

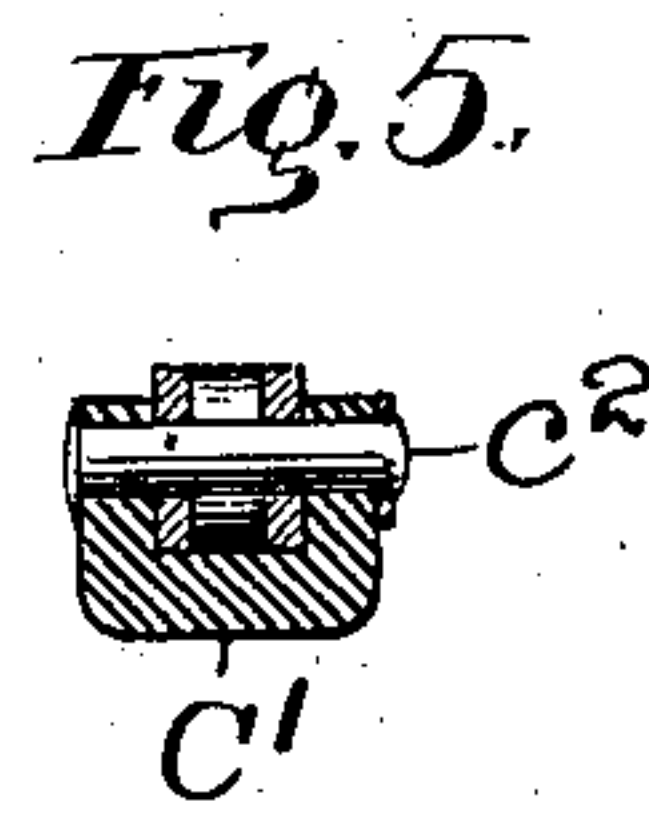
