

(No Model.)

A. R. MILLER.
VEHICLE WHEEL.

No. 409,610.

Patented Aug. 20, 1889.

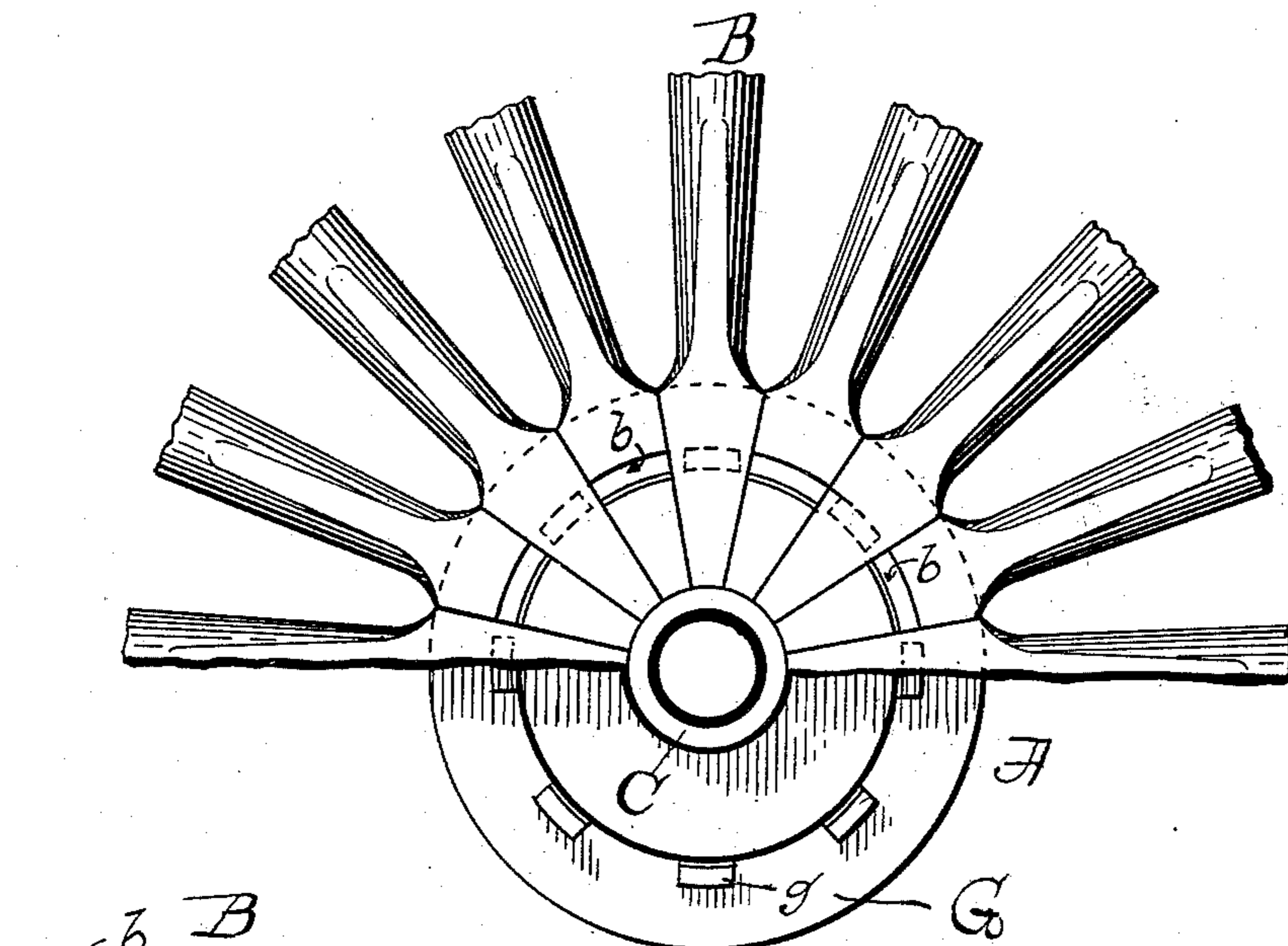


Fig. 2

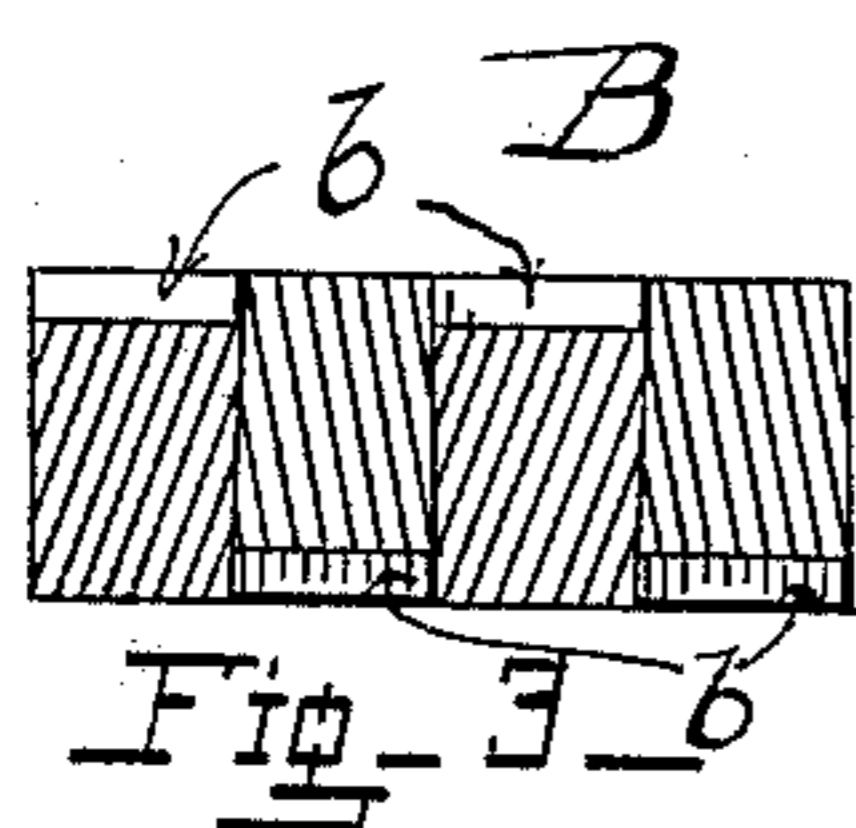
