

(No Model.)

F. KLINGELHÖFER.
WHEEL.

No. 532,159.

Patented Jan. 8, 1895.

Fig. 1.

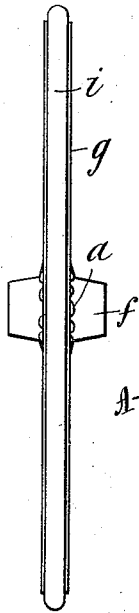


Fig. 2.

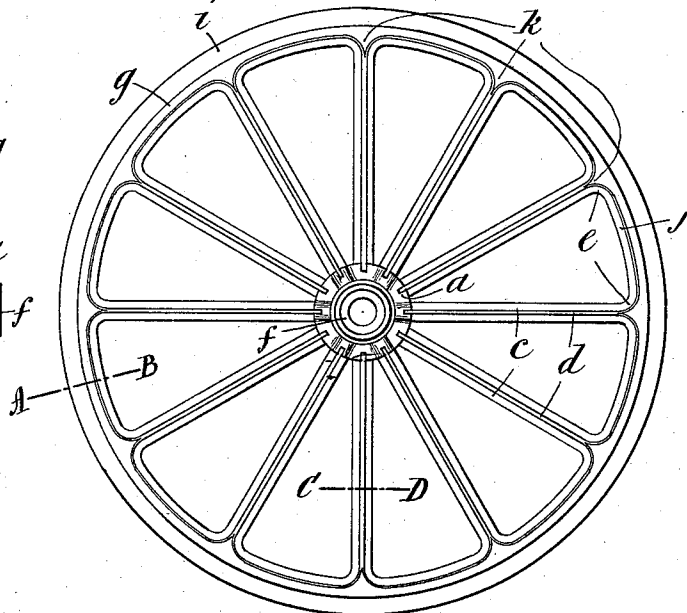


Fig. 3.

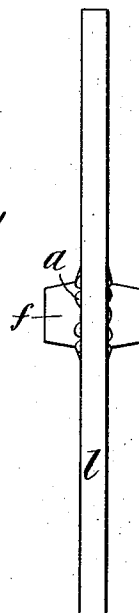


Fig. 4.

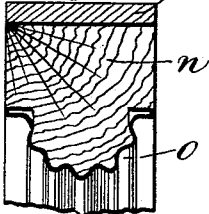


Fig. 5.

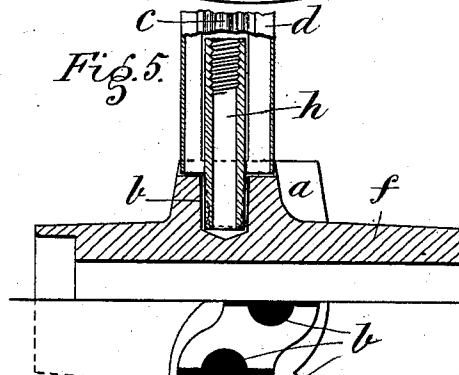


Fig. 6.

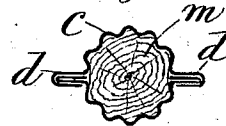


Fig. 7.

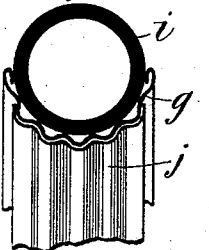


Fig. 8.

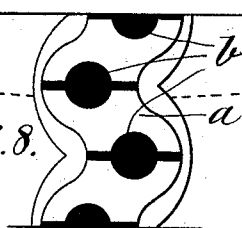
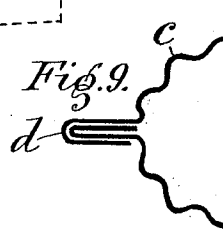


Fig. 9.



Witnesses.

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FELIX KLINGELHÖFER, OF LONDON, ENGLAND.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 532,159, dated January 8, 1895.

Application filed December 9, 1893. Serial No. 493,238. (No model.) Patented in England November 20, 1893, No. 22,192.

To all whom it may concern:

Be it known that I, FELIX KLINGELHÖFER, mechanical engineer, a subject of the Queen of Great Britain, residing at 32 Clanricarde Gardens, Notting Hill, in the city of London, England, have invented new and useful Improvements in Wheels, (for which I have made application for a patent in Great Britain, No. 22,192, bearing date November 20, 1893,) of which the following is a specification.

My invention relates to improvements in wheels, which consists of a metallic hub with a zig zag socketed collar, and into which corrugated metallic spokes fit, surrounded by a corrugated sheet steel rim.

