

Oct. 9, 1945.

G. A. LYON

2,386,223

METHOD OF MAKING WHEEL COVERS

Filed May 7, 1941

2 Sheets-Sheet 1

Fig. 1.



Fig. 2.

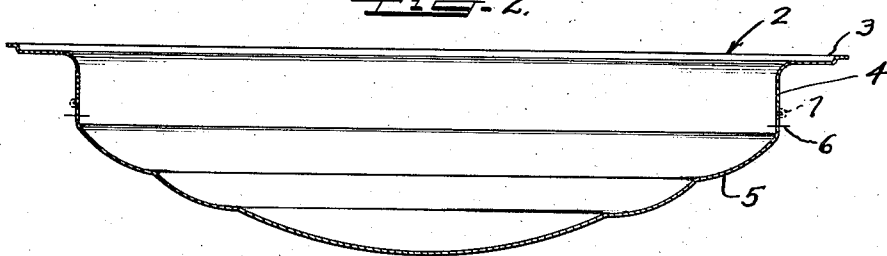


Fig. 3.



Fig. 4.

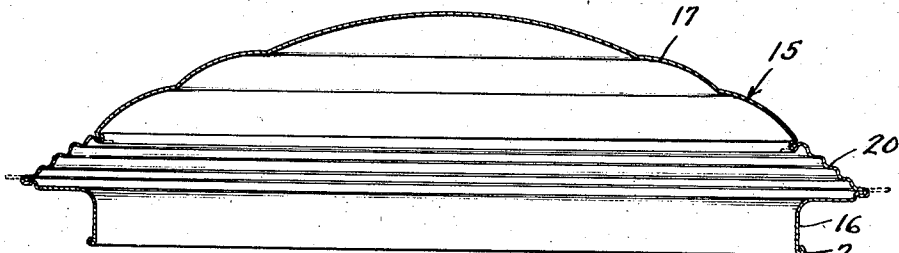


Fig. 5.

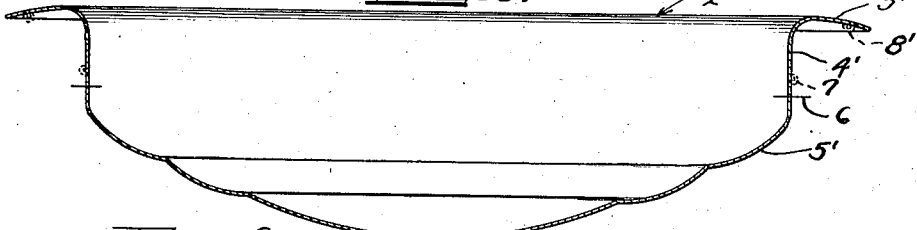
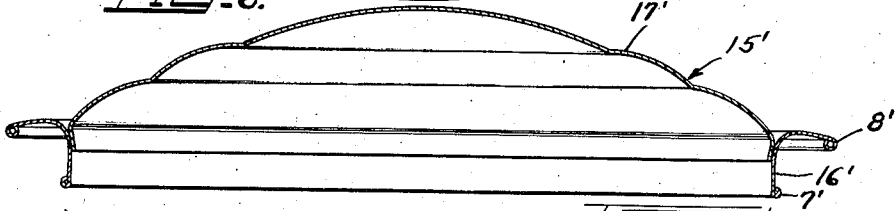


Fig. 6.



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Fig-8.

