8467X

J. STIMPSON.

Car Wheel.

Patented Oct. 23, 1834.

Fig. 2.

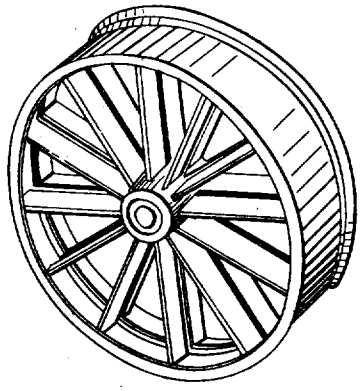
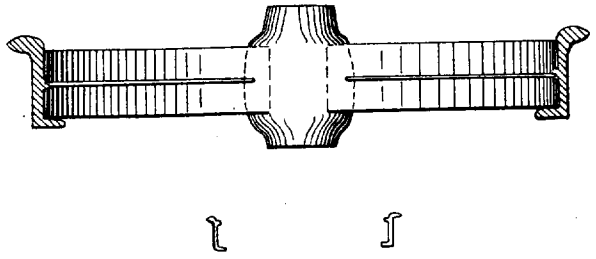


Fig. 1.



AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS.)

James Stimpson Baltimore Maryland

Letters Patent

The Schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said James Stimpson himself of his improvement in the mode of constructing wheels for the use of Rail Road Cars or Locomotive Engines

To all to whom these presents shall come. Be it known that I James Stimpson of the City and County of Baltimore and State of Maryland have invented a new and useful improvement in the mode of constructing Wheels for the use of Rail Road Cars or Locomotive Engines and that the following is a full and exact description thereof. The rims and Spokes of the wheel are to be made of wrought iron. The hub of cast iron. The spokes may be made in the form of a cross and nearly or quite as wide as the treads of the wheel. varying in thickness according to the weight they are intended to carry say a quarter to half an inch. a rib should be formed upon each side of said spokes near their centres of the same thickness as the spokes or more at their bases contracted a little by a taper thence to their outer extremities. said ribs may be also varied both in thickness and width as desired. but for passenger Cars say to project five eighths of an inch in width from the spoke on each side may be sufficient. said spokes may be rolled in that form. the said ribs should terminate a little short of the exterior ends of the spokes to fit exactly join to and terminate upon the interior edge of an internal flanch or rib within the inner periphery of the rim of the wheel as will be more fully explained hereafter. A wooden pattern may be made to represent the hub and spokes of such wheel as is wanted with the spokes formed exactly in shape and size like the rolled wrought iron spokes. said pattern should be made to divide or open in the centre of the ribs of the spokes. that when moulded in the sand the flasks cope and nowel may take each a part of the mould. so that when the pat-

bar is withdrawn from the sand the iron spokes may be laid into the mould and the cope closed down over them. in this way the hub may be cast upon the spokes. The hub should be sufficiently large to enclose a proper length of the spokes for strength. and yet their inner ends should not be allowed to extend ~~entirely~~ to within about one half of an inch of the axle. Thus when the hub is cast it will represent a hub and spokes without a rim. but the ribs on the spokes should not be allowed to extend into the hub over an eighth of an inch, for they would very nearly divide the hub into two parts perpendicularly through it and thereby make it unsafe for use. The rim on the exterior may be formed as usual with a flanch and cone. or one cone as desired. on the exterior there are to be formed two internal flanches or ribs projecting inwards from the interior of the rim as wide or deep as may be desired. varying according to the objects for which they are intended to be used. One of said rims or flanches should be formed at the edge of the inner periphery of the outside of the wheel diagonally opposite to the external flanch and it may be made say three quarters of an inch thick at the base tapering to half an inch across the inner edge more or less and one inch and a half wide or deep including the thickness of the rim of the wheel. more or less. this proportion may be proper for a passenger Car and the average thickness of the rim three eighths of an inch. The other rib may be placed midway between this internal and the external flanch, or nearer to the external if desired. This rib may not be so deep as the others. it may project within the rim say five eighths of an inch more or less. and must be as thick as the ribs on the spokes as they are to be fitted to it and terminate upon the inner periphery of this rib. It may be made less than the ribs on the spokes if desired. I use from nine to twelve spokes for a three to four feet wheel. and then nine to twelve notches are to be formed a mark in the last described internal flanch or rib equidistant from each other of a form and size just to fit exactly to the outer ends of the spokes these notches are only to be cut just deep enough to allow the outer ends of the spokes to pass through

