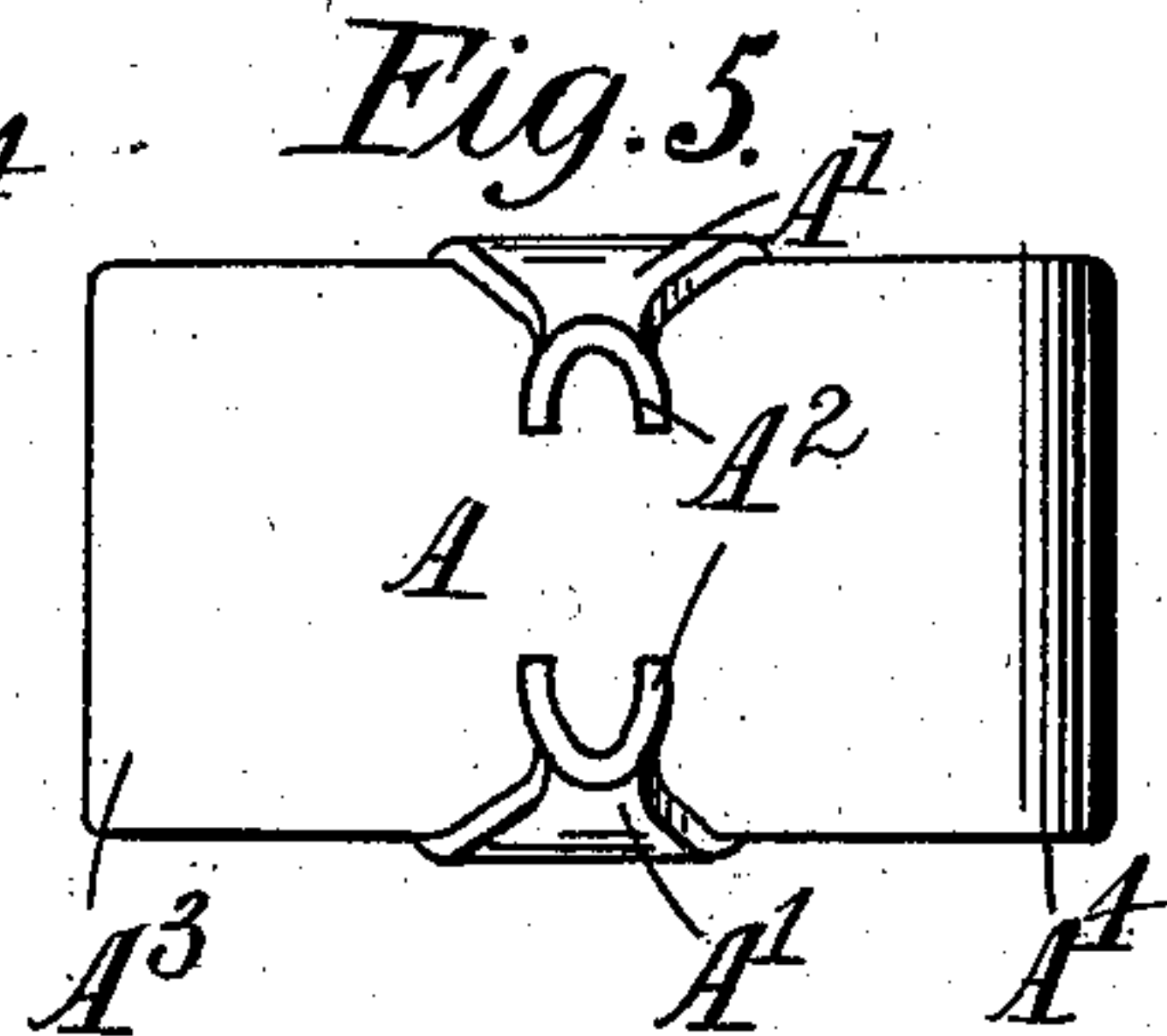
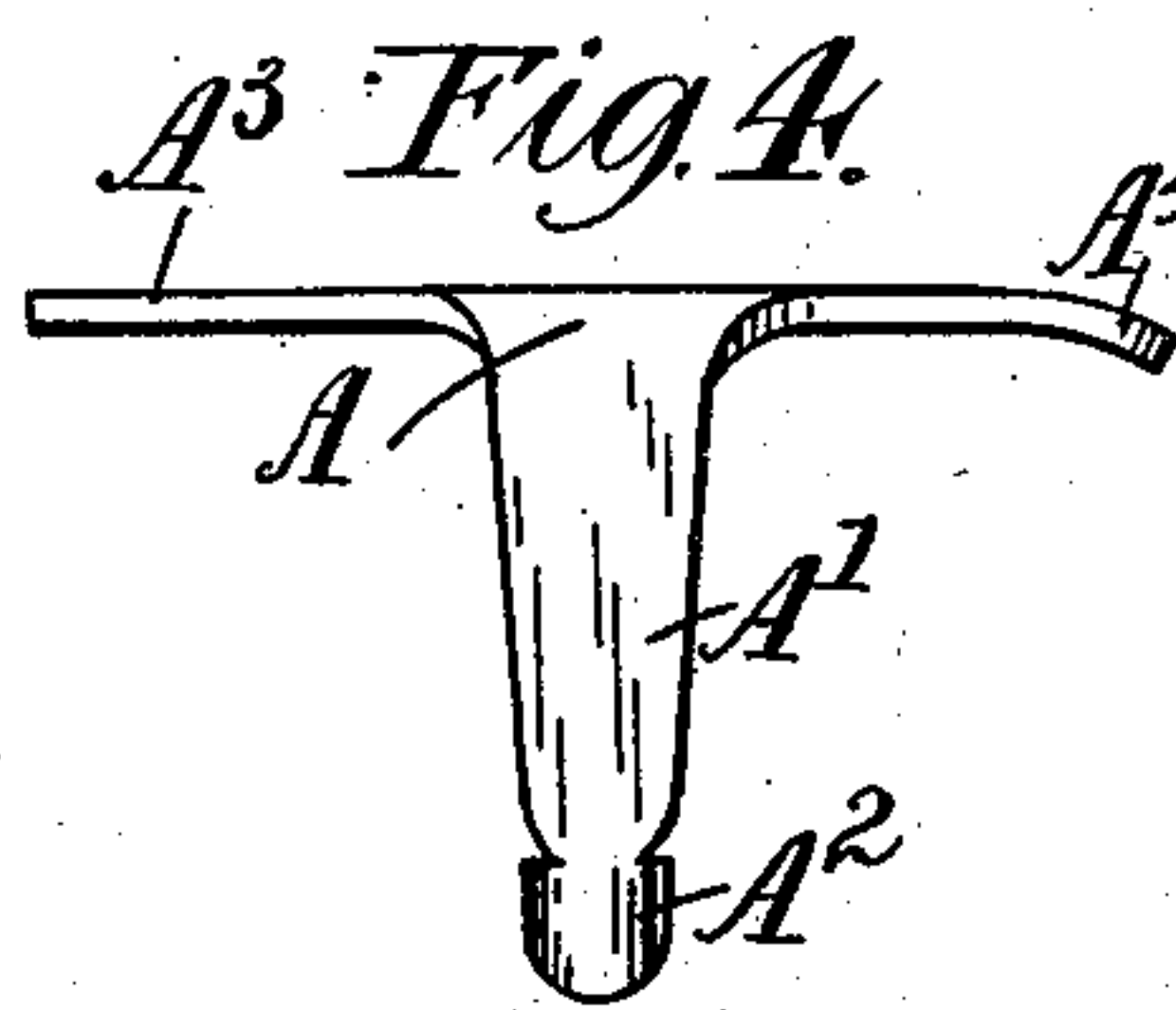
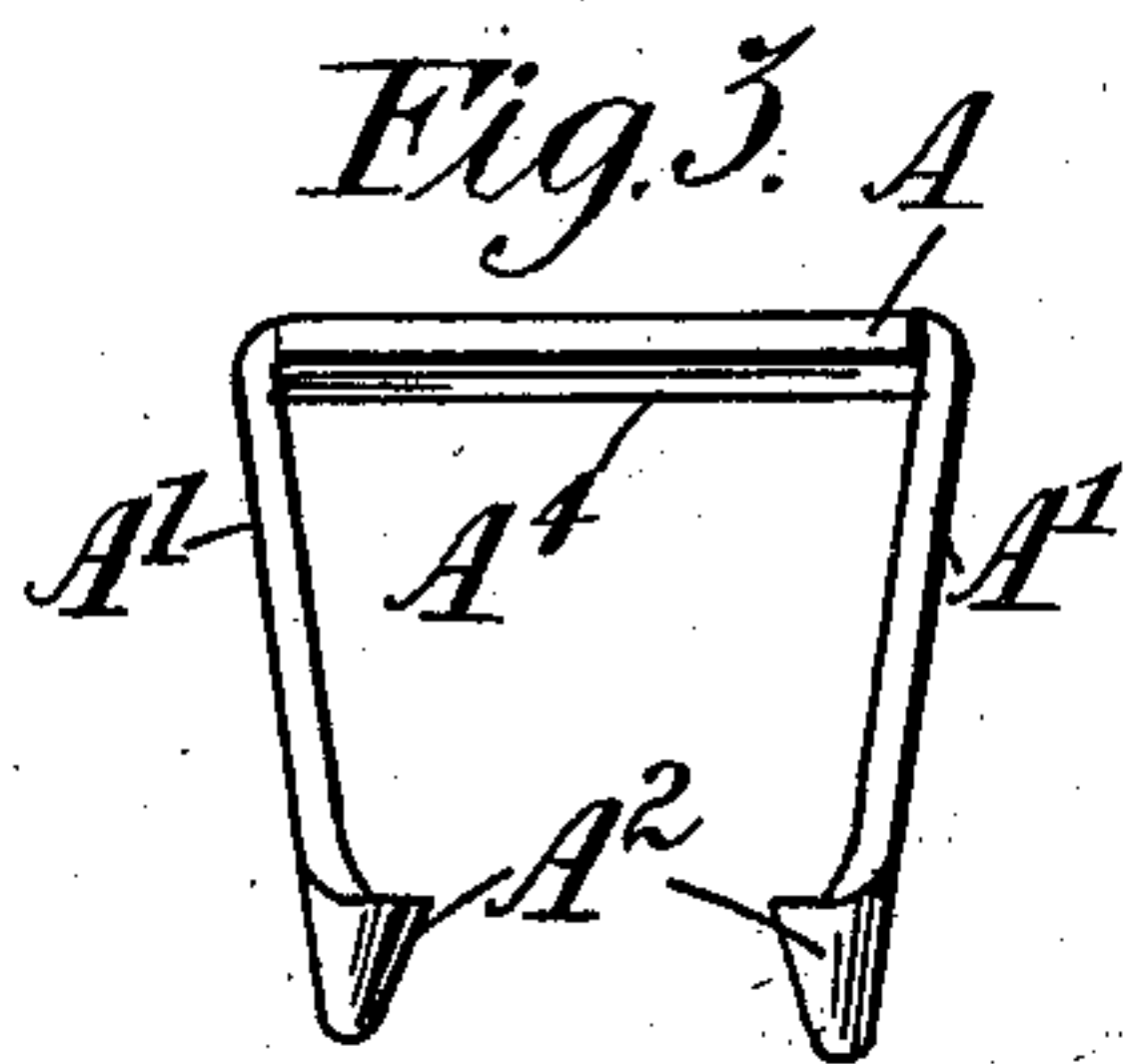
