

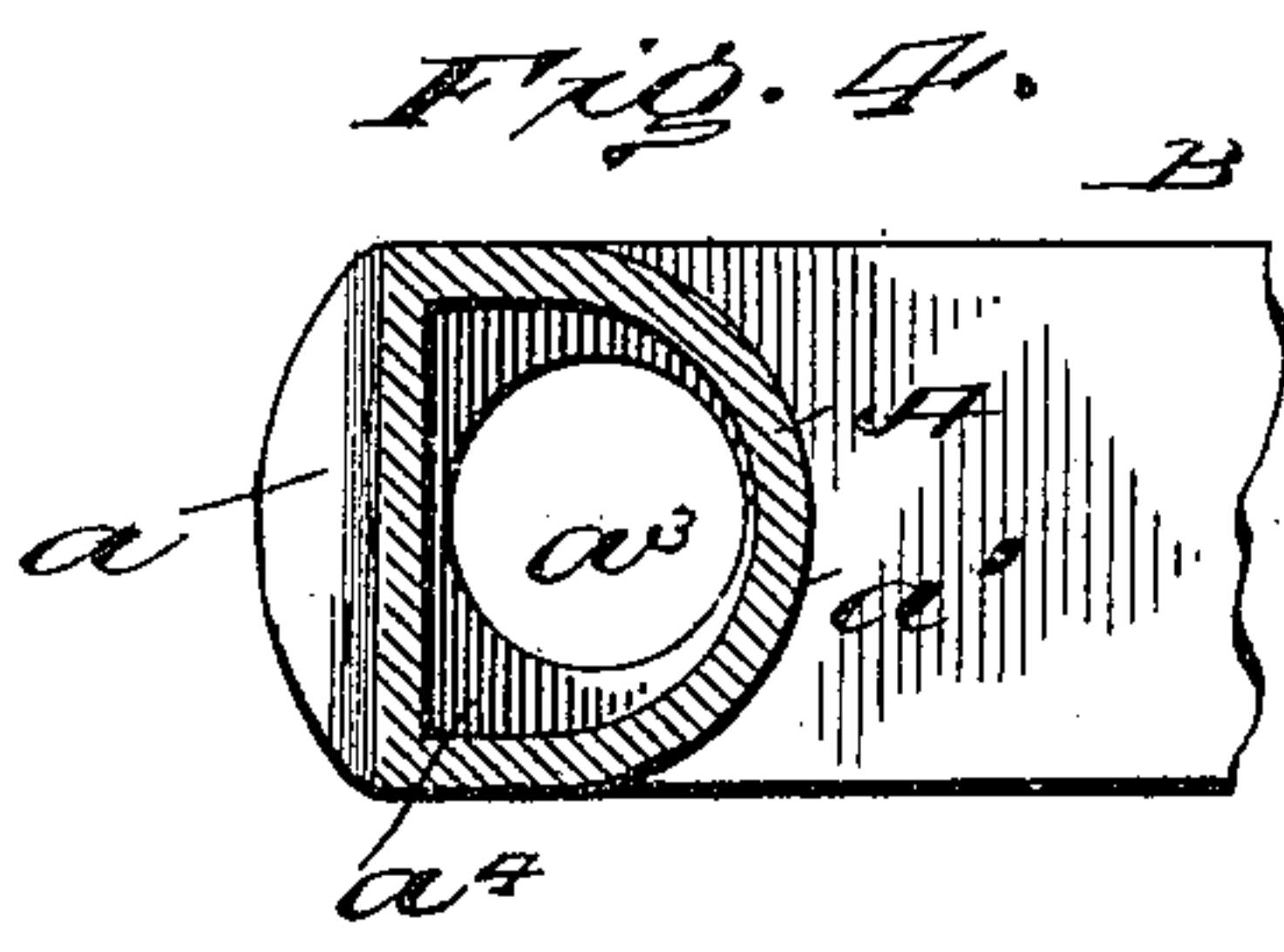
