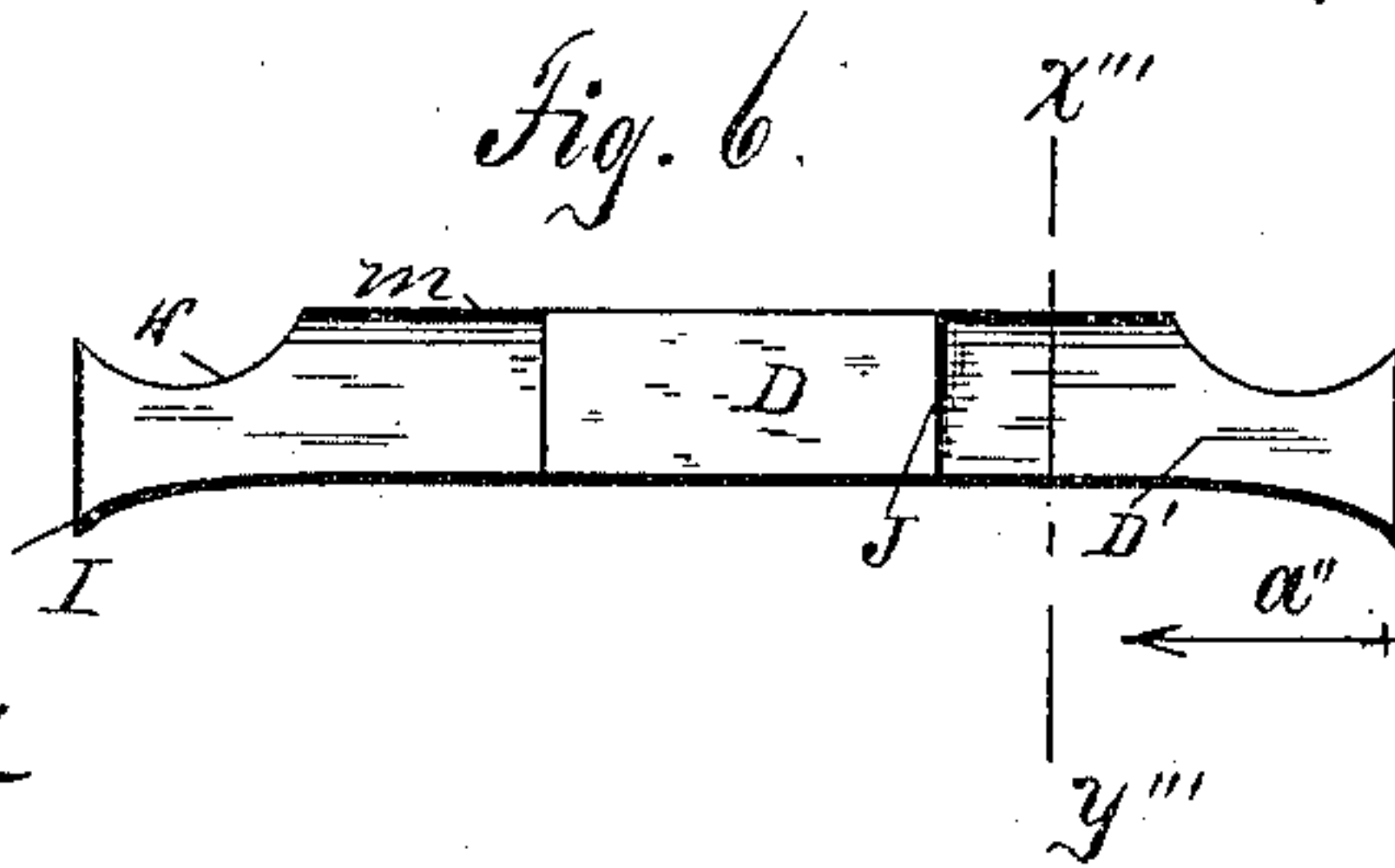
