INSECT SCREEN COMPRISING PARTIALLY OVERLAPPING SEGMENTS

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Abstract

The invention relates to a passable closing system for a door or window opening, comprising a length of a first flexible material, which is fixed to supporting members that can be connected to a door or window casing surrounding said opening. The supporting members are made up of at least one strip-shaped member of a second flexible material, which is fixed to said length of material, and which can be detachably connected to the casing. Preferably, a strip-shaped member fitted near the upper side of said length of material is connected to said casing at a point located near one end of said strip-shaped member and at a point located between the ends of said strip-shaped member.
Fig. 1
INSECT SCREEN COMPRISING PARTIALLY OVERLAPPING SEGMENTS

[0001] The invention relates to a passable closing system for a door or window opening, comprising a length of a first flexible-material, which is fixed to supporting members that can be connected to a door or window casing surrounding said opening.

[0002] With conventional passable closing systems of this kind, such as screen curtains, a length of a gauze-like material is fixed to a frame surrounding said length of material on the sides, the bottom side and the upper side, which frame is generally slidably or pivotally mounted when used in-door openings, whilst the frame can often be removed in its entirety when used in window openings.

[0003] Screen curtains of this kind are voluminous and expensive, partially because they must be made precisely to size for the window opening in question.

[0004] Furthermore such screen curtains are difficult to remove, if at all, during those seasons that they are not needed.

[0005] The object of the invention is to provide a closing system of the above kind, wherein, whether or not in preferred embodiments thereof, the drawbacks of the prior art constructions can be avoided, and, which moreover allows nearly unobstructed passage of persons or of a person’s arms, for example, wherein an excellent closing function is obtained again after said passage.

[0006] According to the invention, this objective can be accomplished in that said supporting members are made up of at least one strip-shaped member of a second flexible material, which is fixed to said length of material and which can be connected to the casing.

[0007] By using the construction according to the invention, a closing system, for example a screen system, can be obtained which can be fitted and, if desired, be removed again in a simple manner. The length of material can be pushed aside when passing through a door opening, whereby the strip-shaped members are bent. By making the strip-shaped members of a slightly resilient material, the length of gauze-like material will automatically return to a position in which it closes the door opening.

[0008] The invention furthermore relates to an assembly for forming a closing system according to the invention.

[0009] The invention will now be explained in more detail by means of a few possible embodiments of the construction according to the invention, which are illustrated in the accompanying figures.

[0010] FIG. 1 is a schematic view of a door opening, which is closed by two overlapping lengths of a gauze-like material.

[0011] FIG. 2 is a view of a strip-shaped member.

[0012] FIG. 3 is a view of another strip-shaped member.

[0013] FIG. 4 is a view of a connecting element.

[0014] FIG. 5 is a view of the connecting element of FIG. 4, seen from the other side.

[0015] FIG. 6 is a cross-sectional view of FIG. 4, along line VI-VI in FIG. 4.

[0016] FIG. 7 is a view of a second embodiment of a connecting element.

[0017] FIG. 8 is a side view of FIG. 7.

[0018] FIG. 9 is a side view of FIG. 8.

[0019] FIG. 10 is a sectional view of FIG. 7, along line X-X in FIG. 7.

[0020] FIG. 11 is a perspective view of a part of a screen curtain with further possible embodiments of connecting means.

[0021] FIG. 12 is a perspective view of a part of a screen curtain with further possible connecting means.

[0022] FIG. 13 shows a template suitable for fixing supporting members to the gauze-like material.

[0023] FIG. 14 is a perspective view of yet another possible first embodiment of connecting means.

[0024] FIG. 15 is a view according to arrow XV in FIG. 14.

[0025] FIG. 16 is a perspective view of yet another possible second embodiment of connecting means.

[0026] FIG. 17 is a view according to arrow XVII in FIG. 16.

[0027] FIG. 18 shows a door opening closed with the aid of the connecting means according to FIGS. 14 and 16.

[0028] FIG. 1 schematically shows a door casing 1, which bounds a door opening in which a screen curtain 2 according to the invention is present. In the embodiment that is shown in FIG. 1, the screen curtain comprises two lengths 3 and 4 of gauze-like material as conventionally used for screen doors and the like, which lengths overlap near the middle of the door opening.

[0029] Each length of material 3 and 4 is clamped between two supporting members, in the form of elongated strip-shaped members 5 near its upper end, which strip-shaped members extend perpendicularly to the longitudinal direction of said lengths of material.

[0030] As is shown more in particular in FIG. 2, such a strip-shaped member 5 is provided with a circular hole 6, at least near one end thereof, and with an elongated hole 7 near its centre.

[0031] The strip-shaped member will be provided with an adhesive on one side, and the length of gauze-like material is fixed between two such strip-shaped members 5 by means of said adhesive. The strip-shaped members suitably have a thickness of about 1 mm, and they are made of a slightly resilient material, such as PVC, for example. Connecting the adhered-together strip-shaped members 5 to casing 1 takes place with the aid of the connecting means that are shown in FIGS. 4-6 and in FIGS. 7-10.

