

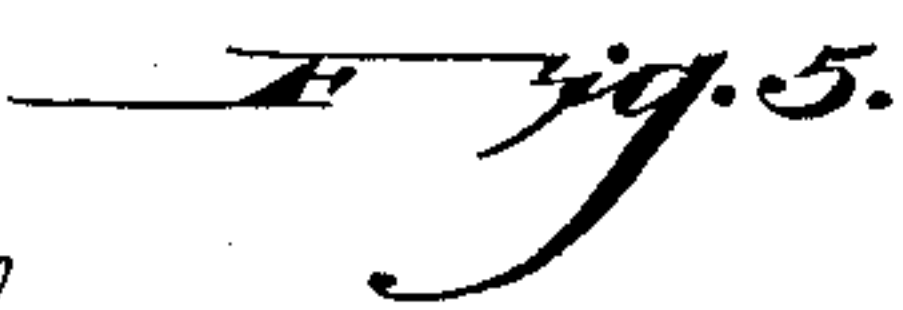
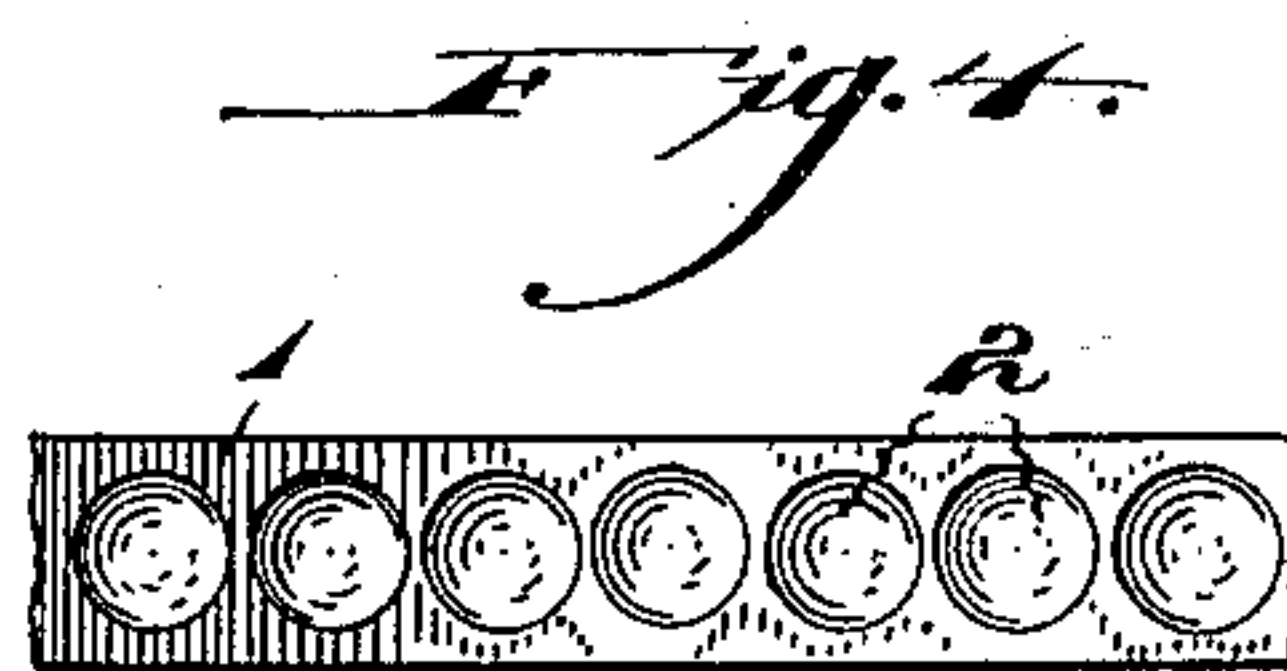
