

(No Model.)

W. S. GUBELMANN.

CRANK SHAFT AND SPROCKET WHEEL CONNECTION.

No. 601,415.

Patented Mar. 29, 1898.

Fig. 2.

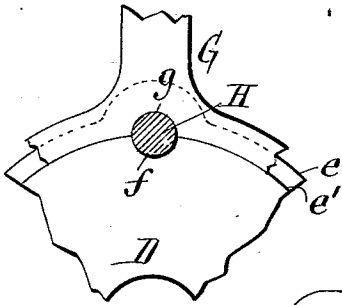


Fig. 1.

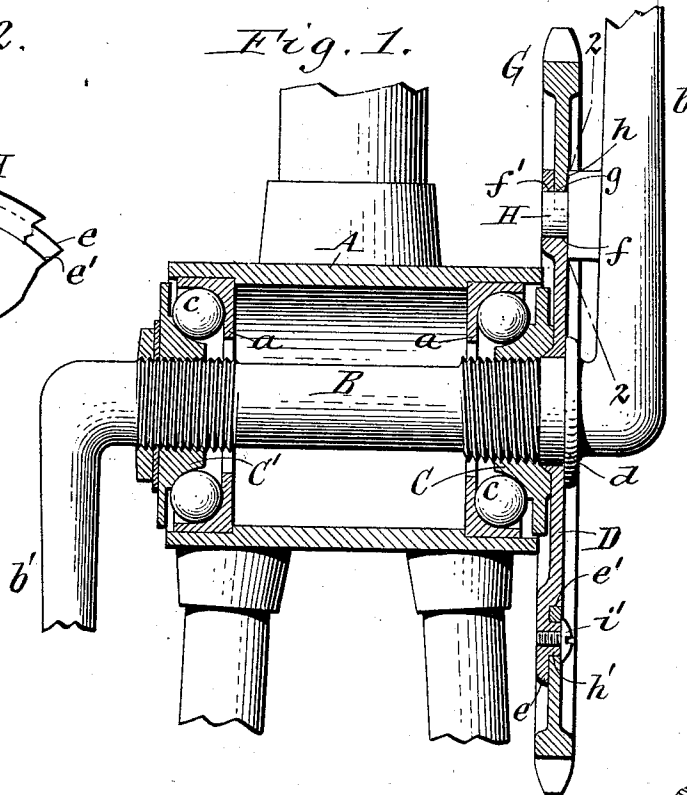


Fig. 3.

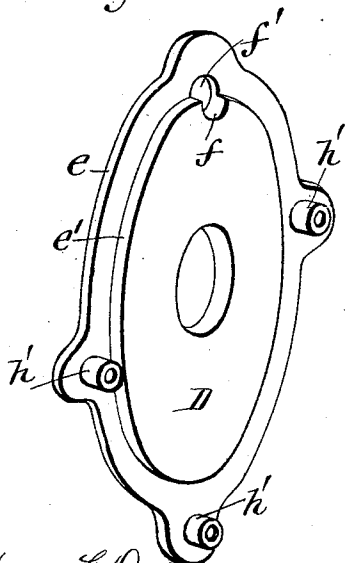


Fig. 4.

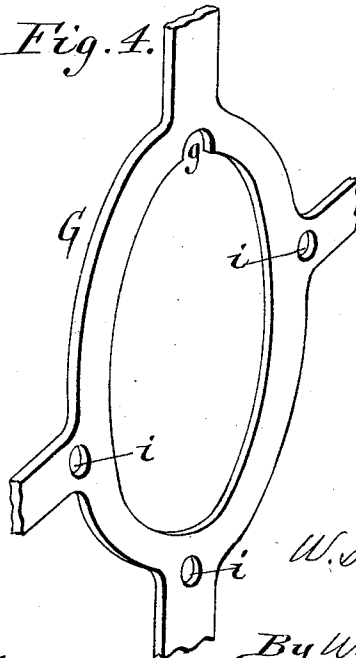
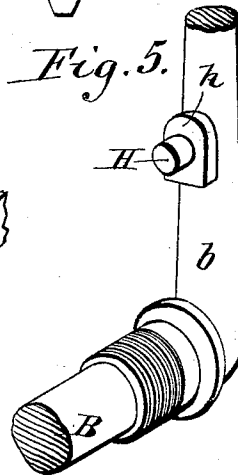


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM S. GUBELMANN, OF BUFFALO, NEW YORK.

CRANK-SHAFT AND SPROCKET-WHEEL CONNECTION.

SPECIFICATION forming part of Letters Patent No. 601,415, dated March 29, 1898.

Application filed March 11, 1897. Serial No. 626,980. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. GUBELMANN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Crank-Shaft and Sprocket-Wheel Connections, of which the following is a specification:

This invention relates to the connection between a crank-shaft and sprocket-wheel of a velocipede, and has the object to provide a connection between these parts which is simple and reliable and which permits of easily attaching the sprocket-wheel to and detaching the same from the crank-shaft without dismembering the bearing.

