

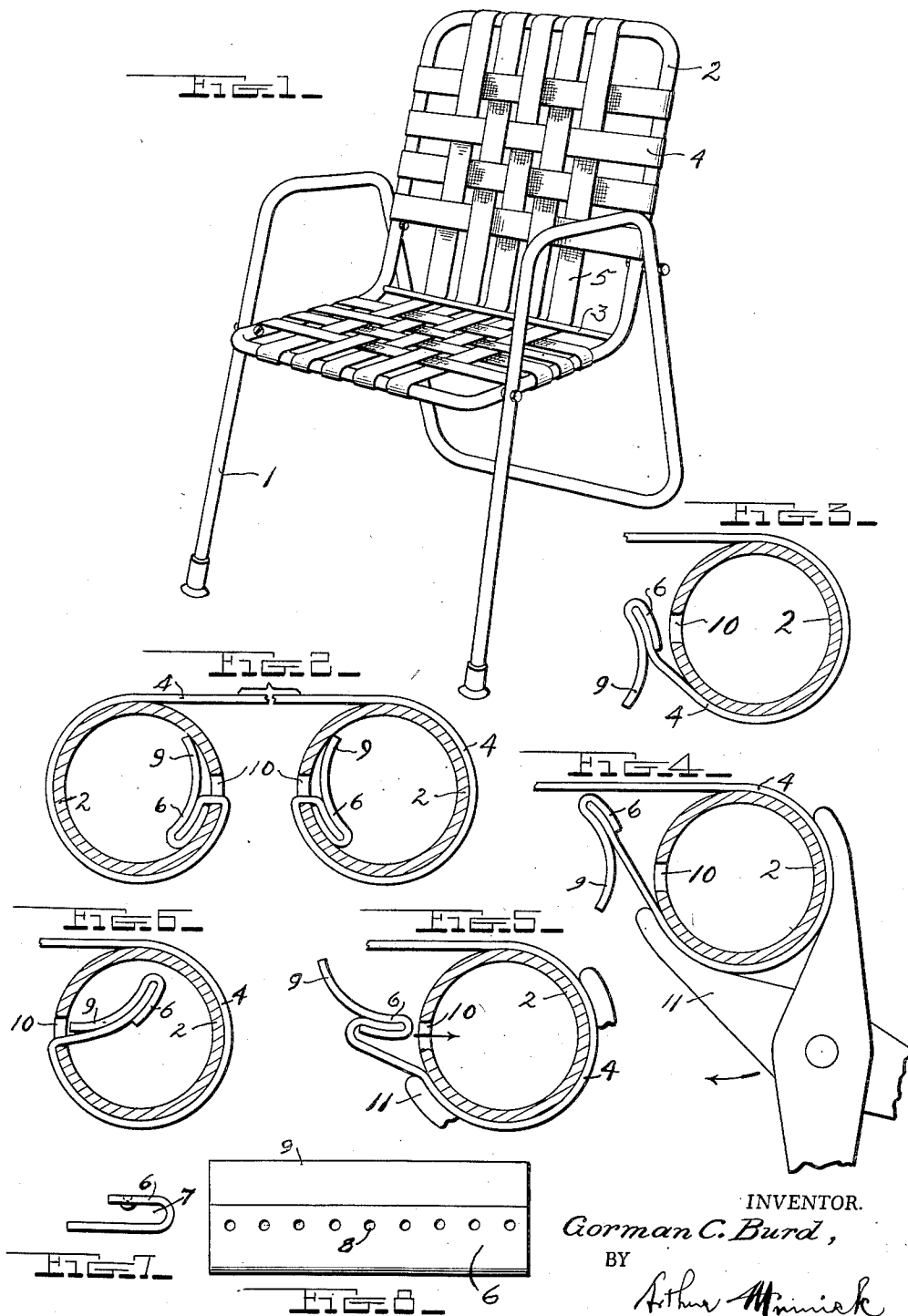
Dec. 23, 1952

G. C. BURD

2,622,663

CHAIR CONSTRUCTION

Filed July 14, 1950



INVENTOR.
Gorman C. Burd,
BY

Arthur M. Minick
att'y.

UNITED STATES PATENT OFFICE

2,622,663

CHAIR CONSTRUCTION

Gorman C. Burd, Clearwater, Fla.

Application July 14, 1950, Serial No. 173,838

5 Claims. (Cl. 155—187)

1

This invention relates to metal furniture construction and particularly to means for securing elastic straps of webbing to tubular metallic frames and to the method of setting the securing means in place.

