United States Patent

Walker et al.

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[54] STRIPPABLE PROTECTIVE FILM

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[52] **U.S. Cl.** .....**161/145,** 156/308, 156/309, 161/39, 161/252, 161/254, 161/256, 161/406, 206/46 R, 206/DIG. 4, 229/51 AS

[51] **Int. Cl.** **B32b 7/10,** B32b 27/08, B65d 5/54

[58] **Field of Search** .....156/308, 309; 161/252, 254, 161/256, 406, 48, 145; 206/46 R, DIG. 4; 229/51 TS, 51 S, 51 AS

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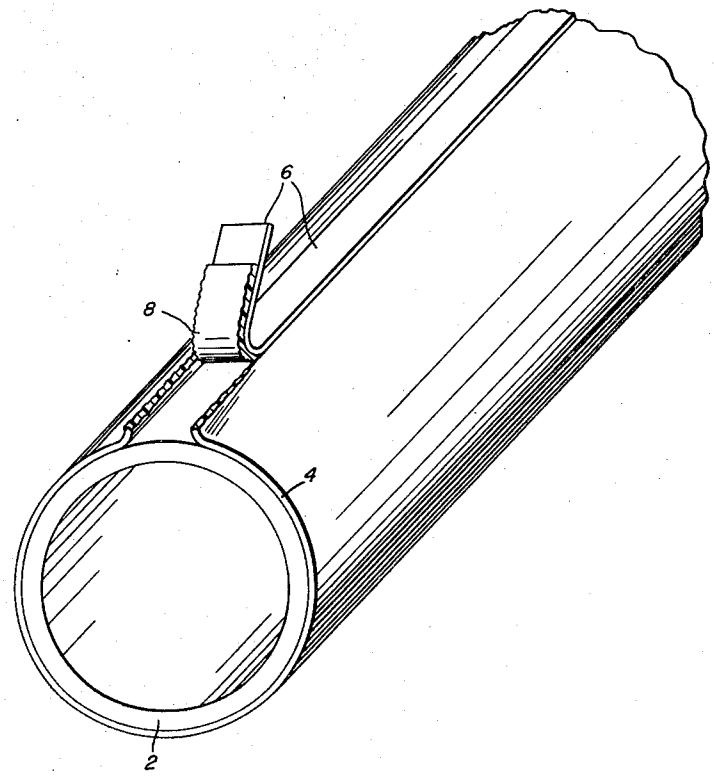
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[57] **ABSTRACT**

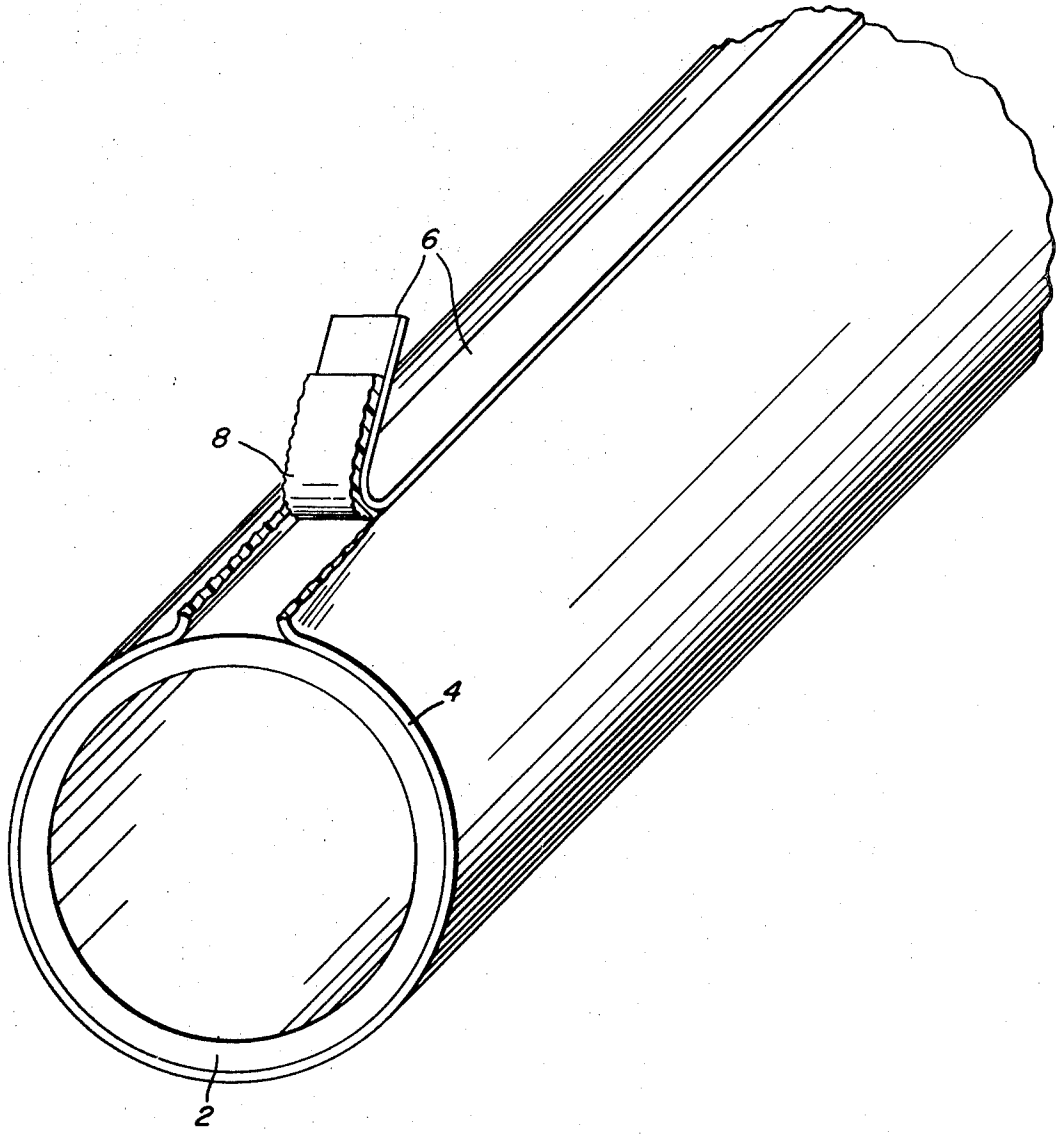
A temporary, protective plastic coating for an article, such as ornamental tubing, which may be sprayed on the tubing becoming adhered thereto and, upon nominal drying, a strip of material such as adhesive-backed tape is placed in contact with the coating over a full length in one dimension. The strip and the coating are bonded together with a strength at least as great as the film strength of the coating such that upon tearing off the strip, the plastic film directly in contact with the strip is also removed, enabling rapid removal of the remaining film on the article.

