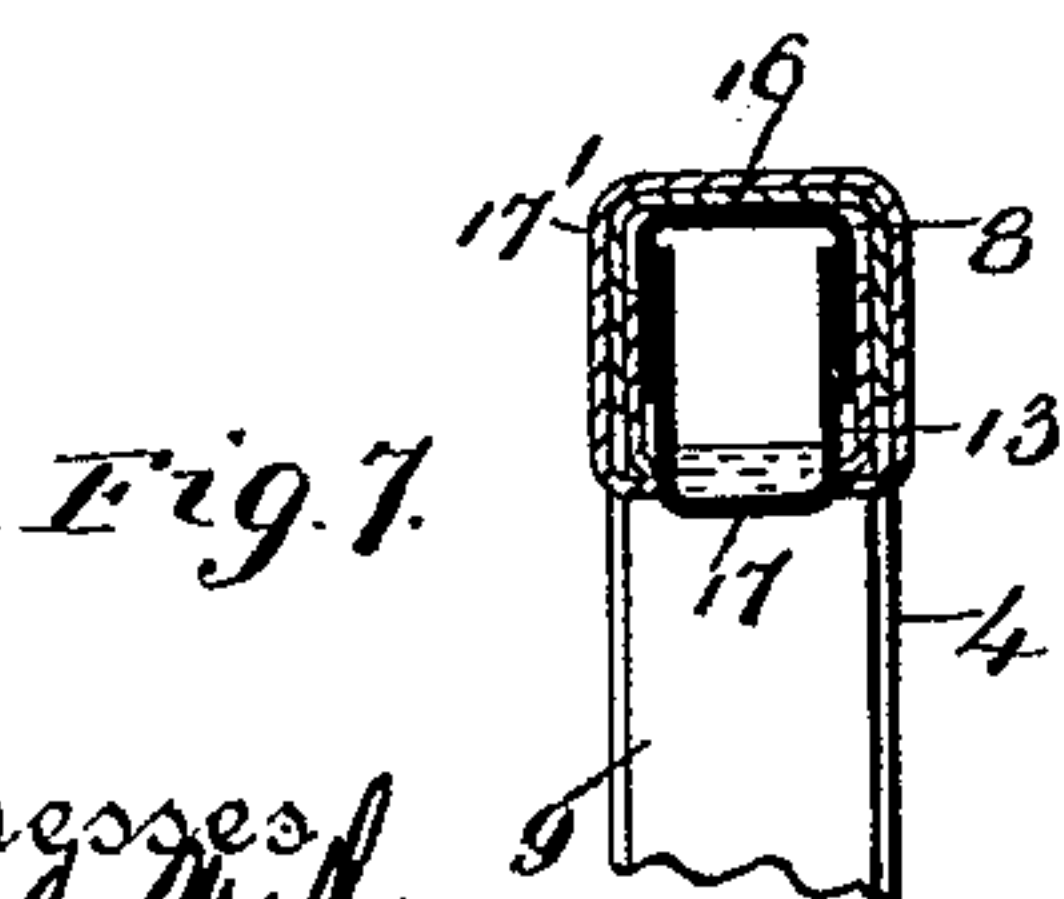
