(No Model.)

E. DANFORD.

FELLY FOR VEHICLE WHEELS.

No. 332,593. Patented Dec. 15, 1885.

Fig. 1.

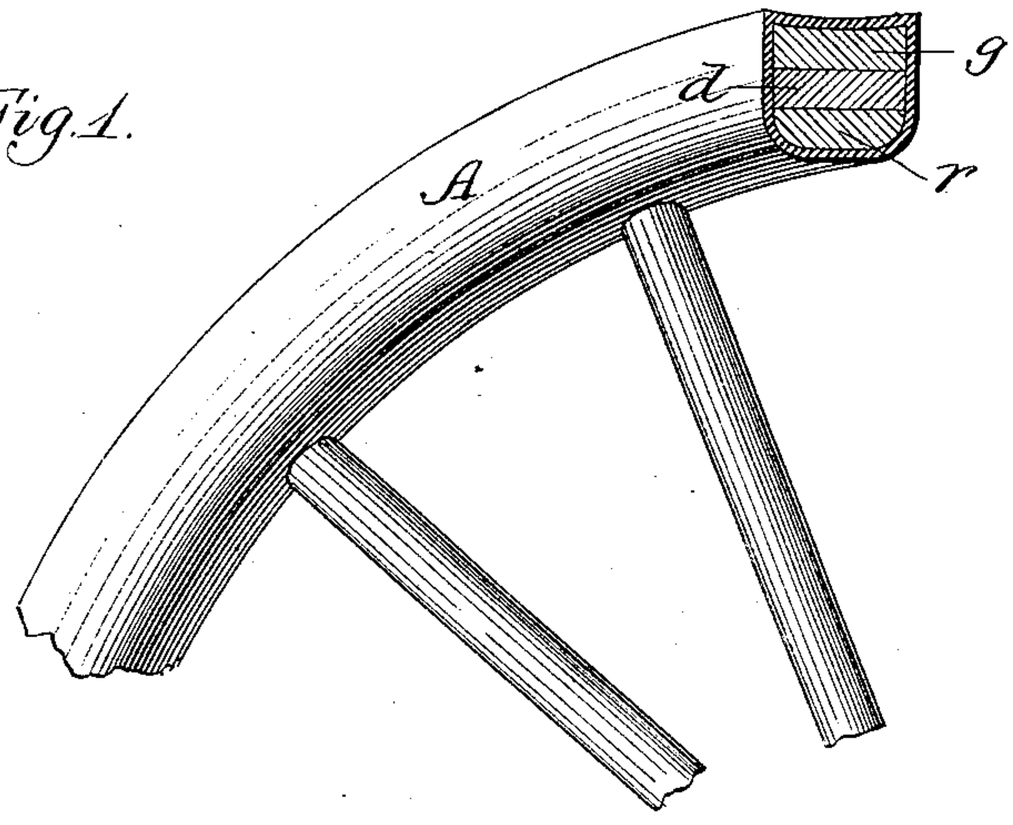
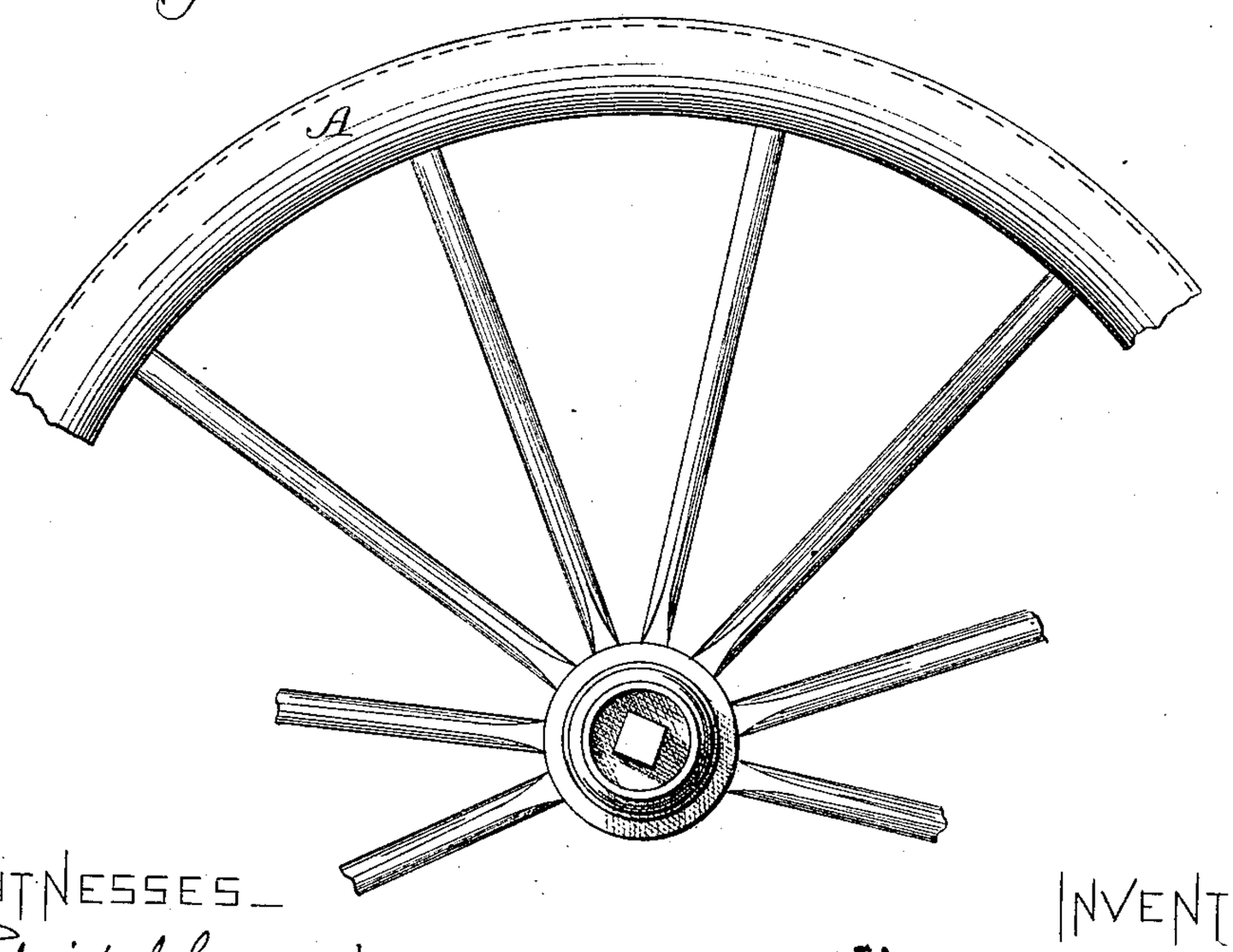


