Nov. 2, 1971 W. D. WALTHER Re. 27,220

TIRE RIMS

Original Filed Aug. 4, 1966 2 Sheets-Sheet 1

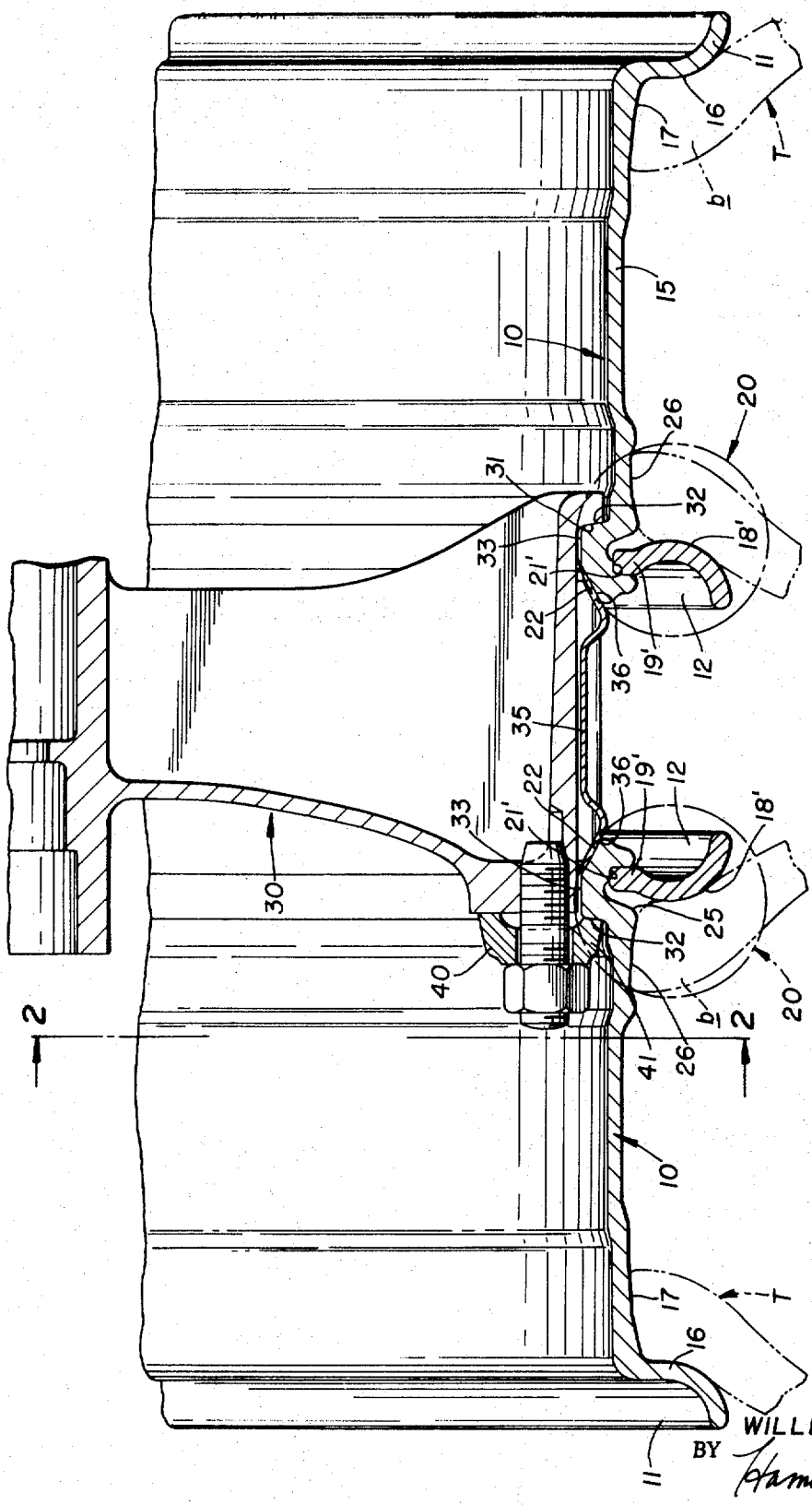


FIG. 1

INVENTOR.
WILLIAM D. WALTHER
BY Hamilton & Cook
ATTORNEYS

Nov. 2, 1971 W. D. WALTHER Re. 27,220

TIRE RIMS

Original Filed Aug. 4, 1966 2 Sheets-Sheet 2

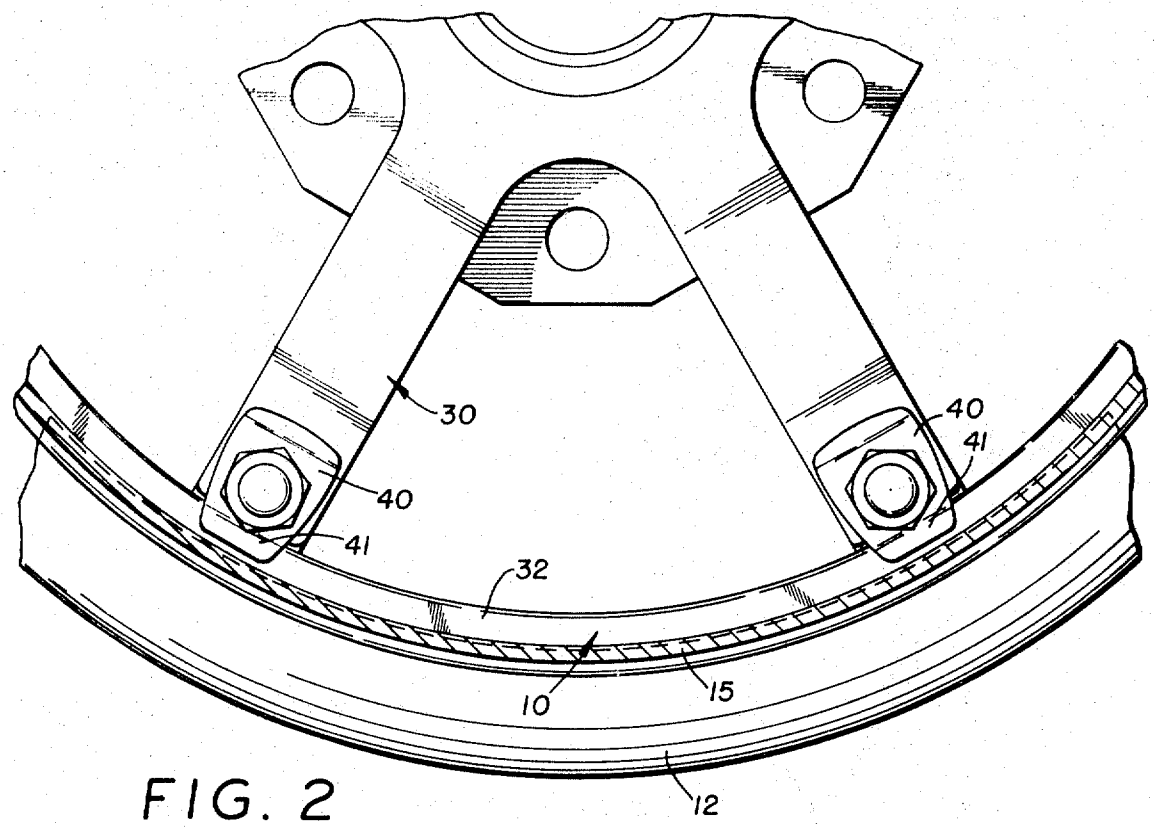


FIG. 2

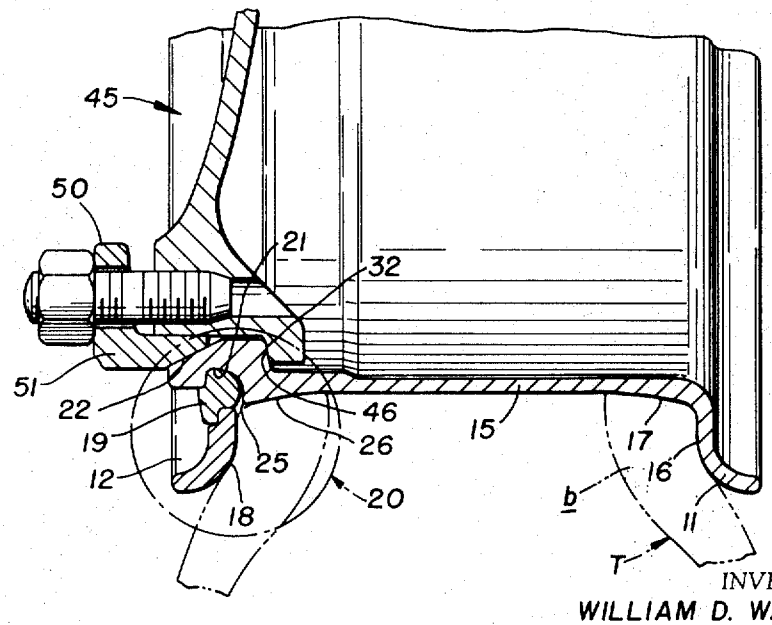


FIG. 3

INVENTOR.
WILLIAM D. WALTHER
BY Hamilton & Cook
ATTORNEYS

United States Patent Office

Re. 27,220
Reissued Nov. 2, 1971

27,220

TIRE RIMS

William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Original No. 3,421,797, dated Jan. 14, 1969, Ser. No. 570,269, Aug. 4, 1966. Application for reissue Nov. 19, 1969, Ser. No. 871,506

Int. Cl. B60b *25/06*

U.S. Cl. 301—12 1 Claim

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

ABSTRACT OF THE DISCLOSURE

A rim for mounting a tire. The rim has a fixed and a removable side flange. The base of the removable side flange is received in a cove on the rim edge and mechanically seats the tire bead. The tire bead is pneumatically sealed against a tapered surface adjacent the cove.

The present invention relates to improvements in rims for mounting tires; particularly heavy-duty or tubeless truck tires. More particularly, the invention relates to demountable rims having a removable side ring or bead flange to facilitate mounting of a tire.

The object of the invention is to provide an improved rim, having a removable side ring or bead flange, for the mounting of tubeless truck tires.

Further and specific objects of the invention as well as the advantages thereof over prior art tire rims having removable side rings will become apparent from the following specification and the attached drawings.

