

UNITED STATES PATENT OFFICE.

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MACHINE-GEAR.

SPECIFICATION forming part of Letters Patent No. 528,653, dated November 6, 1894.

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To all whom it may concern:

Be it known that we, HARRY P. BRADFORD and JOHN A. SMITH, citizens of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Machine-Gears, of which the following is a specification.

Our invention relates to gear wheels; under which term, for purposes of the present specification, we include wheels used in machine construction for giving or receiving rotating power, whether cog-wheels, band-pulleys, or friction pulleys; and its object is twofold, namely: first, to provide a construction in which worn or broken parts may be renewed or repaired with facility, economy and dispatch; and second, to provide a "split" wheel that may, in addition to possessing the above named advantages, be placed upon a shaft in position without removal of the latter from its bearings or connected machinery.

To these ends our invention consists, generally, first, in a wheel-rim formed in two corresponding and similar parts interlocking and adapted to be attached to the central or hub portion of the wheel, as hereinafter pointed out; second, in the combination of said interlocking rim with a hub-portion having a face of corresponding width with the rim and recessed to admit opposite interlocking and fastening lugs, whereby the rim parts are secured to the hub-portion and secured to each other through the intervention of the disk or web of the hub-portion; and lastly, in the wheel complete, in preferred form, embodying in combination the two similar rib-portions provided with radial lugs, and the two similar halves constituting the hub-portion; all as hereinafter more fully set forth.

In the accompanying drawings illustrating our invention, is exhibited in:—Figure 1, a front elevation of a spur-gear wheel complete, constructed according to our invention. Fig. 2, is a corresponding plan or edge view of same. Fig. 3, is an elevation of the central or hub-portion detached. Fig. 4, is a corresponding plan or edge view of the same. Fig. 5, is a front elevation of one of the rim pieces detached; and Fig. 6, is a corresponding side or edge elevation of the same. Fig. 7, is a series of three radial sections of the complete wheel, indicated as sections x , y , z ,

and taken in the planes correspondingly marked and indicated by dotted lines in Fig. 1.

We have selected for the illustration of our invention a spur-gear, such as commonly used on geared electric street-car motors where the necessarily compact construction of the mechanism renders a "split" gear necessary, and where also the excessive wear renders frequent renewals necessary,—thus combining both conditions illustrating special advantages of our invention.

The gear shown consists of two principal parts, namely: the central or "hub-portion," A, made up of two similar halves, a' , a^2 , and the detachable rim, B, made up in like manner of two similar halves, b' , b^{10} .

The hub-portion, A, consists of a circular disk or web, w , cast with a central hub, h , and a peripheral face or tread, t , overhanging the web at both sides. When made in two parts, as herein shown, it is cast as one and afterward broken or otherwise divided on a plane pp of the diameter. The overhanging tread, t , is connected to the hub, h , by corresponding flanges, c , along the line of division, through which bolts, c' , are passed to secure the parts together. The "overhang" of the tread, t , is not continuous, but certain portions are omitted for a purpose hereinafter explained, constituting recesses, t' , extending inward to the web, w . The outer face of the part, A, is slightly recessed peripherally in a central zone somewhat wider than the thickness of the web so that when the two halves, a' , a^2 , are bolted together the raised portions of the outer face may be turned to a true cylindrical surface, still leaving a slight central depression for reasons to be hereinafter explained.

The rim-portion, B, is composed of two halves, b' , b^{10} , each consisting of an annulus of proper dimensions to fit the central or "hub-portion," A, half the width of the face or tread, t , and extending through half or more of the entire circle, and widened midway to full width for an arc-space, b^3 , b^4 , (Fig. 5,) equal to the omitted arc between the ends, b^5 , b^6 . Each rim portion is provided with four radial lugs, b^6 , b^7 , b^8 , b^9 , (b^6 , b^7 , b^8 , b^9), projecting inwardly in such relation that when the two portions, b' , b^{10} , are placed together, the widened portion of one occupies the arc be-

tween the extremities of the other, and the lugs stand exactly opposite in pairs, each to each, spaced apart a distance equal to the thickness of the web, *w*. The lugs are formed with a face width and wedge-like contour adapting them to enter and fit the recesses, *t'*, when the parts are placed together, and lock the rim, B, and central or hub-portion, A, of the wheel against interrotation of these two main elements independently of the fastening bolts. The internal wall of the rim—considered as one element—is recessed similarly to the external periphery of the wheel portion, so that true cylindrical bearing faces may be turned on the internal wall of the rim outside the line of the lugs, the entire surface between the turned portions being relatively depressed. The turned surfaces are made to fit closely the periphery of the part, A. Thus, when the parts are placed together, as shown in Fig. 1 and further detailed in Figs. 2 and 7, fastening bolts, *e*, are passed through the opposite lugs, and through intervening web, *w*, and the parts thus firmly secured.

We claim as our invention and desire to secure by Letters Patent of the United States—

1. A wheel embodying in combination a central or hub-portion, and a detachable rim composed of two equal segments each having extremities of half width and a central portion of full width; the widened portion of one segment adapted to enter and lock between the narrowed ends of the other segment, substantially as set forth.

2. A wheel embodying in combination a central hub-disk having a recessed overhang-

ing face or tread, and a detachable rim composed of two equal segments each having a central portion of full width adapted to fit and engage between the terminals of the segment, and each provided with inner radial lugs adapted to enter the recesses of the tread or face-portion of the central disk, at opposite sides of the disk and be secured together by bolts passing through each two opposite lugs and the intervening web, substantially as set forth.

3. A "split" wheel embodying in combination a central hub-disk composed of two equal halves divided in an axial plane of the shaft, and a detachable rim consisting of two members each of more than half a circle, having a central portion of full width through an arc equal to that separating the ends of the opposite portion, and terminals of half width substantially as set forth.

4. In a combination-wheel, the combination of a hub-disk having an overhanging face or tread with lateral recesses or interruptions, and a detachable rim in component parts divided in a plane of rotation, provided with internal lugs adapted to enter the interruptions of the disk-tread and be secured to the face of the web, as set forth.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

HARRY P. BRADFORD.
JOHN A. SMITH.

Witnesses:

LONDON FREYBLER,
L. M. HOSEA.