Jan. 6, 1953 J. H. VIEWEGH 2,624,504

MEANS FOR INTERCONNECTING FAN GUARD FRAME SECTIONS

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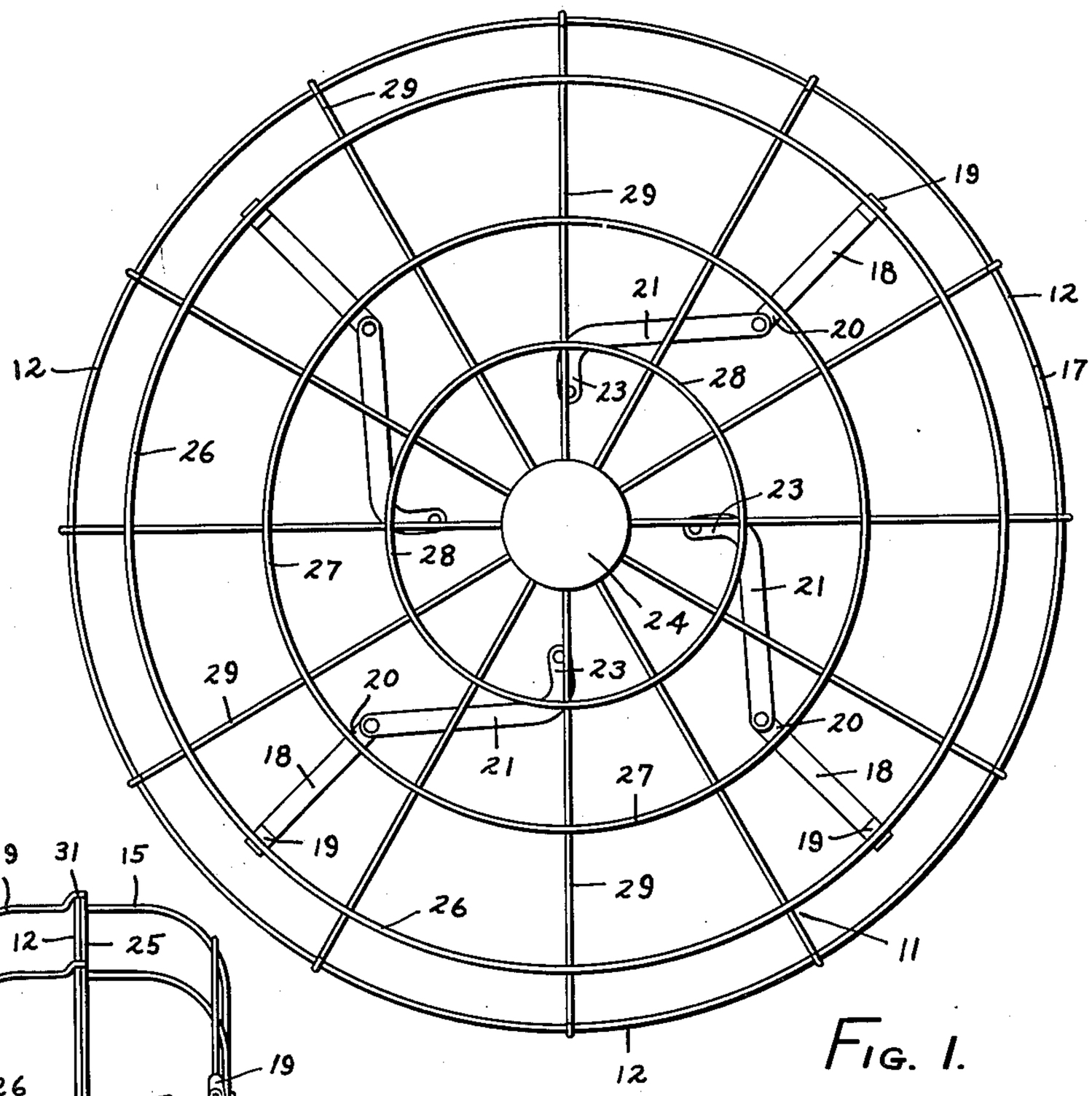

FIG. 1.

