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⑤④ **Stretcher frame assembly.**

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⑧④ Designated Contracting States :
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⑤⑥ References cited :
GB-A- 357 653
US-A- 3 529 653
US-A- 3 625 274
US-A- 3 950 869

EP 0 229 636 B1

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Description

This invention generally relates to stretcher frames used by artists to mount canvas and other fabrics thereon prior to working on such fabrics.

5 Painters have traditionally mounted their canvases on rectangularly shaped wood frames by pulling the canvas tautly over the edge of the wooden frame and then tacking or stapling the edge of the canvas to the back side of the wood frame. Similar frames have also been used to mount silk and nylon fabric for silk screening.

10 Unfortunately, the tacks and staples tend to damage the fabric when mounting and removing the fabric from the frame. As a result, once the fabric was mounted to the stretcher frame, the mounting tends to be permanent because of the inconvenience of removing the tacks and staples in order to remove the fabric from the frame.

In those instances, such as in art classes, where the wooden frames may be used repeatedly, removing the canvas and other fabric can be very burdensome and inconvenient.

15 Many different types of stretcher frames have been proposed over the years with the prime purpose thereof to eliminate the need for tacking and stapling the fabric to the frame. The following list of patents disclose some of these prior devices. The list is intended to be exemplary not exhaustive on the subject.

20	U.S. 2,455,640	Ashbaugh	December 7, 1948
	U.S. 3,841,008	Cusick	October 15, 1974
	U.S. 3,950,869	Samarin	April 20, 1976
	U.S. 4,409,749	Hamu	October 18, 1983

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One characteristic common to all of the above described prior art stretcher frames, other than the conventional rectangularly shaped wooden frame, is that they have not met with much commercial success. They have either been too inconvenient or too expensive or both. As a result, painters and other artists, for the most part, still use the rectangularly shaped wooden frames which have been used for hundreds of years.

30 There has been a long felt need for stretcher frame assemblies which are both simple to use and re-use and still be inexpensive. The present invention satisfies this need.

GB 357653 discloses a frame or stretcher for canvas in which the members forming the top, bottom and sides of the frame have a rabbet around their inner edges into which edge portions may be extended of a piece of canvas stretched over the frame and pulled around the outer edges of the frame members. The edge portions of the canvas are clamped in the rabbet by fillets of form complementary with the rabbet and which fillets are held in place by clips extended over the fillets and the adjoining inner edges of the frame members. The frame, and the manner of securing the ends of the frame members together, are otherwise conventional and ill-suited to assembly by unskilled hands. The manner of fitting the canvas to the amended frame likewise requires some skill.

40 US 3625274 discloses a canvas stretcher which comprises tubular frame members interconnected by angled elements the limbs of which are received in the open ends of the tubular frame members. The frame members have, on their rear sides, longitudinal channels to receive edge portions of the canvas applied to the frame, which edge portions are held in place by deformable plastics insert strips subsequently inserted in said channels. This stretcher, like that of GB 357653 is not readily assembled and used by students and others who may not have the manual dexterity to assemble a conventional stretcher frame and to mount fabric thereon.

It is an object of the invention to provide an improved stretcher frame on which fabrics such as canvas and silk can be easily and quickly mounted and from which they can quickly and easily be removed without damaging the fabric, and which can be re-used without the need for any refurbishing thereof.

50 According to the invention there is provided a stretcher frame assembly for mounting a sheet of fabric, the assembly including a frame structure comprising a plurality of interconnected frame sections so secured together at their ends as to prevent relative rotational movement between said frame sections, said frame structure defining a front plane and said frame sections having portions, disposed rearwardly of said front plane and projecting inwardly, and thus towards the middle of the frame, the assembly including clamping means whereby, in use, a sheet of fabric can be stretched tautly over said frame structure so that a central portion of said sheet lies in said first plane and edge portions of said sheet extend around said frame sections, and whereby such edge portions can be secured to said inwardly projecting portions of said frame sections by said clamping means, characterised in that said inwardly projecting portions of said frame sections are in the form of ridges

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which project inwardly from the respective frame sections and said clamping means are adapted to fit over said ridges after such edge portions of the fabric have been wrapped over such ridges, whereby said edge portions are clamped to the front and rear surfaces of said ridges, said frame sections being interconnected at their ends by angled elements each having the limbs thereof extending into respective longitudinal internal passages in the adjoining frame sections, such passages being open at the respective ends of the frame sections to receive said limbs, cooperating means being provided on the frame sections and said angled elements to prevent rotation of said frame sections about their respective longitudinal axes.

