

Description

THIS INVENTION relates to a fastening means having particular utility in the fastening of flexible sheeting material, such as plastic sheeting, to a fixture. Moreover, the invention finds particular, although not exclusive, application to fixing plastic sheeting to a framework so as to form coverings for green houses, cloches, or other such structures.

BACKGROUND ART

With respect to the aforementioned application, previously known methods of fixing flexible sheeting to a framework have involved forming a hem around the perimeter of the sheeting and fastening the hem to the framework by means of nailed battens or by the use of dowels and twine. With regard to the latter, wooden dowels are passed through the hem at spaced apart locations and twine is firstly laced through the dowels and subsequently fixed to the frame work by means of staples. Both of these methods have the disadvantages. In the case of nailed battens, the sheeting has a tendency to tear, and the battens have a tendency to work away from the framework, particularly in windy conditions. In the case of dowels and twine, tensile forces within the sheeting, over a period of time, have a tendency to stress the lacing and eventually cause the staples to pull out, thereby releasing the sheeting. Additionally, the sheeting material often times tears through the dowels when subjected to extremely large transient tensile forces such as do arise in windy conditions, causing not only the release of the sheeting but also damage to the sheeting.

In order to overcome the disadvantages of the aforementioned methods of fastening sheeting, several products have been proposed which utilize a channel member and a mating wedge or clip member, which are capable of being deformedly interconnected to form a joint. In these arrangements, one member is fixedly mounted to the greenhouse or cloche framework, and the sheeting is clamped to this member by disposing it between the respective members of the joint prior to interconnection and subsequently pressing the other member into engagement with the fixed member so as to clamp or pin the sheeting between the members. Examples of this type of fastening are disclosed in prior patent specification numbers AU-43065/68, DE-2433638, AU-33920/84, AU-38379/85 and BE-898594.

Each of the prior art fastening devices disclosed in these specifications relies upon the fixing of the channel member, usually formed of aluminium, to the framework which supports the sheeting. The sheeting is then anchored by pushing the

wedge or clip, usually formed of plastic material, into the channel with the sheeting interposed between the channel and the clip. Consequently, the channel member and/or clip is required to be deformed to subsequently allow frictional engagement between the members and thus the formation of the joint.

The types of frictional fastening suffer from several disadvantages as a result of their intrinsic design. Moreover, these types of fastening for their fastening ability rely upon the frictional force created between the interconnected members being greater than any tensile or tensioning force applied to the sheeting, such that these forces are in direct opposition to each other. It has been found, however, that in gusty wind conditions where relatively large and repetitive tensile forces are applied to the sheeting material, the wedge or clip members have a tendency to be forced apart due to the tensile forces on the sheeting providing a generally transverse force component within the confines of the channel, directly against the wedge or clip member, due to the sheeting material in the vicinity of the channel being displaced from the general plane of the sheeting which is actually subjected to the tensile forces. Furthermore, due to these devices relying upon deformation of either or both the channel member and wedge or clip member, such a type of fastening is not conducive to repeated usage on the same portion of sheeting, since the sheeting material in the vicinity of the channel is subjected to a relatively high degree of stress during the interconnecting operation. Thus repeated release and re-application of the fastening would have a tendency to cause severe wear of that portion of the sheeting retained within the joint. Additionally, the release of the joint would be a relatively difficult operation since the application of a force greater than the frictional force maintaining the joint, would need to be applied to the wedge or clip member in order to ensure its release.

An alternative construction for fastening sheeting material is disclosed in US 4452294, whereby a fastener having a fork member with a pair of outwardly diverging arms, one of which has hook means which acts as a stop for a keeper member, is described. The keeper member is formed of a pair of planar strips which are unreleasably fixed to sheeting material along the position at which the sheeting material is to be joined to the fork member. The sheeting material is retained by a combination of a wedging of the keeper member in the fork member against the hook means, and optionally by the sheeting material being wrapped around the external body of the sheeting material.

This arrangement is particularly intended for fastening screens for use in endless writing boards and possesses a significant disadvantage if applied

to fastening of sheet material in circumstances envisaged by the present invention. Moreover, due to the fact that sheeting material stretches over time, particularly when exposed to windy conditions, the arrangement described in US 4452294 finds very limited application due to the permanent attachment of the keeper member to the sheeting, making it unsuitable to use in outdoor fastening applications for sheeting, or where the sheeting is subject to repeated tensioning.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a fastening means for sheeting material which can facilitate the release and re-fastening of the material.

