United States Patent [19]

Buerger

[11] **3,843,201**

[45] **Oct. 22, 1974**

[54] **WIRE WHEEL SIMULATING WHEEL COVER**

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[73] Assignee: **Del-Met Corporation,** Walton, N.Y.

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[52] **U.S. Cl.** ..... **301/37 SS,** 301/37 C M

[51] **Int. Cl.** **B60b 7/04**

[58] **Field of Search** ..... 301/37 SS, 37 CM

[56] **References Cited**

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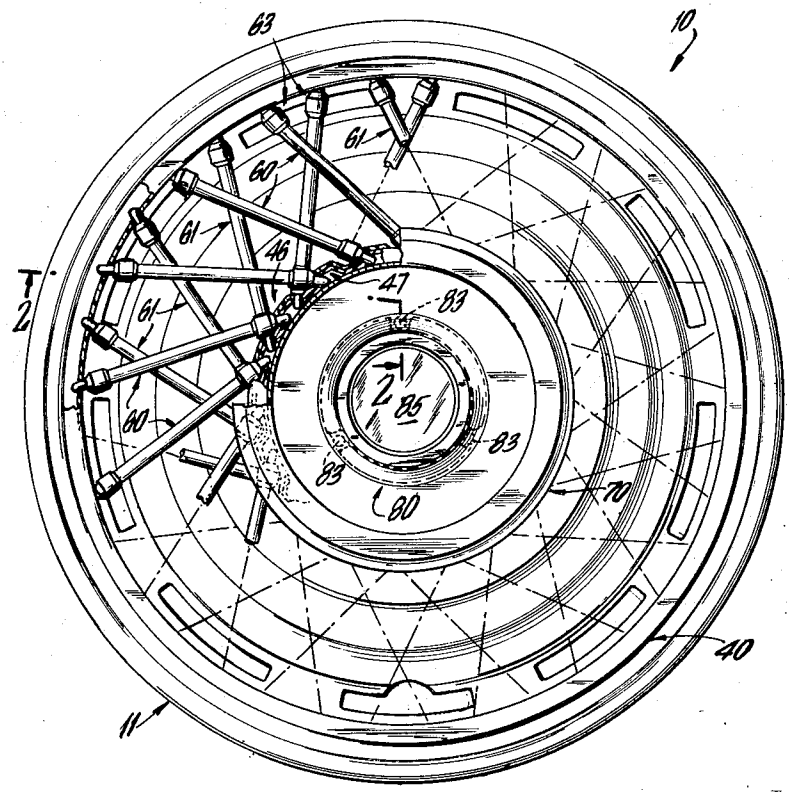
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Primary Examiner—Philip Goodman
Attorney, Agent, or Firm—J. B. Felshin; Marvin Feldman

[57] **ABSTRACT**

This wheel cover can be easily, quickly and cheaply assembled. It incorporates straight spoke simulating pieces which can be made of metal or plastic, and can be in rod or tubular form, which permits the rods to be chopped from long lengths. All the rods can be of similar length. An assembler can be taught very quickly to make the assembly with or without use of assembly fixtures. The device is of good appearance. The easy assembly leads to high production possibility because of the construction of the various parts, with less labor and time to make the assemblies. Caps on the ends of the rods may be force fitted on the rods, or the caps can be integral with the rods. Also the caps can be replaced by circular notches formed in the rods. For straight rods, long lengths can be cut or chopped to desired size. The cut or chopped straight pieces can be barrel plated since it allows tumbling whereas wires or rods with hooks are difficult to tumble because they interengage. The caps can be of plastic, rubber or metal fitted on the rods, or the rods can be made solid with cap simulating integral end portions. The inner and outer interfitting smaller rings and the large outer ring may be made of plastic.