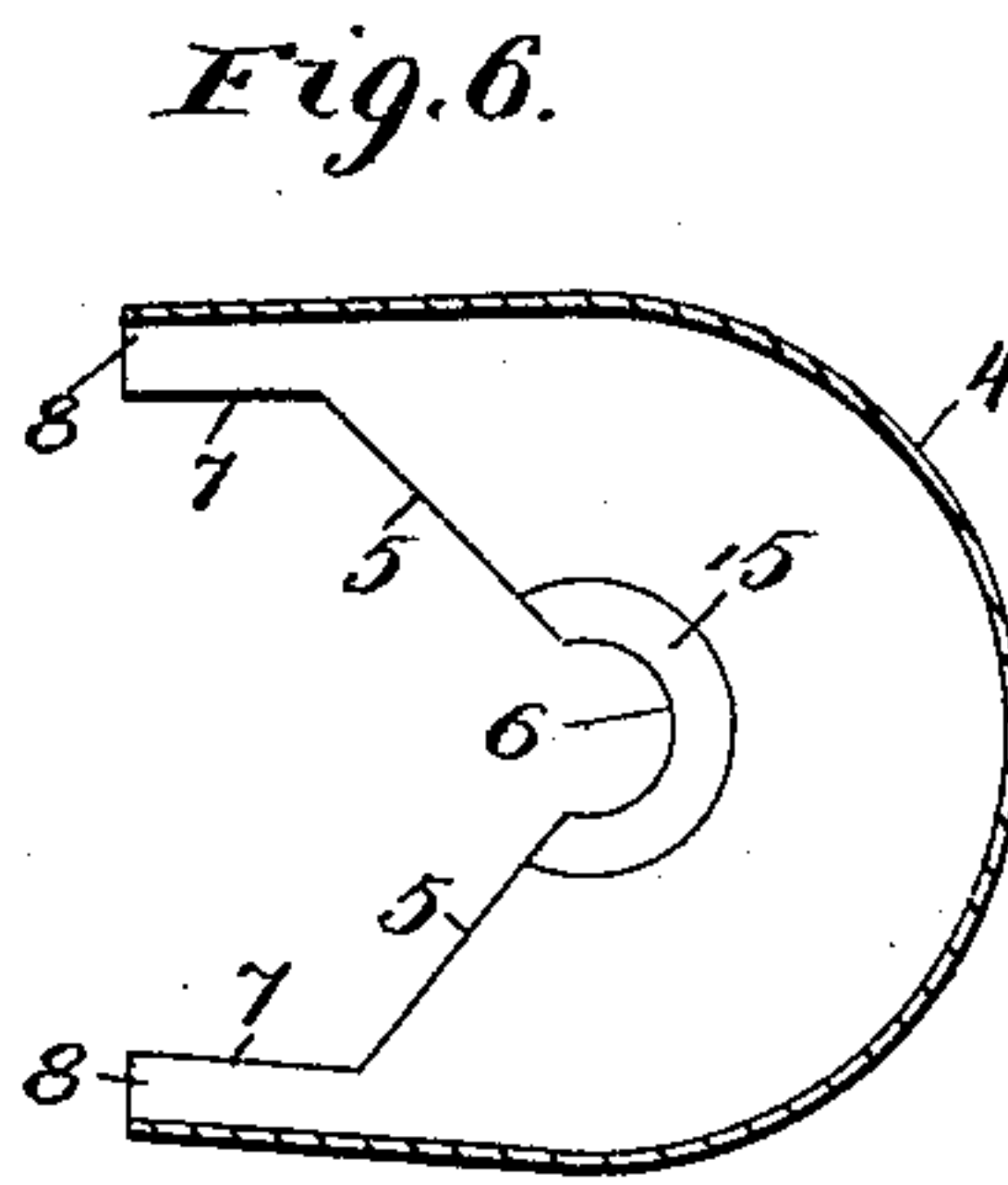
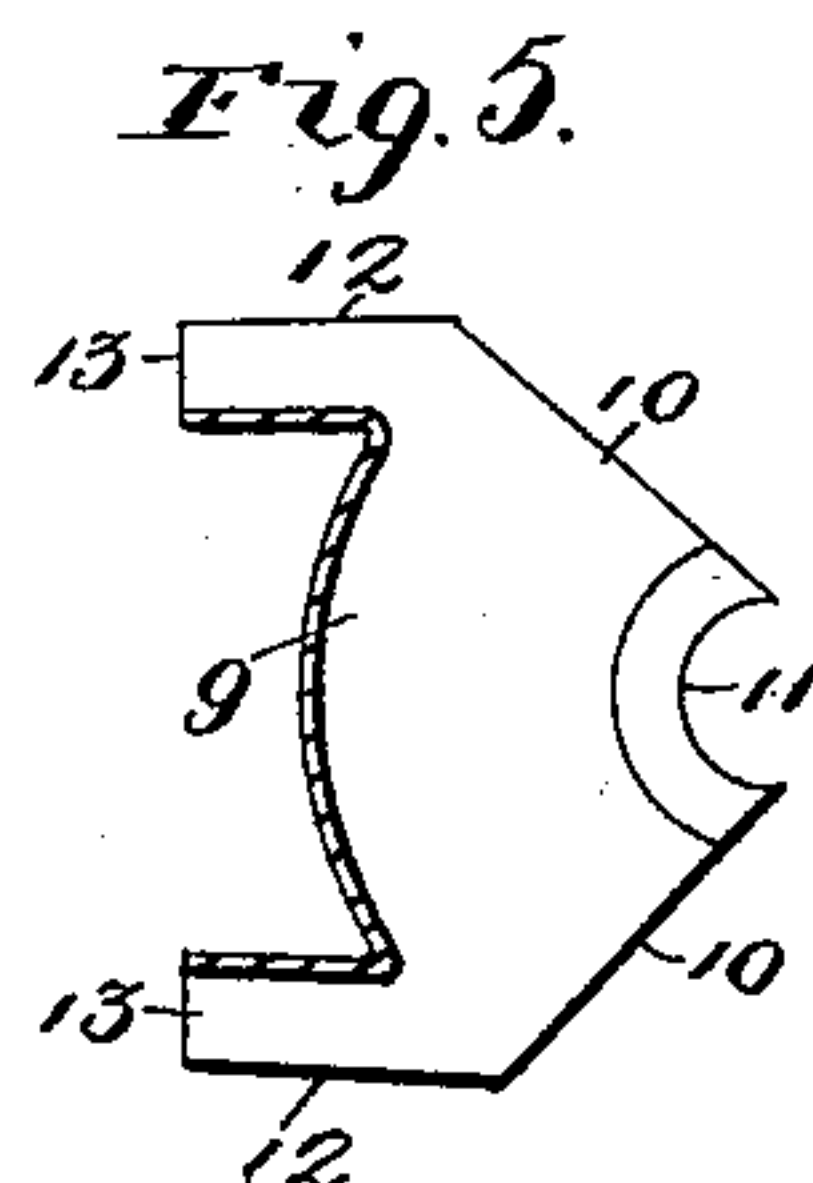