1 Claims, 1 Drawing Figure



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STRIPPABLE PROTECTIVE FILM

BACKGROUND OF THE INVENTION

In the production of ornamental metal articles, such as highly polished metal strips or finished tubing which are bent and assembled into decorative and useful structures, such as swimming pool ladders of stainless steel, etc., it is desirable to protect the surface of the finished material against marring during forming operations and assembly. The alternative to this would be to finish the metal; i.e., buff and polish it, after assembly. The latter alternative would produce a less uniform finish as well as being very time consuming and costly. The present solution for the problem existing in the industry involving the production of ornamental articles is to adequately prefinish while protecting the materials being formed into a final structure at some time in the submanufacturing process. Conventional means for such protection includes the wrapping of the articles in paper or other protective covering usually in tape form. The conventional wrappings are often coated on one side with an adhesive material so that the wrapping will adhere to the article upon which it is placed. It may be appreciated by those familiar with the art that it is a time-consuming and costly process to first cover a polished material prior to forming and assembly and then remove this protective covering from the assembled article. Also, the protection afforded often breaks down due to parting of the paper or tape during manufacturing operations such as bending or drilling. The necessary protection contributes a substantial increase in the final production cost of the article because of the excessive amounts of time and expense in applying and removing the protection. It may thus be seen that there is a need in the industry for a protective covering which (1) may be quickly and readily applied; (2) will withstand the deformation of later manufacturing steps and (3) will be readily and quickly removable from the completed assembly. Our invention meets such need existing in the industry.

SUMMARY OF THE INVENTION

A quickly appliable and readily removable protective film for an article being a thin coating of homogeneous high molecular weight material known as plastic, conveniently applied by spraying which adheres to an article and a strip adhesively affixed to the coating by a bond the film strength of which is of a magnitude at least as large as the tear strength of the film, extending over one dimension of the coated article.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the FIGURE, an article **2** is shown which may be for example, a length of stainless steel tubing. The article might also be a sheet of highly polished ornamental metal which may require further forming and assembly. To protect the finish and surface of article **2**, a protective cover **4** is applied which adheres to the article over much of the juncture between the two. This cover may be a coating of any one of a number of various temporary plastic protective coatings, which in the preferred embodiment of the vinyl plastisol type, a species of which is available from Conchemco, Inc., Kansas City, Mo. The preferred method of applying the cover is to spray a protective film on the article thereby rapidly depositing a thin uniform coat on the article. The protective material might also be purchased in sheet or roll form and applied to the material by wrapping, however, this would require additional manpower and time to effect an extensive covering of the article **2**.

Those familiar with temporary plastic materials are well aware of the shelf life limitation of these materials. In order to prolong the storage capability of the vinyl plastisol-type plastic, we prefer that the coating include an ultraviolet light absorber. Such a material, a clear strippable plastisol known as type 615C-121 is available from the aforementioned Conchemco, Inc.

