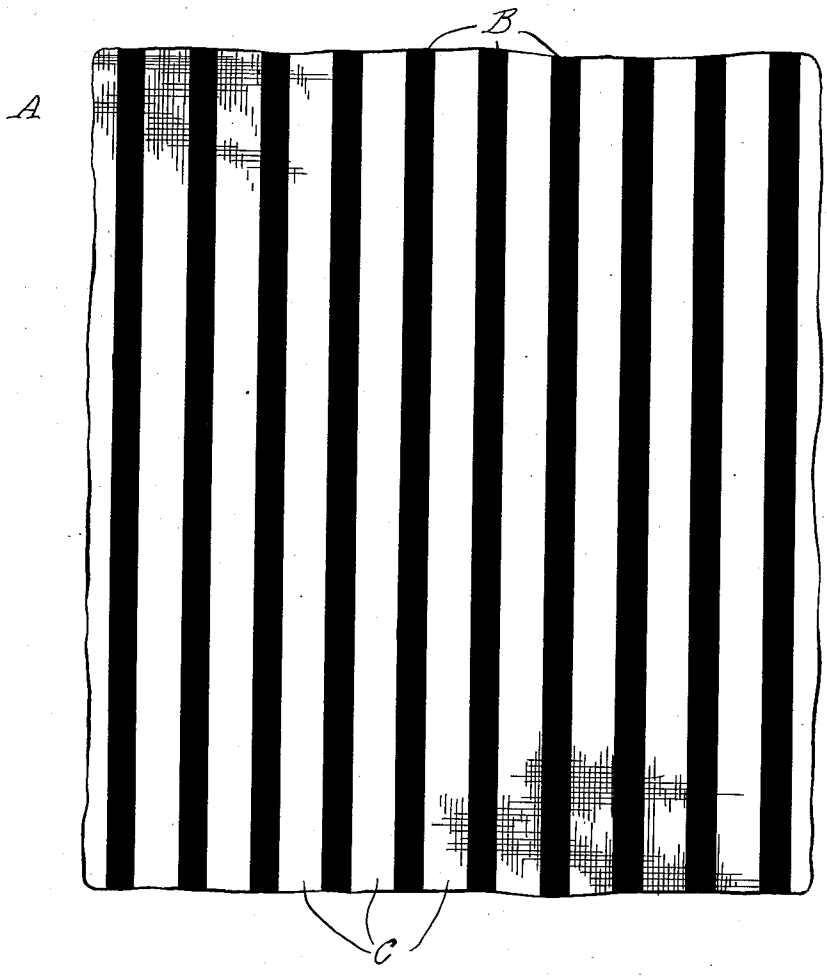
April 21, 1931. F. H. GUERNSEY ET AL 1,802,052

STANDARD SOILED MATERIAL AND METHOD OF PREPARING SAME

Filed Jan. 28, 1928



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Patented Apr. 21, 1931 1,802,052

UNITED STATES PATENT OFFICE

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STANDARD-SOILED MATERIAL AND METHOD OF PREPARING SAME

Application filed January 28, 1928. Serial No. 250,329.

This invention relates to cloths or other articles which have been soiled by a standard composition for the purpose of using these articles as a basis for testing the effectiveness of a cleansing operation, and to methods of preparing such cloths or articles.

The objects of this invention are to provide an artificially soiled cloth or article of a kind which will serve as a standard in the measurement or comparison of the efficiency of various detergent compositions or other cleansing media, or of washing processes or apparatus; also to provide a soiled article of this kind in which the soiling composition is applied thereto in such a way as to leave a number of portions of the article unsoiled in such a manner that any traces of the soiling composition remaining on the article after washing the same will be readily visible by contrast with the unsoiled portions of the article also to provide a standard soiled article which can be easily and inexpensively produced and by means of which the efficiency of detergents, washing processes or apparatus can be determined without the use of special apparatus or chemical analysis to determine the efficiency of the composition, process or apparatus employed; also to provide a method of preparing standard soiled articles of this kind in which the soiling composition is uniformly applied to the articles; also to improve articles of this kind and methods of making the same in other respects hereinafter specified.

Laboratory methods of determining detergent efficiency are largely based upon measurements of interfacial tension lowering, deflocculation of various inert solids and liquids, foaming values, etc., but we have early recognized that the mechanism of cleansing is based upon at least two distinct steps, namely; separation of the adsorbed soil from the surface to be cleansed, and secondly, deflocculation of the separated soil in such manner that the suspension or emulsion formed will be sufficiently stable to resist the dilution incident to rinsing without "cracking" or flocculation. While ordinary laboratory tests result in a measure of the emulsifying or suspending power of the detergent system, they do not in any way measure the effectiveness of the detergent system from the standpoint of separating the soil from the surface to be cleansed. Furthermore, this phase of the cleansing process is regarded as of the greatest importance since the soil must be separated from the surface before it may be deflocculated, and furthermore, any unseparated soil later appears as stains or discoloration.

In textile cleansing, attempts have been made to account for these factors by saturating a piece of cloth or yarn with a soiling mixture, by immersion in a solution of the soiling mixture in a volatile solvent, the latter being later evaporated from the fiber leaving the soiling ingredients deposited in the fiber. The difficulties of such methods are well known to workers who have pursued investigations of this nature. It is next to impossible to produce uniformly soiled goods because of difficulties in deflocculation of carbon black and other soiling agents in volatile solvents and unless extreme care and speed in drying are carried out the solvent will tend to flow into loops in the cloth and carry greater portions of the more soluble agents into such areas. Also it is next to impossible to prepare any quantity of such cloth for extensive work and as it is not reproducible by others for collaborative work it is of no value as a standard.