It is a preferred object of the present invention to provide a fastening means for sheeting material which applies a holding force to the material proportional to any outwardly direct tensile force applied to the material.

In accordance with one aspect of the present invention, there is provided a sheet material securing fastener for fastening sheet material to a fixture wherein the sheet material is subject to a varying tensile force comprising:

a fork member for mounting to the fixture, said fork member including a pair of outwardly diverging arms joined at a common junction to define a void therebetween, one of said arms including a hook means thereon spaced from said junction and facing inwardly; and

a keeper member having a substantially planar body with two ends, one end for holding the sheet material against said hook means and the other end for holding the sheet material inside said void; characterised in that said keeper member is discrete from the sheet material and is of rigid integral form; and that the distance between the ends of said body is greater than the maximal spacing between said arms and less than the distance between said hook means and said common junction; thereby enabling the keeper member to be positioned within said fork member to adopt a locking position where the keeper member during use is pulled in the same direction as any tensile force that is applied to the sheet material causing the ends of said body to apply a fastening force to the sheet material, such that the fastening force is applied to the sheet material by said other end of said body in proportion to the tensile force which is applied to the sheet material.

Preferably said keeper member includes biasing means adapted to urge said one end against said hook means.

Preferably said biasing means comprises a resilient outwardly extending finger integral with said

body.

Preferably said finger extends a distance from said other end of said body which is less than the spacing between said hook means and the surface there opposite to enable removal of said keeper member from said fork member.

Preferably said finger is adapted to hold the sheeting material at a position extending along said other of said arms adjacent to said other end of said keeper member and substantially parallel thereto.

Preferably said other arm of said fork member is formed with a substantially planar inner side to enable the sheet material to extend generally contiguously with said inner side of said other arm.

Preferably said keeper member includes wing member means projecting outwardly from said body to facilitate removal of said keeper member from said fork member.

Preferably said one arm is of substantially planar construction between said hook means and said common junction.

BRIEF DESCRIPTION OF DRAWINGS

The invention is further described in the following specific embodiments thereof. The description is made with reference to the accompanying drawings wherein:-

Fig. 1 is a cross-sectional end view of the fastening means in accordance with the first embodiment;

Fig. 2 is a perspective view of the fastening means shown at Fig. 1;

Fig. 3 is an end view of the keeper member;

Fig. 4 is an end view of the fork member;

Fig. 5 is a cross-sectional end view of the fastening means in accordance with the second embodiment; and

Fig. 6 is an end view of the fastening means in accordance with the third embodiment.

BEST MODE FOR CARRYING OUT THE INVENTION

The first embodiment is directed towards a fastening means for fastening flexible sheeting material in the form of a plastic membrane to a frame work for a green house, whereby the plastic membrane provides a transparent cover to the green-house.

The fastening means 11 essentially consists of two members, one being a fork member 13 and the other being a keeper member 15.

The fork member is formed with a pair of outwardly diverging arms 17 which are joined at a common junction 19. One arm 17a is provided with an inwardly directed hook means 21 at the distal

end thereof relative to the junction 19. The other arm 17b has a generally planar inner side which terminates abruptly at the distal end thereof relative to the junction 17a. A mounting flange portion 23 projects from the junction 19 in a generally opposite direction to the other arm. The flange portion 23 combines with the other arm 17b to define a planar outer mounting side 25 for flush mounting the fork member to a structural member 27 of the framework for the greenhouse. A series of apertures 29 are provided at regular spacings along the flange portion 23 to facilitate mounting the fork member to the structural member by a conventional fastener such as a self tapping screw 31.

The keeper member 15 is elongated in section and is formed with opposing ends for respectively engaging the inner sides of the opposing arms 17 of the fork member. That is, one end 15a is adapted to engage the inner side of the one arm 17a and moreover, be retained by the hook means 21, and the other end 15b is adapted to lodge between the arms proximate the junction 19, and, when appropriate, engage the inner side of the other arm 17b. Accordingly, the longitudinal extent of the keeper member between the ends, is generally greater than the maximal spacing between the arms, but is less than the distance between the hook means 21 and the junction 19 to permit the member to adopt a locking position to be described in more detail later.

The keeper member has a transverse extent generally less than the maximal spacing between the arms to enable removal of the keeper member from within the confines of the fork member by aligning the longitudinal extent of the keeper member with the opening between the arms.