In the drawings:

FIG. 1 is a sectional view illustrating a wheel and fastening means mounting dual, or inner and outer, rims according to the invention;

FIG. 2 is a fragmentary view taken substantially as indicated on line **2**—**2** of FIG. 1; and

FIG. 3 is a sectional view illustrating a wheel and fastening means mounting a single rim according to the invention.

The tire rims according to the invention are indicated generally by the numeral **10**. A tire T is mounted between a fixed side ring or bead flange **11** and a removable side ring or bead flange **12**. The flanges **12** are carried by and mounted within a portion of the rim **10** which is enclosed within the circle designated **20**.

The side flanges **11** and **12** are separated by an annular base portion **15** having an axial width as determined by the size and bead spacing of a tire T to be mounted on a rim **10**. This is illustrated by FIG. 1 showing two relatively wide rims and by FIG. 3 showing one relatively narrow rim.

The fixed side flange **11** is formed integrally with the axially extending base portion **15**. A flange **11** has a radially directed side portion **16** for confining the axially outer edge of a tire bead b. The radially inner portion of the tire bead b is seated on and pneumatically sealed against a surface **17** adjacent the flange side portion **16** and having a taper, such as the 5–8° taper shown in the drawings.

In a rim **10**, the several improvements of the invention are provided by the structural features embodied in the rim portions enclosed by the circles **20**.

A side flange **12** may be in either a one-piece form (FIG. 1) or a two-piece form (FIG. 3). A flange **12** has a radially directed side portion **18** or **18'** for confining the axially outer edge of a tire bead b and a specially shaped

