(No Model.) 3 Sheets—Sheet 1.

N. L. HOLMES.

WAGON HUB.

No. 343,274. Patented June 8, 1886.

Fig. 1.

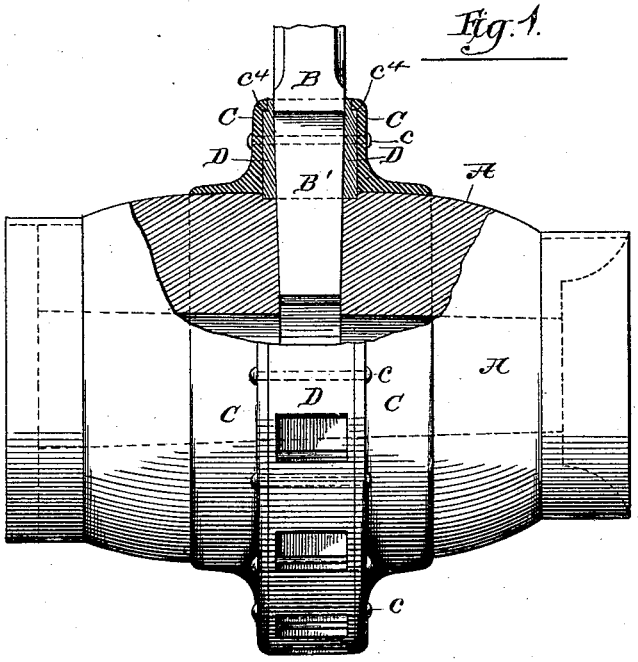
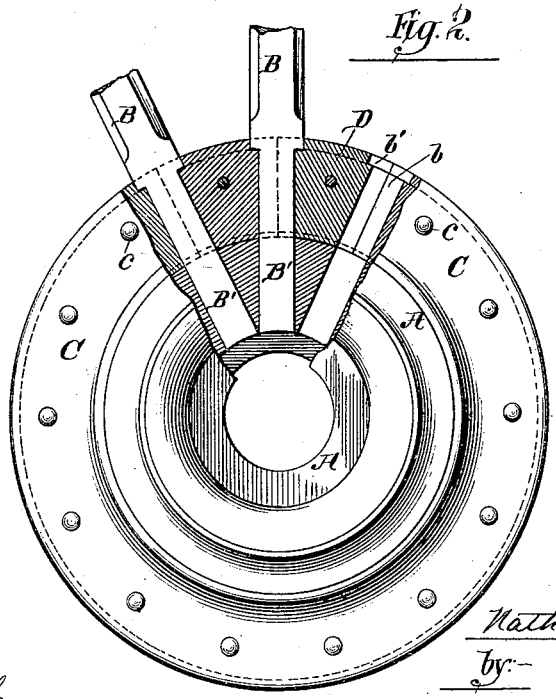


