Oct. 13, 1942. C. S. ASH ET AL 2,298,333

VALVE STEM LOCATOR

Filed Feb. 15, 1940 4 Sheets-Sheet 1

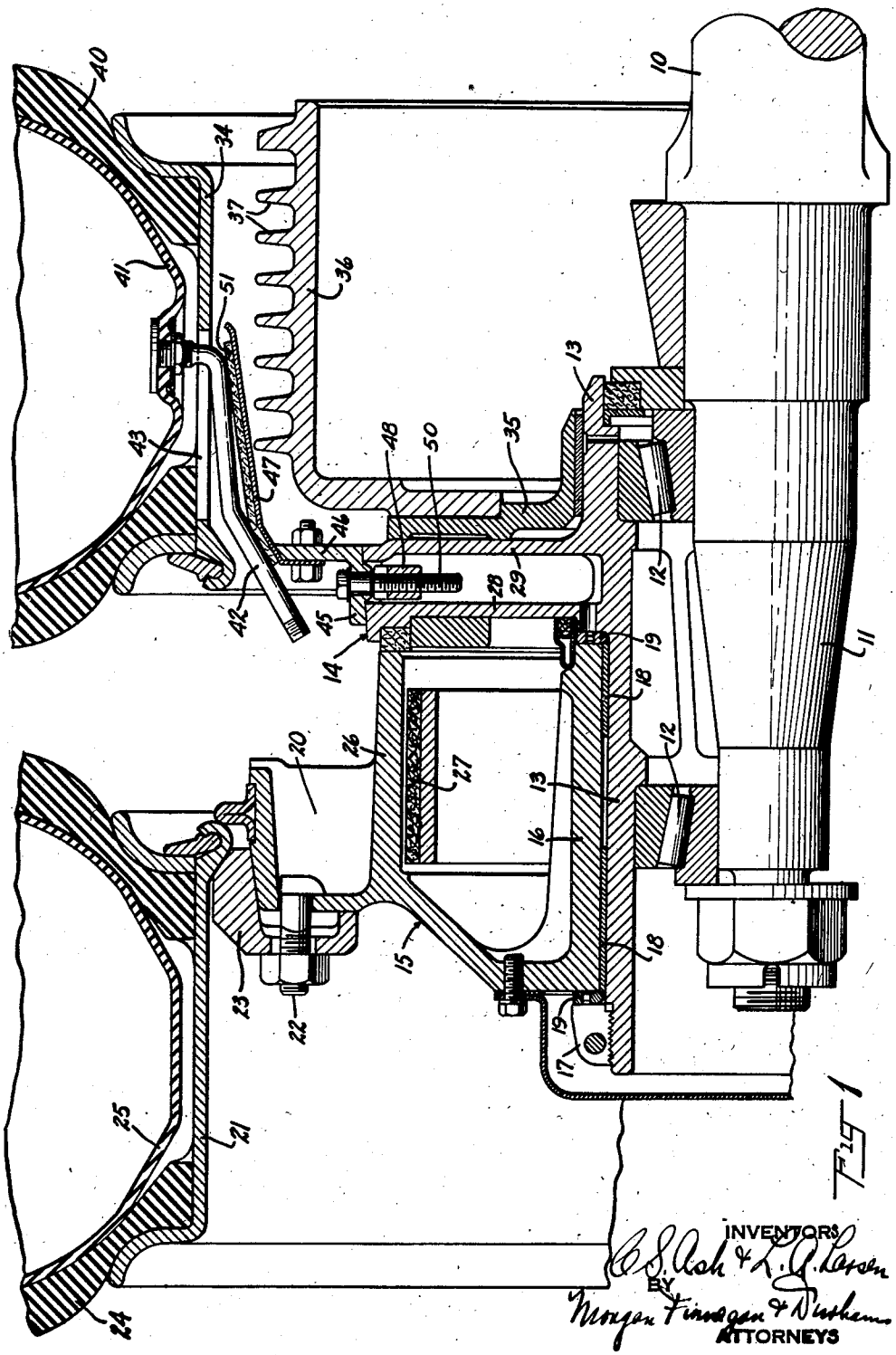


Fig. 1

