

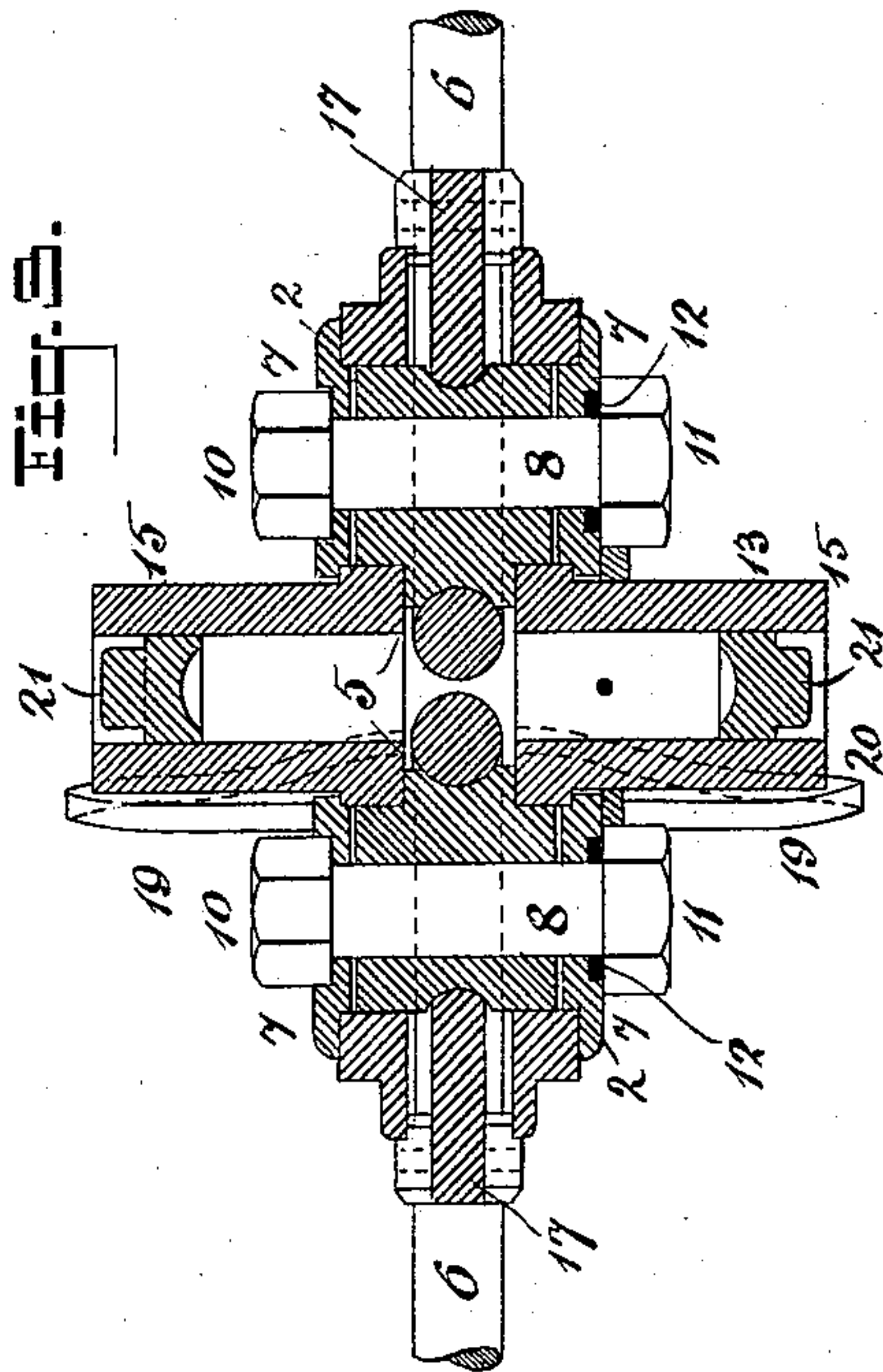