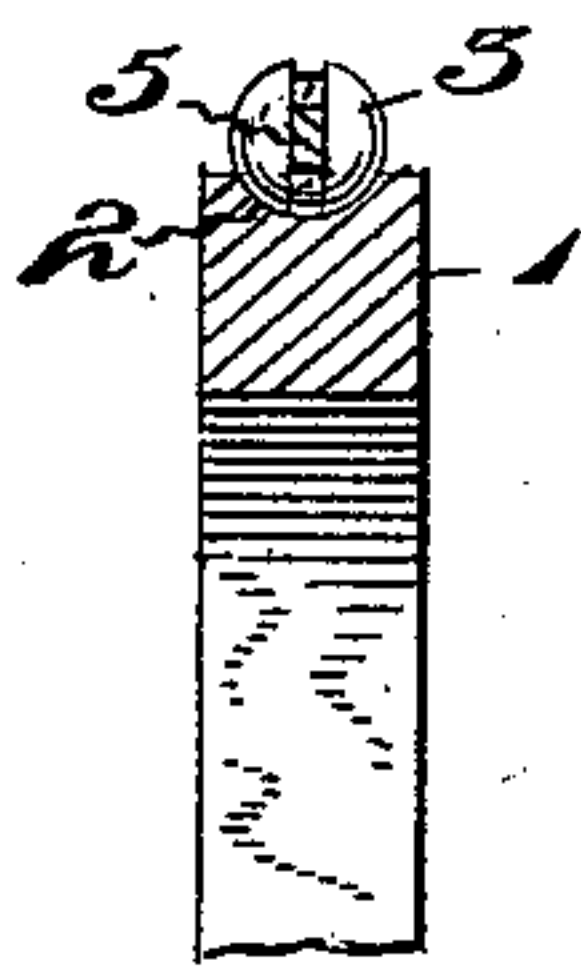
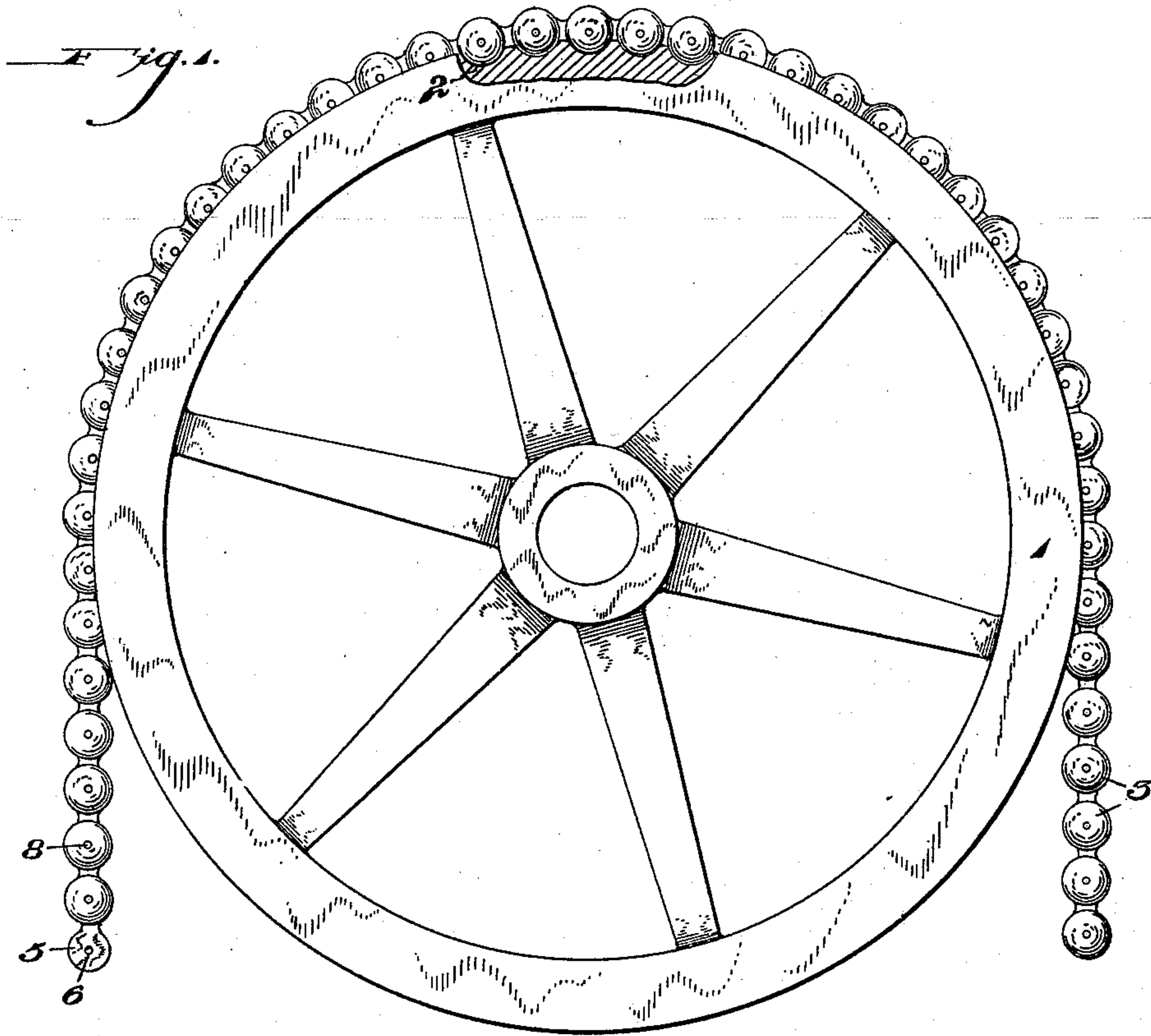
No. 624,177.