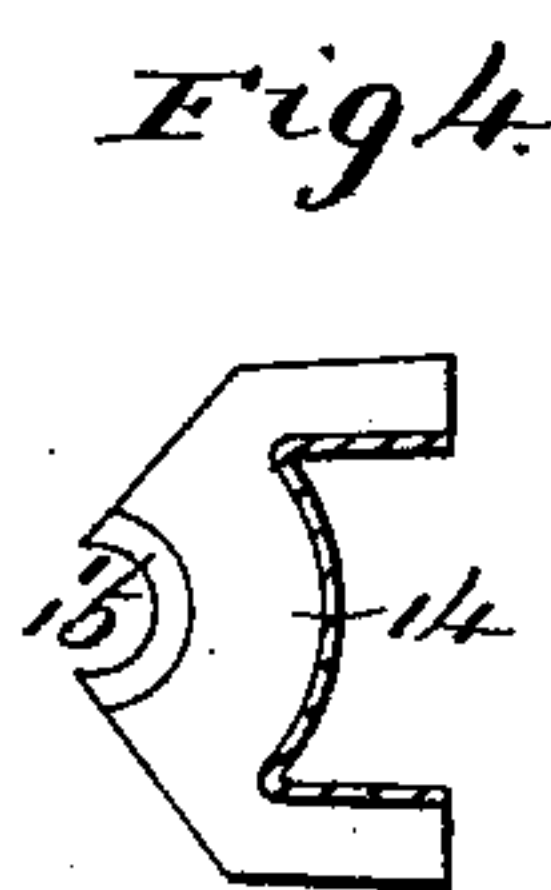