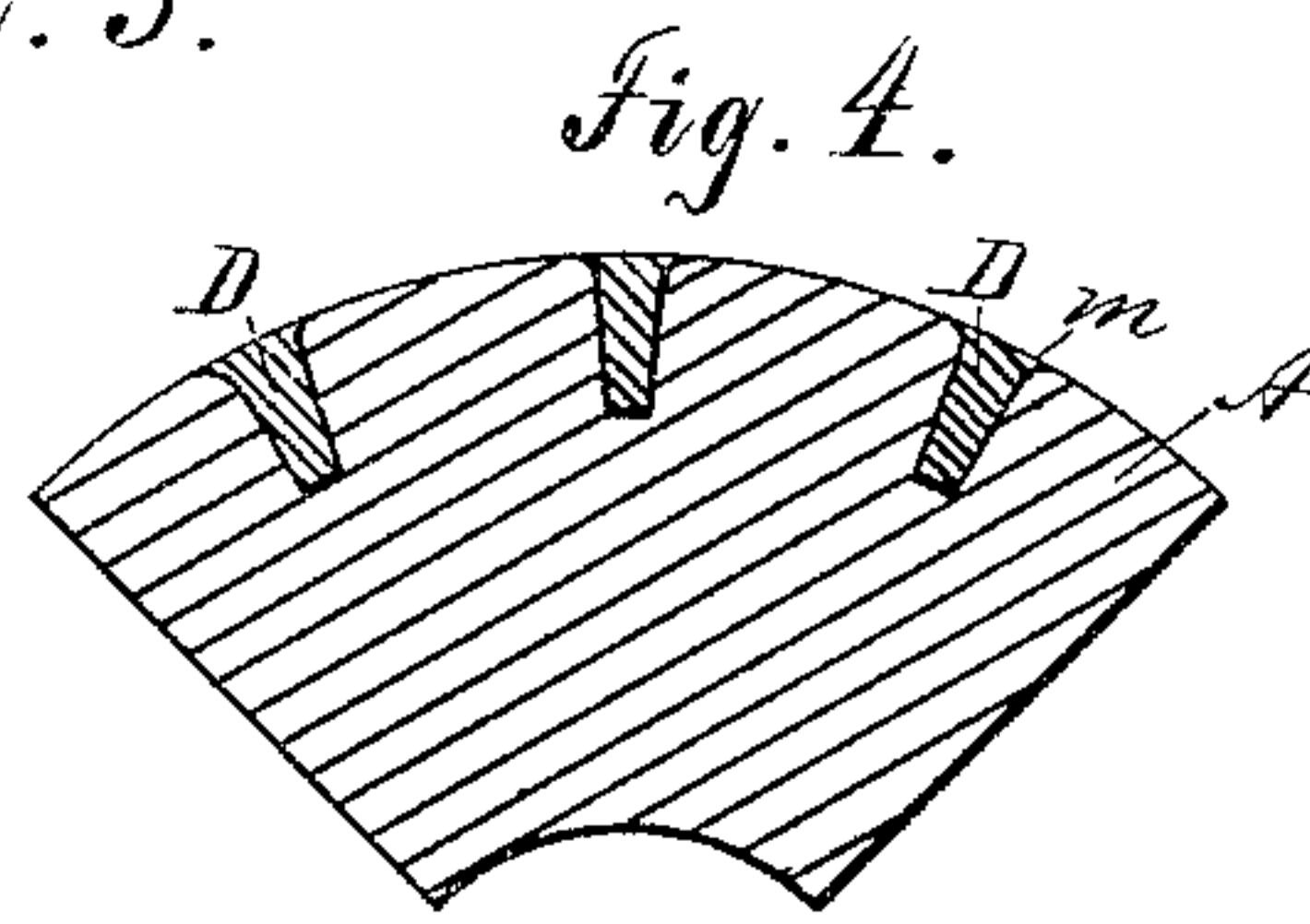
