

L. KING.  
SHACKLE FOR WIRE GUYS, &c.

No. 547,642.

Patented Oct. 8, 1895.

Fig. 1.

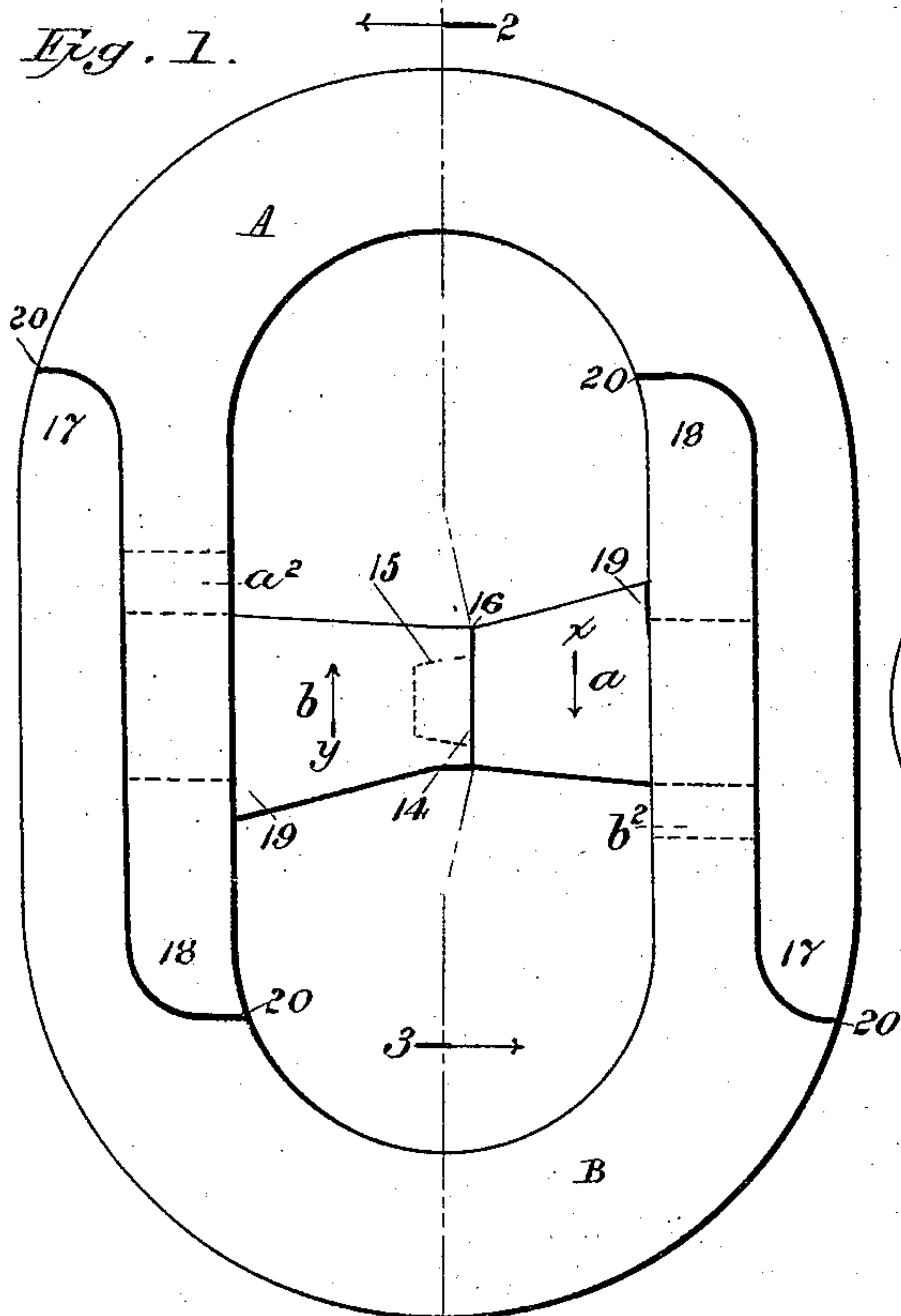


Fig. 2.