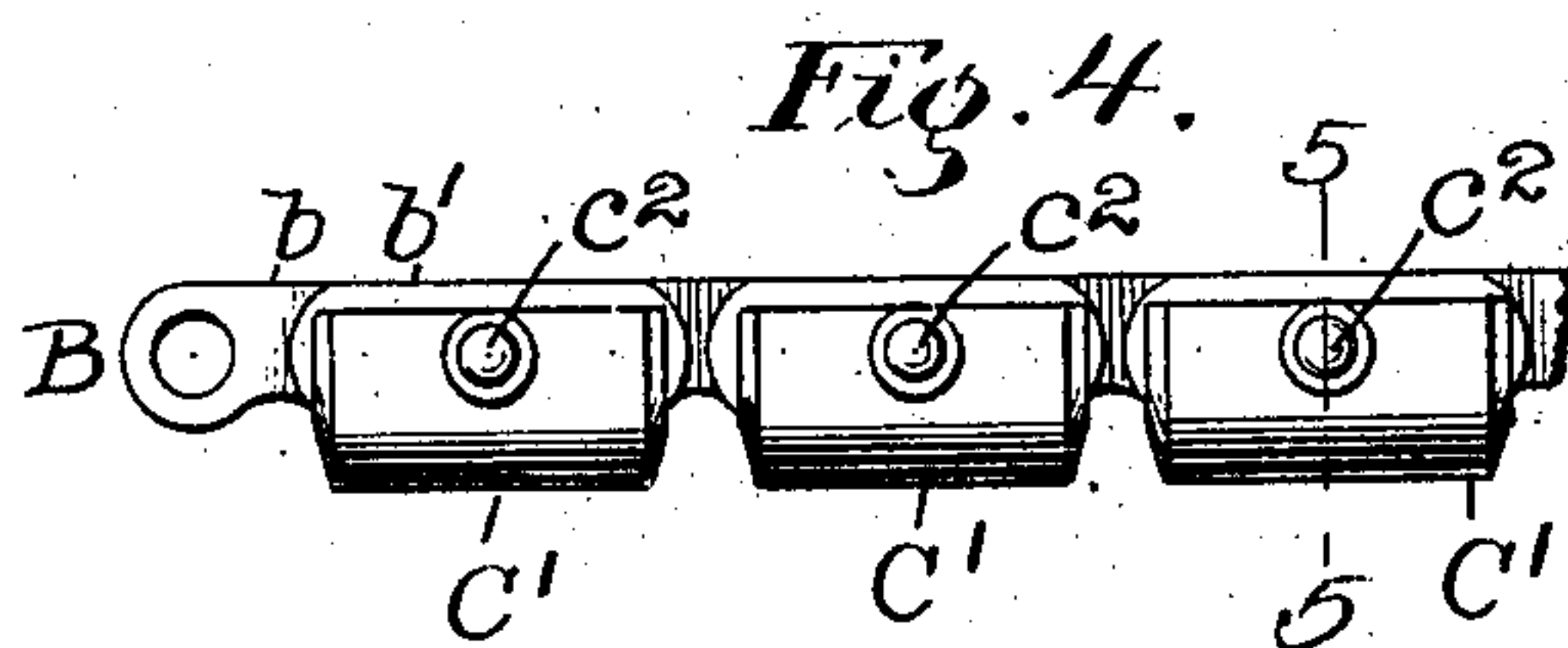
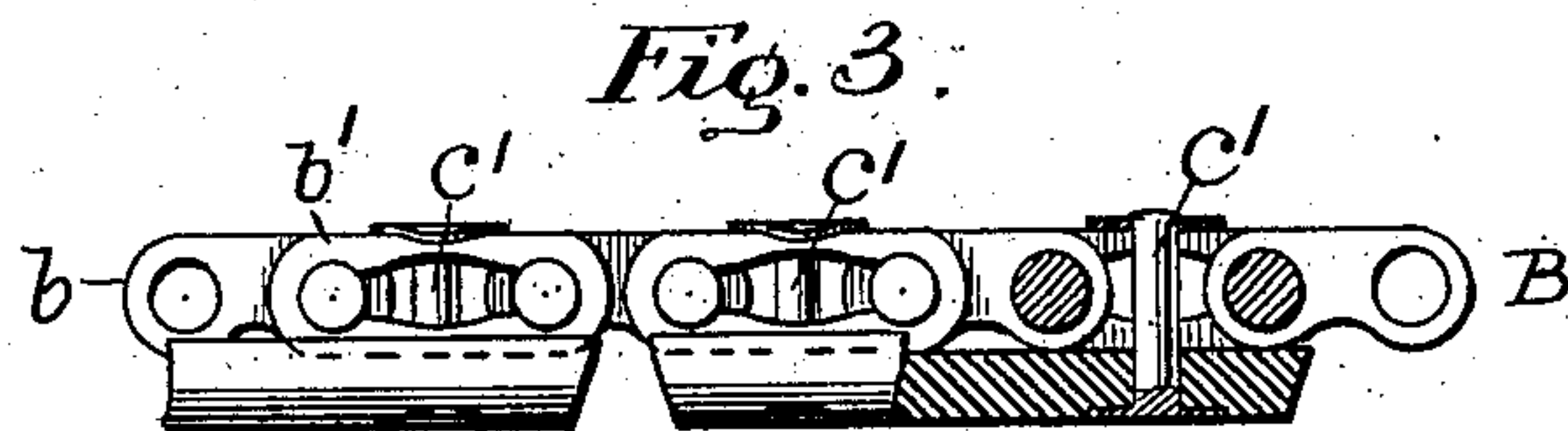
