April 5, 1949. S. B. KORMAN 2,466,595

METAL UMBRELLA

Filed July 11, 1947 3 Sheets-Sheet 1

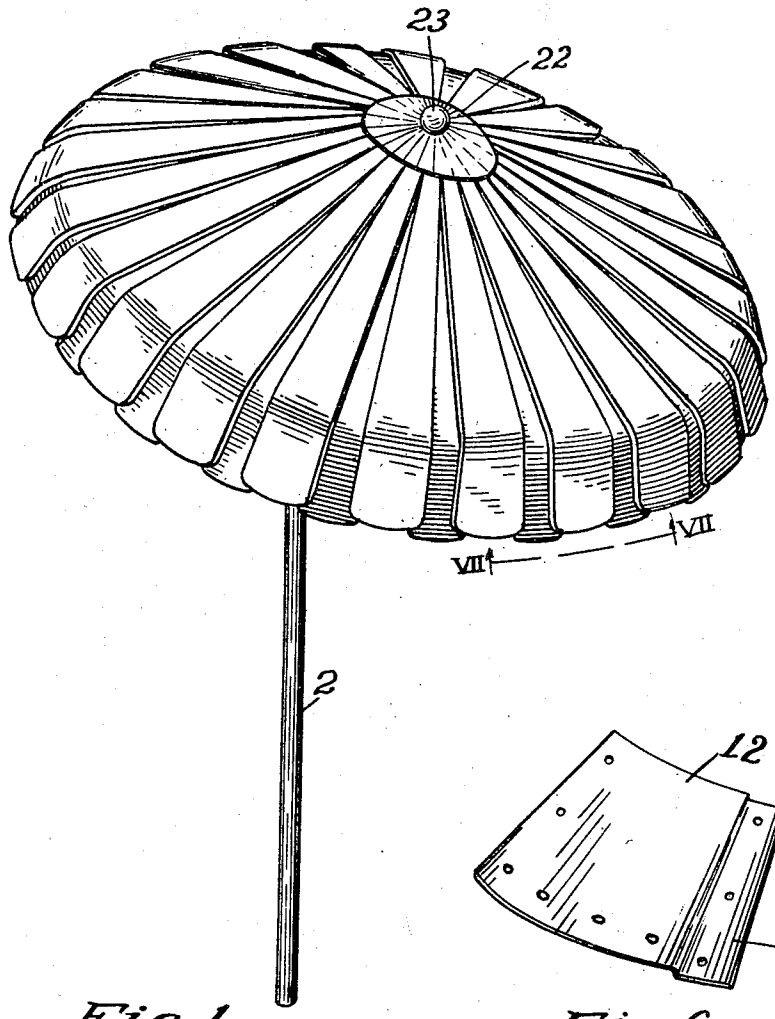

Fig. 1.

Fig. 6.