The primary object of the invention is to provide a strong, simple and efficient fastening means for the ends of the wide straps commonly used within open metallic frames to form the backs and seats of chairs and couches.

Another object of the invention is to provide a clip which is secured across the full width of the strap and which is held in longitudinal engagement with the metal frame so that the webbing will remain smooth and taut in ordinary use.

A further object is to conceal the fastenings within the tubing so that no part can be seen or felt on the outside.

For purposes of illustration, a preferred embodiment of the invention is shown in the accompanying drawings, in which Figure 1 is a perspective view of a type of chair having metallic tubing and plastic webbing straps for which the present invention is especially adapted; Fig. 2 is a sectional view of two opposite side members of the seat with the straps connected thereto, the clips being shown in end view in position on the inside of the tubing and with the central portion of the webbing broken away; Fig. 3 is a section of one of the tubes of a frame with the end portion of a strap brought loosely around the top, outer side, and bottom of the tube ready for stretching; Fig. 4 is a similar sectional view showing a tool grasping the strap upon the surface of the tube and with the strap pulled farther around the tube than in the previous figure; Fig. 5 is a similar sectional view in which the clip has been swung upward at its free edge, bending the strap through about 120° to bring the folded edge of the clip opposite the slot in the tube; Fig. 6 is a similar sectional view with the clip inserted for its whole width inside of the tube; Fig. 7 is a side elevation of a clip after its preliminary longitudinal fold has been made; and Fig. 8 is a plan view of the clip before clamping it on the strap.

The chair shown in Fig. 1 has a leg section 1 formed of a single piece of tubing, preferably of a light metal such as aluminum, to which is secured an open frame 2 bent in L-shape to form back and seat portions. At the bend between the back and the seat, a brace rod 3 is connected at its ends to the opposite sides of the frame. Straps 4 of heavy elastic plastic webbing are stretched transversely of the frame and similar straps 5 are stretched longitudinally of the frame, passing at their central portions beneath the rod 3.

2

Clips 6, preferably of aluminum or other non-rusting metal, and of a length substantially equal to the width of the webbing, are bent longitudinally at one side of their center, as shown in Fig. 7, to leave sufficient space as at 7 between the adjacent surfaces to receive one end of a strap. After the end of a strap has been set in position against the bottom of the space, a press will be used to force the side walls of the space 7 against the strap very firmly, and a row of indentations 8 will preferably be formed in the metal of the clip 6, to cause the metal to protrude opposite each indentation, these protruding portions, shown in Fig. 7, engaging into the surface of the webbing as an additional precaution to prevent the end of the strap from slipping out of the space 7, while the walls of the clip will be bent in a curve as seen in Figs. 2 to 6. A portion of the clip at 9 on one face of the strap extends outward from the tightly clamped section as a free edge that can move away from the surface of the strap.

On the inside confronting faces of the frame, the tubing is provided with a series of spaced slots 10, each slot on one side having a correspondingly spaced slot on the opposite side to form a pair to receive the opposite ends of a strap. The length of each slot 10 is slightly greater than the width of the strap and the length of its clip so that the clip and the end of the strap can easily be inserted through the slot into the interior of the tube. The slot will be made of a width greater than the combined thicknesses of the strap and of the two metallic walls of the clip that are clamped on the end of the strap, and the total width of the clip will be less than the inside diameter of the tube.

As seen at the left in Fig. 2, when the clip on the strap has been placed through the slot into the interior of the tube with the free edge 9 of the clip on top of the strap and the strap is pulled outward, the free edge of the clip at 9 will slide upward upon the inner surface of the tube until the other edge of the metal of the clip is substantially flush with the lower edge of the slot. The strap will bend outward at almost right angles to the clip and as the strap is pulled around the lower outer surface of the tube, it will bend again through more than a right angle at the lower outer edge of the slot.

The two parallel walls of the clip engaging the end of the strap will extend to one side of the bent strap at the slot for a distance greater than the width of the slot in the tube, and the free edge at 9 will project from the strip on the other face for a distance greater than the width of the slot, so that when the clip is in the tube and

tilted, no pull outward exerted by the strap can cause the clip to leave the slot. The bending of the webbing inside of the tube at the clip and the further bending at the outer lower edge of the slot will prevent the transmission of any force along the strap sufficient to pull the end of the strap out of the clip. It will be noted that the strap engages about three-fourths of the outer circumference of each tube to which it is secured, and when a strap is under tension and with its end in a slot, the friction of the strap on the tube and slot is such as to hold it in place against any usual strain even in the absence of a clip.