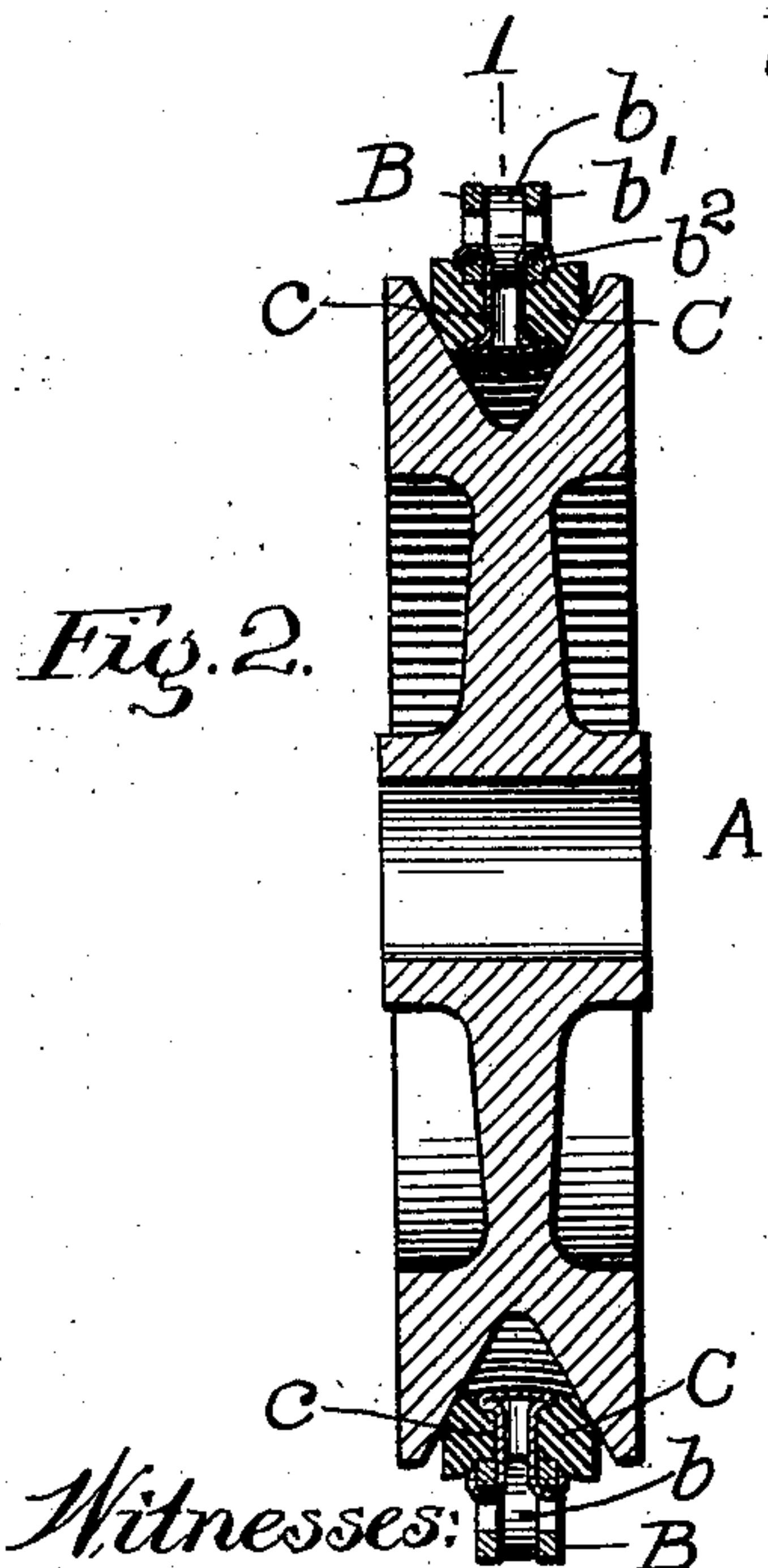