The keeper member 15 is provided with a biasing means in the form of a resilient finger 33. The finger 33 projects outwardly from the body of the keeper member proximate the other end 15b in a generally transverse direction to the longitudinal extent of the member. The finger is capable of lateral deflection towards the body of the keeper member to effectively apply an outward biasing force thereon. Consequently, the keeper member may be inserted into the confines of the fork member with the finger 33 disposed on the upperside of the keeper member so as to extend outwardly relative to the opening of the fork member, and be brought into a locking position. Moreover, the one end 15a of the keeper member is brought into and maintained in engagement with the hook means 21 of the member and the other end 15b is disposed between the arms proximate the junction 19. In this position, the finger 33 is deflected laterally by the adjacent location of the inner side of the other arm 17b and thus applies a resulting biasing force to the body of the keeper member causing the one

end 15a of the keeper member to repose against the inner side of the one arm 17a of the fork member. Accordingly the one end 15a engages the hook means 21 in response to any outward movement of the keeper member from within the fork member.

In order to remove the keeper member from the locking position, it is simply necessary to align the longitudinal extent of the keeper member with the opening between the arms and releasing the one end 15a of the keeper member from the hook means 21. This can be achieved by simply disposing the other end 15b of the keeper member in close engagement with the junction 19 and bodily deflecting the keeper member away from the arm 17a, in cases where access to the one end 15a is restricted by the end of the hook means, or by simply pulling the one end 15a away from the hook means in cases where access is not so restricted, so that in either case the one end 15a is spaced laterally from the hook means 21. Subsequently the keeper member can be removed from this position by passing it through the opening provided between the arms 17 whilst maintaining its aligned attitude. Such disposition of the keeper member is caused by deflection of the finger 33 relative to the body of the keeper member by a force greater than the biasing force applied by the finger.

Now describing the operation of the fastening means, the end portion of the plastic membrane 35 which is desired to be fastened, is positioned so as to overlie the opening between the arms 17 of the fork member. The keeper member 15 is then positioned along this opening engaging the plastic membrane on the opposite side to that which overlies the fork member. Thus, the plastic membrane is interposed between the fork member and the keeper member. The other end of the keeper member, is then directed inwardly through the opening and into the confines of the fork member by bodily pressing the keeper member and so causing the distal end of the finger 33 to engage the inner side of other arm 17b with the plastic membrane interposed therebetween. Eventually, the one end 15a of the keeper member will enter the confines of the fork member and engage the inner side of the arm 17a with the plastic membrane interposed therebetween. At this stage, the finger 33 will be deflected inwardly by the action of the other arm 17b biasing the one end 15a of the keeper member into engagement with the one arm 17a and consequently, into engagement with the hook means 21. At this position, the keeper member will be effectively locked within the confines of the fork member, and be prevented from escaping from this confinement by the provision of the hook means 21.

Consequently, the plastic membrane enters the confines of the fork member adjacent the inner side of the other arm 17b so as to extend contiguously with the general plane of this side in the direction beyond the distal of the other arm. The membrane further extends around the inner side of the keeper member to generally envelope the same within the confines of the fork member.

Thus, if any outwardly directed tensioning force is applied to the plastic membrane as represented by the arrows A, an effective moment will be applied to the keeper member causing the one end 15a of the member to engage more securely with the hook means 21 and the other end 15b to engage more securely with the inner side of the other arm 17b. If this tensioning force increases, the moment applied to the keeper member will be increased causing a greater forced engagement between the other end 15b of the keeper member and the other arm 17b. Consequently, the fastening force applied by the keeper member to the membrane increases with an increase in tensioning forces on the membrane. Similarly, a reduction in the tensioning force on the membrane causes a reduction in the holding or clamping force provided by the fastening means.

Accordingly, the present invention has the advantage that a fastening force is only applied to the membrane at those times when the membrane requires it, i.e. when under tension, and thus reduces the degree of wear upon the components of the fastening means and the membrane itself due to the impermanence of the holding forces applied between the members and the membrane.

Additionally, release of the fastening of the membrane is facilitated by removing the keeper member from within the confines of the fork member in the manner previously described. Consequently, repeated use of the fastening means is allowed and indeed is facilitated by the simple process required in releasing the keeper member without the imposition of significant stresses upon the plastic membrane retained thereby.

The second embodiment is substantially similar to the previous embodiment, except that the keeper member is of a slightly different configuration.

In the description of this embodiment, the same reference numerals are used for identifying features of the fastening means consistent with both embodiments.

