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A. J. MICHELIN

METHOD OF MAKING WHEEL RIMS

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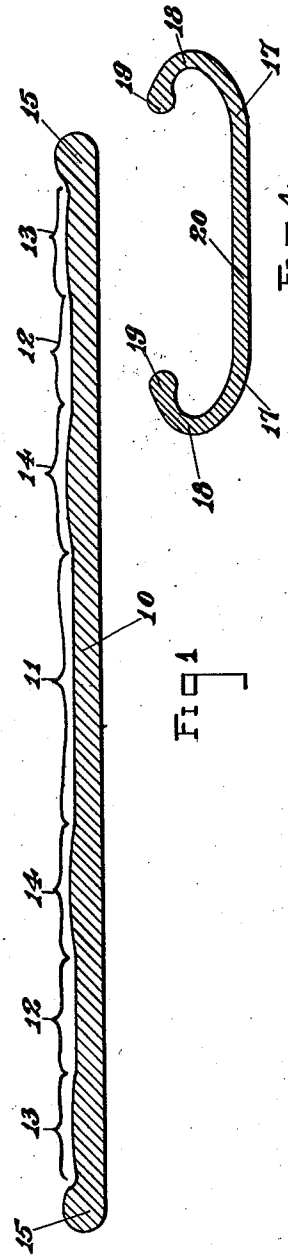


Fig. 1

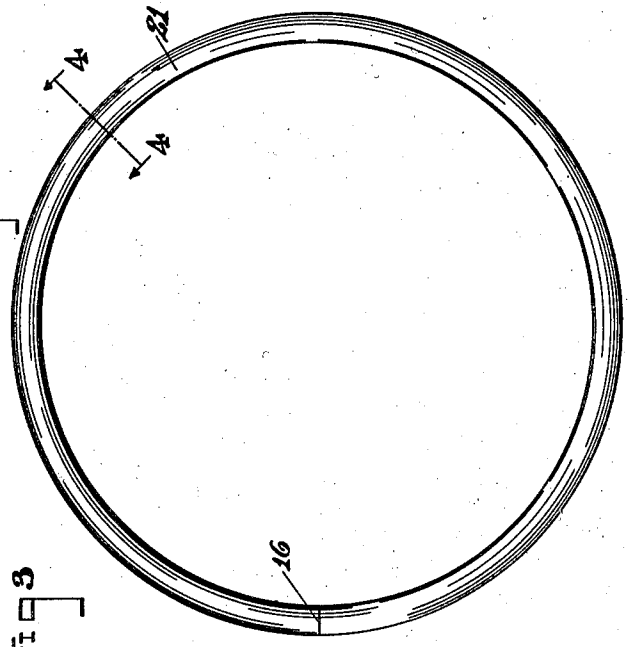


Fig. 4

Fig. 3

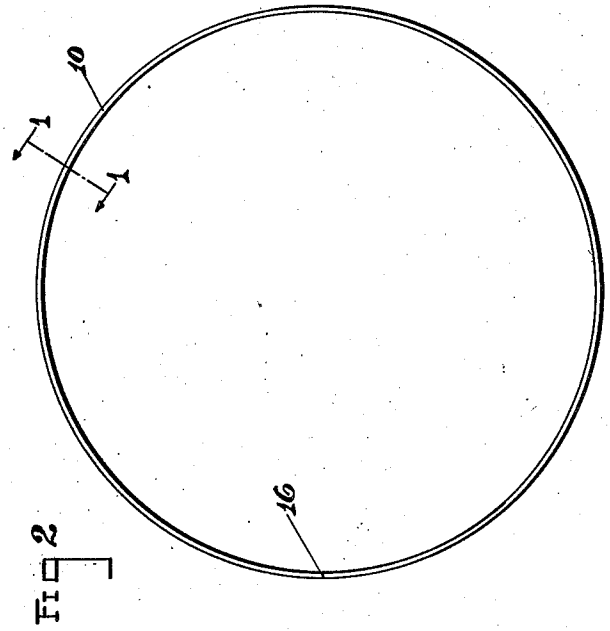


Fig. 2

WITNESS:—
Walter M. Trout

INVENTOR.
A. J. Michelin
BY E. B. Des Jardins
ATTORNEY

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UNITED STATES PATENT OFFICE.

