METHOD OF DRY CLEANING FABRIC AND SIMULTANEOUSLY RENDERING THE SAME ANTISTATIC

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Fig. 1.

Fig. 2.

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METHOD OF DRY CLEANING FABRIC AND SIMULTANEOUSLY RENDERING THE SAME ANTISTATIC

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1 Claim. (Cl. 117—47)

This invention relates to an improved method of and compositions for cleaning fibrous and non-fibrous materials. More particularly, the invention relates to improved methods of dry cleaning fibrous materials and for cleaning and polishing non-fibrous materials such as plastic or resin massive molded objects, and to the new compositions for use in these operations.

During dry cleaning of textiles such as articles of clothing (or of other fibrous materials including blankets, draperies and the like) considerable difficulty is encountered due to the occurrence of static charges at the different stages of the dry cleaning procedure. Thus, in commercial dry cleaning establishments, the static charges may occur in the washer in which the clothing is cleaned, in the tumbler in which the cleaned clothing is dried, and in the finishing department where the clothes are pressed and prepared for return to the customer. Static electricity exerts specific effects in each of these stages of the overall dry cleaning process and whenever, or wherever, it develops it is objectionable and detrimental.

The media conventionally used in dry cleaning are non-aqueous and non-conductive. Textiles washed in such solvents are in a "dry" state and because of this the friction created by rubbing of the garments or the like against themselves or against the moving chamber of the washer, produces much frictional electricity that sparks may jump between the oppositely charged components of the system. This source of static electricity has actually been the cause of fires in dry cleaning houses. A more common and troublesome result of this electrical charge developed by and upon the fabric is the tendency of lint or of the clarification powder used in some dry cleaning processes to become firmly adhered to the fabric.

If it is attempted to clean fabrics of different type and color in a single run or load, for example a nylon garment of one color and one comprising shaggy wool of a different color, lint from the wool garment will migrate to and become firmly fixed on the nylon fabric to remain affixed thereto through the complete cleaning cycle including the drying and finishing stages. The differently colored lint can only be removed from the fabric to which it is bonded by electrostatic forces by vigorous brushing which may be harmful to the garment. Even with vigorous brushing, it is often very difficult to remove all of the lint.

Of course, this is only an illustrative example of what happens under ordinary conditions when nylon and woolen articles are dry cleaned together. The same phenomenon occurs with other types of fibrous materials when the conditions are such that the accumulation of the electrostatic charges inevitably generated is not prevented. Because of this problem, it is the practice of the dry cleaning establishments to separate the garments or the like on the basis of color and kind and to dry clean and rise them separately, on that basis, so that migration of soil and lint of one color to, and fixing thereof on, garments of another color is avoided. Even when garments of like kind and color are cleaned or rinsed together, however, electrostatic charge accumulation is a problem because of the tendency of the charged garments to be attracted to, and stick to, the metal parts of the washer.

It has been attempted to reduce or eliminate the hazard of electrostatic charge development and accumulation in the washer by incorporating certain dry cleaning soaps and/or detergents in the dry cleaning solvent. However, the known dry cleaning soaps and detergents have, in themselves, very little inhibitory effect on the accumulation of electrostatic charges and no capacity to be adsorbed to fibrous or non-fibrous materials. Therefore, if this expedient occasionally results in any noticeable reduction of the electrostatic charge accumulation in the washer, it contributes little or nothing to elimination of the problem of static charge development and accumulation in the drying tumbler since the soaps or detergents are lost during the rinsing which precedes the drying step.

Therefore, even if the garments are cleaned in a system containing a dry cleaning solvent modified by the inclusion of one of the known detergents or dry cleaning soap the clothes become strongly electrified when, after the rinsing, they are introduced into the dryer. Once electrified therein, the attraction of lint and soil from fabric bearing one charge to fabric bearing an opposite charge, or sticking of the charged fabrics to the machine parts, cannot be avoided. The migration of lint from a garment of one color to a garment of another color, in the drying tumbler is a serious problem for the dry cleaner which cannot always be avoided by exercising care in separating a lot of clothing into batches for individual cleaning since many fabrics nowadays comprise fiber blends the nature of which may be unknown.

The problem is not confined to woven material. Trimmings and the like made of plastic and synthetic resins are also subject to the objectionable effects of static electricity. Much effort is required before the final pressing and finishing in order to remove lint fixed on the garments during drying thereof. Also, at both the washing and drying stages, difficulty is experienced in removing the garments from the washer or dryer. Considerable pulling is necessary to remove the garments individually when they are attracted to each other or to the walls or other members of the machines.