18 Claims, 10 Drawing Figures



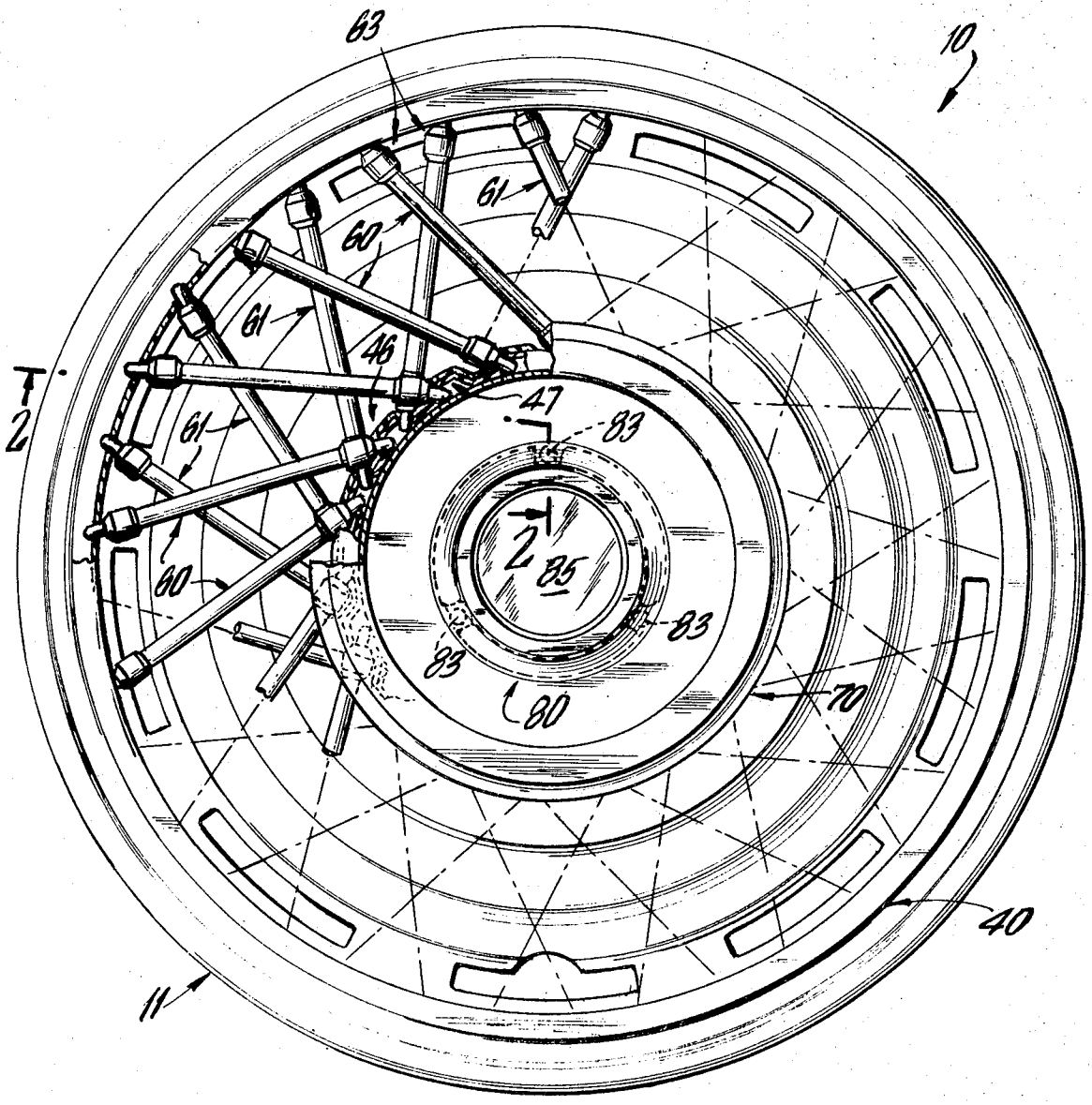


FIG. 1

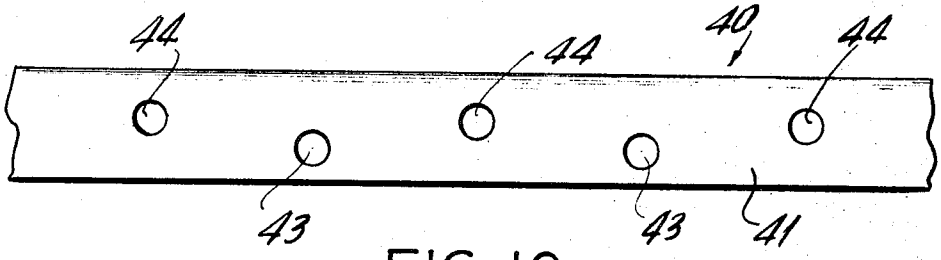


FIG. 10

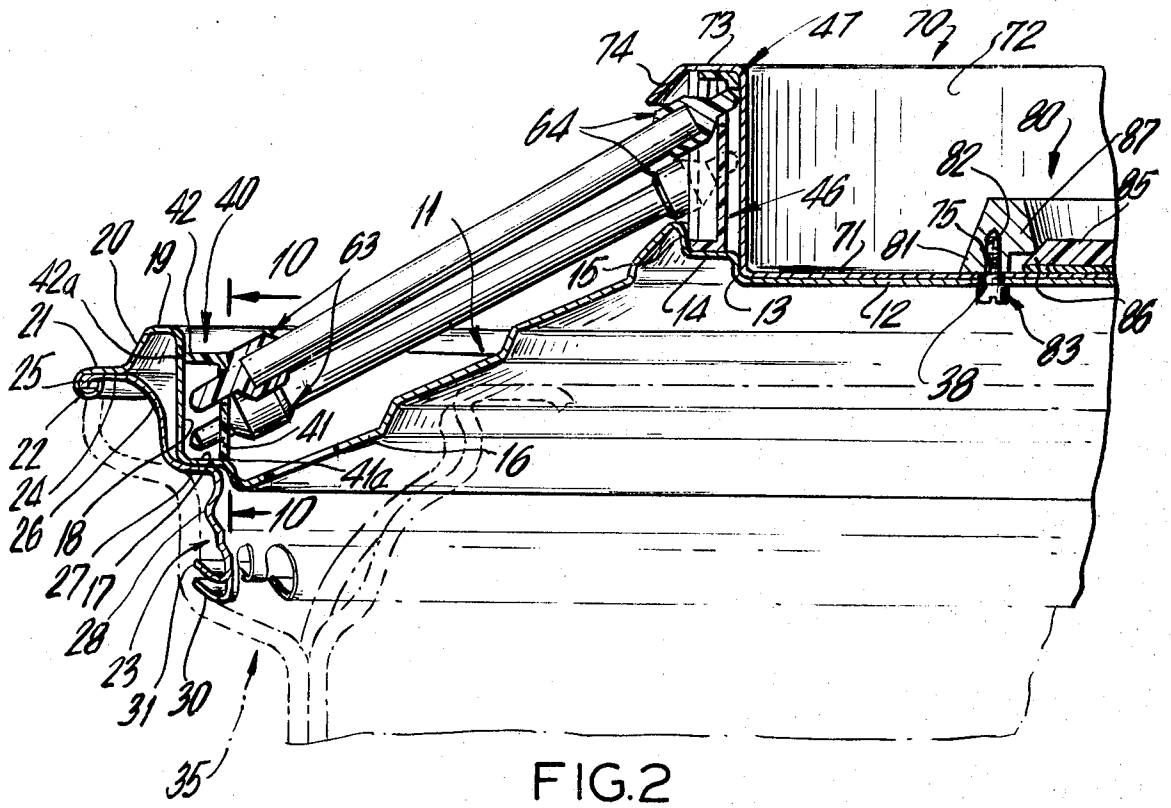

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12
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83
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42a