ANDRÉ JULES MICHELIN, OF PARIS, FRANCE.

METHOD OF MAKING WHEEL RIMS.

Application filed July 31, 1922. Serial No. 578,733.

This invention relates to an improved method of making wheel rims.

Heretofore, it has been the practice to make vehicle wheel rims from a flat strip of uniform thickness, by bending the strip into a ring and welding the abutting ends of the strip together, thus forming a continuous ring or cylindrical band, and then rolling this ring or band in a beading or flanging machine to turn or bend up the edge portions so as to form the tire-retaining flanges of the rim. The flat strip of material, from which the rim is made, has been of uniform thickness and such thickness has been determined by the amount of metal required to prevent rupture at certain points where the metal is bent in the beading or flanging operation. This has involved an excess of metal at other points in the rim, which are not subjected to any strains such as are caused by the beading or flanging operation.

The chief object of my invention is to provide an improved method of making wheel rims by means of which a lighter and cheaper rim may be made without sacrificing any of its strength.

Further objects, and objects relating to details and economies of operation, will definitely appear from the detailed description to follow. In one instance, I accomplish the objects of my invention by the devices and means described in the following specification. My invention is clearly defined and pointed out in the appended claims. One embodiment of my invention is illustrated in the accompanying drawing, forming a part of this specification, in which:

Fig. 1 is an enlarged, transverse, sectional view through the strip showing how it differs in thickness at different points.

Fig. 2 is a plan view of the ring or cylindrical band formed from a strip of metal.

Fig. 3 is a plan view of the finished rim, and

Fig. 4 is a section through the rim on line 4—4 of Fig. 3.

In the drawing, the same reference numerals refer to the same parts throughout the several views.

My invention consists in departing from the common practice of making rims and using a strip of special section from which to form the rim instead of a flat strip of uniform thickness throughout. In accordance with my invention, I form the rim from a strip or blank of special section which varies in thickness, the thicker portions being located at those points which are subjected to a bending or forming action during the beading or flanging operation. A strip of this special section is rolled up to form a ring or cylindrical band, the abutting ends of the strip being welded together to make the ring continuous, and this continuous ring is then passed through a beading or flanging operation, which bends the metal, at the thicker portions of the blank, to form tire-retaining flanges as may be desired.

In this application, I have shown, as one specific embodiment of my invention, the method of making a clincher rim for an automobile wheel. The rim is made from a strip or blank, 10, of metal, said strip being, preferably, a mill section rolled so as to vary in thickness at different portions thereof, as shown in Fig. 1. Referring to that view, it will be seen that there is a central zone, 11, extending longitudinally of the strip, 10, which is of uniform thickness and is the thinnest portion of the strip. On either side of this central zone, 11, but spaced therefrom, are the parallel zones, 12, which extend the length of the strip and are of uniform thickness and, in this instance, of the same thickness as zone, 11. Between the central zone, 11, and the zones, 12, there are the longitudinally extending zones, 14, in which the thickness varies, increasing from the sides to the center of each zone, as shown in Fig. 1. On the outer edges of zones, 12, there are the longitudinally-extending zones, 13, which increase in thickness as one approaches the outer edge of the zone, as appears from Fig. 1. The side edges of the strip, 10, are rounded and thickened at 15.

A strip, 10, having a cross-section such as just described, is rolled to form a ring or cylindrical band and the ends of strip, 10, are welded together, at 16, so as to make the ring or band continuous. This continuous ring or band is then placed in a beading or flanging machine, and the edge portions thereof are bent up so that the ring is given a cross-section, such as shown in Fig. 4, forming the finished rim. Thus the central zone, 11, of the strip, 10, forms the rim base, 20, and the metal is bent upwardly, at 17, and inwardly, at 18, forming the flanges of the clincher rim.

