(No Model.) 2 Sheets—Sheet 1.

W. S. SIMPSON.

DRIVE OR SPROCKET CHAIN AND WHEEL THEREFOR.

No. 550,541. Patented Nov. 26, 1895.

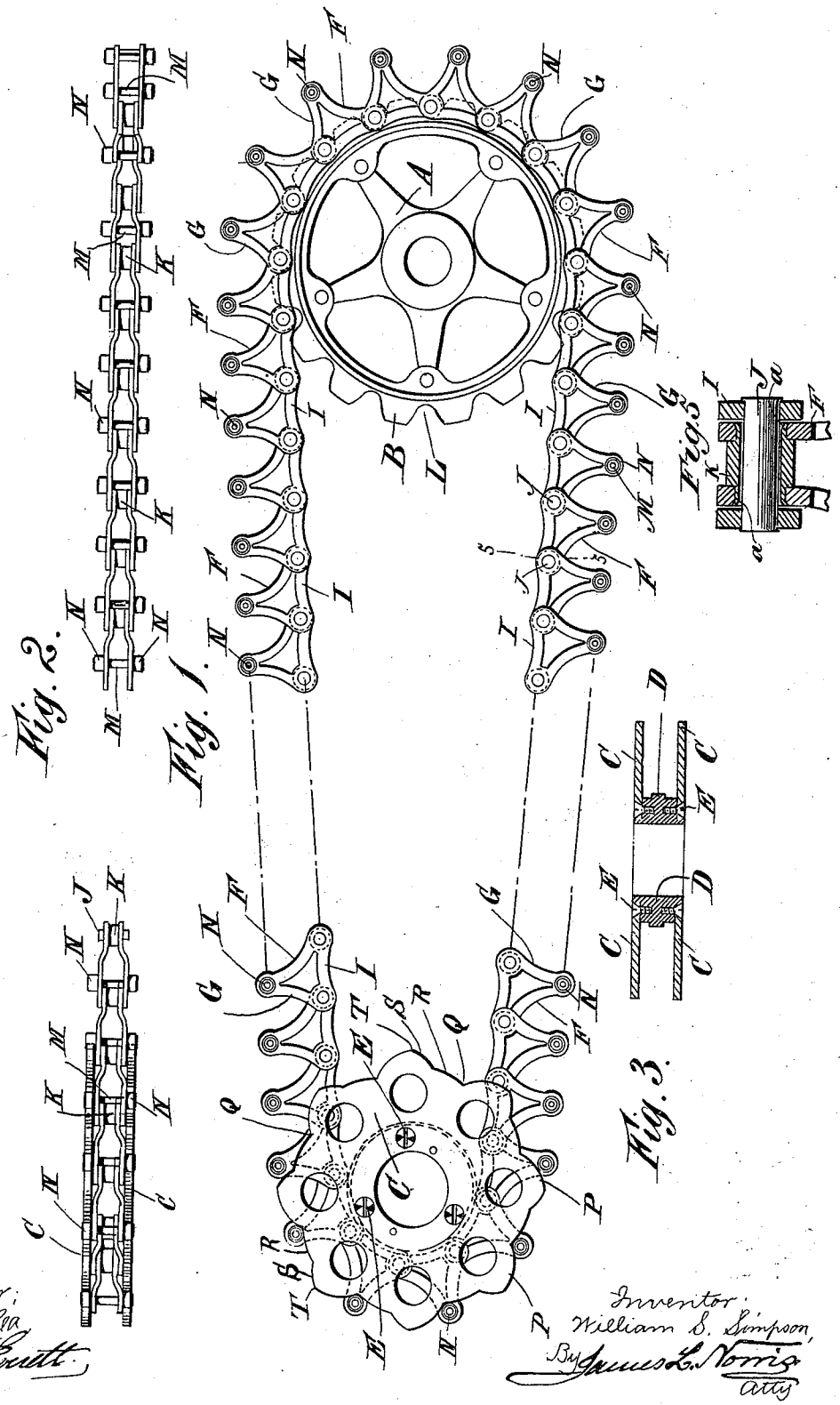

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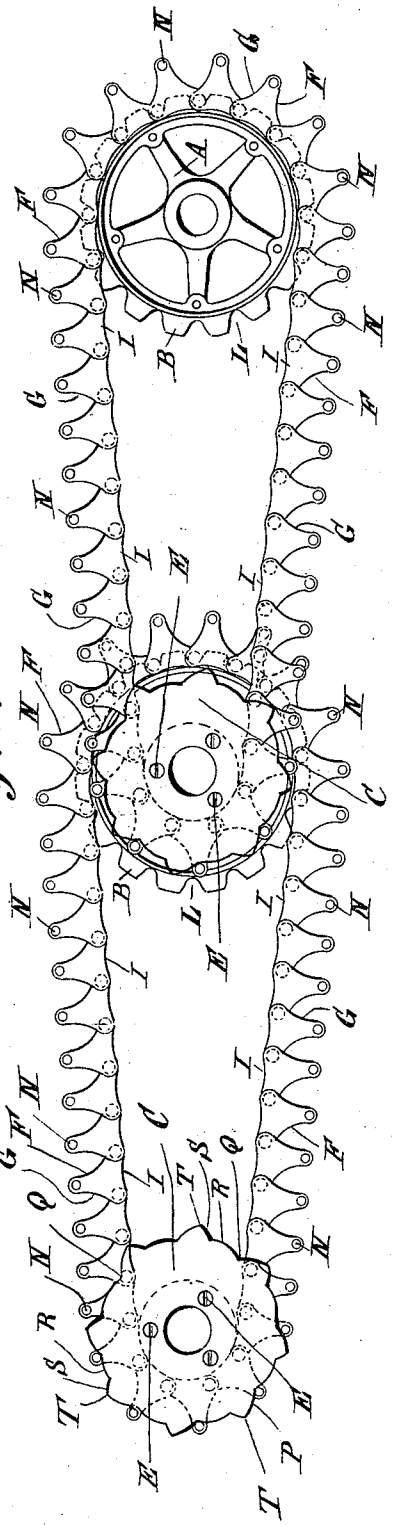
Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM SPEIRS SIMPSON, OF LONDON, ENGLAND.

DRIVE OR SPROCKET CHAIN AND WHEEL THEREFOR.

SPECIFICATION forming part of Letters Patent No. 550,541, dated November 26, 1895.

Application filed September 21, 1895. Serial No. 563,223. (No model.) Patented in England August 31, 1895, No. 16,366.

To all whom it may concern:

Be it known that I, WILLIAM SPEIRS SIMPSON, a subject of the Queen of Great Britain, and a resident of 49 Battersea Park Road, London, England, have invented certain new and useful Improvements in Drive or Sprocket Chains and Wheels Therefor, (patented in Great Britain, No. 16,366, dated August 31, 1895,) of which the following is a specification.

This invention relates, first, to the construction of chain-links for cycle and like gear from plates of triangular form. Two of the points of the triangle are for the connection or coupling up into a chain, the other for carrying a cross-pin with ends projecting outwardly from the sides with or without rollers to rub on or roll over the edges of suitably-shaped disks, constituting the driven gear-wheel, say, of a cycle, the pedal or drive gear-wheel being of the usual sprocket kind, with teeth to enter between the lower webs of the triangles, said webs being curved to bear upon the plain edges outside the sprockets.