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METAL UMBRELLA

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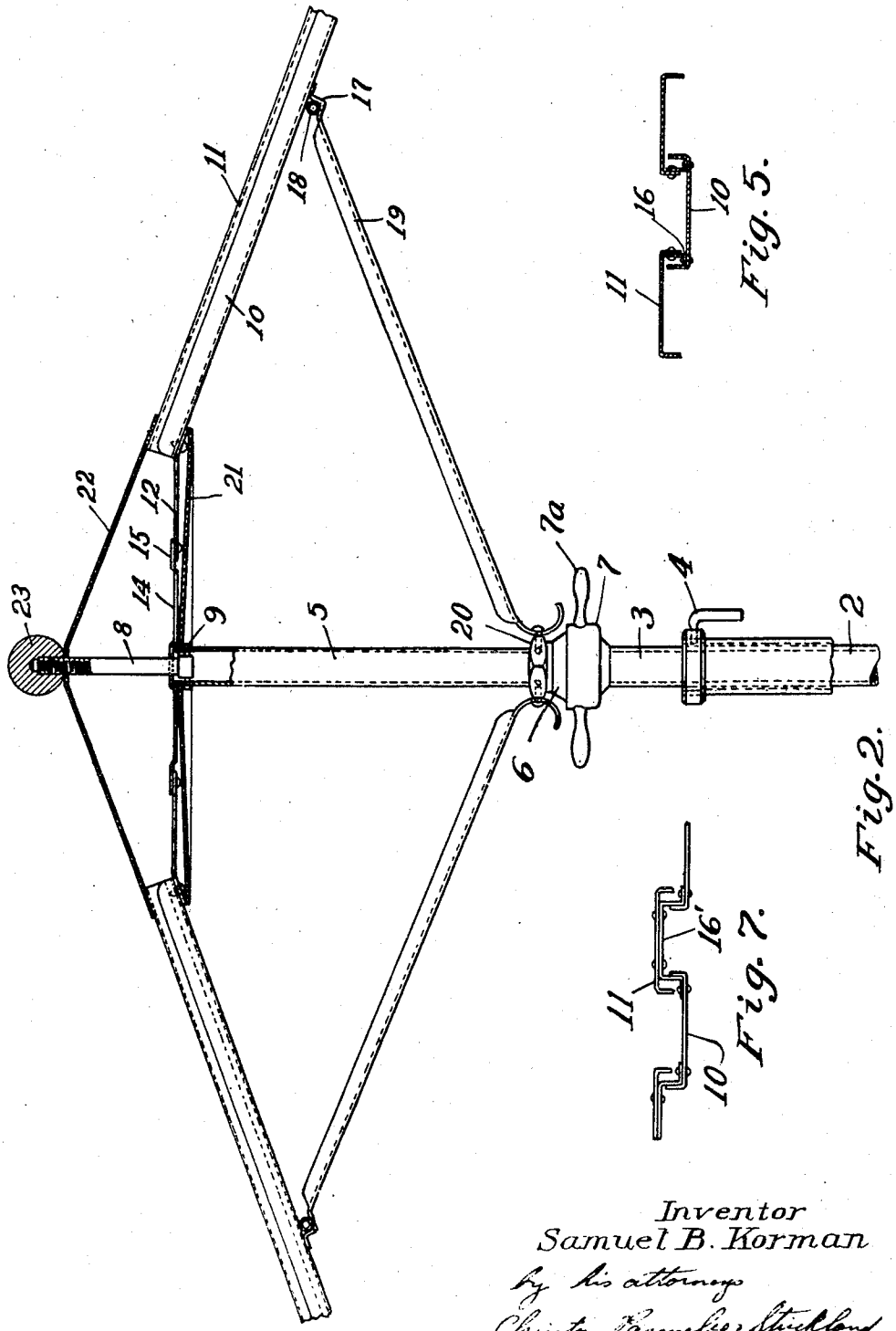

Fig. 2.

Fig. 5.

Fig. 7.