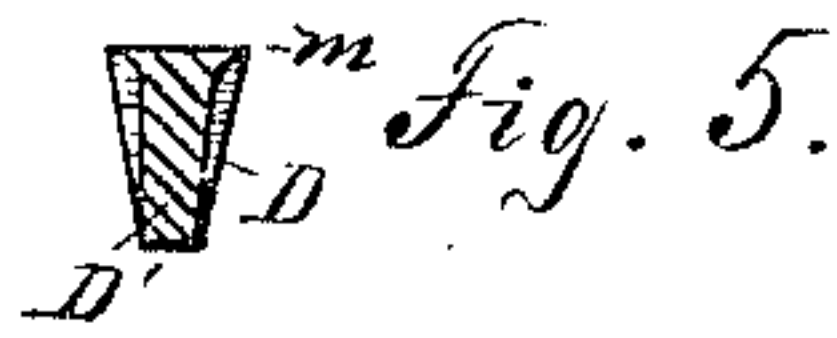
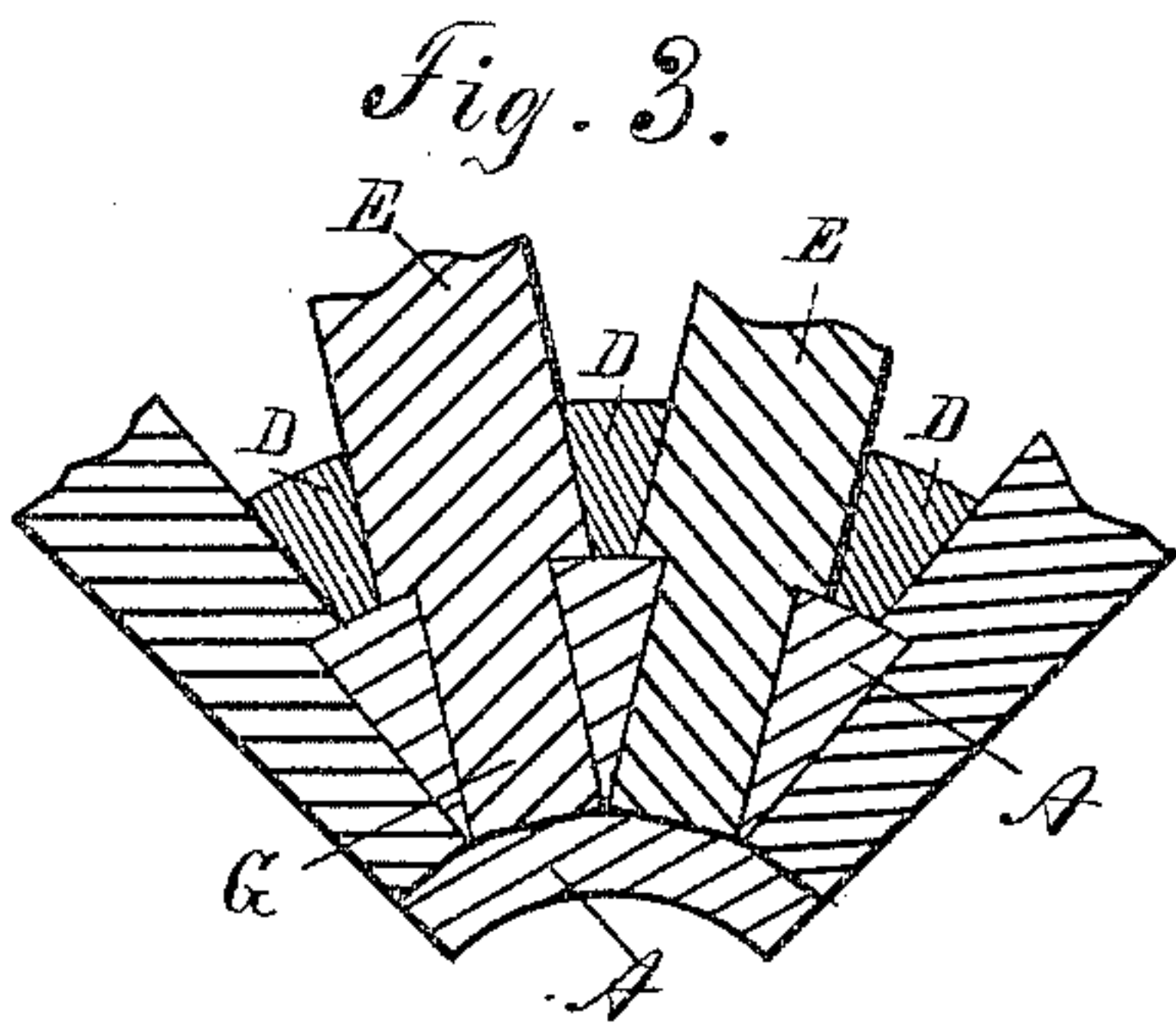