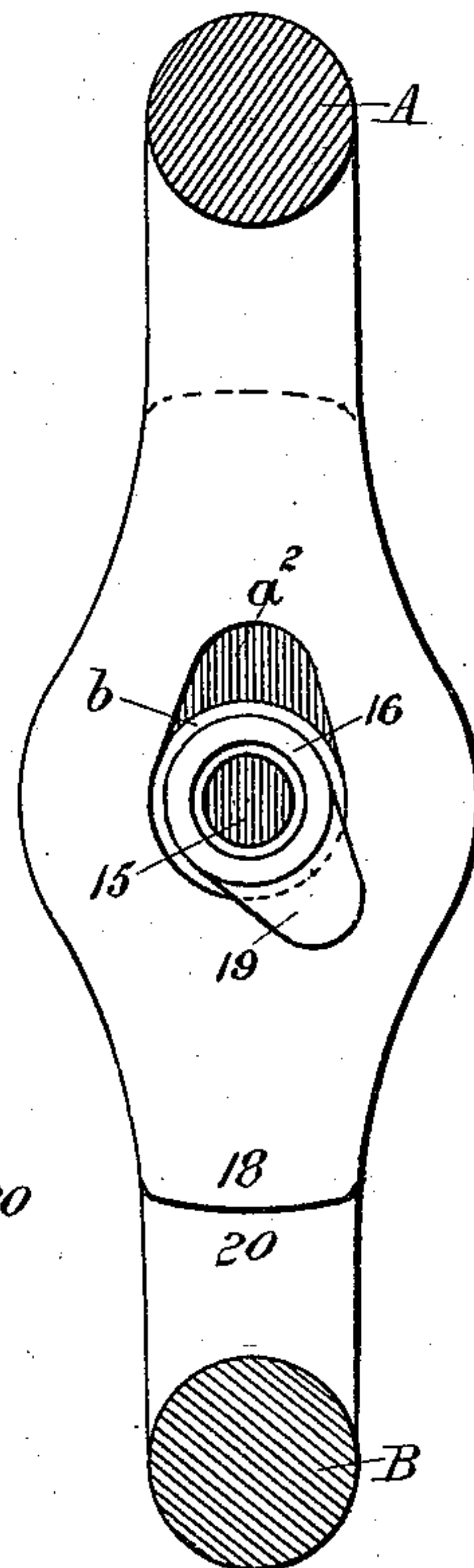


Fig. 3.

