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A. BROWN

2,882,094

SECTIONAL TYPE DEMOUNTABLE RIM

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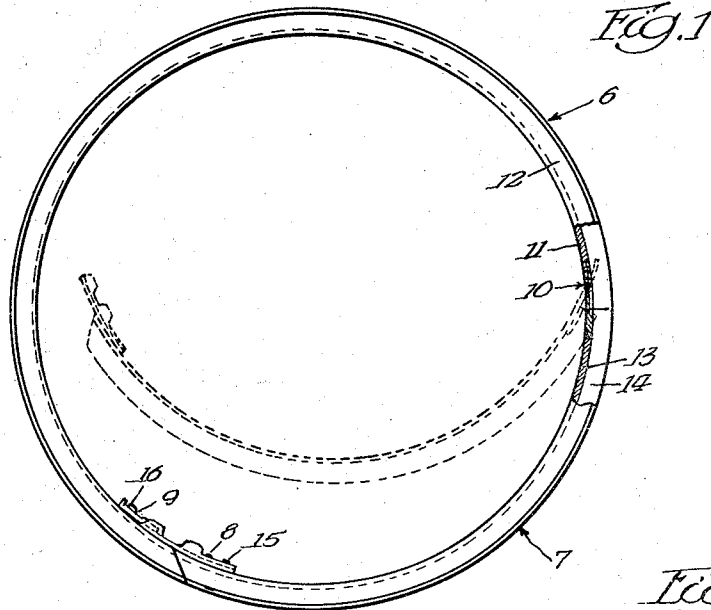


Fig. 4

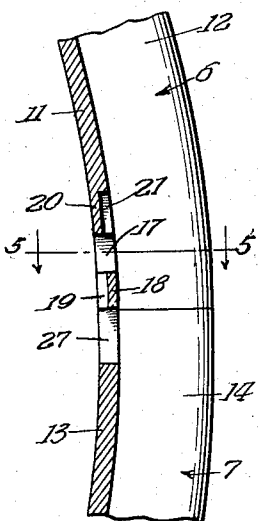


Fig. 2

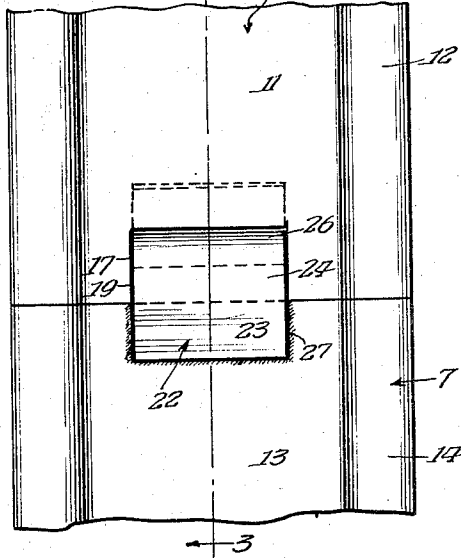


Fig. 3

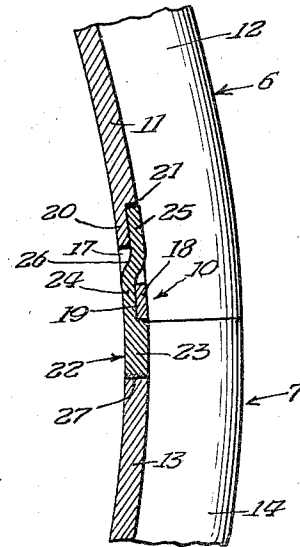


Fig. 5

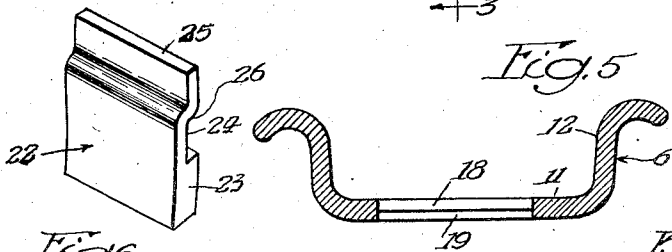
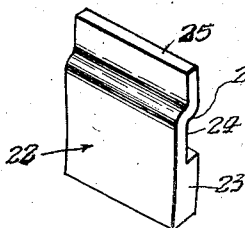


Fig. 6



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1

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SECTIONAL TYPE DEMOUNTABLE RIM

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Substituted for abandoned application Serial No. 435,454,
June 9, 1954. This application November 3, 1958,
Serial No. 772,649

