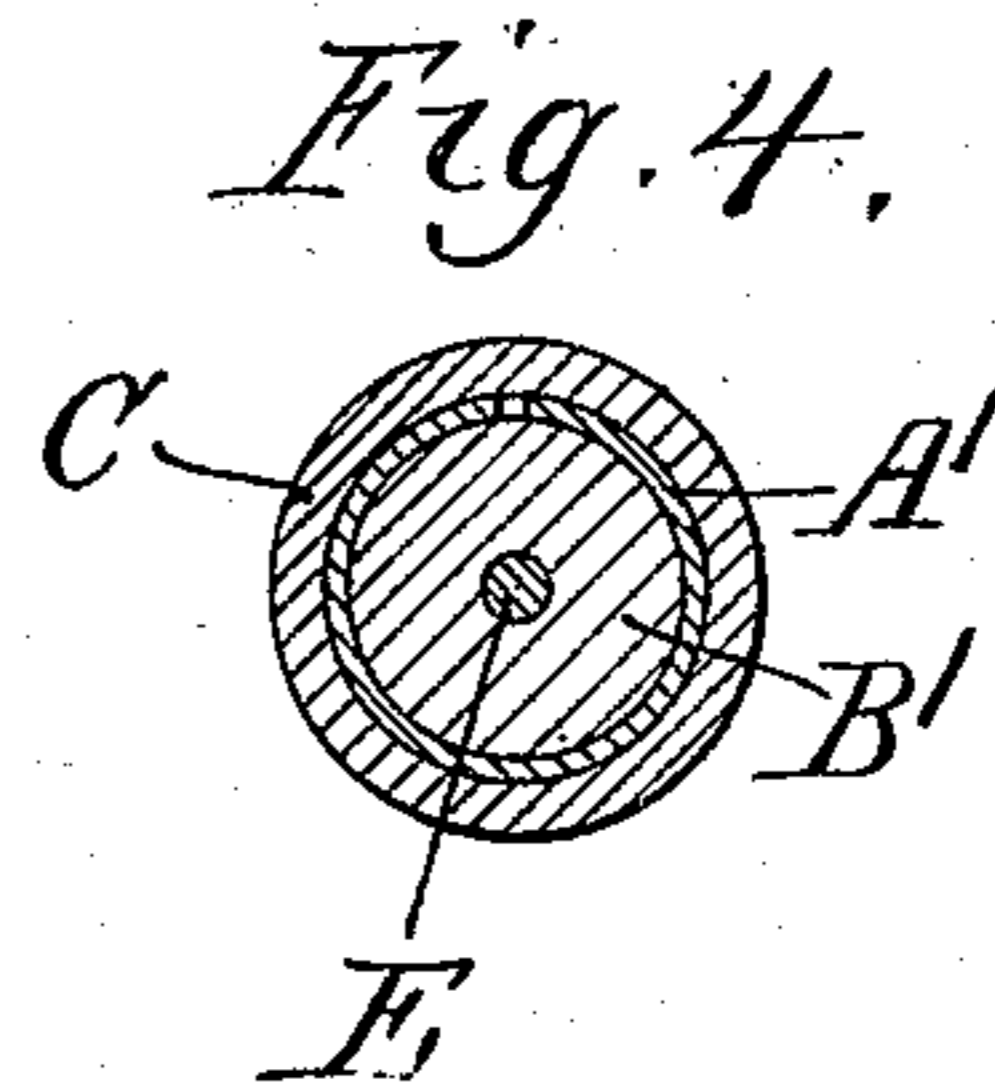
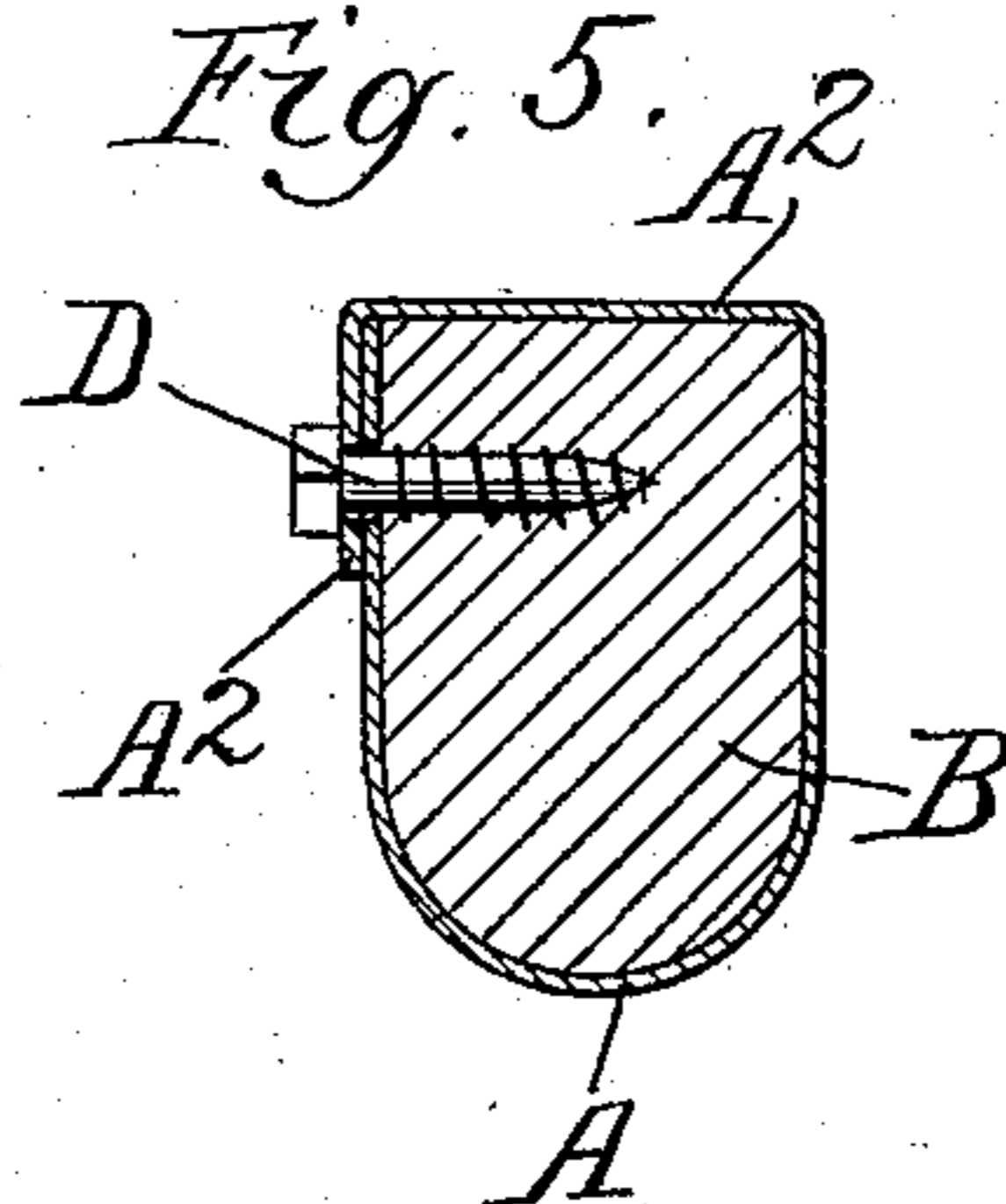