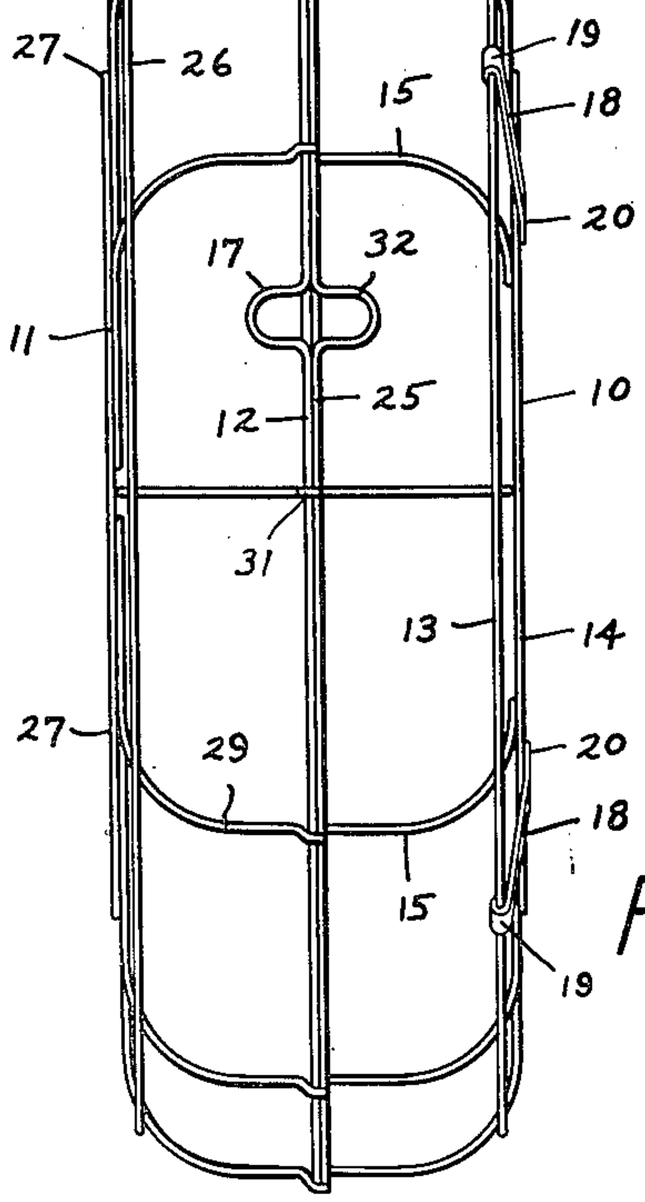

FIG. 2.

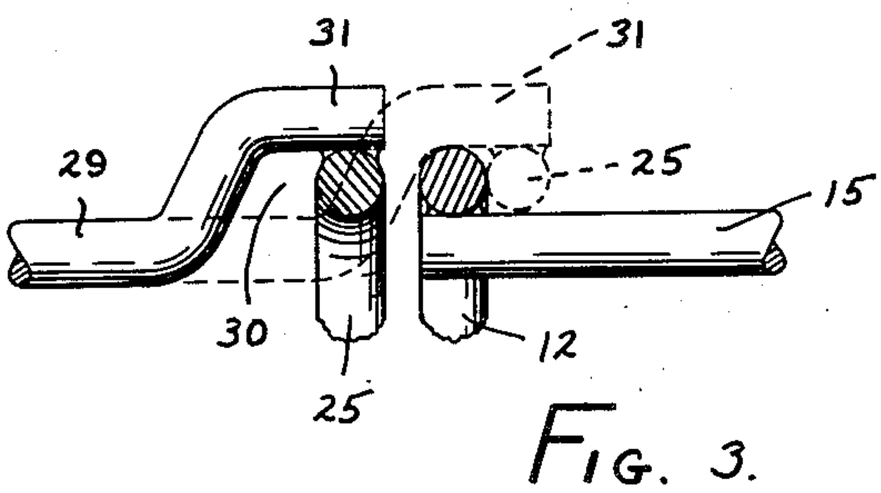

FIG. 3.

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MEANS FOR INTERCONNECTING FAN GUARD FRAME SECTIONS

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8 Claims. (Cl. 230—275)

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This invention relates to a fan guard and more particularly to a means for interconnecting fan guard frame sections.

A primary purpose of the invention is to provide means free of clamps, screws, and bolts for interconnecting front and rear sections of a fan guard.

An important purpose is to form front and back frame sections of a fan guard which sections can be nested together to reduce the overall thickness of the fan guard for storage or shipping.

A further important purpose of the construction is to form an interconnecting, integral structure for uniting the frame sections about a fan without removing the fan.

A still further important object of this invention is to provide a fan guard section interconnecting means which is extremely simple, efficient, and inexpensive, wherein the sections simply snap into engagement one with the other.

