The invention provides methods and equipment for storing and protecting window assemblies. In certain embodiments, there is provided a method for storing and protecting a window assembly using a bag of the described nature.
Figure 10
WINDOW ASSEMBLY MASKING BAG

RELATED APPLICATION

[0001] The present application claims priority to U.S. provisional patent application 60/678,736, filed May 6, 2005, the entire disclosure of which is incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to window assemblies. More particularly, this invention relates to mechanisms used for storing and protecting the assemblies during a period of time which extends from just after the window assembly is manufactured until after the window assembly is installed.

BACKGROUND OF THE INVENTION

[0003] In most industrialized countries, it is customary for manufacturers to distribute or ship products in packages. One primary reason for using such packaging is to protect the product during shipping so that the product is received by the consumer in generally the same condition as it was when initially sent from the manufacturer. As a result, the consumer is more likely to be satisfied with the product after receiving it from the packaging, and in turn, more likely to continue doing business with the manufacturer in the future.

[0004] Window assemblies are generally comprised of at least one pane (i.e., typically a pane of glass) and a corresponding frame. The window assemblies are no different from any other product in that, without adequate protection during shipping, they can become easily damaged prior to their use in the field. There are many ways in which this damage can occur. A few examples could involve the glass of the assembly being scratched or cracked or the frame of the assembly being scraped or nicked from handling during shipping. Unfortunately, this type of damage is liable to occur at any time subsequent to manufacturing up until the time the window assembly is installed.

[0005] In addition, a window assembly can also become marked or stained anytime prior to or after installation. For example, during storage after manufacture, water vapor is likely to condense on the outer surface of the assemblies. If the frame of such assembly is made of wood, such moisture settling thereon may promote the formation of mildew, which could potentially damage the window assembly. Another example involves the period of time following installation, during which surrounding wall surfaces may be painted. When painting, potential exists for paint to drip or splatter onto the pane or frame of the window assembly. If such paint is not timely washed off or otherwise removed, the window assembly could be permanently stained.

[0006] While there have been prior attempts to protect window assemblies from the time of manufacture up until after the time of installation, there have been shortcomings in regards to these attempts. This invention attempts to solve these shortcomings.

SUMMARY OF THE INVENTION

[0007] The invention provides a method and apparatus for storing and protecting a window assembly on all exposed surfaces. The method and apparatus provide a bag that can be used following manufacture of the assembly up through the time that the window assembly is installed. The method and apparatus provide a bag configured to seal the window assembly therein and form-fit the bag to the window assembly. Following installation of the window assembly, the bag is adapted for removal from all exposed sections of the window assembly, providing a clean appearance for the exposed surfaces of the assembly and providing a protective barrier for the non-exposed surfaces of the window assembly within the installation opening.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a schematic perspective view of a window;

[0009] FIG. 2 is a schematic front elevation view of a window assembly;

[0010] FIG. 3 is a schematic perspective view of a window assembly masking bag in accordance with an exemplary embodiment of the present invention;

[0011] FIG. 4 is a schematic perspective view of a window assembly masking bag in accordance with an alternate exemplary embodiment of the present invention;

[0012] FIG. 5 is a schematic perspective view illustrating the window assembly of FIG. 2 located within a window assembly masking bag in accordance with an exemplary embodiment of the present invention;

[0013] FIG. 6 is a schematic perspective view illustrating the window assembly masking bag and window assembly of FIG. 5 following a form-fitting process in accordance with an exemplary embodiment of the present invention;

[0014] FIG. 7 is a schematic perspective view illustrating the window assembly masking bag and window assembly of FIG. 6 following their installation in accordance with an exemplary embodiment of the present invention;

[0015] FIG. 8 is a schematic perspective view illustrating the window assembly of FIG. 7 following the removal of a portion of the window assembly masking bag of FIG. 7 in accordance with an exemplary embodiment of the present invention;

[0016] FIG. 9 is a schematic perspective view illustrating the window assembly masking bag and window assembly of FIG. 6 following their installation in accordance with an exemplary embodiment of the present invention; and

[0017] FIG. 10 is a schematic perspective view illustrating the window assembly masking bag and window assembly of FIG. 6 following their installation in accordance with an exemplary embodiment of the present invention.