Nor does the problem end with the drying operation. If all the lint is brushed or plucked off the dried garment, it still remains in the charged condition and the problem of the migration of lint from one garment to another, and the fixing of dust from the air on the fabrics, continues to harass the operator during the pressing and finishing steps. If he succeeds in removing the lint and/or dust fixed to the fabric during the earlier stages of the dry cleaning process, he is again confronted with the problem as the garments proceed through the pressing and final finishing stages of the dry cleaning cycle.

Moreover, the pressed, finished garments may become electrified by frictional contact with each other when they are hung side by side on the delivery line and pick up lint, dust or other extraneous matter before the operator has an opportunity to put the garments into separate protective paper bags or other wrappers or containers. Many types of fabric attract dust and lint when they are worn, especially after dry cleaning by the conventional methods. Wool broadcloth, serge and so-called "wool-crepes" have in particular this disadvantage and garments made therefrom are frequently criticized because they "pick up everything they touch.

Therefore, it has been proposed to solve the problem of electrostatic charge development and accumulation during drying by applying to the garments or the like, by
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dipping or spraying techniques, and usually between the rinsing and drying steps, various water-soluble or water-dispersible amine salts, amine derivatives and quaternary ammonium compounds. This does not solve the problem during the washing stage and is objectionable for the reason that water or aqueous carriers are required and have a harmful effect on many types of fabrics which must be dry cleaned rather than laundering for the very reason that they are susceptible to damage by water or aqueous media.

The effectiveness of these water-soluble anti-statics depends on their capacity to pick up and retain moisture which renders them conductive. The water-soluble anti-static agents of the types mentioned are only temporarily or partially effective, even if it is safe to apply them in the aqueous carrier to the given fabric being dry cleaned, and do not impose or induce on the fabrics sufficient conductivity to accomplish the objectives of this invention as set forth hereinbelow.

Failure of these water-soluble antistatic agents to render and maintain fibrous and non-fibrous materials conductive may be attributed to a number of reasons including, in the case of many amine derivatives more especially, an inability to retain sufficient moisture to produce the necessary conductive effect. Also, some of the water-soluble anti-statics are decomposed or chemically altered by heat during and pressing, or by exposure to light, air and moisture, the decomposition or chemical modification rendering them inactive as static eliminating aids.

This problem of electrostatic charge accumulation is not confined to fibrous materials. It occurs when the surfaces of shaped or molded articles are cleaned or polished, mechanically or by hand-brushing or rubbing, with dry cleaning compositions. The cleaning or polishing operation may leave a charged surface which is highly attractive to dust, soil, lint and the like.

One object of this invention is to provide a method of cleaning or polishing fibrous and non-fibrous materials in which the accumulation of static charges is inhibited or prevented.

Another object is to prevent or inhibit the accumulation of static electrical charges during the dry cleaning of clothing and the like, at all stages of the dry cleaning procedure without subjecting the clothing to water or aqueous media.

A further object is to provide a new method of dry cleaning clothing and the like in which the clothing is rendered static-free during washing and cleaning by application of a dry cleaning solvent and remains in the anti-static conductive condition throughout and after drying and finishing thereof.

Another object is to provide a method of dry cleaning or polishing fibrous and non-fibrous materials without causing lint or soil to be attracted to and fixed on the material as a result of a static charge thereon inducing migration of oppositely charged lint or soil thereto.

It is also an object to provide a method of dry cleaning fibrous and non-fibrous materials in which the accumulation of static electrical charges on the material is inhibited or prevented without any fundamental change in conventional dry cleaning procedures or the sequence of steps involved therein.

Still another object is to provide a method of cleaning hard non-fibrous surfaces, such as the surfaces of films and other molded or shaped objects comprising plastic or synthetic resin masses without the accumulation of static charges.

The antistatic agents which may be used in practicing this invention, to achieve the stated objectives, include quaternary ammonium compounds having a molecular structure such that they form stable solutions of 0.02% to 10% by weight concentration in conventional dry cleaning solvents which, as is well known, are generally either hydrocarbons or chlorinated hydrocarbons.