As shown at Fig. 5 of the drawings, the keeper member 15 of the present embodiment is of a more pronounced angular configuration so as to be accommodated with a fork member 13 having arms 17 of a closer spacing.

The keeper member 15 is further formed, with an integral wing 41 which projects outwardly from the body of the keeper member on the same side

as does the finger 33. The wing 41, however, is disposed towards the one end 15a of the keeper member and projects outwardly from within the confines of the fork member beyond the opening, when the keeper member is disposed therein. The wing 41 terminates with an outwardly projecting lip 43, which is disposed to generally overlie the hook means 21 so as to shield any exiting membrane between the hook means and the keeper member. Consequently, the stressed portion of the membrane is shielded from exposure to the external environment and in particular, from ultra violet radiation, thereby mitigating its tendency to otherwise debilitate.

The wing 41 provides the additional benefit of a handle which may be grasped to depress the keeper member into the confines of the fork member, enabling disengagement of the one end 15a of the keeper member from the hook means 21 and consequently permitting disengagement of the one end 15a from the inner side of the one arm 17a by deflecting the body of the keeper member against the finger 33. Hence, removal of the keeper member from the fork member is facilitated, and use of the keeper member is enabled in fork members having restrictive openings designed for the application of relatively high fastening forces.

The third embodiment is essentially an extension of the first embodiment, whereby a fastening means is provided having dual fork members which are oppositely disposed and adapted to receive keeper members so as to provide a connector for interconnecting the ends of two separate pieces of sheeting both of which are capable of being subjected to tensioning.

As shown at Fig. 6 of the drawings, the fastening means 45 comprises a pair of oppositely disposed fork members 47a and 47b which are joined together at a common junction 49. Each fork member 47 is of essentially the same design of the fork member of the first embodiment, and is adapted to receive a keeper member 51 in a locking position to fasten the end of a portion of sheeting within the confines of the fork member. Thus, one fork member 47a is adapted to receive the keeper member 51a and so fasten the portion of sheeting 53a in the same manner as described in the previous embodiments, and the other fork member 47b is adapted to receive the keeper member 51b to fasten the portion of sheeting 53b therein.

The particular disposition of the diverging arms of the fork members, is such that the one arm 55 which terminates with the hook means extends out from the junction 49 towards the same side of the fastening means, and the other arms 57 extend outwardly in opposite directions from the junction 49 at the other side of the fastening means. Furthermore, the other arms 57a and 57b of the re-

spective fork members are coplanar so as to define a planar outer side face 59 along the other side of the fastening means to facilitate mounting of the fastening means to the framework.

Consequently, a butt jointing of the ends of two separate portions of sheeting may be achieved by fastening the respective ends of the sheeting 53 to the respective fork members in the manner previously described in the preceding embodiments.

It should be noted that an important feature of the aforementioned embodiments is that the fastening means described therein, provides a fastening force which varies with the tensioning or pulling force applied by the sheeting material and moreover, provides fastening force which is directly proportional to this. Accordingly, by adjusting the proportions of the arms of the fork member and varying the angle of the keeper member, it is possible to multiply the fastening force by the resultant lever action applied by the keeper member upon the sheeting material. Furthermore, when there is no tensioning force, the fastening force reduces markedly to that merely applied by the resilient finger.

In addition, it should be noted that the spring action provided by the finger is only necessary to maintain the keeper member in place when there is no tension on the sheeting material. Hence, the provision of the biasing means can be dispensed within those applications where there is always some tension in the sheeting material being fastened.

Claims

1. A sheet material securing fastener (11) for fastening sheet material (35) to a fixture (27) for subjecting during use the sheet material (35) to a varying tensile force comprising:
 - a fork member (13) for mounting to the fixture (27), said fork member (13) including a pair of outwardly diverging arms (17) joined at a common junction (19) to define a void therebetween, one of said arms (17a) including a hook means (21) thereon spaced from said junction (19) and facing inwardly; and
 - a keeper member (15) having a substantially planar body with two ends, one end (15a) for holding the sheet material (35) against said hook means and the other end (15b) for holding the sheet material (35) inside said void;
 - characterized in that said keeper member (15) is discrete from the sheet material (35) and is of rigid integral form; and that the distance between the ends (15a, 15b) of said body is greater than the maximal spacing between said arms (17) and less than the distance between said hook means (21) and said common junction (19); thereby enabling the

keeper member (15) to be positioned within said fork member (13) to adopt a locking position where the keeper member (15) during use is pulled in the same direction as any tensile force that is applied to the sheet material (35) causing the ends (15a, 15b) of said body to apply a fastening force to the sheet material (35), such that the fastening force is applied to the sheet material (35) by said other end (15b) of said body in proportion to the tensile force which is applied to the sheet material (35).