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41a
16
10

FIG.2

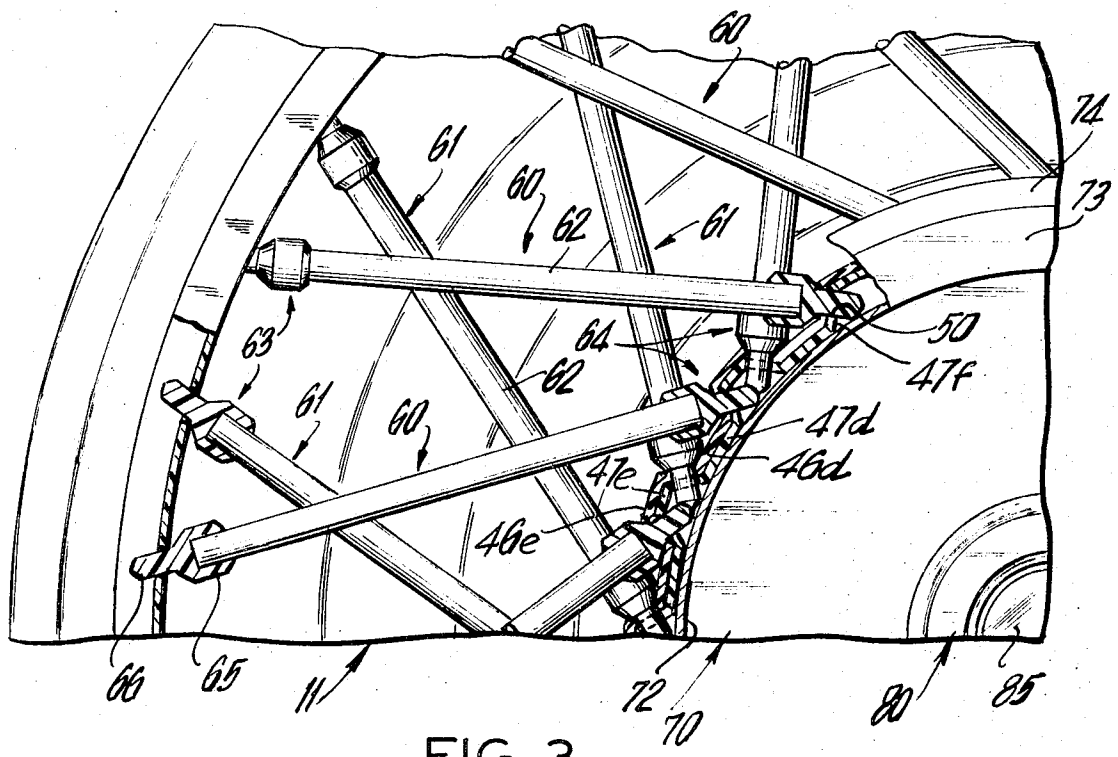

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62
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63
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72
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85