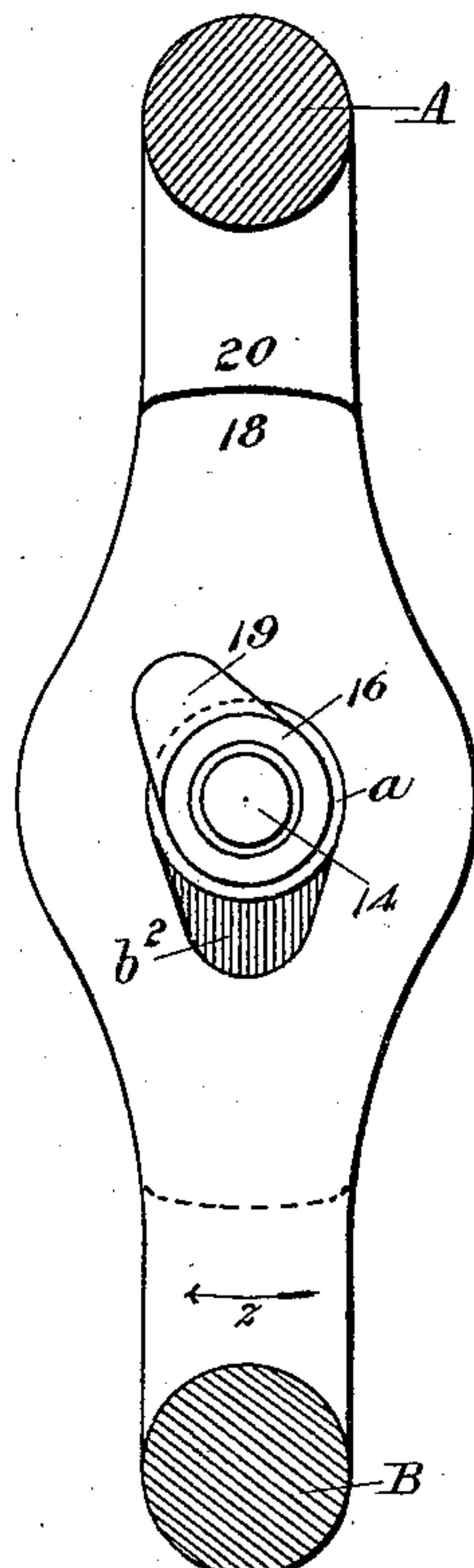


Fig. 4.

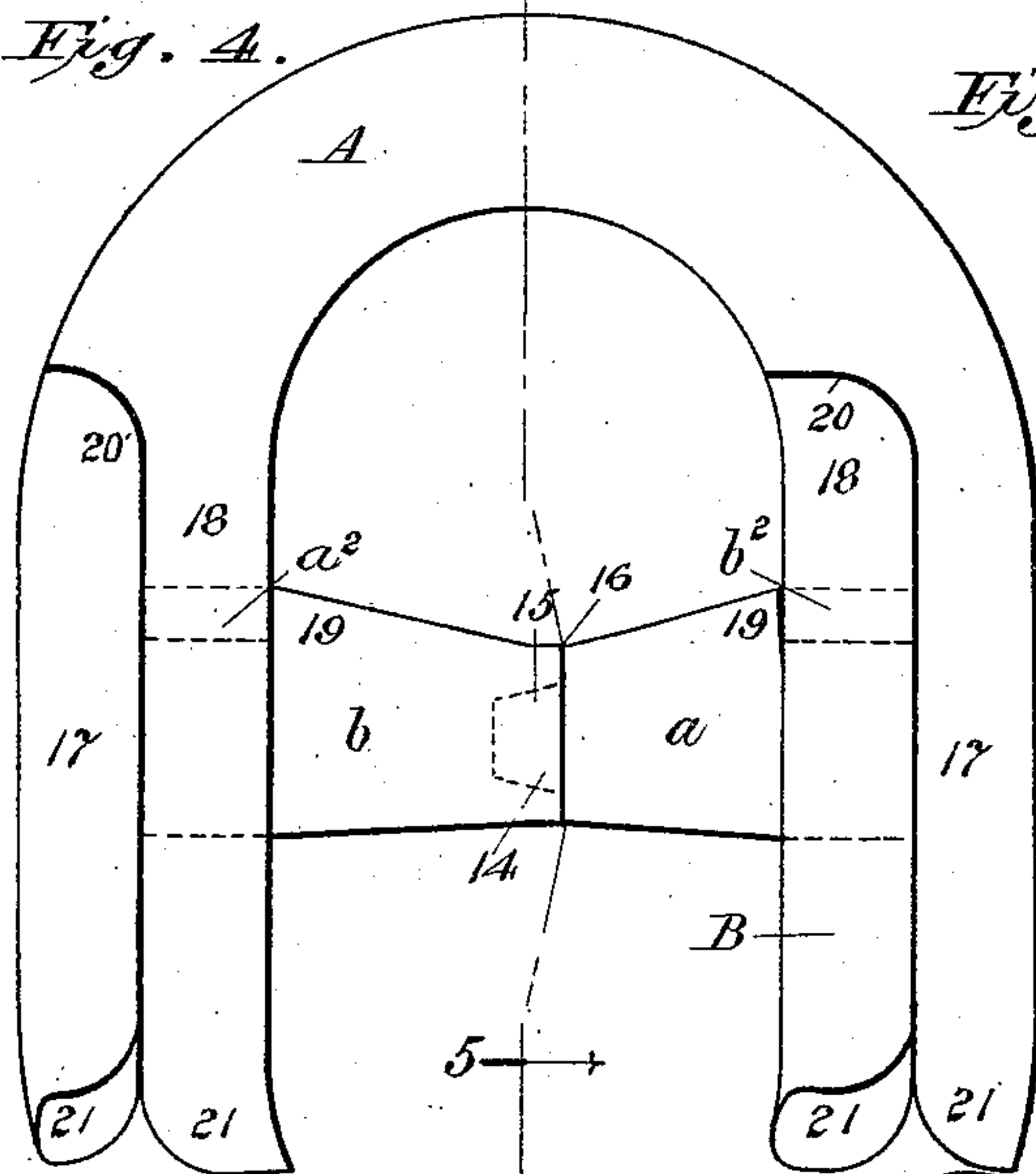


Fig. 6.