The clamping means preferably comprises a plurality of individual clips on each frame section, for it is difficult to maintain the desired uniform tension on an entire side of the fabric if only one elongated clipping element is used to secure the one side of the fabric to the ridge on an individual frame section.

To mount fabric on, for example, a rectangularly shaped stretcher frame, one edge of the fabric is pulled over the ridge and clips are applied thereto to secure the fabric to the frame section. The opposite edge of the fabric is pulled tautly over the ridge on the opposite frame section and clipped thereto to secure the fabric thereto. The adjacent sides of the fabric are attached in the same or similar manner. Usually, the fabric is pulled tautly and clipped to the ridge at a plurality of points along the length of each frame section in order to provide the desired tension to the fabric along this edge thereof.

To remove the fabric from the frame, the clips are merely disengaged from the ridge and the fabric and the frame separated.

The ridges on the individual frame sections are preferably parallel to the plane of the frame and/or fabric mounted thereon so that when the clips are employed to secure the fabric to the ridge, the clips did not project outwardly beyond the back plane of the frame.

An embodiment of the invention is described below with reference to the accompanying exemplary drawings, in which :

FIGURE 1 is an exploded perspective view of a stretcher frame assembly embodying the invention with fabric mounted thereto and a companion display frame ;

FIGURE 2 is a cross-sectional view of the stretcher frame assembly shown in Figure 1 taken along the lines 2-2 ;

FIGURE 3 is a perspective front view of the display frame and stretcher frame shown in Figure 1 ;

FIGURE 4 is a perspective view of a corner construction of the stretcher frame which restricts rotational movement of the stretcher frame elements ; and

FIGURE 5 is a perspective view of an alternative embodiment of the invention.

Reference is made to Figures 1, 2 and 4 which illustrate an annular stretcher frame assembly 10 embodying features of the invention. The stretcher frame 10 assembly comprises frame sections 11 interconnected by means of elbows 12. A plurality of clips 13 secure fabric 14 onto the ridge elements 15 on the inner side of frame sections 11.

Figures 1 and 2 best illustrate securing the fabric 14 to the ridge 15 by means of the spring clips 13. As shown therein, the ridge 15 projects inwardly toward the centre of the annular frame 10 and is generally parallel to the plane thereof. The fabric 14 is mounted on frame 10 with the clips 13 positioned out of the way so that they do not become disengaged from the ridge 15, or otherwise interfere with the subsequent handling of the stretcher frame assembly 10. Slight deviations from the parallel relationship could be accommodated provided that the ridge 15 or clip 13 do not project beyond the back plane of the frame assembly 10.

An alternative frame section 20 is shown in Figure 5 which has a plurality of ridges or projections 21 along the length thereof in those areas where the spring clips 13 are to be used to secure the fabric 14 to the ridges 21.

Figures 2 and 3 illustrate the stretcher frame assembly 10 with fabric 14 mounted thereon in conjunction with a display frame 30. The inner surface or contact points of the display frame 30 match the outer surface of the stretcher frame assembly 10 so that the fabric 14 can be displayed while still mounted on the stretcher frame 10. Suitable means (not shown) are provided along the outer edge of the display frame 30 to fit over the back side of the stretcher frame 10 to hold the stretcher frame assembly 10 and the display frame 30 together.

The mountings of the edges of the fabric 14 to the ridges 15 by means of clips 13 are most important on those sides of the stretcher frame where the fabric is pulled tautly over the ridge 15 to put the proper tension on the fabric. Other means may be employed to initially mount the fabric on the opposite sides of the stretcher frame. With rectangular shaped frame assemblies at least two adjacent frame sections must be provided with inner ridges suitable for securing the fabric thereto by clips.

As shown in Figures 2 and 4 the stretcher frame assembly 10 can be made as a breakdown unit comprising standard corner sections or elbows 12 with frame sections 11 of various lengths in order to form stretcher frames in a wide variety of sizes. It is also contemplated that the stretcher frame of the invention may take the shape other than rectangular, in which case the corner sections or elbows 12 may have an angle other than 90°. The

ends of the corner sections or elbows 12 may be provided with ridges 35 which interfit grooves 36 provided on the interiors of the frame section 11 to properly lock the individual frame sections 11 into position with the elbows 12 when assembling the stretcher frame components to prevent relative rotation thereof.

