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CONSTRUCTION OF SOLID WHEELS.

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1,303,501.

Patented May 13, 1919.

fig. 1.

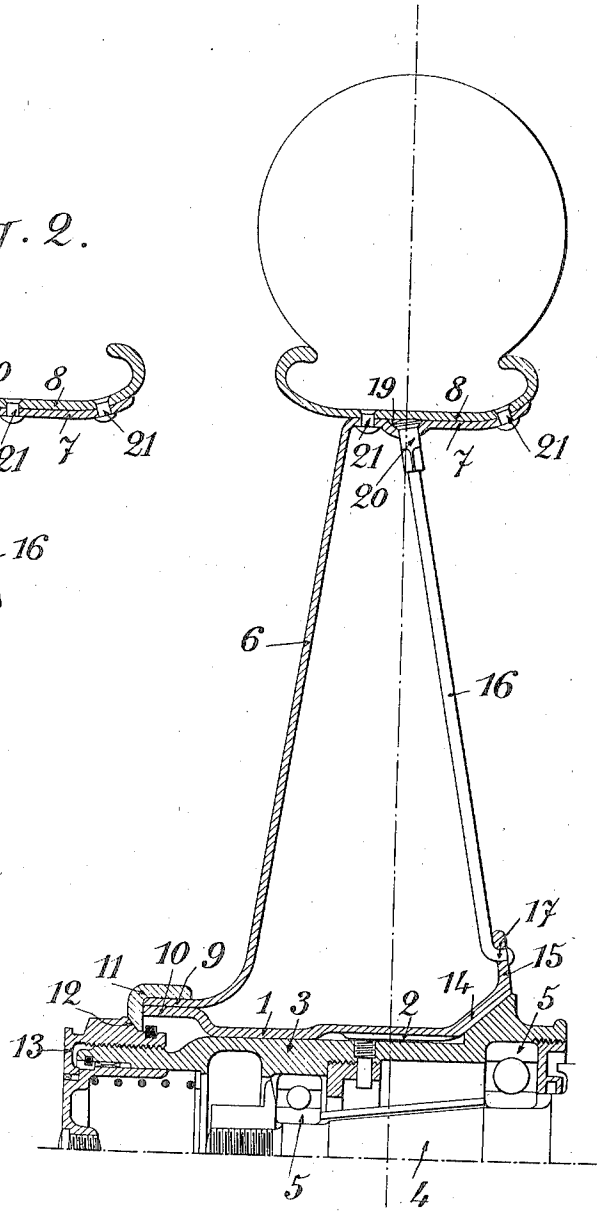


fig. 2.

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CONSTRUCTION OF SOLID WHEELS.

1,303,501. Specification of Letters Patent. **Patented May 13, 1919.**

Application filed August 4, 1917. Serial No. 184,497.

To all whom it may concern:

Be it known that I, LOUIS ROUANET, a citizen of the Republic of France, residing at 42 Rue Franklin, Ivry-Port, Seine, in the Republic of France, have invented new and useful Improvements in the Construction of Solid Wheels, of which the following is a specification.

The present invention relates to improvements in the construction of solid wheels.

At the present time the construction of solid wheels presents great difficulties which are mainly encountered in the operation of centering. The greater part of the present solid wheels are obtained by the stamping or other similar process applied to a metal disk. In some cases the work is carried out upon a sheet of metal which retains its initial thickness after the process, or in other cases, the operation is performed by the repoussé process or again by lathe work, so as to obtain different thicknesses of metal corresponding to the different circumferential strains which the said thicknesses are called upon to support, it being essential to realize such conditions in order to obtain the required solidity of the wheel.

When the work is carried out upon a metal sheet which is relatively thin with reference to the eventual weight of the wheel, it is required to strengthen the central part of the disk forming the body of the wheel so that it will be able to withstand the strains placed upon it during the running of the vehicle which carries the wheel, and this without danger of breaking.

The disks hitherto produced are in all cases designed to be assembled either with a rim or a hub, or sometimes with both, and the process of centering the disks with these latter parts presents difficulties which are almost insurmountable, for in practice it is found very difficult to obtain perfect surfaces on such disks.

The object of the present invention is the construction of a wheel of this class by the use of a metal disk which is stamped out of sheet metal, the disk being flanged at the outer part so as to obtain an annular portion adapted for fitting on the usual wheel rim in any suitable way, while the inner part of the wheel is flanged in the contrary sense so as to be mounted upon the sleeve or socket forming the wheel hub.

Disks of this kind can be stamped out of relatively thin metal, owing to the fact that the stamped disk retains the initial thickness of the metal, but the wheel thus formed is intended to be strengthened by the use of a spoke device in which the spokes are attached at one end to the outer flange of the wheel and at the other to one end of the hub upon which said wheel has been already mounted by means of its flange. The spokes can be mounted with their ends in a series of cavities in the outer flange of the disk or again in a set of cavities formed at the same time in the flange and the wheel rim, this latter design being employed in order to obtain a better propulsive effect between the two parts and to suppress one of the rows of rivets required for attaching the outer flange to the rim.