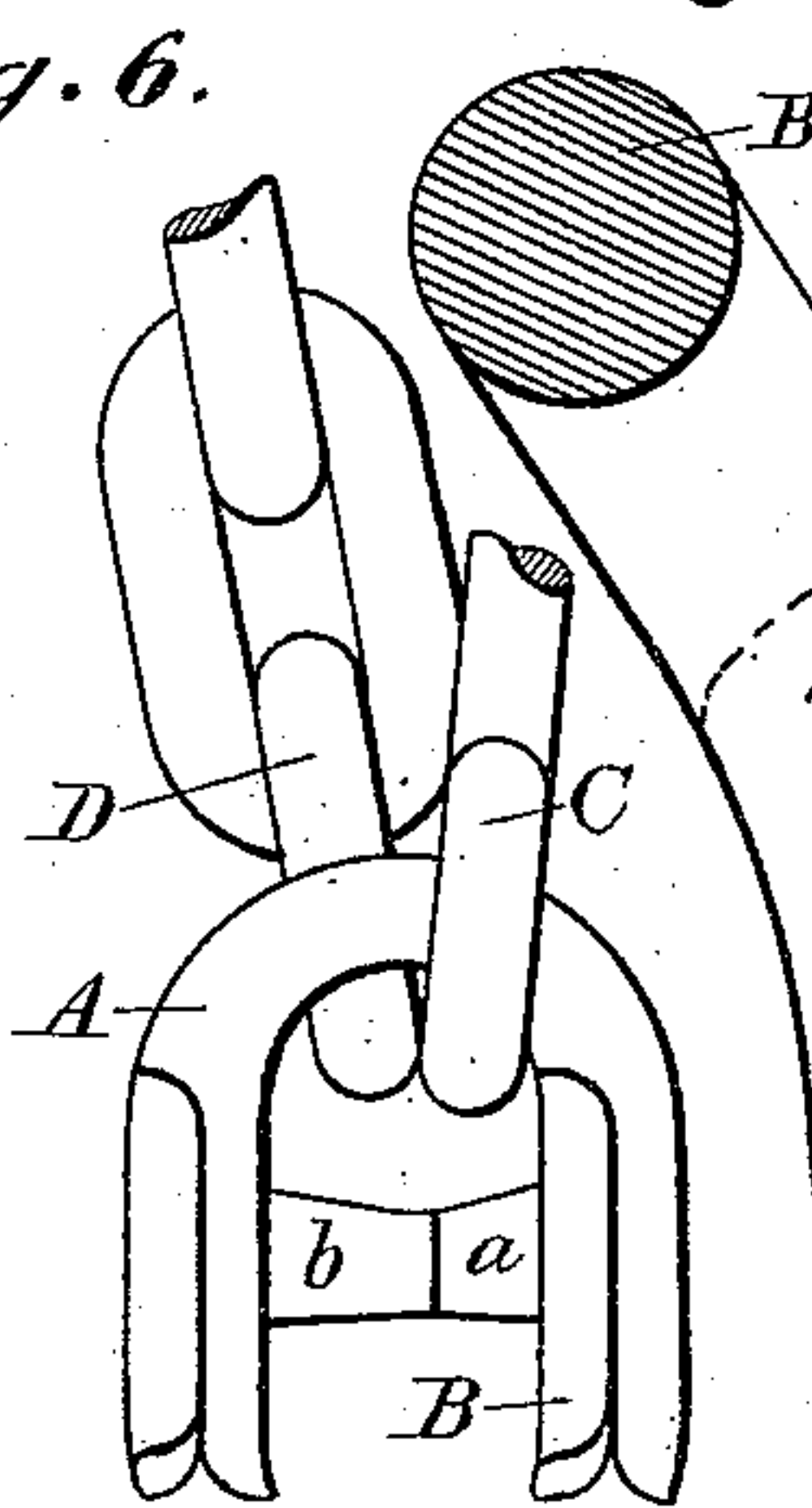


Fig. 5.