Each strap is made of a length such that when one end is secured to a tube on one side of the frame with its clip passed through a slot, the strap can be brought around the bottom of that tube to its top, thence across the frame and across the top of the tube on the other side of the frame, down on the outside of the tube, back beneath the tube, and up on the inside face to a position as shown in Fig. 3, with the exertion of little force. In that position, the strap will be grasped by a plier-like tool such as shown partly broken away in Fig. 4 at 11, and when the tool is given a partial rotation around the tube to exert a pull on the strap, any slack will be taken up, the inherent elasticity of the plastic material itself and of the webbing as a woven fabric will allow a certain stretch of the strap, and the elastic metal of the frame will bend if necessary to allow the strap to advance from the position of Fig. 3 to that of Fig. 4. Fig. 5 shows the end of the strap bent and the clip moved to bring its bent edge opposite the slot into which it will be inserted by a movement in the direction indicated by the arrow, until the clip reaches the position shown in Fig. 6 entirely within the tube. The weight of the clip will tend to cause it to move downward and the elasticity of the strap will tend to cause the free edge to move away from the strap as in Fig. 3 or Fig. 4, bringing the free edge above the upper side of the slot, so that when the tool is released and the strap pulls outward, the free edge of the clip will slide upward on the inner surface of the tube to the position shown at the right in Fig. 2.

The straps may be inserted into their respective slots in any desired order, beginning at any slot, and when in place and released by the tool, each strap will be smooth and taut with substantially uniform tension across its entire width.

As shown, the straps are arranged in the frame both longitudinally and transversely of both back and seat and they are usually interwoven during assembly in a basket-work pattern.

This method of assembly herein described results in a construction in which the fastening means are entirely concealed in the tubing of the frame. If a strap should become damaged and need replacement, it will be cut through at each end at the slot edge leaving the clips in the tubes. A new strap can be installed by proceeding in the same manner as with the original strap, and the clips left within the tube will not interfere with the insertion of the new ones or with the use of the chair.

While the invention has been described as using aluminum tubing, and plastic webbing, and a clip of a specific construction, it will be evident that the invention is not limited to the details chosen for purposes of illustration and dis-

closure, and it is to be understood that I desire to cover all changes and modifications of the example selected herein which do not constitute departures from the spirit and scope of the invention.

I claim:

1. A strap having a metallic clip secured to one end thereof transversely of its width, a tube having a longitudinal slot formed in a wall thereof of a length greater than that of the clip and of a width greater than the thickness of the clip and strap when the clip lies substantially parallel with the strap, and the width of the clip being less than the internal diameter of the tube, whereby the clip while secured to the strap may be passed through the slot from the outside to the inside to lie wholly within the tube, and the clip being secured to the strap in a manner to permit it to project laterally from both faces of the strap for a distance greater than the width of the slot whereby it may engage the interior surface of the tube on both sides of the slot to prevent its withdrawal from the tube.

2. A frame comprising metallic tubes on opposite sides thereof, the tubes having a plurality of pairs of longitudinally extending slots formed in confronting faces thereof, a plurality of straps each extending across the frame over one side of the tubes, around the remote faces thereof, and across the opposite side of the tubes, each end of a strap entering a slot and having means retaining it therein.

3. A frame of tubular metal, a plurality of flexible straps each having a clip secured transversely of its width at each end, the tubular metal having slots along opposite sides of the frame adapted to permit passage of the clips therethrough in one direction, each strap extending across the frame and around the remote sides thereof to a point within a slot, the portion of the straps engaged by the clips lying wholly within the tubular metal.

4. A method of securing a strap to a tube having a slot formed in a wall thereof, consisting in attaching to the end of a strap a clip capable of being passed entirely through the slot into the tube and movable within the tube laterally of the thickness of the strap into engagement with the inner surface of the tube, and passing the clip on the end of the strap through the slot into the tube.

5. A method of securing an elastic strap under tension between two tubes of which at least one has a slot in its wall, which consists in attaching one end of the strap to one tube, providing the other end of the strap with a clip capable of being passed entirely through the slot into the other tube and capable of engaging a portion of the inner surface of the tube on each side of the slot to prevent withdrawal, applying tension to the strap to cause stretching thereof, and passing its end with its clip while under tension through the slot into engagement with the inner surface.

GORMAN C. BURD.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,329,667	Thexton	Sept. 14, 1943
2,444,873	Goldberg	July 6, 1948
2,484,453	Halverson	Oct. 11, 1949