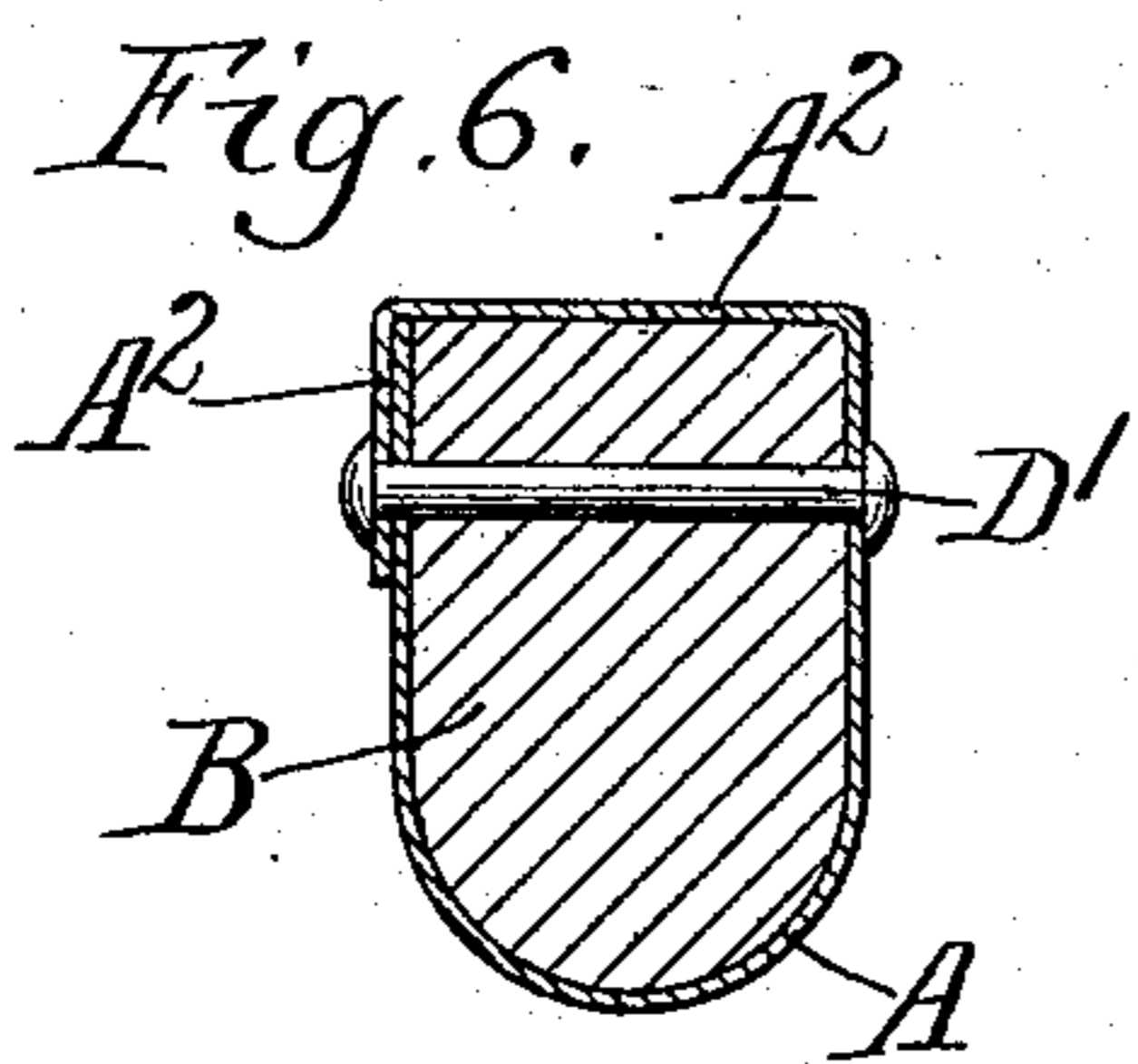
