

(No Model.)

2 Sheets—Sheet 1.

G. W. HOWELL.

WHEEL.

No. 303,853.

Patented Aug. 19, 1884.

Fig. 1.

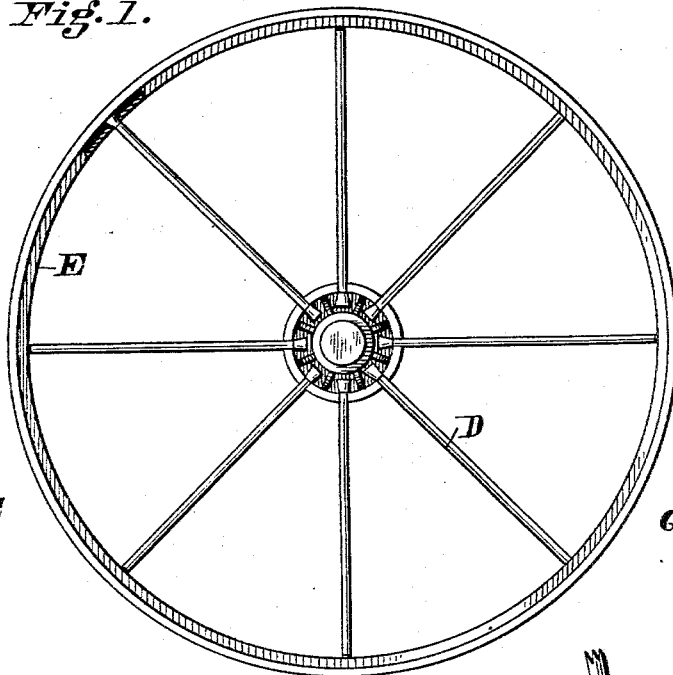


Fig. 8.

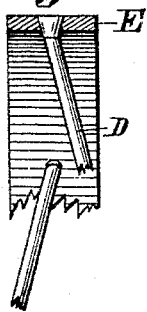


Fig. 9.

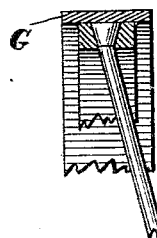


Fig. 2.

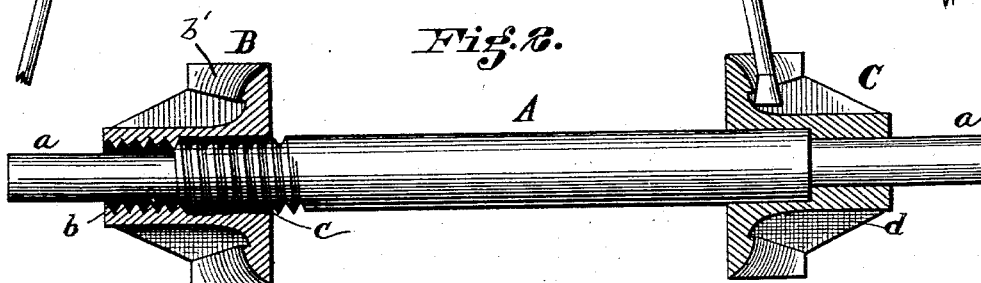


Fig. 3.

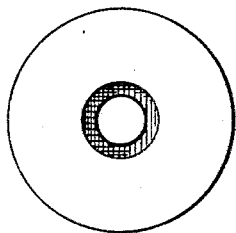


Fig. 4.

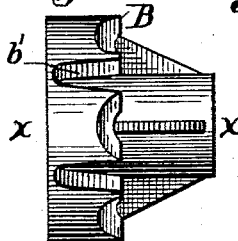


Fig. 6. I

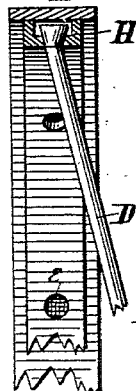
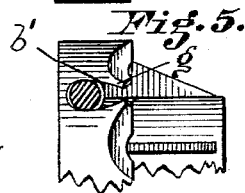


Fig. 7.



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Fig. 10.