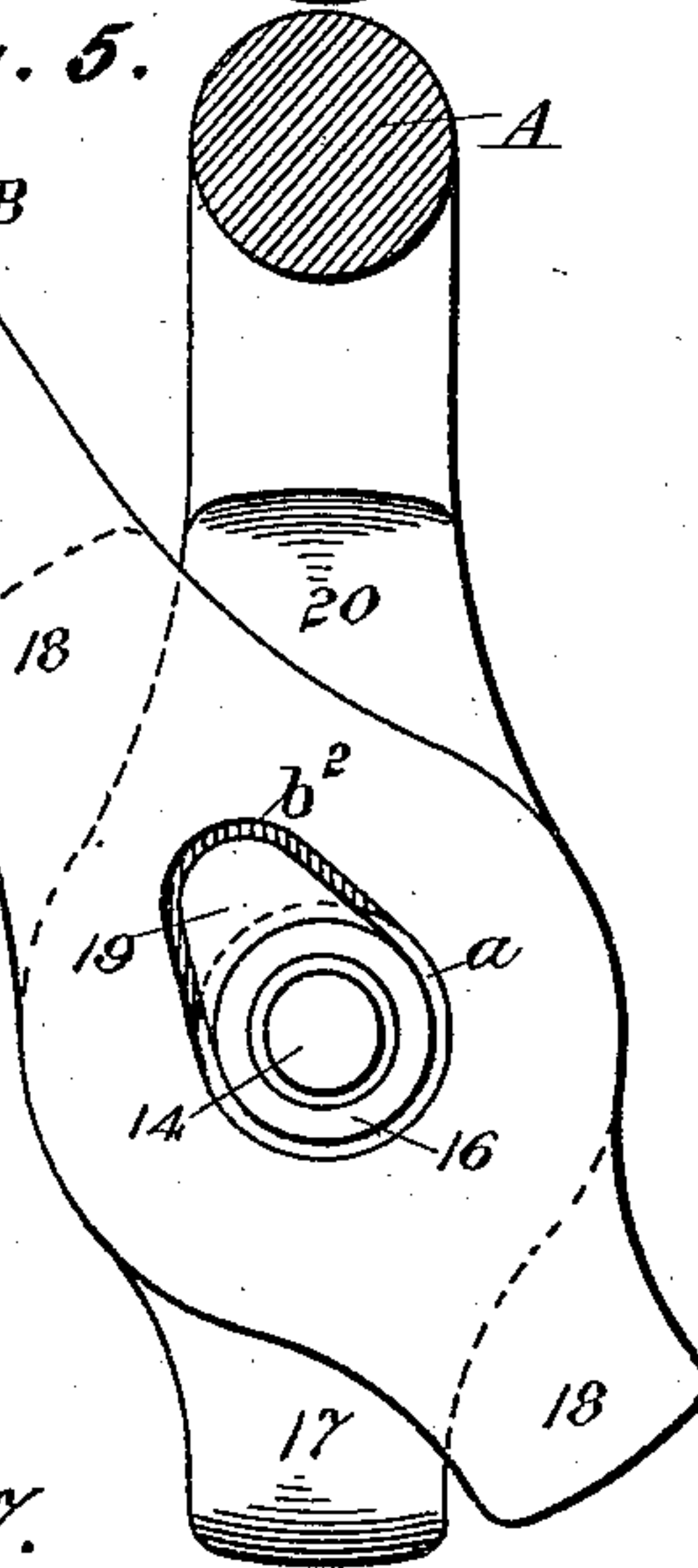
