

No. 711,368.

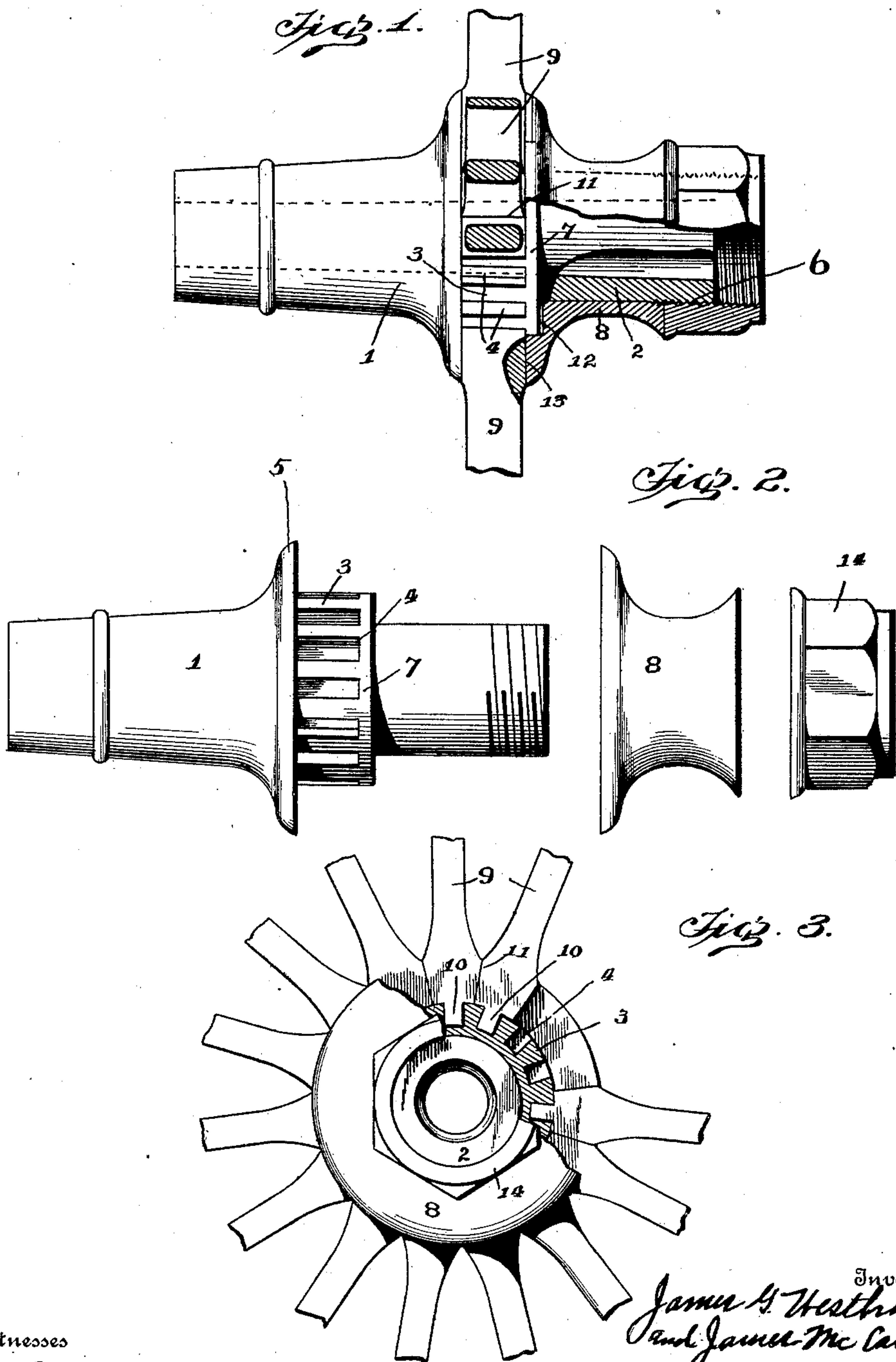
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HUB.

(Application filed Feb. 6, 1902.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

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## HUB.

SPECIFICATION forming part of Letters Patent No. 711,368, dated October 14, 1902.

Application filed February 6, 1902. Serial No. 92,800. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES G. WESTBROOK and JAMES McCASLAND, citizens of the United States, residing at Ogdensburg, in the county of St. Lawrence and State of New York, have invented certain new and useful Improvements in Hubs; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in hubs; and it consists in a hub having an axle-box, a spoke-engaging flange, and a mortise-containing portion formed of an integral piece of material, the mortises being closed at their sides and ends, a ring or cup fitting upon the axle-box and engaging the spokes, and means for holding the said ring snugly against the spokes, the structure being such that the spokes may be secured in position in the hub in constructing a wheel, so as to form a water-excluding spoke-holding portion and so as to provide a spoke receiving and holding portion of great strength.

It further consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a side elevation of a hub constructed in accordance with our invention, a portion of the same being broken away and shown in section to reveal the interior of the same. Fig. 2 is a view showing the parts of the hub in side elevation and somewhat separated. Fig. 3 is an end elevation of the hub, a portion of the same being broken away and shown in section to reveal the mortises of the hub, some of the tenons upon the spokes being shown in place therein.

Hubs of this general character have been heretofore constructed; but they have been weak and not capable of having their parts come sufficiently snugly together to make a water-excluding device in a completed wheel. The present invention is developed in order to obviate the difficulties heretofore experienced in hubs of a similar character.