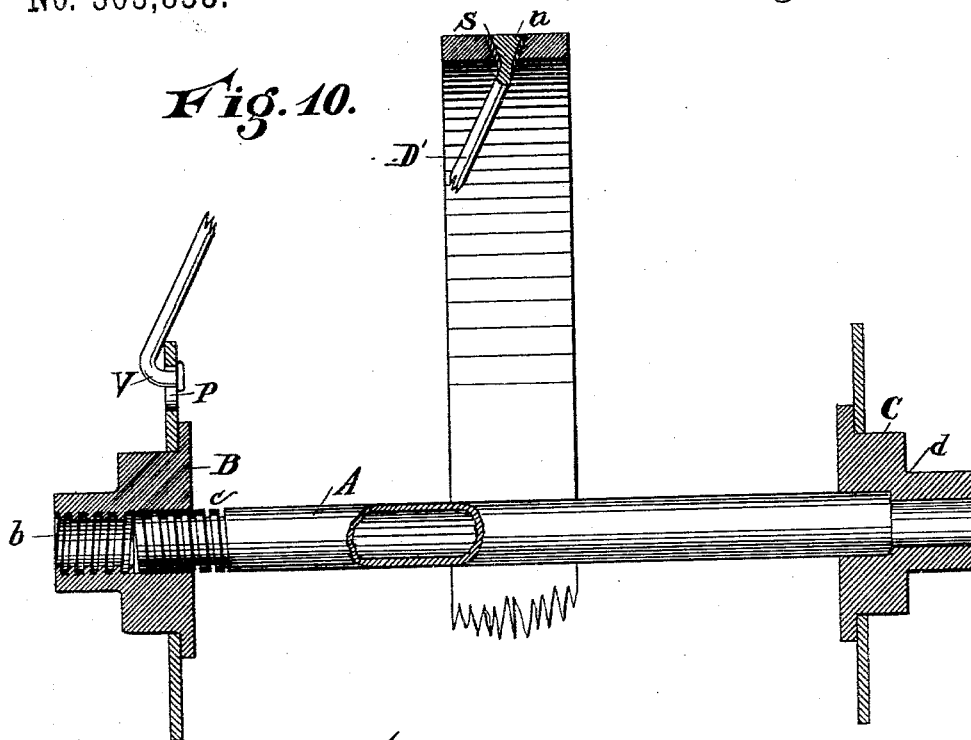


Fig. 11.

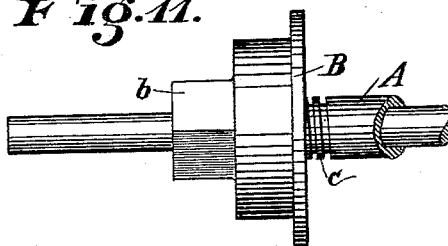
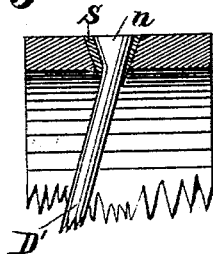


Fig. 12.



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his attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. HOWELL, OF COVINGTON, KENTUCKY.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 303,853, dated August 19, 1884.

Application filed March 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HOWELL, of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Wheels, of which the following is a specification.

My invention relates to a wheel adapted to be used for buggies, sulkeys, wheelbarrows, velocipedes, and as pulleys for shafting.

The object of my invention is to provide a cheap, strong, and durable wheel or pulley, and one which can be used either with or without a tire, and which may be strained by simply turning the axle, all of which will be fully set forth in the description of the accompanying drawings, in which—

Figure 1 is a side elevation of my improvement. Fig. 2 is a longitudinal sectional elevation of the axle and hubs; Fig. 3, an inside elevation of one of the hubs; Fig. 4, a top plan view of the same. Fig. 5 is a top plan view of the modified form. Fig. 6 is a sectional elevation of one form of rim having a tire; Fig. 7, a similar view having a modified form of tire. Fig. 8 is a sectional elevation of the ordinary rim, shown with the spokes in position. Fig. 9 is a similar view of the same rim, showing the metallic tire thereon. Fig. 10 is a central section, partly in elevation, showing a modified form of wheel; Fig. 11, an elevation of a modified form of hub; Fig. 12, a detail section showing the improved method of straining the spoke.

A represents the axis of the hub. It may be made solid and projecting through the flanged collars B and C, and provided with gudgeons *a*, to serve as axial journals, on which the wheel revolves; or the axle may be made hollow in form of a sleeve, and serve as a journal-bearing on the axle revolving therein, as shown in Fig. 10. Another modification would be to construct the axis of the hub A with a square opening for the insertion of a square shaft.

B and C represent collars, which are combined with the sleeve or shaft A to form the hub of the wheel. Collar B is shown as shouldered or recessed at the inner end of its bore. The outer end of the bore is provided with screw-threads *b*, which engage with threads *c*, chased upon the shaft A. The opposite end

of the shaft A is likewise provided with a shoulder, which journals in a correspondingly-shaped bearing provided in collar C.

D represents the spokes, which are preferably headed and inserted through holes *e*, pierced in the rim E. The inner end of the spokes D in Fig. 1 are shown as provided with a head, which engages with slots *b'*, pierced in the flange of the collar B or C. Instead, however, of connecting the inner end of the spokes to the collars in the manner there shown, the flanges of the collars may be slotted and the spokes bent to form hooks and inserted therein, as shown in Fig. 10.

D' represents an improved form of spokes, which consists in a taper bush, *r*, which is lined around the taper head *s* of the spoke D'. The hook *v*, formed on the end of the spoke, is small enough to pass through a hole pierced in the rim of the wheel, and adapted to be hooked in a slotted flange, P, which is constructed as shown in Letters Patent No. 293,251, granted me February 12, 1884, except the flange P is pierced with a round hole and slips over the collars B and C, and is retained by a shoulder formed on the inner periphery of said collars. One flange may be made solid with the collar C.