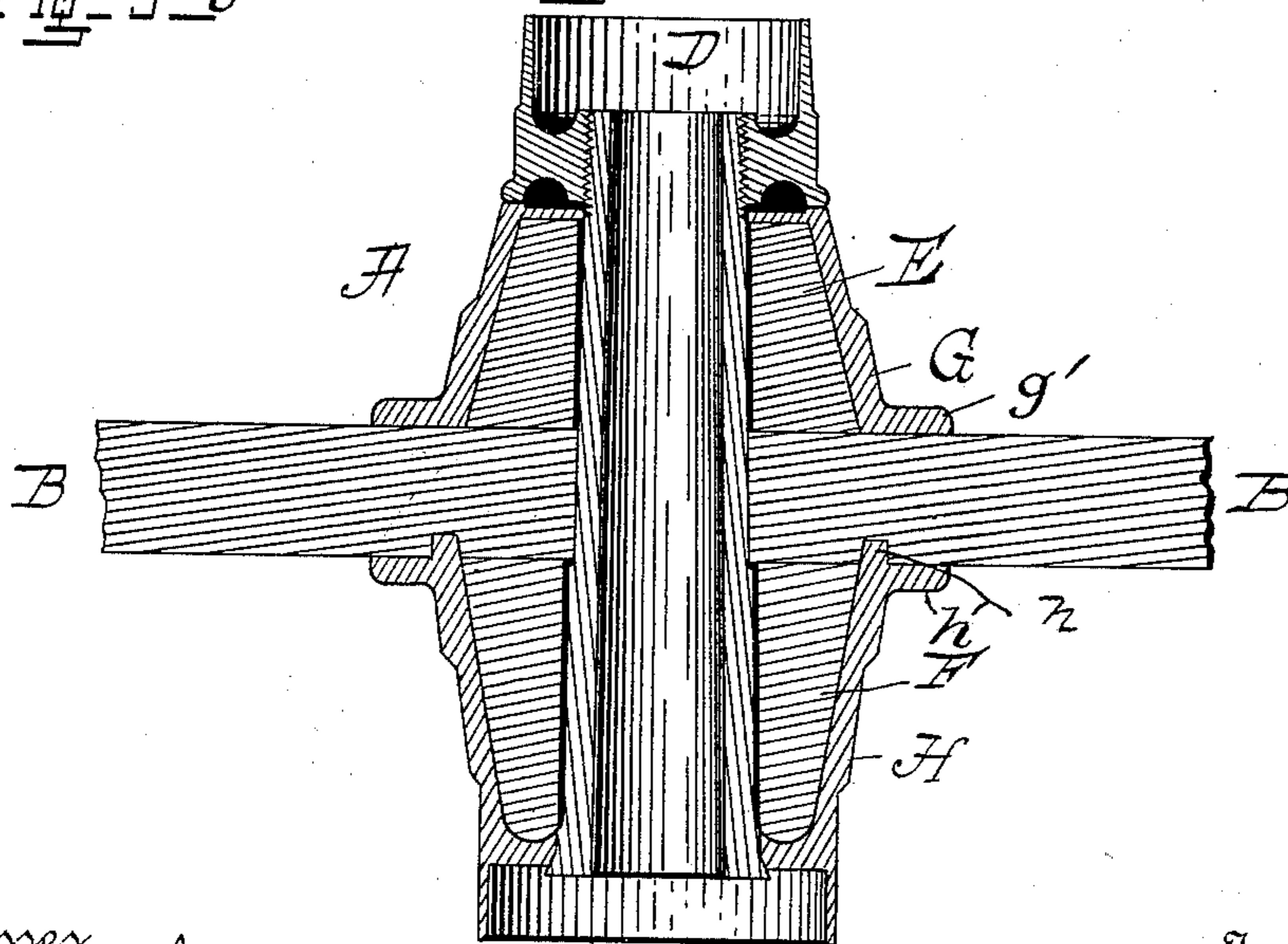


Fig. 1



Witnesses
A. P. Wood
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UNITED STATES PATENT OFFICE.

