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PROCESS OF MANUFACTURING CRUSHED VELVET

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This invention relates to a process of manufacturing and treating velvet, particularly so-called "crushed velvet."

The term "crushed velvet," as herein sometimes used, refers to a material with a short, soft, thick warp pile surface on a fabric back which after dyeing and finishing has been subjected to a crushing treatment.

Tests and practical experience show that crushed velvet manufactured by methods and processes, as hitherto known, will substantially lose its crush when wetted, particularly after repeated wettings.

As a result, the use of crushed velvet, as now available, is limited and the material cannot be employed for certain articles for which its use would be desirable, but which by their nature are exposed to repeated wettings, such as bathing suits, shoes, etc.

Accordingly, it is one of the objects of the invention to provide a novel and improved process of manufacturing crushed velvet which can be advantageously used for bathing suits, shoes and other articles, which by their nature are subjected to repeated wettings.

Another object of the invention is to provide a novel and improved process of manufacturing crushed velvet which will permanently substantially retain its crush, even though the material may be repeatedly and thoroughly soaked in water, and even though the water may exert a certain pull upon the material, as it does when the material is used for bathing suits.

Another object of the invention is to provide a novel and improved process of manufacturing crushed velvet which will retain permanently its crush and also its original sheen or lustre.

According to the invention the above enumerated objects, features and advantages and other objects, features and advantages which will be pointed out hereinafter and set forth in the appended claims forming part of the application, are obtained by applying the following process steps in the manufacture of crushed velvet.

The velvet to be treated according to the invention may have any suitable fabric back made for instance of rayon, cotton or silk, or a mixture of such fibers. In case elasticity of the material is required the warp or the filling or both, depending upon whether stretch in one direction or both directions is desired, must be made of or contain stretchable material such as rubber or latex, as now known under the trade-mark Lastex.

The pile of the velvet must comprise a material capable of permanently retaining a crush, notwithstanding repeated wettings, after having been treated according to the invention, as will be fully explained hereinafter. Applicant has found by extensive tests that the filaments of acetate rayon are particularly suitable for the purpose of the invention by reason of their thermoplastic properties. Satisfactory results were also obtained with cotton fibers.

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The velvet is dyed, finished and crushed by any suitable method and means, conventional or unconventional, which are known in the art for the aforesaid purposes. The crushing operation generally consists of twisting and compressing the material until it assumes the shape of a tight rope, sometimes forming knots.

Inasmuch as the manufacture of the velvet proper and the dyeing, finishing and crushing of the material may be conventional and are not essential for the understanding of the invention, they are not described here in detail.

As previously mentioned, conventionally crushed velvet, whether it has an acetate rayon pile or a pile made of any other fiber or filament, will substantially lose its crush if thoroughly wetted, particularly if subjected to a pull when wet. For the purpose of making the crush of crushed velvet substantially insensitive to even a thorough and repeated wetting, crushed velvet while still in the shape it is upon completion of the crushing operation, that is, in form of a tightly wound or twisted rope is, according to the invention, subjected to a heat treatment in the presence of moisture at a temperature between 140° and 212° F. or even higher if the material to be treated can withstand higher temperatures. This heat treatment is continued until the heat has completely penetrated the velvet rope and the same is saturated with moisture. Various methods and means may be employed to apply the aforesaid heat treatment. The applicant has found that generally good results are obtained by submerging the rope in water having a temperature between 140° and 212° F. Particularly good results were obtained when a temperature between 180° and 212° F. was employed. The rope should remain in the hot water bath until thoroughly heated and soaked, generally about ten minutes are sufficient.

In certain instances, satisfactory results can also be obtained by subjecting the rope of crushed velvet to a treatment with air having a temperature above 140°, preferably between 180 and 212° F., in the presence of moisture. The moisture can be provided by saturating the hot air or soak-

ing the cloth with water before exposing it to the hot air.

In case the dyes used for dyeing the velvet are sufficiently colorfast, live steam having a temperature of more than 212° F. may also be employed. In any event care must be taken that the applied heat penetrates the entire rope and that the rope is saturated with moisture. To facilitate the heat penetration and saturation of the rope, the treatment may be carried out under pressure or under vacuum.

Tests made by the applicant with crushed velvet treated according to the invention, particularly with crushed velvet having an acetate rayon pile, show that the folds or wrinkles caused by the crushing operation are fixed to such an extent that they will substantially retain their shape after repeated soakings of the velvet in water and exposure to the stresses and pulls to which the material is customarily subjected when used for a bathing suit.