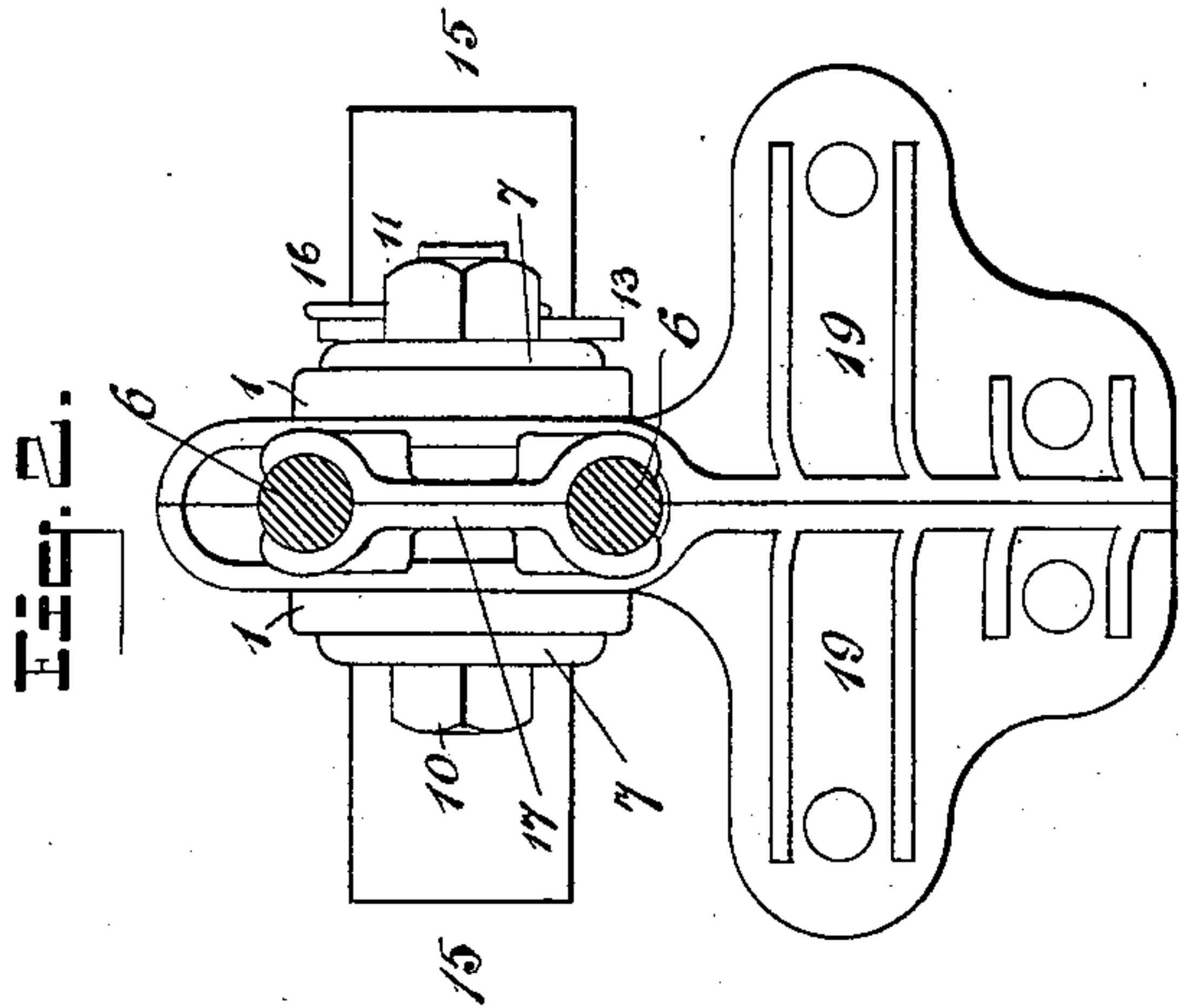