DETAILED DESCRIPTION

[0018] The following detailed description is to be read with reference to the drawings, in which like elements in different drawings have been given like reference numerals. The drawings, which are not necessarily to scale, depict selected embodiments and are not intended to limit the scope of the invention. Skilled artisans will recognize that the examples provided herein have many useful alternatives that fall within the scope of the invention.
The structure of the system is generally referred to herein as a bag; however, the structure can also be referred to as a carrier, a container, a sack, or other like terms. Preferably, the structure of the system (i.e., the bag) is adapted for securely storing and protecting window assemblies therein. In certain embodiments, the bags are used to accommodate window assemblies for a time period following their manufacture up until after the assemblies are installed in the field. Typically, this time period accounts for after-assembly storage, shipping, and installation of the window assemblies. The structure of the system, however, can also be configured for storing and protecting other objects in a wide variety of other applications.

In certain embodiments, the invention provides a bag for generally storing and protecting a corresponding window assembly. An obvious component of a window assembly is a window, an example of which is illustrated in FIG. 1. The window 10 of FIG. 1 includes a pane 12 peripherally surrounded by a sash 14. The pane 12 typically includes a generally flat, sheet-like substrate. The substrate typically has two generally-opposed major surfaces, which preferably are planar and substantially parallel to each other. In most cases, each substrate will be a sheet of transparent material (e.g., a transparent pane). For example, each substrate may be a sheet of glass, clear plastic, or the like. The sash 14 is typically a rectangular-shaped casing that is bonded to the periphery of the at least one pane 12. In most cases, the sash 14 is formed of wood, metal, plastic or any other suitable material. Thus, for an exemplary window, there is typically provided at least one pane 12 having first and second generally-opposed major surfaces surrounded by a sash 14.

An exemplary window assembly is illustrated in FIG. 2. The assembly 16 of FIG. 2 is commonly referred to as a vertical sliding sash window assembly. Generally, such assembly 16 includes a rectangular frame 18 and at least one window 10. The vertical rectangular frame 18 supports the windows 10 within the assembly 16 and includes two side jams 20, a head 22, and a sill 24. The common side jams 20 are the parallel spaced vertical frame members and the head 22 is the top horizontal frame member joining the top of each side jamb 20. The head 22 and side jams 20 are typically of equal width. The sill 24 part of the bottom of the frame 18 generally slopes downward to prevent water from draining into the interior of the building. The frame 18 may be constructed of wood, metal, plastic or any other suitable material. Although, the invention is described in connection with such sliding sash window assembly 16, it is not done so as to limit the invention as such. It is contemplated that the invention may also be used with a wide variety of window types, styles and sizes.

As mentioned above, the bags of the invention are preferably used advantageously for storing and protecting such window assemblies. As such, each bag is generally sized and shaped to accommodate a corresponding window assembly. In use, the bag is configured to protect the normally-exposed assembly surfaces from incidental blemishes (i.e., scratches, scrapes, bumps, nicks, etc.) that are generally known to occur during storage, transport, or installation of the assembly. Further, the bag can be used for a time period following installation so as to further protect the assembly. For example, after the window assembly is installed, one may need to clean or paint the surrounding walls. Typically, before such cleaning or painting is started, the window assembly sash or frame, as well as the window assembly pane(s), may be masked to prevent any cleaning solution or paint from adhering thereto. While most compounds that become adhered to the sash, frame, or pane may be scraped off or otherwise removed, additional time is required to do so. Further, because of a tempering process normally performed on glass panes of windows, the pane (if glass) is generally softer than untempered glass. Consequently, if one needs to clean or scrape the pane of the assembly, the pane surface could potentially be scratched or abraded, resulting in the window assembly being unacceptable to the customer. As such, in using the invention, all such masking can be avoided, as well as potential dissatisfaction from the customer in regard to the product.