FIG. 3

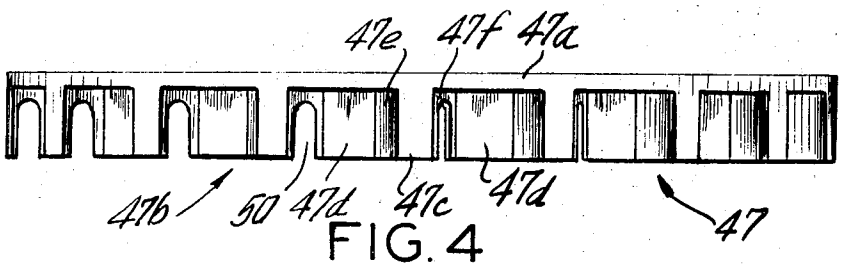


FIG. 4

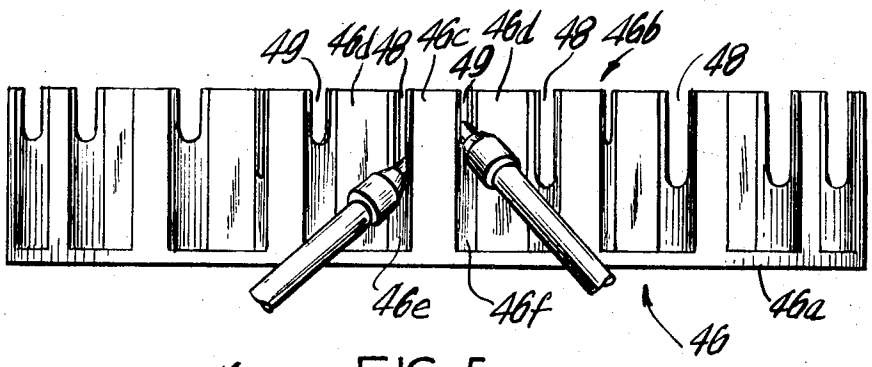


FIG. 5

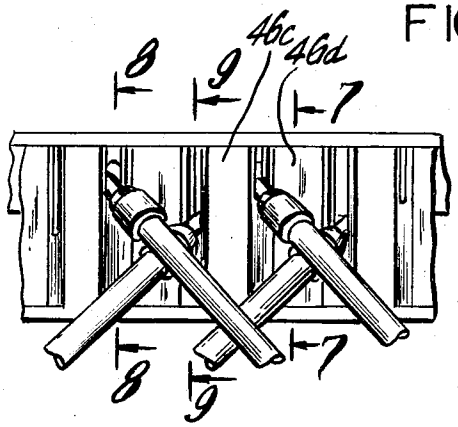


FIG. 6

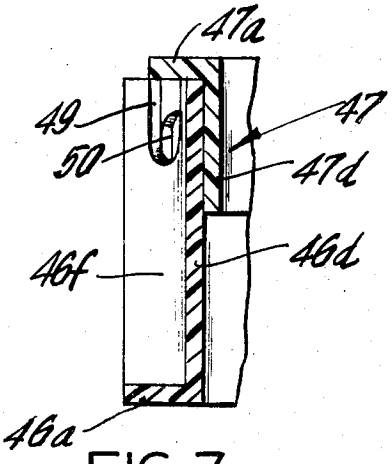


FIG. 7

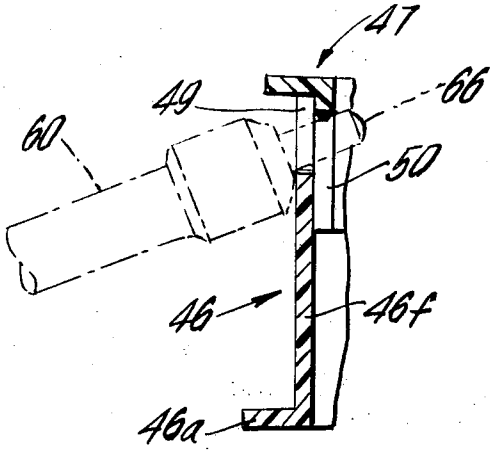


FIG. 8

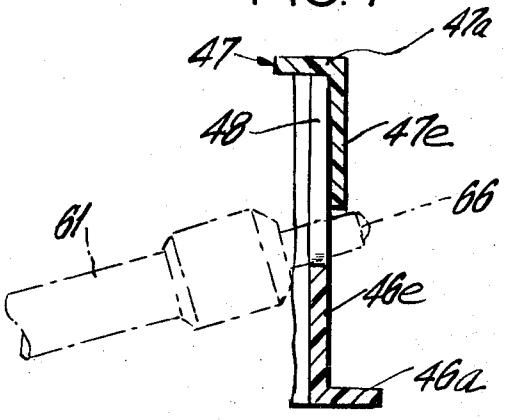


FIG. 9

WIRE WHEEL SIMULATING WHEEL COVER

This invention relates to wire wheel simulating wheel covers.

