This invention relates to an article for cleaning and applying an anti-mist film to glass surfaces or the like. The invention relates more particularly to such an article serviceable for cleaning polished surfaces to a highly transparent or perfectly reflective condition and at the same time to make such surfaces highly resistant to the formation of misting films which tend to mar their polished transparency or reflectivity.

Cleaning and anti-mist treatment of polished surfaces has been hitherto accomplished by first applying a smear of anti-filming or anti-misting compound upon the surface, sometimes by spraying and other times by rubbing, and then wiping the smear clean with fresh rags or other absorbent materials. This is time wasting and inconvenient, in that it involves two separate operations, and also because it requires a plurality of cleaning elements. In view of this inconvenience, in most cases, people wait until vision has become dangerously obscured before wiping the glass clean.

In accordance with my present invention, the cleaning and anti-misting treatment can be reduced to a single operation by the use of a single carrier suitably processed so that it functions simultaneously for cleaning and applying the anti-mist film to the polished surface. Polished surfaces which are effectively treated by the use of the material of the present invention are eye-glass lenses, bathroom mirrors, automobile windows and windshields, refrigerated show cases, and the like, and in fact, any polished surface of a transparent or reflective nature to which the function of which is directly impaired by lack of cleanliness and by misting films formed thereon.

I have found that a flexible carrier such as a soft tissue paper or cloth may be combined with an anti-mist material in such a way that the cleaning operation and the anti-mist film applying operation may be accomplished at one and the same time and in a very simple and facile manner. This is done by combining the flexible carrier with the anti-mist material so that the anti-mist material is held on the carrier in such a way as to allow transfer of the said material to the polished surface such as glass and the like, to produce a thin, anti-mist film thereon at the same time and while the glass surface is cleaned by the carrier. I have also found that it is essential to apply the anti-mist material to the carrier in a predetermined quantity large enough in amount to leave on the cleaned surface a thin, anti-mist film, yet insufficient in amount to interfere in the first place with the cleaning effect of the carrier, or in the second place, to leave upon the cleansed surface any visible smear.

When the flexible carrier is thus suitably processed and contains the workable amount of anti-mist material, the carrier may be used as an ordinary piece of cleansing tissue or cloth is used and will function for simultaneously cleaning the polished surface and applying thereto a thin, invisible anti-mist film.

The flexible carrier which is preferably employed is a porous material such as a soft tissue paper or cloth, which is adapted for use in wiping and cleaning polished surfaces such as glass or the like. The carrier should be free from any abrasive material which would scratch or mar the polished surface, and should also be free of any detachable particles which would tend to deposit themselves and remain on the polished surface after a wiping or cleansing operation. The carrier should preferably be fine textured, soft and porous in order to pick up foreign matter and absorb any moisture and grease which may be on the surface to be wiped, and also so that it may properly receive and have deposited thereon the anti-mist chemical with which it is treated to produce the product of the present invention.

This soft tissue paper or cloth flexible carrier is treated with the anti-mist chemical. Such chemicals are well known; they comprise water soluble and foaming materials, such as elm-bark, acacia, ordinary soap and generally most stearates, oleates, palmitates, etc. The treatment is made in any of a number of ways as is set forth in the examples hereinafter given. I have found that the desired results can only be obtained by the combination of the flexible carrier with an extremely minute and generally critical amount of the anti-mist chemical. If too much of the anti-mist chemical is employed, there results on the polished surface a visible film or smear that continued rubbing will not satisfactorily remove. Furthermore, the use of too much of the anti-mist chemical has a tendency to interfere with the cleansing function of the flexible carrier. On the other hand, if an insufficient amount of the anti-mist chemical is used on the carrier, although the polished surface may be wiped clean, no anti-misting film will be formed; the anti-mist material is, therefore, deposited on the carrier in a predetermined quantity large enough in amount to leave on the clean surface the thin, anti-mist film desired.

While the amount of the anti-mist chemical applied is generally critical, it is dependent upon
a number of factors, prime among which are the method of applying the chemical to the carrier, the nature of the carrier, and the character of the anti-mist chemical.

I have found that the carrier may be treated with an anti-mist chemical in either of two ways to produce the proper combination of the carrier and the anti-mist material, and that in both a uniform deposit of the chemical per unit area of the wiping surface may be effected.

Impregnation method.—The anti-mist material may be applied to the surface in a very thin film by a process of impregnation. This is accomplished by spraying or dipping the carrier with a finely divided water solution of the chemical. With a fairly dry soap a concentration of about eight per cent (8%) by weight is convenient. The application should be such as to result in the even distribution of dry soap in the tissue paper carrier, so that the paper contains about seven per cent (7%) of soap by weight. This amount may also be defined volumetrically, as thinner and lighter papers require less weight of soap per unit area. The desired amount is dependent upon the kind of soap used. I have found that if impregnation is attempted with water-washed pieces of soap, about three times as much soap must be applied in order to obtain the desired effect. It would appear that these water-washed pieces must have had some of the most active anti-mist components bleached out. Furthermore, I have found that the chemical composition of the soap will also determine its optimum amount; for example, if a tissue be impregnated with pure sodium stearate, only one-half of one per cent of soap by weight is required. Furthermore, it has been found that an important advantage of using sodium stearate in such small amounts is that even if several times the amount of stearate necessary to form a film is used, it still is such a small amount that the excess does not form a smear.