Fig. 2.



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UNITED STATES PATENT OFFICE.

EBENEZER DANFORD, OF GENEVA, ILLINOIS.

FELLY FOR VEHICLE-WHEELS.

SPECIFICATION forming part of Letters Patent No. 332,593, dated December 15, 1885.

Application filed October 16, 1882. Serial No. 74,403. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER DANFORD, a citizen of the United States, residing at Geneva, in the county of Kane and State of Illinois, have invented a certain new and useful Improvement in Fellies for Vehicle-Wheels, of which the following is a specification.

My invention relates to the filling of hollow metal fellies with wood or equivalent material; and it consists in separating such filling into layers or divisions overlying each other.

I have illstrated my invention by the accompanying drawings, in which Figure 1 is a cross-sectional view of my improved felly, showing a wood filling composed of three layers or divisions. Fig. 2 is a side elevation of the same, showing a section of a wheel.

Like letters represent like parts in the different views.

A indicates the outer wall of a hollow or tubular metal felly.

g, *d*, and *r* indicate the layers or divisions of the wood or other suitable material used for filling the inside of the felly.

I obtained Letters Patent of the United States, No. 262,650, dated August 15, 1882, for an improved combination-felly, the outer wall being of metal and the inside having a filling of wood or equivalent material.

My invention, as therein set forth, has much value, as vehicle-fellies thus constructed are far superior to such as are made of an outer wall of metal, the inside being hollow.

