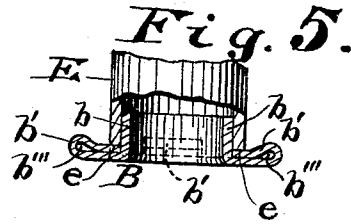
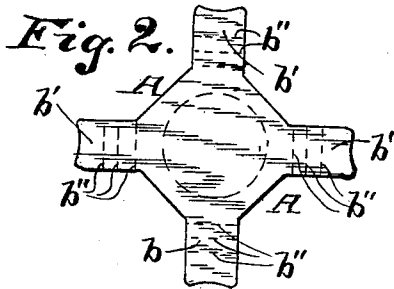
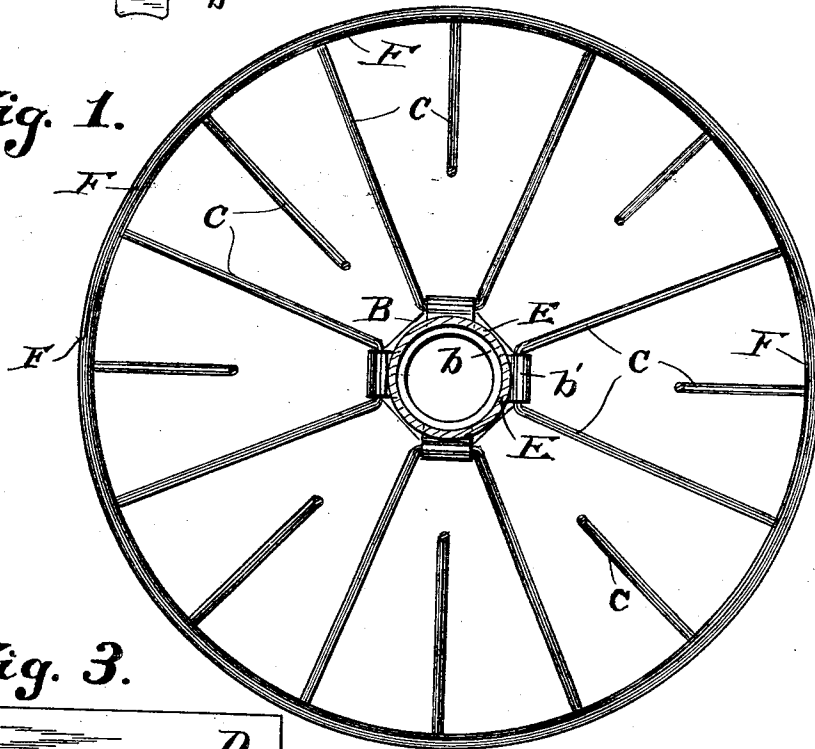


941,029.

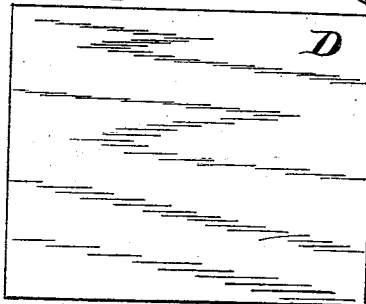
Patented Nov. 23, 1909.



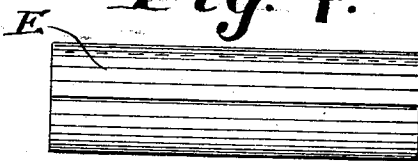
**Fig. 1.**



**Fig. 3.**



**Fig. 4.**



Witnesses:  
G. C. Adams.  
Max Quater

Inventor;  
John W. Murray;  
By Charles Turner Brown  
Atty.

# UNITED STATES PATENT OFFICE.

JOHN W. MURRAY, OF CHICAGO, ILLINOIS, ASSIGNOR TO KNOX METAL WHEEL COMPANY, OF KNOX, INDIANA.