These quaternary ammonium compounds must contain an anion component, which may be halogen, sulfite which may be in the form of a sulfate, phosphorus in the form of a phosphoric or phosphite group, or an organic group which may be an unsaturated higher fatty acid radical such as an oleyl radical, or a radical derived from an acid of the oleic acid series; and a cation component which must comprise quaternary nitrogen the four valences of which are satisfied by different organic radicals such that the cation component taken as a whole, that is the nitrogen atom plus the four substituents, has a molecular weight of from at least 250 to 1000.

The organic radicals attached to the nitrogen atom may contain from 1 to 20 carbons and may be alkyl, acyl or aroyl. Radicals of these different groups may be present in the same quaternary compound. The soluble atom may be a member of a cyclic structure in which alkyl groups are attached to it through a "bridge" atom which may be oxygen.

The cationic component of the quaternary ammonium compound may comprise from 5 to 50 polyoxyethylene units which may be arranged in straight chain fashion or condensed with each other. Exemplary quaternary ammonium compounds which have been used successfully include the following: ethyl dimethyl octadecyl ammonium ethyl hydrogen phosphate having the formula

\[
\text{H}_2\text{C}_6\text{CH}_2\text{N} - \text{O} - \text{P} - \text{O} \cdot \text{H}
\]

N-oxy-N-ethyl morpholinium ethanesulfate, dimethyl benzyl dehydrodiethyl ammonium chloride, alkyl (C_3 to C_6) ethyl ammonium ethoxylate containing 30 polyoxyethylene groups, alkyl (C_3 to C_6) tolyl methyl trimethyl ammonium chloride and p-di-isobutyl phenoxymethylbenzyl ammonium chloride.

All of these compounds contain the required cation and anion active components rendering them soluble to the required extent in the dry cleaning solvents. They may be varied considerably with respect to the substituent groups comprising, with the nitrogen atom, the cationic component within the broad limits set forth above.

Other very effective antistatic agents for use in this invention are mono- and di-alkylated acid phosphates in which the alkyl radicals contain from 1 to 5 carbons, and mono- and di-arylated acid phosphates in which the aryl radical is of the benzene series. Particularly effective compounds in this category are: di-ethyl acid phosphate, mono-isooctyl acid phosphate, di-ethylamino acid phosphate and di-ortho cresol acid phosphate.

Another group of substances which are antistatics under the present conditions and meet the present requirements as to solubility in the dry cleaning solvents are the partial, preferably the mono-esters of polyhydric alcohols with higher saturated or unsaturated fatty acids. Dihydric alcohol esters, such as propylene glycol mono-oleate may be used, but more effective and therefor preferred, are the esters of polyhydric alcohols containing from three to six hydroxyl groups, including glycerol and the hexitols having some free OH groups and at least (and preferably) one OH group esterified with a saturated fatty acid of from 8 to 18, preferably 12 to 18 carbon atoms or with an unsaturated fatty acid such as oleic acid. There may be used, also, partial esters of the anhydro-hexitans. Examples of these compounds are: diglycol monolaureate, glycerol monostearate, sorbitan monolaureate, sorbitan trioleate, mannide mono-oleate, glycerol mono-oleate and sorbitan mono-oleate.

Still other, though less effective, antistatic agents which may be used in the present cleaning and polishing methods are naphthenic acid and ammonium naphthenate.

In dry cleaning fibrous materials these antistatic agents are used in conjunction with conventional dry cleaning soaps and/or detergents.

In one extremely important embodiment of the invention, fibrous materials, such as garments, blankets, draper-
lies, rugs, seat covers and the like are either washed in the dry cleaning solvent containing dry cleaning soap and/or detergents and the antistatic agent, or are washed in the dry cleaning solvent, rinsed in the same washing and rinsing solvent and then rinsed in a dry cleaning solvent solution or dispersion of the antistatic agent. In either case, the fibrous materials are thereby simultaneously washed or rinsed and rendered conductive and resistant to the accumulation of electrostatic charges at all subsequent steps of the dry cleaning cycle, including the drying and finishing steps.

The detergents used may be of the type conventionally used in dry cleaning, i.e., a dry cleaning soap or detergent which is more soluble in organic or dry cleaning solvents than in water. The commercially available products known as "Tweens" (polyoxyethylene condensates of partial polyhydric alcohol esters) may be used. Alkylated phenoxy polyoxyalkanols such as the detergent or surfactant available commercially under the designation "Ononito" Dispersant NI—O are very satisfactory. (Note—"Ononito" is a mixture of nonyl phenols condensed with 5 to 7 ethylene oxide units, and is marketed by Ononito Chemical Co., California.) Simple soap may be used. The only limitations on the detergent or dry cleaners' soap are these: it must be soluble or dispersible in the dry cleaning solvent and, when used in the washer with the antistatic, compatible therewith. Many detergents and dry cleaning soaps of this type are well known in the art; those specifically mentioned herein are illustrative, merely.