The aforesaid heat treatment frequently reduces the original sheen or lustre of the velvet to a certain extent. For certain applications such reduction of sheen or lustre does not affect the usefulness of the crushed velvet, while in other instances a high sheen or lustre is desirable.

Applicant has found that the original sheen or lustre of the material can be substantially restored by rapidly cooling the material upon completion of the heat treatment and while still in the form of said tight rope.

Tests made by the applicant show that good results are obtained by submerging the velvet rope in water which may have approximately room temperature. The cooling operation is continued until the material is thoroughly cooled off. Ten minutes are generally sufficient. In certain instances, it is also possible and practical to cool off the velvet rope by exposing it to a current of cold air.

Finally, the crushed velvet, now having a permanent crush, is dried and framed for instance by means of a conventional finishing or tendering machine to give the material the desired width.

While the invention has been described in detail with respect to certain now preferred process steps, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended, therefore, in the appended claims, to cover all such changes and modifications.

What is claimed is:

1. In the process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material, the step of thoroughly heating the velvet material while being in said twisted and compressed condition in the presence of moisture to a temperature between 140 and 212° F.

2. In the process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material, the step of submerging the velvet material, while being in said twisted and compressed condition, in an aqueous fluid having a temperature between 175 and 212° F. for at least a period of time sufficient to heat and soak the velvet material throughout.

3. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising acetate rayon filaments, the step of thoroughly heating the velvet material, while being in said twisted and compressed condition, in the presence of moisture to a temperature between 140 and 212° F.

4. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising acetate rayon filaments, the step of submerging the velvet material, while being in said twisted and compressed condition, in water having a temperature between 175 and 212° F. for at least a period of time sufficient to soak and heat the velvet material throughout.

5. In the process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material, the steps of thoroughly heating the velvet material, while being in said twisted and compressed condition in the presence of moisture, to a temperature between 140 and 212° F., and of subjecting the heated velvet material, while being in said twisted and compressed condition, to a treatment with a cooling medium for rapidly cooling the crushed velvet throughout upon completion of the heat treatment.

6. In the process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material, the steps of submerging the velvet material, while being in said twisted and compressed condition, in an aqueous fluid having a temperature between 140 and 212° F. for at least a period of time sufficient to heat and soak the velvet material throughout, and of submerging the heated velvet material, while being in said twisted and compressed condition, in cold water for at least a period of time sufficient to obtain complete cooling of the heated velvet.

7. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising acetate rayon filaments, the steps of thoroughly heating the velvet material, while being in said twisted and compressed condition, in the presence of moisture to a temperature between 140 and 212° F., and of subjecting the heated velvet material, while being in said twisted and compressed condition, to a treatment with a cooling medium for rapidly cooling the crushed velvet throughout upon completion of the heat treatment.

8. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising acetate rayon filaments, the steps of submerging the velvet material, while being in said twisted and compressed condition, in water having a temperature between 175 and 212° F. for at least a period of time sufficient to soak and heat the velvet material throughout, and of submerging the heated velvet material while being in said twisted and compressed condition in a cold water bath for a period of time sufficient to cool off completely the velvet material.

9. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material, the step of exposing the velvet, while being in said twisted and compressed condition, to hot air having a temperature of at least 140° F. in the presence of moisture for at least a period of time sufficient to secure thorough heating and saturation with moisture of the velvet material.

10. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material,

the step of exposing the velvet, while being in said twisted and compressed condition, to live steam for at least a period of time sufficient to secure thorough heating and moisture saturation of the velvet material.

11. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material, the step of exposing the velvet, while being in said twisted and compressed condition, to hot air having a temperature of at least 140° F. in the presence of moisture for at least a period of time sufficient to secure thorough heating and saturation with moisture of the velvet material, and of subjecting the heated velvet material, while being in said twisted and compressed condition, to a treatment with a cooling medium for rapidly cooling the crushed velvet upon completion of the heat treatment.

12. In a process of manufacturing crushed velvet by twisting and compressing velvet material having a pile comprising thermoplastic material,

the step of exposing the velvet while being in said twisted and compressed condition, to live steam for at least a period of time sufficient to secure thorough heating and moisture saturation of the velvet material, and subjecting the heated velvet material, while being in said twisted and compressed condition, to a treatment with a cooling medium for rapidly cooling the crushed velvet upon completion of the heat treatment.

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