Preferably, the bag is simple and economical to manufacture. In certain embodiments, the bag is made of a thin flexible protective material. The protective material may be most any suitable commercially available film such as plastic and the like. A few suitable plastic materials include polyethylene and biaxially oriented polypropylene, which are commercially available from DuPont (Wilmington, Del., U.S.A.). In certain embodiments, the material is opaque, so as to be generally impenetrable by light. In turn, the bag can protect the assembly, in particular, the frame, from bleaching due to exposure from light. Conversely, in other certain embodiments, the material is preferably transparent (or at least translucent) to permit examination of the bag contents (i.e., the window assembly) at any time. Further, the material shall be flexible, moisture-proof, and reasonably tough to withstand tearing. Although the thickness of the material could feasibly vary depending on the size and mass of the window assembly it is intended to store and protect, the material should be not be so thin that it tears during installation, and alternatively, not too thick so that it is too stiff to permit proper installation of the window assembly. In certain embodiments, such material thickness may range from 3 to 6 mil. The bag can be generally constructed from one section of such protective material even though the bag may involve other elements (e.g., materials used for coupling surfaces of the bag, etc.) that contribute to the bag’s overall assembly.

In certain embodiments, the bag is adapted to be form-fitted. As such, once the window assembly is placed within the bag, the bag can be form-fitted to the window assembly. In turn, when the window assembly is transported (i.e., during subsequent storage, shipping, and installation), the potential for the bag to hang loosely from the assembly, so as to possibly catch on something and tear is minimized. In certain embodiments, this is accomplished via a vacuum sealing process. Vacuum sealing of this nature involves removing a substantial portion of the air from within the bag via a self-sealing tube located thereon. Generally, this process takes place after the window assembly is inserted within the bag through an opening, and after the bag opening has been sealed. Subsequently, the self-sealing tube is used in pulling (i.e., sucking) the air out of the bag. With the air being pulled from the interior of the bag in this fashion, the bag naturally collapses around the window. Alternate form-fitting processes may involve using a material for the bag that retains static electricity (i.e., causing the material to naturally “cling” to surfaces) or that is heat sensitive (causing the material to “shrink” and form with surfaces when
heated). Unfortunately, such specialized materials may be more difficult to utilize and also more expensive to acquire. Thus, it is contemplated that vacuum sealing would generally be preferred over these alternate processes. As mentioned above, in order for the bag to be form-fitted to the window assembly, the bag opening must first be sealed. Once the opening is sealed, the window assembly will be fully contained within the bag so as to prevent exposure of the window assembly to contaminants (e.g., air, moisture, etc.). Such sealing methods are described below.

[0025] FIG. 3 is a schematic perspective view of a bag 26 in accordance with certain embodiments of the invention. The bag 26 is preferably sized and shaped to accommodate a certain window assembly (not shown); however, given its form-fitting functionality described above, the bag 26 can also greatly exceed the size of the window assembly and still be used. Preferably, the bag 26 has at least two opposing major sides 28, 30. In certain embodiments, when a window assembly is accommodated by the bag 26 (as shown in FIG. 5), the major sides 28, 30 of the bag 26 generally lie almost parallel to major planar surfaces of the window assembly. In certain embodiments, the major sides 28, 30 of the bag 26 are sheets of material having about the same size and shape; however, it is contemplated that the sides 28, 30 may be of different sizes as well. Respective edges 32, 34 of the major sides 28, 30 are operatively coupled together to form a housing for the window assembly. In certain embodiments, as illustrated in FIG. 3, the corresponding edges 32, 34 of the major sides 28, 30 are coupled together by using one or more sheets of material 36 as intermediaries. Preferably, an opening 38 is defined in at least one end 40 of the bag 26 so as to enable the insertion of a window assembly therein. Alternatively, in other certain embodiments, as shown in FIG. 4, a bag 42 may be used which has major sides 44, 46 corresponding with edges 48, 50 that are directly coupled together without using any intermediary material. Preferably, at least one end 52 of the bag 42 has edges 48, 50 which are not coupled so as to define an opening 54 to enable insertion of a window assembly therethrough. Coupling methods mentioned above could involve sewing, gluing, stapling, or other like techniques.