[0032] The coupling element 8 that is shown in FIGS. 4-6 comprises a plate-shaped member 8, to which a projecting arm 9 is connected. Cuts 10 have been formed in said plate-shaped member 8 on either side of the arm.

[0033] A projecting nose 11 is formed on the underside of arm 9, seen in FIG. 6, the outer circumferential edge of which extends along part of a circle.
[0034] The connecting element 12 that is shown in FIGS. 7-10 comprises a part 13 which is U-shaped, seen in FIG. 7. An arm 14 is disposed between the parallel legs 13' of said U-shaped member, which arm is connected at one end to the central portion 13' of U-shaped member 13 that interconnects the two legs 13' of said U-shaped member 13.

[0035] Arm 14 is formed with a projecting nose 15 at its free end, the free end of which is more or less in one plane with the boundary surfaces of the legs 13' of U-shaped member 13 in unloaded condition, which legs 13' are slightly staggered with respect to the part 13' that interconnects the legs of U-shaped member 13, as will be apparent from FIG. 8.

[0036] As is indicated in FIG. 1, a connecting element 12 as shown in FIGS. 7-10 is attached to the lintel of casing 1 for each length of gauze-like material 3, 4, in such a manner that the right-hand boundary surface, seen in FIG. 8, of the part 13' of the U-shaped member 13 abuts against casing 1.

[0037] Furthermore a connecting element 8 as shown in FIGS. 4-6 is attached to each of the vertical members of casing 1 near the lintel, in such a manner that part 8 of said casing and part 9 extends in the direction of the door opening.

[0038] When the strip-shaped members 5 are being fitted, the ends of the strip-shaped members provided with openings 6 are moved between the casing and the free end of arm 9, with arm 9 being bent slightly resiliently, whereby projection 11 will fall into opening 6.

[0039] The upper edges of the strip-shaped members 5 are moved between casing 1 and the arm 14 of the connecting element 12 that is shown in FIGS. 7-10, whereby nose 15 will fall into slotted hole 7.

[0040] It will be understood that the respective lengths of gauze-like material 3 and 4 thus hang on casing 1 in a simple manner.

[0041] As is furthermore shown in FIG. 1, strips 16 being similar to strips 5 and extending parallel to strips 5 are fixed to the bottom sides of the two lengths of material 3 and 4, whereby the ends of the strips that are disposed near the vertical members of the casing are connected to the casing 1, in a similar manner as described above for strips 5, by means of the connecting element 8 that is shown in FIGS. 4-6.

[0042] If desired, the length of gauze-like material can be connected to casing 1 in one or more points located between the upper end and the lower end of the length of material in question, as is shown the right-hand side of FIG. 1. A comparatively short strip 18 can be used thereby, as is shown in FIG. 3, which strip is preferably made of a flexible plastic material, such as PVC. Two such strips 18 can be adhered to the length of material in opposed relationship on either side of said length of material. The strips are thereby provided with circular holes 19 near their centres, and they can be connected to the casing by means of the connecting element 8 that is shown in FIGS. 4-6.

[0043] If a person wishes to pass the screen curtain of FIG. 1, which is fitted in a door opening, he only needs to push aside the, lengths of material 3, 4, for example by pushing with his foot against the strips 16 that are fixed to the bottom side of the length of material. The lengths of material will be “folded open” in that case as a result of said lengths bending about imaginary lines 20 extending between the connecting points that are located at the upper side of the casing; near the centres of the lengths of material, and the connecting points of the lengths of material that are located on the sides of the lengths of material, near the bottom sides of said lengths.

[0044] As a result of the inherent spring force of the material from which the strip-shaped supporting members 5 and 16 are made, the screen curtain will exhibit a tendency to return to the position that is shown in FIG. 1, in which position the lengths of material close the door opening.

[0045] As furthermore appears from FIG. 1, the strip-shaped supporting members 5 and 16 are preferably fitted in such a manner near the upper side and the bottom side of the lengths of material 3 and 4 that the gauze-like-material projects above the upper strip-shaped supporting members 5 and under the lower strip-shaped supporting members 16, whereby said projecting parts will abut against the casing and against the bottom rail in the “closed” position of the screen curtain so as to ensure a proper closing action.

[0046] Of course modifications and/or additions to the above-described embodiment are conceivable.

[0047] Thus FIG. 11 shows an embodiment wherein a type of connecting element 26 comprising a U-shaped body 27 is used for connecting the strip-shaped supporting members 5, which are fixed to a length of gauze-like material 3, 4, to the casing 1, which body 27 is to be attached to the casing, and an arm 28 positioned between the legs of said U-shaped body 27, which arm is connected to the U-shaped body 27 with one end and which is provided with a projecting nose 29 at its free end.

[0048] Nose 29 can be inserted, under slightly resilient deformation of arm 28, into a slotted hole 30 located at one end of the interconnected strip-shaped supporting members 5 and in a slotted hole 31, respectively, which is located near the centre of said supporting members 5.