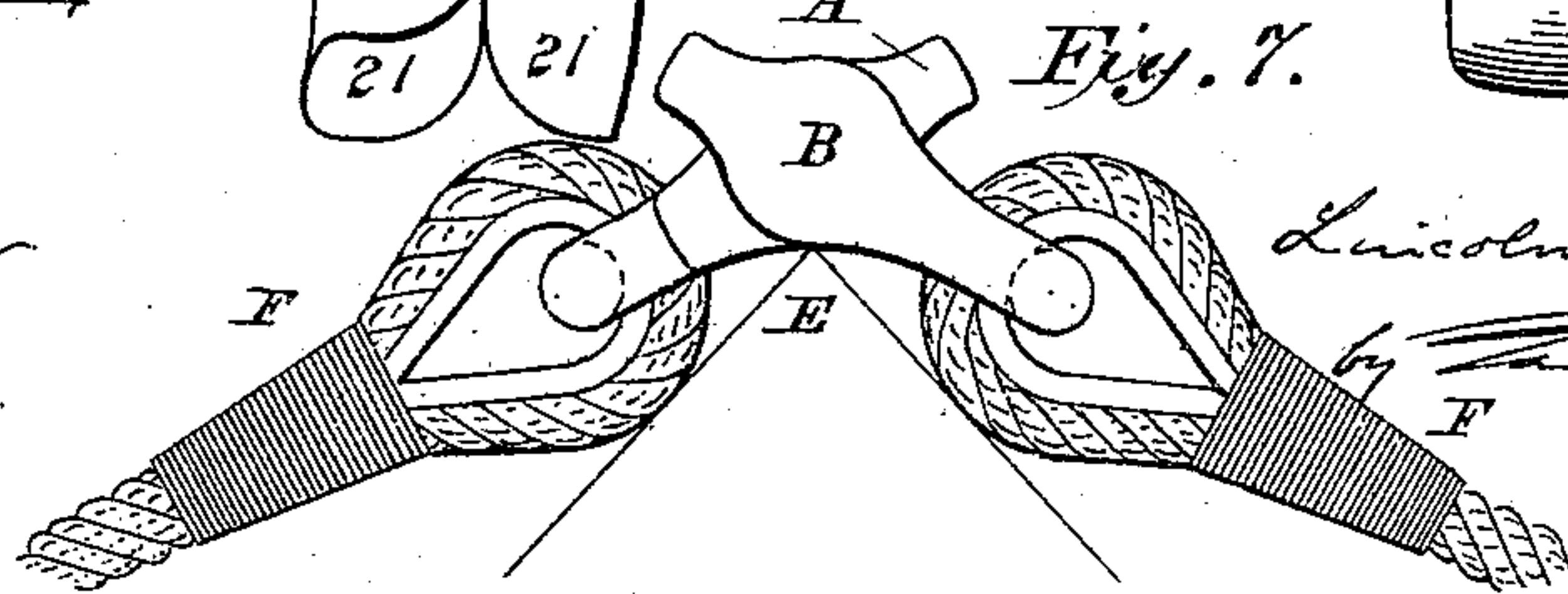