In order to provide the protective cover **4** of our invention which is easily removable from the article after forming and assembling have been completed, we apply stripping aid **6** which may be one of the well known adhesive-backed tapes, such as vinyl type tape known as electrical tape. A requirement of the invention is that the stripping aid **6** be affixed to film **4** with a bonding strength at least as large as the tear strength of the film **4**. Such a combination insures that upon removal, as by a tearing action of strip **6** away from the protected article **2**, the strip **6** will adhere to the film **4**, tearing that portion of the film in contact with the strip, as at **8**, away from the protected article **2**. It should also be recognized that the overall strength of strip **6** should be significantly greater than the tear strength of film **4** and bond between film **4** and strip **6**, such that strip **6** does not part during the tearing operation. The vinyl type tape such as electrical tape, provides a preferred stripping aid **6** in that it can elongate with the film **4** during forming operations. Those familiar with the art will appreciate the substitutability of a cloth, or nylon strip having the necessary adhesive and bonding capabilities for those instances where the strip **6** is not subjected to elongation as deformation during manufacturing operations.

In the preferred embodiment I use vinyl plastisol type 615C-121 plastic available from Conchemco, Inc. in liquid form for coating. The plastic is sprayed on the tube **2** to be protected in this embodiment to a thickness of approximately 0.001 inch to 0.002 inch. The plastic adheres to the tube **2** as it dries thereby remaining in place during later manufacturing operations. By choice, the plastic coating in the preferred embodiment has the characteristic that it may be dried by heat after being sprayed upon the tube and then quenched to room temperature by means such as a water spray. The immediate heating and quenching provide sufficient stability in the coating for immediate handling, however, allows for further curing for a period of from 8 to 12 hours by an air cure of the coating producing the full abrasive resistant characteristics of the film. These dual characteristics of the coating material permit application of the stripping means **6** to the coating **4** after the spray quenching to room temperature. The film has the further elasticizer of plastisol to aid its deformation concurrent with that of the article **2**, as it experiences various forming operations. The stripping means **6** employed in the preferred embodiment is a conventional vinyl-type electrical plastic tape but other strong, adhesive-backed tapes may be acceptable alternatives. It is applied in the preferred embodiment after the spray quenching to room temperature and prior to the air curing by laying the tape along the member **2** in the location of the preferred parting line. The affixing of the stripping tape **6** to the film prior to the air cure, enables the stripping tape **6** to develop a bond to the film **4** many times stronger than if the tape is applied after the film **4** has an opportunity to air cure. By this method of attaching, the combination of stripping means **6** and film **4** are bonded together with a strength sufficient to remain joined during the tearing of the stripping means **6** from the protected article **2**. The film **4** adheres closely to the stripping means **6** over the juncture of it and thus tears away as at **8** from the rest of the film **4** as the stripping means **5** is pulled from the article **2**. In the preferred embodiment the tape separates the coating from the article **2** with a continuous parting line along the film adjacent either side where the tape formerly was. With the preferred top-mounted stripping aid **6**, the removal of the strip **6** tends also to draw the film **4** away from the adhesive contact with the article **2** along the parting line **8** enabling the remaining cover **4** to be more easily grasped and removed. The remaining film may then be removed by the simple operation of grasping the remaining film at the parting line and pulling it from the article **2**.

In an alternative embodiment the strip **6** may be placed directly on the article **2** and the film laid over top of it. The stripping tape **6** in this embodiment may be either singly or doubly bonded as both to the film and the article **2** if desired. Depending upon the thickness of film necessary to afford the degree of protection to the article and the combined bonding properties upon curing this submerged application of tape may present a preferable advantage.

Conventionally, the film **4** is left on the protected article through shipment of the article to a final fabricator and many times may be left on the article through his final assembly operations. The final finisher may then strip the protective coating from the protected article **2** prior to his packaging and final shipping to the ultimate consumer or it may be left for the ultimate consumer to remove. It should be apparent to those skilled in the art that the disclosed invention would provide a protective coating for articles to be stored or shipped in mildly corrosive environments, such as salt air. The invention is thus, usable in numerous areas not including manufacturing and these are considered to be within the scope of the appended claims.

I claim:

1. A strippable protective cover for an article comprising a thin coating of strippable plastic of the vinyl plastisol-type, and a tear strip of solid cured vinyl plastic having a pressure-sensitive adhesive on one side thereof with the tear strip overlying and with the pressure-sensitive adhesive being in contact with the outer surface of said coating of strippable plastic, as is produced by initially coating said article with said strippable plastic in liquid form, the plastic being thereafter heated and quenched before said tear strip is applied, and the plastic after application of the tear strip being permitted to air cure.

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