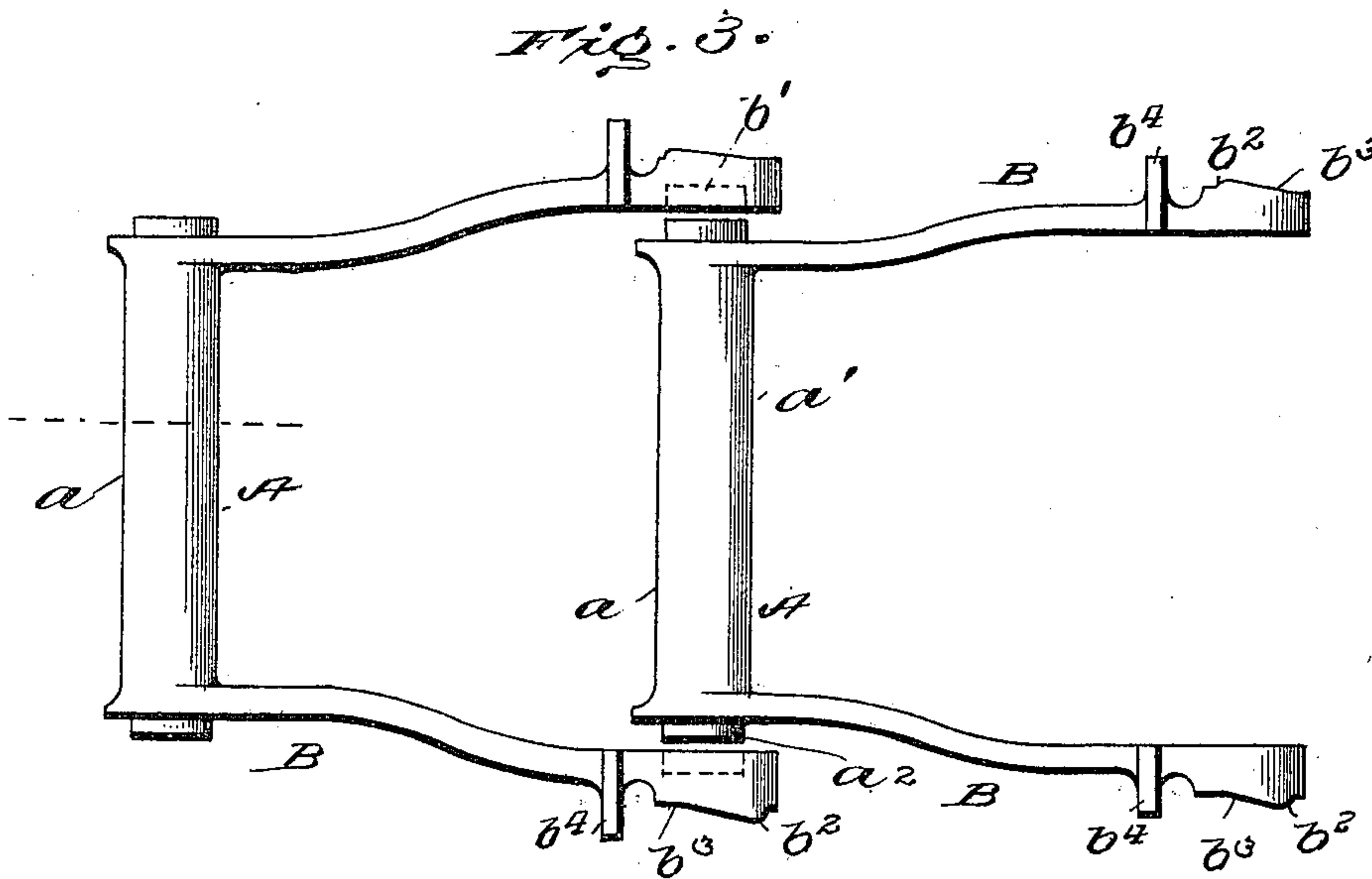