5 The stretcher frame 10 and the elbows 12 of the invention can be formed of any suitable plastic, metal or wood materials or combinations thereof. Plastic material such as polyethylene is preferred because it can be easily and inexpensively produced by extruding. Moreover, the ridge can be extended integrally therein. The cross-section of the frame sections 11 while shown hollow and circular in the drawings, may be of any convenient cross-sectional shape and moreover, may be solid instead of hollow as shown. The ridge 15 is shown in the drawings as being integral with the frame section 11 ; however, the ridge may be a separate element and
10 attached or fixed to the frame section 10 by suitable means.

The stretcher frames of the invention are most suitable for use in art classes where the stretcher frames may be frequently reused by the students, particularly when the frames are made as breakdown units.

Although the clipping means have been described herein in terms of spring clips, it is obvious that different types of clipping means can be employed.

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Claims

20 1. A stretcher frame assembly for mounting a sheet of fabric (14), the assembly including a frame structure (10) comprising a plurality of interconnected frame sections (11) so secured together at their ends as to prevent relative rotational movement between said frame sections (11), said frame structure (10) defining a front plane and said frame sections having portions, disposed rearwardly of said front plane and projecting inwardly, and thus towards the middle of the frame, the assembly including clamping means (13) whereby, in use, a sheet of fabric (14) can be stretched tautly over said frame structure so that a central portion of said sheet lies in said
25 first plane and edge portions of said sheet extend around said frame sections, and whereby such edge portions can be secured to said inwardly projecting portions of said frame sections by said clamping means, characterised in that said inwardly projecting portions of said frame sections are in the form of ridges (15) which project inwardly from the respective frame sections and said clamping means (13) are adapted to fit over said ridges after such edge portions of the fabric (14) have been wrapped over such ridges, whereby said edge portions
30 are clamped to the front and rear surfaces of said ridges, said frame sections being interconnected at their ends by angled elements (12) each having the limbs thereof extending into respective longitudinal internal passages in the adjoining frame sections, such passages being open at the respective ends of the frame sections to receive said limbs, cooperating means (35, 36) being provided on the frame sections and said angled elements (12) to prevent rotation of said frame sections about their respective longitudinal axes.

35 2. The stretcher frame of claim 1 comprises four said frame sections interconnected into a rectangular shape.

3. The stretcher frame assembly of claim 1 wherein the clamping means (13) comprise spring clips.

40 4. The stretcher frame of claim 1 wherein said limbs of the angled elements (12) and frame sections (11) are provided with matching ridges (35) and grooves (36) respectively to mechanically interlock when interconnected to prevent relative rotation between the angled elements and the frame sections.

Ansprüche

45 1. Spannrahmenanordnung zum Aufziehen einer Gewebbahn (14), wobei die Anordnung eine Rahmenstruktur (10) mit einer Vielzahl von miteinander verbundenen Rahmenabschnitten (11) umfaßt, die an ihren Enden so aneinander befestigt sind, daß eine relative Drehbewegung zwischen den Rahmenabschnitten (11) verhindert wird, wobei die Rahmenstruktur (10) eine Vorderfläche definiert und die Rahmenabschnitte Bereiche aufweisen, die rückwärtig der Vorderfläche angeordnet sind und nach innen und somit auf die Mitte des Rahmens zu ragen, wobei die Anordnung Klemmelemente (13) umfaßt, so daß bei der Verwendung eine Gewebbahn (14) straff über die Rahmenstruktur gespannt werden kann, so daß ein mittlerer Bereich der Bahn in der
50 ersten Fläche liegt und die Seitenbereiche der Bahn sich um die Rahmenabschnitte erstrecken, und wobei die Seitenbereiche an den nach innen ragenden Bereichen der Rahmenabschnitte durch die Klemmelemente befestigt werden können, dadurch gekennzeichnet, daß die nach innen ragenden Bereiche der Rahmenabschnitte in Form von Rippen (15) ausgebildet sind, die von den jeweiligen Rahmenabschnitten nach innen ragen, und daß die Klemmelemente (13) so ausgelegt sind, daß sie über die Rippen greifen, nachdem die Seitenbereiche des Gewebes (14) über die Rippen gelegt worden sind, wodurch die Seitenbereiche auf die Vorder- und Rückfläche der Rippen geklemmt werden, wobei die Rahmenbereiche an ihren Enden durch Winkелеlemente (12)

