

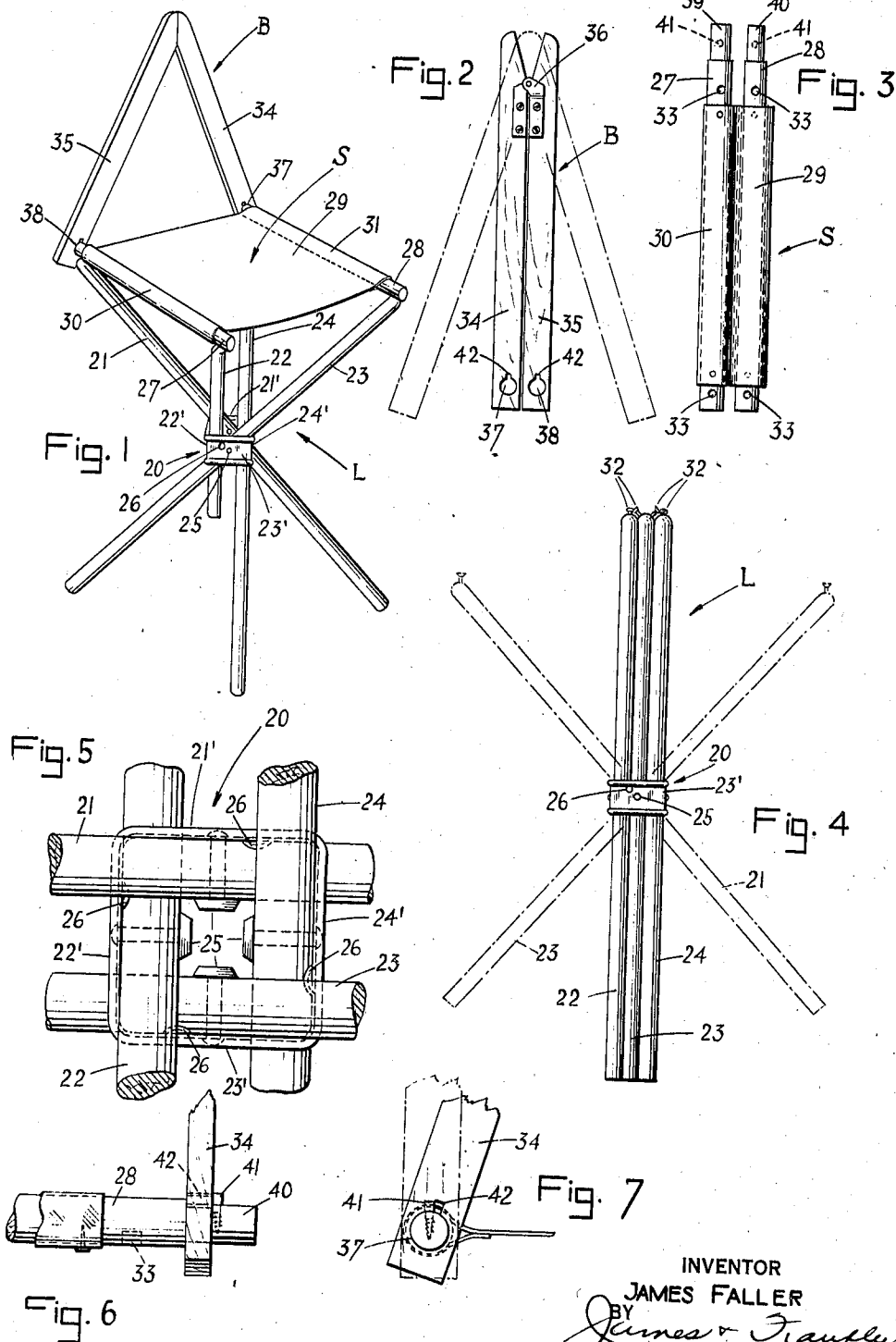
June 20, 1944.