Further important objects and advantages of the invention will become apparent to those skilled in the art from the following description of one particular form of the invention, as illustrated in the accompanying drawings, in which

Fig. 1 is a view in front elevation of a fan guard embodying the invention;

Fig. 2 is a view in side elevation thereof; and

Fig. 3 is a detail in section on an enlarged scale illustrating the relationship of the major diameter rings of front and rear fan guard frame sections.

Referring to the drawings, in which like reference characters refer to like parts throughout the several views, the fan guard consists of a rear frame section generally designated by the numeral 10 and a front frame section generally designated by the numeral 11.

The rear frame section 10 consists of a plurality of spaced apart circular rings, herein shown as a major diameter ring 12, an intermediate ring 13, and a minor diameter ring 14. The rings are interconnected and radially spaced apart by a plurality of circumferentially spaced apart spokes 15 which extend radially outwardly from the minor ring 14 and then curve forwardly to be fixed across the inside of the ring 12.

The major ring 12 is formed to define a plane by its outermost side, wherein all portions of that side lie within the plane with the exception of a U-shaped portion 17 which is directed substantially normally and forwardly from that plane. The ring 12 and this portion 17 is in effect one continuous piece of wire, elastic in nature, such

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as spring steel wire. By reason of the ring 12 having this intervening portion 17 as an integral part thereof, the ring may be contracted circumferentially in its plane to reduce its circumferential length by the contraction of this U portion 17. The inherent elasticity of this portion 17 tends at all times to return the ring to a normal, initial fixed circumferential length within its plane.

Some mounting means is provided to support the section 10. One such means consists of a plurality of circumferentially spaced metal straps 18 herein shown as four in number, having their outer ends 19 looped around the ring 13 and their inner end portions 20 secured to the minor ring 14 with arms 21 pivotally connected to the inner ends 20. These arms 21 have transversely extending ends 23 which are used to attach the fan guard to varying sizes of fan motors (not shown). This particular fan guard mounting means is more completely described and claimed in my copending application No. 29,541, filed May 27, 1948, now Patent No. 2,542,735.

The front section 11 consists of a plurality of spaced circular rings, herein shown as a major diameter ring 25 and three smaller rings of progressively smaller diameters, 26, 27, and 28, interconnected by a plurality of circumferentially spaced apart spokes 29, shown herein as twelve, extending radially outwardly from a central member 24 to curve rearwardly by outer ends, into offset end portions 31 lapping over and across the outer side of the ring 25. These end portions 31 provide a recess 30 under the portions 31 and forwardly of the ring 25. These recesses 30 are adapted to receive the major ring 12 on the rear frame 10 thereacross in each instance.

The major ring 25 is made to have the same normal diameter as that of the ring 12, and likewise to define a plane, from which there is a U-shaped portion 32 extending substantially normally and rearwardly therefrom. The ring 25 and the portion 32 constitutes in effect one continuous length of wire of elastic nature such as steel wire. The essential characteristic of this ring 25 is that its circumferential length may be increased in its plane under expansion of the portion 32.

To assemble the two sections 10 and 11, Fig. 3, the major ring 25 is brought relatively against the major ring 12. The ring 25 is then expanded and the ring 12 contracted by forcing the ring 25 over the ring 12. In this action the ring 25 is relatively expanded while the ring 12 is

relatively contracted in diameter, one in respect to the other.

The ring **25** is in effect pushed rearwardly telescopically over the ring **12**, and then the ring **25** snaps back of the ring **12**, to permit both rings to return to their normal common diameters under influence of the respective U portions **32** and **17** whereby the ring **12** then is positioned across the recesses **30**, wherein the ring **12** is held snugly therein against fore and aft travel, and in compressive contact against the forward side of the ring **25**.

For storage or shipping purposes, the rear section **10** separated from the section **11** may be reversed in position and placed inside of the front section **11** to nest the two sections one with the other and thus reduce the over-all thickness of the two units. It is also convenient to nest a number of the units together for shipment or storage.

While I have herein shown and described my invention in one particular form, it is obvious that structural changes may be employed without departing from the spirit of the invention, and I therefore do not desire to be limited to that precise form beyond the limitations which may be imposed by the following claims.

I claim:

1. In a fan guard comprising detachable front and rear frame sections, means for interconnecting said sections comprising in combination a first elastic ring in the front plane of said rear section; a second elastic ring in the rear plane of said front section; both of said rings having elastic U-shaped members integrally formed therein to permit expansion and contraction of the diameters of said rings; a plurality of rearwardly extending wire members fixed to one of said rings; each of said members presenting an abutment surface adjacent said first ring and spaced inwardly from the outer surface of said one ring; a plurality of forwardly extending wire members fixed to the other ring; each of said members presenting a horizontal abutment adjacent said other ring and spaced outwardly from the inner surface of said other ring and a second abutment spaced from said other ring and extending obliquely inwardly and away from said horizontal abutment; said last mentioned abutments and said other ring forming a plurality of recesses to receive the one ring; both of said rings and said U-shaped members having an elastic preformed set biasing said one ring within said recesses.

