June 3, 1941. R. C. BARLOW 2,244,042

SHEET METAL HINGE CONSTRUCTION

Filed Oct. 20, 1939

Fig. 1.

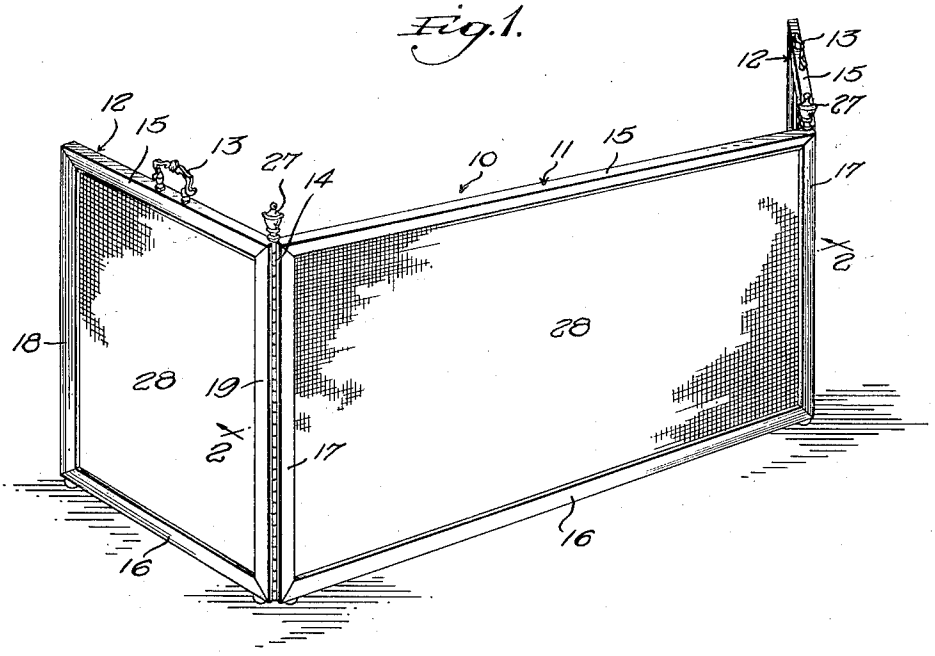


Fig. 2.

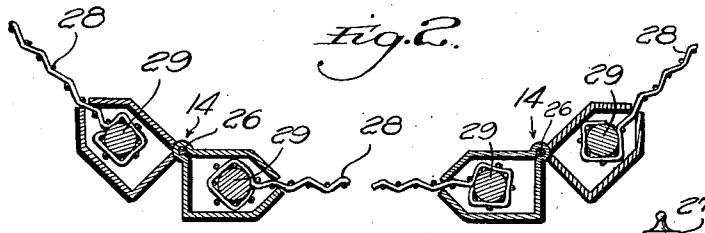


Fig. 3.

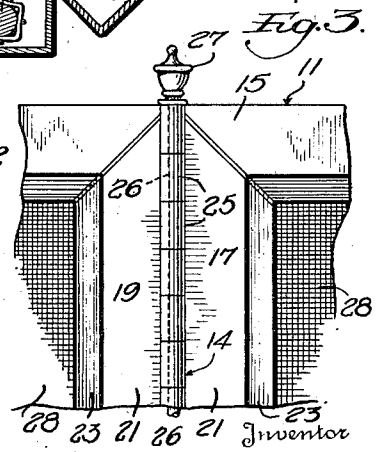
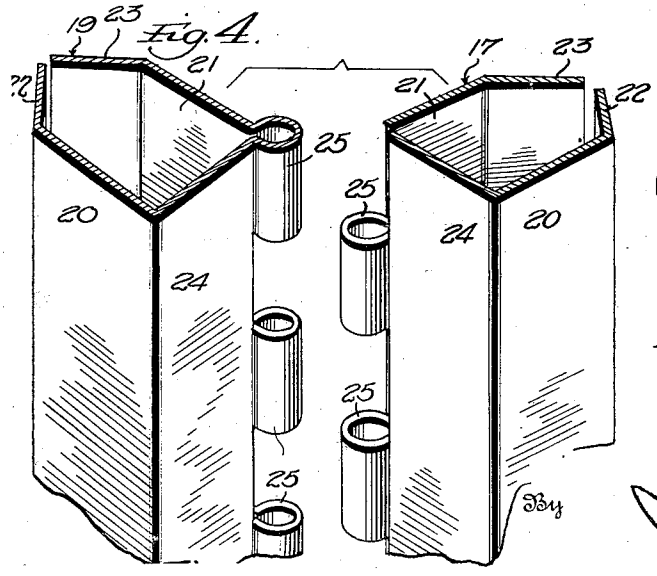


Fig. 4.