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METAL UMBRELLA

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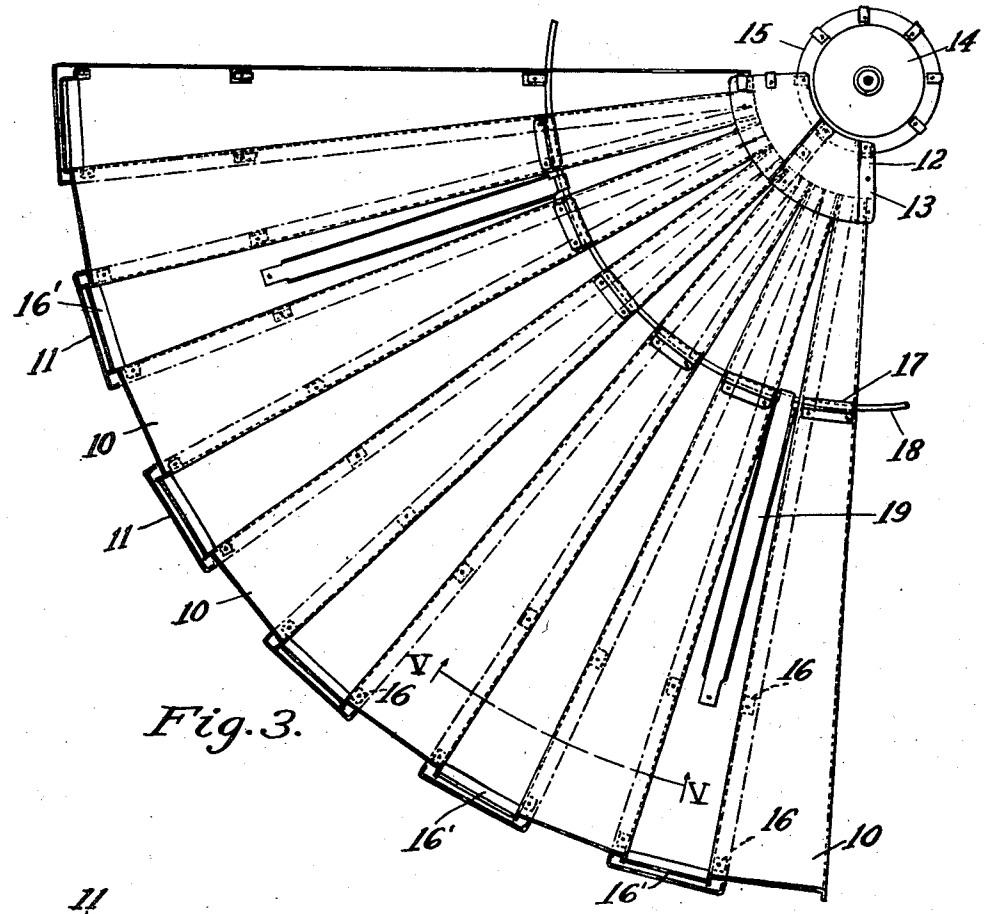

Fig. 3.

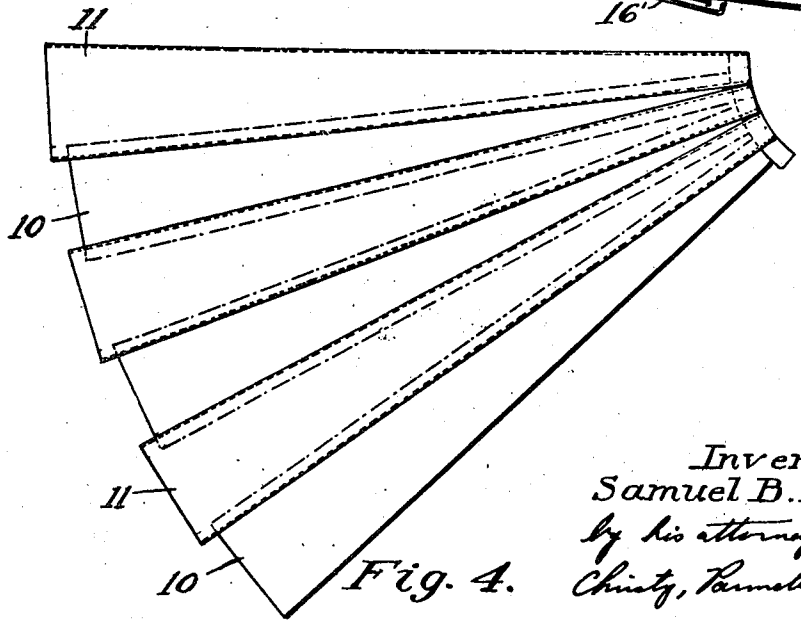

Fig. 4.

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UNITED STATES PATENT OFFICE

2,466,595

METAL UMBRELLA

Samuel B. Korman, Pittsburgh, Pa.

Application July 11, 1947, Serial No. 760,409

12 Claims. (Cl. 108—3)

1

This invention relates to umbrellas, and more particularly to lawn or beach umbrellas, and is for an improved umbrella of this type made up of metal.