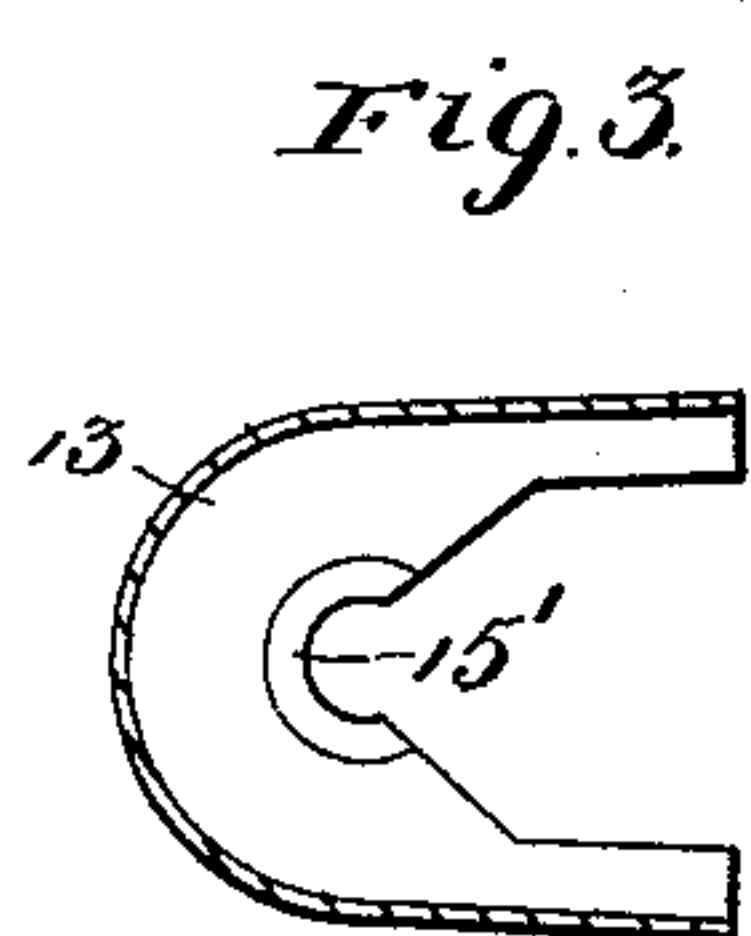
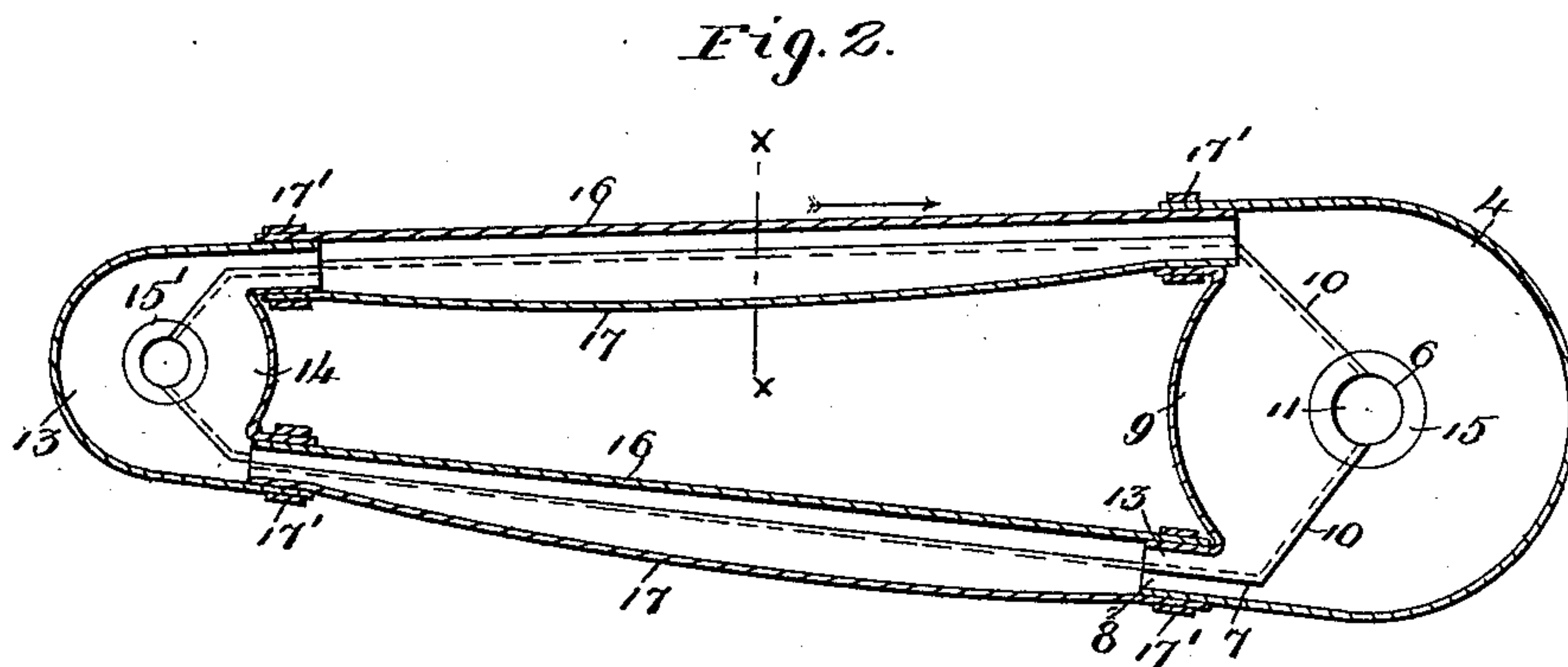