[0026] Even though they are not shown as such, the respective bags 26 and 42 of FIGS. 3 and 4 are also generally configured to close such openings 38 and 54. In certain preferable embodiments, during or subsequent to their being closed, the opening 38 and 54 would also be sealed. Mechanisms providing such closing and/or sealing functionality are generally known in the technology, with a few examples being described below. In FIG. 5, the window assembly 16 (in dashed lines) from FIG. 2 is shown as having already been inserted within a bag 56. The bag 56 is generally similar in structure to the bag 26 of FIG. 3 with one exception. The major sides 58 and 60 of the bag 56 have been extended on the front end 62 proximate to where the opening 38 had previously been shown in FIG. 3. Such sides 58 and 60 have been extended outward from the bag 56 so as to join, and in doing so, to generally close the bag opening. One embodiment for additionally sealing the bag 56 may involve a locking mechanism similar to the zipping mechanism (e.g., Ziploc®) commonly used on small-scale plastic bags. In particular, a protrusion would exist on an inner surface of one of the major sides 58 or 60 proximate to the front end 62 of the bag 56, with the protrusion extending across the length of the opening (not visibly shown, but generally represented as 38 in FIG. 3). A channel would exist on an inner surface of the opposing major side 58 or 60 proximate to the front end 62 of the bag 56, with the channel extending across the length of the opening (not visibly shown, but generally represented as 38 in FIG. 3). As is generally known in the art, given an appropriately sized protrusion and channel, an airtight seal can be created from the protrusion being forcibly inserted across the length of the channel. Another sealing embodiment may involve an adhering mechanism which functions similarly to the locking mechanism described above. In particular, adhesive would be applied to an inner surface of at least one of the major sides 58 or 60 proximate to the front end 62 of the bag 56, with the adhesive being applied across the length of the opening (not visibly shown, but generally represented as 38 in FIG. 3). The inner surfaces would then be pressed together to create an air-tight seal.

[0027] One other sealing embodiment may involve a bag similar to the one illustrated in FIG. 5, but having only one major side 58 or 60 extend off of the front end 62. This extension, or flap, would be movable and would have adhesive applied along its entire inner edge. As such, the flap could be folded over the opening (not visibly shown, but generally represented as 38 in FIG. 3) and pressed along its outer edge to create an air tight seal between the flap and the non-extended major side 58 or 60. While a few examples have been provided herein, it is contemplated that there are a variety of other techniques in which the openings of such described bags can be closed and further sealed. As such, the examples described herein are not meant to limit the invention as such. Likewise, it is contemplated that a variety of bags and window assemblies can be used to exemplify these techniques, and by choosing the bag 56 and window assembly 16 above, it was not done so to limit the invention as such.

[0028] Once the window assemblies have been inserted within the bags of the invention and the bags have been subsequently sealed, the bags are then generally form-fitted to the window assemblies. As mentioned above, this form fitting can be accomplished in a number of ways. In certain preferable embodiments, such form-fitting is accomplished with the use of a self-sealing tube operatively coupled on a surface of the bag. Such tubes are generally known in the art. FIG. 5 shows such a tube 64 on the major side 58 of the bag 56. While the tube 64 is shown in this location, it is contemplated that such tube 64 could be located anywhere on the exposed surface of the bag 56 so long as it is removable following installation of the window assembly 16. In certain preferred embodiments, the tube 64 is made of a flexible plastic so as not to mark the window assembly 16 if a lower portion of the tube 64 makes contact with the assembly 16. As described above, the air within the bag 56 can be generally pulled out through the tube 64 (e.g., via use of a vacuum). As a result, the bag 56 is made to close in on the outer surfaces of the window assembly 16. Once the vacuum is removed, the tube 64 is configured to seal itself in order to prevent air from reentering the bag 56. FIG. 6 shows a representation of the bag 56 following this form fitting process.