2. A sheet material securing fastener as claimed in claim 1 wherein said keeper member (15) includes biasing means (33) adapted to urge said one end (15a) against said hook means (21).
3. A sheet material securing fastener as claimed in claim 2 wherein said biasing means comprises a resilient outwardly extending finger (33) integral with said body.
4. A sheet material securing fastener as claimed in claim 3 wherein said finger (33) extends a distance from said other end (15b) of said body which is less than the spacing between said hook means (21) and the surface there opposite to enable removal of said keeper member (15) from said fork member (13).
5. A sheet material securing fastener as claimed in claims 3 or claim 4 wherein said finger (33) is adapted to hold the sheeting material at a position extending along the other (17b) of said arms (17) adjacent to said other end (15b) of said keeper member (15) and substantially parallel thereto.
6. A sheet material securing fastener as claimed in any one of claims 1 to 5 wherein said other arm (17b) of said fork member is formed with a substantially planar inner side to enable the sheet material (35) to extend generally contiguously with said inner side of said other arm (17b).
7. A sheet material securing fastener as claimed in any one of the preceding claims wherein said one arm (17a) is of substantially planar construction between said hook means (21) and said common junction (19).
8. A sheet material securing fastener as claimed in any one of claims 1 to 7 wherein said keeper member (15) includes wing member means (41) projecting outwardly from said body to facilitate removal of said keeper mem-

spective fork members are coplanar so as to define a planar outer side face 59 along the other side of the fastening means to facilitate mounting of the fastening means to the framework.

Consequently, a butt jointing of the ends of two separate portions of sheeting may be achieved by fastening the respective ends of the sheeting 53 to the respective fork members in the manner previously described in the preceding embodiments.

It should be noted that an important feature of the aforementioned embodiments is that the fastening means described therein, provides a fastening force which varies with the tensioning or pulling force applied by the sheeting material and moreover, provides fastening force which is directly proportional to this. Accordingly, by adjusting the proportions of the arms of the fork member and varying the angle of the keeper member, it is possible to multiply the fastening force by the resultant lever action applied by the keeper member upon the sheeting material. Furthermore, when there is no tensioning force, the fastening force reduces markedly to that merely applied by the resilient finger.

In addition, it should be noted that the spring action provided by the finger is only necessary to maintain the keeper member in place when there is no tension on the sheeting material. Hence, the provision of the biasing means can be dispensed within those applications where there is always some tension in the sheeting material being fastened.

Claims

1. A sheet material securing fastener (11) for fastening sheet material (35) to a fixture (27) for subjecting during use the sheet material (35) to a varying tensile force comprising:

a fork member (13) for mounting to the fixture (27), said fork member (13) including a pair of outwardly diverging arms (17) joined at a common junction (19) to define a void therebetween, one of said arms (17a) including a hook means (21) thereon spaced from said junction (19) and facing inwardly; and

a keeper member (15) having a substantially planar body with two ends, one end (15a) for holding the sheet material (35) against said hook means and the other end (15b) for holding the sheet material (35) inside said void;

characterized in that said keeper member (15) is discrete from the sheet material (35) and is of rigid integral form; and that the distance between the ends (15a, 15b) of said body is greater than the maximal spacing between said arms (17) and less than the distance between said hook means (21) and said common junction (19); thereby enabling the

keeper member (15) to be positioned within said fork member (13) to adopt a locking position where the keeper member (15) during use is pulled in the same direction as any tensile force that is applied to the sheet material (35) causing the ends (15a, 15b) of said body to apply a fastening force to the sheet material (35), such that the fastening force is applied to the sheet material (35) by said other end (15b) of said body in proportion to the tensile force which is applied to the sheet material (35).