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SHEET METAL HINGE CONSTRUCTION

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Application October 20, 1939, Serial No. 300,465

2 Claims. (Cl. 126—202)

This invention relates to fireplace screens and the like and more particularly to a hinge structure therefor.

An important object of the invention is to provide a hinge structure for fireplace screens which forms, in effect, a sealed joint between the sections of the screen to prevent the passage of sparks therebetween.

A further object is to provide such a structure wherein the formation of the hinge and associated parts is such as to maintain the adjacent screen frame elements in perfectly straight form.

A further object is to provide a fireplace screen or the like wherein the adjacent frame elements or parallel sections have the loop elements of the connecting hinge therebetween formed integral therewith, thus simplifying the construction, eliminating the possibility of parts becoming loose, etc.

A further object is to provide such a structure wherein the edges of the frame elements opposite the hinge are adapted to receive edges of the screen therebetween, and to provide in the frame element a substantial degree of resilience for facilitating the holding of the screen elements in position.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing I have shown one embodiment of the invention. In this showing:

Figure 1 is a perspective view of a fireplace screen embodying the invention,

Figure 2 is an enlarged horizontal detailed sectional view on line 2—2 of Figure 1, parts being broken away,

Figure 3 is a fragmentary inside elevation showing the hinge and associated elements, and,

Figure 4 is an enlarged fragmentary sectional perspective view of two of the adjacent frame members showing the relative arrangement of the hinge loops formed thereon.

Referring to Figure 1, the numeral 10 designates a fireplace screen as a whole having center and end panels or sections 11 and 12 respectively. The end sections are provided with the usual handles 13 to facilitate the handling of the screen. Each end of the center section 11 is connected to the adjacent end section by a hinge structure indicated as a whole by the numeral 14 and referred to in detail below.

The center section 11 and end sections 12 are provided with upper and lower parallel frame members 15 and 16 which may be similar in cross-section to the vertical frame members to be described. The center section is provided with end frame members 17, while the end sections 12 are provided with outer and inner end frame members 18 and 19, the frame members 17 and 19 being connected by the hinge structures referred to.

The frame members 17 and 19 are constructed as shown in Figures 2 and 4 and are identical in cross-sectional shape. Each of these frame members is made from a single sheet of material, and when formed into a frame member includes outer and inner walls 20 and 21 which terminate in end elements 22 and 23 converging toward each other. Opposite the converging ends referred to each frame member 17 and 19 is provided with a vertical wall 24, perpendicular to the walls 20 and 21. In each of the frame members 17 and 19 the wall 24 is joined to the wall 20 by substantially cylindrical hinge loops 25, these loops being formed integral with the sheet of material from which the respective frame members 17 and 19 are made.

It will be apparent that the loops 25 of the adjacent frame members 17 and 19 are staggered with respect to each other and the loops preferably are of uniform length. The loops of each of the frame members referred to are spaced apart a distance approximately equal to their own length, and accordingly each loop 25 is adapted to be received between the loops of the adjacent frame member to form, in effect, a continuous cylinder throughout the height of the screen. When the loop members of adjacent sections 17 and 19 are assembled in aligned relation they are adapted to receive a pintle 26, thus assembling the screen sections with relation to each other for pivotal movement. The upper end of the pintle may be provided with a suitable ornament 27.

Each screen section is provided with a screen element 28 of the usual type. The edges of each screen element are wrapped around bars 29, and the bars of each screen element may be a complete rectangle corresponding in shape to the shape of the opening defined within the walls of the frame members of each section. As previously stated, each frame element of each section is preferably of the same cross-sectional shape as shown in Figures 2 and 4 except that the hinge loops obviously are omitted in the frame members 15, 16 and 18. Accordingly the converging walls 22 and 23 of each frame member receive the adjacent edge portion of the corresponding screen element 28.

