United States Patent [19]

Mizuno

[11] **3,755,184**

[45] **Aug. 28, 1973**

[54] **CLEANING TEFLON-COATED COOKWARE**

[75] Inventor: **William G. Mizuno**, St. Paul, Minn.

[73] Assignee: **Economics Laboratory, Inc.**, St. Paul, Minn.

[22] Filed: **June 18, 1971**

[21] Appl. No.: **154,676**

[52] **U.S. Cl.** **252/171**, 134/40, 252/309, 252/316

[51] **Int. Cl.** **C11d 7/52**

[58] **Field of Search** 252/171, 316, 309; 134/40

[56] **References Cited**

UNITED STATES PATENTS

2,123,434	7/1938	Paulson et al.	134/40
2,390,609	12/1945	Minich	252/316
2,620,345	12/1952	Dean	252/316
2,733,154	1/1956	Taylor	252/171
2,969,328	1/1961	Ellenson et al.	252/171
3,206,410	9/1965	Moller et al.	252/309

Primary Examiner—William E. Schulz
Attorney—Merchant & Gould

[57] **ABSTRACT**

Teflon-coated cookware is cleaned with a cleansing agent containing a lower chlorocarbon (e.g., trichloroethylene) , preferably in admixture with a thickening agent (e.g., aluminum stearate) and a cooking oil.

5 Claims, No Drawings

CLEANING TEFLON-COATED COOKWARE

BACKGROUND OF THE INVENTION

The repeated use of Teflon-coated cookware, particularly for frying, results in the deposit of fat and oil residues on the surface of the Teflon. These residues tend to accumulate and, as a result of successive re-heating, polymerize to form varnish-like deposits. These deposits can eventually carbonize as a result of repeated heating, particularly if high temperatures are used. If the deposits become carbonized, there is no economically practical way to remove the deposits without partially or totally damaging the Teflon coating. Consequently, periodic use of a cleansing agent is necessary to avoid the prolonged build-up of cooking residues. The use of such cleansing agents removes the deposits or soil from the Teflon while they are still removable.

Although Teflon-coated cookware is a fairly recent innovation, it is often cleaned with conventional alkaline cookware cleaners formulated for cleansing coffee pots and destaining plastic dishware.

Prior art cleansers for cookware generally contain detergent salts such as sodium perborate, sodium silicate, sodium tripolyphosphate and the like. Cleaning compositions presently available in commercial quantities for this purpose are normally used by filling or partially filling the Teflon-coated cookware with water, adding the cleansing composition to the water and simmering the water in the cookware for from 20–30 minutes. Thereafter, the liquid contents of the cookware are discarded, and the cleansed cookware is rinsed and dried. Usually, the clean Teflon does not have "non-stick" properties and must be re-conditioned or "seasoned" to be returned to a "non-stick" state. This is accomplished by smearing or otherwise coating the clean Teflon surface with a cooking oil and then heating the oil-coated, Teflon-coated cookward to "season" the Teflon.

SUMMARY OF THE INVENTION

The present invention involves the discovery that lower molecular weight chlorocarbons can be used to more quickly clean Teflon-coated cookware. Desirably, the chlorocarbon is used in admixture with a thickening agent and a cooling oil.

DETAILED DESCRIPTION

Chlorocarbons

It has been found that lower chlorocarbons (e.g., C_1 – C_2 chlorocarbons) such as trichloroethylene cause swelling and softening of the varnish-like coatings which are formed on the Teflon surfaces of Teflon-coated cookware. After contact with a suitable chlorocarbon, the swollen and softened deposits can be removed from the cookware by gentle rubbing with a rag, paper towel, or other kitchen aid. Other liquid chlorocarbons which can be used include tetrachloroethylene ($Cl_2C=C\,Cl_2$), tetrachloroethane ($Cl_2\,CH-CH\,Cl_2$), trichloroethane ($Cl_3\;C\;CH_3$), methylene chloride (CH_2Cl_2) and the like. The desired characteristics are freedom from strong odors, no significant residual odor, and volatility of such a nature that the chlorocarbon will evaporate slowly enough to remain in the pan long enough to soften polymerized fats, and desirably evaporate completely and quickly enough at room temperature to render the cookware substantially free of chlorocarbon residue within several minutes after cleaning the cookware so that it does not have to be washed with soap and water prior to use and so that no toxic residues are left behind. Of the various chlorocarbons, trichloroethylene is preferred. If desired, mixtures of chlorocarbons can be used.