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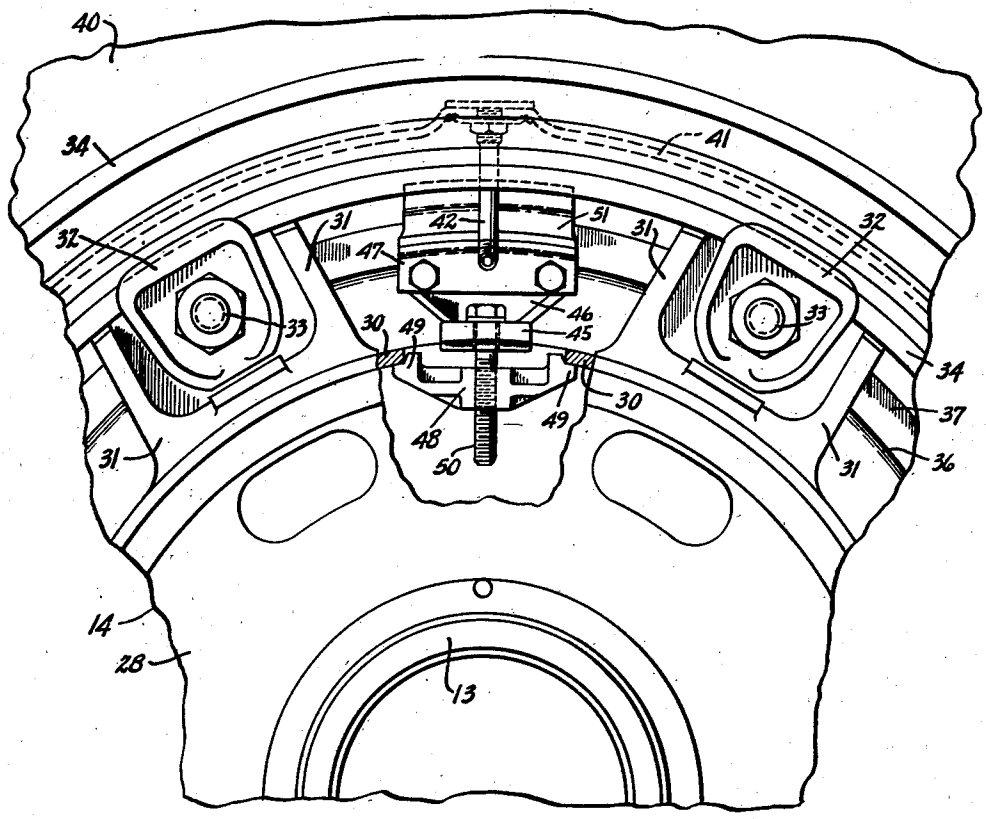


Fig 2

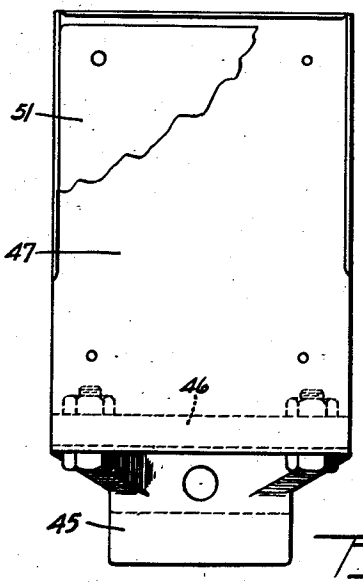
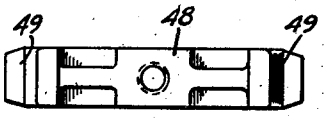