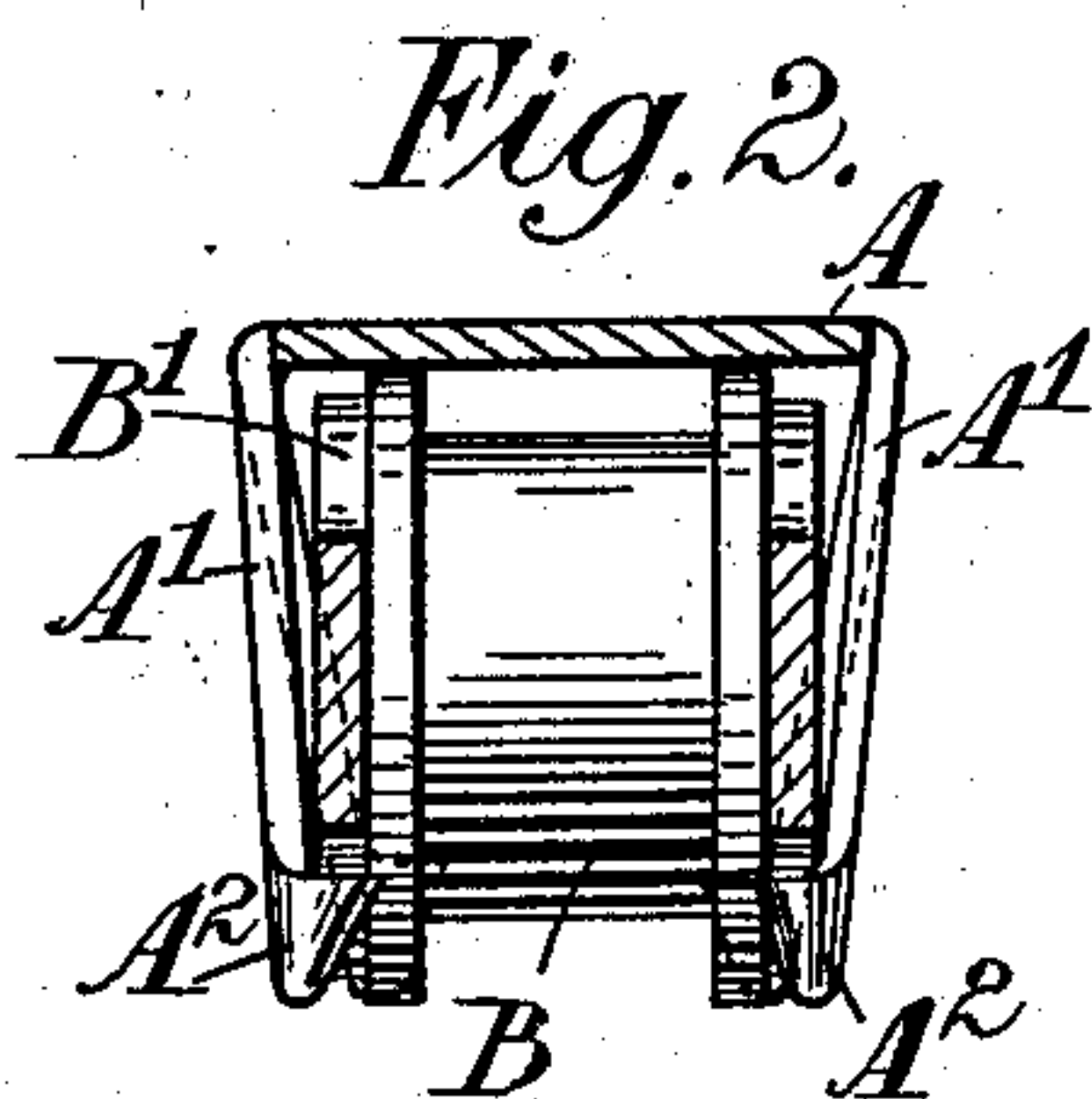
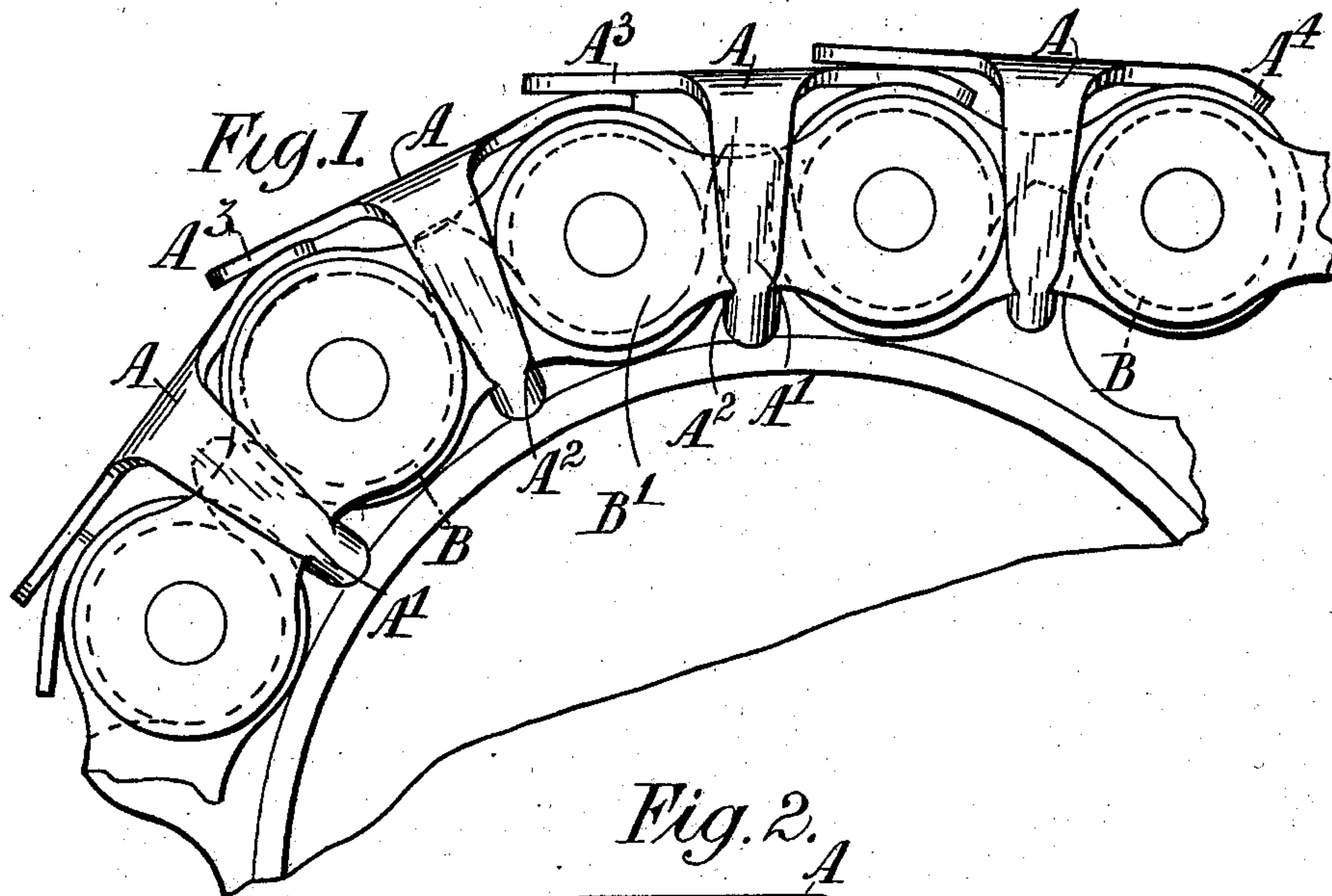