Aside from the difficulties of preparation of such cloth, washing tests upon it involve the problem of measuring the degree of whiteness obtained and this obviously is very involved and beyond the scope of facilities available to many persons, such for example, as laundry men, interested in comparative detergency tests under conditions existing in their respective industrial plants.

In accordance with our invention any desired cloth, textile material, or other article may be employed, and a suitable soiling composition may be applied thereto in such a manner as to form a pattern or design of such a nature that many portions of the cloth or textile material remain uncovered by the soiling composition, so that the soiled and unsoiled portions of the textile material are

arranged in alternate or interrupted relation to each other. The soiling composition may, for example, be applied to the cloth in the form of stripes, bars or any other desired design or pattern. The cloth or textile material may be initially white or of any other color which contrasts with the color of the soiling composition.

In the accompanying drawing, the figure represents a face view of one form of a standard soiled material embodying this invention.

In the drawing, A represents a piece of cloth having the soiling composition thereon in the form of bars or stripes B. These stripes are spaced apart, leaving unprinted portions C of the cloth.

The soiling composition itself does not form a part of this invention and may be varied, as desired. For example, a combination of ingredients of the soiling composition may be selected so as to be representative of the character of a certain soil which is to be investigated, or a combination of ingredients may be selected only for their known resistance to cleansing and for their varied properties. By way of example, the composition may include the following ingredients:

	Parts
Wheat starch	57
Gum tragacanth	3
Tallow	11
Mineral oil	11
Carbon black	17

Water sufficient to produce a creamy consistency.

Since the amount of washing or other cleansing operation necessary in order to remove the soiling composition from a sample of cloth or other material depends to some extent upon the amount of quantity of soiling composition which has been placed upon the cloth or other material, it is desirable to secure a uniform deposit of the soiling composition upon the material. This may be effected by mechanical means in different ways. The composition may be sprayed upon the goods or the composition may be transferred to the goods by means of rubber stamps. Preferably, however, the soiling composition is applied to the articles by means of a printing machine, such as a standard textile printing machine in which a soiling composition is applied to the printing cylinder or plate and in turn transferred to the goods. When a printing machine of this kind is used a very uniform distribution of the soiling composition upon the cloth or other articles is effected. In this manner all pieces of cloth discharged from the printing machine will have the same amount of soiling composition printed thereon. The moisture in the soiling composition is quickly evaporated, leaving a deposit of the soiling mixture on the goods, which deposit has sharp edges contrasting with the unsoiled portions of the goods.

This method of preparing a standard soiled cloth or article produces an article which is uniformly soiled and which is readily reproducible, so that all such soiled articles, whether produced in one place or in another, and by one person or another will be uniform and will require the same amount of time for washing or removing the soiling composition therefrom with a given detergent, process or apparatus. The article thus produced is locally impregnated with the standard soiling composition, the color of which contrasts with the unsoiled portions of the article. When such an article is washed or subjected to a cleansing process, the progress of soil removal is easily observed by the vanishing of the design or pattern on the article when compared with the unsoiled portions of the article. When all traces of the design or pattern and the outlines thereof have disappeared, the cloth or article may be considered clean, and the number of treatments required for entirely removing the soiling composition may be accepted as an index of the detergent value of the detergent system under investigation or of the effectiveness of the system or apparatus employed. No instrumentalities for measuring the whiteness of the washed articles need be employed since by applying the soiling composition on the article in the form of a design or pattern with unsoiled portions of the article arranged in frequent intervals with the soiled portions, the disappearance of the design or pattern from the soiled article is readily visible with the naked eye, so that the soiled article embodying this invention is of particular value for general industrial application and enables a person unskilled in scientific research to readily determine the value or efficiency of a detergent composition, of a washing machine, or of any other cleansing operation. The real test of detergency lies in the power of removing the last trace of the soil. In the use of our improved soiled articles, the greatest amount of soil or the upper layers of the soiling composition are readily removed in the first few treatments or washings of the soiled cloth, but the removal of the tightly adsorbed soil, closest to the fiber of the article requires greater activity on the part of the detergent system or apparatus.

Claims:—

1. A standard soiled cloth for use in testing the effectiveness of cleansing operations, said cloth having a definite quantity of a soiling composition including a plurality of ingredients and removable from the cloth by a cleansing operation said composition being printed on the cloth to form a pattern and leaving portions of the cloth uncovered at

frequent intervals between printed portions, said unsoiled portions by contrast enabling remaining slight traces of soiling composition to be readily detected by sight.

2. A standard soiled cloth for use in testing the effectiveness of cleansing operations, said cloth having a definite quantity of a soiling composition removable from the cloth by a cleansing operation printed thereon to form a pattern and leaving portions of the cloth uncovered at frequent intervals between printed portions, said soiling composition including superficial portions which are readily removable by a cleansing operation and other portions which are intimately associated with the fibers of the cloth and are removed with greater difficulty.

3. A standard soiled article for use in testing the effectiveness of cleansing operations, said article having a standard soiling composition removable from the article by a cleansing operation, uniformly applied to portions only of a face of the article by printing at intervals sufficiently small to produce a uniform deposit of soiling composition on the printed portions of the surface, the unprinted portions of the articles serving as standards of comparison between soiled and unsoiled portions of the article after washing and ensuring uniform application of the composition to the printed portions.

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