An object of this invention is to provide a wheel cover of the character described which shall comprise a plurality of parts which are easily assembled and clamped in assembled relation, quickly and without use of special tools or skilled labor and with little training.

Another object of this invention is to provide a wheel cover of the character described utilizing similar individual straight spoke simulating members or pieces which are straight and have no portions which can be interhooked, which can be easily tumble plated, and which can be cut from long lengths and easily chopped to desired length.

Still another object of this invention is to provide a wheel cover of the character described which comprises a wheel cover member provided with spring grip ring for gripping the tire rim of a wheel, a large ring fitted and centered in an annular portion of the wheel cover member, and telescoping inner and outer smaller rings concentric with the outer ring and also fitted and centered in a smaller annular portion of the wheel cover member, said larger and smaller inner telescoping rings having openings so located as to receive the outer ends of the spoke simultating members, and a central cup shaped member centered and fitted in the wheel cover member, inside said telescoping rings, and attached to the wheel cover member, to hold said wheel cover member, large and small rings and cup in assembled relation.

A further object of this invention is to provide in a wire wheel simulating wheel cover of the character described, a large ring and smaller inner and outer telescoping rings which are constructed to retain the outer and inner ends of straight spoke simulating members in crossing, inclined relation, and with the straight members inclined in one direction disposed above the straight members inclined in a crossing direction, the construction being such furthermore, that the large ring and the outer smaller ring are first placed in position, the lower rods are then placed in position with the outer ends inserted in a lower circle of openings in the larger ring, the inner ends of the rods placed in slots in the outer of the smaller telescoping rings, the outer ends of the upper rods then inserted in an upper circle of openings in the large ring, alternating with respect to the lower circle of openings, inserting the inner ends of the upper rods in other slots in said outer smaller ring and then telescoping the inner smaller ring with the outer smaller ring to lock the inner ends of all the rods in place, and then inserting the central cup in place and attaching said central cup to the center of the wheel cover member, to hold the telescoping rings in place.

Still a further object of this invention is to provide a wheel cover of the character described which shall be relatively inexpensive to manufacture, easy to assemble, attractive in appearance, which shall allow easy replacement of spoke simulating members or other parts, if damaged, and which shall yet be practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described and of which the scope of invention will be indicated in the following claims.

IN THE DRAWINGS

FIG. **1** is a vertical side view of a wire wheel simulating wheel cover embodying the invention with parts broken away and in cross-section, and with a number of spoke simulating members shown in dot-dash lines;

FIG. **2** is a cross-sectional view taken on line **2—2** of FIG. **1**;

FIG. **3** is a partial enlarged view of a portion of the wheel cover shown in FIG. **1**;

FIG. **4** is a side elevational view of the inner smaller ring;

FIG. **5** is a side elevational view of the outer smaller ring;

FIG. **6** is a partial, enlarged view illustrating the connection of the inner ends of the spoke simulating members with the telescoping inner and outer smaller ring;

FIG. **7** is a cross-sectional view taken on line **7—7** of FIG. **6**;

FIG. **8** is a cross-sectional view taken on line **8—8** of FIG. **6**;

FIG. **9** is a cross-sectional view taken on line **9—9** of FIG. **6**; and

FIG. **10** is a partial inner view of the larger, outer ring taken on line **10—10** of FIG. **2.**

Referring now in detail to the drawing, **10** designates a wire wheel simulating wheel cover embodying the invention. Said wheel cover **10** comprises an annular wheel cover member **11** which may be made of stamped sheet metal. Said member **11** is shown in axial cross-section and in horizontal position in FIG. **2** of the drawing. This is the position in which various parts of the wheel cover **10** are assembled, although in use, the wheel cover has its axis in a horizontal position as shown in FIG. **1** of the drawing. The wheel member will be described in its horizontal position of FIG. **2.**

Said wheel cover member **11** has a central, flat, annular wall **12** from the periphery of which extends axially outwardly, an annular, cylindrical web or wall **13.** Extending outwardly from cylindrical wall **13** is a radial, flat annular web **14** concentric with wall **12** and from which a second cylindrical wall **15** extends axially outwardly, in concentricity with wall **13.** Extending from wall **15** is a zig-zagging frusto-conical wall **16** terminating in a flat annular, radial wall **17** concentric with wall **14.** Extending axially outwardly from wall **17** is a cylindrical wall **18.** The term "axially outwardly" in this paragraph refers to the position of the wheel cover member in use. In FIG. **2,** the cylindrical walls **13, 15** and **18** are shown to extend axially upwardly.