The spokes might even be attached at any desired height upon the body of the disk itself, but the essential result to be obtained here is a method of rapid centering for the wheel (it being practically impossible to carry out such centering upon a solid disk wheel), and the spoke method also allows of compensating for any deformation of the wheel as well as to suppress the special reinforcing parts employed in usual disk wheels, on the other hand the use of such spokes will give a great lightness as well as a much greater strength than usual. Machine work will also be much reduced since the disk will now have a uniform thickness and the wheel thus obtained will also possess a much greater amount of elasticity than heretofore.

In the class of new industrial products, the present invention relates to wheels affording a combination of a spoke wheel and a solid wheel, thus presenting the advantages of the two systems and suppressing the drawbacks inherent in each of these two types of wheel, it being observed that the operation of cleaning the spoke wheels is a very long and unpractical one, while the

usual type of solid wheel is very difficult to realize in practice owing to the difficulties encountered in the centering operation.

The method will be better understood by referring to the accompanying drawing.

Figure 1 shows a vertical section of a constructional form of the present device.

Fig. 2 is an alternative form of the same device.

According to the example shown in the drawing, the solid wheel with metal disk and spoke device is a removable wheel in which the propelling sleeve or socket 1 provided with teeth 2 is centered upon the false hub 3 mounted in the usual practice upon the axle 4 through the ball-bearing 5. The body of this wheel is a metal disk 6 flanged at its outer part so as to form an annular portion 7 for carrying the wheel rim 8; the disk 6 is also flanged in the contrary sense at its inner part in order to form the annular portion 9 which is centered upon the outer part 10 of the sleeve 1. The two parts 9 and 10 are held in close connection by means of a ring 11 with a conical part 12 against which is screwed the tightening nut 13.

On the inside of the above-mentioned sleeve is a conical part 14 in contact with a corresponding conical part of the false hub, and also a flanged portion 15 containing a set of holes corresponding to the number of spokes employed. The spokes 16 are attached to said flange 15 by their ends 17, and the tightening nuts of these spokes are disposed within the cavities 19 in the flange 7 of the disk 6. The wheel rim 8 designed to receive the pneumatic tire is attached to the flange 7 by means of one or more rows of rivets 21. The tightening nuts 20 of the spokes 16 are held in this way between one side of the cavity 19 and the rim 8, and this avoids all possible deterioration of the air chamber by the ends of the spokes 16. In the alternative design shown in Fig. 2, the tightening nuts 20 are placed within cavities formed in the wheel rim 8 and in the flange 7, and this method has the advantage of giving a means of propulsion between the two parts 7 and 8, however these parts are always closely connected by the use of one or more rows of rivets 21.

Instead of placing the spokes upon the flange 7 of the disk 6, the spokes may be attached directly to the body of the disk and at any desired distance from the center of the wheel, provided this does not diminish the strength of the wheel.

The object of the present mounting of the spokes is to obtain a rapid centering of the wheel, in the same way as prevails for the usual spoke wheels, and it also allows of suppressing the reinforcing disks such as are indicated for instance in the French Patent No. 480611 dated January 4th, 1916, in the name of Société Française des Roues Amovibles.

A wheel of the present design thus presents on the outer or visible side a perfectly flat surface which can be readily cleaned, and on the other hand it also has the advantages of the usual spoke wheel on account of the spoke construction, this being concealed by the disk 6,—but which nevertheless gives almost as much elasticity to the wheel as in the case of an ordinary spoke wheel.

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

1. A wheel for automobiles containing, in combination, a hub, a rim, a stamped disk flanged at the center and at the periphery, means for fixing the inner flange of the disk upon the hub, means for fixing the outer flange to the rim, and metal wire spokes connecting the hub and the peripheral flange of the disk, substantially as described and for the purpose set forth.

2. A wheel for automobiles containing, in combination, a hub, a rim, a stamped disk flanged in opposite directions at the center and at the periphery, and having on the peripheral portion a set of cavities each possessing a hole, means for fixing the inner flange of the disk upon the hub, rivets for fixing the peripheral flange of the disk to the wheel rim, metal wire spokes, means for fixing said spokes to the hub, and tightening nuts held in the cavities of the peripheral flange of the disk, passing through holes in these cavities and screwed upon the outer ends of said spokes, substantially as described and for the purpose set forth.

3. A wheel for automobiles containing, in combination, a false hub provided with coupling teeth and having a conical part, a sleeve provided with teeth engaging with those of the false hub, said sleeve having a cylindrical bearing part on one side and on the other a conical bearing part extended by a flange, a hub, a stamped disk having an inner flange and also a peripheral flange directed in the contrary sense to the preceding and carrying a set of cavities each possessing a hole, means for fixing the inner flange of the disk upon the sleeve and for fixing the sleeve upon the false hub, rivets for fixing the peripheral flange of the disk to the wheel rim, metal wire spokes, means for fixing said spokes to the above mentioned flange of the sleeve, and tightening nuts held in the cavities of the peripheral flange of the disk, passing through holes in these cavities and screwed upon the outer ends of said spokes, substantially as described and for the purpose set forth.

4. A wheel for automobiles comprising a false hub, teeth formed on the hub, a sleeve surrounding the hub, teeth formed on the sleeve and engageable with the teeth on the hub, a rim, a disk secured to said sleeve and to said rim, and wire spokes connecting said sleeve and rim.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS ROUANET.

Witnesses:

LOUIS MOSES,

CHAS. P. PRESSLY.