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

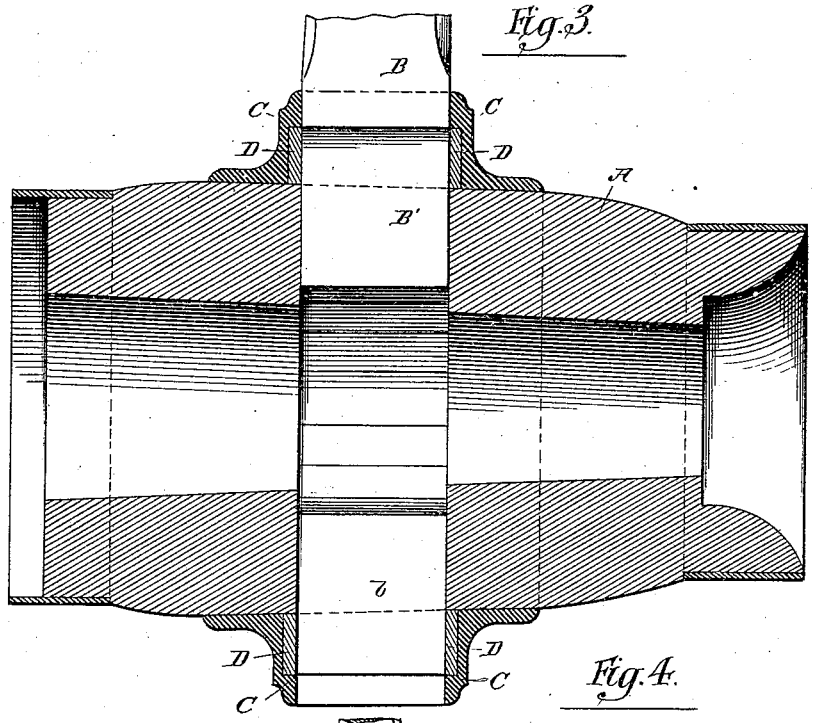
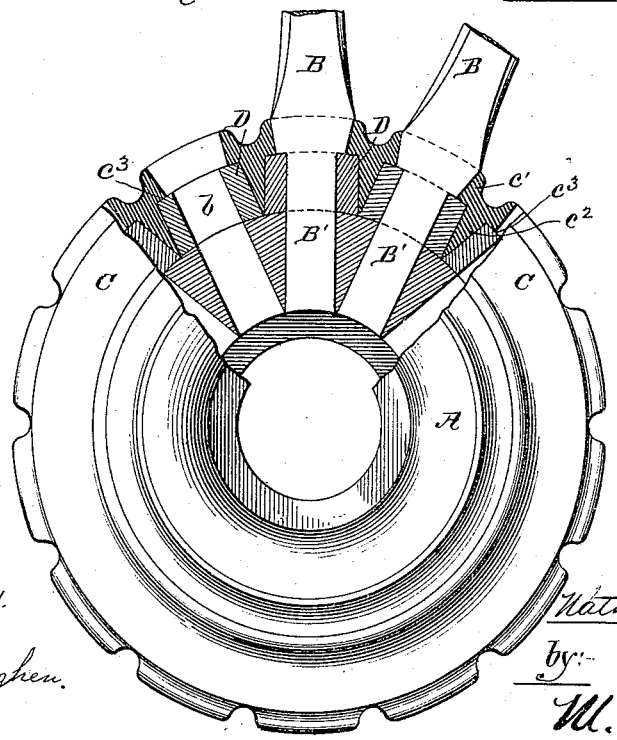


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 5.

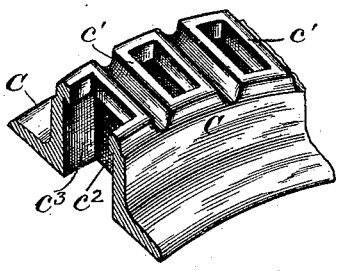


Fig. 6.

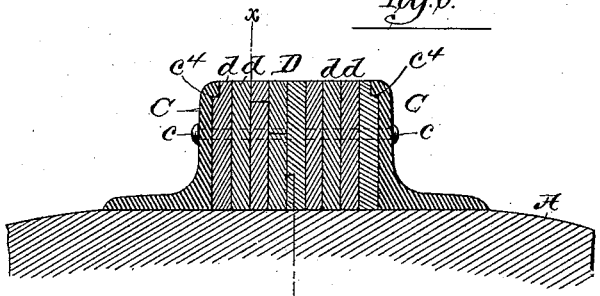
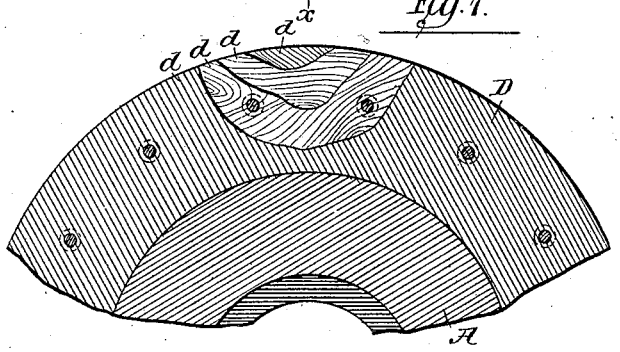


Fig. 7.



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UNITED STATES PATENT OFFICE.

NATHAN L. HOLMES, OF RACINE, WISCONSIN.

WAGON-HUB.

SPECIFICATION forming part of Letters Patent No. 343,274, dated June 8, 1886.

Application filed August 26, 1885. Serial No. 175,351. (No model.)