[0049] In the embodiment that is shown in FIG. 12, a connecting element 32 comprises a plate-shaped member 33 to be fixed to the casing. A projecting arm 34 is connected to said plate-shaped member 33, which arm is provided with a nose 35 at its free end, which nose is intended for being hooked into a respective slotted hole 30, 31 formed in a supporting member 5.

[0050] The above-described screen curtain is very suitable for sale to “do-it-yourselfers”, whereby the lengths of gauze-like material, the supporting members and the connecting means are supplied separately. The buyer can cut the gauze-like material to size and fix the supporting members to the gauze-like material in the required manner.

[0051] It is possible thereby to efficiently utilize the template 36 that is shown in FIG. 13, which may be made of cardboard or a similar material, for example, and on which the contours 5" of a strip-shaped supporting member as well as the holes formed in said strip-shaped supporting member are already indicated. Also the position of the gauge relative to said “strip-shaped supporting members’S” is indicated, both for the upper side of the screen curtain and for the bottom side of the screen curtain, in such a manner that the
gauze will project a desired distance above and below the respective supporting members.

[0052] The connecting elements 40, 41 that are shown in FIGS. 14, 15 and 16, 17, respectively, are suitable for being fastened to the inner side of a casing. Such a fastening method may for example be used when insufficient space is available on the front side of the casing for mounting the connecting elements, as is for example shown in FIGS. 4-12. Moreover, an additional visual advantage of fastening the connecting elements to the inner side of the casing is that the connecting element lies hidden behind the respective length of gauze-like material, and is thus less exposed to view. The connecting elements 40, 41 are made up of a rectangular body 42, 43 and of lips 44, 45, which lips are spring-connected to the respective rectangular bodies 42, 43. Rectangular body 42 mainly consists of contact surface 46, receiving surface 47 and side surfaces 48. Connecting element 40 is connected to a casing with its contact surface 46 abutting against the inner side of said casing. Such a connection can for example be effected by means of one or more screws, which extend into the casing through openings in contact surface 46. Alternatively, double-sided adhesive tape may be used, which is currently commercially available under the brand name Powerstrip. Lip 44 includes a semi-cylindrical part 49 on the outer side, which part functions to increase the spring force of lip 44 with respect to rectangular body 42. Lip 44 is provided with a rib 50 exactly in its centre, seen in longitudinal direction, by means of which the correct mounting position of connecting element 40 on the casing can be determined in a simple manner. A rectangular nose 51 is formed on the inner side of lip 44 to enable connecting element 40 to receive a strip-shaped member between receiving surface 47 and lip 44, which nose engages in a slotted recess in said strip-shaped member in connected condition. Nose 51 includes a bevelled side 52 on the inner side of the casing, which makes it easier to insert a strip-shaped member into connecting element 40. Side surfaces 48 ensure that rectangular body 42, and in particular the connection between contact surface 46 and receiving surface 47, is sufficiently rigid.

[0053] Connecting element 41 is largely similar to connecting element 40. What is different is in particular the shape of nose 53, which is round. Nose 53 likewise includes a bevelled side 54. Connecting element 40 is in particular suitable for being fastened to an upper horizontal member of a casing, whilst connecting element 41 lends itself more for being fastened to the vertical members of a casing, in particular on the bottom side, since the round shape of nose 53 enables said nose to perform a hinge function with respect to the strip shaped member that is inserted into connecting element 41. The wide edge of nose 51 enables connecting element 40 to perform its bearing function better.

[0054] FIG. 18 shows a screen curtain system in the situation wherein the connecting elements are used as shown in FIGS. 14-17. In comparison with FIG. 1, the connecting elements 40, 41 are less exposed to view. In FIG. 18, the lengths of material 55, 56 include a fringe 57, 58 on their bottom sides, as a result of which the correct length of lengths 55, 56 for the casing in question can easily be achieved by cutting said lengths 55, 56 to measure along line 59. The advantage of using fringes 57, 58 is in particular the fact that the strip-shaped 5, 16 can be fixed to lengths of material 55, 56 at the factory already, so that the buyer will be spared some assembling work. In addition to that it has become apparent that persons passing a screen door system as shown in FIG. 1 unconsciously tend to step over the lower strip-shaped members 16. This risk is smaller when fringes are used.

[0055] Although the invention has only been explained as used with screen curtain systems so far, it is emphasized that also other forms of a passable closing system according to the invention are possible. When a plastic foil, for example a transparent plastic foil, is used for said lengths of material, one can imagine that it is thus possible to obtain a passable closing system which excludes odour, draught or cold.

1. A passable closing system for a door or window opening, comprising two lengths (3, 4) of a first flexible material, which lengths (3, 4) overlap near the middle of the opening and which each are fixed to supporting members (5, 16) that are connectable to a door or window casing (1) surrounding said opening, characterized in that said supporting members (5, 16) are each made up of at least one strip-shaped member extending perpendicularly to the longitudinal direction of said lengths (3, 4) and made of a second flexible, resilient material allowing the bending and automatically returning of the strip-shaped members during passage through the door or window opening between the two lengths, which strip shaped members are fitted to said length of material near the upper ends of each length (3, 4) such that they overlap each other and which are connectable to the casing (1).