More particularly the invention provides a metal umbrella, a major portion of the roof of which is comprised of radially disposed channel elements arranged in alternately reversed relation to provide an umbrella of unique appearance and yet which is extremely strong so as to withstand high winds, and still not be excessively heavy. Moreover these alternately reversed channels may have their flanges arranged in overlapping spaced relation so as to permit the ready circulation of air under the umbrella and permit adequate light to come through while excluding all direct rays of light and rain, even though it be wind-driven.

The invention moreover provides an umbrella which may be conveniently shipped in "knocked-down" form and readily assembled at the place where it is to be used.

My invention may be more fully understood by reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of the complete umbrella;

Fig. 2 is a transverse vertical section through the umbrella shown in Fig. 1;

Fig. 3 is a bottom plan view of two segments of the roof secured together;

Fig. 4 is a top plan view of one of the segments;

Fig. 5 is a transverse fragmentary section in the plane of line V—V of Fig. 3;

Fig. 6 is a perspective view of one of the segment plates; and

Fig. 7 is a fragmentary end view of the turned down valance at the edge of the umbrella showing a detail of the connection between cover elements of the umbrella.

In the drawings, 2 designates a bottom post section into which is telescopically fitted the lower end of an upper post section 3. A clamping screw 4 releasably holds the upper section at the height to which it is adjusted. The post section 3 is joined to an upper section 5 through a ball-and-socket joint 6 of a well known type to allow universal adjustment of the umbrella, a clamping nut 7 with handles 7a serving to hold the umbrella in the position to which it is set or tilted.

At the top of the post or mast section 5 is a bolt 8 secured in place by a transverse rivet 9, the threaded end of the bolt projecting upwardly.

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The roof section of the umbrella is comprised principally of a lower series of spaced radial channels or pan elements 10 having upwardly turned flanges and an upper series of downwardly turned channels or cover elements 11, each cover element spanning the space between two pan elements, with the flanges of the covers overlapping the flanges on the two edges of the two pans with which it cooperates. The flanges of the covers are preferably spaced from the sides and bottoms of the pans, as shown in Fig. 5, to provide for ventilation and the infiltration of light while excluding water and direct rays of light. In other words, the flanges of the pans and covers are preferably in spaced overlapping relation.

For convenience in storing and shipping, the roof is made up of segments, each comprising an equal number of pans 10 and covers 11. Conveniently, there are three pans and covers in each segment in the structure shown in the drawings, but this depends upon the width of the pans and covers and the size of the umbrella, and my invention is not limited to any special number. The pans and covers have downwardly curved outer ends to provide a valance around the umbrella, and they decrease uniformly in width toward the center.

Each segment or section, in this case comprising three pans and three covers, has at its inner end a segment plate 12. The bottom channels or pans have their converging inner ends riveted as shown to this plate, while the covers are secured to the pans in the manner hereinafter described. Each segment plate has a downwardly offset margin 13 along one radial edge only thereof, which, as shown in Fig. 3, laps under the other radial edge of the adjacent segment plate, and bolts or self-tapping screws pass through these overlapping marginal portions of the segment plates to unite them into a continuous annulus. At the top of the post section 5 there is a center disk 14 with an upwardly offset peripheral margin 15 which overlaps the composite annulus made up of plates 12, and the inner edge of this annulus is bolted or attached with sheet metal screws to this edge, as clearly shown in Figs. 2 and 3.

Each of the cover elements 11 has small cleats 16 riveted to its flanges, at intervals therealong, two such cleats being shown. These cleats have laterally turned feet or pad portions which rest in the pans, and the pans are punched with registering holes, so that sheet metal screws may be entered upwardly through the pans into the pads of the cleats for supporting the covers in the

desired fixed position on the pans. The cleats are concealed, and only the heads of the screws are visible on the under side of the umbrella. In addition to the cleats 16, U-shaped straps 16' are riveted to the inner face of the valance forming portion of the cover elements. The outwardly turned pads or feet on these straps are secured to the pan elements. This imparts rigidity to the fringe of the cover. All of the screws in any segment of the roof are inserted at the place of manufacture, so that when the umbrella is assembled, only the screws at the junction of the segments have to be put in.