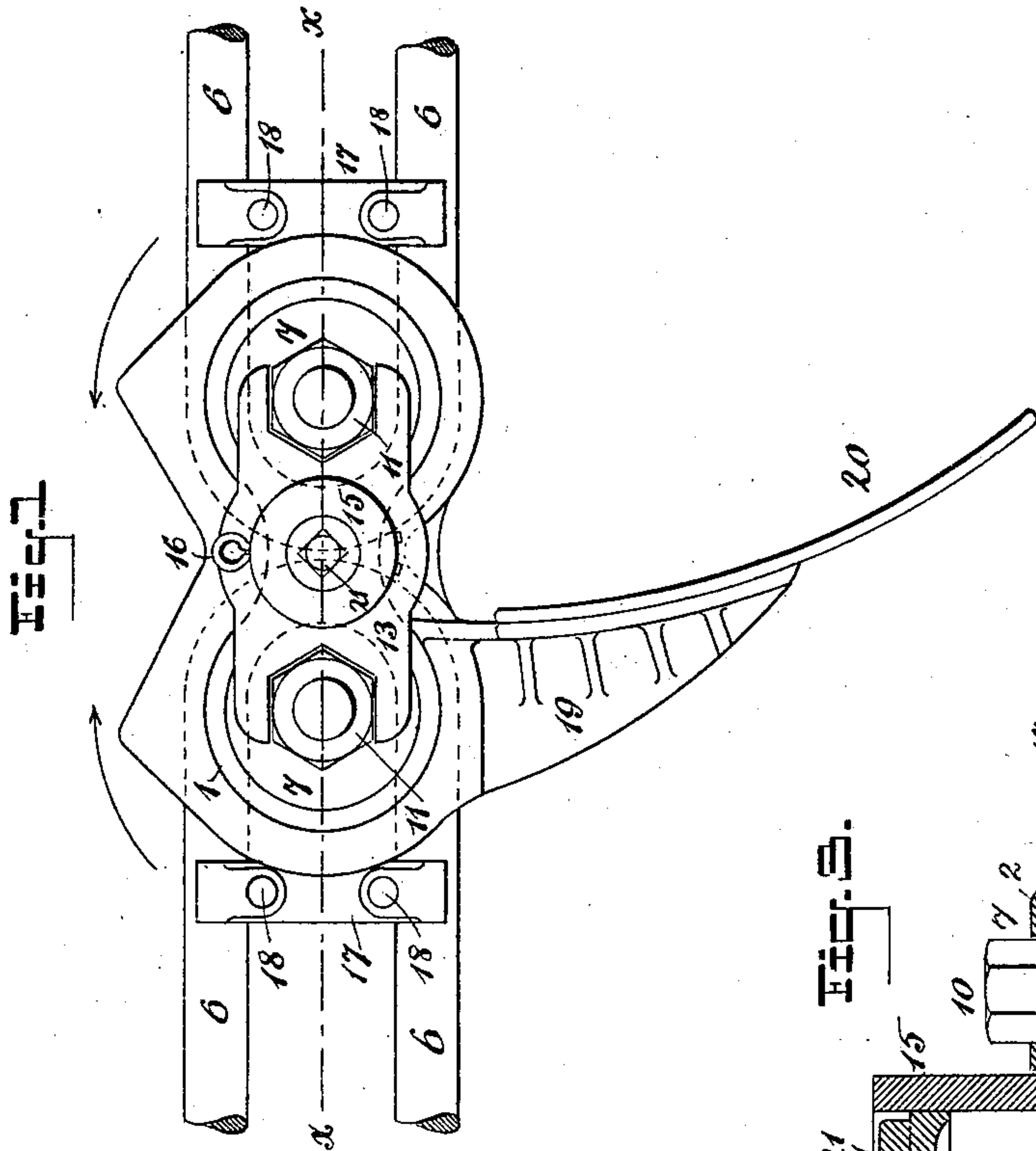
(No Model.)