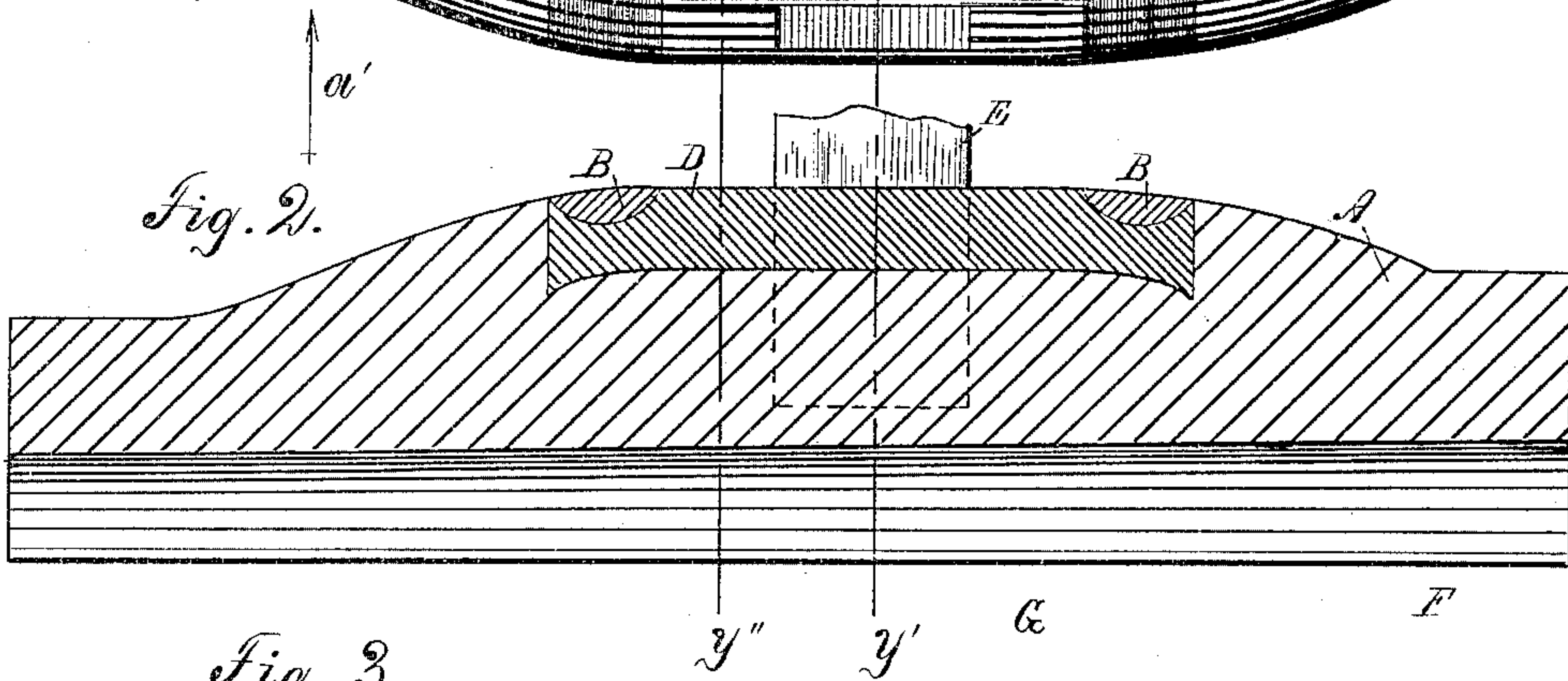