The under side of each of the pans 10 is provided, intermediate its ends, with a cleat 17, that has a projection extending toward the center of the umbrella. These cleats serve to receive a roof tensioning ring 18 that is sprung into place when the umbrella is otherwise assembled. This ring must be sprung into place, and it serves to put the roof under proper tension and keep it from sagging. The tensioning ring has several, usually four struts 19 attached thereto, these being made of deformed sheet metal with one end bent or looped around the ring so as to hinge or pivot, allowing the struts to lay flat as shown in Fig. 3 on the sections, but to be swung down into the position shown in Fig. 2 when the umbrella is assembled. The opposite ends of these struts are bent out of line to bear against a collar 20 on the post section 5, and machine screws are passed through the ends of the struts into the collar in the finished assembly.

There is a cover disk 21 on the post 5 which is initially down on the collar 20, but after the umbrella has been assembled, it is slid up to the position shown in Fig. 2. It snaps over the rivet 9 that holds the bolt 8 in place and gives a finished appearance to the interior of the umbrella, since it conceals the segment plates, the inner disk and the ends of the channels.

An inverted cover 22 with a central hole therein is set over the bolt 8, and its periphery extends over the inner ends of the channels. An ornamental knob 23 screwed onto the end of bolt 8 presses down on this cover and holds it tight against the tops of the inner ends of the cover members 11. The cover members converge into contact with one another, so that little water from rain and no debris can work under the cover. If the umbrella is tilted to the position shown in Fig. 1, water that may seep between the covers will flow onto the annulus provided by the segment plates and around the pans on the low side.

The plans and covers are formed on thin gauge aluminum or other metal, preferably a lightweight metal, but because of the channel structure, the umbrella is very strong and will withstand high wind to which a lawn umbrella may be exposed.

While it is preferred to use a large number of radial channels, a similar effect or appearance may be secured by making the segments of corrugated sheet metal, corrugated to the same form, or by using integrally formed inverted and upright channel elements, and such equivalent structures are within the contemplation of my invention.

In practice, the hoop or tension ring, the several segments and the other parts are shipped in large cartons requiring little bulk, being relatively thin, flat packages, and they can be easily assembled by the retailer or purchaser. This is an important factor, as the umbrellas in assembled form would be too large for general handling in transit, warehouses, and the like.

While I have specifically shown and described one embodiment of my invention, it will be understood that various changes and modifications may be made therein.

I claim:

1. An umbrella of the class described comprising a plurality of radial segments united to form a circular cover, each segment having a segment plate at its inner end, each segment plate having an offset margin along one edge to lap the edge of the next adjacent plate, the lapped portion being secured together, a central disk lapping the inner edges of the segment plates, and a post section on which the disk is carried.

2. The umbrella as defined in claim 1 wherein a tension ring concentric with the post is secured to the under surfaces of the segments.

3. An umbrella of the class described comprising a plurality of radial segments united to form a circular cover, each segment having a segment plate at its inner end, each segment plate having an offset margin along one edge to lap the edge of the next adjacent plate, the lapped portion being secured together, a central disk lapping the inner edges of the segment plates, and a post section on which the disk is carried, each segment comprising a plurality of trough and cover elements converging toward the center of the umbrella.

4. An umbrella of the class described comprising a plurality of radial segments united to form a circular cover, each segment having a segment plate at its inner end, each segment plate having an offset margin along one edge to lap the edge of the next adjacent plate, the lapped portion being secured together, a central disk lapping the inner edges of the segment plates, a post section on which the disk is carried, each segment comprising an equal number of spaced trough-like pan members secured at their inner ends to the segment plates, and a plurality of inverted channel-like cover elements alternated with the pan elements and in spaced overlapping relation to the pan members, the pans and covers decreasing in width toward the center of the umbrella.

5. An umbrella of the class described comprising a plurality of radial segments united to form a circular cover, each segment having a segment plate at its inner end, each segment plate having an offset margin along one edge to lap the edge of the next adjacent plate, the lapped portion being secured together, a central disk lapping the inner edges of the segment plates, and a post section on which the disk is carried, each segment being of like form and being comprised of radially extending inwardly converging pan and cover elements.