In the preferred treatment of textiles and other fibrous materials, the antistatic is included in the washer with the dry cleaning solvent and soap or detergent. The result is that, during the dry cleaning, a conductive film which prevents or inhibits the accumulation of the electrostatic charges inevitably developed by the friction, is formed on the fabrics which therefore do not become charged, exert an attraction for lint or soil, or adhere to the machine parts. This conductive film is firmly adsorbed to the fabrics, regardless of type or color, and may be fixed or anchored to the fibrous material in the manner of a substantive agent.

The strong adsorption of the conductive film to the fabrics appears to be a phenomenon resulting from the conjoint use of the organic solvent soluble detergent or soap and the antistatic, although the precise explanation for this effect is not present clearly apparent. Neither the antistatic nor the detergent of itself gives the same result. Unexpectedly, it is found that when the dry cleaning solvent contains the soap or detergent and an antistatic as described herein, it is possible to dry clean, in the same load and in the same washer, fabrics of different kinds, and colors, that is fabrics comprising or formed from, different types of fibers and in different colors, without experiencing any problem whatever due to the development and accumulation of electrostatic charges or the migration of color, soil or lint from one fabric to the other.

Moreover, the fabrics of different kinds and colors may be dried together in the same drying tumbler without difficulty. Shaggy woolen articles may be dried clean in the same washer with broadcloth and fancy evening clothes such as men's dress suits of serge or the like. I have dried wool in a single load in the same washer and in dry cleaners' naphtha containing 4% of a detergent and 1% of the quaternary ammonium, ethyl dialkyl ammonium ethyl hydrogen phosphate, such diverse items as nylon nurses' uniforms, natural silk dresses, a down comforter, and a cellulose acetate covering. I have dried shaggy wool blankets in green, pink and blue colors. There was no transfer of lint, color or soil from one fabric to the other, nor were any of the articles attracted to the sides of the machine. All of these articles remained resistant to the accumulation of electrostatic charges during rinsing, drying, pressing and final finishing, and could be hung or laid side by side when finished, without lint from the shaggy wool, for example, becoming fixed to the other articles.

The foregoing results are in sharp contrast to the usual experience wherein it is attempted to dry clean different types and colors of fabrics by loading the washer indiscriminately and without careful sorting of the fabrics. The fabrics or fibrous articles (such as non-woven fabrics, mats, etc.) dry cleaned by the present method may be formed from or comprise all types of fibers including natural and artificial fibers such as cotton and wool, artificial fibers such as regenerated cellulose fibers from viscose or cuprammonium, synthetic fibers such as those from organic acid esters of cellulose, notably cellulose acetate, resin fibers such as the polymides of the nylon type, polyethylene glycol teraphthalate ("Daeron"), polyacrylonitrile and copolymers of acrylonitrile with one or more other monomers, monomers polymerizable with acrylonitrile and particularly dyerecipients of the vinyl-substituted heterocyclic tertiary amine class such as the vinylpyridines and nuclearly substituted alkylated vinylpyridines, polyethylene, "Vinylon" (copolymers of vinyl chloride and vinyl acetate), "Vinylon N" (copolymers of vinyl chloride and acrylonitrile), "Dyurln" (co-polymer of vinylidene chloride and vinyl chloride), the fiber-forming polyamides derived from carboxanhydrides, and other types of synthetic resin fibers.

The results of extensive tests on "Orion" (acrylonitrile polymer) fabrics are important and indicative of the effectiveness of the invention. Since "Orion" (acrylonitrile polymer) fabrics are important and indicative of the effectiveness of the invention are especially high in electrical resistance in the dry, clean condition. Dry, clean pieces of "Orion" fleece, a kind of velvet (size 8" × 3"), were dipped into solutions as set forth below, dried and tested for conductivity. The capacity of the antistatic agents to impart conductivity to a plurality of fabrics immersed successively in the foregoing solutions, that is, none of the seven fabric pieces treated with one solution, was exposed to the remaining solutions. Each piece of fabric was centrifuged, after removal from the treating solution, and the liquid was recovered for use in load another piece of the fleece. After centrifuging, the fabric was rinsed, dried and finished; no difficulty such as pick-up of lint due to the accumulation of electrostatic charges on the fabric was experienced at any stage of the dry cleaning and finishing procedure.