## METAL WHEEL-HUB.

941,029.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed November 18, 1907. Serial No. 402,657.

*To all whom it may concern:*

Be it known that I, JOHN W. MURRAY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metal Wheel-Hubs, of which the following, when taken in connection with the drawing accompanying and forming a part hereof, is a full and complete specification sufficient to enable those skilled in the art to which it pertains to understand, make, and use the same.

This invention relates to metal wheels wherein the felly is a rigid metal ring or band, the spokes are of wire, and the hub of metal. And the object of this invention is to obtain a metal hub formed or pressed up from ductile sheet metal as soft sheet steel, brass, or other like material.

Another object of the invention is to obtain a durable and strong hub at small expense. And an additional object of the invention is to obtain a hub which will be pleasing in appearance when contained in a wheel, and which will give to the wheel a slightly and symmetrical look.

In the drawing referred to Figure 1 is an elevation of a metal wheel embodying this invention with the hub in section and with the spokes which are attached to one end of the hub broken away. Fig. 2 is a plan of a blank from which the ends of the hub are, respectively, formed up. Fig. 3 is a plan of a blank from which the tube forming an element of the hub is formed up. Fig. 4 is a tube formed up from the blank illustrated in Fig. 3, such tube forming an element in a hub embodying this invention, and Fig. 5 is an elevation of one end of a hub embodying this invention, with the spoke engaging part thereof and a portion of the tube shown in section.

A reference letter applied to designate a given part is used to indicate such part wherever the same appears throughout the several views.

A is a blank from which the combined spoke and tube engaging portion of the hub is formed up.

B, (Figs. 1 and 5) is a combined spoke and tube engaging part, formed up from blank A. Part B comprises the tubular portion *b*, which is forced out from blank A, and the

projecting arms *b'*, *b'* bent up on the lines indicated by broken lines *b''*, *b''*, *b''*, in Fig. 2. The projecting arms *b'*, *b'*, are, respectively, of sufficient length to come in contact, or nearly so, at the ends thereof, with the peripheral surface of the tubular portion *b*; and, as can be observed in Fig. 5, such projecting arms are so bent that the wire spokes C, C, may, respectively, be held therein, as at *b'''*.

D is a blank from which the tube E is rolled or pressed up. The inner diameter of the tube E is of substantially the same size as the outer diameter of the tubular portion *b* of part B.

The ends of projecting arms *b'*, *b'*, respectively are near to contact with the periphery of the tubular part *b*, in the making of part B; as when so made the end of the tube E comes in contact with the side of such projecting arms, as at *e*, *e*, Fig. 5, and such contact tends to maintain such arms in substantially the position thereof shown, thus strengthening such arms. The tendency of the spokes C, C, being to straighten out the projecting arms *b'*, *b'*, I believe considerable strength is added to the part B by the construction given.

In assembling the several parts forming a hub embodying this invention the spokes are put into engagement with the projecting arms *b'*, *b'* of the part B, (duplicate of such parts B being used, one at each end of the hub), such spokes are put through corresponding holes in felly F and there riveted, and the tubular portion *b* of part B is put into one end of the tube E, as shown in Fig. 5. The whole wheel is thereby completed, with the exception of the tire, which forms no part of this invention.

The construction of the felly F and the riveting of the spokes C, C, therein is old in the art.

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

The combination of a felly, a tube, spokes respectively provided with bends, and combined tube and spoke engaging devices respectively arranged to engage with the tube and with the spokes between the bends therein, each of such spoke engaging devices comprising a central tubular portion arranged

to fit within the end of the tube and provided with projections having, respectively, return bends arranged to bring the ends of such projections near to contact with the  
5 peripheral surface of the tubular portion and the sides in contact with the ends of the tube, and the ends of the spokes arranged to

engage with the felly; substantially as described.

JOHN W. MURRAY.

In the presence of—

CORA A. ADAMS,

CHARLES TURNER BROWN.