J. FALLER
FOLDING CHAIR

2,352,090

Filed Sept. 13, 1941

2 Sheets-Sheet 1



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BY *James & Franklin*
ATTORNEYS

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2 Sheets-Sheet 2

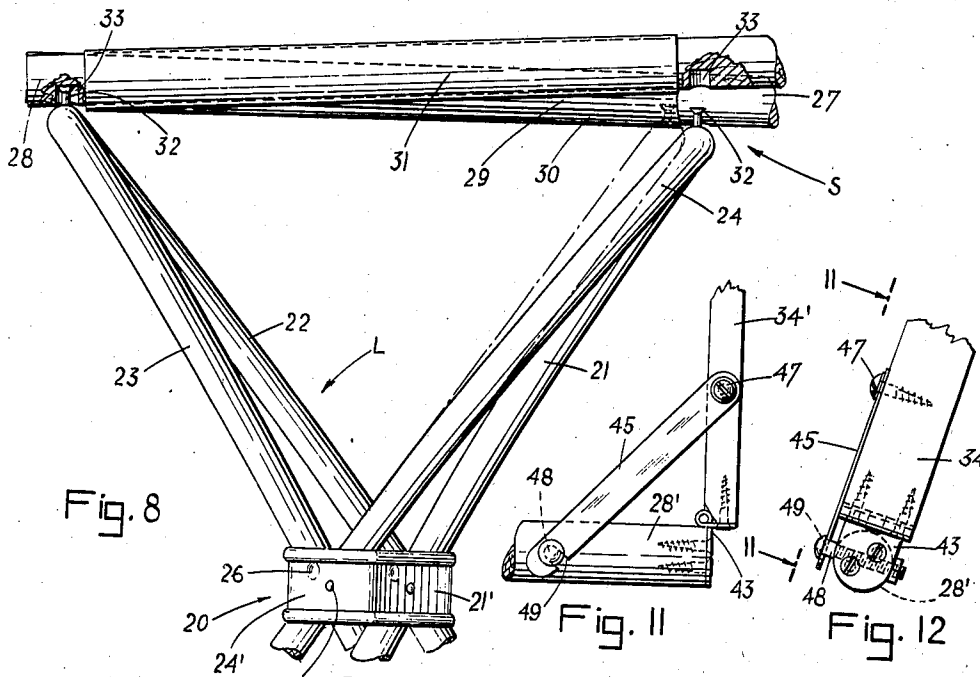
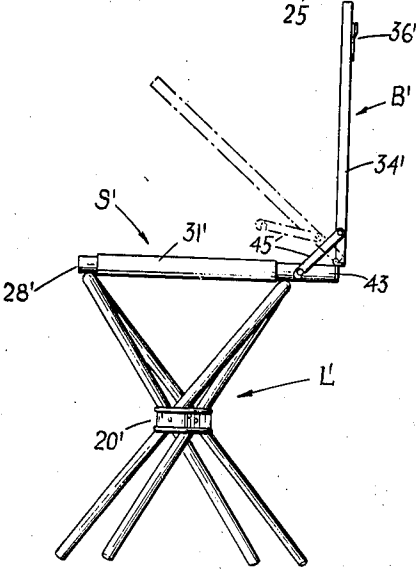


Fig. 9

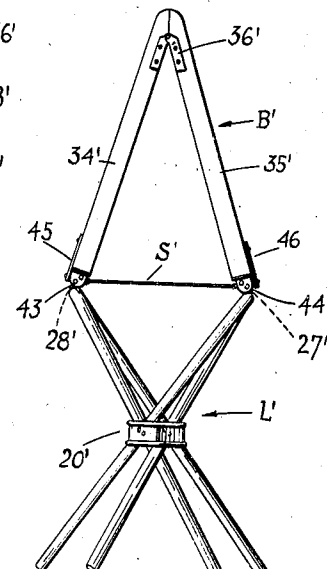


Fig. 10

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FOLDING CHAIR

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6 Claims. (Cl. 155—136)

This invention relates to an improved folding chair.

The present invention has special reference to the provision of a folding chair of the type in which the leg structure consists of a rectangular block or band serving as a leg holder and brace, and legs pivotally mounted on the walls of said rectangular block or band, the legs being movable on the block or band between a collapsed condition with the legs arranged in closely parallel formation and an open condition with the legs spread apart.