E. CATCHPOOL.  
PROTECTION OF DRIVING CHAINS.

(Application filed Feb. 27, 1902.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:  
Arthur L. Bryant,  
C. W. Clement.

Inventor:  
Ernest Catchpool  
by Watson & Watson  
Attys.

No. 702,775.

Patented June 17, 1902.

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PROTECTION OF DRIVING CHAINS.

(Application filed Feb. 27, 1902.)

(No Model.)

4 Sheets—Sheet 2.

Fig. 8.

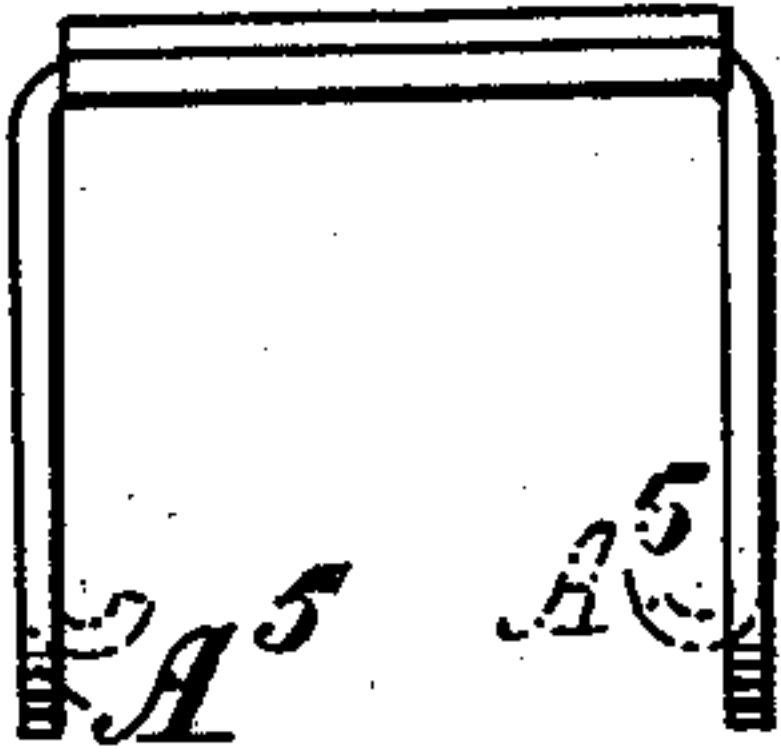


Fig. 9.