Patented May 2, 1899.

W. A. CHURCH.  
BICYCLE CHAIN.

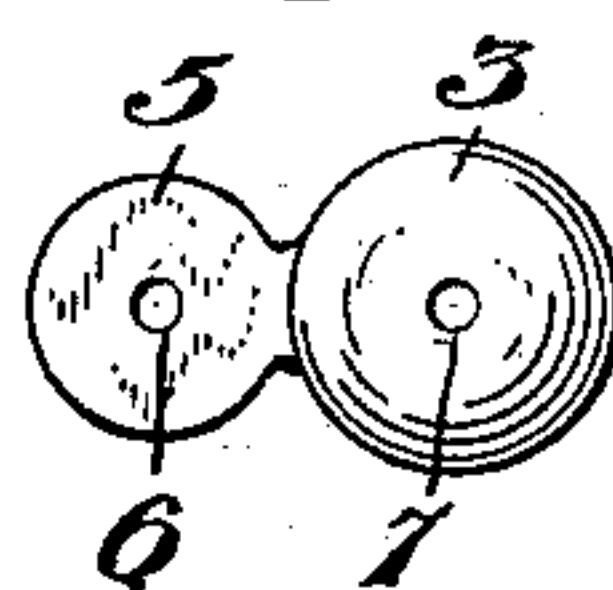
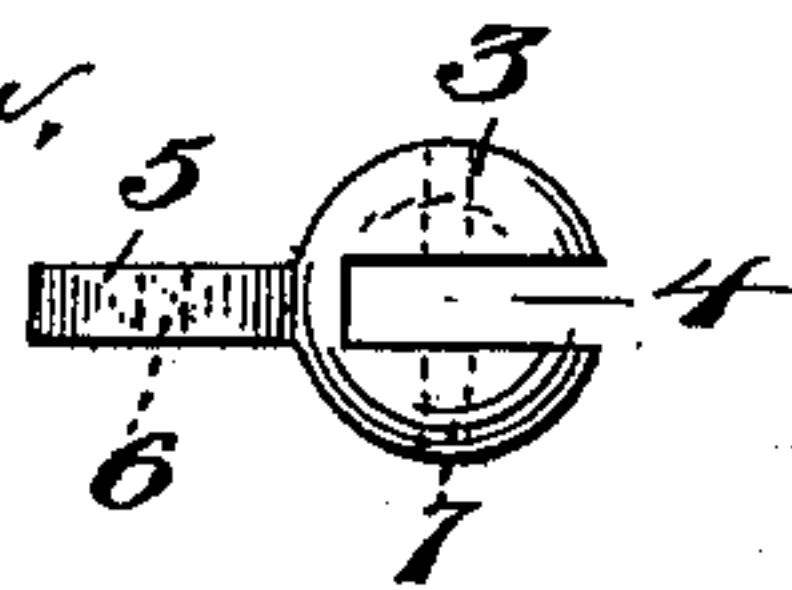
(Application filed July 22, 1898.)