The main advantage of a folding chair of this type is, besides its simplicity in construction, the ability to collapse the leg structure into an elongated assembly of small transverse dimensions and, therefore, rendering the same compactly portable. Folding chairs of this type have been designed either with a wholly flexible or a wholly rigid seat; and because of the defects inherent in both forms of seat, this type of folding chair has not come into practical use. The difficulty with the wholly flexible form of seat is, besides that of insecurity and weakness in the seat structure itself, the tendency of the leg structure to partially collapse under the weight of the user. The difficulty with an all rigid seat is that it itself cannot be readily collapsed and placed into small confines, thus defeating the aim of compact portability desired for this type of folding chair assembly.

The prime object of my present invention centers about the provision of a collapsible chair of the referred to type, having a seat structure which by itself and in combination with the leg structure possesses the following advantages: (1) The seat structure provides or supplies seat rigidity in one direction and, therefore, security and strength; (2) the seat structure possesses flexibility in another direction and is thereby capable of being collapsed, the construction being, moreover, such that the elements of the seat structure are also collapsible into an elongated assembly of small transverse dimensions similar to that of the leg structure and thus capable of being boxed therewith in the same such as an elongated cylindrical container; (3) the rigid elements of the seat structure are connectable with the legs of the leg structure so as to form rigid connecting braces between the two leg pairs of the leg structure, and thereby despite the otherwise flexibility of the seat structure functions to hold all the legs against pivotal or collapsing movement. As a result, the chair when the seat structure and leg structure are

assembled maintains its open or operative condition without tendency to collapse either by itself or under the weight of the user.

A further desideratum in a folding chair of this character is the provision of a serviceable back for the chair. A further object of my present invention centers about the provision of a back structure associated with the folding chair structure described, which possesses the following advantages: (a) ability of being folded into an elongated assembly of small transverse dimensions rendering the same capable of being boxed in the same elongated package with the leg and seat structures, (b) ready detachable connectability with the seat structure, or if fixedly attached thereto equal ready collapsibility with the seat structure and (c) simplicity and strength.

To the accomplishment of these objects and such other objects as may hereinafter appear, my invention relates to the improved folding chair and the structural combinations thereof hereinafter sought to be defined in the claims and described in this specification in connection with the appended drawings in which:

Figure 1 is a perspective view of the folding chair in set-up or open condition and showing one form or modification of the seat structure and back structure;

Figure 2 is a front elevational view of the back structure when made separable from the seat structure and showing the manner of collapsing the same;

Figure 3 is a view of the seat structure showing the manner of collapsing the same;

Figure 4 is a view showing the leg structure and the manner of collapsing the same;

Figures 2, 3 and 4, collectively, illustrate the collapsibility of the back, seat and leg structures, each into an elongated assembly of small transverse dimensions, whereby all of the parts may be boxed compactly in the same package;

Figure 5 is a top plan view of the leg structure with the leg ends broken away;

Figures 6 and 7 are views of details showing the manner of assembling the back structure and the seat structure of Figures 1 to 3;

Figure 8 is a front elevational view of the folding chair with parts broken away, showing the association between the seat structure and the leg structure;

Figure 9 is a side elevational view of a modified form of folding chair, in which the seat structure and the back structure are united to be handleable as a unit;

Figure 10 is a front elevational view of the same; and

Figures 11 and 12 are views of details showing the manner of uniting parts of the back structure and seat structure of this modified form of folding chair.

Referring now more in detail to the drawings and having reference first to Figures 1 to 4 thereof, the folding chair of my invention comprises a leg structure generally designated as L, a detachable seat structure generally designated as S, and a back structure generally designated as B, constructed to be set up in operative condition as shown in Figure 1 of the drawings and to be disassembled and collapsed into the conditions shown in Figures 2, 3 and 4 of the drawings. The two main features of the invention are illustrated in these Figures 1 to 4. Firstly, when the folding chair is set up in assembled condition as shown in Figure 1, the leg structure L and the seat structure S are interrelated so that the set-up or open condition of the chair is maintained, all tendency to collapse being obviated by the mutual bracing effects between the leg structure parts and the seat structure parts. Secondly, when the parts are disassembled, the leg structure L is collapsible into an elongated assembly of small transverse dimensions as shown in Figure 4 of the drawings, the seat structure S as also the back structure B are similarly collapsible into elongated assemblies of small transverse dimensions, as shown respectively in Figure 3 and Figure 2 of the drawings, so that all the parts are capable of being boxed in the same, such as an elongated cylindrical container. Other ancillary advantages obtained will be explained hereinafter.