Wall **14** is located axially outwardly of wall **12.** Wall **17** is located axially inwardly of the wall **14.** Extending radially outwardly from cylindrical wall **18** is a flat annular wall **19** located between the planes of walls **12** and **17.** Extending from the wall **19** in a radially outwardly and axially inwardly inclined direction, is a frusto-conical wall **20** from which an annular wall **21** extends radially outwardly between the planes of walls **17** and **19.** Wall **21** terminates in an axially inwardly and

radially inwardly rolled bead **22** which serves to attach a grip ring **23** to the cover wheel member **11.**

Grip ring **23** may be made of spring metal and comprises an annular flange **24** contacting the inner surface of wall **21** of member **11,** and extending into the rolled bead **22.** The outer rim edge of flange **24** may be bent inwardly slightly as at **25** within bead **22.** Extending from flange **24** is a radially and axially inwardly curved wall **26** from the inner end of which extends radially inwardly, a wall **27** contacting the inner surface of wall **17.** Extending axially inwardly from the inner end of wall **27** is a transversely corrugated, generally cylindrical wall **28** formed at its periphery with radially and axially outwardly extending bent-back alternating outer and inner spring fingers **30, 31** to grip the inner surface of a usual tire rim flange of a vehicle wheel shown in dot-dash lines in FIG. **2** at **35.**

The rolled rim **22** firmly attaches members **11** and **28** together. Wall **12** may be formed with three equiangularly spaced holes **38** on a circle concentric with the axis of member **11,** and of a radius smaller than that of said wall. The purpose of these holes **38** will be explained hereinafter. Members **11** and **28** are fabricated and assembled together before being assembled with remaining parts of the wheel cover **10,** as described hereinafter. During such assembly, the attached together parts **11, 28** are held in any suitable manner in the position of FIG. **2,** with the axis thereof in a vertical position.

Fitted in member **11** is an outer, larger ring **40** which may be made of rigid plastic or any other suitable material. Said ring **40** comprises a cylindrical portion **41** from which a flat flange **42** extends radially outwardly. The lower edge **41**a of wall **41** contacts wall **17.** Wall **41** is spaced radially inwardly of wall **18** and is concentric therewith. The outer edge **42**a of flange **42** substantially contacts the inner surface of cylindrical wall **18.** Said flange **42** is located close to the wall **19** as shown in FIG. **2.** Said wall **41** is formed with a lower circle of openings **43** and with an upper circle of openings **44.** Openings **43** and **44** alternate. There are an even number of holes **43, 44.** They may be about 1 inch apart. In a wheel cover of 14 inch diameter, there may be 36 holes **43, 44.** The holes **43, 44** are spaced from the upper and lower ends of wall **41** (looking at FIG. **10**). The holes **43, 44** may be about one-quarter of an inch in diameter.

Fitted onto wall **14** and inside of cylindrical wall **15** is an assembly of a pair of smaller telescoping or interfitting outer and inner rings **46, 47,** respectively, which may be made of rigid plastic or any other suitable material. The outer ring **46** of the smaller rings **46, 47,** comprises a bottom flange **46***a* (looking at FIGS. **2, 5, 6, 7, 8** and **9**). Extending upwardly from flange **46***a*, is a corrugated shaped annular wall **46***b* comprising radially outer wall portions **46***c* arranged in a circle alternating with radially inner wall portions **46***d* and interconnected by wall portions **46***e*, **46***f* inclined in opposite directions. Inclined wall portions **46***e*have longer slots **48** extending down from the upper edges of said wall portions. Inclined wall portions **46***f* have shorter slots **49** extending down from the upper edges of said wall portions. The upper edges of wall portions **46***c*, **46***d*, **46***e*, and **46***f* are in the same plane, as seen in FIG. **5** of the drawing.

The inner ring **47** of the pair of telescoping smaller rings **46, 47,** comprising a top flange **47***a*. Extending down from flange **47***a* is a corrugated annular wall **47***b* comprising radially outer wall portions **47***c* arranged in a circle, and radially inner wall portions **47***d*, alternating with each other and interconnected by oppositely inclined wall portions **47***e*, **47***f*. The height of wall portions **47***c*, **47***d*, **47***e*, and **47***f* (looking at FIGS. **2** to **9**) is the same. Said walls **47***c*, **47***d*, **47***e* and **47***f* have lower edges in the same plane. Walls **47***f* are formed with notches **50** extending up from the lower edges of said walls. The notches **50** terminate somewhat below flange **47***a*. The lower edges of walls **47***c*, **47***d*, **47***e*, **47***f* are disposed above the lower semi-circular edges of notches **48.** The upper semi-circular edges of notches **50** are above the lower semi-circular edges of notches **49.** Wall portions **47***c* of ring **47** lie inside of wall portions **46***c* of ring **46.** Wall portions **47***d* of ring **47** lie inside of wall portions **46***d* of ring **46.** Inclined wall portions **47***e* of ring **47** lie inside of inclined wall portions **46***e* of ring **46.** Inclined wall portions **47***f* of ring **47** lie inside of inclined wall portions **46***f* of ring **46.** Thus, notches **49** and **50** overlap to expose a circular opening through inclined wall portions **46***f*, **46***f*, at a higher level than the portions of the lower ends of notches **48** which are disposed below the lower edges of wall portions **47***e* of ring **47,** to provide through openings through wall portions **46***e*, **47***e*, for the purpose hereinafter appearing. The upper holes alternate with the lower holes.