2. Means for securing a front section to a rear section of a fan guard, comprising in combination a ring member on the rear of said front section; a ring member on the front of said rear section; at least one of said ring members being formed from resilient material and having a resilient member formed therein to permit expansion and contraction of the diameter of said ring member; a plurality of spoke members fixed to one of said ring members and extending longitudinally therefrom, each of said spoke members providing an abutment adjacent said ring member and spaced outwardly from the inner surface of said ring member and a second abutment adjacent said first abutment and longitudinally spaced away from said ring member; said abutments and said ring member thus forming a plurality of recesses to receive the other ring member.

3. In a fan guard comprising detachable front and rear frame sections, means for interconnecting said sections comprising in combination a first elastic ring in the front plane of said rear section; a second elastic ring in the rear plane of said front section; both of said rings having elastic U-shaped members integrally formed therein to permit expansion and contraction of the diameters of said rings; a plurality of rearwardly extending wire members fixed to one of said rings; each of said members presenting an abutment surface adjacent said first ring and spaced inwardly from the outer surface of said one ring; a plurality of forwardly extending wire members fixed to the other ring; each of said members presenting a horizontal abutment adjacent said other ring and spaced outwardly from the inner surface of said other ring and a second abutment spaced from said other ring and extending obliquely inwardly and away from said horizontal abutment; said last mentioned abutments and said other ring forming a plurality of recesses to receive the one ring; both of said rings and said U-shaped members having an elastic preformed set biasing said one ring within said recesses; a plurality of spoke members fixed to and extending longitudinally away from said other ring member; said spoke members presenting an abutment adjacent said other ring member and spaced inwardly from the outer surface of said other ring member to bear against the outer surface of said one ring member.

4. Means for detachably securing together two frame sections comprising in combination a resilient ring on one frame section having an elastic preformed set therein; a localized deformation in the ring to permit expansion and contraction therethrough of the ring diameter; a ring on the other frame section; a plurality of abutments adjacent one of said rings and spaced outwardly from the inner surface of said one ring; and a plurality of abutments spaced longitudinally from said one ring; a plurality of abutments carried by the other ring and spaced inwardly from the outer surface of said other ring.

5. Means for detachably securing two frame sections comprising a first ring in one of said frame sections; a second ring in the other frame section; a plurality of circumferentially spaced apart inwardly opening recesses carried by said first ring; said recesses being formed to receive and retain said second ring therein; a bow in at least one of said rings having an elastic preformed set therein to permit expansion and contraction of the diameter of said elastic ring; whereby, when the second ring is in said recesses, the preformed set in said elastic ring will hold said second ring in said recesses.

6. In a fan guard comprising detachable opposing sections, an elastic ring presented across one section, and an elastic ring presented across the other section, the two rings being presented one toward the other to come into contact in a common plane, at least one of said rings having an integral portion extending laterally therefrom through a U bend whereby the circumferential length of said one ring may be varied by contraction and expansion of that bend, and each of said rings extending radially beyond at least a part of the respective sections, whereby said one ring may be sprung over the other ring to rest therebehind.

7. In a fan guard comprising detachable opposing sections, an elastic ring presented across one section, and an elastic ring presented across the other section, the two rings being presented one toward the other to come into contact in a

common plane, at least one of said rings having an integral portion extending laterally therefrom through a U bend whereby the circumferential length of said one ring may be varied by contraction and expansion of that bend, and each of said rings extending radially beyond at least a part of the respective sections, whereby said one ring may be sprung over the other ring to rest therebehind; and abutments spaced laterally from said other ring to receive said one ring therebetween.

8. Means for detachably securing together two frame sections comprising in combination a resilient ring on one frame section having an elastic preformed set therein for a normal diameter; a local deformation in the ring to permit expansion and contraction to provide a variable diameter of the ring; a ring on the second frame for presentation toward the first said ring and having a normal diameter substantially equal

to that of the normal diameter of the first ring; and a plurality of abutments carried by said one frame section around said second ring and spaced therefrom laterally and inwardly from the said first ring to form a frame recess between the ring and the frame of a width substantially equal to the diameter of the said second ring; whereby the first ring may be sprung through the second ring to expand and rest in said recess.

JOHN H. VIEWEGH.

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