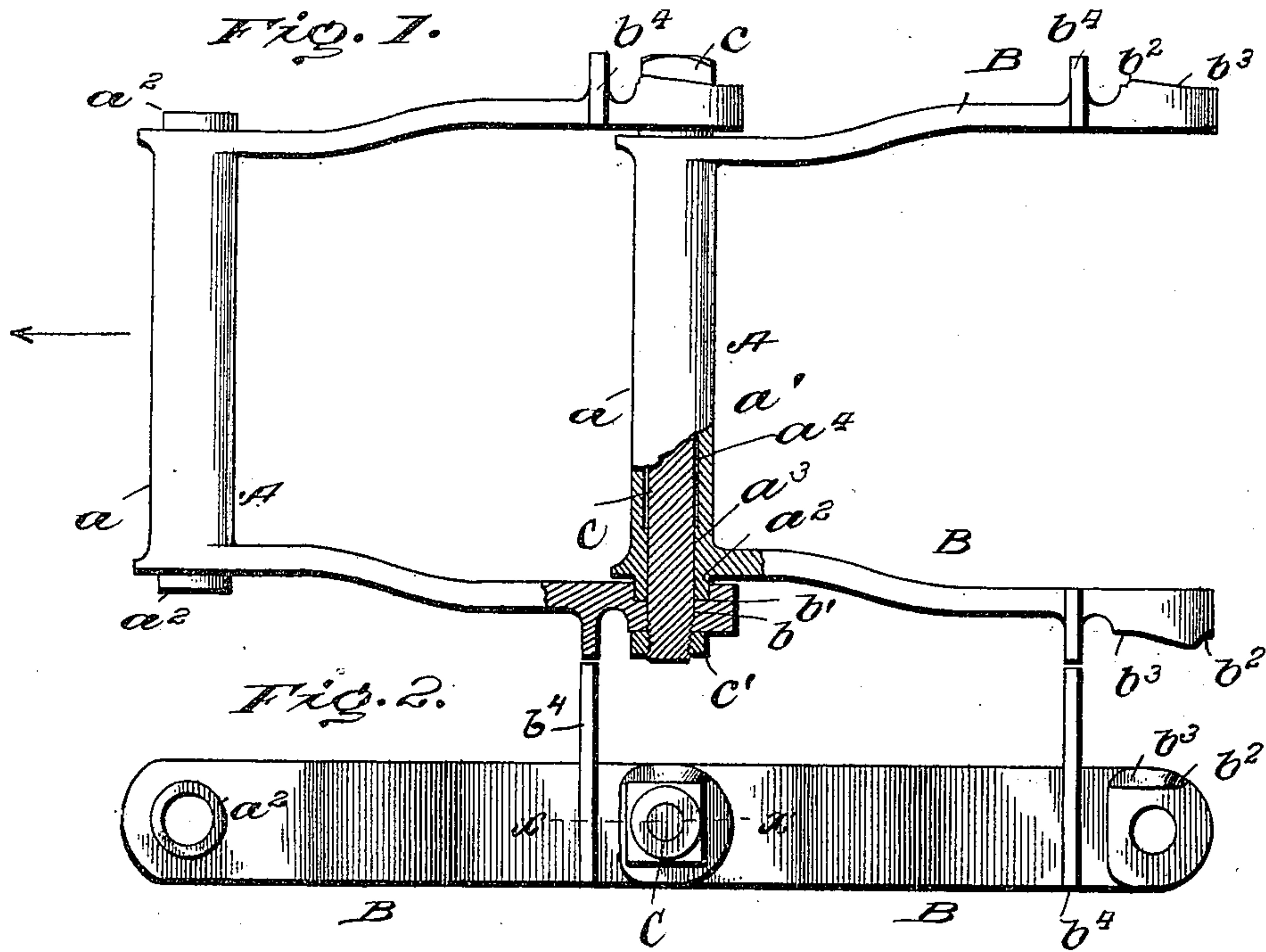
No. 670,285.