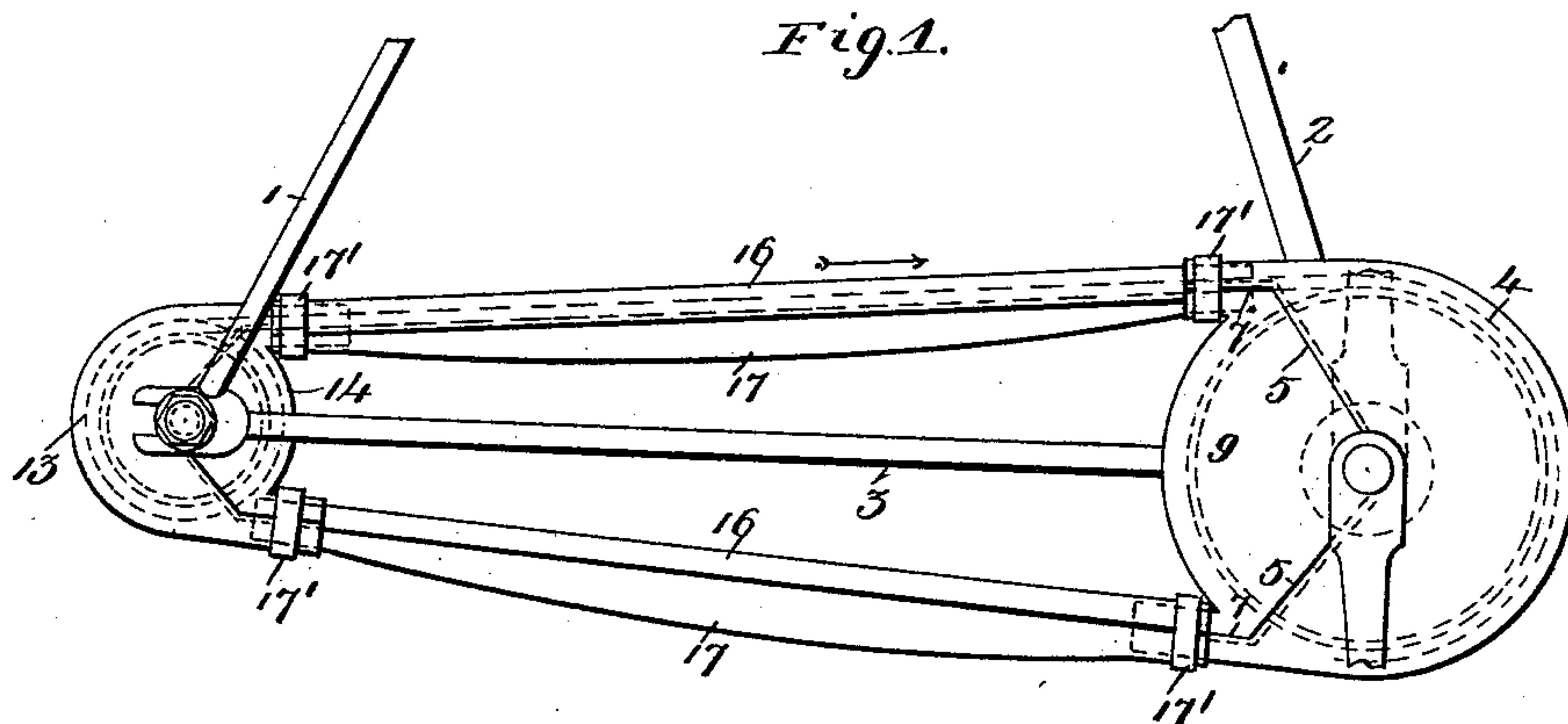