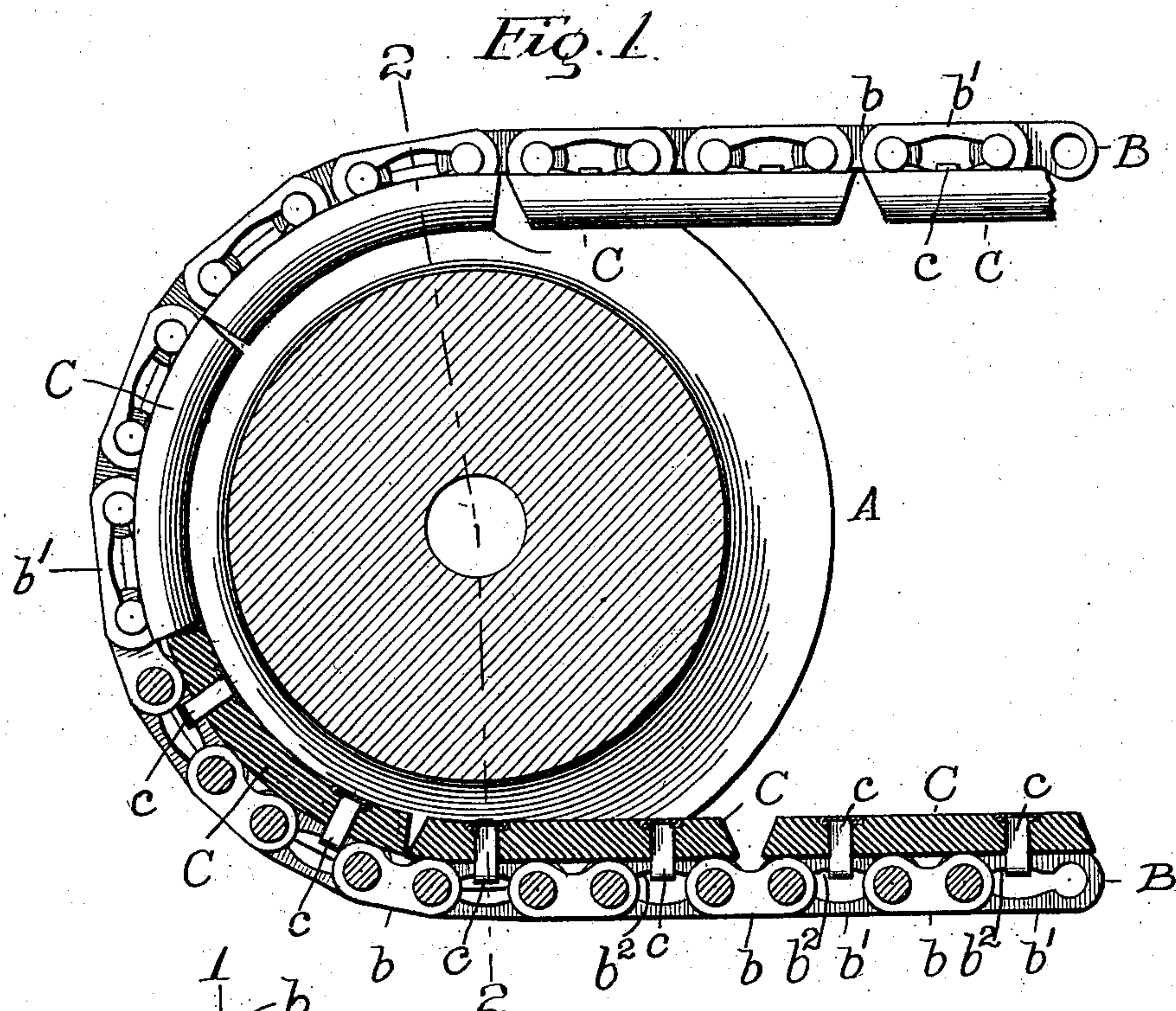
No. 721,643.