Patented Mar. 19, 1901.

C. W. LEVALLEY.
DRIVE CHAIN.

(Application filed Mar. 18, 1898.)

(No Model.)



Witnesses

for minor
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UNITED STATES PATENT OFFICE.

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DRIVE-CHAIN.

SPECIFICATION forming part of Letters Patent No. 670,285, dated March 19, 1901.

Application filed March 18, 1898. Serial No. 674,364. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Drive-Chains, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a plan view, partly in section, on the dotted line xx on Fig. 2. Fig. 2 is an edge view. Fig. 3 is a plan view of two links in position for being coupled together. Fig. 4 is a sectional view taken through one of the cross-bars of a link on the dotted line in Fig. 3, this view being drawn on a larger scale than the other figures.

Like reference-letters indicate similar parts in all the figures.

A refers generally to the cross-bar or "end" bar, as it is sometimes called, which is, by preference, provided with a vertical and practically flat front face a , the chain being intended to run in the direction indicated by the arrow in Fig. 1, this flat face facilitating the moving of sawdust or any other material which the chain is adapted to move. Such links make a drag-belt with actually less metal than is used in the ordinary round end bar links. The rear face of the cross-bar is shown as being curved in cross-section, as at a' , this form insuring that the chain shall readily traverse the driving sprocket-wheel which propels it, as will be understood by all who are acquainted with the operation of such mechanism. At the ends of the cross-bar there are hubs or bosses a^2 , which are concentric with the axis common to both of the bearings $a^3 a^3$, and form practically continuations thereof with the same internal diameter, they being bored or drilled with the same tool, and the outer circular faces of the bosses are of uniform diameter. The central part of the cross-bar is cored out in casting and is of greater diameter than are the bearings, so as to constitute an oil-chamber a^4 , the ends of which chamber are preferably closed by a wall or shoulder at each end. (See Figs. 1 and 4.)

The side bars $B B$ are preferably cast integral with the cross-bar and diverge therefrom slightly and are at their outer or free ends

provided with pintle-seats $b b$ and with sockets $b' b'$ of such size as to receive and fit quite closely the bosses $a^2 a^2$ of overlapping ends of an adjacent link. I prefer that the normal distance between the outer or free ends of the side bars shall be such that in order to couple the links into a chain it will be necessary to spread the ends apart, as indicated in Fig. 3, to receive the cross-bar, and that the elasticity of the links shall be such that after the insertion of each cross-bar the ends will return to their normal distance apart, and thus confine the bosses within the sockets $b' b'$ with a quite firm grip, in which event the chain will be capable of doing useful work without the addition of any other part.

$b^2 b^3$ are locking-shoulders, of which b^2 is a relatively short and abrupt face projecting at about a right angle from the surface of the side bar, with which it is preferably cast integral, the face b^3 being longer and quite wedge-shaped, (see particularly Fig. 1,) where the extent to which the shoulders project from the face of the side bars is somewhat exaggerated relative to the size of the other parts of the links.

In order to adapt the chain to a wider range of uses, I propose to provide the side bars with wings $b^4 b^4$, one form of which I have illustrated in the drawings, it being of course understood that their form and location may be varied by substituting therefor any of those which are well known or approved for such purposes; but the wings may be omitted without in any manner restricting the other parts of the invention.

By the employment of a pintle the bearings $a^3 a^3$ and the seats $b b$ may be utilized, and the durability of the chain thereby increased.

C is a pintle made with, preferably, a head c at one end and a nut c' at the other end. The pintle makes close-fitting joints with the radial walls at the ends of the oil-chamber. After two links are connected, as has been above explained, the pintle may be put in place and secured by screwing on the nut, the inclines b^3 facing in the proper direction, as indicated, so that the nut will slide up over its engaging incline as it is being screwed down to place, but will be prevented from backing off by reason of its engagement with the abrupt shoulder b^2 , the elasticity of the

legs permitting them to be sprung inward far enough to admit of the nut being screwed up to its proper position and then springing back and locking it, (the nut,) there being a similar locking-shoulder to prevent the pintle-head *c* from turning in the wrong direction. Thus the pintle is locked to the overlapping ends of the side bars.

In addition to performing the function of articulations for the links the bosses and sockets serve to practically exclude dirt from the wearing-surfaces, and thus increase materially the durability of the chain, especially if the right kind of lubricant is put into the chamber *a*⁴, a sort which will be distributed slowly over the bearings. The pintle and the walls of the recess *a*⁴ constitute a closed oil-chamber, which may be filled just before the pintle is inserted its entire length.

While under many conditions no precautions beyond screwing up the nuts reasonably tight will be needed, yet, if found desirable, the end of the pintle may be riveted over and down upon the nut, because the nut can be backed off with an ordinary wrench if it be thought best to take the pintle out for any reason, to facilitate doing which I prefer to make the face *b*² incline a little from a right angle toward the wedging-face *b*³.