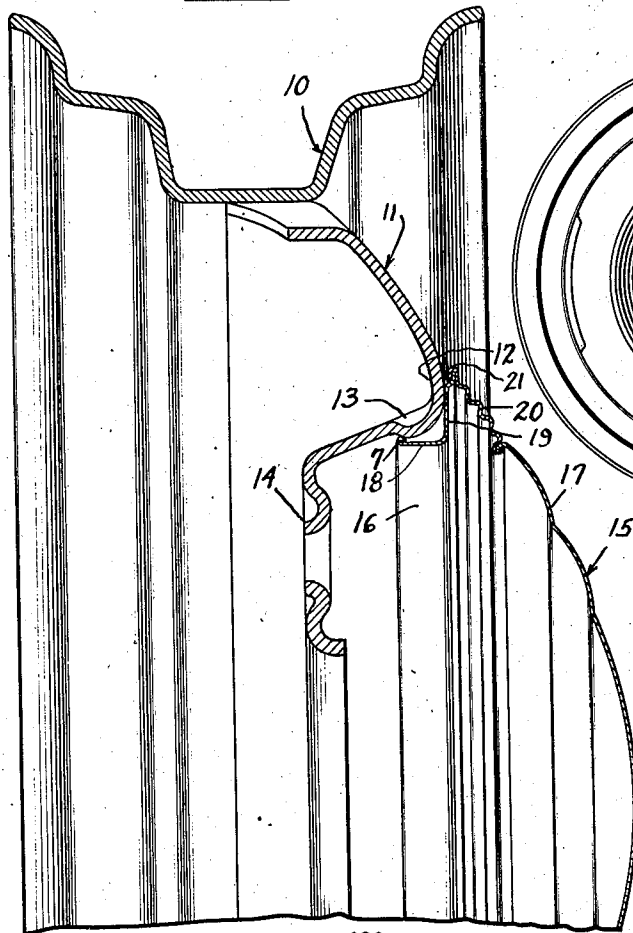


Fig-7.

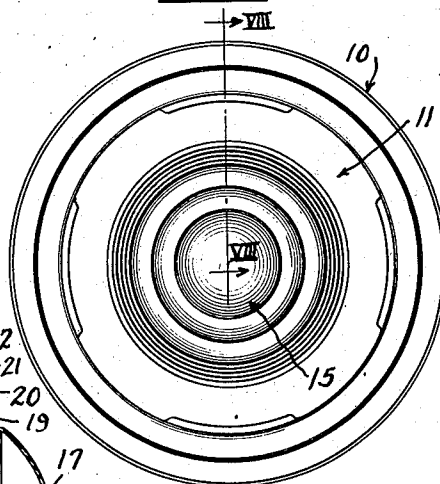


Fig-9.

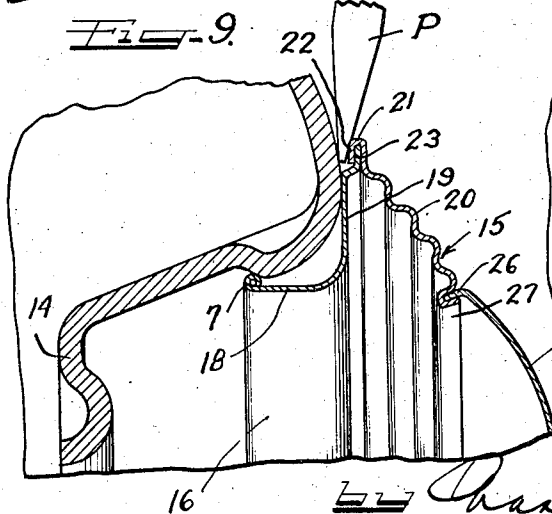
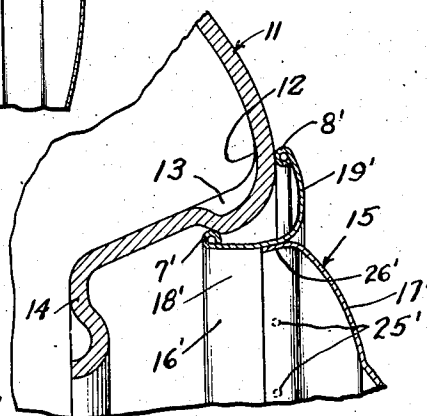


Fig-10.



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UNITED STATES PATENT OFFICE

2,386,223

METHOD OF MAKING WHEEL COVERS

George Albert Lyon, Allenhurst, N. J.

Application May 7, 1941, Serial No. 392,222

3 Claims. (Cl. 113—116)

This invention relates to a method of making a wheel cover, and more particularly to making a multi-part wheel cover from a curved blanked shell.

An object of this invention is to provide a more economical method of making a wheel cover or hub cap.

Still another object of this invention is to provide a multi-part wheel cover, a plurality of parts of which can be obtained from a single blanked shell and interconnected together with a minimum of waste.