1 Claim. (Cl. 301—30)

The present invention relates generally to demountable rims for vehicle wheels. More particularly, the invention relates to that type of demountable rim which serves as a mounting instrumentality for a pneumatic tire, is formed of steel, and as its components comprises: (1) an arcuate main section which consists of a base and a pair of outwardly extending tire-retaining side flanges and is materially greater than one-half of the circumference of the rim as a whole; (2) an arcuate complementary section which consists of a base and a pair of outwardly extending tire-retaining side flanges and is adapted normally to assume an operative position wherein it extends between the ends of, and serves to complete, the main section; (3) two coacting locking members which are mounted, respectively, on the inner surfaces of certain adjacent ends of the bases of the main and complementary sections and are adapted when in locked relation to hold the complementary section in its operative position and when in unlocked relation to release the complementary section so that it may be swung bodily inwards into an inoperative tire-releasing position; and (4) a detachable connection which extends between the other adjacent ends of the bases of the main and complementary sections and serves, after release of the locking members and inward swinging of the complementary section, to permit the complementary section to be bodily removed or disconnected from the main section in order to facilitate application or removal of the tire.

As evidenced by United States Letters Patent No. 1,857,426, granted to me on May 10, 1932 and entitled "Demountable Rim," its has heretofore been proposed in connection with a demountable rim of the aforementioned type to form the detachable connection between the other adjacent ends of the main and complementary sections by way of two laterally spaced tongues which are formed integrally with, and project generally circumferentially outwards from, the adjacent end of the base of the complementary section, have the central and inner end portions thereof off-set radially inwards, and have their outer end portions offset radially outwards and adapted to extend through two rectangular openings in the adjacent end of the base of the main section and fit snugly and slidably in two open front sockets which are disposed directly inwards of and face the openings. In forming a detachable connection of the aforementioned character, it is necessary as disclosed in Letters Patent No. 1,857,426 to form the open front sockets by striking radially inwards the portions of the base of the main section that are directly inwards of the rectangular openings. In practice it has been found that a demountable rim as comprehended by the aforesaid patent is subject to certain objections. In the first place, forming the tongues of the detachable connection integrally with the base of the complementary section is extremely difficult and necessitates a considerable waste of steel. Secondly, the central and inner end portions of the tongues because they are offset radially inwards and the socket defining portions

2

of the base of the main section because of the manner in which they are struck or deflected radially inwards result in objectionable high spots or inwardly extending protuberances on the inner periphery of the rim.

The principal object of this invention is to provide a demountable rim which is an improvement upon, and eliminates the objections to, a rim like that of Patent No. 1,857,426 and is characterized by the fact that the detachable connection between the main and complementary sections is in the form of a single separately formed tongue which has the inner end thereof disposed within, and welded to, a notch in the base of the complementary section and is so constructed that the inner surface of its central and inner end portions are flush with the inner peripheral portions of the main and complementary sections and hence do not produce or form objectionable inwardly extending high spots or protuberances.

Another object of the invention is to provide a demountable rim of the type and character under consideration in which the base of the main section has but a single rectangular tongue-receiving opening and the open front socket for slidably receiving the outer end portion of the single tongue is formed by removing the outer portion of the steel that is directly inwards of the opening to the end that the base of the main section has no objectionable inwardly extending high spot or protuberance.

A further object of the invention is to provide a demountable rim which is generally of new and improved construction, may be manufactured or produced at a comparatively low cost and is capable of being manipulated with facility in connection with application and removal of the pneumatic tire with which the rim is associated.

Other objects of the invention and the various advantages and characteristics of the present demountable rim will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by the claim at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a side elevation of a demountable rim embodying the invention;

Figure 2 is a fragmentary internal view illustrating in detail the character and design of the particular detachable connection between the main and complementary rim sections;

Figure 3 is a circumferential section taken on the line 3—3 of Figure 2 and showing the shape or configuration of a single tongue and the manner in which the outer end portion of the tongue fits in the open front socket in the base of the main rim section;

Figure 4 is a similar circumferential section, i.e., a section like Figure 3, except that it does not show the tongue;

Figure 5 is a radial section taken on the line 5—5 of Figure 4; and

Figure 6 is a perspective of the single tongue which constitutes the detachable connection between the main and complementary rim sections.

The demountable rim that is shown in the drawing constitutes the preferred form or embodiment of the invention. It is adapted for use with a pneumatic tire (not shown) and is designed to fit around the felly of a vehicle wheel (also not shown). As its parts or components, the rim comprises an arcuate main section 6, an

arcuate complemental section 7, a pair of coacting locking members 8 and 9 and a detachable connection 10.

The main rim section 6 is greater than one-half of the circumference of the rim as a whole, as illustrated in Figure 1. It is formed of steel and consists of an arcuate base 11 and a pair of outwardly extending side flanges 12. The side flanges are formed integrally with the side margins of the base 11 and are adapted to lap and to retain in place the side parts of the casing of the tire with which the rim is used.