3 Sheets—Sheet 1.

J. H. MITCHELL.
ADJUSTABLE DRAG CHAIN.

No. 566,995.

Patented Sept. 1, 1896.



WITNESSES:

D. W. Mott
C. H. Wright

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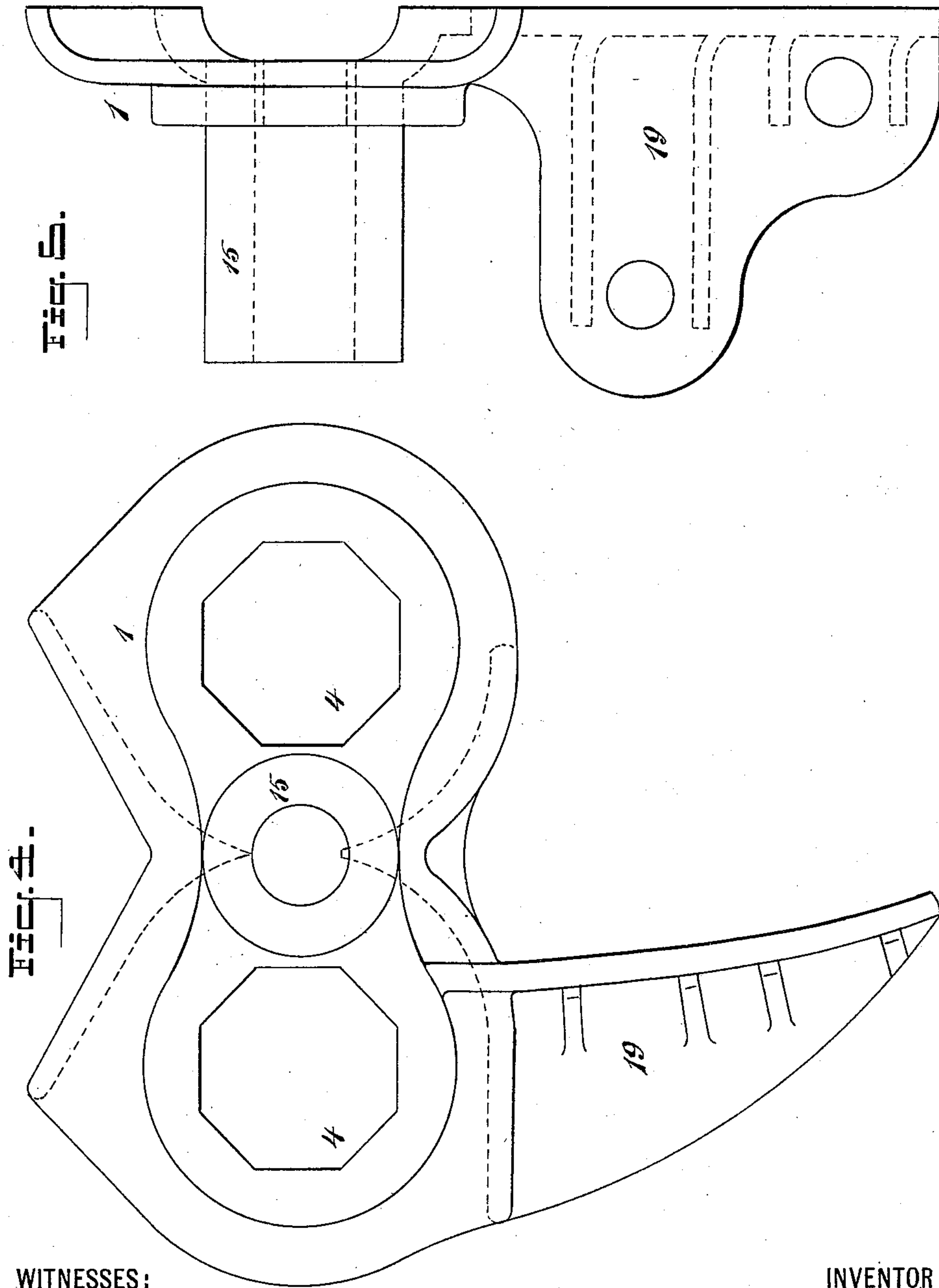