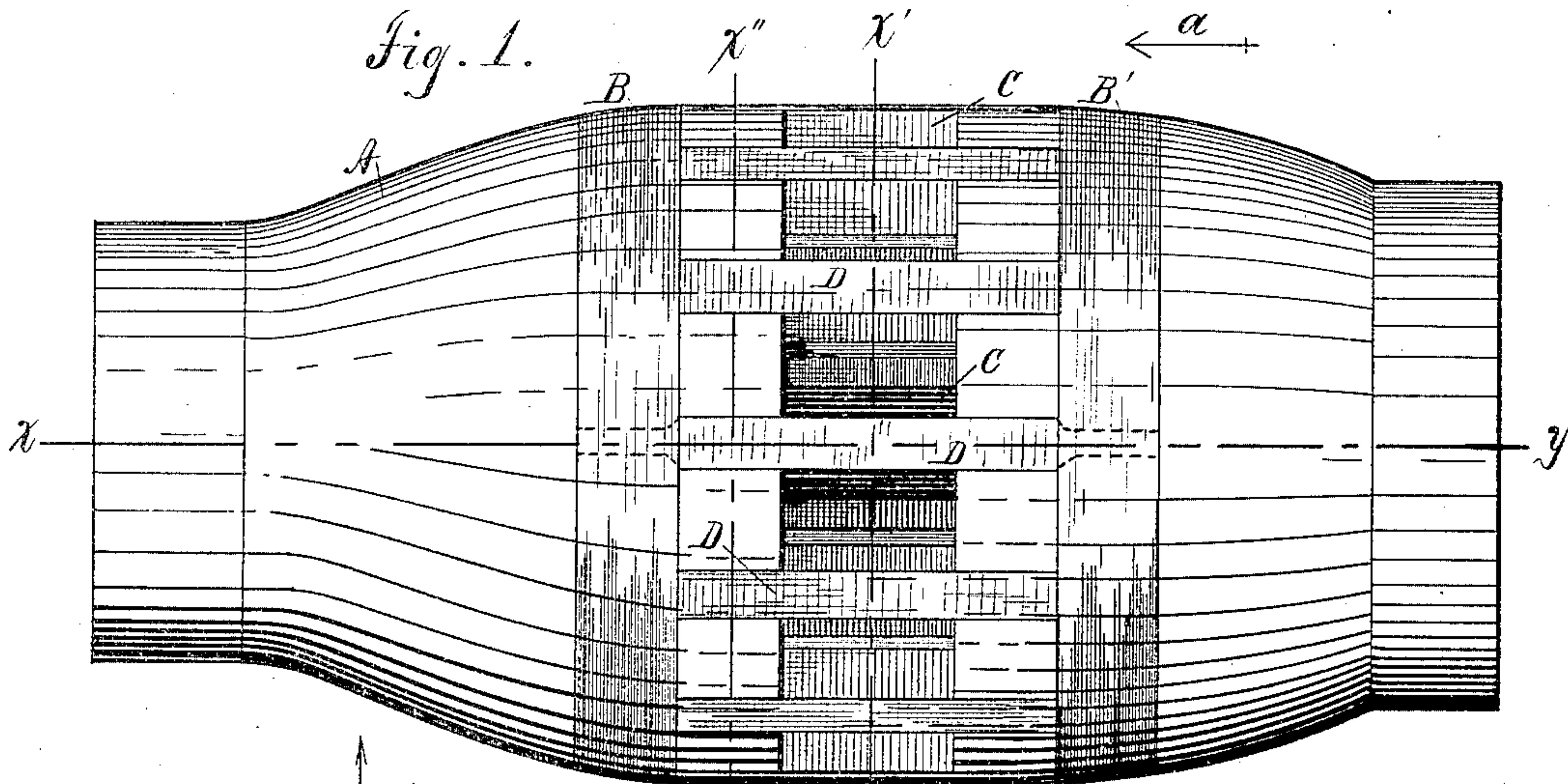


