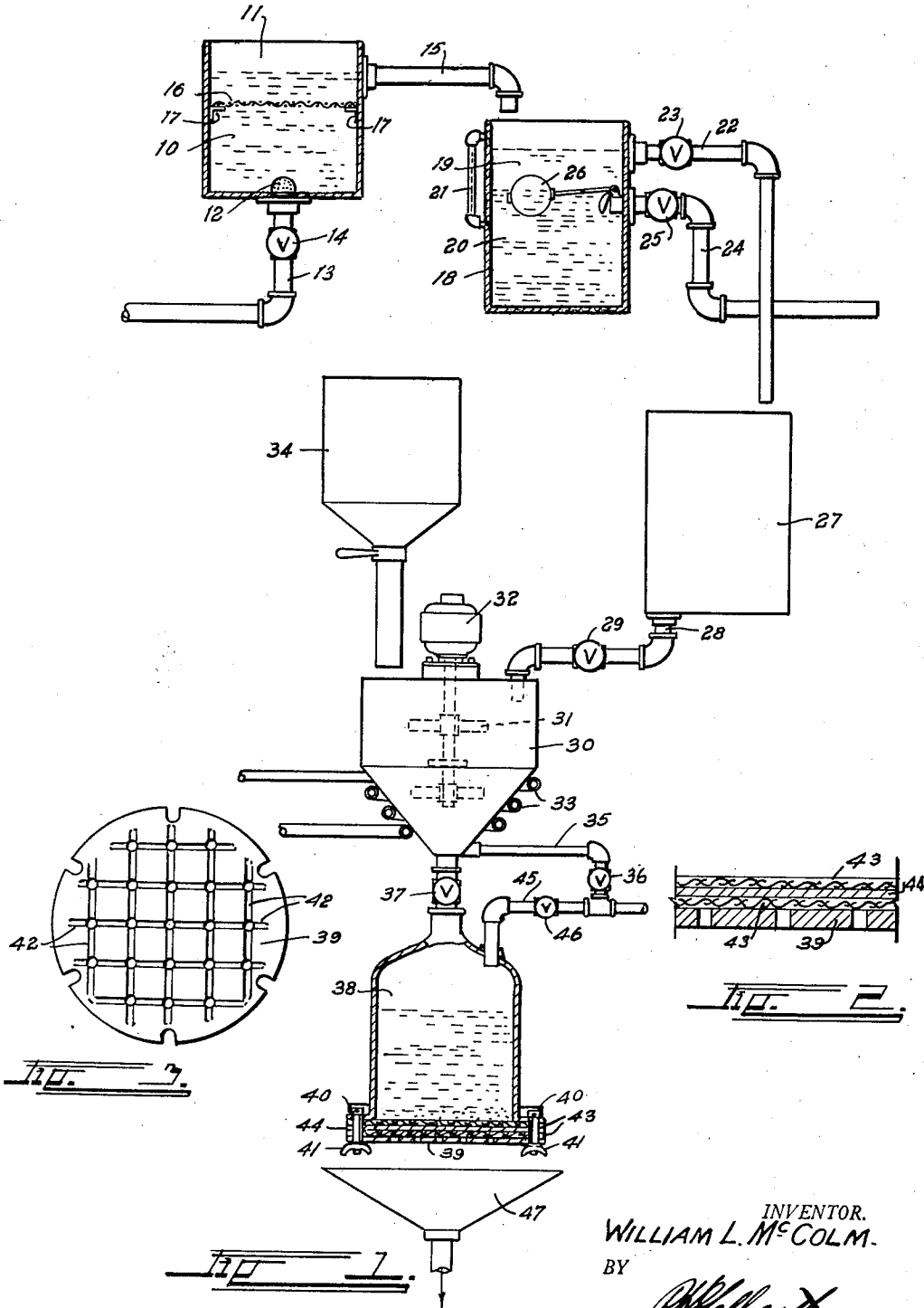
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PROCESS FOR RECOVERING WASTE COOKING OILS

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PROCESS FOR RECOVERING WASTE
COOKING OILS

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2 Claims. (Cl. 260—412)

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This invention relates to a method and means for reclaiming shortening and cooking oils used in the manufacture of potato chips, shoestring potatoes, and other deep-fat-fried products.

The principal object of the invention is to provide a simple and highly efficient method and means for quickly, easily, and economically reclaiming the used oils from waste factory products.

In the usual potato chip factory there is a large percentage of waste products caused by broken and discolored potato chips. These waste products must be discarded, and they carry with them a large percentage of the valuable cooking oils. This invention is designed to reclaim these oils from the products before the latter are discarded to waste.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 illustrates a diagrammatic flow sheet of the improved process;

Fig. 2 is an enlarged, detail, sectional view illustrating the type of filter medium employed in the improved process; and

Fig. 3 is a plan view of a filter plate employed in the improved process.