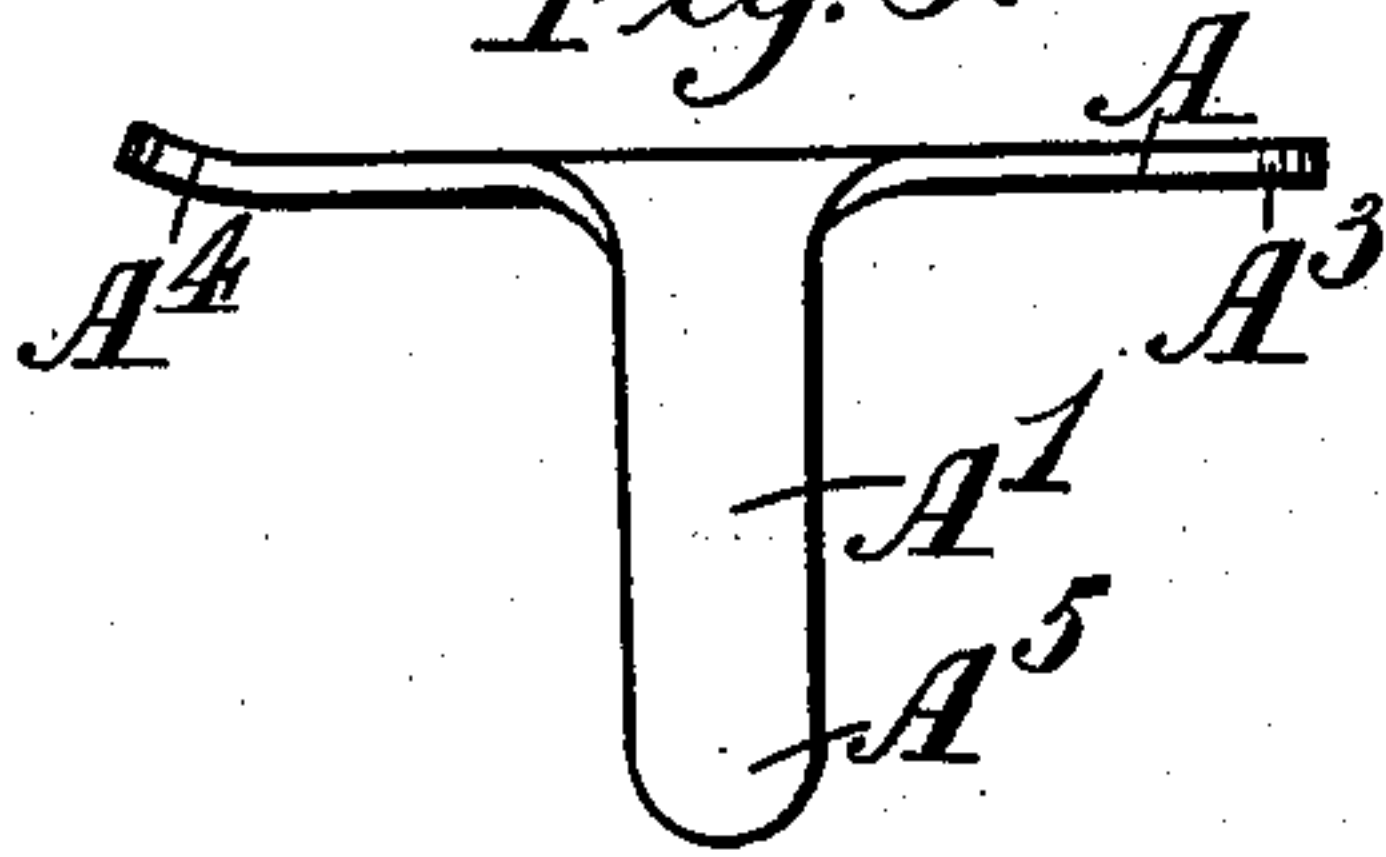


Fig. 10.