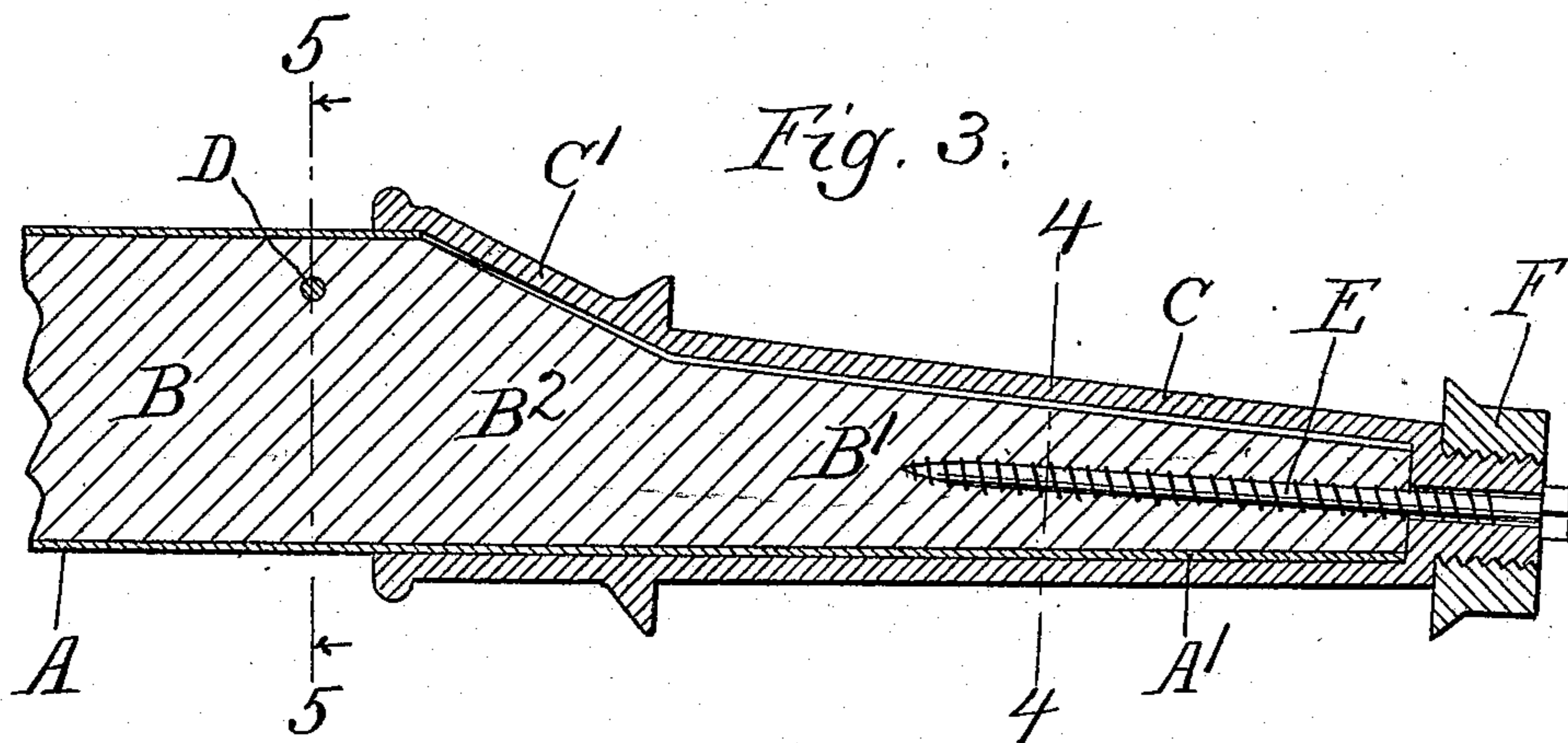
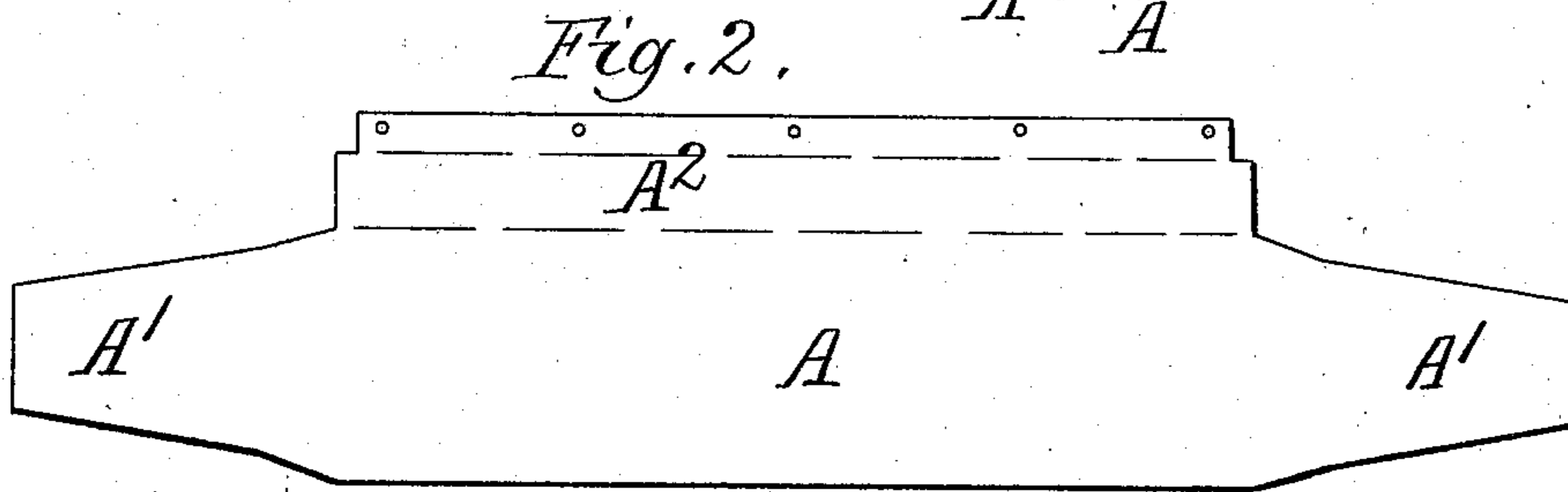