Fig 3

Fig 4



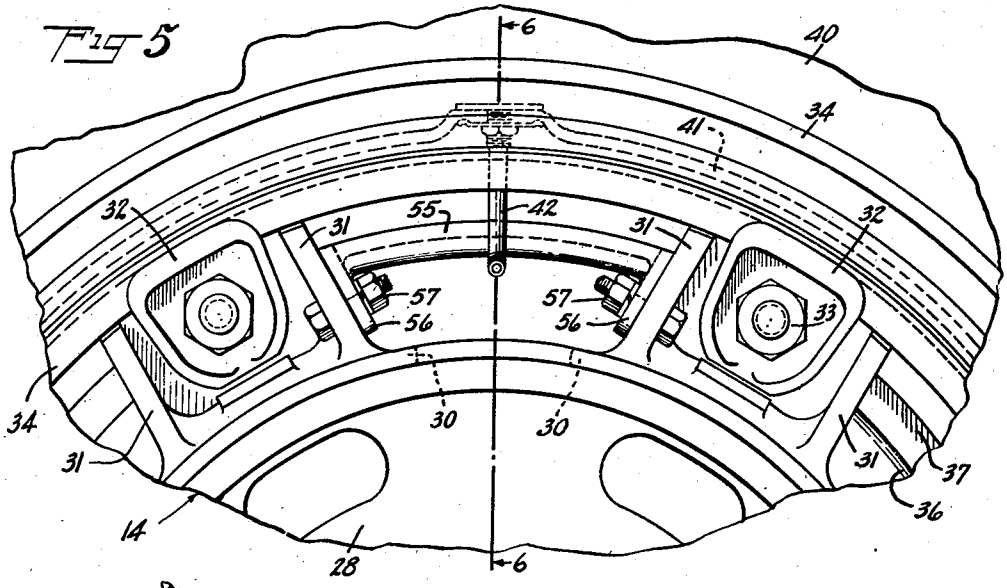
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VALVE STEM LOCATOR