The object of my invention is to provide a rigid wheel constructed mostly of corrugated sheet steel of a light and strong description for every class of vehicle. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a front elevation of a wheel with an india rubber tire. Fig. 2, is a side elevation of Fig. 1. Fig. 3, is a front elevation of a wheel with a metallic tire. Fig. 4, is a section of the rim of Fig. 3. Fig. 5, is a longitudinal section of half the hub and a part of the fitting of a spoke. Fig. 6, is a section on line C. D. Fig. 7, is a section on line A. B. Fig. 8, is one fourth of the plan of the circumference of the socketed collar on the hub. Fig. 9, is a half section of a metallic spoke.

Parts of the figures are drawn to an enlarged scale, and are broken off for convenience.

Similar letters refer to similar parts throughout the several views.

The zig zag collar *a* is formed on its outer periphery into a number of slotted sockets for the reception of the ends or flanges of the ends of the spokes. The lower inner portions of the sockets *b* are made tapering, for reasons to be hereinafter explained. Each spoke *c* is constructed in two parts. In order to effect this, a number of pieces of flat steel are first corrugated longitudinally, leaving a flange *d* on each side of the corrugations and are then bent round a templet so as to form an isosceles triangle with the corners *e* rounded. The free ends of the segments thus formed are inserted into the taper sockets *b* on the hub *f*, and are then pressed home. It will

thus be seen that two adjacent sides of two adjacent segments will form one spoke, while the base of the isosceles triangle will form a segmental portion of the rim of the wheel. The flanges *d* which are formed on each side of the longitudinal corrugations with the corrugated portion will constitute a cylindrical spoke *c* with lateral ribs. A wood spoke *m* may if preferable be inserted inside the metallic spoke as in Fig. 6. The sockets *b* on the hub *f* are slotted about half their depth on each side so as to receive the flanges *d* and thus afford additional support and rigidity to the spokes *c*. The flanges do not extend to the extreme ends of the segments, and the opposing faces of the ends of the corrugations are slightly beveled so as to enable the adjacent segments to be forced in the taper sockets by tapped hollow steel plugs. When the segments are in position in their sockets, all their bases forming the periphery are surrounded by a corrugated rim *g* to receive an india-rubber tire *i*. The corrugated rim *g* may be constructed in one piece. Upon the inner surface of the rim are formed semi-circular projections or beads which are intended to fit into the depression or corresponding corrugations of the periphery *j* of the combined segments. The rim *g* is bent to the requisite circular form and is then placed round the wheel so as to encircle the combined segments, and compressing it into the peripheral depressions. Its two ends are then joined together in any suitable and practical manner. If necessary the small triangular spaces *k* between the rounded corners of the segments and the rim *g* may be filled by small chocks composed of any suitable material.

All the segments when placed together will form a rough circle the adjacent sides of the segments forming tubular flanged spokes of the wheel. The ends of the segments are then introduced into the zig zag sockets *b* on the hub *f* and pressed home and fixed firmly by the steel plug *h*. The use of the plug *h* is to bind or fix the ends of the segments to the zig zag sockets.

In order to prevent the flanges *d* of the spokes from separating or buckling in the center, between the hub *f* and the rim *g*, the flanges of the spokes may be secured together by overlapping. The rim *o* as in Fig. 4, may

be filled in with a felly *n* of wood, papier-maché or other suitable material, and will preferably be constructed in one piece. In order to receive a metallic tire *l*, the inner surface of the felly *n* is formed into corrugated projections, so arranged that it shall fit into the depression or grooves in the segmental portions of the metallic rim.

It will be understood that I do not particularly bind myself to construct the wheel in the manner herein described, as the materials, shapes and parts may be varied in many ways within the scope of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. As an improved article, a wheel consisting of the hub having a zig-zag collar with circular apertures and lateral slots, the spokes and fellies comprising corrugated and curved sheet metal plates bent into triangular form, with their edges bent at an angle forming flanges, which flanges and the ends of said plates are inserted in the slots and apertures in the said collar, the rim consisting of a corrugated curved sheet metal plate surrounding the fellies, and the tire, substantially as described.

2. In a wheel, the combination with the hub

having a zig-zag collar formed with circular apertures and lateral slots, of the spokes and fellies consisting of curved, corrugated, sheet metal plates, bent into triangular form and their edges bent, at an angle forming overlapping flanges, the ends of which flanges and plates are inserted in the apertures and slots in said collars, and the curved and corrugated sheet metal rim surrounding said fellies, substantially as described.

3. In a wheel, the combination with the hub having a zig-zag collar formed with circular apertures and lateral slots, of the spokes, each consisting of two curved, corrugated sheet metal plates, bent into triangular form, the bases of which form felly segments, and their edges bent at an angle and overlapping each other forming flanges, the ends of which and of said plates, are inserted in the apertures and slots in the said collar, the semi-circular corrugated sheet metal rim surrounding said felly segments and the plugs located within the spokes, substantially as described.

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Witnesses:

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H. MITCHELL.