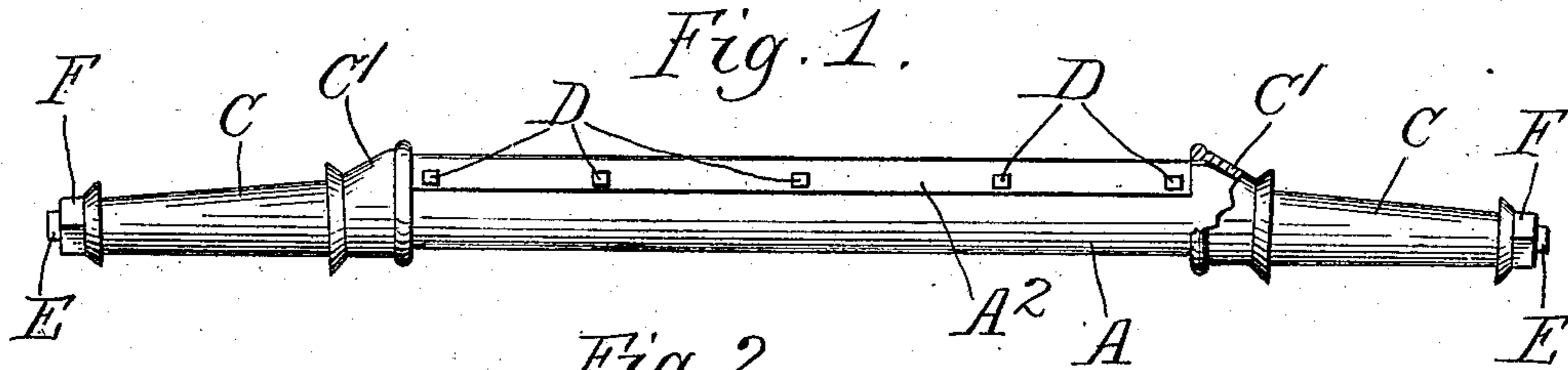