miteinander verbunden sind, die jeweils Schenkel aufweisen, die sich in entsprechende innere Längsdurchlässe in den gegenüberliegenden Rahmenbereichen erstrecken, wobei die Durchlässe an den entsprechenden Enden der Rahmenabschnitte offen sind, um die Schenkel aufzunehmen, wobei zusammenwirkende Einrichtungen (35, 36) auf den Rahmenabschnitten und auf den Winkelelementen (12) vorgesehen sind, um die Drehung der Rahmenabschnitte um ihre entsprechenden Längsachsen zu verhindern.

2. Der Spannrahmen nach Anspruch 1 umfaßt vier Rahmenabschnitte, die zu einer rechteckigen Form miteinander verbunden sind.

3. Spannrahmenanordnung nach Anspruch 1, bei der die Klemmelemente (13) Federklemmen umfassen.

4. Spannrahmen nach Anspruch 1, bei dem die Schenkel der Winkelelemente (12) und die Rahmenabschnitte (11) mit aufeinander abgestimmten Rippen (35) bzw. Nuten (36) versehen sind, die mechanisch ineinander koppeln, wenn sie miteinander verbunden werden, um die relative Drehbewegung zwischen den Winkelelementen und den Rahmenabschnitten zu verhindern.

15 Revendications

1. Assemblage de cadre tendeur pour monter une feuille de tissu (14), l'assemblage comprenant une structure de cadre (10) comportant plusieurs sections de cadre (11) interconnectées et fixées les unes aux autres à leurs extrémités de manière à éviter un mouvement de rotation relatif entre lesdites sections de cadre (11), ladite structure de cadre (10) définissant un plan frontal et lesdites sections de cadre comportant des portions, disposées à l'arrière dudit plan avant et faisant saillie vers l'intérieur, et ainsi en direction du centre du cadre, l'assemblage comprenant des moyens de serrage (13) par lesquels, pendant l'utilisation, une feuille de tissu (14) peut être tendue sur ladite structure de cadre de manière qu'une portion centrale de ladite feuille soit située dans ledit plan frontal et que les portions de bord de ladite feuille s'étendent autour desdites sections de cadre, et par lequel ces portions de bord peuvent être fixées auxdites portions desdites sections de cadre qui font saillie vers l'intérieur par lesdits moyens de serrage, caractérisé en ce que lesdites portions desdites sections de cadre faisant saillie vers l'intérieur se présentent sous la forme de nervures (15) faisant saillie vers l'intérieur à partir des sections de cadre respectives et lesdits moyens de serrage (13) sont adaptés à se disposer sur lesdites nervures après que les portions de bord du tissu (14) ont été enroulées autour de ces nervures, moyennant quoi lesdites portions de bord sont serrées sur les surfaces avant et arrière desdites nervures, lesdites sections de cadre étant interconnectées à leurs extrémités par des éléments coudés (12) dont les membres de chacun s'étendent dans des passages internes longitudinaux respectifs des sections de cadre voisines, ces passages étant ouverts aux extrémités respectives des sections de cadre pour recevoir lesdits membres, des moyens de coopération (35, 36) étant prévus sur les sections de cadre et lesdits éléments coudés (12) pour éviter la rotation desdites sections de cadre autour de leurs axes longitudinaux respectifs.

2. Cadre tendeur selon la revendication 1, comprenant quatre desdites sections de cadre interconnectées sous une forme rectangulaire.

3. Cadre tendeur selon la revendication 1, dans lequel les moyens de serrage (13) comprennent des attaches à ressort.

4. Cadre tendeur selon la revendication 1, dans lequel les membres des éléments coudés (12) et les sections de cadre (11) sont munis de nervures (35) et respectivement de gorges (36) de forme complémentaire pour établir une liaison mécanique quand ils sont interconnectés pour éviter une rotation relative entre les éléments coudés et les éléments de cadre.