Still another object of this invention is to provide an improved method of interconnecting a multiple number of metallic parts together to form a unitary wheel cover or hub cap.

It should be noted that the wheel cover or hub cap structures disclosed in this application constitute the subject matter of a separate invention claimed in my copending application Serial No. 392,223, filed May 7, 1941, now Patent No. 2,306,631, patented December 29, 1942.

In accordance with the general features of this invention, there is provided a method of making a wheel cover from sheet material which comprises drawing a blank into an annular dome-shaped hollow shell having a laterally turned outer marginal flange, cutting a ring part of substantially L-shaped cross section from said shell in which said lateral marginal portion comprises one leg and a portion of the dome comprises the other leg, reversing the position of the remaining dome portion with respect to said ring part, and connecting the margin of said remaining portion to said other leg of said ring part.

Another feature of the invention relates to establishing the connections between the parts formed from the common shell by an intermediate annular band of metal having its inner edge fastened to one part and its other edge fastened to another.

It should be noted that I have illustrated two embodiments of my invention, the first of which utilizes an intermediate annular band for connecting the parts of the cover together, and the second of which connects the parts directly to each other.

Other objects and features of this invention will more fully appear from the following detail description taken in connection with the accompanying drawings which illustrate several embodiments of the invention, and in which:

Figure 1 is a cross sectional view through a blank such as metallic sheet from which parts of my cover are formed;

Figure 2 is a cross sectional view through a circular shell-like part blanked from the sheet shown in Figure 1;

Figure 3 is a cross sectional view through an annular metallic band which is utilized to interconnect the two parts formed from the shell shown in Figure 2;

Figure 4 is a cross sectional view showing how the three parts are interconnected together to form a unitary wheel cover and illustrating in dotted lines how the edges of the intermediate annular band are lockseamed to the adjoining edges of the other parts;

Figure 5 is a cross sectional view taken through a shell similar to that shown in Figure 2 but illustrating a modified form of the invention;

Figure 6 is a cross sectional view through a wheel cover made from the two parts obtained from the shell shown in Figure 5;

Figure 7 is a side view of a wheel showing how the first form of my cover is applied thereto;

Figure 8 is an enlarged fragmentary cross sectional view taken on the line VIII—VIII of Figure 7 looking in the direction indicated by the arrows and showing the manner in which the ring-like part of my first form of wheel cover is adapted to cooperate retainingly with a wheel spider;

Figure 9 is an enlarged fragmentary sectional view corresponding to the middle portion of Figure 8 and showing how a pry-off tool may be applied to the outer edge of the cover in the removing of the cover from the wheel; and

Figure 10 is a fragmentary sectional view corresponding to Figure 9 and showing how the cover made in accordance with the features of the second form of my invention is applied to a wheel spider.

As shown on the drawings:

The reference character 1 designates generally a sheet of material, which may, for example, be steel, from which the circular shell designated by the reference character 2 is blanked by any suitable press equipment. This shell includes a laterally extending flange 3 at substantially right angles to the shell. More specifically, the flange 3 is at right angles to the cylindrical portion 4 of the shell which curves into the main crown portion 5 of convex-concave cross sectional shape.

After the shell 2 has been formed, it is cut into two parts on the line designated by the reference character 6. This results in an annular ring-like part of L-shaped cross section including the two legs 3 and 4 and the dome portion or part 5. The edge of the leg 4 of the ring part

is then turned as indicated by dotted line 7 of Figure 2 to form a curled or turned edge on this part.

The two parts are then assembled into a wheel cover or hub cap shown in Figure 4. In this hub cap designated generally by the reference character 15, the completed ring part is designated by the reference numeral 16, and the interlocked dome part is designated by the reference numeral 17. These two parts are interconnected by an intermediate annular band of metal 20 (Figure 3) having its peripheral edges interlocked or lock-seamed to the adjoining edges of the dome part 17 and the ring part 16 (Figure 4).

It should be noted that in the process of assembling the parts of the hub cap, the dome part is reversed in position with respect to the ring part 16, so that it is disposed on top of the horizontal flange of the ring part as shown in Figure 4. I shall describe this form of the invention more fully hereinafter in connection with the manner in which the product thereof, namely, the hub cap, cooperates with the wheel as shown in Figures 7 and 9.