[0029] Once stored and protected within the inventive bag 56, the window assembly 16 is typically bundled and shipped to a distributor, supplier, wholesaler, etc. and is ultimately sold to an end user. Conversely, the window
assembly 16 can be shipped and sold directly to the end user. In certain embodiments, the end user installs the assembly 16 in a building wall opening generally intended for such a window assembly. A representation of the assembly 16 after such installation is illustrated in FIG. 7. Generally, the conventional technique for installing the window assembly 16 would not be compromised by having the window assembly 16 encased in the bag 56. To the contrary, by form-fitting the bag 56 to the assembly 16, any problems generally caused by the bag 56 hanging loosely therefrom would be reduced or eliminated. Further, by sealing the assembly 16 within the bag 56, the installation surroundings (i.e., walls, ceiling, etc.) may be painted, stained, sanded or otherwise prepared (either before or after the installation of the window assembly 16) without fear of blemishing the assembly 16. Thus, during the various pre-hanging, pre-finishing and painting processes, there is no need to be concerned about scratching or applying paint or stain to the assembly 16, as it is already protected.

[0030] After installation and preparation of the environment surrounding the installed assembly 16, the exposed portions of the bag 56 (the portions of the bag 56 protruding outside the building wall opening) may be removed, for example, by means of any sharp instrument. For example, as illustrated in FIG. 7, the exposed portions of the bag 56 can be removed from each major side of the window assembly 16 (only one major side is shown in FIG. 7) by cutting the bag 56 along joint lines 66. Subsequently, such cut portions could be torn away and then discarded, leaving the exposed surfaces of the window assembly 16 uncovered, as shown in FIG. 8. In turn, a portion of the bag 56 (not visibly shown) is generally left trapped between the window assembly frame and the building wall opening. The portion of the bag retained within such opening effectively serves as a barrier against action of the wall material on the non-exposed frame surfaces (not visibly shown) of the window assembly 16. In addition, by extending only up to the joint lines 66, such left Upper portion of the bag 56 may be used as a seal or gasket (i.e., a waterproof and potentially airtight barrier) for the non-exposed frame members, assuming that the assembly 16 has been properly sealed within the wall opening, with the use of putty or other sealers.

[0031] In other certain embodiments, the exposed portions of the bag 56 (the portions of the bag 56 protruding outside the building wall opening) may be removed using other methods. For example, a bag can be configured with any one of a number of mechanisms located along the joint lines defined between the edge of the plaster, paint, or other wall coating and the window assembly frame members to enable one to remove the exposed portions of the bag as described above without cutting. One mechanism could involve the use of scoring or perforations 70, as shown in FIG. 9. Scored or perforated material can be represented in a variety of forms; however, the material generally includes at least one row of holes pierced or stamped into the bag 68 to allow for easy separation along the row. As such, by tearing at the perforations 70 along the joint lines 66, the exposed portions of the bag 68 could be removed from each major side of the window assembly 16 (only one major side is shown in FIG. 9). Subsequently, such cut portions could be torn away and then discarded, leaving a portion of the bag 68 generally left between the window assembly frame and the building wall opening as previously described. Another mechanism could involve the use of plastic strip or string 72, as shown in FIG. 10. The function of such plastic strip or string 72 would be to hold two portions of the corresponding bag 74 where the plastic strip or string 72 is affixed to the bag 74. As the plastic strip or string 72 is pulled from the bag 74 along the joint lines 66, the exposed portions of the bag 74 would separate from each major side of the window assembly 16 (only one major side is shown in FIG. 10). Subsequently, such separated portions could be torn away and then discarded, leaving a portion of the bag 74 generally left between the window assembly frame and the building wall opening as previously described.

[0032] While preferred embodiments of the present invention have been described, it should be understood that a variety of changes, adaptations, and modifications can be made therein without departing from the spirit of the invention.

What is claimed is:

1. An apparatus for securely storing and protecting a window assembly, comprising a bag with size and shape to accommodate a window assembly, the bag having an opening in at least one end thereof for inserting the window assembly into the bag, the bag having form-fitting functionality for eliminating amounts of excess space between interior surfaces of the bag and exterior surfaces of the window assembly once the window assembly is inserted into the bag, such form-fitting capability enabling the bag to be form-fitted to the window assembly, thereby enabling securement of the window assembly within the bag while also limiting portions of the bag which protrude from the window assembly.