(No Model)

J. D. FARMER.  
GEAR CASING FOR BICYCLES.

No. 583,144.

Patented May 25, 1897.



Witnesses  
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J. W. Gibbons

Inventor  
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By his Attorneys  
Keller & Starnes



# UNITED STATES PATENT OFFICE.

JAMES D. FARMER, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO  
R. L. HILL, OF SAME PLACE.

## GEAR-CASING FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 583,144, dated May 25, 1897.

Application filed September 4, 1896. Serial No. 604,892. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES D. FARMER, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Gear-Casings for Bicycles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in gear-casings for bicycles; and it consists in the novel arrangement and combination of parts more fully set forth in the specification, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the casing attached to the frame of the machine. Fig. 2 is a middle vertical section of the casing. Fig. 3 is a detail vertical sectional elevation of the outer section of the rear boxing of the casing. Fig. 4 is a corresponding detail of the inner section of the rear boxing. Fig. 5 is a corresponding view of the inner section of the front boxing. Fig. 6 is a corresponding view of the outer section of the front boxing. Fig. 7 is a section on  $xx$  of Fig. 2, and Fig. 8 is a similar section of a modified form of chain-tube.

The object of my invention is to construct a detachable sectional gear-casing for bicycles, the sections of the same being so arranged as to readily admit the placing of the casing on existing machines without the necessity of removing any portion of the gear mechanism, which it is intended to cover and protect, and, further, to so construct the casing that the same may be readily taken apart when occasion may arise.

A further object is to so assemble the parts that little or no resistance shall be offered to the free and uninterrupted travel of the drive-chain, and, finally, to construct a casing which will be thoroughly dust-proof, cheap, durable, one whose parts are readily assembled and taken apart, and one which presents further and other advantages apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents one of the members of the rear fork of the bicycle, 2 the saddle-post, and 3 the horizontal basal member of the frame. The casing is

adapted to cover the front and rear sprocket-wheels and the sprocket-chain connecting the same, these parts being merely indicated by dotted lines in the drawings, as they are well known and require no particular description. The forward portion or boxing of the casing which covers the driving sprocket-wheel is composed of two sections, an outer section 4, whose lateral walls are cut away along the radial edges or lines 5 5, along the semicircular edge 6, by which the pedal-shaft is partially embraced, and along the adjacent inner parallel edges 7, as best shown in Fig. 6, the edges 7 forming the inner adjacent edges of the U-shaped coupling arms or extensions 8, formed by the lateral plane walls and outer curved walls of the said section 4, and of an inner section 9, whose lateral walls are cut away along the radial edges or lines 10, along the semicircular central edge or line 11, by which the remaining portion of the periphery of the pedal-shaft is embraced, and along the outer parallel edges 12, the latter forming the outer edges of the U-shaped coupling-arms 13 of said inner section. In assembling the two sections the outer section is passed over the driving sprocket-wheel and then the inner section is coupled to it, the U-shaped coupling-arm 8 being adapted to embrace the outer walls of the U-shaped coupling-arm 13, (see Fig. 7,) the two sections being forced sufficiently together to cause the edges 5 and 10 to slightly overlap and prevent thus the access of dust into the interior of the boxing and the gearing confined within the same. The rear sprocket-wheel is inclosed by the rear portion or boxing of the casing, said rear boxing being composed of an outer section 13 and an inner section 14, both made identical with the respective sections 4 and 9 of the front boxing, but only smaller to conform to the reduced size of the rear sprocket-wheel.