(No Model.)

C. W. FILLMORE.  
HUB FOR VEHICLE WHEELS.

No. 324,928.

Patented Aug. 25, 1885.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHARLES W. FILLMORE, OF MARENGO, ILLINOIS.

## HUB FOR VEHICLE-WHEELS.

SPECIFICATION forming part of Letters Patent No. 324,928, dated August 25, 1885

Application filed July 16, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. FILLMORE, a resident of Marengo, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Hubs for Vehicle-Wheels; and I 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 pertains to make and use the same.

My invention relates to improvements in hubs for vehicle-wheels, and is fully described and explained in this specification and shown in the accompanying drawings, in which—

Figure 1 is a plan of a hub embodying my invention; Fig. 2, a longitudinal central section thereof through the line  $x y$ , Fig. 1, the view being in the direction indicated by the arrow  $a'$ , Fig. 1; Fig. 3, a transverse section of a portion of the hub through the line  $x' y'$ , Fig. 1, the spokes of the wheel being in position in the hub, and the view being in the direction indicated by the arrow  $a$ , Fig. 1; Fig. 4, a transverse section of the hub through the line  $x'' y''$ , Fig. 1, looking in the same direction as in Fig. 3; Fig. 5, a transverse section of one of the retaining-plates  $D$  through the line  $x''' y'''$ , Fig. 6, looking in the direction indicated by the arrow  $a''$ , Fig. 6; Fig. 6, a side elevation of one of said retaining-plates.

In these views,  $A$  is a wooden vehicle-hub of ordinary outward form, and having the usual spoke mortises,  $C$ , adapted to receive the full-sized ends of a series of spokes,  $E$ , and also the ordinary tenon-mortises, which are narrower than the spoke mortises  $C$ , and receive the tenons  $G$  of the spokes.

Between each of the spoke-mortises and the one next to it on either side is a metal retaining-plate,  $D$ , of a width equal to the space between the two contiguous mortises, and of a depth preferably equal to that of the spoke-mortises. Each of the retaining-plates extends a considerable distance beyond the end of the spoke-mortise in either direction, the projecting ends of the plate being embedded in suitable grooves in the body of the hub, and the outer surface of each of the plates being flush with the surface of the wooden portion of the hub.

At either end of each of the retaining-plates, and at a considerable distance from the end of

the spoke-mortise, is a notch or depression,  $H$ , in the outer face of the plate, and in the wood of the hub are formed annular grooves of the same cross-section as the notches or depressions in the plates, and forming therewith continuous annular channels, encircling the hub, and preferably at equal distances from the spoke-mortises. In each of these channels is a metal ring or band,  $B$ , shrunk into place in the usual manner, and fastening the plates  $D$  securely in place. I prefer that the outer surfaces of these rings shall be flush with the general surface of the hub, as shown in the drawings; but this is not essential. I also prefer that each of the bands shall be substantially half-oval in cross-section; but the form of the band is evidently not material.

The central part or body,  $D$ , of each of the retaining-plates is a truncated wedge, thickest at the surface of the hub, and growing thinner as it approaches the axis. Its opposite surfaces form the lateral faces of the two spoke-mortises between which it lies, and it is, in fact, nothing more or less than a partition between said mortises.

From the body  $D$  outward in either direction the plate is somewhat thinner than the body, its thickness being preferably about the same as that of the thinnest part of the truncated wedge  $D$ .