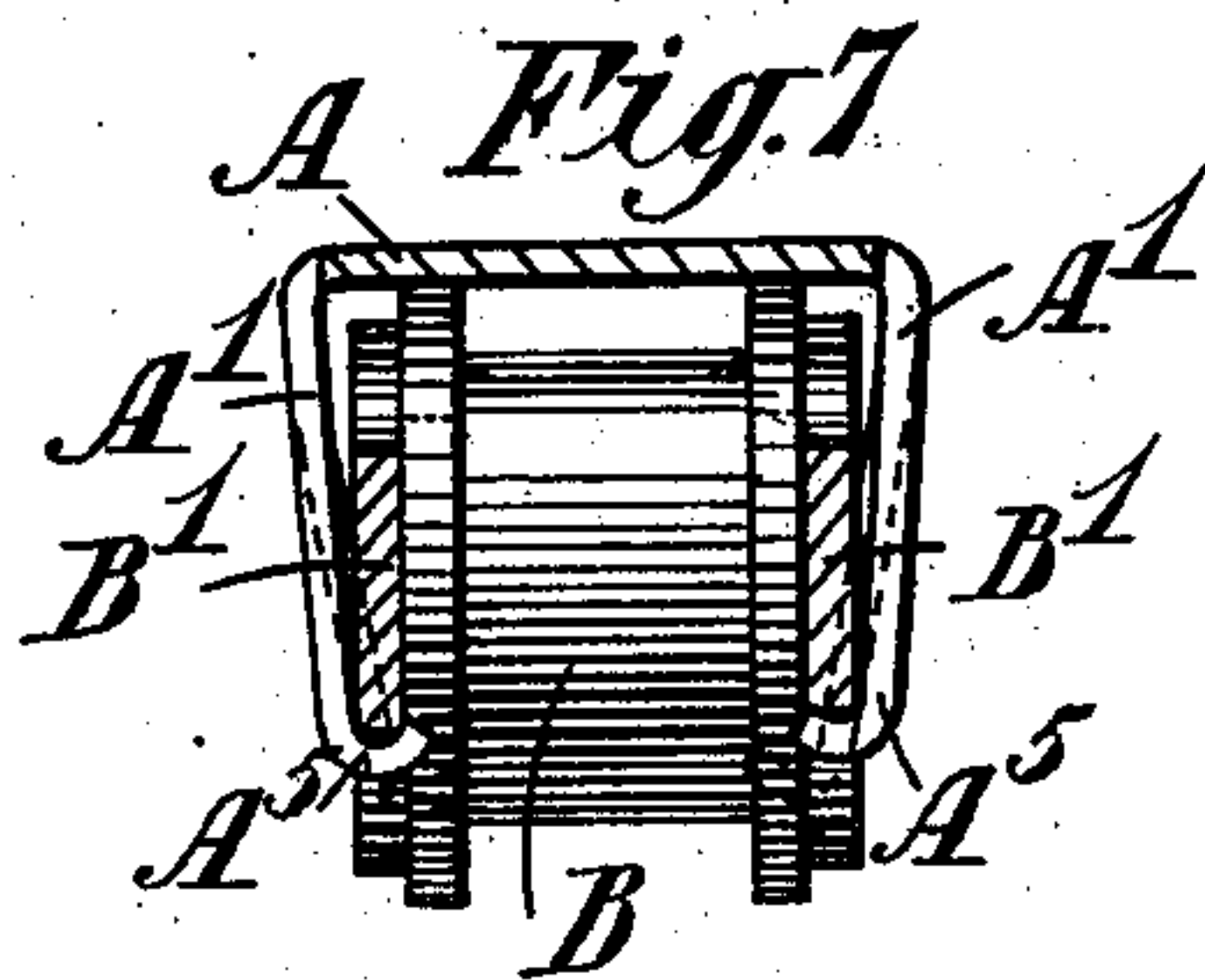
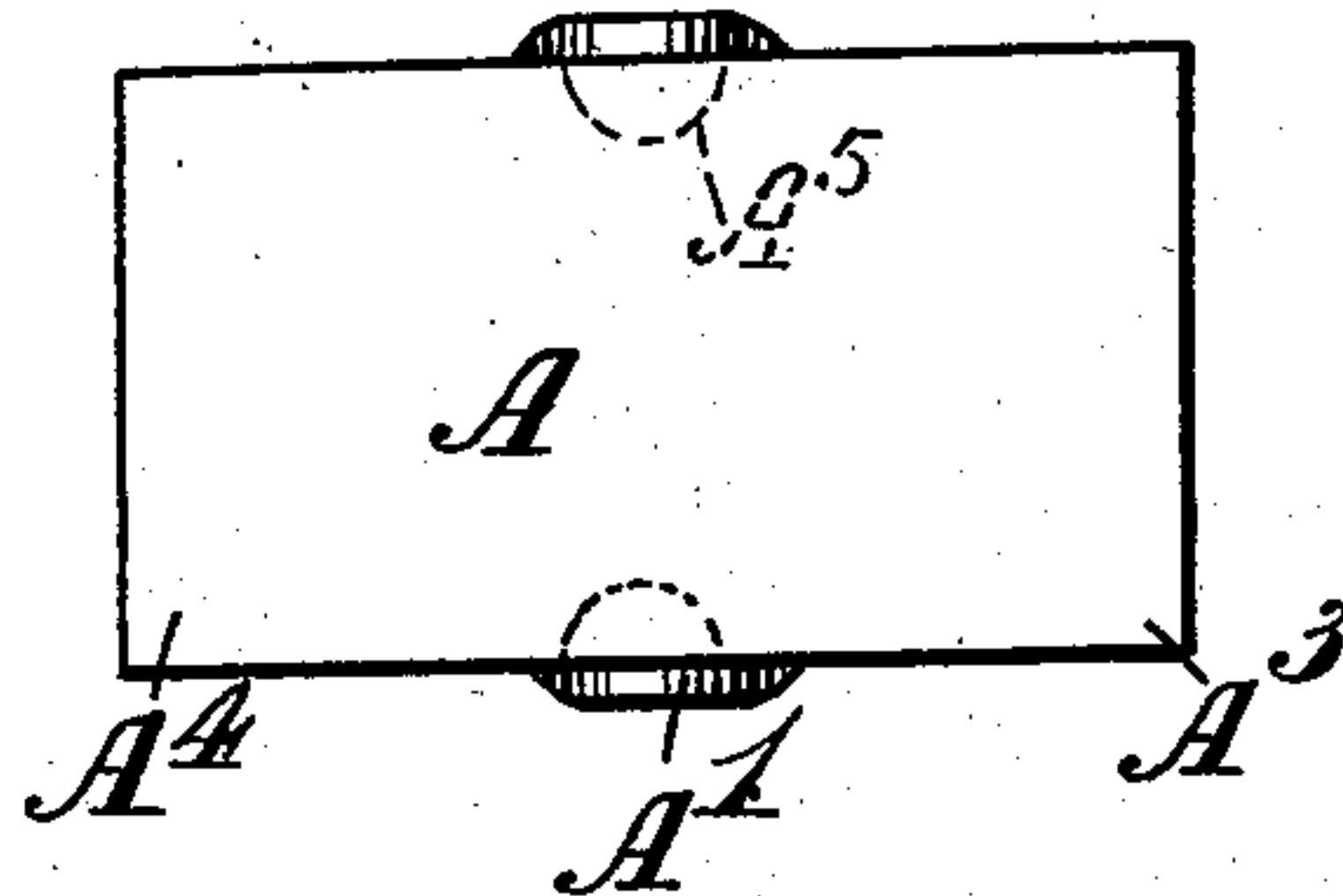


Fig. 11.