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Fig 5



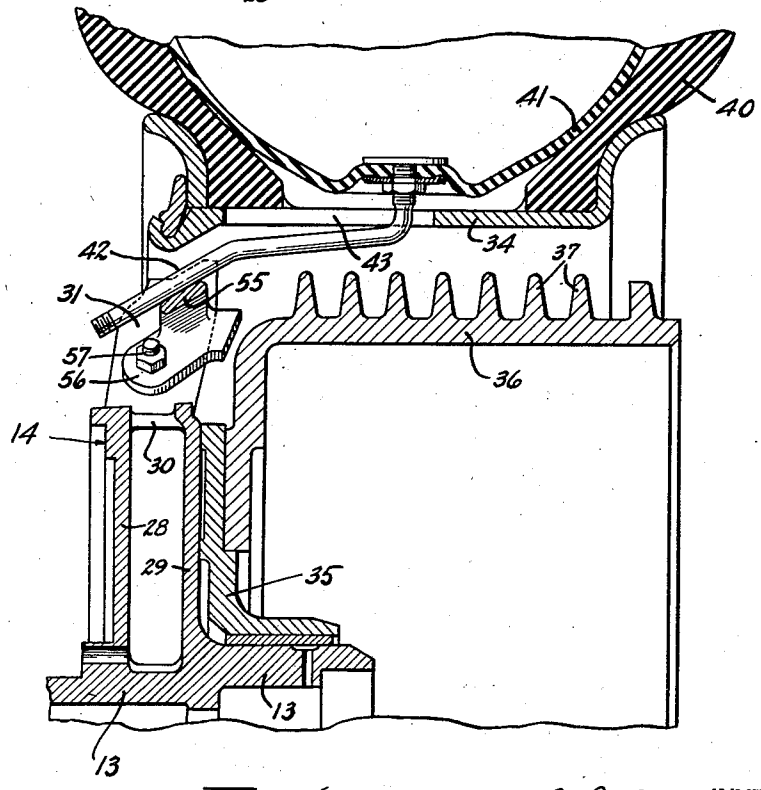


Fig 6

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VALVE STEM LOCATOR

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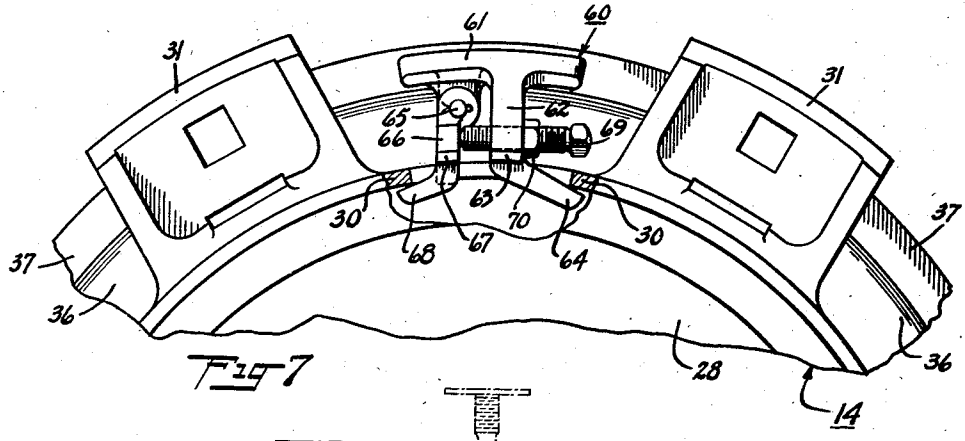


Fig 7

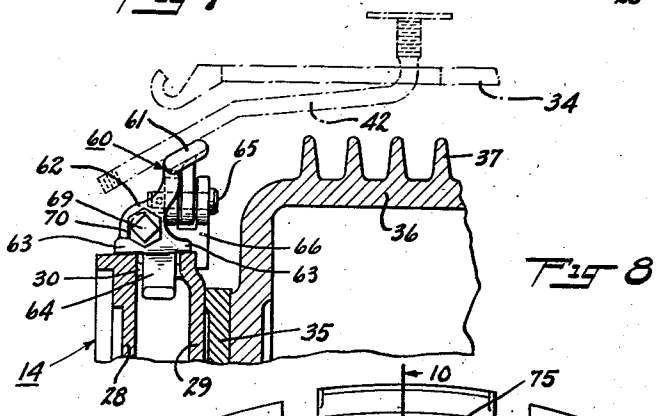


Fig 8

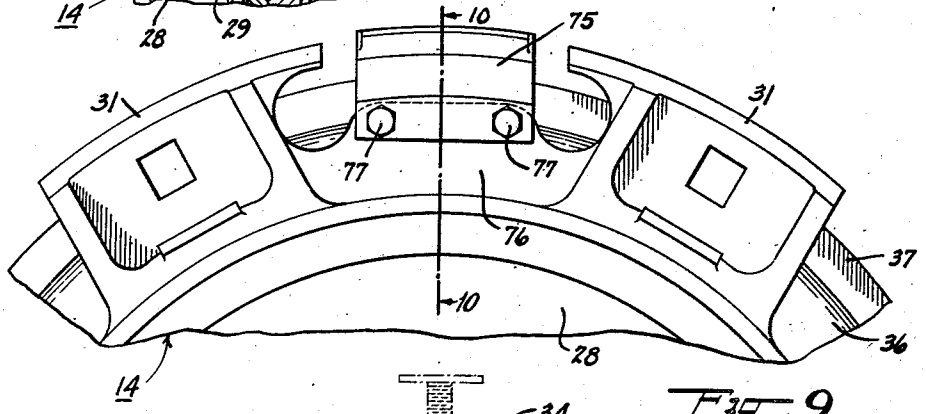


Fig 9

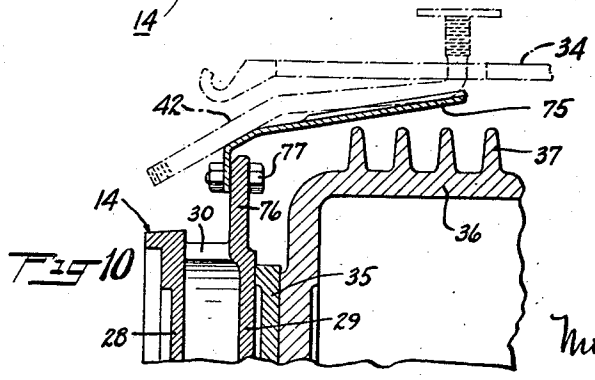


Fig 10

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UNITED STATES PATENT OFFICE

2,298,333

VALVE STEM LOCATOR

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Application February 15, 1940, Serial No. 319,068

6 Claims. (Cl. 301—5)

The present invention relates to new and useful improvements in valve stem locators for use with pneumatically-tired motor vehicle wheels.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate several modifications of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:

Fig. 1 is a fragmentary vertical section through the upper half of a dual wheel unit showing a valve stem locator applied to the inner wheel of the unit;

Fig. 2 is a fragmentary elevation, partly broken away, of the outer side of the inner wheel;

Fig. 3 is a plan view of the guard member portion of a valve stem locator;

Fig. 4 is a plan view of the clamping bar portion of a locator;

Fig. 5 is a fragmentary elevation similar to Fig. 2 but showing a modified form of valve stem locator;

Fig. 6 is a vertical cross section taken on the line 6—6 of Fig. 5;

Fig. 7 is a fragmentary outside elevation of an inner wheel showing another form of valve stem locator;

Fig. 8 is a fragmentary vertical section of the wheel shown in Fig. 7 and showing in elevation the valve stem locator applied thereto;

Fig. 9 is a fragmentary outside elevation on an inner wheel showing a form of valve stem locator adapted for attachment thereto by screws; and

Fig. 10 is a vertical section taken on the line 10—10 of Fig. 9.

The present invention has for its object the provision of a novel and improved valve stem locator particularly adapted for use with independently rotatable dual wheels. A further object of the invention is the provision of a valve stem locator which is substantially attached to the wheel and prevents the transmission of a damaging amount of heat from the brake band through the valve stem to the inner tube of the tire. Still another object of the invention is the provision of a novel and improved means for preventing mechanical injury to the valve stem and for preventing excessive thermal deterioration of the inner tube at the inner tube.

In accordance with the present invention means are provided for locating the valve stem accurately, for holding it away from the brake drum and for preventing the transmission or excessive radiation of heat from the brake drums, thereby preventing mechanical injury to the valve stem and excessive heating of the inner tube at the valve stem. In the embodiments shown, the valve stem projects through the tire rim towards the brake drum and thence laterally of the wheel and means are provided contacting with the lateral portion of the valve stem at one or more points for holding the valve stem in a fixed position out of contact with the brake drum, and these means are attached to the wheel, are of low heat transmitting quality due to their small cross sectional area, and also preferably to their material, small area of contact with the valve stem and also to their relatively large area exposed to the cooling action of the moving air adjacent the tire rim.

Referring now in detail to the drawings, and more particularly to Figures 1 to 4 inclusive, the invention is illustrated as applied to a dual wheel unit which may consist of a pair of independently rotatable wheels carried by a fixed axle. As embodied, an axle 10 has mounted and secured upon its outer end 11 a pair of roller bearings 12 which serve as journals for the hub portion 13 of an inner wheel 14 of a dual wheel unit. An outer wheel 15 is rotatably mounted, by means of its hub 16, upon the outward extension of the hub 13 of the inner wheel, and is held in longitudinal alinement thereon by the usual split clamp nut 17. A pair of anti-friction bushings 18 are interposed between hubs 13 and 16, and thrust washers 19, 19 provided at each end of the outer wheel hub 16, the washers being suitably drilled and grooved for purposes of lubrication.

Conventionally mounted upon spokes 20 of the outer wheel 15 is a demountable tire rim 21, the usual clamp bolts 22 and clamp lugs 23 being provided for this purpose, and the rim 21 has mounted thereon, in the usual manner, a tire consisting of a shoe 24 and inner tube 25. Outer wheel 15 is also provided with a brake drum 26 and a cooperating brake shoe 27 which may be operated in any manner and is not shown nor described in detail since it forms no part of the present invention.

The inner wheel 14 consists of the elongated hub 13, near the inner end of which is integrally formed a web portion consisting of spaced apart flanges 28 and 29 which are joined together at regularly spaced intervals along their periphery by several arcuate ribs 30 (see Fig. 2). Extending outwardly from the several ribs 30, and formed integral therewith, are wheel spokes 31 upon which is removably secured, as by clamp lugs 32 and bolts 33, a conventional tire rim 34. Rotatably mounted upon an inner extension of hub 13 and adjacent the web flange 29 is a brake flange 35 to which is secured, as by bolts (not shown), a main brake drum 36 which may be provided with heat dispensing ribs 37 upon its periphery. Braking mechanism of any conventional type may be provided in association with brake drum 36.