The complemental rim section 7 is adapted normally to assume an operative position wherein it extends between the ends of, and serves to complete, the main section 6. It is formed of outwardly extending tire-retaining side flanges 14. The base 13 of the complemental rim section 7 is the same in width and thickness as the base 11 of the main rim section 6 and is finished or constructed so that the end edges thereof abut directly against the end edges of the base 11 when the complemental rim section is in its aforesaid operative position. The side flanges 14 of the complemental rim section 7 are formed integrally with the side margins of the base 13, and when the complemental section is in its operative position with the tire on the rim, coact with the side flanges 12 to hold the tire casing in place.

The coacting locking members 8 and 9 are mounted, respectively, on the inner surfaces of certain adjacent ends of the bases of the main and complemental rim sections and are adapted when in locked relation to hold the complemental section 7 in its operative position and when in unlocked relation to release the complemental section so that it may be swung bodily inwards into an inoperative tire-releasing position. They are conventional so far as design and mode of operation are concerned and are like those that are shown in the drawing of aforementioned Patent No. 1,857,426. The locking member 8 is in the form of a flanged steel plate and has one end portion thereof secured against the inner surface of the adjacent end of the base 13 by a pair of rivets 15. The other end portion of the plate that constitutes the locking member 8 projects circumferentially outwards of the adjacent end edge of the base 13 and is adapted to fit against the inner surface of the adjacent end of the base 11 of the main rim section 6. The locking member 9 is in the form of a steel latch and fits against the inner surface of the adjacent end of the base 11 of the main rim section 6. It is pivotally mounted by way of a rivet 16 in order that it may be swung into and out of locked relation with the projecting end portion of the locking member 8, as well understood in the art. When the locking member 9 is swung out of locked relation with the projecting end portion of the locking member 8, the end of the complemental rim section 7 that carries the locking member 8 is released and hence it is possible to swing the complemental rim section inwards into its inoperative tire-releasing position as shown in dotted lines in Figure 1. The ends of the side flanges 12 and 14 that are adjacent the locking members 8 and 9 are mitred or diagonally cut in order to facilitate swinging of the complemental rim section 7 into its inoperative position after turning of the locking member 9 out of locked relation with the projecting end portion of the locking member 8.

The detachable connection 10 is located between the other adjacent ends of the bases of the main and complemental sections 6 and 7 and serves, after release of the locking members 8 and 9 and inward swinging of the complemental section 7, to permit the complemental rim section to be bodily removed or disconnected from the main section in order to facilitate application and removal of the tire. It consists of a formation on the adjacent end of the base of the main section 6 and a formation on the adjacent end of the base of the complemental section 7. The first mentioned formation includes a rectangular opening 17 in the adjacent end of

the base 11 of the main section 6. Said opening is located midway between the side flanges 12 and is spaced a small distance inwards of the adjacent end edge of the base 11. The portion of the adjacent end of the base 11 that is outwards of the opening 17 is designated in the drawing by the reference numeral 18 and has the inner half portion thereof removed or milled away so as to form a groove 19. The latter is the same in width as the opening 17 and communicates with the opening. The portion of the adjacent end of the base 11 that is directly inwards of the opening 17 is designated in the drawing by the reference numeral 20 and has the outer half portion thereof cut or milled away so as to form an open front socket 21. Such socket is the same in width as the opening 17 and communicates with the inner portion of the opening. The second mentioned formation, i.e., the formation on the adjacent end of the base 13 of the complemental section 7 is in the form of an elongated separately formed tongue 22. The latter is formed of steel, extends circumferentially of the main and complemental rim sections and consists of an inner end portion 23, a central portion 24, an outer end portion 25 and a diagonal connecting portion 26 between the central portion 24 and the outer end portion 25. The width of the tongue is the same as the width of the rectangular opening 17. The inner end portion 23 of the tongue is the same in thickness as the bases 11 and 13 of the main and complemental rim sections 6 and 7 and fits in, and is welded to, a rectangular notch 27 in the central portion of the adjacent end margin of the base 13 of the complemental section 7. It is so positioned that its outer and inner surfaces are, respectively, flush with the outer and inner surfaces of the base 13. The central portion 24, the outer end portion 25 and the diagonal connecting portion 26 of the tongue 22 are half as thick as the inner end portion 23 and the bases of the main and complemental rim sections. The central portion 24 of the tongue 22 is shaped and adapted to fit in the groove 19 and has the inner surface thereof flush with the inner surface of the inner end portion 23 and the inner surface of the base 13. When the complemental section 7 is in its operative position the central portion 24 of the tongue 22 underlies the portion 18 of the adjacent end of the base 11 and has its inner surface flush with the inner surface of the base 11. The outer end portion 25 of the tongue 22 is shaped and adapted to fit within the open front socket 21 and has its outer surface flush with the outer surface of the base 11 when the complemental rim section 7 is in its operative position. The diagonal connecting part 26 of the tongue serves outwardly to offset the outer end portion 25 with respect to the central portion 24 and is shaped and adapted to fit within the opening 17 as shown in Figure 3. As previously pointed out, the detachable connection 10 including the tongue 22 serves, after release of the locking members 8 and 9 and inward swinging of the complemental section 7, to permit the complemental section to be bodily removed or disconnected from the main section in order to facilitate application and removal of the tire.