In the accompanying drawings, Figure 1 is a longitudinal section of a crank-shaft journaled in a hanger and connected with a sprocket-wheel by my improved connection. Fig. 2 is a fragmentary transverse section in line 2 2, Fig. 1. Fig. 3 is a perspective view of the driving-disk. Fig. 4 is a fragmentary perspective view of the central portion of the sprocket-wheel. Fig. 5 is a similar view of the crank-shaft and one of its arms.

Like letters of reference refer to like parts in the several figures.

A represents the crank-hanger or casing, and *a* the bearing-cups arranged therein.

B represents the crank-shaft arranged in the hanger and provided at opposite ends with crank-arms *b b'*, C C' the internally-screw-threaded bearing-cones arranged on the externally-screw-threaded portions of the shaft, and *c c'* the balls arranged between the cones and cups in the usual manner.

D represents a supporting and driving disk which is mounted on the shaft and clamped between one of the bearing-cones and a collar *d*, arranged on the shaft adjacent to the crank-arm *b*. This disk is provided on its margin with an annular rim *e*, which is offset inwardly from the body of the disk, forming an annular outwardly-facing shoulder *e'* on the outer edge of the disk. A transverse socket is arranged in the disk and rim, so as to intersect the shoulder of the disk and form notch *f* in the edge of the disk and an opening *f'* in the rim.

G represents a sprocket-wheel which fits around the annular shoulder of the driving-

disk and bears with its inner side against the outer side of the rim on the disk. The inner edge of the sprocket-wheel is provided with a notch or recess *g*, which is arranged opposite the notch in the edge of the disk and forms therewith a complete opening.

H represents a stud which is formed on the inner side of the crank-arm *b* and engages with the socket of the driving-disk and the notch of the sprocket-wheel. This stud is provided with an inwardly-facing shoulder *h*, which bears against the outer side of the driving-disk and sprocket-wheel. By this means the driving-disk and sprocket-wheel are both interlocked with the crank and motion is positively transmitted from the shaft to the disk and sprocket-wheel.

h' represents a number of driving lugs or studs which are arranged on the outer side of the rim and equidistant together with the socket and which fit into openings *i*, formed in the body of the sprocket-wheel. The lugs *h'* are of such length that when the sprocket-wheel bears against the rim the outer ends of the lugs are flush with the outer side of the sprocket-wheel.

i' are fastening-screws which engage with screw-threaded openings in the driving-lugs and have their heads overlapping the lugs and bearing against the outer side of the sprocket-wheel.

This means of connecting the driving-disk and sprocket-wheel causes these parts to be interlocked positively and the driving strain to be taken by the lugs *h'*, whereby the screws are relieved from shearing or loosening strains and serve merely to hold the sprocket-wheel in place on the driving-disk.

The sprocket-wheel can be easily removed when it is desired to replace the same for one of larger or smaller diameter by simply removing the fastening-screws and tipping the loosened portion of the sprocket-wheel outwardly until it is disengaged from the driving-lugs, after which the notch of the wheel can be disengaged from the driving-stud H, which leaves the sprocket-wheel free to be passed over the crank-arm.

The fit between the lugs *h'* of the disk D and the openings *i* in the arms of the sprocket-wheel and between the marginal portions of the notch *g* and the flange *e* and shoulder *h*

is sufficiently loose to permit the sprocket-wheel to be freely applied to the disk or removed therefrom, as before described.

By thus coupling the crank with both the 5 supporting-disk and the sprocket-wheel these parts are positively driven from the crank regardless of whether the disk has been secured sufficiently tight on the shaft or not, while at 10 the same time the sprocket-wheel can be readily replaced by one of larger or smaller diameter without dismembering the bearing of the crank-hanger.

By making the supporting-disk D separate from the crank-shaft these parts can be finished 15 separately much quicker and neater than is possible when these parts are integral or permanently secured together.

I claim as my invention—

1. The combination with the shaft and the 20 crank having an inwardly-projecting stud on its rear side, of a center disk mounted on the shaft and provided with a socket near its periphery by which it is interlocked with said stud, a detachable sprocket wheel or rim hav- 25 ing the bore of its hub provided with a notch

by which it also is interlocked with said stud, and means whereby the hub of the sprocket-wheel is secured to said center disk, substantially as set forth.

2. The combination with the shaft and the 30 crank having an inwardly-projecting stud on its rear side, of a center disk mounted on the shaft and provided on its outer face with a marginal offset or annular shoulder and with a socket which is arranged at said offset and 35 by which said disk is interlocked with said stud, a detachable sprocket wheel or rim arranged against the outer face of said disk with its hub around said annular shoulder and hav- 40 ing in the bore of its hub a notch by which said wheel or rim also is interlocked with said stud, and means whereby the hub of said wheel or rim is secured to said center disk, substantially as set forth.

Witness my hand this 16th day of February, 45 1897.

WILLIAM S. GUBELMANN.

Witnesses:

THEO. L. POPP,

CHAS. F. BURKHARDT.