To all whom it may concern:

Be it known that I, NATHAN L. HOLMES, of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Wagon-Hubs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of wagon-hubs in which one or more metal flanges or flanged bands encircle the hub where the spokes enter the same for the purpose of enlarging the diameter of the hub at this point, and thus increasing the support of said spokes.

The invention has for its object to supply a wooden seat for the spokes in those parts thereof which are laterally embraced between the metal flanges. The invention is more especially intended for the larger class of hubs, as for heavy wagons, and it presents the advantage of affording the desirable wooden seat or socket throughout the length of the spoke-tenon without the use of a central hub proper of corresponding diameter.

Heretofore in the use of a socketed metal spoke-band, or of two separate metal flanges encircling the hub and embracing the spokes, that part of the spoke which is laterally embraced by the band or flanges rests in contact with the metal. As is well known, the hold of a wood tenon embraced within metal surfaces is far less tenacious and reliable then when seated in wood. The part-metal construction has, therefore, little favor in the case of heavy wagons, wherein wooden hubs of the full diameter required to properly seat the spokes are preferably employed. But the quantity of available hub-timber of large size is now greatly reduced and such sticks as are suitable have become quite expensive, such expense being materially increased by the long time required in properly seasoning the same, and the large loss of sticks from checking in the operation of drying.

By the present invention it is proposed to secure the practical advantages of a wooden hub of the full diameter that would be required to afford wooden seats for the spokes, while in fact employing a hub proper of much smaller diameter.

The nature of the invention will be further set forth in the following description of the drawings.

In said drawings, Figure 1 is a side elevation and partial axial section of a wagon-hub constructed in one form in accordance with my invention, or having a continuous wood body made up of segmental blocks and encircling the main hub or hub proper. Fig. 2 is an end view and partial transverse section through the mortises of the construction shown in Fig. 1. Fig. 3 is an axial section of a hub of another construction, but also embodying my invention, the difference from that shown in the preceding figures being, that the metal body is a single socketed band containing inner recesses, in which separate wooden blocks are placed to receive the spokes. Fig. 4 is an end view and partial transverse section throughout the mortises of the construction shown in Fig. 3. Fig. 5 is a fragment in perspective of the socketed spoke-band present in Figs. 3 and 4. Fig. 6 is a fragmentary axial section of a hub in which the outer and encircling wood body is made up of a number of thin wooden rings.

In said drawings, A represents the main hub as being of wood. B B are wooden spokes, of which B′ B′ are the hub-tenons.

C C are annular metal flanges, which encircle the hub on opposite sides of the spokes in a familiar manner. In Figs. 1, 2, and 6 said flanges are shown as separate and as being tied or clamped inwardly upon the intervening wood by means of bolts or rivets *c c*, while in Figs. 3, 4, and 5 they are connected to form a single socketed band by means of the cross-bars c' c^2 cast integral with the flanges C.

D D is a body of wood placed external to the main hub A, and held in place thereon by means of the flanges C. The mortises for the spokes are made through this exterior wood body and into the central or main hub, as represented at *b*, Figs. 2 and 4.

In Figs. 1 and 2 the wood body D is indicated as being made up of a series of segmental blocks extending from one spoke-mortise to the next; or, in other words, with the spoke-mortises *b* made through the radial joints at which the blocks meet. The grain of the wood forming these blocks preferably runs in a substantially radial direction. If desired, the

mortises may be cut through the middle of the blocks, instead of between them.

In Figs. 3, 4, and 5 the metal structure C C is shown as having recesses c^3, separated by the wedge-shaped portions c^2 of the cross-bars, into which recesses the wooden blocks D are inserted from the inside, being, of course, so placed before the band is put on the hub A, and being held outwardly in place by means of said hub. To insure a properly close fit in the recesses of the band and suitable firmness in the finished hub, the blocks D, in this particular form of the invention, should be made of such size as to require forcing into the sockets, and then left so full at their inner ends as to insure their hugging closely on the hub A when the ring or band is driven thereon.