Mounted on and between the larger outer ring **40** and the telescoping smaller rings **46, 47,** are a plurality of upper, inclined spoke simulating rods **60** crossing a plurality of lower, inclined spoke simulating rods **61.** The rods **60, 61** may be similar in length.

Each rod **60** comprises a straight piece **62** of solid or tubular round stock with outer heads or caps **63** fitted on the outer ends, and caps **64** fitted on the inner ends thereof. The caps **63, 64** may be similar and force fitted on the rods. Each may be formed with a socket portion **64** from **65** a pin **66** extends outwardly. The pins **66** at the outer ends of the lower members **61** project into the lower openings **43** of ring **40.** The pins **66** at the inner ends of the lower members **61** project into lower ends of the notches **48** and are held down by the walls **47***e* of ring **47.** The outer pins **66** of the upper members **60,** project into the upper openings **44** of ring **40** whereas the inner pins **66** of the upper members **60** project through the overlapping ends of notches **49, 50.** It will be noted that the members **60** are inclined in one direction and members **61** are inclined in a crossing direction. Each member **60** crosses **3** members **61** and each member **61** crosses three members **60** (See FIGS. **1** and **3**).

Fitted onto the central wall **12** of member **11** is a cup **70** made of stamped or drawn sheet metal and comprises a flat circular wall **71** overlying and registering with wall **12.** Extending upwardly from wall **71** is a cylindrical wal **72** contacting the inner surface of cylindrical wall **13.** Extending radially outwardly of cylindrical wall **72** is a flat web a wall **73** lying on flange **47***a* of ring **47.** Extending radially and axially inwardly, from wall **73** is a frusto-conical wall **74** which overlies parts of inner caps **63** on members **60, 61.** Wall **71** is formed with three openings **75** which register with openings **38.**

A central, decorative hub **80** rests on wall **71** in concentricity with cylindrical wall **72** and has an outer flange **81** contacting wall **71** and its formed with screw threaded holes **82** receiving shanks of screws **83** pass-

ing up through registering holes **38, 75** to fix member **80** to the center of cup **70.** A central decorative button **85** has an outer beveled flange **86** underlying an inwardly extending flange **87** on member **80** to centralize the button. Member **80** is whollly within cup **70.**

It will now be understood that screws **83** serve to attach rings **46, 47,** together, and hence the spoke similating rods **60, 61** in assembled relation.

The members **60, 61** could be made all of plastic or metal, and also each could be made of a single piece of material, if desired. They may all also be of similar length. It is noted that each member **60** is inclined to a radial line through the outer end thereof, by the same angle that the next adjacent member **61** is inclined to a radial line through its outer end, but on the opposite side of said radial line.

The straight rods **62** can be chopped up to size from full lengths of rod or tubular stock. For different sized wheel covers, the full length stock can be cut to desired lengths. Also when metal rods are used, they can readily be barrel plated. With wire simulating elements with hooks or bent ends, it is difficult to tumble them in a barrel because they interhook.

The assembly of the entire wheel cover is easy. The caps **63, 64** can be made of plastic, rubber, or metal and force fitted on the rods. The center cup is a stamped, drawn metal cup. Upon attaching the center cup to the cover wheel member **11,** all the parts of the assembly are held together.

The whole assembly can be assembled on fixtures. The outer ring **40** and inner rings **46, 47** can be dropped in place and are held in concentric relation by annular shoulers on member **11.** The straight members **60, 61** resemble wire spokes.

An assembly operator need not be highly skilled and can be taught to make the assembly, easily, after a short period of instruction.

If spoke rods **60, 61** are damaged, they can be readily replaced. Any damaged part can be readily replaced. By unscrewing screws **83,** all the parts can be disassembled readily. These wheel covers can be assembled even without fixtures because the parts are so constructed so as to be interfitted in proper relative positions. The assembly is of good appearance and cheaper to make because of high production possibilities, with less labor and less time consumption.

The caps can be replaced by circular notches on the rods. The caps do however add to the attractive appearance of the wheel covers.

It will be noted that the wire spoke simulating members **60, 61** are in conical surfaces, being inclined axially as well as radially and being also inclined to radial planes passing through said members. The cup **70** being attached to the cover wheel member **11** due to its being bolted thereto, presses down on the telescoping rings. The spoke simulating members having abutting, relation to the outer large ring and to the telescoping smaller rings, clamps the outer large ring to the wheel cover member. It will also be noted that the outer larger ring and the inner telescoping rings are held in concentric relation by concentric cylindrical portions of the wheel cover member **11** and are clamped against flat, annular wall portions of the wheel cover member.

It will thus be seen that there is provided an article in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings, is to be interpreted as illustrative only.