when the rim is expanded by heat. to the extent it will bear without injury. there must also be formed notches in the exterior ends of the spokes just as deep as the sole of the notch made in the internal rim is from the inner periphery of the rim of said wheel. and also as wide as the rib itself so that the notch in the end of the spoke shall exactly span and fit tight to the rib on the inner periphery of the wheel within the said notches and at the same time the ends of the ribs on each side of the spokes are to be formed so exactly to fit upon the inner periphery of the rib when the tire or rim of the wheel is shrunk by cooling to its natural size. though care must be had to calculate and make the diameter of the spokes and rim so to agree with each other that when cold the rim shall hug the spokes as light as they will bear and at the same time be the most secure. lasting and safe for use.

Now then it will be seen that the objects of these internal ribs or flanges are to answer two special purposes. the first is to secure strength and firmness in the rim from flexure with but as small quantity and weight of metal. and the second is to secure the rim to the spokes against any lateral or other movement without screw bolts nuts or rivets.

This form of rim will evidently save a great weight of iron and yet be much stronger than cast iron wheels as usually made. the internal ribs are a complete substitute for the cast iron rim in point of strength and firmness. while the rim itself will not be near so liable to shrink thereby to become loose upon the spokes as the usual wrought iron tire when shrunk in the usual way over a solid cast iron rim. neither could wood within my knowledge of any use. no screw bolts nuts or rivets to work loose. which require to be looked after. and with spokes formed as described their lightness and yet firmness all combine to make a wheel of less material by one half the usual cast iron wheels intended for passenger cars and yet will withstand a blow of more than twice the force that a cast iron wheel could without breaking. Hence wheels of this construction may be made large. the necessary weight being so small as not to be regarded. In a train this will be an immense saving of power. wear and tear to the road and cars. The

outer edges of the spokes should be made to fit up tight to the inside o
the outer flanch or rib as it will add great additional security to th
notches in the spokes against lateral movement, as the inclination
the peripheries of the wheels is inwards or towards each other: hence
inside of the deep rib as well as the space beyond the sole of the notch
abundantly secure the rims to the spokes from any lateral movement
It is my intention first to roll the rim in a set of dies approaching
in a small degree towards the shape of the rim when finished by an
estimate based upon a calculation of the necessary weight. and a few e
periments the exact weight necessary to form a wheel of a certain dia
ter by the roller dies may be had to enable us to round up and weld
rough rolled bar before passing it through the finishing dies. in whi
last state the rollers when brought tight together will leave the rim
and so perfect on the surface as to require no turning and yet be ma
the exact size that may be wanted. The upper roller of course a
form the external flanch cone and the face of the head of the whee
and a part of thickness of the rim while the under roller will form
remainder of the thickness of the rim and the internal flanches or
the dies in the under roller must be on the outside of its journals whi
The upper roller must be made to as to be raised by two screws geared
gether to receive the hoop for rolling and then force the upper roller
gradually by the screws as the rollers revolve. until they touch each
other when the rim will be finished and must then be removed as
quick as possible. The hub and spokes must be put into a che
lathe. the hole bored out to receive the axle. then fitted upon an arb
in a lathe. The ends of the spokes ground off by passing round by
an emery wheel in quick motion with a lateral movement to the
emery wheel to keep it level or straight upon its surface. or before a
stone and then a burr cutter so formed as to make a finish to the end
the ribs. and also the notches in the ends of the spokes and after
are thus prepared the rim must be heated in a clear furnace an
shrunk upon the spokes. which will then form a wheel perfect
true from the centre every way or it may be done in any other wa

Commissioner may please. I mention it only the more fully to illustrate the construction of the wheel &c

What I claim as my invention is the internal flanches or ribs within the same periphery of the rim of the wheel and the form and mode of setting the spokes so as to connect them and the rim together without screw bolts or rivets as set forth in the above specification or in any other form or mode of construction which effects the same purpose by the same principles

Witnesses
James H. Stimpson
Julia M. Stimpson

James Stimpson

Drawing

1918 words