inner or base portion **19** or **19'**. In the two-piece [sorm] *form* of FIG. 3, the mating faces of flange portions **18** and **19** are suitably notched, as shown, for secure mechanical engagement. For initial mounting of a flange **12** on the edge of the rim, the flange base portion **19** (of FIG. 3) is split radially. The flange base portion **19'** (of FIG. 1) may be either split radially or else notched in two areas on the inside diameter.

The side flange base portions (**19** or **19'**) are carried on the edge **20** of the rim base **15**. The base portions (**19** or **19'**) are mounted within a radially inwardly concave area **21** providing a cove for full surface mechanical seating of a correspondingly-shaped face on the base portions. In a rim **10**, the cove area **21** begins axially inwardly of an axially inclined surface **22** adapted for wedging engagement with either a fastening means or clamp lug as further described below in connection with FIG. 3, or a spacer element as further described below in connection with FIG. 1.

As shown in FIG. 3, the axially outer portion of the cove **21** has the greater radially inward extent. As the cove area extends axially inward the extent of concavity gradually diminishes so that the cove area terminates abruptly radially inwardly and axially outwardly of a shoulder **25** on the rim base **15**. The cove **21'** as shown in FIG. 1 has the greater radially inward extent axially inward of the surfaces seating the flange base portions **19'**. As in the FIG. 3 form, the cove area **21** terminates abruptly radially inwardly and axially outwardly of the rim base shoulder **25**.