6. An umbrella of the class described comprising a plurality of radial segments united to form a circular cover, each segment having a segment plate at its inner end, each segment plate having an offset margin along one edge to lap the edge of the next adjacent plate, the lapped portion being secured together, a central disk lapping the inner edges of the segment plates, a post section on which the disk is carried, each segment being of like form and being comprised of radially extending inwardly converging pan and cover elements, each pan element having a clip on the under face thereof intermediate its ends and providing an annular series of such clips, and a tension ring retained in said clips concentrically to the post.

7. An umbrella of the class described comprising a plurality of radial segments united to form a circular cover, each segment having a segment plate at its inner end, each segment plate having an offset margin along one edge to lap the edge of the next adjacent plate, the lapped portion being secured together, a central disk lapping the inner edges of the segment plates, a post section on which the disk is carried, each segment being of like form and being comprised of radially extending inwardly converging pan and cover elements, each pan element having a clip on the under face thereof intermediate its ends and providing an annular series of such clips, a tension ring retained in said clips concentrically to the post, and a plurality of struts extending between the ring and the post and connected with each.

8. In an umbrella of the class described, a main roof section formed to provide an annular series of troughs and covers in alternate relation, a center post, means on the post forming a center in said main roof section, a threaded bolt extending upwardly from the post, a metal cone having a central hole through which the bolt passes, and a knob element screwed onto the top of the bolt and pressing down on the cone, the edge of the cone overlapping the inner edge of the main roof member, and concealing at the top, the said center for the main roof member.

9. In an umbrella of the class described, a main roof section formed to provide an annular series of troughs and covers in alternate relation, a center post, means on the post forming a center in said main roof section, a threaded bolt extending upwardly from the post, a metal cone having a central hole through which the bolt passes, and a knob element screwed onto the top of the bolt and pressing down on the cone, the edge of the cone overlapping the inner edge of the main roof member, and concealing at the top, the center for the main roof member, the main roof section being formed of separate radially converging upright and inverted spaced channel elements with the edges of the inverted channel elements overlapping the underlying edges of two upright channel elements.

10. In an umbrella of the class described, a main roof section formed to provide an annular series of troughs and covers in alternate relation, a center post, means on the post forming a center in said main roof section, a threaded bolt extending upwardly from the post, a metal cone having a central hole trough which the bolt passes, and a knob element screwed onto the top of the bolt

and pressing down on the cone, the edge of the cone overlapping the inner edge of the main roof member, and concealing at the top, the center for the main roof member, the main roof section being formed of separate radially converging upright and inverted spaced channel elements with the edges of the inverted channel elements overlapping the underlying edges of two upright channel elements, the inverted channels contacting one another at their inner ends where they are overlapped by the cone.

11. In an umbrella of the class described, a main roof section formed to provide an annular series of troughs and covers in alternate relation, a center post, means on the post forming a center in said main roof section, a threaded bolt extending upwardly from the post, a metal cone having a central hole through which the bolt passes, and a knob element screwed onto the top of the bolt and pressing down on the cone, the edge of the cone overlapping the inner edge of the main roof member, and concealing at the top, the center for the main roof member, the main roof section being formed of separate radially converging upright and inverted spaced channel elements with the edges of the inverted channel elements overlapping the underlying edges of two upright channel elements, the inverted channels contacting one another at their inner ends where they are overlapped by the cone, the converging upright and inverted channel elements being grouped into segments, each segment having a segment plate at its inner end to which the inner ends of the upright channel elements are secured, the segment plates being secured together into an annulus to form a part of the center of the main section.

12. An umbrella having a main cover portion formed of radially extending inverted and upright channel elements with overlapping flanges constituting pan and cover members, means at the center of the cover section for supporting them, said channel elements each having a downwardly turned outer end forming a valance around the cover, and a U-shaped member on the inner face of each cover member adjacent said end with feet portions on each leg of the U shape which are secured to the adjacent pan members to maintain the outer valance forming ends of the elements in fixed relation.

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No references cited.