In Figures 5 and 6, I have illustrated a modification of the invention wherein the ensuing product comprises only two parts instead of three as in the first described form of the invention. In accordance with this form of the invention, a convex-concave hollow shell 2' is first blanked from a sheet of metal. This shell is then cut on the line 6' to form a ring-like part 4' and a dome part 5'. It should be noted that the ring-like part 4' includes a laterally extending flange 3', the outer edge of which is adapted to be rolled or beaded as indicated in dotted lines by 8'. The laterally extending flange 3' may, if desired, be turned rearwardly relative to the dome, as shown in Figure 6. The inner edge also of the ring 4' is adapted to be curled as indicated at 7' to form a beaded edge, so that both edges of the annular ring are turned or beaded.

After the cutting operation as in the preferred form of the invention, the dome part is reversed in position with respect to the ring part, so that the marginal edge of the dome part may be interlocked with the annular ring part as shown in Figure 6. In this form of the invention, instead of effecting the connection of the dome part to the ring part by means of an intermediate band the dome part is directly attached to the ring part. In the completed hub cap 15', I have designated the dome part by the reference numeral 17' and the ring part by the reference numeral 16'.

I shall now proceed to describe both of these forms of the invention with particular reference to how the ensuing product or hub cap cooperates with a wheel. The particular angular formation of the parts and their purpose will become more evident from a description of how the ensuing product cooperates with the spider of an automobile wheel.

As shown in Figures 7, 8, and 9, the reference character 10 designates generally a conventional drop center type of tire rim connected in the usual way to a central wheel spider or body part 11. This spider has a bulged convex-concave nose portion 12 on which there is provided radially inwardly extending protuberances 13 for retaining cooperation with the hub cap or wheel cover previously designated generally by the reference character 15. The spider is also

provided with an axially inwardly offset vertical flange portion 14 adapted to be bolted on an axle part in the usual way.

It should be noted that while in both forms of the invention I have shown the wheel cover of a diameter such that it constitutes a hub cap, the invention is not to be thus limited, since the cover could also be in the form of a larger disk extending out closer to the tire rim of the wheel.

As best shown in Figure 9, the ring part 16 in reality comprises the skirt of the hub cap and is of an L-shaped cross section. It includes two legs 18 and 19, leg 18 extending axially of the wheel and telescoping the nose portion of the spider, and the leg 19 extending radially outwardly over the nose portion 12 for concealing the retaining protuberances or bumps 13.

The inner edge of the leg 16 is turned as indicated at 7 so as to provide the cover with a continuous flexible inner edge adapted to be snapped over and into retaining cooperation with the retaining bumps 13 on the nose portion 12 of the wheel, the edge being under stress when in retaining engagement with the bumps.

The central crown part 17 is of convex-concave cross sectional shape and may be formed from the central portion of the blank from which the ring part 16 is fabricated. The material from which these two parts 16 and 17 are formed is preferably of steel sheet, and I have obtained excellent results from the use of relatively low carbon steel such as .25 to .30 carbon steel. I have, in the fabricating of these parts from such metal sheet, used annealed steel so as to enable a relatively deep draw in the formation of the part 17 from the central stock taken from the center of the ring 16.

In order to provide the ring with an ornamented or lustrous appearance, I have found it desirable to make the annular corrugated band part 20 of steel such as stainless steel. This enables the ensuing cover to have an ornamented or trimmed appearance, where, for example, the outer band part 20 may be lustrous and the central crown part 17 may be finished in color. This also provides a more economical construction in that it is not necessary to make the entire cover or hub cap of stainless steel which is considerably more expensive than annealed low carbon steel.

The central crown part 17 has its outer edge turned axially rearwardly as shown at 26 and is interlocked or lockseamed with the inner edge 27 of the annular band 20.

It will be noted that the outer edge 27 of the crown part 17 is in reality in telescoping cooperation with the other part 20 of the cover so that it is firmly interlocked therewith.