The driven gear-wheel, which constitutes the second part of my invention, is composed of two disks, with a central boss on which the lower webs of the triangles bear, the cross-pins of the extension-legs of the triangles bearing and rubbing or rolling on the curves on the edges of the disks in succession. The curves are struck from coupling-up points in reverse order, there being three curves for the purpose to each tooth, into or onto which the projecting pins or the rollers on them move in obtaining the necessary bite for pulling the driven wheel or gear around and for leaving without noise the approach, the rub, or roll, the grip and the leaving being effected by a gradual sliding action.

Figure 1 of the annexed drawings is an elevation of so much of a chain of my novel construction on a sprocket-wheel and disk wheel as will illustrate my invention; Fig. 2, a plan thereof, and Fig. 3 a section of the disk wheel detached. Fig. 4 represents multiple chain for tandem cycles; and Fig. 5 is a detail sectional view taken on the line 5 5, Fig. 1.

A indicates a wheel with sprockets B.

C indicates a disk wheel, composed of two disks C C, secured to the periphery of a central collar D by screws E E, which collar forms a surface for the base or lower edges of my chain to bear on and to take the strain of the chain when tightened up. Each of the links of my chain is of irregular triangular shape—that is, the bars or webs F are somewhat longer than the bars or webs G. The links are preferably in pairs, as seen in the plan view, Fig. 2, the bars or webs F I being bent inwardly and then parallel for the connection, this being effected, preferably, by burring or expanding the shouldered ends of the distancing pieces or sleeves K into engagement with the eyes of the links, as will be best seen at *a* in the detail sectional view, Fig. 5.