J. E. SYMONS.
AXLE.

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Patented Mar. 23, 1909.



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UNITED STATES PATENT OFFICE

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AXLE.

No. 915,902.

Specification of Letters Patent.

Patented March 23, 1909.

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To all whom it may concern:

Be it known that I, JOSIAH E. SYMONS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Axles, of which the following is a specification.

My invention relates to axles and has for its object to provide certain new and useful improvements hereinafter more fully set forth.

It is illustrated in one form in the accompanying drawings, wherein—

Figure 1 is a side elevation of a finished axle with parts broken away; Fig. 2, a plan of the sheet metal blank; Fig. 3, a longitudinal section through the end of the completed axle; Fig. 4, a cross section on line 4—4 of Fig. 3; Fig. 5, a cross section on line 5—5 of Fig. 3, and Fig. 6, a similar cross section showing a slight modification.

Like parts are indicated by the same characters in all the figures.

A is a blank having the tapered ends A¹ A² and the central enlargement A³.

B is a filler or former preferably of wood or similar material and preferably integral, but in any event, provided with tapered ends B¹ B². There should be one such tapered end at each end of the complete axle.

C is the axle skein shaped preferably as shown, of any desired material and provided with an inner enlarged extension C¹ to be received over that portion B² of the core which connects the central portion with the end. The part A² is bent over as indicated in Figs. 5 and 6, and turned down on one side, and the overlapping portions of the metal sheet are then secured by the screws D, D or the bolts D¹.

E is a screw whereby the skein is secured to the end of the core.

F is a nut screwed onto the outer end of the skein so as to hold the wheel on.