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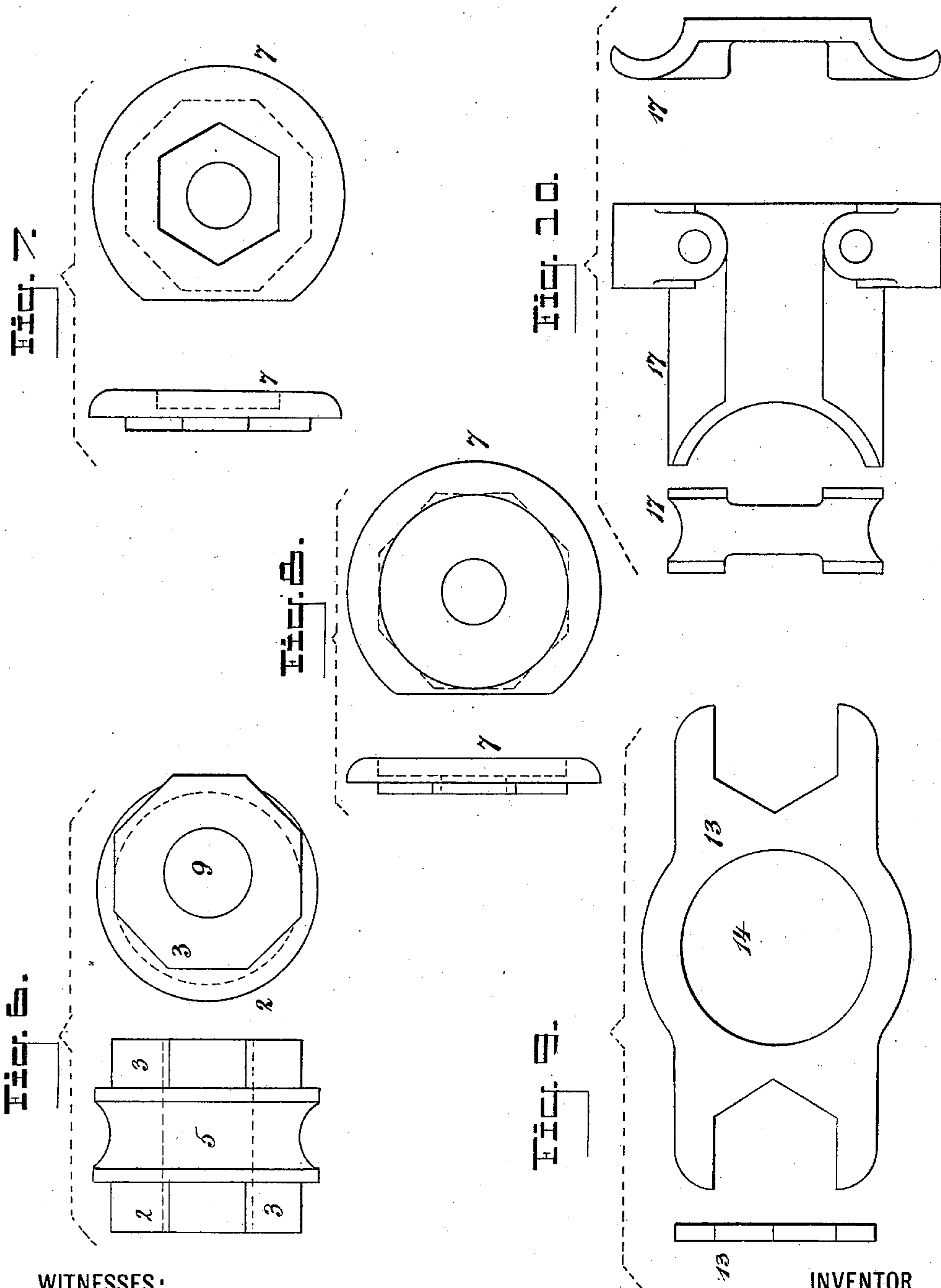
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ADJUSTABLE DRAG CHAIN.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES H. MITCHELL, OF PHILADELPHIA, PENNSYLVANIA.