My previous patent of the date and number stated provides for filling the interior of the felly with a single piece or strip of wood, solidified paper, or other equivalent material, of dimensions corresponding with such interior. While this construction is suitable for fellies of medium size, I find it not to meet all of the requirements in making wheels for heavy trucks and wagons, or for light vehicles, where thin metal is desirable for the outer wall of the felly. As a hollow or tubular metal felly of this description is first filled and then bent between rollers into the requisite circular form, it has been demonstrated by experience that when the filling is of hard well-seasoned wood, or of any other material suitable for this use and having the required solidity and strength, the strain produced by the operation of bending is greater than the metal is capable of sustaining, both in very heavy fellies and in those of light weight.

Metal fellies, or such as have an exterior of metal and an interior filling of wood or other suitable material, are so far superior to those made entirely of wood, because of their increased strength and durability, that they have been found to be particularly serviceable and desirable for the construction of heavy trucks designed to carry a great weight, as well as for light road-wagons and buggies. In the construction of very heavy trucks strength and durability are the two elements most sought after, while in vehicles of the other class mentioned lightness of weight is desired, in addition to durability. When the filling consists of a single piece, the bending necessarily expands the outer portion, while the inner portion is correspondingly contracted or compressed. The filling being confined within prescribed and fixed limits, the bending of the same into a circular form cannot but produce the result stated, because of the inequality between the inner and outer arcs of the circle thus formed. In heavy truck-fellies the strain produced by the bending of a single piece of hard wood or equivalent material is frequently greater than the surrounding metal can sustain; and when the resisting power of the wood is greater than that of the metal the felly, after being bent, will partially loses its circular form. This fact, when very hard and well-seasoned wood is used for the filling, not infrequently makes it necessary in heavy truck-fellies to use a thickness of metal which would not otherwise be required, as it will be readily seen that to thus bend the felly and have it retain its proper shape the metal outer wall must have a resisting power greater than the interior filling. In making fellies of this class for light vehicles it has been found that the outer metal or tube may be made quite thin, when steel is used, and yet meet all the requirements of strength and durability. An outer steel wall of one twenty-fourth part of an inch in thickness has been found to answer the purpose when the filling has been compact and strong. Even steel of such light weight will not always stand the strain and pressure of being bent when filled with hard wood or other hard material.

My invention overcomes these defects in

combination metal and wood fellies. By having the filling in layers or divisions overlying each other the strain and outward pressure produced by bending are greatly reduced, so much so that heavy truck-fellies may be thus successfully constructed, as also may be those intended for light vehicles having a thin metallic outer wall. As these layers are not fastened together, it will be seen that they will to a considerable extent yield, and thus conform more readily to the expansion and compression produced by bending than would solid filling. It is this separation of the filling into layers or divisions which constitutes my invention. These layers may be of wood, solidified paper, or other equivalent material having the requisite solidity and strength. The layers should preferably be of sufficient length to extend entirely through the felly and overlie each other; but I do not desire to strictly confine my invention to this construction, as it will be possible to use filling of three layers, in which the middle layer is not formed of a continuous piece, or even when none of the layers extend the entire length of the felly, but such a construction would not be as good or strong as when the layers are continuous instead of broken. Whatever material is used, it will be found advantageous to first coat the same with oil or white lead.

It is not material as to the number of divisions used, as two will to a great extent possess the advantages set forth; but I prefer to use three layers, having found the same preferable, yet a greater number may be used, if desired. The divisions or layers are driven or inserted into the hollow metal wall of the felly while the same is straight, and the filled felly is then bent between rollers, as set forth in my previous specification, to which reference has been made.

My improvement, as will be seen, makes the construction of combination-fellies of this kind more practicable, and at the same time reduces the weight of metal required, both for very heavy and very light vehicles, which correspondingly diminishes their cost, and likewise decreases their weight without any relative decrease in safety and durability, thus uniting practicability, economy, and utility.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

In a felly for vehicles, the combination of a metallic outer wall, casing, or tube, and a filling of wood or equivalent material separated into divisions or layers, substantially as described, and for the purpose specified.

EBENEZER DANFORD.

Witnesses:
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