The several sections may be made of any suitable material, but preferably of papier-mâché, with the exception, perhaps, of the bearing-rings 15 15', directly embracing the shafts, which may be made of metal. The front and rear boxings of the casings are connected by the chain-tubes, also made in section—viz., an upper channel-section 16 and a lower channel-section 17, the base of the lower



section being somewhat concaved, so as to allow for any sagging of the laps of the drive-chain. Inasmuch as the drive-chain travels in the direction indicated by the arrows in Figs. 1 and 2, it is essential that the various parts of the casing shall be so united or assembled as not to offer any resistance to the ready travel of the chain in its proper direction. For this reason the forward end of the upper chain-tube is made the male member of the coupling effected between it and the forward boxing, whereas the rear end of the tube forms the female member of the coupling effected between it and the rear boxing, the coupling-arms of the latter (see Fig. 2) being made to enter the rear end of said tube. The coupling connections of course are just reversed with respect to the lower tube and the front and rear boxings. In this way the chain traveling in the direction indicated is not interfered with in its motion by the ridges or offsets formed by the ends of any of the parts thus coupled. The parts when once assembled are firmly held by suitable bands 17', embracing the coupling-arms of the boxings and the ends of the chain-tubes, respectively.

In Fig. 8 I have shown a modified form of chain-tube made in one piece, the edges thereof overlapping slightly, the tube being made of elastic material, such as metal and the like, when the walls thereof can be readily separated sufficiently to permit the tube to be passed over the lap of the chain it is intended to cover, the said walls springing back to their normal position after being released. This tube can be coupled to the front and rear boxings in the manner already described.

It is apparent that the present casing is thoroughly dust-proof and completely incases the driving mechanism. The casing can be readily attached to the machine and can as readily be removed without disturbing any portions of the gearing. The reason that the casing can thus be attached without disturbing any portion of the gearing depends, of course, on the fact that the chain-tubes are

sectionized longitudinally, the channel-sections of the tubes being readily assembled or united.

Having described my invention, what I claim is—

1. In a gear-casing for bicycles, a front sectional boxing adapted to cover the driving sprocket-wheel, a rear sectional boxing adapted to cover the rear sprocket-wheel, lower and upper coupling-arms forming a part of each boxing, and suitable longitudinally-sectionized channel chain-tubes, the opposite ends of the same being adapted to be coupled to said coupling-arms, and the whole adapted to be placed over the chain and sprocket wheels without removing any parts of the machine, substantially as set forth.

2. In a gear-casing for bicycles, a boxing adapted to cover the driving sprocket-wheel and composed of two sections, one section having lateral walls cut away along lines or edges radiating from a common center, a curved or semicircular edge at the meeting end of the radial lines whereby the shaft of the sprocket-wheel is partially embraced, then along parallel adjacent lines forming a continuation of the radial lines referred to, and the other section having its lateral walls cut along radial lines or edges adapted to cooperate with the radial edges of the first section, thence along a central curved or semicircular edge adapted to embrace the remaining portion of the periphery of the sprocket-wheel shaft, thence along outer parallel edges or lines forming a continuation of the radial edges referred to, the sections when assembled having upper and lower coupling-arms whereby the ends of the longitudinally-sectionized chain-tubes may be secured thereto, substantially as set forth.

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

JAMES D. FARMER.

Witnesses:

EMIL STAREK,  
ALFRED A. MATHEY.