Thickening agents

Although chlorocarbons can be used alone, it has been found advantageous to incorporate a thickening agent into the chlorocarbon. The thickening agent serves to increase the viscosity of the volatile chlorocarbon so that it will spread along the surface of the Teflon and cling to the surface. Any compatible thickening agent can be used, although all do not serve with equal effectiveness. For example, one high molecular weight polymer of ethylene oxide (Polyox, a product of Union Carbide Corporation) is a satisfactory thickening agent but produces a "slimy" feel to the resulting cleaning composition. Non-toxic metal soaps are particularly useful. Aluminum stearate is the preferred thickening agent. The amount of thickening agent used is a matter of selection within the skill of the art and will depend upon the particular thickening agent selected and the particular chlorocarbon to be thickened. If desired, mixtures of thickening agents can be used.

Cooking oils

Still further, it is desirable to use the chlorocarbon in combination with a cooking oil, regardless of whether or not a thickening agent is used. The edible cooking oil is included so that the cleaned Teflon surface does not need to be reconditioned or seasoned prior to reuse to thereby regain its non-stick properties.

The present invention is further illustrated by the following specific examples which include a preferred embodiment. Unless otherwise indicated, all parts and percentages are by weight.

EXAMPLE 1

This example illustrates the preparation of a cleaning composition suitable for use in cleaning Teflon-coated cookware.

90 ml. trichloroethylene are warmed to 60°– 70°C. 1.5 grams of finely divided aluminum stearate are sprinkled over the surface of the warm trichloroethylene and the resulting mixture agitated to prevent "clot" formation. After thorough mixing, 10 ml. vegetable cooking oil (e.g., corn oil) are added with agitation. The resulting liquid composition can be colored and perfumed, as desired.

EXAMPLE 2

This example illustrates the use of the cleaning compositions of the present invention to clean Teflon-coated cookware.

A Teflon-coated frying pan was selected for treatment. This pan had a varnish-like deposit over the surface of the Teflon, which deposit had been created by the repeated use of the pan for cooking purposes. The cleaning composition of Example 1 was poured into the pan and spread over the Teflon surface. Heating was not required for cleansing. After a few minutes at room temperature, the varnish-like residue became softened and swollen. The softened deposits were wiped from the pan with a soft towel. The trichloroethylene evaporated within a few minutes leaving behind a residue of aluminum stearate and vegetable oil. Further seasoning of the Teflon-coated cookware was not required and

the clean pan was able to be used for additional cooking and it exhibited "non-stick" properties.

What is claimed is:

1. A composition suitable for use in cleaning Teflon coated cookware consisting essentially of,

a. a fat and oil residue-dissolving amount of lower chlorocarbon,

b. an amount of non-toxic metal soap sufficient to thicken the lower chlorocarbon to a viscous liquid, and

c. a Teflon cookware-seasoning amount of a vegetable cooking oil, said seasoning amount of said vegetable cooking oil being less than the amount of lower chlorocarbon.

2. A cookware cleaning composition consisting essentially of:

a. about 90 parts by volume of trichloroethylene,

b. about 1.5 parts by weight of aluminum stearate, and

c. about 10 parts by volume of corn oil.

3. A method for removing cooking residues from Teflon-coated cookware and seasoning the Teflon coating comprising the step of:

contacting the Teflon coating with a liquid composition consisting essentially of at least one lower chlorocarbon and at least one edible cooking oil, said composition being thickened with a viscosity-increasing amount of at least one thickening agent.

4. A method according to claim 3, wherein the thickened composition consists essentially of trichloroethylene and a vegetable oil.

5. A composition according to claim 1 wherein said chlorocarbon is selected from the group consisting of trichloroethylene, tetrachloroethylene, tetrachloroethane, trichloroethane, methylene chloride, and mixtures thereof, and wherein said thickening agent is aluminum stearate.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,755,184 Dated August 28, 1973

Inventor(s) William G. Mizuno

It is certified that error appears in the above-identified pate and that said Letters Patent are hereby corrected as shown below:

In column 1, line 37, for "cookward" read --cookware--.

In column 1, line 45, for "cooling" read --cooking--.

In column 1, line 46, for "Detailed Description" read --Detailed Discussion--.

Signed and sealed this 11th day of December 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

RENE D. TEGTMEYER
Acting Commissioner of Patents