PATENTED FEB. 24, 1903.

I. M. WILLIE.  
DRIVE BELT.

APPLICATION FILED FEB. 3, 1902.

NO MODEL.



Witnesses:  
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Atty



# UNITED STATES PATENT OFFICE.

ISAAC M. WILLIE, OF FREEPORT, ILLINOIS.

## DRIVE-BELT.

SPECIFICATION forming part of Letters Patent No. 721,643, dated February 24, 1903.

Application filed February 3, 1902. Serial No. 92,258. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC M. WILLIE, a citizen of the United States of America, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Drive-Belts, of which the following is a specification.

My invention relates to certain new and useful improvements in drive-belts; and its object is to produce a belt which is exceedingly strong and approximately non-elastic and which has at the same time as great friction upon the pulleys over which it runs as have the ordinary forms of belts in common use.

To this end my invention consists in certain novel features of construction, which are fully illustrated in the accompanying drawings and described in this specification.

In the drawings, Figure 1 is a section in the line 1 1 of Fig. 2, showing a certain part of the belt in elevation. Fig. 2 is a section in line 2 2 of Fig. 1, showing the form of pulley which I prefer to use with this type of belt. Fig. 3 is an elevation and section of a modified form of my belt. Fig. 4 is a second modified form of the same; and Fig. 5 is a section in the line 5 5 of Fig. 4, showing the construction of this second modification.

Referring to the drawings, A is a pulley, the shape of which is clearly shown. I prefer to use this form of pulley with my improved belt and find it more satisfactory; but it will be obvious that the belt can be used with other forms of pulleys.

B is a chain similar to that used on sprocket-wheels, consisting of the blocks *b* and the links *b'*. To the chain B are secured a number of leather strips C, slightly beveled at the ends, as is clearly shown in Fig. 1. In the preferred form of my belt the leather strips C extend over two of the links *b'* and the intervening block *b* and are secured to the links by means of forked rivets *c*, passing through the chain and spread out to engage with holes *b<sup>2</sup>* of the link-plates *b'*. This construction is clearly shown in Fig. 1.

The first modification of my belt (see Fig. 3) is much the same as the form shown in Fig. 1, except that the rivets *c'* run completely through the chain and are secured on the opposite side. The rivets, both in this

modified form and in the preferred form, are made loose enough to permit a certain amount of longitudinal movement between the strips and the chain, so that in going around the pulley there will be no binding or straining, but merely an easy play between the two parallel portions of the belt. The second modification (shown in Figs. 4 and 5) is somewhat different in that the leather strips C' cover only one link and are bent around the link on three sides and secured by the rivet *c<sup>2</sup>*, passing, preferably, through the link. (See Fig. 5.)

The particular advantages of my improved drive-belt are to a certain extent very obvious. The chain B is exceedingly strong and practically inelastic, while the leather bearing-surfaces C give to the combination all the advantages which a friction-drive has over a positive chain-gear. In other words, the combination produced in my belt has all the advantages, so far as strength and inelasticity go, that the driving-chain has, and it also has all the advantages of any of the well-known forms of friction-drive.

Each one of the modifications shown has certain advantages which fit it for special work. The preferred form (shown in Fig. 1) is that which is used where this belt merely replaces a chain-drive and where it is desirable to use a sprocket-idler to keep the belt tight. The rivets *c*, not coming to the outer surface of the chain at all, in no way conflict with the proper action of an idler, and I therefore use this form of riveting under the circumstances. The first modification, Fig. 3, is much more easily and cheaply manufactured than is the preferred form, but of course it cannot be used with a sprocket-idler. The form in Figs. 4 and 5 is preferable where a flat pulley is used. I prefer to use the form of pulley shown in Fig. 2, for the reason that the leather strips become to a certain extent wedged out and produce a firm grip on the pulley and for the further reason that owing to the central depression there is no noise or rattle due to the passage of the rivet-heads through the pulley, as there would be were the flat pulley used. Of course the second modification, Figs. 4 and 5, can be used with a flat pulley without this rattle and noise, as above stated, and it is



therefore the best form to use with this kind of a pulley.

I realize that considerable variations might be made in this form of construction, that  
5 other well-known friction materials might be used in place of leather for the construction of the friction-strip—as, for example, rubber—and that other forms of drive-chains or perhaps even metallic strips might be used  
10 without altering the broad idea, and I therefore do not wish to limit myself to the specific form herein set forth.

I claim as new and desire to secure by Letters Patent—

15 1. In a drive-belt, the combination with a suitable flexible metallic chain, consisting of alternate blocks and links, said links being provided with suitable perforations, of a plurality of friction-strips applied to the surface  
20 of said chain and suitable rivets passing through said strips and turning outward to

engage the perforations in said links; substantially as described.

2. In a drive-belt, the combination with a plurality of solid links, of a plurality of slot- 25 ted links alternating therewith and a plurality of friction-strips each extending over two of said slotted links and the intermediate solid link and suitable rivets passing through said friction-strips and into the slots of said 30 slotted links and having a limited play therein, substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand, at Freeport, in the county of Stephen- 35 son and State of Illinois, this 28th day of January, A. D. 1902.

ISAAC M. WILLIE.

Witnesses:

CHAS. D. KNOWLTON,  
E. T. MORSE.