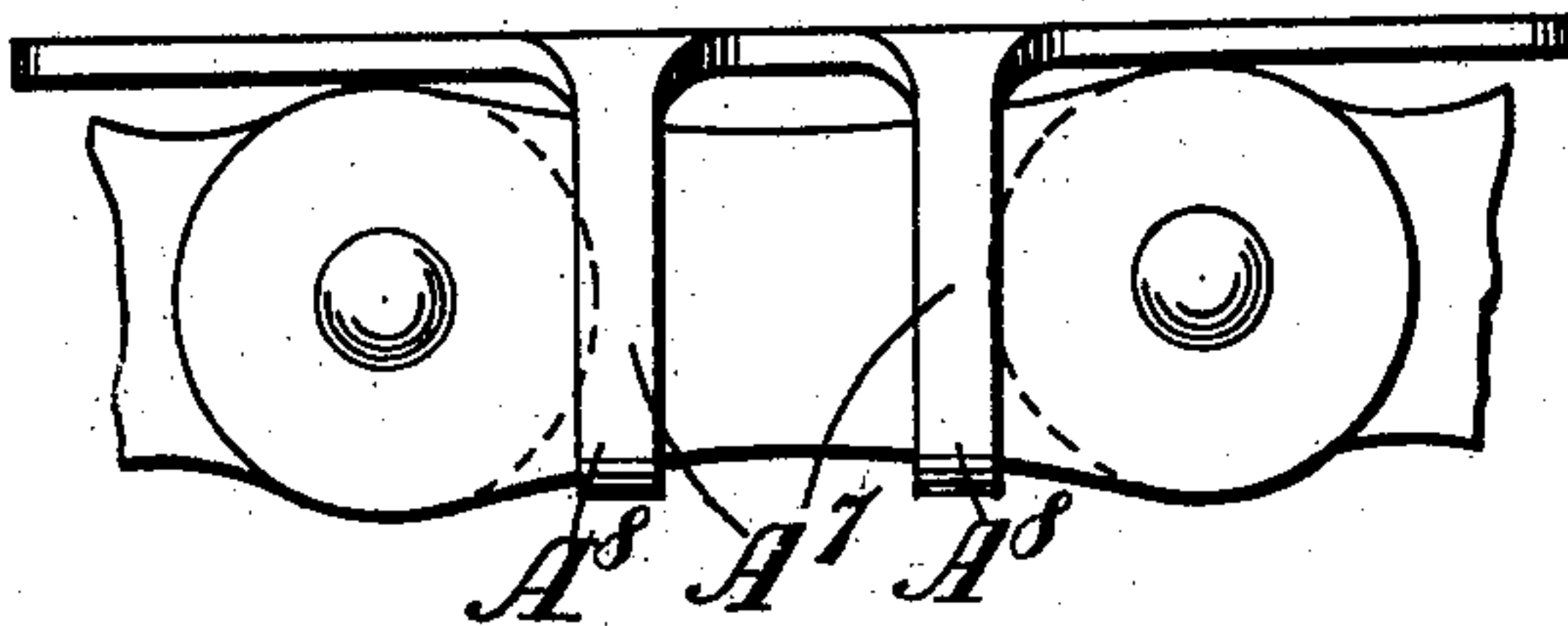
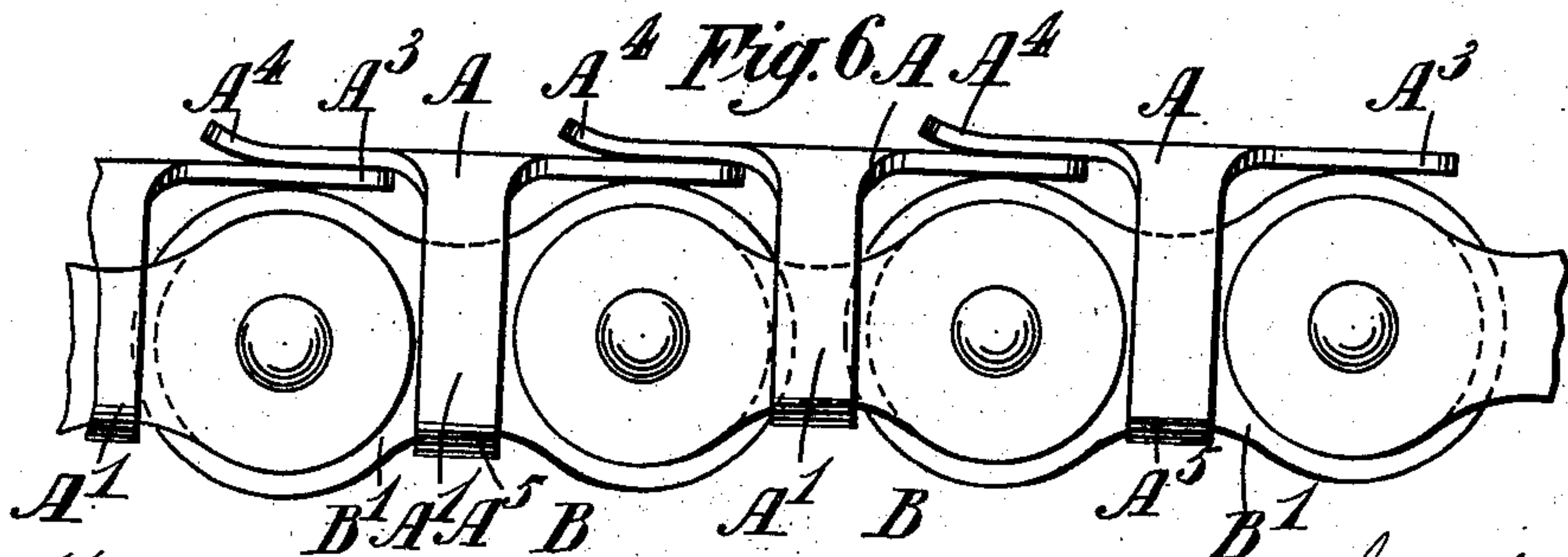
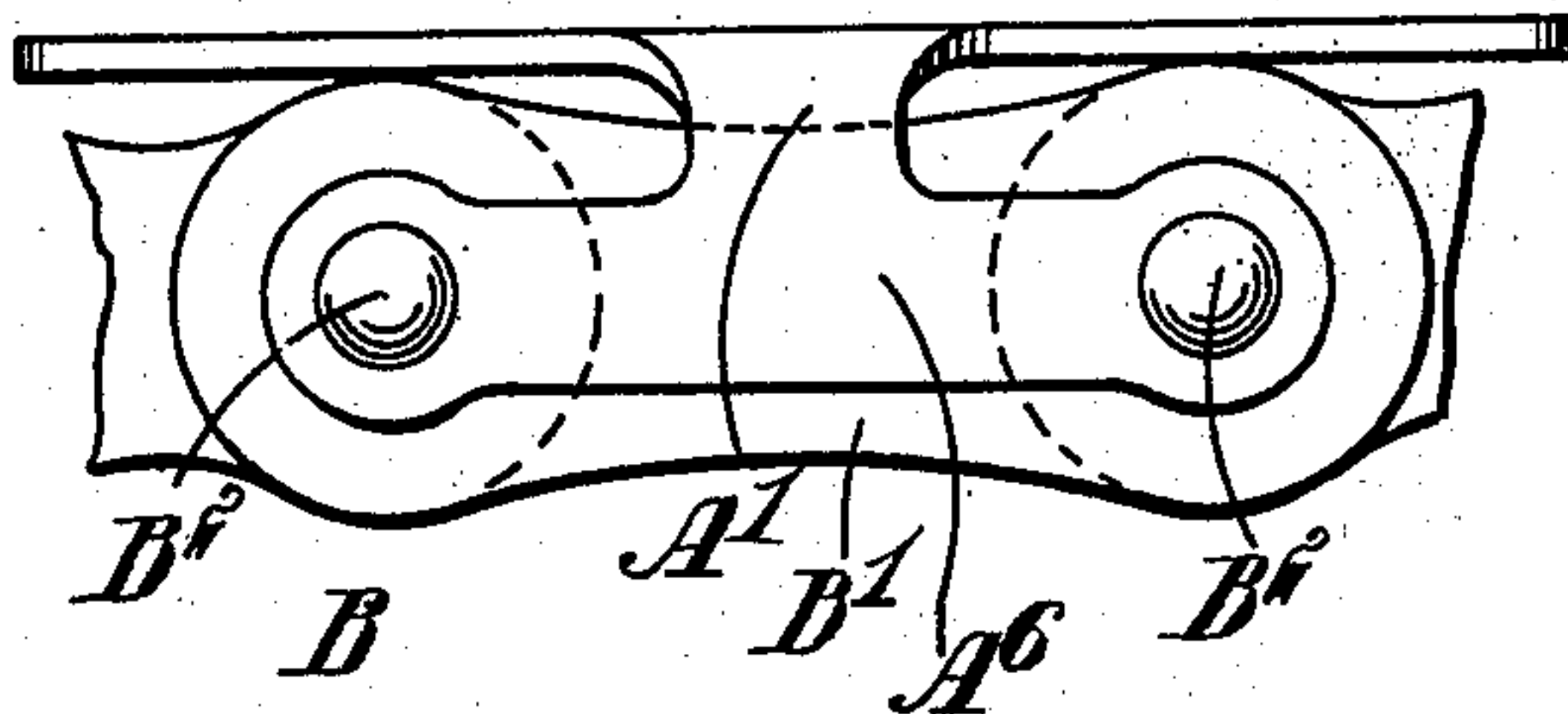


Fig. 12.



Witnesses:  
Arthur L. Bryant,  
C. W. Clement.

Inventor:  
Ernest Catchpool  
by Watson & Watson  
Attys.

No. 702,775.