The leg structure L, which in itself is of a generally known type, comprises a rectangular block or band generally designated as 20, which serves as a leg holder and brace, and four legs 21, 22, 23 and 24 pivotally mounted, respectively, on the four walls 21', 22', 23' and 24' (see particularly Figure 5) of the said rectangular block or band 20, the pivotal mounting being by means of the headed pivot pins 25, 25' riveted at their front ends to the band walls as best shown in Figure 5 of the drawings. The block or band 20 is preferably made of heavy steel tubing flanged at the top and bottom to provide the top and bottom strengthening beads clearly shown in Figures 1, 4 and 5 of the drawings, and the legs 21 to 24, inclusive, are preferably formed from wooden rods of suitable dimensions. With this construction each leg is pivotally movable on its wall of the rectangular band or holder 20 in a plane parallel to the plane of the said wall, the legs being movable between a collapsed condition with the legs arranged in closely parallel formation (Figure 4) and an operative or set-up condition with the legs spread apart (Figures 1 and 5). The height of the band 20 as well as the dimensions of the rectangular opening thereof are such as to predetermine the degree to which the legs are spread, the rectangular band 20 serving as a brace therefor, the leg pressure when the legs are in set-up condition, being against the top and bottom beads of the band. To restrain each leg from moving except in one direction when moved from collapsed to set-up condition, each wall of the band is provided with a pressed-in nib or button 26 which acts as a stop or restraining element for the leg. With this construction the leg structure may be quickly made to assume a collapsed condition shown in Figure 4 and the open or set-up condition shown in Figure 1.

The seat structure S comprises simply two bars 27 and 28 and a flexible interconnecting seat section 29. The bars 27 and 28 may be made in the form of wooden rods having a cross-sectional dimension similar to that of the legs 21 to 24, and the flexible interconnecting seat section may be made of canvas or similar woven fabric, the two sides of which are sewed to provide cylindrical pockets 30 and 31 for receiving the bars 27 and 28.

The seat structure S is associated with the leg structure L so that when the two are assembled together the rigid elements of the seat structure form rigid connecting braces between the two leg pairs of the leg structure and thereby, despite the otherwise flexibility of the seat structure, functions to hold all of the legs against pivotal or collapsing movement. Thus, as shown in Figure 1 of the drawings, when the parts are assembled in set-up condition, the seat bar 27 forms a connecting brace for the leg pair 21 and 22 and similarly the seat bar 28 forms a connecting brace for the leg pair 23 and 24. The bracing by each seat bar for a leg pair is along a diagonal direction or, more accurately, along a line parallel to the diagonal of the rectangular band or holder 20, and, therefore, supplies a force component for each leg in the plane of movement of said leg. This will be seen by viewing Figure 1 of the drawings. Therefore, the seat structure S, although rigid only in one direction, namely, from front to back, i. e., along the lines of seat bars 27 and 28, supplies a rigidifying force for not only bracing the legs against further spreading movement, but for holding the legs against pivotal or collapsing movement even under the weight of the user. As a result, the chair when in set-up condition maintains its open or operative condition without any tendency to collapse, and the chair may be handled as a unit.

In addition to this, the seat structure itself provides or supplies seat rigidity in one direction, namely, from front to back, and, therefore, the necessary security and strength, and nevertheless possesses flexibility from side to side which latter not only enables comfortable seating of the user, but also permits the seat to be collapsed in scroll form into the condition depicted in Figure 3 of the drawings heretofore described.