For coupling or joining up two adjoining links pins J J are employed to pass through the distancing-pieces, which are hollow, said pins J J being headed or riveted home to secure one link to the other in making up a chain. The distancing-pieces serve as guides and occupy a position in the notches L between the sprockets B B, in which, from their shape, they move freely in entering and leaving the notches. The bars or webs have at their outer ends a pin M, the ends of which project outwardly and carry small rollers N N, which first engage and press against the upper part of the curve P of the disks C C, and as the disks rotate the rollers N N run down said curve and locate themselves in the hollow Q, as in the bottom of a wheel's tooth, for pulling the disk wheel around, there being always, say, from three to five pairs of rollers N N in contact to prevent slip or loss of power, the number in contact being determined by the diameter of the sprocket-wheel, which alters the angle of the chain in approaching and leaving the disk wheel. When the pulling power of the upper pair of rollers N N is expended, they run on the curve R and thence up the curve S, leaving the point T as gradually and silently as they entered and remained in contact with the curve P. Cycle-chains thus made may be used for any purpose, and singly or in pairs, or multipled in any desired manner.

It will be evident that the roller-bearings or rollers N can be dispensed with and the extremities of the cross-pins M caused to engage, grip, and release the triple curved projections of the driven or sprocket wheel, and

I wish it understood that my invention comprehends such modification.

I do not wish to be understood as confining myself to the use of my invention in connection with a bicycle or similar wheeled vehicle operated by a rider, as obviously the improved drive or sprocket chain and wheel therefor can be employed for many different purposes without altering the spirit of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a plurality of approximately triangular links pivotally connected together and comprising side bars forming outwardly projecting portions, pins mounted in the outwardly projecting portions of the side bars, rollers mounted on the extremities of said pins, and a sprocket wheel composed of disks having a central collar or hub portion and provided at their peripheries with three projections each having curved surfaces R, S, P, upon and against which the rollers of the sprocket chain bear and move, substantially as described.

2. The combination with a wheel composed of a central collar or hub, and side disks or plates having their peripheries constructed with a plurality of projections, of a chain composed of approximately triangular links pivotally connected at their inner end portions to bear against the collar or hub, and provided at their outer end portions with rollers or bearings which engage, grip, and release the said peripheral projections of the wheel, substantially as described.

3. A drive or sprocket-chain, consisting of a plurality of approximately triangular links pivotally connected together and having their outwardly projecting portions provided with cross-pins having their ends extending laterally therefrom, said cross-pins being fixed relatively to the outwardly projecting portions of the links to remain constantly at the same distance from the inner edges or bases of the links, substantially as and for the purposes described.

4. A drive or sprocket-chain, consisting of a plurality of approximately triangular links pivotally connected together and having their outwardly projecting portions provided with cross-pins having their ends extending laterally therefrom and provided with rollers, said cross-pins being fixed relatively to the outwardly projecting portions of the links to remain constantly at the same distance from the inner edges or bases of the links, substantially as and for the purposes described.

5. A sprocket chain, consisting of pivotally connected links I, comprising webs F and G, pins M arranged in the outer end portions of the webs, and rollers mounted on the projecting ends of said pins, substantially as described.

6. A drive or sprocket-chain, consisting of a plurality of links pivotally connected together and each composed of two separated approximately triangular bars or plates having their outwardly projecting portions provided with a connecting cross-pin fixed relatively thereto and having its ends extending laterally therefrom, said cross-pins being fixed with relation to the bars or plates to remain constantly at the same distance from the inner edges or bases of the links, substantially as and for the purposes described.

7. A drive or sprocket-chain, consisting of pivotally connected links I, each composed of two separated bars or plates having outwardly projecting portions, a cross-pin M connecting the outwardly projecting parts of the plates composing each link, extending laterally therefrom and fixed with relation to the bars or plates to remain constantly at the same distance from the inner edges or bases of the links, and rollers N mounted on the laterally extending ends of each cross-pin, substantially as and for the purposes described.

The 7th day of September, 1895.

WILLIAM SPEIRS SIMPSON.

In presence of—

HENRY GARDNER,

RICHARD CORE GARDNER.