The tire rim 34 may be a conventional type upon which is demountably secured a tire shoe 40 and inner tube 41, the latter being provided with the usual goose-neck valve stem 42 by which air is admitted into the inner tube 41. An elongated slot 43 is provided at one point in the rim 34 through which the valve stem 42 projects inwardly towards the center of the wheel 41 and laterally towards the outer side of the wheel when the rim is mounted thereon.

It is desirable when mounting the inner tire rim 34 and its tire upon the inner wheel 14 that the valve stem 42 be properly placed or located in respect to spokes 31 so as to be readily accessible for tire inflation and at the same time be firmly supported against undue vibration such as might, if unsupported, cause it to strike against the brake drum 36. To this end there is provided on the inner wheel 14 a detachable locating device which is visible during the rim mounting operation and enables an operator to quickly, easily and properly place the valve stem 42 in its correct position with a minimum effort. As embodied, an angle bracket is provided having an arcuate base 45, adapted to seat upon the periphery of the web flanges 28, 29, and a flared upright portion 46 to which is securely bolted an inwardly extending plate 47 which overlies the brake drum 36 and is so bent as to conform approximately to the goose-neck shape of the valve stem.

Means for removably securing the angle bracket base 45 to the wheel 14 comprise a clamping bar 48, adapted for insertion between the web flanges 28, 29 and having stepped ends 49 so formed as to grip the inner adjacent corners of two of the arcuate ribs 30. A bolt 50, passed through an orifice in the angle bracket base 45, is threaded into the central portion of clamping bar 48. The bolt 50 has sufficient length to allow such spacing between the angle bracket and clamping bar as will permit the clamping bar to be "snaked" into place previous to seating the angle bracket on the web flanges 28, 29. After the angle bracket has been seated, a tightening of the bolt 50 will bring the stepped ends 49 of the clamping bar 48 into contact with the ends of arcuate ribs 30 and thus securely hold the angle bracket and its attached plate 47 in the desired position midway between two of the wheel spokes 31 and in spaced relation to the brake drum 36.

A further function of the locator plate 47, upon which the valve stem 42 is supported, is to act as a heat deflector or insulator whereby the heat generated in the brake drum 36 is prevented, as far as possible, from reaching the valve stem 42 and the inner tube 41 at the point where the valve stem is attached thereto. To increase the efficiency of heat deflection of the plate 47 there may be attached thereto, as by rivets or otherwise, a heat insulating sheet 51 which may consist of asbestos or other similar substance.

Referring now to Figures 5 and 6 there is shown a modified form of means whereby the valve stem 42 may be correctly positioned or located and properly supported, and in this form the valve stem is kept from being excessively heated by the brake by the air circulated over the valve stem and brake drum. As embodied there is provided an arcuate bracket 55 upon each end of which is formed a base 56. The outer faces of the two bases 56 are in angular relation to each other and adapted to be placed in contact with the adjacent sides of two of the wheel spokes 31 and secured thereto by bolts and nuts 57. The arcuate portion of the bracket 55 is so shaped as to receive and support the angularly disposed outer end of the valve stem 42.

In Figures 7 and 8 there is shown a further modification wherein a support bracket 60 having an arcuate support portion 61 somewhat similar to the bracket 55 is adapted for clamping, rather than bolting, in place on the inner wheel 14. As embodied, the arcuate portion 61 is provided with a lower extension 62, near the end of which are laterally extending lips 63 adapted to seat on the periphery of the web flanges 28, 29. From the end of extension 62 and projecting sidewise therefrom is a clamp toe 64. Pivotally attached at 65, to the arcuate portion 61, is a clamp arm 66 having its lower end provided with seating lips 67, similar to lips 63, and a clamp toe 68, similar to toe 64 but extending in the opposite direction. A clamp bolt 69, threaded into extension 62 and provided with a check nut 70, is adapted to bear against and force the clamp arm 66 away from the extension 62.