(No Model.)



WITNESSES:

*J. P. Appleman,*  
*A. L. Boggs*



INVENTOR

*Walter A. Church*

BY

*A. B. Everett & Co.*

ATTORNEYS

# UNITED STATES PATENT OFFICE.

WALTER A. CHURCH, OF PITTSBURG, PENNSYLVANIA.

## BICYCLE-CHAIN.

SPECIFICATION forming part of Letters Patent No. 624,177, dated May 2, 1899.

Application filed July 22, 1898. Serial No. 686,553. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER A. CHURCH, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Bicycle-Chains, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention relates to certain new and useful improvements in drive-chains.

This invention relates to chains, usually known as "driving-chains," for transmitting motion either for bicycles or any other machine or purposes where such chain driving-gear is used or applicable.

15 A further object of my invention is to provide an improved construction in drive-chain by which all friction is eliminated, and the dirt or foreign matter which may fall upon the drive-wheel will be immediately freed therefrom, so as not to interfere with the chain and cause friction.

20 My invention particularly consists in the novel construction of my drive-chain, it being formed of a series of ball-links or spherical portions pivotally secured to each other at their center, hereinafter more fully described.

25 My invention finally consists in the novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and particularly pointed out in the claims.

30 In the drawings, Figure 1 is a side view of my improved drive-chain as applied to the drive-wheel of a bicycle, which is partly partly broken away at its upper edge. Fig. 2 is a sectional view of the drive wheel and chain taken on the line *xx*, Fig. 1. Fig. 3 is a top plan view of a part of the rim of the wheel, showing the drive-chain applied there-  
40 to. Fig. 4 is a top plan view of a portion of the rim of the drive-wheel. Fig. 5 is a top plan view of one of the chain-links. Fig. 6 is a side view thereof.

45 Referring to the drawings, in which like numerals of reference indicate corresponding parts throughout the several views of the

drawings, 1 indicates the drive-wheel, the periphery of which has a series of cavities 50 formed thereon. The cavities 2 are semispherical in shape and are adapted to receive the spherical portion 3 of the drive-chain. This spherical portion is cut away, forming an oblong slot, as at 4, to receive the link 5, formed 55 integral with the side of the adjacent spherical portion. An aperture 6 is formed in the link 5, which coincides with an aperture 7 formed in the spherical portion 3, and the link 5 and spherical portion are adapted to be 60 pivotally secured together by the insertion through the said apertures of a pivot-pin 8.

It will be noted that various changes may be made in the details of construction without departing from the general spirit of my 65 invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a drive-chain, a series of links each 70 of which is formed of a spherical portion which is cut away on its one side to form an oblong slot, a flat circular extension formed integral with the spherical portion in horizontal alignment with the oblong slot and adapted to be 75 secured in the slot of the adjacent link, substantially as described.

2. In a drive-chain, a series of links each of which is formed with a spherical portion which is cut away on one side to form an ob- 80 long slot, a flat circular extension formed integral with the spherical portion of each link opposite the cut-away portion and in vertical alinement therewith and which is adapted to be secured in the oblong slot of the adjacent 85 link, in combination with a drive-wheel having semicircular cavities in its periphery to receive the spherical portions of the links, substantially as described.

In testimony whereof I affix my signature 90 in the presence of two witnesses.

WALTER A. CHURCH.

Witnesses:

JOHN NOLAND,  
H. H. PATTERSON.