2. A sheet material securing fastener as claimed in claim 1 wherein said keeper member (15) includes biasing means (33) adapted to urge said one end (15a) against said hook means (21).
3. A sheet material securing fastener as claimed in claim 2 wherein said biasing means comprises a resilient outwardly extending finger (33) integral with said body.
4. A sheet material securing fastener as claimed in claim 3 wherein said finger (33) extends a distance from said other end (15b) of said body which is less than the spacing between said hook means (21) and the surface there opposite to enable removal of said keeper member (15) from said fork member (13).
5. A sheet material securing fastener as claimed in claims 3 or claim 4 wherein said finger (33) is adapted to hold the sheeting material at a position extending along the other (17b) of said arms (17) adjacent to said other end (15b) of said keeper member (15) and substantially parallel thereto.
6. A sheet material securing fastener as claimed in any one of claims 1 to 5 wherein said other arm (17b) of said fork member is formed with a substantially planar inner side to enable the sheet material (35) to extend generally contiguously with said inner side of said other arm (17b).
7. A sheet material securing fastener as claimed in any one of the preceding claims wherein said one arm (17a) is of substantially planar construction between said hook means (21) and said common junction (19).
8. A sheet material securing fastener as claimed in any one of claims 1 to 7 wherein said keeper member (15) includes wing member means (41) projecting outwardly from said body to facilitate removal of said keeper mem-



ber (15) from said fork member (13).

9. A sheet material securing fastener as claimed in claim 8, wherein said wing member means (41) is disposed relative to said keeper member (15) and said fork member (13) when said keeper member (15) is disposed within said fork member (13), to overlie the hook means (21) of said one arm (17a) to shield any sheet material (35) disposed between said hook means (21) and said one end (15a) of the keeper means (15).
10. A sheet material securing fastener (45) as claimed in any one of the proceeding claims, comprising a further fork member (47b) corresponding to the first fork member (13, 47a) and having outwardly diverging arms (51b, 55b) disposed oppositely to the arms (57a, 55a) of said first fork member (47b), and a further keeper member (51b) for said further fork member (47b) corresponding to the first keeper member (15, 51a), the other arm (51b) of said further fork member (47b) being disposed in coplanar arrangement with the other arm (57a) of said first fork member (47a) to define a planar outer side (59) to facilitate mounting of the fastener (45) to the fixture (27).

Patentansprüche

1. Befestigungsmittel für Folienmaterial (11) zur Befestigung eines Folienmaterials (35) an einer Haltevorrichtung (27), um das Folienmaterial (35) während der Nutzung einer veränderlichen Zugkraft aussetzen zu können, welches folgende Elemente aufweist:
 ein Bügelement (13) zur Befestigung an der Haltevorrichtung (27), wobei dieses Bügelement (13) ein Paar nach außen divergierender Arme (17) einschließt, die an einer gemeinsamen Verbindungsstelle (19) miteinander verbunden sind, um dazwischen einen leeren Raum zu bilden, wobei einer der Arme (17a) ein Hakenmittel (21) einschließt, das an diesem und im Abstand zu der Verbindungsstelle (19) angeordnet und nach innen gerichtet ist, und
 ein Halteelement (15), das einen im wesentlichen planen Körper mit zwei Enden hat, wobei das eine Ende (15a) dem Halten des Folienmaterials (35) am Hakenmittel und das andere Ende (15b) dem Halten des Folienmaterials (35) innerhalb des leeren Raumes dient;
 gekennzeichnet dadurch, daß das Halteelement (15) von dem Folienmaterial (35) getrennt ist und eine starre, integrale Form hat; und dadurch, daß der Abstand zwischen den Enden

(15a, 15b) des Körpers größer als der maximale Abstand zwischen den Armen (17) und kleiner als der Abstand zwischen dem Hakenmittel (21) und der gemeinsamen Verbindungsstelle (19) ist; wodurch es möglich wird, das Halteelement (15) innerhalb des Bügelementes (13) anzuordnen, um eine Verriegelungsposition einzunehmen, wodurch das Halteelement (15) während der Nutzung in derselben Richtung gezogen wird wie jedwede Zugkraft, die auf das Folienmaterial (35) ausgeübt wird, was zur Folge hat, daß die Enden (15a, 15b) des Körpers eine Befestigungskraft in einer Weise auf das Folienmaterial (35) ausüben, daß die Befestigungskraft durch das andere Ende (15b) des Körpers im Verhältnis zu der Zugkraft ausgeübt wird, die auf das Folienmaterial (35) einwirkt.