The outer edge 21 of the band 20 is folded or turned radially inwardly over a flattened offset portion 23 on the outer edge of the vertical leg 19 of the ring part 16. This enables an interlocked or lockseamed connection between the outer edges of the two parts 20 and 16 which is offset axially outwardly from the nose portion 12 of the spider 11.

The advantage of the above described feature of providing a laterally offset lockseam between the outer edges of the leg 19 and the band 20 is that it provides a space between the plane of the leg 19 and the turned edge 22 of the band 20 in which a pry-off tool P can be inserted for the purpose of prying the cover or hub cap out of retaining cooperation with the protuberance means or bumps 13.

In Figure 10, I have illustrated how the hub cap 15' made in accordance with my modified form of process is applied to a wheel spider. I have used the same numerals in this figure and in Fig. 9 to designate corresponding parts of the wheel.

The hub cap 15' in this form of the invention comprises two parts, namely, a ring part 16' and a crown or central part 17'. The ring part 16' is of an L-shaped cross section and includes an axially extending leg 18' in telescoping and snap-on cooperation with the retaining protuberances 13 on the wheel spider. The ring part 16' also includes a vertical leg 19' extending radially outwardly and terminating in a turned edge 8' adapted to overlie an outer face of the nose portion 12 of the spider for the purpose of concealing the retaining bumps 13.

The central part 17' is of a convex-concave cross sectional configuration and includes a rearwardly turned outer edge 26' telescoping the ring part 16' and fastened to the leg 18' by any suitable means, such, for example, as welds 25'. In this form of the invention, both of the parts may be made from the same material. Also, the part 17' may be formed from the central waste stock removed from the center of the blank from which the ring part 16' is formed.

It should, of course, be understood that, while I have described my novel hub cap as best made of steel, other suitable material, such, for example, as plastic, might be used in the fabrication of the same.

In prying off the hub cap 16' shown in Figure 10, a suitable pry-off tool, such, for example, as a screw driver may be inserted under the turned edge 8' for the purpose of forcibly ejecting the hub cap out of retained cooperation with the protuberances or bumps 13.

I claim as my invention:

1. The method of making a three-piece wheel cover including a central circular part, an intermediate annular part and an annular snap-on flange from sheet material which comprises drawing a blank into a circular dome-shaped hollow shell having a laterally turned outer marginal flange, cutting a ring part of substantially L-shaped cross section from said shell in which part said lateral marginal portion comprises one leg and a portion of the dome comprises the other leg, reversing the position of the remaining dome

portion with respect to said ring part, positioning an intermediate annular band in alignment with and following generally the curvature of said dome portion, securing the inner peripheral margin of said band to the outer peripheral margin of said dome, and positioning the outer margin of said lateral marginal flange of the ring part adjacent the outer margin of said band and securing it thereto with the other leg of said ring part extending rearwardly.

2. The method of making a three-piece wheel cover including a central circular part, an intermediate annular part and an annular snap-on flange from sheet of material which comprises drawing a blank into a circular dome-shaped hollow shell having a laterally turned outer marginal flange, cutting a ring part of substantially L-shaped cross section from said leg in which part said lateral marginal portion comprises one leg and a portion of the dome comprises the other leg, reversing the position of the remaining dome portion with respect to the ring part, fastening the outer edge of said dome portion to an inner edge of an intermediate annular band, and connecting said ring part to the outer edge of said band thus to provide a unitary dome-shaped cover in which said ring part constitutes a rearwardly extending cover retaining skirt.

3. The method of making a multi-part wheel cover including ring and crown parts and an intermediate annular member disposed radially intermediate the ring and crown parts which comprises the steps of interlocking the outer peripheral portion of the crown part with a peripheral part of the annular member, forming at the other peripheral portion of the ring part an axially offset, radially extending flange, forming at the peripheral part of the intermediate annular member a radially extending flange and forming the flange on the intermediate member around the offset flange on the ring to envelop the same to interlock the ring and the intermediate member together and to form contemporaneously therewith a multi-thickness flange offset radially and axially from the main body of the ring to afford an under surface of the flange accessible in use for the application of an edge of a pry-off tool thereto during removal of the cover from a wheel.

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