The use and operation of my invention are as follows: The core is a former about which the sheet metal blank is wrapped, the latter being bent around the core as upon a former. The overlapping edges of the middle portion of the blank are spiked or held in place. The wrapped portion of the sheet metal which surrounds the tapering core ends is preferably arranged so that a slight interval is left between its contiguous edges when so wrapped. The end of the axle thus presents a tapering core with an inclosing sheath, the

whole more or less yielding to receive and accommodate itself to the skein. In this case the core is entirely inclosed or wrapped. The parts are shaped so that the wrapping or sheath presents extended substantially vertical surfaces to give greater strength. Moreover, the overlapping of the edges of the sheath results in further strengthening the axle in the direction in which it needs strength. Experience has shown me that such axles are liable to break at the point where the tapered end makes connection with the enlarged or upwardly rising axle body, and I have, therefore, extended the skein and have thickened the core at such point, as indicated in Fig. 3.

I have spoken of the core as if it were integral and continuous from end to end. Of course this is not essential, though I think it the preferred form. It is essential that the core or former at the end should take approximately the shape shown. The body of course, assume various forms, but a portion of my invention is the arrangement of this sheet so that it shall take the shape of two flat plates on opposite sides of the core or former, or space which such former would occupy if it were continuous and complete. The two plates, therefore, have great strength and this strength is as suggested, increased where two sections of the plate are overlapped. This feature of the invention, could, of course, be obtained without having all the other features referred to.

Where I use the term "core" or "wooden core" I mean to imply so much of the core as may be necessary, particularly at the tapered ends and a core which is substantially wooden or to a certain extent yielding and elastic.

I claim:

1. An axle comprising a wooden core with homogeneous tapered ends and a thin metal sheath entirely inclosing the core, its ends permanently wrapped around and set in position about the body and the tapered ends of the core to form relatively yielding metal covered tapered axle ends to receive the skeins.

2. An axle comprising a wooden core with tapered ends and a thin metal sheath entirely inclosing the core, its ends permanently wrapped around and set in position about the body and the tapered ends of the core to form relatively yielding metal cov-

ered tapered axle ends to receive the skeins, said core provided with substantially vertical sides intermediate the tapered ends and said sheath lying parallel to such sides.

5 3. An axle comprising a wooden core with tapered ends and a thin metal sheath entirely inclosing the core, its ends permanently wrapped around and set in position about the body and the tapered ends of the
10 core to form relatively yielding metal covered tapered axle ends to receive the skeins, said core provided with substantially vertical sides intermediate the tapered ends and said sheath lying parallel to such sides, and
15 overlapped at one side.

4. An axle comprising a wooden core with tapered ends, a thin metal sheath entirely inclosing the core, its ends permanently wrapped around and set in position about
20 the tapered ends and body of the core to form a metal covered axle, the thin metal sheath having opposite substantially vertically arranged sides along the body of the core.

25 5. An axle comprising a wooden core with tapered ends, a thin metal sheath entirely inclosing the core, its ends permanently wrapped around and set in position about the tapered ends and body of the core to
30 form a metal covered axle, the thin metal sheath having opposite substantially vertically arranged sides along the body of the core, one of such sides extended over the top of the core and down over a portion of the
35 other side.

6. An axle comprising a wooden core with uniformly compressible tapered ends, and a thin metal sheath entirely inclosing the core,

its ends permanently wrapped around and set in position about the body and the tapered ends of the core to form relatively yielding tapered axle ends to receive the skeins.

7. An axle comprising a wooden core with vertical sides and a thin metal sheath inclosing the core and wrapped around the same, one portion of the sheath carried over the
45 top of the core and bent down around the other portion on the opposite side of the core.

8. An axle comprising a wooden core having a body with tapered ends smaller in cross section than the body, and an intermediate connecting portion with a thin metal sheath inclosing the tapering end and connecting
50 portion so as to make a yielding end for the skein, and a skein adapted to be driven over the core and sheath and to inclose the tapering portion and the connecting portion.

9. An axle comprising a core having tapered ends and a metal sheath wrapped around and formed upon said tapered core
60 ends so as to form relatively yielding axle ends for the skein, and intermediate between the ends two thin vertical plates with a cross connection from one to the other.

10. An axle comprising a core having tapered ends and a metal sheath wrapped around and formed upon said tapered core
65 ends so as to form relatively yielding axle ends for the skein, and intermediate between the ends two thin vertical plates with a cross connection from one to the other, such plates
70 on one side of double thickness.

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