ADJUSTABLE DRAG-CHAIN.

SPECIFICATION forming part of Letters Patent No. 566,995, dated September 1, 1896.

Application filed June 6, 1895. Serial No. 551,810. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MITCHELL, a citizen of the United States, residing in Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Adjustable Drag-Chains, of which the following is a specification.

My invention relates especially to drag-chains employed with sprocket-wheels, and has for its object the provision of means and mechanism whereby the elongation caused by the wearing and stretching of forged links may be taken up.

To attain the desired end, my invention consists in an eccentric bearing-pin, the construction of said pin being of such a nature that when once set to a given position it will retain such position until readjustment is required.

The invention further consists in a self-lubricating device formed by a grease-holding chamber or cavity close to the adjacent ends of the forged links, whereby the links are at all times kept in contact with the grease or lubricant.

The invention further consists in a hollow connecting-link arranged to surround the ends of the forged links, whereby the admission of dust, dirt, or grit to the bearings is effectually prevented.

The invention further consists in bridge-pieces interposed close to the ends of the forged links, preventing hugging or binding around the respective bearings, stiffening the bearings, and augmenting the strength of the chain; and my invention also involves certain other novel and useful combinations or arrangements of parts and peculiarities of construction and operation, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the accompanying drawings, forming a part hereof, Figure 1 is a side elevation of a connecting hollow link joining two forged links. Fig. 2 is an end elevation thereof. Fig. 3 is a horizontal sectional view at line x of Fig. 1. The remaining views of the drawings are upon an enlarged scale. Fig. 4 is an outside elevation of one of the connecting-links, and Fig. 5 is an end elevation of

the same. Fig. 6 shows the eccentric bearing-pins. Fig. 7 is a view in detail of the hexagonal washer. Fig. 8 shows a clamping-washer. Fig. 9 shows the nut-locking plate. Fig. 10 is the bridge-piece for the forged links.

Similar numerals of reference, wherever they occur, indicate corresponding parts in all the figures.

1 are the right and left portions of the joining-link. This link is made in two halves, one right hand and the other left hand, which when they are joined together hold in position the eccentric-pins 2, having upon each side an octagonal boss 3, engaging and fitting into octagonal openings 4 in the portions 1 of the link. The central portion 5 of the pin 2 is hollowed out, so as to conform to the forged links 6, forming a bearing that will permit a free oscillation of said links. Adjustment of the forged links toward or away from each other is accomplished by setting the octagonal projections of the bosses 3 into the requisite position in the side portions 1 of the links in any one of the eight positions, care being taken that the relative positions of the two eccentrics are the same, so that the two links 6 are upon the same horizontal plane.

In assembling the chain the eccentric-pins 2 are placed in the ends of two links 6, and their octagonal bosses engaged by the parts 1 of the connecting-link. The washers 7 are next placed in the openings 4 in the portion 1 of the link, and bolts 8 passed through the openings 9 in the pins 2. The head 10 of each bolt 8 is held and locked in place by the octagonal openings in the washers 7, into which they pass a short distance. The nuts 11 upon the opposite sides of the bolts 8 have under them, firmly embedded in the washers 7, a vulcanite-fiber bearing-piece 12, preventing the rusting fast of the nut. The nuts 11 are locked and held in position by a plate 13, so shaped as to embrace four sides of each nut. In the center of the plate 13 is a hole 14, through which one of the projecting bosses 15 from a plate 1 passes. To hold the plate 13 in position, a split key 16 is employed, passing through the boss 15.

After the bolts 8 have been securely fastened, locking the parts in place, as above set forth, the link brace-pieces 17, particu-

larly illustrated in Fig. 10, are entered between the parallel sides of the forged links 6 and are driven back against the eccentric-pins 2 and riveted firmly in position by means of rivets 18. It will be observed that the rounded inner ends of the brace-pieces 17 conform to the hollowed portion 5 of the eccentric-pins, thus constituting a bearing therefor.

For driving or propelling this adjustable chain the two projecting bosses or studs 15 are used, coming in contact with the engaging teeth of a double propelling sprocket-wheel.

Projecting downward from each of the two connecting-link pieces 1 is a brace 19, to which any desired or requisite shaped scraper or flight 20 may be secured, in accordance with the work to be done.

In manufacturing this chain the forged links 6 are to be made quite long, so that the parallel bars thereof may be sprung apart to freely admit the eccentric-pins, after which the said pins are pushed back to the rounded ends of the forged links at each end. By making the forged links long the weight of the chain is reduced, giving the smallest number of connecting-links possible, and also at the same time proper space is provided between the drag-plates.