2. Befestigungsmittel für Folienmaterial nach Anspruch 1, bei welchem das Haltemittel (15) ein Vorspannmittel (33) einschließt, welches das genannte eine Ende (15a) gegen das Hakenmittel (21) drücken kann.
3. Befestigungsmittel für Folienmaterial nach Anspruch 2, bei welchem das Vorspannmittel einen elastischen, nach außen gerichteten Finger (33) aufweist, der mit dem genannten Körper aus einem Stück besteht.
4. Befestigungsmittel für Folienmaterial nach Anspruch 3, bei welchem sich der Finger (33) in einem Abstand von dem genannten anderen Ende (15b) des Körpers erstreckt, der kleiner als der Abstand zwischen dem Hakenmittel (21) und der diesem gegenüberliegenden Oberfläche ist, um die Abnahme des Halteelementes (15) von dem Bügelement (13) zu ermöglichen.
5. Befestigungsmittel für Folienmaterial nach Anspruch 3 oder Anspruch 4, bei welchem der Finger (33) das Folienmaterial in einer Position halten kann, die längs des anderen (17b) der genannten Arme (17), angrenzend an das genannte andere Ende (15b) des Halteelementes (15) und im wesentlichen parallel dazu, verläuft.
6. Befestigungsmittel für Folienmaterial nach einem der Ansprüche 1 bis 5, bei welchem der genannte andere Arm (17b) des Bügelementes mit einer im wesentlichen planen Innenseite gebildet wird, um zu ermöglichen, daß sich das Folienmaterial (35) im allgemeinen anliegend an der Innenseite des genannten anderen Armes (17b) erstrecken kann.



7. Befestigungsmittel für Folienmaterial nach einem der vorstehenden Ansprüche, bei welchem der genannte eine Arm (17a) eine im wesentlichen ebenflächige Bauweise zwischen dem Hakenmittel (21) und der gemeinsamen Verbindungsstelle (19) aufweist.
8. Befestigungsmittel für Folienmaterial nach einem der Ansprüche 1 bis 7, bei welchem das Halteelement (15) ein Flügelbauelement (41) einschließt, das von dem genannten Körper nach außen vorsteht, um die Abnahme des Halteelementes (15) von dem Bügelement (13) zu erleichtern.
9. Befestigungsmittel für Folienmaterial nach Anspruch 8, bei welchem das Flügelbauelement (41) in Beziehung zu dem Halteelement (15) und dem Bügelement (13) angeordnet ist, wenn sich das Halteelement (15) innerhalb des Bügelementes (13) befindet, um das Hakenmittel (21) des genannten einen Armes (17a) zu überlagern und das Folienmaterial (35) zu schützen, das sich zwischen dem Hakenmittel (21) und dem genannten einen Ende (15a) des Halteelementes (15) befindet.
10. Befestigungsmittel für Folienmaterial (45) nach einem der vorstehenden Ansprüche, das ein weiteres Bügelement (47b), das dem ersten Bügelement (13, 47a) entspricht und nach außen divergierende Arme (51b, 55b) hat, die den Armen (57a, 55a) des ersten Bügelementes (47b) gegenüberliegend angeordnet sind, und ein weiteres Halteelement (51b) für das genannte weitere Bügelement (47b), das dem ersten Halteelement (15, 51a) entspricht, aufweist, wobei der andere Arm (51b) des genannten weiteren Bügelementes (47b) in einer Ebene mit dem anderen Arm (57a) des ersten Bügelementes (47a) angeordnet ist, um eine plane Außenseite (59) zu bilden, um so die Anbringung des Befestigungsmittels (45) an der Haltevorrichtung (27) zu erleichtern.

Revendications

1. Un organe de fixation et de retenue (11) pour des matériaux en feuilles, servant à fixer des matériaux en feuilles (35) sur une pièce fixe (27), pour soumettre les matériaux en feuilles (35) à une force de traction variable en cours d'utilisation, comprenant:

un organe à fourche (13) destiné à être monté sur la pièce fixe (27), ledit organe à fourche (13) englobant une paire de bras divergeant vers l'extérieur (17), assemblés au niveau d'une jonction commune (19) pour définir

un vide entre eux, un des dits bras (17a) englobant un moyen de crochet (21) espacé de ladite jonction (19) et orienté vers l'intérieur; et

un organe de maintien (15) possédant un corps pratiquement plan avec deux extrémités, une extrémité (15a) servant à maintenir le matériau en feuilles (35) contre ledit moyen de crochet et l'autre extrémité (15b) servant à maintenir le matériau en feuilles (35) à l'intérieur du dit vide;