Thus, to mount the bracket 60 in its proper place between two of the spokes 31 of the inner wheel 14, the clamp bolt 69 is first backed partially out of lower extension 62, thereby permitting the toes 64 and 68 to be brought together an amount sufficient to allow them to be passed between the ends of two of the ribs 30. The bracket 60 is then lowered until the lips 63 and 67 seat upon the web flanges 28, 29. By then screwing the bolt 69 against the clamp arm 66 the toes 64 and 68 are forced apart and beneath the ribs 30 thereby securely clamping the bracket 60 in its desired position midway between the two spokes 31, 31. Lock nut 70 may then be tightened to prevent dislodgement of the bracket 60.

In Figures 9 and 10 there is shown a further modification in which a locator plate 75, similar to plate 47, may be attached directly to a slightly modified form of inner wheel 14. As embodied, the web flange 29 of the inner wheel 14 is provided, midway between any two of the spokes 31, 31, with an outwardly projecting rib 76 to which locator plate 75 may be secured by bolts and nuts 77.

From the foregoing description it will be seen that a device has been provided which is easy and cheap to manufacture, adapted to simple application to an existing wheel by unskilled labor and having the simple act of attachment determine its proper position on the wheel. It further provides a highly visible and obvious

point at which the operator, who may be mounting the rim on the wheel, is to place the valve stem from the inner tube, and also provides a broad and ridged support for the valve stem to protect it from injury which might be caused by vibration. Also, certain forms of the invention have been illustrated wherein provision has been made to protect the valve stem and inner tube adjacent thereto from the ravages of heat generated by continued application of the brake shoes on the brake drum.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What we claim is:

1. In combination with a pneumatically-tired motor vehicle wheel having a brake drum attached to the wheel and a tire mounting rim on the wheel apertured to receive a tire valve stem and a valve stem projecting radially inward and then laterally of the wheel between the rim and brake drum, a supporting and heat insulating member detachably connected to the wheel and positioned between the valve stem and brake drum, contacting with the valve stem at a plurality of points to locate the valve stem, hold it out of contact with the brake drum and increase the heat radiating area between the valve stem and brake drum.

2. In combination with a pneumatically-tired motor vehicle wheel having a brake drum attached to the wheel and a tire mounting rim on the wheel apertured to receive a tire valve stem and a valve stem projecting radially inward and then laterally of the wheel between the rim and brake drum. a valve stem locator mounted on the wheel and pressing the valve stem away from the brake drum, said locator being provided with a portion of heat insulating material engaging the valve stem.

3. In combination with a pneumatically-tired motor vehicle wheel having a brake drum attached to the wheel and a tire mounting rim on the wheel apertured to receive a tire valve stem and a valve stem projecting radially inward and then laterally of the wheel between the rim and brake drum, a valve stem locator mounted on the wheel and pressing the valve stem away from the brake drum, said locator having a relatively large surface area compared to its area of contact with the valve stem whereby the heat radiated by the locator is large compared to the heat transmitted to the valve stem.

4. In combination with a pneumatically-tired motor vehicle wheel having a brake drum attached to the wheel and a tire mounting rim on the wheel apertured to receive a tire valve stem and a valve stem projecting radially inward and then laterally of the wheel between the rim and brake drum, a valve stem locator mounted on the wheel and tending to hold the valve stem against movement, said locator being positioned between the valve stem and brake drum and comprising a relatively thin sheet of metal extending along the valve stem.

5. In combination with a pneumatically-tired motor vehicle wheel having a brake drum attached to the wheel and a tire mounting rim on the wheel apertured to receive a tire valve stem and a valve stem projecting radially inward and then laterally of the wheel between the rim and brake drum, a thin, wide member mounted on the wheel and of relatively small cross sectional area, said member engaging the laterally extending portion of the valve stem to hold it out of contact with the brake drum, the small cross sectional area of the member serving to reduce the heat transmitted from the wheel and brake drum to the valve stem.

6. In combination with a pneumatically-tired motor vehicle wheel having a hub portion, a tire mounting rim apertured to receive an inwardly extending valve stem, means for detachably supporting the rim on the hub, a brake drum connected to the wheel, a valve stem between the rim and brake drum and a heat insulating valve stem locator fixed with respect to the hub and pressing the valve stem away from the brake drum, said locator engaging the valve stem at a plurality of points.

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