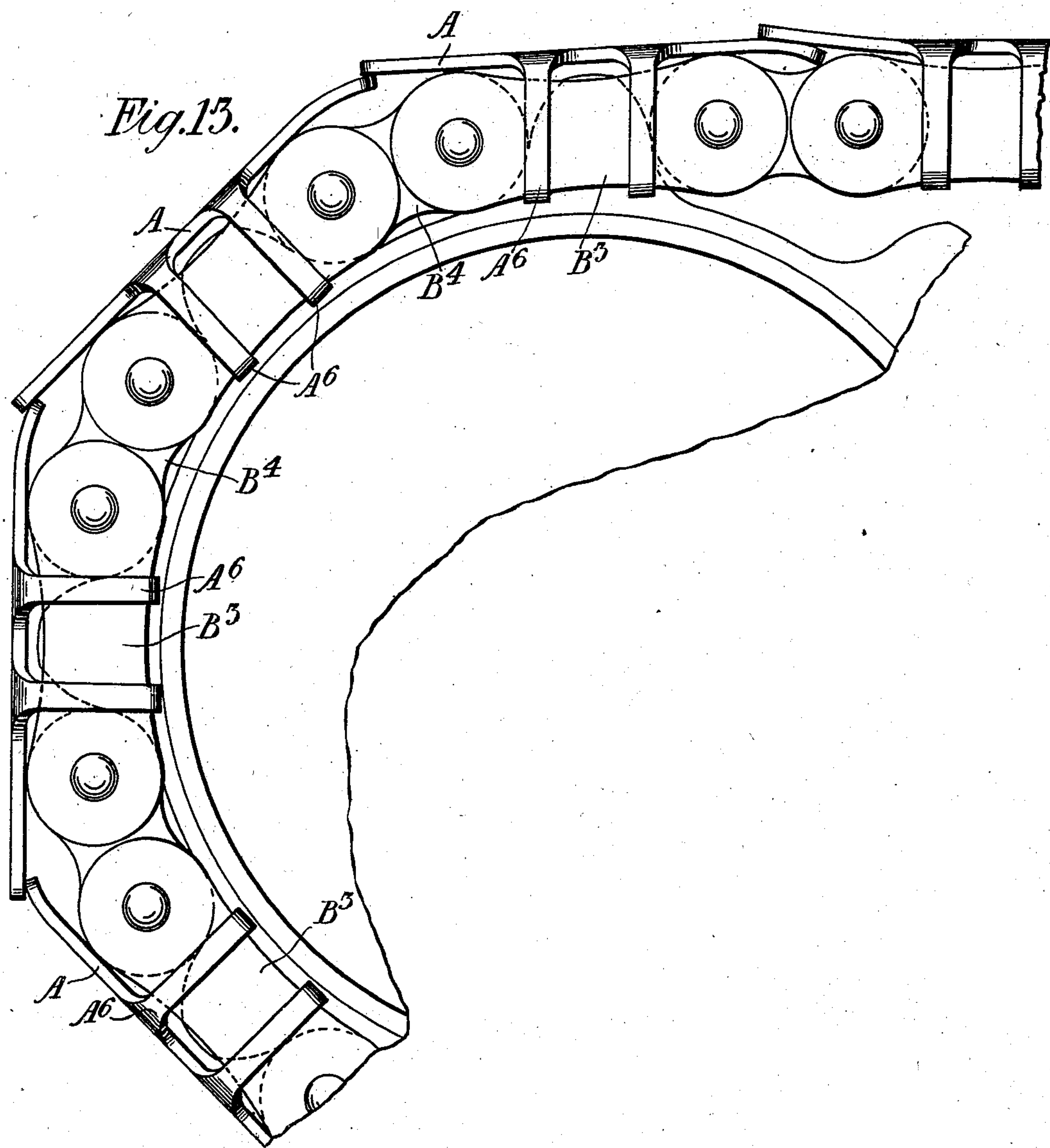
Patented June 17, 1902.

E. CATCHPOOL.  
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(Application filed Feb. 27, 1902.)

(No Model.)

4 Sheets—Sheet 3.



*Witnesses:*  
*Arthur L. Bryant,*  
*C. W. Clement.*

*Inventor:*  
*Ernest Catchpool*  
*by Watson & Watson*  
*Attys*



No. 702,775.

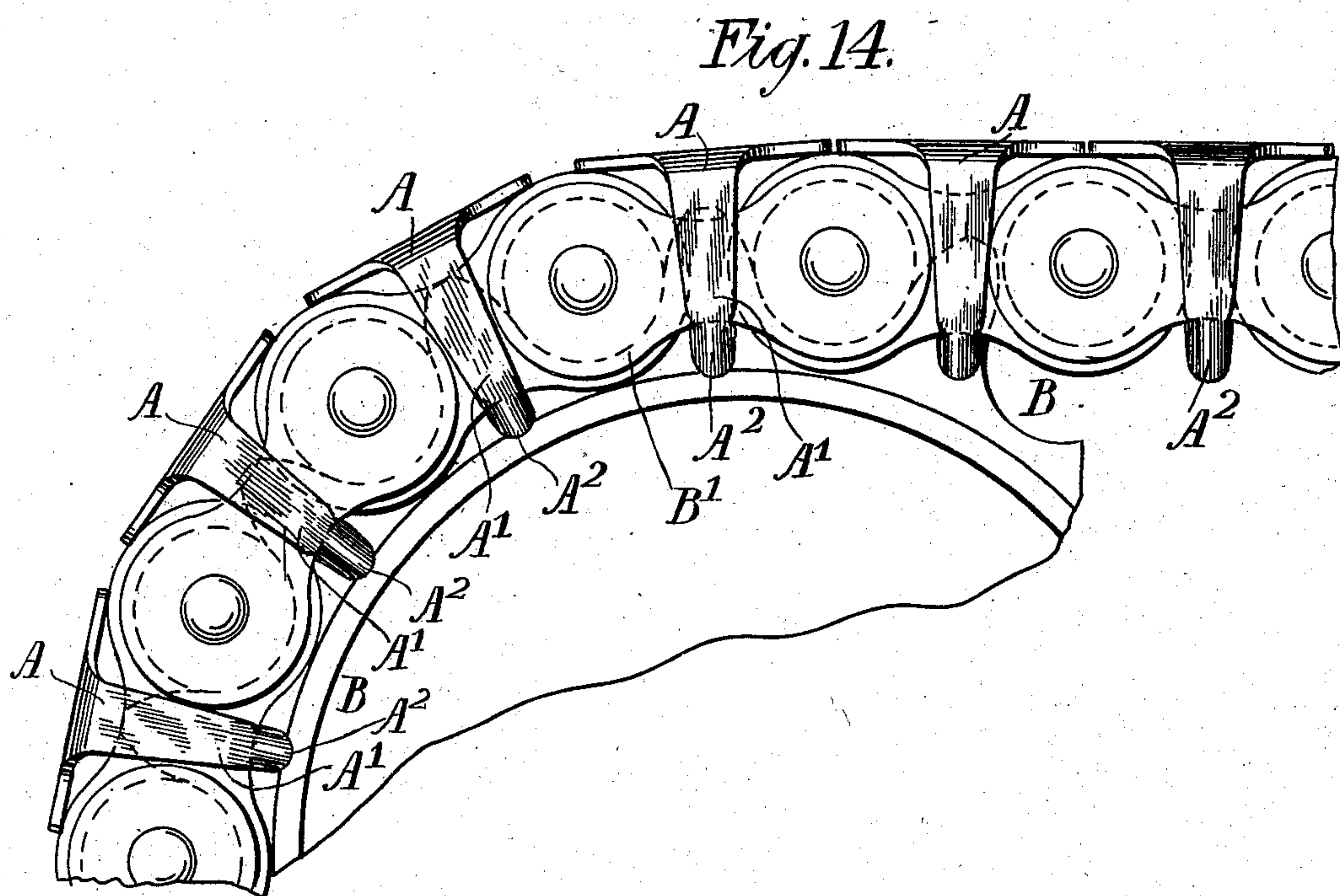
Patented June 17, 1902.