As shown in the drawings, the principal

part of the hub comprises an axle-box 1, formed with a reduced portion 2 at one end, and a centrally-enlarged annular portion 3, formed with a series of outwardly-opening sockets forming mortises 4 for receiving the tenons of spokes. Upon one side of the mortised annular portion 3 is formed an annular flange 5, which extends a suitable distance beyond the mortised portion 3 to obtain considerable purchase or bearing upon one edge of each of the spokes of the wheel of which the hub is to form the center. The outer end of the reduced portion 2 of the hub is preferably screw-threaded, as at 6, so that a screw-threaded spoke-retaining cup or ring or a binding-nut may be screwed thereon for clamping the parts of the wheel together. The mortises 4 are made of a suitable depth, the inner portions or bottoms of said mortises being a trifle larger, if anything, than the open entrance portions of said mortises, so that the tenons of the spokes will fit very snugly therein and will preferably have to be driven or forced into position. It will be seen, especially by reference to Fig. 2 of the drawings, that each mortise has an inclosing wall entirely around the same. This is quite an essential feature, since mortises which are open at one end or side cannot be safely used with spokes which have to be driven into place, since such mortises are weak and unable to withstand such a strain. By the structure set forth in this application, in which the mortises have walls extending entirely around them closing the sides and ends thereof, the tenons of the spokes can be made to fit the mortises so snugly that the said spokes have to be driven into position, and all without the danger of weakening or overstraining the walls of the mortises or the adjacent portions of the hub. The closing of the mortises at the ends, especially by means of the end walls 7, makes it possible to put all the spokes into position and have them properly held therein before the cup or spoke-clamping collar 8 is put upon the hub and forced against the edges of the spokes. This structure also makes it possible for the parts of the hub to be separated and one or more spokes to be removed without the danger of all the spokes springing out of position, par-



ticularly in wheels in which the spokes are dished out or somewhat bent outwardly at their outer ends, as is common in most wheels as now built.

5 The spokes 9 are formed with tenons 10, which are made to fit snugly the mortises 4, while the adjacent portions of the spokes are formed with meeting faces, as at 11, giving the hub ends of the said spokes a wedge shape  
10 and causing them to fill completely the space between the flange 5 and the cup or ring 8 when the parts of the hub are put together. The spokes are all formed to fit quite tightly in their proper places, and in assembling the  
15 parts the alternate spokes are easily driven into position first and then the other alternate spokes are forced in between them, the whole structure being so snugly put together as to leave no space or crevice into which  
20 water or other materials may enter and reach the interior of the hub structure.

The collar 8 is formed with an annular recess 12, which fits over the inner corner or annular edge of the mortised portion of the  
25 hub, the annular flanged portion 13 of said collar being arranged to bear against the inner edges or faces of the spokes 9 and being capable of forcing the said spokes tightly against the integral flange 5 of the hub structure.  
30 The collar or ring 8 may be formed with interiorly-arranged screw-threads, if desired, for screwing upon the threads 6 of the hub; but the said collar is preferably formed, as illustrated in the drawings, without interiorly-  
35 ranged screw-threads, the collar being forced into position upon the hub and against the spokes by means of a nut 14, which is interiorly threaded in the usual manner and adapted to fit upon the threads 6 of the hub.  
40 This structure is better than the one just named in that the collar 8 may be forced against the spokes without being turned with respect to the same, since it is only necessary to turn the nut 14 to clamp the parts in position.  
45 The annular recess 12 of the collar 8 is made of sufficient depth to cause the flange 13 to come in contact with the faces of the spokes before the said collar engages the edge of the mortised portion 3 of the hub.

50 By the structure above described we find that we are enabled to construct a wheel of great strength, and yet with parts simple in form and easily manipulated. The parts of the hub can be taken apart for removing old  
55 spokes and inserting new ones at any time without disturbing the spokes which do not have to be replaced. The structure of the mortises also is especially good, since it makes it possible to use spokes which have to be  
60 driven into position, and a hub for a wheel is thus formed which is exceedingly tight and impervious to the weather or outside conditions. The spokes also can be clamped in position by the use of a single collar or re-

movable ring, the ring being forced to its position by an ordinary nut. 65

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A hub, comprising an axle-box, a mortised spoke-receiving portion formed thereon, having a series of mortises formed with walls at their sides and ends for completely inclosing them, an integral flange on one side of said mortises, and a movable collar or ring  
70 for clamping the spokes of the wheel in position in said mortises and against said flange, substantially as described. 75

2. A hub, comprising an axle-box having a mortised spoke-receiving annular portion, the said mortises having walls entirely inclosing them, spokes having tenons adapted to be driven snugly into said mortises, an outer spoke-engaging flange formed integral with said axle-box, and a ring adapted to be  
80 fastened upon the axle-box so as to bear against the inner side of the said spokes and clamp them against the flange on the axle-box, to hold them in position in said mortises, substantially as described. 85 90

3. A hub, comprising an axle-box having a reduced screw-threaded portion formed thereon, an annular mortised spoke-receiving portion, and a projecting annular flange to one side thereof, spokes having tenons adapted to be forced into position in said mortises so as to bear snugly against each other to form a strong arch around the hub, a clamping ring or collar having an annular recess to fit over the edge of the said mortised portion, but not bearing against the same, the outer edge of said ring opposing the flange on the axle-box and holding the spokes tightly against the same, and means for holding said collar tightly against the spokes, substantially as described. 95 100 105

4. A hub, comprising an axle-box, an annular mortised portion, and a flange formed thereon, a removable collar having an annular recess adapted to fit over the end walls of the mortises, the said annular recess being made of greater depth than the thickness of the said end walls so as not to bear against them, an annular flange formed on said collar outside the said recess for clamping the spokes  
110 against the flange on the axle-box, the depth of the said annular recess permitting the ring to be forced tightly at all times against the spokes, and means for holding the said ring in position, substantially as described. 115 120

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

JAMES G. WESTBROOK.  
JAMES McCASLAND.

Witnesses:

GEORGE B. SHEPARD,  
CHARLES HYDE.