Fig. 7.



Witnesses  
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 8.

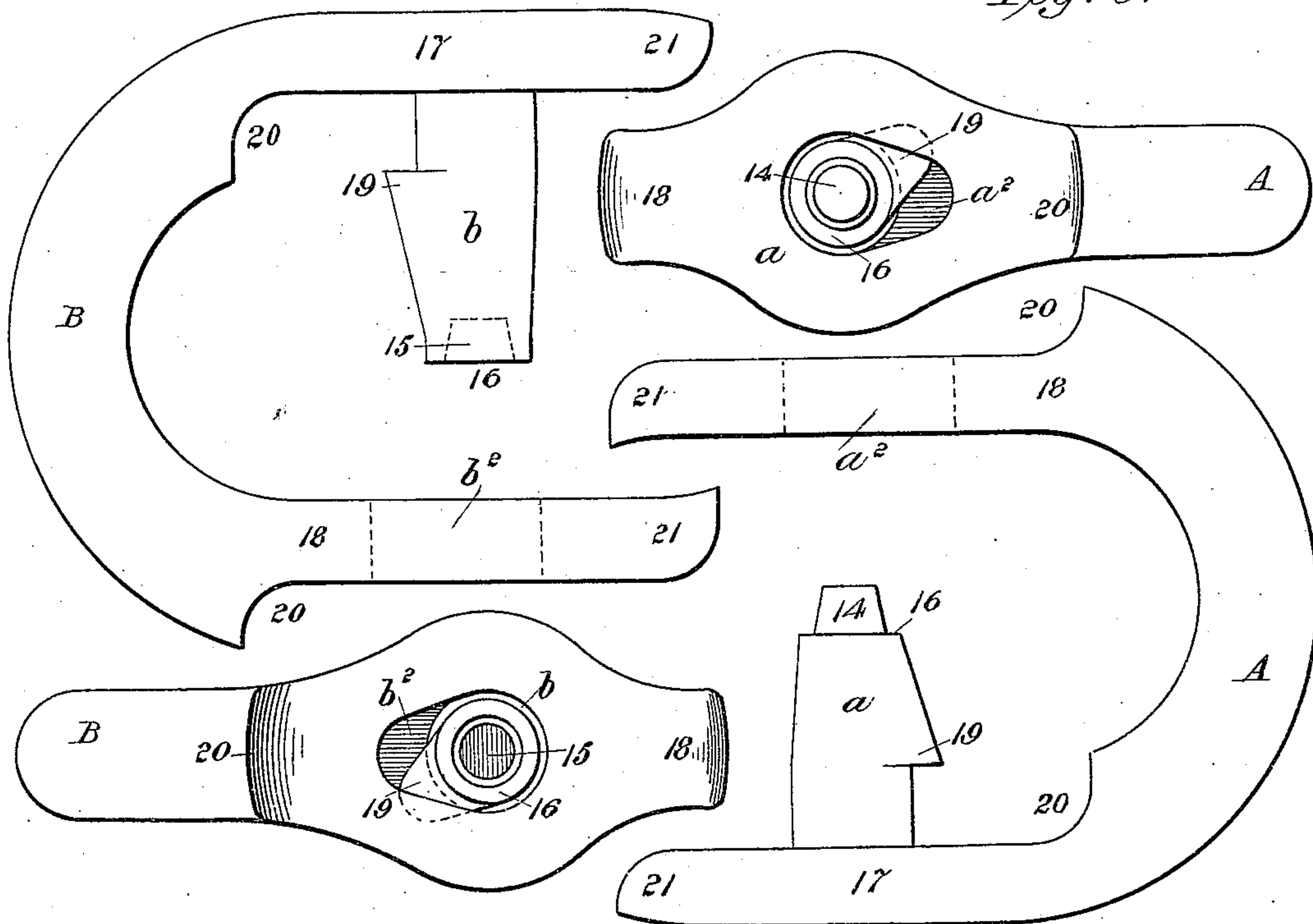


Fig. 9.