Fig. 1

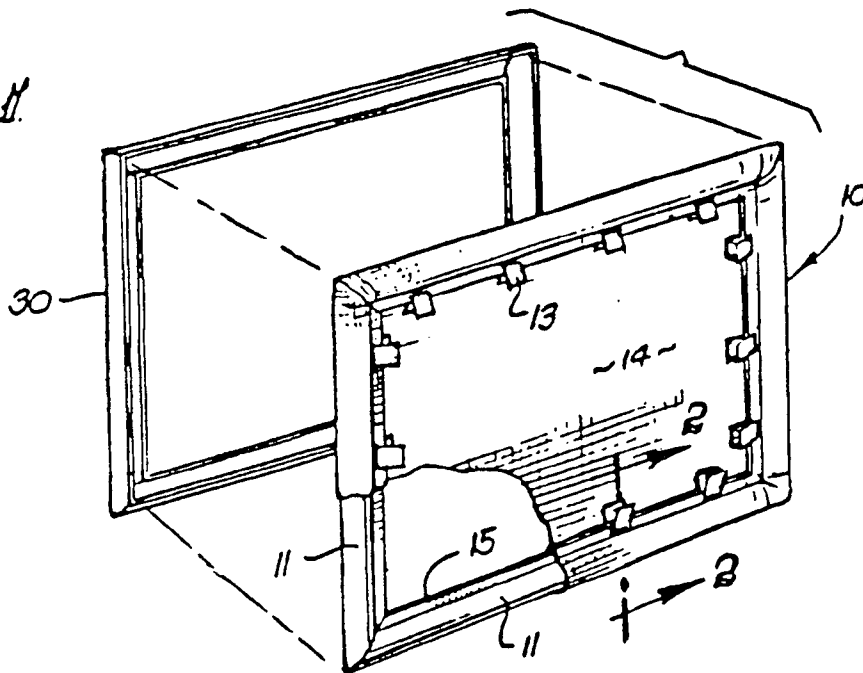


Fig. 2

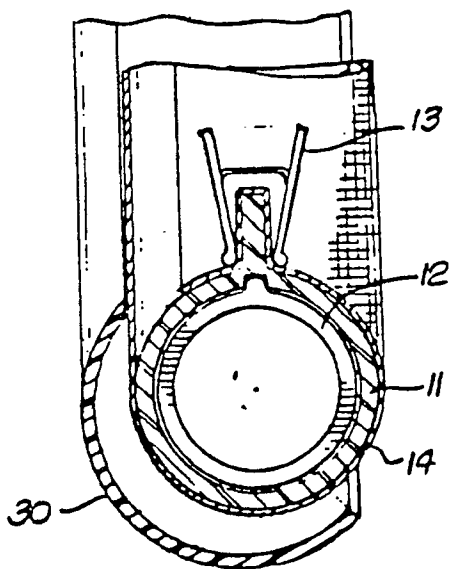


Fig. 3

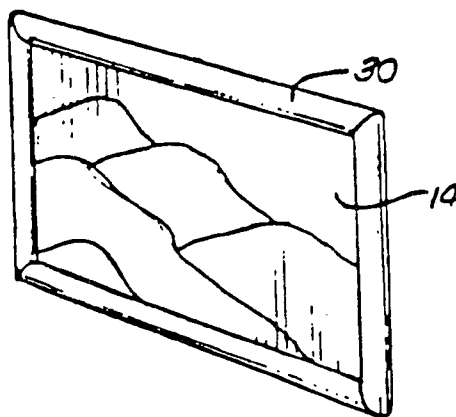


Fig. 4

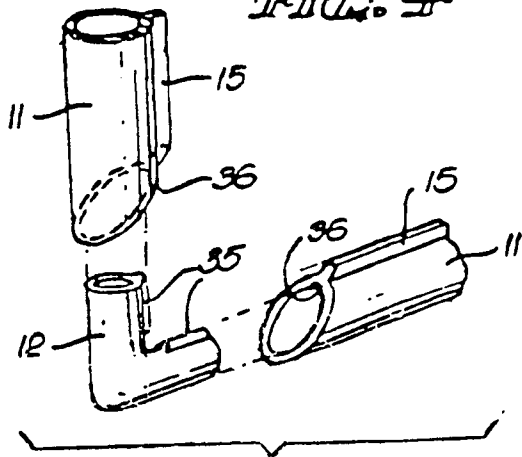


Fig. 5