It is to be noted that the bends, 17, occur in the thickened zones or portions, 14, of the strip, 10, and the bends, 18, in the thickened zones or portions, 13, while the enlarged or thickened edge portions, 15, form the beads, 19, at the edges of the rim flanges. Thus the only bending takes place at the portions which are thicker than the central portion, 11, of the strip, so that excess metal is provided at the points where the metal is to be bent or formed to prevent rupture at such points. The other portions of the strip, however, do not have such excess metal since there is no particular strain and no danger of rupture at such points. The result is that a rim constructed in accordance with this invention is lighter than rims heretofore made of equal strength and can be made more cheaply since the amount of metal used is reduced.

I have illustrated my invention in connection with the manufacture of a rim of the clincher type but I wish it to be understood that it is not restricted to a rim of this type but is applicable to other types of rim, such as transplit and quick-detachable rims.

The embodiment of my invention illustrated in this application may be varied considerably without departing from the spirit of my invention and, hence, I claim my invention broadly, as indicated by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:—

1. The method of making wheel rims comprising the taking of a strip of varying cross-section, bending said strip and uniting the ends thereof to form a continuous cylindrical band, and flanging said cylindrical band along its zones of greater section.

2. The method of making wheel rims comprising the taking of a strip of metal of varying cross-section, having one or more zones of uniform cross-section and one or more zones of thicker and varying cross-section, said zones extending longitudinally of the strip, curving said strip and uniting the ends thereof to form a continuous cylindrical band, and bending said strip in a zone of thicker and varying cross-section to form a rim flange.

3. The method of making wheel rims comprising the taking of a strip of metal having a central, longitudinally-extending zone of uniform cross-section and a zone of thicker and varying cross-section at one side of said central zone, curving said strip and uniting the ends thereof to form a continuous cylindrical band, and bending the strip in said zone of thicker and varying cross-section to form a side flange of the rim.

4. The method of making wheel rims comprising the taking of a strip of metal having a central zone of uniform cross-section and parallel edge zones of thicker and varying cross-section, curving the strip and uniting the ends thereof to form a continuous cylindrical band, and bending the edge portions of the strip transversely to the central zone at points in said edge zones to form the side flanges of the rim.

5. The method of making wheel rims comprising the taking of a strip of metal having a central and side zones of uniform thickness, and zones of varying and thicker cross-section interposed between the central and side zones, curving the strip and uniting the ends thereof to form a continuous cylindrical band, and bending the edge portions of the strip at points in the zones of thicker and varying cross-section to form rim flanges.

6. The method of making wheel rims which consists in rolling the stock of the rim to thicken it in zones where subsequent bending is to take place, and thereafter bending the rim in these zones to form flanges and simultaneously reducing the thickness of the sections so bent.

7. The method of making wheel rims of bent cross section which comprises first forming a strip of metal of thick and thin cross section, the thick section being such that when bent to the required degree it is reduced to substantially the same thickness as the thin section, secondly, bending the strip of thick and thin section into the form of a band of the approximate diameter of the rim desired to be formed, thirdly, uniting the approximate ends thereof, and fourthly, bending the band to form the rim flange and reduce the section as aforesaid.

8. As an article of manufacture, a length of strip material for forming wheel rims having a transverse section of a width sufficient to form the complete rim section, a thickness at bend points sufficient to guard against rupture in the forming operation and to give adequate strength to the completed rim, and a thickness intermediate the bending zones on opposite sides less than the thickness aforesaid, whereby rims of greatly increased lightness may be formed.

9. The method of forming wheel rims which consists in forming a strip of a width sufficient to constitute both the body and the flanges and thickened in cross section at the regions where the flanges are to be formed, and thereafter subjecting the strip to bending operations which reduce the thickened section and form the flanges.

In testimony whereof, I affix my signature.

ANDRÉ JULES MICHELIN.