It will be observed that this chain may be readily taken apart by removing the bolts 8, and by having the propelling-studs 15 made hollow a receptacle for lubricating material is provided, the ends of said receptacle being closed by removable plugs 21. The grease or lubricant thus inclosed comes in direct contact with the rounded ends of the forged links 6.

Chains of this character are intended to be driven by means of hexagon or octagon chain-wheels having their teeth so arranged as to engage simultaneously with the two projecting bosses 15 on each side of the closed connecting-link, and in passing over each driving-wheel the forged link will swivel in the direction shown by the arrow in Fig. 1, one-half of the movement being accomplished by adjacent ends of each of the forged links held by the connecting-link, and after passing from the duplex chain-wheel the forged links will resume the position shown in Fig. 1. It will thus be seen that the form of construction illustrated will permit of ready adjustment of the forged links toward and away from each other, thereby compensating for wear and stretch of the links, and it will also be readily seen that the wearing parts are protected from grit and dirt by means of the upper portion of the connecting-links 1, which rest snugly against each other, as particularly illustrated in Fig. 2.

By removing the bolts 8 and the scraper or flight 20 the chain may be readily detached at any point. There are no horizontal flat links exposed, thereby forming carrying-cavi-

ties for retaining lumps of coal or other material, as the connecting-link has no openings and its upper portion and the forged links travel upon edge, rendering it impossible for material to lodge upon them, and the whole construction of chain is light, durable, and strong.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a drag-chain, the combination with a link, of an eccentric bearing-pin for the link, a link in which the said pin is supported and is adjustable, and means for holding the pin in the different positions to which it may be adjusted, substantially as set forth.

2. In a drag-chain, the combination with a link, of a bearing-pin for the end of the link having an eccentrically-disposed bearing portion, and a projection which prevents the rotation of the bearing-pin, and another link in which the bearing-pin is mounted having a bearing or seat for the said projection of the pin, substantially as set forth.

3. In a drag-chain, the combination of a link, the bearing-pin, 2, having the eccentrically-disposed part, 5, with which the end of the link is adapted to articulate, and the bosses, 3, a joining-link having the bearings, 4, which correspond in shape with the bosses, 3, and in which they may be adjusted from one position to another, substantially as set forth.

4. In a chain, the combination with the links, 6, joining-links between adjacent links, 6, two eccentric bearing-pins mounted in the said joining-links and with which the links, 6, engage, and means for holding the said pins in different positions to which they may be adjusted, substantially as set forth.

5. In a chain, the combination of links, 6, a joining-link between two adjacent links, 6, the joining-link being formed of two separable portions, two hollow pins for the ends of the links, 6, mounted in the said joining-link, and two bolts which pass through the said pins and connect together the two portions of the joining-link, substantially as set forth.

6. In a chain, the combination of links, 6, a joining-link connecting two of such links and formed of two parts separable from each other, two hollow pins mounted in the said joining-links with which the ends of the links, 6, engage, bolts passing through the said pins and serving to connect the two parts of the joining-link, and the locking-plate, 13, substantially as set forth.

7. The combination of the links of a separable chain, the bearing-pins which connect the links, the movable bridge-pieces adapted to be set into engagement with the said bearing-pins, and means for holding the bridge-pieces in the positions to which they have been set, substantially as set forth.

8. In a chain composed of separable links,

the combination with the links, of the bearing-pins which connect the links having eccentrically-disposed portions upon which the links articulate, means for adjusting the said
5 bearing-pins and for holding them after adjustment, and movable bridge-pieces adapted to engage with the links and to be set into engagement with the said bearing-pins, and means for holding the said bridge-pieces in
10 the positions in which they have been set, substantially as set forth.

9. In a drag-chain, the combination of the

links, 6, the joining-links, each composed of two portions adapted to embrace the adjacent ends of two links, 6, and each provided with 15 a driving projection or boss, 15, means for uniting the portions of the joining-links, and bearing-pins for the links, 6, carried by the joining-links, substantially as set forth.

JAMES H. MITCHELL.

Witnesses:

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MAURICE R. MASSEY.