2. The apparatus of claim 1, wherein the bag is formed of one or more elements, one of the elements being a flexible protective material that is of suitable thickness so as to be resistant to tearing yet accommodating so as to not interfere with installation of the window assembly in the field.

3. The apparatus of claim 2, wherein material comprises plastic.

4. The apparatus of claim 1, wherein the bag is opaque in order to protect the window assembly from bleaching.

5. The apparatus of claim 1, wherein the bag is translucent to permit examination of contents of the bag.

6. The apparatus of claim 1, wherein the bag is water-resistant.

7. The apparatus of claim 1, wherein the bag includes a tube defining a bore that enables fluid communication between interior of the bag and exterior of the bag, wherein the tube is operatively coupled to a side of the bag, wherein the bag opening is adapted to be operatively sealed, and wherein the bag is adapted to be form-fitted to the window assembly through vacuum sealing via the tube.

8. The apparatus of claim 7, wherein the tube is made of a plastic material and is adapted to be self-sealing.

9. The apparatus of claim 1, wherein the bag is comprised of material adapted to retain static electricity.

10. The apparatus of claim 1, wherein the bag is comprised of heat sensitive material.
11. A method of securely storing and protecting a window assembly for a period of time after the window assembly is manufactured, comprising the steps of: providing a bag with size and shape to accommodate a window assembly, the bag having an opening in at least one end thereof for inserting the window assembly into the bag, the bag having form-fitting functionality for enabling the bag to be form-fitted to the window assembly, thereby enabling securement of the window assembly within the bag while also limiting portions of the bag which protrude from the window assembly; inserting the window assembly into the bag; and form-fitting the bag once the window assembly is inserted in the bag.

12. The method of claim 11, wherein the form-fitting functionality includes a tube defining a bore that enables fluid communication between interior of the bag and exterior of the bag, wherein the tube is operatively coupled to a side of the bag, and wherein the form-fitting step includes sealing the bag opening and pulling excess air between interior surfaces of the bag and exterior surfaces of the window assembly out of the bag through the tube.

13. The method of claim 12, wherein the form-fitting step includes self-sealing of the tube after the excess air is pulled out from the bag.

14. The method of claim 11, wherein the bag is comprised of material adapted to retain static electricity, and wherein the form-fitting step includes introducing static electricity to the material.

15. The method of claim 11, wherein the bag is comprised of heat sensitive material, and wherein the form-fitting step includes heating surfaces of the bag.

16. A method of securely storing and protecting a window assembly during installation of the window assembly, comprising the steps of:

providing a construction including a window assembly being encased in a bag, the bag form-fitted to the window assembly, the form-fitted bag enabling securement of the window assembly within the bag while also limiting portions of the bag which protrude from the window assembly;

installing the construction in a building wall opening generally intended for the window assembly;

finishing environment surrounding the installed construction; and

removing the exposed portions of the bag.

17. The method of claim 16, wherein the removing step involves cutting the bag along joint lines defined between edges of the building wall opening and the construction with a sharp instrument.

18. The method of claim 16, wherein the removing step involves tearing the bag along joint lines defined between edges of the building wall opening and the construction.

19. The method of claim 18, wherein removing step involves providing perforations in the bag along the joint lines.

20. The method of claim 18, wherein the removing step involves providing a linkage holding the bag together at the joint lines, and wherein tearing along the joint lines would involve pulling the linkage away from the construction.

21. The method of claim 16, wherein the removing step involves leaving a portion of the bag between the building wall opening and the window assembly, such bag portion serving as a barrier against action of wall material on non-exposed frame surfaces of the window assembly.

22. The method of claim 21, wherein the removing step involves using the bag portion as a seal for the non-exposed frame surfaces.

23. The method of claim 22, wherein the removing step involves using the bag portion as one or more of a waterproof barrier and an airtight barrier.