Fig. 5 shows another modified form of securing the inner ends of the spokes, the points of the metal *g* each side of the slots *b'* being pressed together, so as to grasp the spoke and hold it securely in position.

The wheel is put together in the following manner: The spokes D are connected to the rim G, and the inner end of every other spoke is connected to collar C by either of the methods herein described. The shaft A is then inserted into the collar C. Collar B is then secured upon the shaft A a sufficient distance to allow the alternate spokes to be properly secured to its flange B. Then the axle A is turned in the direction which will spread the collars B C, the shaft A turning freely on its journals in collar C to engage with the threads in the collar B and separate the collars. This spreading should be continued until the outer end of the threads *c* on the shaft A fall behind the inner thread, *b*, on the nut B.

If desired, the threads may be made square, as shown in Fig. 10, when there will be no ma-

terial tendency to draw the axle inward by the revolution of the shaft A; or a jam-nut or other fastening device may be made to secure the collar B in a fixed relative position to the shaft A. By this means of making the hub of the collar B and the shaft A threaded at one end only the wheel can be cheaply and easily made, and the spokes and rims strained to any requisite degree, and fixed readily in their strained condition, making at once a cheaper, stronger, and more durable wheel than any hitherto made.

In some instances it is desired to employ a narrow rim or felly with a wide metallic tire, as in the use of pulleys for shafting, in which case I prefer to employ a channel-rim, H, as shown in Figs. 6 and 7, the hubs of the spokes D resting in the channels, the flanges of which are sufficiently high to come above the level of the outer ends of the heads of the spokes. The faces of the channels are then turned or trued off, so as to be perfectly circular, and the metallic bands I may be secured thereon, either by shrinking or rivets, as desired.

Instead of using a plain tire, I, it may be provided with flanges *h*, projecting down inside of the channel-felly H, and between the sides of the channel and heads of the spokes, to more securely hold them in position, as illustrated in Fig. 7.

Fig. 9 shows the form of rim illustrated in Fig. 8, around which the metal tire G is shrunk or secured.

When it is desired to make what is called a "knockdown wheel," the spokes D should be made readily detachable from the flanges of the hubs B in any desired form, and their inner ends should be sufficiently small to be allowed to pass through the holes *e* in the rim E.

When it is desired to use a veneer or wooden surface to form the rim of a driving-pulley, the channel-iron H should be employed, with the sides or flanges of the channel projecting up a sufficient distance to receive the desired fill outside of the ends of the spokes; or fibrous substances may be used or employed to fill the channels, if desired.

In velocipede-wheels the rim may be provided with a circular groove for the reception of the rubber tie, and when the channel-rim H is employed the channel should be circular instead of rectangular, as here shown.

Instead of setting or locking the shaft to the collar of the wheel after the parts have been strained by the means herein shown, a threaded

screw-tap engaging with the threads *b* in the collar B might be employed. It could be screwed up to abut against the threads of shaft A and prevent it from being turned. This would close the orifice or recess in the outer end of collar B and give a finish to the wheel. When an inside shaft is used, journaling the shaft A, this screw-tap should be in the form of a sleeve, with the threads chased upon the outer periphery.

Having described my invention, what I claim as new is—

1. A wheel-hub consisting of the collar B, having the flange forming a part thereof, and constructed with an interior screw-threaded bore, the collar C, having an attached flange and an interior smooth bore, and the shaft A, having a screw-thread at one end engaging the flanged collar B, and adapted to freely rotate in the smooth bore of the collar C, and the spokes connected at their inner ends to the flanges forming part of the two collars, said shaft by its rotation moving the flanged collar B outward to strain the spokes, substantially as described.

2. The combination of the axle A, having the screw-thread *c*, the collar C, in which one end of the axle can turn, the collar B, having an interior screw-threaded bore, and a flange provided with open-ended slots *b'*, and spokes D, having heads at their inner ends, detachably engaged with the slots in the flange of the collar, said shaft by its turning movement acting to move the threaded collar outward to strain the spokes, substantially as described.

3. The combination, with the turning-shaft and the collar C, of the longitudinally-adjustable collar B, having a flange provided with the open-ended slots *b'*, and the spokes D, having heads at their inner ends loosely engaging the open slots in the flange, to permit the spokes to be strained by the adjustment of the collar, substantially as described.

4. A wheel-hub composed, substantially, of the flange-collars B C, one of which is provided with female threads *b* at the outer end, adapted to receive the threaded shaft A, which in straining the wheel is turned out of engagement with collar B to lock the collars apart, substantially as specified.

In testimony whereof I have hereunto set my hand.

GEO. W. HOWELL.

Witnesses:

ANDREW E. SCOTT,
A. GLUCHOWSKY.