The cove areas, **21** and **21'**, of a rim **10** have been shown in the two forms of FIGS. 1 and 3 to illustrate the fact that the exact shape and configuration may vary somewhat, so long as the flange base portions, **19** or **19'**, are in secure mechanical engagement therewith when the tire T is mounted on the rim and inflated.

When the tire T is mounted and inflated, particularly a tubeless tire, the radially inner portion of the tire bead b is seated on and pneumatically sealed against a surface **26** beginning at shoulder **25** and extending axially inward at a desired taper, such as the 5–8° taper shown in the drawing. Therefore, when the tire T is mounted and inflated the axially outer portion of a tire bead b is mechanically seated against a side portion (**18** or **18'**) of a bead flange **12**, the pneumatic seal for the bead b being made solely by the seating of the tire against the shoulder surface **26**. The radially inner axially outer edge of a tire bead is adapted to be received in a radially exposed portion of the cove between the rim shoulder **25** and the removable flange **12**.

The rim **10** is intended to be mounted on conventional wheels. In FIG. 1, the wheel **30** has a relatively wide felly surface with a boss or stop surface **31** at the axially inner end adapted for mating engagement with a radially inclined surface **32** on the edge **20** of the inner rim. Axially outwardly of the surface **32**, the rim edge **20** has a substantially flat axially extending felly seating surface **33**. Axially outwardly of surface **33**, the rim edge has the previously described axially inclined mounting surface **22**. In FIG. 1, the inner and outer rims are separately by a spacer element **35**, an annular band, having side surfaces **36** adapted to engage the surfaces **22** of each rim.

Referring still to FIG. 1, the outer rim is secured to the wheel **30** by a conventional bolt supported clamp **40** having an axially oriented or lateral leg **41** adapted for engaging the surface **32** on the rim edge.

In FIG. 3 the wheel **45** has a relatively narrow felly surface with a boss or stop surface **46** in the axially inner end adapted for mating engagement with the radially inclined surface **32** on the edge **20** of the single rim **10**. The bolt supported clamp **50**, having an axially oriented or laterally extending leg **51**, engages the axially inclined

nounting surface **22** for mounting of the rim on the /heel **45**.

What is claimed is:

1. A demountable rim (**10**) having fixed and removble bead flanges, the bead flanges being separated by an nnular rim base portion (**15**), the fixed flange (**11**) beıg formed integrally with the rim base portion, the reıovable flange (**12**) being carried on and mounted within n edge (**20**) of the rim base portion, characterized in that ıe radially inner portion of the rim edge (**20**) has an uter axially inclined surface (**22**) [, a medial substanally horizontal felly engaging surface (**33**)] and an ier radially inclined surface (**32**), the radially outer poron of said rim edge has a radially inwardly concave rea (**21**) providing a cove surface for full mechanical ɜating of a correspondingly-shaped mating face of the ase portion (**19, 19'**) of the removable flange (**12**), said ɔve being located between said axially inclined surface **22**) and said radially inclined surface (**32**) and terminatıg on a radial line inwardly of a shoulder (**25**) on the m base portion, said rim having an integral surface **26**) *adjacent said cove* tapered at 5° to 8° for seating ıe radially inner portion of a tire bead, the axially outer ɔrtion of a tire bead being mechanically seated against radial side portion (**18, 18'**) of said removable flange, ıere being a radially exposed portion of said cove between the removable flange and said rim shoulder adapted to receive the radially inner axially outer edge of a tire bead.

References Cited

The following references, cited by the Examiner, are of record in the patented file of this patent or the original patent.

UNITED STATES PATENTS

2,048,177	7/1936	Burger	301—12
2,904,096	9/1959	Mueller	152—406
2,152,757	4/1939	Burger	301—13 SM
2,188,271	1/1940	Swain.	
2,948,568	8/1960	Hykes	152—406 X
3,079,200	2/1963	Main.	

FOREIGN PATENTS

626,162	2/1936	Germany.
199,525	9/1958	Austria.
546,938	8/1942	Great Britain.
552,363	4/1943	Great Britain.

R. J. JOHNSON, Primary Examiner

U.S. Cl. X.R.

301—13 SM