Patented Apr. 14, 1953

2,635,040

UNITED STATES PATENT OFFICE

2,635,040

SILICONE-IMPREGNATED SURFACES SUITABLE FOR IRONING

Thomas J. Rasmussen, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York

No Drawing. Application April 19, 1949, Serial No. 88,491

1 Claim. (Cl. 38—144)

1

This invention relates to a method of treating flatirons and similar ironing appliances having metallic ironing surfaces, and articles of manufacture which can be used for effecting treatment of the ironing surfaces of such flatirons.

In ironing with a flatiron, great difficulty has been experienced in ironing starched surfaces due to an accumulation or build-up of starch on the ironing surface of the iron. Moreover, when ironing linen cloth, great care must be exercised lest scorching of the cloth takes place. Again, when ironing certain fabrics, such as rayon, there is a tendency for the iron to "drag" the rayon so as to pull it over the ironing pad by the iron.

Several suggestions have been made for overcoming the above difficulties encountered in using flatirons. One method comprises treating the surface of the flatiron with oily or waxy materials. Thus, the hot surface of the flatiron has been coated with either wax or mineral oil. In the case of the wax coating, it was found that the degree of "slip" was improved slightly. The mineral oil additionally improved the degree of slip, but in the case of both the wax and the mineral oil there was a tendency of the lubricating material to decompose and to contaminate the surface of the flatiron. In addition, a great deal of objectionable odors were given off as a result of the decomposition of the mineral oil.

I have now discovered that all the foregoing disadvantages can be obviated by coating the ironing surface of a flatiron with a thin film of a non-thermosetting silicone. By means of my invention, undesirable build-ups of starch are avoided when pressing starched fabrics, scorching of such sensitive materials as linens is materially reduced, and the surface of the flatiron can be caused to slip over rayon fabrics with scarcely any perceptible drag of the latter.

In accordance with my invention, the ironing surface of the flatiron is coated by suitable means with a liquid non-thermosetting silicone or organopolysiloxane. One method comprises wiping the ironing surface of the iron on a cloth or paper (e. g., asbestos) pad impregnated with the aforementioned non-thermosetting silicone. Such pads, which may comprise one layer or a series of superposed layers, may take the form of a heat-resistant cloth or paper pad impregnated with any suitable amount of a liquid silicone. It is preferred that the pad be porous and capable of absorbing the silicone in varying amounts. Among such heat-resistant pads may be mentioned various materials, such as asbestos cloth, glass cloth, nylon cloth, asbestos paper, etc.

2

The amount of non-thermosetting silicone employed may be varied within wide limits depending on the absorbing surface used and depending upon the degree of impregnation desired. Generally, the heat-resistant, fibrous pad may contain from 1 to 50 (e. g., from 5 to 25) or more per cent, by weight, thereof of the non-thermosetting silicone. I have found that an asbestos cloth pad impregnated with about 20 per cent, by weight, of a liquid methylpolysiloxane has been in continuous use for almost nine months and was still giving satisfactory results at the end of such time. In many instances, it has been found desirable to rest the ironing surface of the iron on such a pad during ironing operations. This is the reason that heat-resistant materials are preferably used with the non-thermosetting silicone. It will of course be understood that other less heat-resistant materials, such as cotton, canvas, etc., may also be employed.

It will, of course, be apparent to those skilled in the art that other methods may be employed for coating the ironing surface of the iron with the non-thermosetting silicone and it is not intended that the claimed invention be limited to the method described above. Thus, I may use a silicone rubber containing a small amount of volatile non-thermosetting silicones, as, for instance, organopolysiloxane rubbers of the type disclosed and claimed in Agens Patent 2,448,756, issued September 7, 1948 and assigned to the same assignee as the present invention.

The term "silicones" herein employed and in the appended claims is intended to mean and include organopolysiloxanes having alternate silicon and oxygen atoms in the skeletal structure, and containing silicon-bonded hydrocarbon radicals. Such hydrocarbon radicals may comprise, for instance, alkyl radicals (e. g., methyl, ethyl, propyl, isobutyl, amyl, decyl, etc.); aryl radicals (e. g., phenyl, napthyl, anthracyl, etc.); alkaryl radicals (e. g., tolyl, xylyl, etc.); aralkyl radicals (e. g., benzyl, phenylethyl, etc.); cycloalkyl radicals (e. g., cyclopentyl, cyclohexyl, etc.); heterocyclic radicals, etc. Stated alternatively, when an alkylpolysiloxane is employed, such material may also be identified as an "alkylated siloxy" composition in which some of the carbon atoms may, if desired, contain phenyl radicals or other organic radicals attached thereto by C-Si linkages. The hydrocarbon substituent may be substituted with essentially inert substituents as, for example, halogens, etc.

The usual silicones employed in the practice of my invention generally should be liquid and

preferably non-thermosetting as compared to the thermosetting silicones of the silicone resin variety. Viscosity of the non-thermosetting silicones is of little criticality, but generally for ease in impregnation of the fibrous pads employed in the manner described above, it is preferable that the silicone be of sufficient fluidity for that purpose. Generally, viscosities of the order of from 50 to 5,000 centistokes have been found to be suitable.

In the choice of the non-thermosetting silicone it has been found preferable in many instances to employ organopolysiloxanes having an average ratio of, for instance, from about 1.9 to 3.0, especially from 1.95 to 2.5, organic groups per silicon atom. Many such organopolysiloxanes are more particularly disclosed and claimed in the copending application of Wilcock, Serial No. 656,162 filed March 21, 1946 and Patnode applications Serial Nos. 463,813 and 463,814 filed October 29, 1942, the former Patnode application now being abandoned and the latter Patnode application now issued as U. S. 2,469,888, on May 10, 1949, all the foregoing applications being assigned to the same assignee as the present invention. In general, I prefer to use polymeric methyl siloxanes (methyl silicones), or polymeric methyl phenyl siloxanes (methyl phenyl silicones) whose organic substituents are present in the above-mentioned ratio. However, I do not intend to be limited to these particular silicones nor to these particular ratios of organo groups since, as pointed out previously, other silicones and other ratios of organic groups to silicon atoms may be employed without departing from the scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

In the process for ironing clothes which may scorch easily or which may adhere undesirably to the hot ironing surface of a flatiron, the improvement which comprises contacting the hot ironing surface of the iron with a porous fibrous pad impregnated with from 5 to 25 percent, by weight, thereof of a methylpolysiloxane in which the methyl groups are attached to the silicon atoms by carbon-silicon linkages, there being present in the methylpolysiloxane from 1.95 to 2.5 methyl groups per silicon atom, whereby a thin film of the aforesaid methylpolysiloxane is deposited on the hot ironing surface of the flatiron, and thereafter carrying out the pressing operation whereby scorching and sticking of clothes during pressing is materially reduced and the passage of the hot iron over the clothes during the pressing operation is substantially enhanced.

THOMAS J. RASMUSSEN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
350,966	Barnes	Oct. 19, 1886
586,985	Woisard	July 27, 1897
1,455,484	Grenda	May 15, 1923
1,647,545	Rocco	Nov. 1, 1927
2,377,689	Hyde (1)	June 5, 1945
2,384,384	McGregor et al.	Sept. 4, 1945
2,389,216	Smith	Nov. 20, 1945
2,432,665	Hyde (3)	Dec. 16, 1947
2,452,254	McGregor et al.	Oct. 26, 1948
2,462,267	Hyde (2)	Feb. 22, 1949
2,469,888	Patnode	May 10, 1949

OTHER REFERENCES

Sanderson, British Plastics, October 1946, Pages 459-464.