The seat structure may be made detachably connectable to the leg structure in any desired way, but whatever means is used, it is preferred to make this detachable connection resilient or tensioned so that these structures are locked together whereby the assembly may be handled as a unit. A preferred form of resilient or tensioned detachable connection for these parts is best shown in Figure 8 of the drawings. The top ends of the legs of the leg structure L are provided with the pegs 32, 32' and the underneath wall of each bar 27 and 28 is provided with bores 33, 33' for seatingly receiving these pegs. To produce the resilient or tensioned connection, the distance between the centers of the bores on each bar is somewhat greater than the normal distance between the pegs of the leg pairs when the legs are spread apart, so that for seating engagement one of the legs of each pair such as, for example, the leg 24, has to be sprung as is illustrated by the movement from the dot-and-dash position to the full line position shown in Figure 8' of the drawings. When thus assembled, the parts will be mutually locked together and the assembly may be moved or lifted as a unit, as, for example, by taking hold of a seat bar or a leg.

As heretofore pointed out, a further desideratum of a folding chair of this character is the provision of a serviceable back for the chair. In the form of the invention shown in Figures 1 to 7 of the drawings, the back B is made into a detachable unit while in the form shown in Figures 9 to 12 of the drawings, this same type of back B is attached to the seat structure and handled as a unit therewith. The back structure B in either form comprises simply two bars 34 and 35 (see Figure 2) hinged together towards one end at their rear faces by means of the hinge device 36, the said bars being shaped at their upper ends in relation to the hinged point so that they are movable between an open inverted V formation shown in the dot-and-dash line in Figure 2 and a collapsed closely parallel formation shown in full lines in Figure 2. The free or lower ends of the bars 34 and 35 are connectable with the bars of the seat structure, and to this end are provided with the holes 37 and 38 which are adapted to be received by the reduced ends 39 and 40 of the seat bars 27 and 28. This can be best seen from viewing Figures 2 and 3 of the drawings and the detailed views Figures 6 and 7. The assembling of the back and seat structures is preferably made when the parts are in collapsed condition so that the parts may be locked against disengagement when open to set-up condition by the following means: each reduced end 39 and 40 is provided with a peg or stud 41 and the holes 37 and 38 of the bars 34 and 35 are provided at their upper ends with key slots 42, 42 which register with the pegs or studs 41, 41 when the parts are assembled but which move out of registry and in locking position when the parts are opened up to set-up condition. This is clearly depicted in Figures 6 and 7 of the drawings.

This back structure B in addition to its sheer simplicity of construction possesses the following important advantages: The ability of being folded into an elongated assembly of small transverse dimensions, rendering the same capable of being boxed in the same elongated package with the leg and seat structures, and ready detachable connectability with the seat structure. A further important feature thereof is that it may be fixedly attached to the seat structure in the form of invention now to be described, and when so attached, has equal ready collapsibility with the seat structure.

In Figures 9 to 12 of the drawings is shown the alternative form of construction in which the back structure B' is connected to the seat structure S'. The elements of these structures, except in the modifications to be described, are the same as those of the form of the invention shown in Figures 1 to 8 of the drawings and are indicated by similar but primed reference characters. The lower ends of the back bars 34' and 35' are simply hinged by means of the hinges 43 and 44 to the rear ends of the seat bars 27' and 28'. To support the back B' in set-up condition, I prefer to provide the angle brackets 45 and 45 movable from the locking position as shown in Figures 9 to 12 of the drawings to the unlocked position shown in the dot-and-dash line of Figure 9 of the drawings. Each angle bracket pivoted on a back bar as by means of a screw 47 is provided with a locking means comprising a pin or bolt 48 fixed to a seat bar and a cooperating slot 49 formed in the angle bracket (see Figures 11 and 12). With this form of construction, the back B' and seat S' may be handled as one unit and

may be moved to the collapsed condition by first detaching the seat structure from the legs and moving the bars of the seat and the bars of the back to parallel formation and by then folding the back structure B' over the seat structure S' as indicated in Figure 9 of the drawings. The reverse operation is followed when the parts are to be moved to open or set-up condition.

The manner of making and using the folding chair of the present invention and the advantages thereof will in the main be fully understood from the above detailed description thereof. It will be further understood that some of the principles of construction of the foldable chair may be employed for similar pieces of furniture. It will be further understood that while I have described the preferred form of the structure embodying the invention, changes may be made therein without departing from the spirit of the invention as defined in the following claims.