caractérisé en ce que ledit organe de maintien (15) est séparé du matériau en feuilles (35) et a une forme intégrale rigide; et en ce que la distance entre les extrémités (15a, 15b) du dit corps est plus grande que l'espacement maximal entre lesdits bras (17) et inférieure à la distance entre ledit moyen de crochet (21) et ladite jonction commune (19); l'organe de maintien (15) pouvant ainsi être positionné à l'intérieur du dit organe à fourche (13) pour adopter une position de blocage où l'élément de maintien (15) est poussé en cours d'utilisation dans la même direction qu'une quelconque force de traction appliquée au matériau en feuilles (35), entraînant les extrémités (15a, 15b) du dit corps à appliquer une force de fixation sur le matériau en feuilles (35), de sorte que la force de fixation est appliquée au matériau en feuilles (35) par ladite autre extrémité (15b) du dit corps en fonction de la force de traction qui est appliquée au matériau en feuilles (35).

2. Un organe de fixation et de retenue pour des matériaux en feuilles selon la revendication 1, dans lequel ledit organe de maintien (15) englobe un moyen poussoir (33), destiné à pousser ladite une extrémité (15a) contre ledit moyen de crochet (21).
3. Un organe de fixation et de retenue pour des matériaux en feuilles selon la revendication 2, dans lequel ledit moyen poussoir comprend un doigt élastique s'étendant vers l'extérieur (33), faisant partie intégrante du dit corps.
4. Un organe de fixation et de retenue pour des matériaux en feuilles selon la revendication 3, dans lequel ledit doigt (33) s'étend sur une distance à partir de ladite autre extrémité (15b) du dit corps qui est inférieure à l'espacement entre ledit moyen de crochet (21) et la surface qui y est opposée, pour permettre l'enlèvement du dit organe de maintien (15) du dit organe à fourche (13).



5. Un organe de fixation et de retenue pour des matériaux en feuilles selon les revendications 3 ou 4, dans lequel ledit doigt (33) sert à maintenir le matériau en feuilles en une position s'étendant le long de l'autre (17b) des dits bras (17), adjacent à ladite autre extrémité (15b) du dit organe de maintien (15) et de façon pratiquement parallèle à celui-ci. 5
6. Un organe de fixation et de retenue pour des matériaux en feuilles selon l'une quelconque des revendications 1 à 5, dans lequel ledit autre bras (17b) du dit organe à fourche comporte un côté intérieur pratiquement plan pour permettre une extension du matériau en feuilles (35) de façon généralement contiguë au dit côté intérieur du dit autre bras (17b). 10 15
7. Un organe de fixation et de retenue pour des matériaux en feuilles selon l'une quelconque des revendications précédentes, dans lequel ledit un bras (17a) a une construction pratiquement plane entre ledit moyen de crochet (21) et ladite jonction commune (19). 20 25
8. Un organe de fixation et de retenue pour des matériaux en feuilles selon l'une quelconque des revendications 1 à 7, dans lequel ledit organe de maintien (15) englobe un moyen d'aile (41) débordant vers l'extérieur du dit corps, pour faciliter l'enlèvement du dit organe de maintien (15) du dit organe à fourche (13). 30
9. Un organe de fixation et de retenue pour des matériaux en feuilles selon la revendication 8, dans lequel ledit moyen d'aile (41) est agencé par rapport au dit organe de retenue (15) et au dit organe à fourche (13) de sorte que lorsque ledit organe de maintien (15) est agencé à l'intérieur du dit organe à fourche (13), il recouvre le moyen de crochet (21) du dit un bras (17a), pour protéger le matériau en feuilles (35) agencé entre ledit moyen de crochet (21) et ladite une extrémité (15a) de l'organe de maintien (15). 35 40 45
10. Un organe de fixation et de retenue pour des matériaux en feuilles (45) selon l'une quelconque des revendications précédentes, comprenant un organe à fourche supplémentaire (47b) correspondant au premier organe à fourche (13, 47a) et possédant des bras divergeant vers l'extérieur (51b, 55b), opposés aux bras (57a, 55a) du dit premier organe à fourche (47b), et un organe de maintien supplémentaire (51b) pour ledit organe à fourche supplémentaire (47b) correspondant au premier organe de maintien (15, 51a), l'autre bras (51b) du 50 55

dit organe à fourche supplémentaire (47b) étant coplanaire à l'autre bras (57a) du dit premier organe à fourche (47a), pour définir un côté extérieur plan (59) et pour faciliter ainsi le montage de l'organe de fixation (45) sur la pièce fixe (27).