The last (seventh) piece of fabric treated in solutions of the preferred quaternary ammonium compounds containing both anion-active and cation-active components or groups, were as conductive as the first fabric pieces treated in those solutions.

The effectiveness of the antistatic agents of the invention, when dissolved in dry cleaning solvent, was determined by measurements performed on the dry cleaned, finished fabric, using a device as illustrated in the accompanying drawing, in which Figures 1 and 2 are plan views of an electrometer suitable for use in measuring the conductivity of the treated material.

As shown, the electrometer comprises a housing provided with a window and mounted on a support having adjustable legs, the contact electrode, and, suspended in the housing, the plate and foil. When an electrified article is contacted with the electrode, a static charge is transmitted to plate and foil. Since F and F obtain a similar charge, the movable foil
F is repelled away from plate P. When S is grounded, both P and F lose their static charges and F returns to its normal position against the vertical plate P.

The effectiveness of the present anti-static agents in rendering fabrics conductive and resistant to static charge accumulation simultaneously with dry cleaning thereof was measured by clamping the opposite ends of the dry cleaned and finished fabric piece 6 (Fig. II) between metal spring clamps 7 and 8, connecting one end of the fabric to the electrode S through the wire 9, and applying a static charge to the other end of the fabric.

When the cloth was conductive, the charge applied at position II (Fig. II) was transmitted to the opposite end of the cloth (position I, Fig. II) which then imposed a charge on plate P and foil F, causing F to be repelled radially along the radially subdivided scale 10 supported in housing 2 and readable through the window 3. Conversely, when the cloth was contacted at position II with the rubber band 11 connected to the iron ring stand 12, a static charge on electrode S could be drawn off through the fabric by grounding it at position II. A measure of the rate of speed at which the displaced foil F returned from a position on the scale removed from the zero position, to the zero position which it occupied when in contact with plate P, provided a measure of the conductivity of the cloth dry cleaned with the given solution containing the given dry cleaning solvent-soluble anti-static.

The dry cleaning fluid in which the fleece was washed was obtained by dissolving 4.0 gms. or 1.0 gms. of the following anti-static agents in 200 gms. portions of a solution of 80 gms. of the dry cleaning detergent "Oronite" Dispersant NI-O (a commercially available alkylated phenols polyoxyalkanol in 1920 gms. of Stoddard's solvent.

Group I:
- Ethyl dimethyl octadecyl ammonium ethyl hydrogen phosphate
- N-soya-N-ethyl morpholine ethosulfate
- Dimethylenzyl dehydro abitrium ammonium chloride
- Alkyl (C₆ to C₁₅) ethyl ammonium ethosulfate dioleate containing 30 polyoxyethylene units per molecule
- Alkyl (C₆ to C₁₅) tolyl methyl trimethyl ammonium chloride
- p-Disobutyl phenoxethoxy ethyl dimethylbenzyl ammonium chloride

Group II:
- Diethyl acid phosphate
- Mono-isomycyl acid phosphate
- Di-isomycyl acid phosphate
- Di-ortho-cresol acid phosphate

Group III:
- Glycerol mono-oleate
- Sorbitol mono-oleate

Group IV:
- Naphthenic acid
- Ammonium naphthenate
- Propylene glycol mono-oleate

The effectiveness of these agents for imparting conductivity to the fabrics coincidental with dry cleaning thereof, and determined on the washed, rinsed, dried and finished fabric, is summarized, for the four groups of anti-static agents, in the table below.

The results given are the average for the seven pieces of fabric treated in each different treating solution.

<table>
<thead>
<tr>
<th>Additive Group</th>
<th>2.0% Concentration (in the detergent)</th>
<th>0.5% Concentration (in the detergent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>High</td>
<td>Good</td>
</tr>
<tr>
<td>II</td>
<td>Very good</td>
<td>Do.</td>
</tr>
<tr>
<td>III</td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td>IV</td>
<td>Poor</td>
<td>Poor</td>
</tr>
</tbody>
</table>

The agents of groups I and II, in the concentrations stated, were not exhausted from the dry cleaning solvent after only one piece of fabric was immersed therein and removed therefrom, and were not exhausted from the solution before the last (seventh) fabric section had been treated. Also, the amount of antistatic adsorbed by the fabrics treated successively in the solutions was sufficient, in each case, to impart satisfactory conductivity to the fabric. In the case of the solution containing the quaternary ammonium compounds of group I, all seven pieces of fabric treated in each of the different solutions for the treating time normally employed in dry cleaning, were equally conductive when tested for conductivity as described herein.