It is believed that the process can best be described and understood by following through a batch of waste potato chips. The waste and discarded chips, indicated at 10, are placed in an open-topped vat 11. The vat is provided at its bottom with a spray head 12, to which hot water is furnished from a hot water line 13 controlled by means of a water valve 14. The vat 11 is also provided with an overflow pipe 15 positioned below its open top.

After the chips 10 are in place, a screen 16 is forced down over the chips. The screen rests upon suitable angle supports 17 below the overflow pipe 15. Water at a temperature of from 180° F. to 200° F. is sprayed upwardly through the chips 10 until the surface of the water rises to the overflow pipe 12 and overflows therethrough. The hot water dissolves and washes the cooking oils from the waste chips 10 and floats the latter as a partial emulsion through the overflow pipe 15.

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The overflowing water and oils are received in a separating tank 18 where they are allowed to settle for a sufficient time to cause a gravity separation between the oils, indicated at 19, and the water, indicated at 20.

The tank 18 may be provided with a water level guage 21 by means of which the separation may be observed and/or the flow of water through the pipe 24 may be controlled by means of a float 26 so balanced that it will float on the water 20 but not on the oil 19. A water overflow pipe 24, controlled by a valve 25, leads from the tank 18 below the oil overflow 22. The oil 19 overflows through the oil overflow pipe 22 to a storage reservoir 27. The oil is drawn from the reservoir 27 through a discharge pipe 28 controlled by means of a valve 29. The oil discharging from the pipe 28 is received in an agitating and heating container 30. The container 30 is provided with any suitable agitating mechanism, such as paddles 31, driven from a motor 32, and with any suitable heating device, such as heating coils 33. The agitation may also be accomplished by means of compressed air introduced through a compressed air pipe 35 controlled by a valve 36.

The oil is agitated in the container 30 and heated by means of the coils 33 to a temperature of from 220° to 230° F. This heating vaporizes and drives off any remaining moisture in the oils.

During the heating and agitating, a filtering clay such as fuller's earth is added from a storage bin 34 at the rate of approximately ¼ ounce of fuller's earth for each pound of oil. After fifteen minutes of agitation with the fuller's earth under the influence of heat, the entire mixture is discharged through a discharge valve 37 into a pressure tank 38, the bottom of which is closed by means of a filter medium.

The filter medium is supported on a perforated metal plate 39 removably secured to the bottom of the tank 38 by means of hinged bolts 40 and wing nuts 41. The plate is provided with a plurality of shallow grooves 42 in its upper surface connecting the perforations therein to facilitate the flow of oil, as shown in Fig. 3.

The filter medium illustrated consists of discs of 10 oz. canvas 43, with a layer of filter paper 44 therebetween. The canvas and paper are clamped between the plate 39 and the tank 38 by means of the wing nuts 41. The resistance to flow caused by the canvas discs 43 and the filter paper 44 is sufficient to prevent the oil 19 from flowing under the influence of gravity. The oil, however, is forced through the filter medium by means of compressed air from a pressure line 45 controlled by an air valve 46.

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The air employed is under a pressure of from 100 to 125 p. s. i. This is sufficient to force the oil through the filter medium and through the layer of fuller's earth which accumulates on the filter medium so that only clarified oil discharges from the perforations in the plate 39. The purified and filtered oil is received in any suitable collector 47 and is ready for reuse in frying potato chips and other potato products.

After the oil has been extracted the nuts 41 are loosened and the bolts 40 are swung aside to discharge the filter cake from the tank 38. The pulp from tank 11 always contains some residual oil and all of the food values of the original potatoes and can be used for feeding hogs and other animals. The water from the pipe 24 of the separating tank 18 may be discarded to the sewer.

While a specific form of the improvement has been described and illustrated herein, it is to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A method of reclaiming cooking oil from waste fried potato products comprising passing hot water through a mass of fried potatoes to soften and carry off oil from the potatoes, delivering intermingled oil and water to a settling zone and separating the oil from the water by flotation, delivering the separated oil and any residual water therein to a mixing zone, heating

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and agitating the oil at a temperature of 220°-230° F. to drive off any remaining moisture, mixing filtering clay with the heated oil during the agitation, and passing the heated oil through a filter and removing the clarified oil from the filter cake.

2. A method of reclaiming cooking oil from waste fried potato products comprising passing hot water through a mass of fried potatoes to soften and carry off oil from the potatoes, delivering intermingled oil and water to a settling zone and separating oil from the water by flotation, delivering the separated oil and any residual water therein to a mixing zone, heating and agitating the oil at a temperature of 220°-230° F. and forcing air through the mixture to drive off any remaining moisture, mixing filtering clay with the heated oil during agitation, and passing the heated oil and removing clarified oil from the cake.

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