This is significant because it allows a very desirable leeway in the case of quantity manufacture.

Coating method.—Another way of preparation is by surfacing or coating the tissue with an extremely fine layer of the chemical. This is, generally speaking, more economical of the chemical, for I have found that slightly less than one-third milligram of dry soap per square inch per side of the carrier is required. An advantage of the surfacing method is that for some uses, such as spectacle lens cleaning, only one side of the carrier need be coated, it being preferable to surface only one side in order that the fingers of the user be not soiled or imparted with a greasy film. It should be noted, in this respect, that with clean new soap, the undesirable effects of coating both sides of the paper are minimized greatly, because the amount of soap used is decreased. Further, when sodium stearate is used the necessity for coating only one side is greatly diminished. In order to compare the amount of soap used in this process with the amount of soap used in the impregnation process, it is well to keep in mind that suitable tissues will weigh about 25 milligrams per square inch and therefore will contain about 1.75 milligrams of soap per square inch after impregnation.

It is important that the chemical be evenly distributed over the surface of the wiping element in order that it may be evenly applied to the surface to be wiped. I have found that a preferred way of accomplishing this is to permit lumps of soap to lightly tumble against a soft surfaced roller adapted to pick up a fairly uniform layer of soap film. This film may be transferred in predetermined amount by rotating the roller against the tissue carrier passing thereover. Regulating the amount of soap transferred may be accurately accomplished by varying the relative speeds of the roller and tissue and the pressure of contact.

I have found it desirable to use a compound of sodium stearate and potassium oleate as the anti-mist chemical for certain purposes. In some applications the concept of carrying a crystal of sodium stearate, particularly if too much is applied to the tissue carrier and especially after the tissue carrier is crumpled, there is a tendency of the anti-mist chemical to flake off and to deposit as a powder on the wiped surface. I have found that this objection may be obviated if one-half as much of potassium oleate is added to the sodium stearate. This anti-mist compound has the further advantage that the amount used is not as critical as when sodium stearate is used alone and, consequently, there is greater leeway in the manufacturing process, tending to increase the yield. Furthermore, it also diminishes the jellying tendency of the soap and, consequently, makes for easier preparation.

The cleaning and anti-mist film applying article of the present invention may be prepared in the form of different packages and of appropriate sizes. For a vest pocket size and for personal use, the processed tissue carriers may be put up in stacked looseleaf form or in book form. Such a package may be readily carried in the consumer's pocket and the tissues may be individually stripped from the package as required for use. For household and automobile use, larger packages may be made with the individual tissues or fabric carriers stacked or interleaved.

The method of making and using the cleaning and anti-mist film applying articles of the present invention will, in the main, be fully apparent from the above detailed description. The flexible carrier may be readily processed either by the impregnation or coating method, and suitable sheet sizes thereof may be appropriately arranged in packages made most convenient for the particular intended use. The processed carrier sheets are used singly for each wiping application, and by the use thereof the polished surface is simultaneously cleansed and coated with anti-mist film. With a single wiping application, it is found that the treated polished surface will resist the formation thereon of moisture films for a substantial period.

It will be apparent that while I have described the product of the invention and the method of making the same in the ways now found to be preferred, that many modifications may be made therein without departing from the spirit of the invention defined in the following claims.

I claim:

1. An article for simultaneously dry cleaning glass surfaces or the like and applying thereto an anti-mist film comprising, a relatively dry flexible carrier of the class of tissue paper effective for dry cleaning and polishing the glass surface, and impregnated with a film comprising at least about one-half per cent by weight of pure sodium stearate, the sodium stearate being distributed in a relatively dry state over said carrier and being critically small in amount to allow transfer of the same to the glass surface when dry cleaned by said carrier to produce a thin anti-mist film thereon.

2. An article for simultaneously dry cleaning
glass surfaces or the like and applying thereto an anti-mist film comprising, a tissue paper carrier effective for dry cleaning and polishing the glass surface, and a relatively dry anti-mist material distributed over and held by said carrier, the said tissue paper being of a weight of about 25 milligrams per square inch and the said anti-mist material being deposited on said carrier in about ½ milligram per square inch, the said anti-film material functioning to leave on the glass surface when dry cleaned by said carrier a thin anti-mist film without interfering with the cleaning effect of the carrier or leaving upon the said surface a visible smear.