In Figs. 6 and 7 the wooden body D is represented as being composed of several relatively thin annular rings, *d d*, clamped together firmly between two separate flanges, C C, through which and the intervening wood body pass a series of clamping bolts or rivets, *c c*. Desirably these rings will be separately glued on their contiguous surfaces before being pressed or clamped together, in order to give greater unity to the body D, and the grooves of the several rings will be diversely arranged in a familiar manner, and as illustrated in Fig. 7.

To better confine the continuous wood body D, (shown in either Figs. 1 and 2 or 6 and 7,) the flanges C C are preferably provided with inward projections of the character illustrated at c^4, Figs. 1 and 6, which positively engage the said wood body and hold the same from radial displacement. A single shallow marginal and inwardly-turned rib on each flange or plate C, as shown in said Figs. 1, 2, 6, and 7, will be a favorable construction for this purpose, and will be preferable to a similar rib located a distance inward from the margin of the flange, for the obvious reason that it is exterior to nearly the entire body of wood to be retained. The wood body D may be turned of proper form to admit this rib, or the rib may be compressed into the wood.

In the construction of the wood body D of separate but continuous blocks, as illustrated in Figs. 1 and 2, said body may, if desired, be let a short distance into the central or main hub, A, with the advantage of increasing the strength of the wheel. To this end the hub A will have a suitable annular recess turned therein, as indicated in said figures. This is, however, not essential to the general invention.

The encircling wood body D, however constructed and however supported on the central wood hub, A, gives, with said central hub, a wood surface in contact with the tenon throughout its length, with material and obvious advantage in permanent closeness of the joint and generally in strength and durability of the wheel.

Certain minor features of construction shown in the drawings may also be observed with further advantage in the direction of strength. For example, in Figs. 1 and 2 the shoulder of the spoke-tenon is shown as seated, say, one-fourth of an inch below the peripheral surface of the wood body D, the outer end of the mortise being cut of greater width, as indicated at *b*, Fig. 2, to admit the larger part of the spoke. It is found in practice that the spoke thus seated is far less likely to break at the shoulder of the tenon when subjected to lateral strain. Another desirable detail is seen in the several transverse sections, wherein it appears that the wood body is wider than the spoke even at the ribs of the flanges C, so that there is a quantity of wood between the spoke and metal at all points. This wood, as well as the spoke, being compressed or yielding when the latter is driven and when the wheel is subjected to wrenching strains in use, a better hugging effect is obtained in the first place, and the spoke is less likely to break or loosen in such use of the wheel.

In the case of the socketed band, Figs. 3, 4, and 5, the sockets are desirably made large enough to admit the full width of the spokes, as particularly seen in Fig. 4, to insure the greatest strength attainable in this construction, and the shoulders of the tenons rest upon the wood blocks D.

I am aware that the spokes of a wheel of this general class have been placed in contact with each other within the compass of metal hub-flanges C, and that in other instances wooden wedges have been inserted between adjacent spokes in that part thereof which is laterally embraced by the flanges C. These devices are not my invention.

The special construction of the encircling wood body D, when made up of a number of flat rings, as shown in Figs. 6 and 7, is made the subject of claim in another application for patent, filed of same date herewith.

I claim as my invention—

1. The combination, with a central wooden hub, A, mortised to receive the inner ends of the spoke-tenons, of a separate external body, D, of wood, encircling the central hub, A, also mortised to admit the spoke-tenons, and affording, together with the said hub, a continuous wood surface in contact with the spoke-tenons, and suitable metal supports for the said external wood body, substantially as described.

2. The combination, with a central wooden hub, A, mortised to receive the inner ends of the spoke-tenons, of a separate external body, D, of wood, encircling the central hub, and also mortised to admit the spoke-tenons, said external wood body being composed of blocks placed with the grain thereof radial to the hub, and metal supports for said blocks, substantially as described.

3. The combination, with a central wooden hub mortised to receive the inner ends of the spoke-tenons, of a single metal band, Figs. 3, 4, and 5, provided with sockets to admit the

spokes, and having inwardly-opening recesses continuous with and larger than said sockets, and wood blocks inserted in said recesses, through which blocks the spoke-tenons pass, said blocks, together with the hub, affording a continuous wood surface in contact with the spoke-tenon, extending to the shoulder of the latter, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

NATHAN L. HOLMES.

Witnesses:
M. E. DAYTON,
G. F. LANAGHEN.