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PROTECTION OF DRIVING CHAINS.

(Application filed Feb. 27, 1902.)

(No Model.)

4 Sheets—Sheet 4.



Witnesses:  
Arthur L. Bryant,  
C. H. Clement.

Inventor:  
Ernest Catchpool  
by Watson & Watson  
Attys



# UNITED STATES PATENT OFFICE.

ERNEST CATCHPOOL, OF DEAL, ENGLAND.

## PROTECTION OF DRIVING-CHAINS.

SPECIFICATION forming part of Letters Patent No. 702,775, dated June 17, 1902.

Application filed February 27, 1902. Serial No. 95,933. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST CATCHPOOL, a subject of the King of England, residing at Deal, county of Kent, England, have invented certain new and useful Improvements in or Relating to the Protection of Driving-Chains, (for which I have made application in Great Britain under No. 15,344, dated July 29, 1901,) of which the following is a specification.

10 This invention relates to driving-chains, and has for its chief object to provide means for protecting the chain from dirt, wet, &c.

According to this invention I provide each link with a separate shield or protecting-plate, 15 which may be applied to the links either in the course of manufacturing the chain or independently to an existing chain.

Referring to the drawings, Figure 1 is a side elevation, on an enlarged scale, showing my invention applied to a roller-chain such as is generally employed on cycles. Fig. 2 is a cross-section of Fig. 1. Figs. 3, 4, and 5 are respectively an end view, a side elevation, and an inverted plan, of one of the shields separately. Fig. 6 is a side elevation of a modified construction of shield applied to a similar chain. Fig. 7 is a transverse section of Fig. 6. Figs. 8, 9, and 10 are respectively an end view, a side elevation, and an inverted plan, of a shield separately. Fig. 11 is a longitudinal view of a further-modified form of shield applied to the link of the chain, such as is generally employed on motor-vehicles. Fig. 12 is a longitudinal elevation of a shield which is applied to the links during the manufacture of the chain. Fig. 13 is a side elevation showing my invention applied to a block-chain, such as is employed on motor-vehicles; and Fig. 14 shows another modification, in 40 which the ends of the shield do not overlap.

Referring more particularly to Figs. 1 to 5, in which the shields are shown applied to the links B of a roller-chain, each shield consists of a plate A, of metal or other suitable material, and is of the same or approximately the same length as the chain-link to which it is attached. At each side the shield is provided with extensions or arms A', which are bent or folded down over the side plate B' of the chain-link and carry at their lower ends inwardly-extending teeth or projections A<sup>2</sup>. The extensions on the shields are strung onto

the links and are retained in position by the teeth A<sup>2</sup>, which engage or bear against the lower edge of the side plate B' of the link. 55

The end portion A<sup>3</sup> of each shield overlaps the end portion A<sup>4</sup> of the shield on the adjacent link of the chain, the end A<sup>4</sup> being bent or curved, as shown in Fig. 1, to conform to the rounded end of the chain-link. The part A<sup>3</sup> overlaps the part A<sup>4</sup> of the adjacent shield to a sufficient extent to protect the chain-links, and as the chain passes around the wheel the underlapping end A<sup>4</sup> of each shield tends to raise the overlapping end A<sup>3</sup> of the adjacent shield, (see Fig. 1,) so as to break off any mud which may have collected there. 60 65

By bending the portion at the end of the plate the two plates are permitted to move relatively to each other without undue friction. 70

In the arrangement shown in Figs. 6 to 10 the lower ends of the extensions A' of the shield are not provided with teeth, as above described; but the parts A<sup>5</sup> and their lower extremities are adapted to be bent around the lower edge of the side plate of the link, (see Fig. 3,) and thus retain the shield in proper position. Instead of bending the underlapping end of the shield, as in the arrangement above described, the overlapping end A<sup>3</sup> is bent or curved upwardly, which has the same effect as the downwardly-bent portion described in the previous arrangement and permits the chain to pass around the wheel smoothly. 75 80 85

In Fig. 11 is illustrated a shield applied to a link of a roller-chain, such as is employed on motor-vehicles, the shield in this case being provided with two arms A', carrying parts A<sup>6</sup> at their lower extremities, which are adapted to embrace the lower edge of the side plate of the link. The plate extensions A' may, as shown in Fig. 12, be arranged to be held by the chain-rivets B<sup>2</sup>, and in this case plates A<sup>6</sup> are formed integral with the extensions A' of the chain, and the rivets are passed through holes in the plates A<sup>6</sup> in the course of manufacturing the chain. 90 95

In Fig. 13 I have shown the shield applied to a block-chain such as is generally applied to motor-vehicles and comprising links B<sup>3</sup> and blocks B<sup>4</sup>. In this case the shields are applied only to the links of the chain and have 100



their ends projecting over the blocks, as shown, to a sufficient extent to prevent them being uncovered when the chain is passing around the wheel. Each shield is provided  
 5 with two extensions A<sup>6</sup>, which have their lower ends bent around the lower edge of the side plate in a similar manner to those described with reference to Fig. 11, or the extensions may be provided with teeth, as already  
 10 described with reference to Figs. 1 to 5.

Instead of forming the shields with one end bent down, as described and shown in Figs. 1 to 5, or with an upturned end, as referred to and illustrated in Figs. 6 to 10, the shields  
 15 may be formed flat throughout their entire length, or one end of each shield may be bent downward and the other end bent upward.

The shields may be formed with side plates instead of the arms, in which case the side  
 20 plates would overlap the links sidewise, so as to protect the sides of the chain as well as its top.

According to the arrangement shown in Fig. 14 the ends of the shields A do not overlap  
 25 each other, as above described, but are arranged so as to protect only the open part of the links or the part into which the tooth of the wheel enters.

What I claim as my invention, and desire  
 30 to secure by Letters Patent, is—

1. The combination with an endless chain, of a series of protecting devices, each consisting of a shield or plate extending across one edge of the side bars of the link, and the  
 35 space between said bars, and having means engaging the opposite edges of the side bars of the link.

2. The combination with a chain-link, of a shield or plate extending across the space be-  
 40 tween the side bars of the link, and arms projecting from opposite sides of said plate and

having lugs engaging with the side bars of the link.

3. The combination with a chain-link, of a shield or plate extending across the space be- 45  
 tween the side bars of the link and having arms extending across said side bars and engaging the edges thereof opposite those adjacent the shield or plate.

4. The combination with a chain-link, of a 50  
 shield or plate extending across the space between the side bars of the link, and arms extending across said side bars and connected at one end to said plate and provided at their  
 55 opposite ends with lugs that extend across the edges of said side bars opposite those adjacent the shield or plate.

5. As an article of manufacture, the herein-described chain-link protector, consisting of a shield or plate adapted to extend across the 60  
 space between the side bars of a chain-link, and arms connected to said plate and provided with means for engaging with the edges of the side bars of the link opposite those ad-  
 65 jacent said plate.

6. As an article of manufacture, the herein-described chain-link protector consisting of a shield or plate adapted to extend across the 70  
 space between the side bars of the chain-link, and arms projecting from opposite sides of said plate, to extend across the side bars of a link and having at their ends inwardly-extending lugs adapted to engage with the edges of said side bars opposite those adjacent the  
 75 shield or plate.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNEST CATCHPOOL.

Witnesses:

ALFRED J. BOULT,  
 HARRY B. BRIDGES.