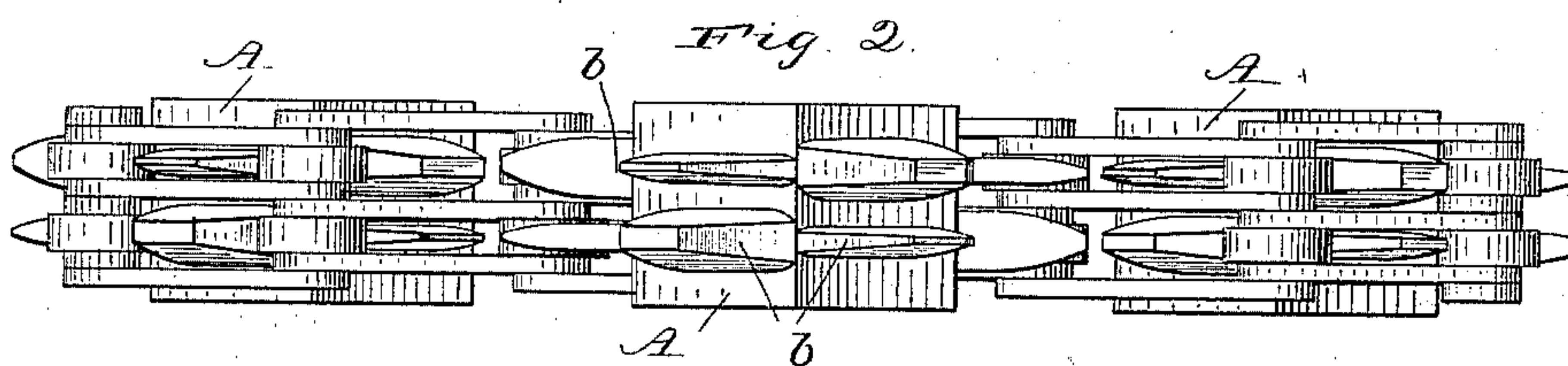
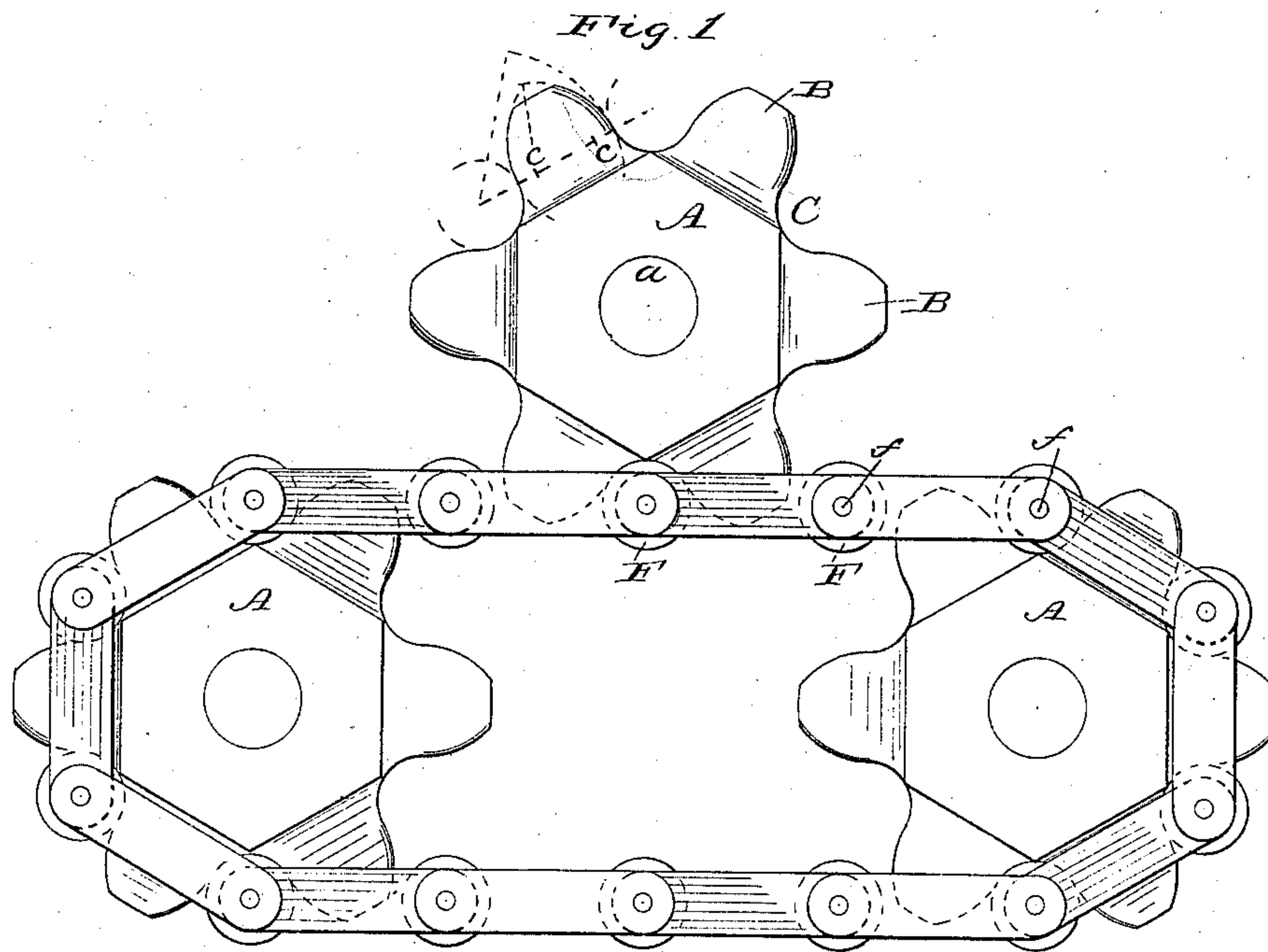