The operation of the device is as follows:

Each frame member is preferably formed of a single sheet of material, and the sheets from which the frame members 15, 16 and 18 are formed may be directly bent into the closed panel form referred to. The material from which the frame members 17 and 19 are formed have the adjacent edges of the walls 21 and 24 spaced apart a distance approximately equal to the circumference of the loops 25 whereby the formation of these loops will bring the adjacent edges of the walls 21 and 24 into close relationship, thus forming an enclosed channel frame member.

Each loop 25 is approximately of the same length as the space between the adjacent pairs of loops between which it is arranged when the device is assembled, thus completely closing the hinged joint against the passage of sparks. Accordingly the screen is highly safe in use. The alternate loops on the adjacent frame members 17 and 19 with the pintle passing therethrough provides a construction wherein the frame members 17 and 19 are effectively braced against warping and consequently causing a gap between the adjacent screen sections, as frequently happens with conventional screen structures.

It will be apparent that the present construction eliminates the use of separate elements for forming the hinge loops, each loop being formed of the same sheet of material as the frame member of which it forms a part. It also will be noted that the connection of the walls 21 and 24 by the loops imparts to each frame member 17 and 19 a degree of resiliency which would not be otherwise provided. Accordingly the inner edges of the converging walls 22 and 23 are adapted to resiliently and not too tightly engage the screen elements. Thus each wire element is effectively supported in the frame members to which it is connected. The bars 29 effectively prevent either of the screen elements from being pulled loose from the frame members by which it is supported.

As previously stated, all of the frame members 15 and 16, 17, 18 and 19 are preferably of the same cross-sectional shape except for the provision of the hinge loops of the frame members 17 and 19. The vertical and horizontal frame members of each screen section may be connected to each other in any suitable manner such as by being mitered and welded, the particular structure and means employed for this purpose forming no part of the present invention.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A hinge construction comprising a pair of elongated frame members each formed of a single sheet of metal having aligned openings cut therethrough with the portions of the metal sheet between the openings bent to form aligned substantially cylindrical loops with the remote edges of each opening brought into right-angular aligned contiguous relationship to form a substantially closed joint, a plane through said joint and the axis of said cylindrical loops approximately bisecting the angle formed at said closed joint, each sheet being further bent at right angles along a line parallel to said contiguous edges, and being further bent along lines parallel to each other and parallel to said first named line and said contiguous edges and substantially equidistantly spaced from the free edges of the sheet to complete the formation of a frame member of substantially closed section, each sheet being bent along said last named lines at such an angle that the portions of the sheet between such lines and the free edges of the sheet angularly converge toward each other and terminate with said free edges of the sheet in adjacent relationship to resiliently engage against a relatively thin sheet-like element therebetween, the loops of each sheet being arranged between and in alignment with the loops of the other sheet, and a pintle extending through said loops.

2. A hinge construction comprising a pair of elongated frame members each formed of a single sheet of metal having aligned openings cut therethrough with the portions of the metal sheet between the openings bent to form aligned substantially cylindrical loops with the remote edges of each opening brought into right-angular aligned contiguous relationship to form a substantially closed joint, a plane through said joint and the axis of said cylindrical loops approximately bisecting the angle formed at said closed joint, each sheet being further bent at right angles along a line parallel to said contiguous edges, and being further bent along lines parallel to each other and parallel to said first named line and said contiguous edges and substantially equidistantly spaced from the free edges of the sheet to complete the formation of a frame member of substantially closed section, each sheet being bent along said last named lines at such an angle that the portions of the sheet between such lines and the free edges of the sheet angularly converge toward each other and terminate with said free edges of the sheet in adjacent relationship to resiliently engage against a relatively thin sheet-like element therebetween, the loops of each sheet being arranged between and in alignment with the loops of the other sheet, and a pintle extending through said loops, each of the loops which is arranged between the adjacent pair of loops of the other sheet being approximately equal in length to the space between such adjacent pair of loops to form a continuous closed hinge substantially throughout the length of said frame members.

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