I claim:

1. A wire wheel simulating wheel cover comprising, a single wheel cover member, an outer larger single ring coaxially fitted within said wheel cover members; a pair of telescoping assembled smaller rings coaxially fitted on said wheel cover member and being axially offset from said larger ring, said outer ring being formed with an upper circle of equi-angularly spaced holes and a lower circle of equi-angularly spaced holes and a lower circle of equi-angularly spaced holes, alternating with the holes in the upper circle, said telescoping rings having means to form upper and lower circles of openings corresponding to the upper and lower circles of openings in the larger ring, and wire wheel spoke simulating members inclined axially of said cover member and having their outer ends in holes of the larger ring and their inner ends in corresponding holes in said telescoping rings, and means to fix said pair of smaller rings to said cover member, said wire wheel spoke simulating members having means to hold said outer ring on said cover member.

2. The combination of claim **1,** said spoke simulating members all being straight.

3. The combination of claim **1,** each spoke simulating member comprising a straight central elongated portion of uniform cross-section and heads at the ends of said elongated portion, said heads having outwardly extending reduced pin portions, wtih each reduced pin portion being slidably received in an opening and each head abutting a ring.

4. The combination of claim **1,** said spoke simulating members each comprising a straight piece with caps having enlarged socket portions force fitted on the ends of the straight piece and said caps having reduced pin portions extending outwardly of said socket portions, with each reduced pin portion being received in an opening and each enlarged socket portion abutting a ring.

5. The combination of claim **1,** said means to fix said pair of rings to said cover member comprising a cup fitted on the center of said wheel cover member, and means to fix said cup to said wheel cover member in coaxial relation thereto.

6. The combination of claim **1,** said wheel cover member having a central circular wall, and a cup having a bottom wall contacting the circular wall of said wheel cover member, a cylindrical wall disposed inside of said telescoping rings, and a flange overlying the outer ends of said pair of telescoping rings and means to attach the bottom wall of said cup to the circular wall of said wheel cover to constitute said means to fix said pair of smaller rings to said cover member.

7. The combination of claim **6,** said wheel cover member having a cylindrical wall extending from the circular wall thereof and contacting the outer side of the cylindrical wall of said cup to center said cup.

8. The combination of claim **7,** said wheel cover member having a flat annular wall, the axially inner ends of said telescoping assembled rings resting on said

flat annular wall, and said wheel cover member having a cylindrical wall contacting the outer side of said axially inner ends of said assembled telescoping rings.

9. The combination of claim **8,** said cover wheel member having a flat annular wall on which said outer ring rests, and a cylindrical wall into which said outer ring telescopes.

10. The combination, of claim **1** said wheel cover member having a cylindrical wall from which a flat annular wall extends radially inwardly, said outer large ring having a cylindrical wall resting on said flat annular wall, and having a flange extending radially outwardly therefrom and telescoping with said cylindrical wall of said wheel cover member, said cylindrical wall of said wheel cover member, said cylindrical wall of said large outer ring being formed with said upper and lower circles of holes.

11. The combination of claim **1,** said telescoping rings being of corrugated annular shape, one of said telescoping rings having a flat annular flange at one end located at one end of the other telescoping ring.

12. The combination of claim **11,** said telescoping rings each having radially inner and radially outer wall portions interconnected by oppositely inclined wall portions.

13. The combination of claim **12,** said inclined wall portions of said rings having overlapping notches to form part of said hole forming means of said telescoping rings.

14. The combination of claim **13,** and one of said telescoping rings having notches partially overlapped by walls of the other of said telescoping rings to form another part of said hole forming means of said telescoping rings.

15. The combination of claim **1,** and a spring grip ring fixed to the outer periphery of said wheel cover member.

16. A wire wheel simulating wheel cover comprising a single wheel cover member, a first ring fitted on said wheel cover member, a pair of telescoping second rings fitted on said wheel cover member, said first ring being concentric with and radially and axially spaced from said pair of second rings, said first ring being formed with angularly spaced openings, said pair of telescoping second rings having means to form openings corresponding to said openings in said first ring, and a plurality of straight wire wheel spoke simulating members being interfittable with one of the openings on said first ring and the other end of each of said wire wheel spoke simulating members being interfittable with a corresponding opening formed by said telescoping second rings, means to fix the pair of telescoping rings to said cover and said spoke members holding said first ring against said wire member.

17. A wire wheel simulating wheel cover, comprising a single wheel cover member, outer and inner ring means, means to clamp the inner ring means against the wheel cover member in fixed concentric relation to said wheel cover member, said inner and outer ring means being in axially spaced planes, and a plurality of straight spoke simulating members inclined axially and having means at their ends to engage said inner and outer ring means, and to keep said straight members from moving out of their axial positions relative to said outer and inner ring means, and to keep said outer ring means assembled with said cover member.

18. The combination of claim **17,** said straight members being disposed in two axially spaced conical sets.

* * * * *