(No Model.)

F. M. LECHNER.  
SPROCKET WHEEL.

No. 257,445.

Patented May 2, 1882.



Witnesses:

N. N. Low  
J. S. Barker.

Inventor:

Francis M. Lechner  
by Doubleday & Bliss

*attg*

# UNITED STATES PATENT OFFICE.

FRANCIS M. LECHNER, OF COLUMBUS, OHIO, ASSIGNOR TO THE LECHNER MINING MACHINE COMPANY, OF SAME PLACE.

## SPROCKET-WHEEL.

SPECIFICATION forming part of Letters Patent No. 257,445, dated May 2, 1882.

Application filed January 3, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS M. LECHNER, a citizen of the United States of America, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Sprocket-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to the construction of sprocket-wheels adapted for use with centrally-open links which fit over and engage with the spurs of the wheel; and it consists essentially in making the faces of the teeth which engage with the chain-links and sustain the pull of the links in the arcs of circles, whereby the friction of the parts is reduced, and whereby, also, I am enabled to avoid "backlashing."

Figure 1 is a vertical section of three wheels having a driving-chain applied thereto. Fig. 2 is a plan of the same.

As all of the wheels are constructed alike, I have lettered but one of them.

Referring to Fig. 1, A is the sprocket-wheel, having central opening, *a*, to receive a shaft.

B B are the teeth, of which any desired number may be used, depending upon the size of the wheel and the length of the links of the chain to be used in connection therewith. Between two adjacent teeth, and at the basis thereof, there is formed a circular seat, C, corresponding substantially to the periphery of anti-friction rollers, to be described hereinafter. The working-faces *b* of the teeth are formed in arcs of circles, which are determined in a manner to be hereinafter described.

D E are the links of which the chain is composed, their adjacent ends being secured to each other by means of pivots *f*, the links being placed to receive anti-friction rollers F F, each of which has a diameter a little greater than the width of the links. These rollers are adapted to traverse the faces of the sprocket-wheel teeth, and to rest in and fit closely the seats C between the teeth. In order to provide that the anti-friction rollers shall fit properly and traverse the adjacent faces of the teeth, I

form the edges of the teeth in arcs of circles, which are described as follows: I describe circles representing the anti-friction rollers placed in the seats C C, and then draw a line intersecting the centers of two adjacent anti-friction rollers. I then divide this line into three equal parts, as indicated at *c c*, and then describe arcs of circles to represent the outlines of the faces of the teeth from each of these points *c c*.

By an examination of Fig. 1 it will be understood that if each face of a tooth represented an arc of a circle the center of which is the center of the anti-friction roller at the opposite end of the link which inclosed said tooth, as indicated in dotted lines, the anti-friction rollers in moving into the seats C would engage more accurately with the adjacent faces of their respective teeth; but in practice I prefer to describe these circles from the points *c c*, believing that teeth thus constructed will, as a rule, operate more satisfactorily, owing to imperfections in the workmanship which are liable to occur in the manufacture of those wheels.

As shown in Fig. 2, each link of the chain is composed of three parallel bars, spaced to receive not only the overlapping ends of the bars of the adjacent link, but also two anti-friction wheels. The object of thus using three parallel bars for each link is to equalize the strain upon the pivots *f* and facilitate the construction of a chain of any desired width to run upon a wide sprocket-wheel in place of a belt.

In Fig. 1 I have shown a third wheel arranged to engage with one line or leg of the chain, and revolving in a direction the reverse of that in which the other wheels revolve.

What I claim is—

1. A sprocket-wheel the teeth of which have their engaging faces formed upon arcs of circles, substantially as set forth.

2. A sprocket-wheel having its teeth slotted to receive the intermediate bars of the chain-links, substantially as set forth.

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

FRANCIS M. LECHNER.

Witnesses:

D. JEFFREY,  
F. W. ARNOLD.