ASA R. MILLER, OF ATLANTA, GEORGIA.

VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 409,610, dated August 20, 1889.

Application filed December 28, 1888. Serial No. 294,870. (No model.)

To all whom it may concern:

Be it known that I, ASA R. MILLER, a citizen of the United States, and a resident of Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Vehicle-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to the class of vehicle-wheels in which the hub is made of several pieces, the object being to supply a hub in which the spokes are clamped securely together and securely fastened into the hub without weakening the spokes. This hub also gives a large contact of wood with wood, the lack of which has been the objection to iron hubs as heretofore constructed, such contact giving the iron hub about the same elasticity as a wooden one without the disadvantageous qualities of a wooden hub.

The invention is an improvement upon that for which United States Patent No. 391,377 were granted to me on the 16th day of October, 1888.

In the accompanying drawings, Figure 1 is a central section through the hub and two opposite spokes, showing the interior construction and arrangement of parts. Fig. 2 is a section through the axle-box on the line of one edge of the spokes and the clamping-face of the cap G with its lugs, the cap H and collar F being removed. Fig. 3 is a section on line *x x*, Fig. 2, projected on a flat surface, showing the bevel on the spokes for tightening them as they are forced into place.

In the figures, like reference-marks indicating corresponding parts in the several views, A is the hub, and B the spokes having notches *b*, C being the axle-box and D the nut.

E and F are collars of wood of sufficient hardness, preferably of about the same texture as the spokes.

G and H are caps having the lugs or projections I.

The axle-box and the nut may be of any

construction suitable for the purpose; but the construction shown is thought preferable—that is, the axle-box having a tapering annular head fitting a hole through the cap H, of corresponding form, and a nut D. The axle-box may be prevented from turning in the cap H by a feather on the box and a corresponding seat in the said cap. The caps G and H should be of tassy form for light vehicles; but for very heavy vehicles they may be made very strong, the form shown being capable of great strength at a comparatively small weight, and they are made hollow in order that the collars E and F may be placed therein. The caps G and H have on their clamping-faces the lugs I, the said lugs being alike on both caps in all particulars, and adapted to engage with the notches *b* in each alternate spoke, the notches being so shown in Figs. 2 and 3. These lugs might be made in the form of rings and extend around the entire faces continuously; but I do not make them so for the following reasons, viz: that it materially weakens the wheel to have the whole series of spokes cut on the same side of the wheel, but I alternate the notches on both sides, thus leaving solid wood on the side of each alternate spoke on both sides of the wheel, which leaves it very much stronger than were all the spokes thus notched even on one side of the wheel. These spokes are preferably glued together in constructing the wheel, which, taken in connection with the alternate notching of the spokes, leaves, in effect, a breadth of material equal to the whole breadth of the spoke. The lugs I are made narrower than the spokes at the point at which they enter the spokes, for two reasons: First, because it facilitates the construction of the wheel by obviating any difficulties that might arise from inequalities in the castings, or inequalities in the spokes, the latter of which might arise from putting in the last spoke thicker or thinner to make it exactly fill. A second reason is that in case the spokes are not glued the lugs will indent themselves into the sides of the notches sufficiently to prevent those remaining slipping out of place when one or more spokes are removed, and when the spokes are glued together in the hub to remove one or more

spokes the joints may be sawed entirely through after having removed the caps G or H, and preferably the axle-box C.

5 It will be observed by reference to Fig. 3 that the spokes are wedge-shaped on the sides where they come in contact when in place, and that the notches *b* are cut in the head of the spoke on the heavy side.

10 By reference to Figs. 1 and 2 it will be observed that the inner faces of the lugs I are inclined, the inclination being sufficient to draw the spokes against the axle-box, while their wedge shape in cross-section (shown in Fig. 3) will render it easy to make tight
15 joints.

In some cases it might be desirable to avoid a contact of the caps G and H with the edges of the spokes, in which case the caps might be so constructed, dispensing with the flanges
20 *g'* and *h'*, that they would not come in contact with the spokes, and rings of metal carrying the lugs I might be inserted in the wood or other filling E and F; or these lugs might be made integrally with the parts E and F.

Having thus described my invention, what I 25 claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a vehicle-wheel hub, the combination of spokes dovetailed in cross-section and having notches *b* with sloping inner sides, caps 30 G and H, adapted to enter said notches and press with a corresponding sloping face against the inner side of the notches *b*, and means, as shown and described, for clamping said caps against the spokes. 35

2. In a vehicle-wheel, the combination of the spokes B, having notches *b* placed alternately on each side of the wheel, the caps G and H, having lugs *g* and *h* arranged to enter each alternate spoke on the opposite side, the 40 axle-box C, and nut D, all arranged and operating as shown and described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ASA R. MILLER.

Witnesses:

A. P. WOOD,
A. A. WOOD.