This invention does not relate specifically to that class of links which require to be placed at an unusual or arbitrary position in order to be coupled or uncoupled, and as the pintles constitute important parts of the articulating-surfaces and are removable but comparatively slight spreading apart of the free ends of the side bars is required. They may be and are preferably made so heavy that they will so resist flexure when in working position that the chain will bear considerable tension without being uncoupled, even though the function of the pintle in this respect be omitted. This feature or mode of operation is new and useful, I think.

In chains of the type to which the chain described belongs it is desirable that the face of the cross or end bar *A*, with which the teeth of the driving sprocket-wheel engage, should be rounded, as represented at *a*¹, in order to adapt them to better fit such teeth and to enter and leave the wheel with little wear and friction. It is desirable after a chain of this character has run for awhile to turn it over relative to the wheel in order to cause equal wear upon both sides, thus prolonging the effectiveness of the chain. By making the cross-bars circumferentially closed or entire, as distinguished from being hook-shaped, as described, I am able to reverse the chain and have it work equally well upon the sprocket-wheel whichever side is presented to the wheel and to thus use it in connection with material of any kind without danger of such material getting into the articulating parts of the chain.

While I have illustrated the best mode now known to me for carrying out my invention,

I do not wish to be limited to the precise details shown, because modifications thereof will readily suggest themselves to a person skilled in the art without departing from my improvement or going outside of its scope.

What I claim is—

1. A drive-chain comprising a series of side bars and hollow cross-bars, and removable pintles which are adapted to pass through the said side and cross bars and so unite the separate links of the chain, the cross-bars being formed with internal chambers which are greater in diameter than the pintles and the seats for the pintles, substantially as set forth.

2. A drive-chain comprising a series of side bars and cross-bars, the cross-bars being provided with internal oil-chambers having walls at their ends, and removable pintles which make close-fitting joints with the walls of the internal oil-chambers, substantially as set forth.

3. A drive-chain comprising links having side bars, and cross-bars integral with the side bars and connecting them at their forward ends, the said cross-bars being circumferentially entire or closed and having their front faces or edges flat and upright as at *a*, and their rear faces curved as at *a*¹, and means for uniting the cross-bars of the links with the rear ends of the side bars of the preceding link, substantially as set forth.

4. A drive-chain formed of links each having a pair of side bars and a cross-bar integral therewith and connecting the side bars near one end, the side bars being at their opposite ends separate or free from each other and arranged to lie on the outside of the ends of the cross-bars, and being elastic whereby their free ends if sprung apart tend to resume their normal position, and the free ends of the side bars and the ends of the cross-bars of the links being provided with interlocking articulating parts which are arranged to be held in engagement by the elasticity of the side bars, substantially as set forth.

5. A drive-chain comprising in combination, side bars and cross-bars provided with interlocking articulations, the side bars being elastic and operating to hold the said articulations in engagement and removable pintles, substantially as set forth.

6. A drive-chain comprising, in combination, overlapping side bars and cross-bars provided with interlocking articulations, the side bars being elastic to permit coupling, removable pintles, means for locking the pintles to the overlapping ends of the side bars, and means for connecting the ends of the pintles with the side bars to support said side bars against spreading apart, substantially as set forth.

7. A drive-chain having in combination, side bars and cross-bars provided with interlocking articulations, the side bars being elastic to permit coupling in straight-line position, and with pintle-bearings, and removable pintles, substantially as set forth.

8. A drive-chain comprising, in combination, a cross-bar having its front face flat and upright and its rear face rounded, side bars provided with interlocking articulations; the
5 side bars being elastic and operating to hold the articulations in working engagement, substantially as set forth.

9. A drive or conveyer chain, having in combination, a cross-bar having its front face
10 upright and its rear face rounded, side bars provided with interlocking articulations and with pintle-bearings, and a pintle, substantially as set forth.

10. A drive-chain comprising in combination side bars and cross-bars provided with
15 interlocking articulations, and the side bars

being elastic and operating to hold the said articulations in engagement, removable pintles provided with heads, and nuts which engage with such pintles, the said side bars
20 being provided with locking devices which operate to prevent the pintles from turning in the side bars, and which prevent the nuts from loosening on the pintles, substantially
25 as set forth.

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

CHRISTOPHER W. LEVALLEY.

Witnesses:

JOSEPH LOCH,
VLASTA I. KLOFANDA.