I claim:

1. A folding chair comprising a collapsible leg structure, a collapsible detachable seat structure and a collapsible back structure, the leg structure consisting of a rectangular holder ring also serving as a brace and legs pivotally mounted on the walls of said rectangular holder ring, a leg being pivotally movable on each of the four walls of the rectangular holder ring in a plane parallel to the plane of its wall, said legs being movable between a collapsed condition with the legs arranged in closely parallel formation and an operative or open position with the legs spread apart, the detachable seat structure consisting of two parallel bars and a flexible interconnecting seat section, the parallel bars supplying seat rigidity in one direction and the flexible seat section supplying seat collapsibility in another direction, the seat when detached being collapsible with the bars arranged in closely parallel formation, and means for detachably connecting each said bar of the seat structure to the top ends of an adjacent pair of legs of the leg structure, each said bar serving as a rigid connecting brace between the two legs connected thereby and functioning thereby to hold the legs against pivotal or collapsing movement in said holder, the back structure consisting of two bars hinged together towards one end and movable when said braces are detached from said legs between an open inverted V formation and a collapsed closely parallel formation, the free ends of the bars of said back structure being connected with the bars of the seat structure when in assembled condition.

2. A folding chair comprising a collapsible leg structure, a collapsible seat structure and a collapsible back structure, the leg structure consisting of a rectangular holder ring serving also as a brace and legs pivotally mounted on the walls of said rectangular holder ring, a leg being pivotally movable on each of the four walls of the rectangular holder ring in a plane parallel to the plane of its wall, said legs being movable between a collapsed condition with the legs arranged in closely parallel formation and an operative or open position with the legs spread apart, the detachable seat structure consisting of two parallel bars and a flexible interconnecting seat section, the parallel bars supplying seat rigidity in one direction and the flexible seat section supplying seat collapsibility in another direction, the seat when removed from the legs being collapsible with the bars arranged in closely parallel formation, the back structure consisting

of two bars hinged together towards one end and movable when the seat bars are detached between an open inverted V formation and a collapsed closely parallel formation, the free ends of the bars of the back structure being hinged to the bars of the seat structure, and means for detachably connecting the seat structure to the leg structure.

3. In a folding chair, a collapsible seat structure and a collapsible back structure, the seat structure consisting of two parallel bars and a flexible interconnecting seat section, the parallel bars supplying seat rigidity in one direction and the flexible seat section supplying seat collapsibility in another direction, the seat being collapsible with the bars arranged in closely parallel formation, the back structure consisting of two bars hinged together towards one end and movable when detached about the hinge between an open inverted V formation and a collapsed closely parallel formation, the free ends of the bars of the back structure being connected to the bars of the seat structure when in assembled condition.

4. In a folding chair, a collapsible seat structure and a collapsible back structure, the seat structure consisting of two parallel bars and a flexible interconnecting seat section, the parallel bars supplying seat rigidity in one direction and the flexible seat section supplying seat collapsibility in another direction, the seat being col-

lapsible with the bars arranged in closely parallel formation, the back structure consisting of two bars hinged together towards one end and movable when detached about the hinge between an open inverted V formation and a collapsed closely parallel formation, the free ends of the bars of the back structure being hinged to the bars of the seat structure, the back structure when collapsed being foldable over the collapsed seat structure.

5. In the combination seat and back structure of claim 4, a movable angle bracket connecting the bars of the back structure and the bars of the seat structure.

6. In a folding chair, a collapsible seat structure and a separable collapsible back structure, the seat structure consisting of two parallel bars and a flexible interconnecting seat section, the parallel bars supplying seat rigidity in one direction and the flexible seat section supplying seat collapsibility in another direction, the seat being collapsible when detached with the bars arranged in closely parallel formation, the back structure consisting of two bars hinged together towards one end and movable about the hinge between an open inverted V formation and a collapsed closely parallel formation, the free ends of the bars of the back structure being detachably connected to the bars of the seat structure.

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