These antistatic agents, when dissolved in dry cleaning solvents containing a detergent soluble in the solvent are adsorbed by the fabric being dry cleaned in a controlled manner and are not removed from the fabrics during the subsequent steps of rinsing, drying and finishing which form a part of conventional dry cleaning procedures. This persistence of the antistatic agents on the fabrics throughout the entire dry cleaning cycle, and the controlled adsorption of the agents by the fabrics in the washer which will permit the washing of successive batches of clothes in the same solution, are extremely important features of this invention.

In some cases, it may be preferred to apply the antistatic in the dry cleaning solvent in which the garments or the like are rinsed after being washed in the dry cleaning solvent containing the detergent or dry cleaning soap dissolved or dispersed therein, this treatment taking place in the presence of the detergent deposited on the fabric during washing thereof.

The concentration of the antistatic in the wash or rinse liquid may be varied and may be extremely low. For example, I have rendered clothes of various types antistatic to an acceptable degree by cleaning 100 lbs. of clothes in dry cleaners' naphtha containing 1% of the detergent "Oronite" Dispersant NI-O and 0.7% of the antistatic ethyl dimethyl octadecyl ammonium ethyl hydrogen phosphate, transferred the clothes to the extractor and whizzed them "dry." The clothes, after removal from the extractor, contained 20 lbs. of the solution in which they had been washed. This 20 lbs. of retained solvent contained 0.20 lb. of detergent and 0.7% of antistatic agent by weight. This means that 0.14 lb. of the antistatic agent (20×0.007=0.14) was left in and dried on the 100 lbs. of clothes.

These clothes, tested as described herein, were sufficiently conductive to release a static charge when grounded and therefore as little as 0.14% of the antistatic deposited on the fabric from dry cleaners' solvent and in the presence of a detergent, and retained thereon, is effective for my purposes. In general, however, and because discharge of the static is faster when more of the compound is retained on the fabric, I may leave on the clothes about four times as much, or about 0.56% of the antistatic, by weight of the clothes. The amount of antistatic on the clothes may be from 0.14 to 0.56% by weight and deposited on the material being cleaned or rinsed from solutions containing from 0.02% to 0.10% or, more generally, from 0.02% to 5.0% or 0.02% to 2.5%. The protective
antistatic film or coating adhered to the clothing or the like cannot be detected under ordinary conditions, that is, by the naked eye.

Suitable dry cleaning solvents include benzene, carbon tetrachloride, chloroform, Stoddard’s solvent, perchloroethylene, and the solvent mixtures sometimes used in modern-day dry cleaning houses. The terms “dry cleaning liquid” and “dry cleaning solvent” are intended to define and include such dry cleaning media, generally.

The detergent or dry cleaning soap may be used in concentrations of from 0.2% to 10% by weight or volume. In applying the compositions comprising the dry cleaning solvent to various materials, including materials comprising synthetic resins in fibrous or non-fibrous form, it is expected that the operator will select a dry cleaning solvent which is not a solvent for, and does not effect softening of, the material being dry cleaned or cleaned and polished.

Although the invention has been illustrated by specific embodiments, various modifications and changes may be made in the details given, in practicing the invention, within the scope of the disclosure and without departing from the spirit and scope of the invention. It will be understood, therefore, that it is not intended to limit the invention except as it is defined in the appended claims. The term “dispersion” as used herein and in the claims includes solutions. Dry cleaning detergents include the so-called dry cleaning soaps.

I claim:
The method of dry cleaning fabrics and clothing and simultaneously rendering the same anti-static, which comprises washing the fabric and clothing with dry cleaning solvent having from 0.2% to 10% by weight of a detergent dissolved therein, and then rinsing the fabric and clothing with a dry cleaning solvent having from 0.02% to 5.0% by weight of an anti-static agent dissolved therein, the anti-static agent being applied to the fabric and clothing in the presence of detergent carried thereby from the washing.

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