Between the body  $D$  and each of the depressions  $H$ , each of the plates has formed on its outer surface a cap,  $m$ , extending outward on either side of the plate, and preferably flush with the surface of the hub and of the same width as the outer face of the body  $D$ . When the plates are in place in the hub, the caps  $m$  guard against the admission of moisture to the grooves in which the plates are embedded, and at the same time add to the finished appearance of the hub. They are a material addition to the perfection of my invention, but are nevertheless not absolutely essential to its successful operation.

An examination of the hub shown in the drawings and above described will show that it has the advantages without the disadvantages of the ordinary banded wood hub. The removal of the wood between the spoke-mortises and the substitution therefor of the retaining-plates permits the formation of a mortise large enough to receive the full-sized



end of the spoke within the body of the hub; and at the same time the setting of the bands B B at a considerable distance from the spokes leaves a body of wood at each end of each of the spoke-mortises, and thus affords a comparatively elastic cushion for each edge of the spoke.

The principal strains which a spoke receives when in use in a wheel are the endwise thrust, which it constantly receives, and the edgewise strain, communicated to the spoke through any lateral pressure on the wheel. The endwise thrust on the spoke is taken up by the hub-surfaces on which the end and shoulder of the tenon rest, and it is essential that these surfaces be of wood and not of metal. The edgewise strain on the spoke is received by the material at the ends of the spoke-mortises, and it is exceedingly desirable that these surfaces be also of wood rather than of metal. It has long been common to strengthen the hub by the application of bands or flanges encircling the hub and in contact with the edges of the spokes; but the edgewise strain already spoken of tends constantly to chafe and wear the spokes against such bands or flanges, and eventually to greatly weaken the spokes at the point where they most need strength—viz., at the surface of the hub. By the arrangement shown I strengthen the hub by the substitution of metal for wood where the added strength is most needed, and where the presence of the metal is unobjectionable, and at the same time I leave intact the wooden cushions, which are required to stand the severest strains to which the spokes of the wheel are subjected.

Having now described and explained my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a mortised wooden hub, of a series of metal retaining-plates lying between the spoke-mortises, but extending beyond the ends of said mortises toward both ends of the hub, and having their projecting ends embedded in the wood of the hub, and two rings or bands encircling the hub and the ends of said retaining-plates, each of said rings being separated from the spoke-mortises by a portion of the wood of the hub.

2. The combination, with a mortised wooden hub, of a series of retaining-plates lying be-

tween the spoke-mortises and forming the side faces thereof, but extending beyond the ends of said mortises toward both ends of the hub, and having their projecting ends embedded in the hub, and two bands or rings encircling the hub and the ends of said retaining-plates, and resting in annular channels cut in said hub and said plates, each of said rings having its outer surface flush with the surface of the hub, and being separated from the spoke-mortises by a portion of the wood of the hub.

3. The combination, with a mortised wooden hub and a series of spokes inserted in the mortises thereof, of a series of retaining-plates lying between the spokes and within the surface of the hub, and extending toward the ends of the hub beyond the spokes, and two rings or bands encircling the hub and the ends of said retaining-plates on opposite sides of the spokes, but not in contact therewith, each of said retaining-plates being provided with an integrally-formed cap extending from the spokes to each of the encircling rings, and each of said caps being flush or approximately flush with the surface of the hub.

4. The combination, with the mortised hub A, of the retaining-plates D, lying between the spokes mortises and having the flanges *m*, and the rings B, encircling the hub and the ends of the retaining-plates, and separated from the ends of the spoke-mortises by parts of the wood of the hub.

5. The combination, with the mortised hub A, of the retaining-plates shown and described, each consisting of a central body, D, lying between two contiguous mortises, and two projecting ends embedded in the wood of the hub and formed with caps *m* and depressions H, and the rings or bands B, encircling the hub and lying in said depressions and in annular channels in the hub continuous with said depressions, substantially as shown and described, and for the purpose set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES W. FILLMORE.

Witnesses:

S. WHIPPLE GEHR,  
T. G. FISH.