When it is desired to apply the tire to the rim the complemental section 7 is first removed or disconnected from the main rim section 6. This is accomplished by releasing the locking members 8 and 9 and then swinging the complemental section inwards into the position shown in dotted lines in Figure 1. After the complemental section is swung inwards, it is shifted bodily in the direction of the locking member 8 in order to slide the outer end portion 25 of the tongue 22 out of the socket 21 and through the opening 17. After removal of the complemental rim section 7 from the main rim section 6, the tire is placed on the main section in the usual manner. As soon as the tire is in place on the main rim section, the complemental section 7 is connected to the main rim section by inserting the outer end

portion 25 of the tongue 22 into and through the opening 17 and then shifting the complementary section in the direction of the tongue in order to cause the outer end portion of the tongue 22 to seat within the open front socket 21. Thereafter the complementary rim section 7 is swung outwards into its operative position and is locked in place by swinging or turning the locking member 9 into locked relation with locking member 8. In connection with outward swinging of the complementary rim section, the central portion 24 of the tongue 22 moves into seated relation with the groove 19. Removal of the tire from the rim is effected by releasing the locking members and then disconnecting the complementary rim section 6 by swinging it inwards and then shifting it bodily so as to withdraw the outer end portion 25 of the tongue 22 from the open front socket 21.

The herein described demountable rim due to the particular construction of the detachable connection 10 between the main and complementary rim sections is capable of being handled with facility in connection with application and removal of a tire. Due to the design of the detachable connection 10, the inner periphery of the rim has no high spots or protuberances and hence the rim with a tire applied thereto may be readily mounted on the felly of a vehicle wheel. Because of the simplicity of the construction of the detachable connection, the rim as a whole may be produced at a comparatively low cost.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claim without departing from the spirit and scope of the invention.

This application is a substitute for my forfeited application Serial No. 435,454 filed on June 9, 1954.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

As a new article of manufacture, a demountable rim adapted to form a mounting instrumentality for a tire and comprising a metallic main section consisting of an arcuate base and outwardly extending tire-retaining side flanges at the sides of the base and having its length materially greater than one-half of the circumference of the rim as a whole, a metallic complementary section consisting of an arcuate base and outwardly extending tire-retaining flanges at the sides of the base and adapted normally to assume an operative position wherein it extends between the ends of, and serves to complete, the main section, coating locking members mounted, respectively, on certain adjacent ends of the bases of the main and complementary sections and adapted when in locked relation to hold the complementary section in its operative position and when in unlocked relation to release the complementary section so that it may be swung inwards into an inoperative tire-releasing position, the

other end of the base of the main section being provided with a rectangular opening midway between the side flanges of the main section and a small distance inwardly of its end edge, having the inner part of the portion thereof that is between the opening and said end edge cut away to a depth of approximately one-half the thickness of the base of the main section and so as to form an inwardly facing groove in communication with the outer end portion of the opening and of the same width as said opening, and having the outer part of the portion thereof that is directly inwardly of the opening cut away to a depth of approximately one half the thickness of the base of the main section and so as to form an outwardly facing open front socket in communication with the inner end portion of said opening and of the same width as said opening, the other end portion of the base of the complementary section being provided with a notch midway between the side flanges of the complementary section, in intersecting relation with its end edge and of the same width as the aforesaid opening, and a detachable connection extending between said other ends of the bases of said main and complementary sections, adapted after swinging of the complementary section into its inoperative position to permit disconnection of the complementary section from the main section and embodying an elongated circumferentially extending separately formed metallic tongue of the same width as said opening and consisting of an inner end portion fitting in, and welded to, said notch, a central portion shaped and adapted to fit within the aforesaid groove, an outer end portion shaped and adapted to fit slidably in the socket, and a diagonal portion disposed between the central and outer end portions, serving to maintain said outer end portion in outwardly offset relation with the central portion and shaped and adapted to fit within said opening, the inner end portion of the tongue being the same in thickness as the base of the complementary section and the central, outer end and diagonal portions of the tongue being approximately half as thick as the base of the main section, said tongue being so constructed and arranged that the inner surfaces of its central and inner end portions are flush with the inner surface of the base of the complementary section, the outer surface of its inner end portion is flush with the outer surface of the base of the complementary section, and the outer surface of its outer end portion is flush with the outer surface of the main section when the complementary section is in its operative position.

References Cited in the file of this patent

UNITED STATES PATENTS

1,317,105	Roller	Sept. 23, 1919
1,857,426	Brown	May 10, 1932