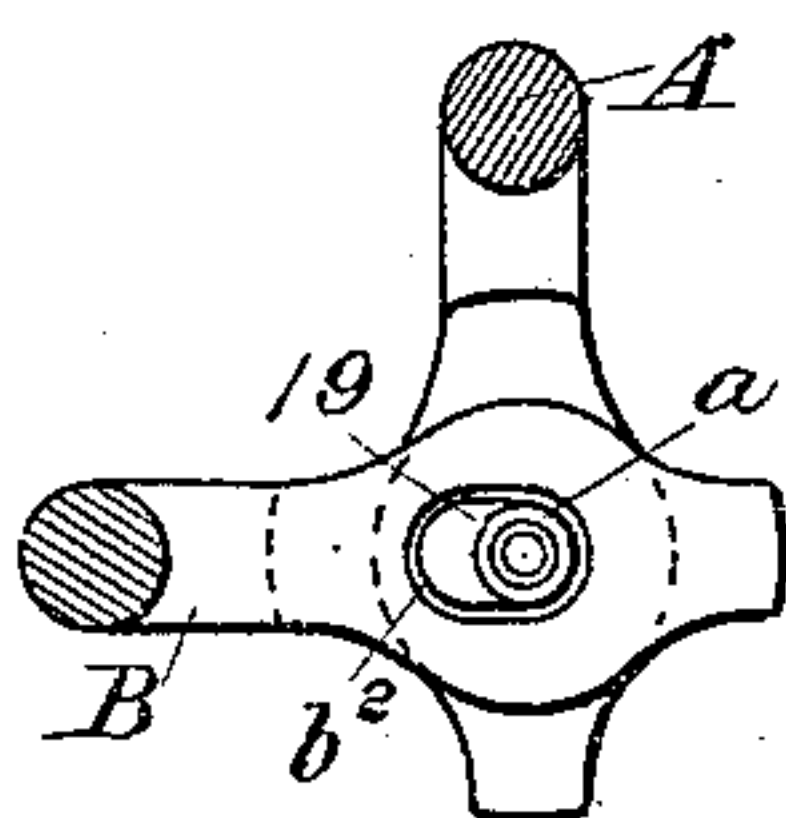


Fig. 10.

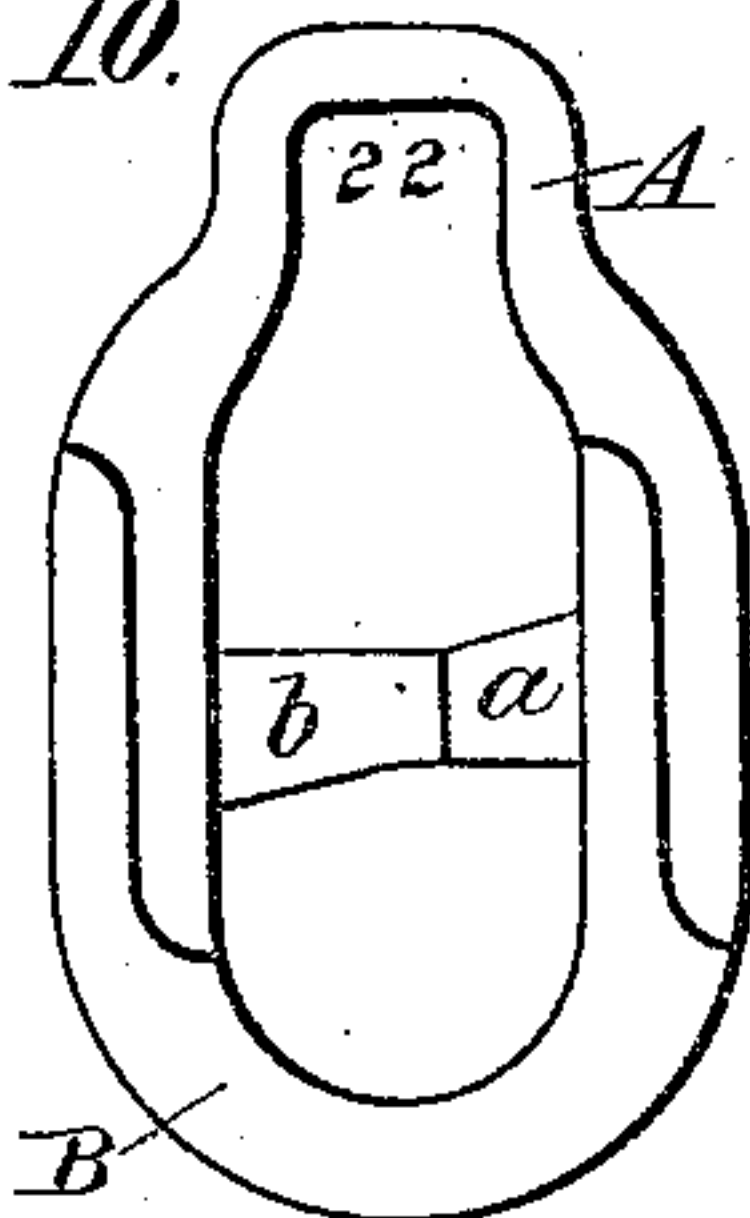


Fig. 11.

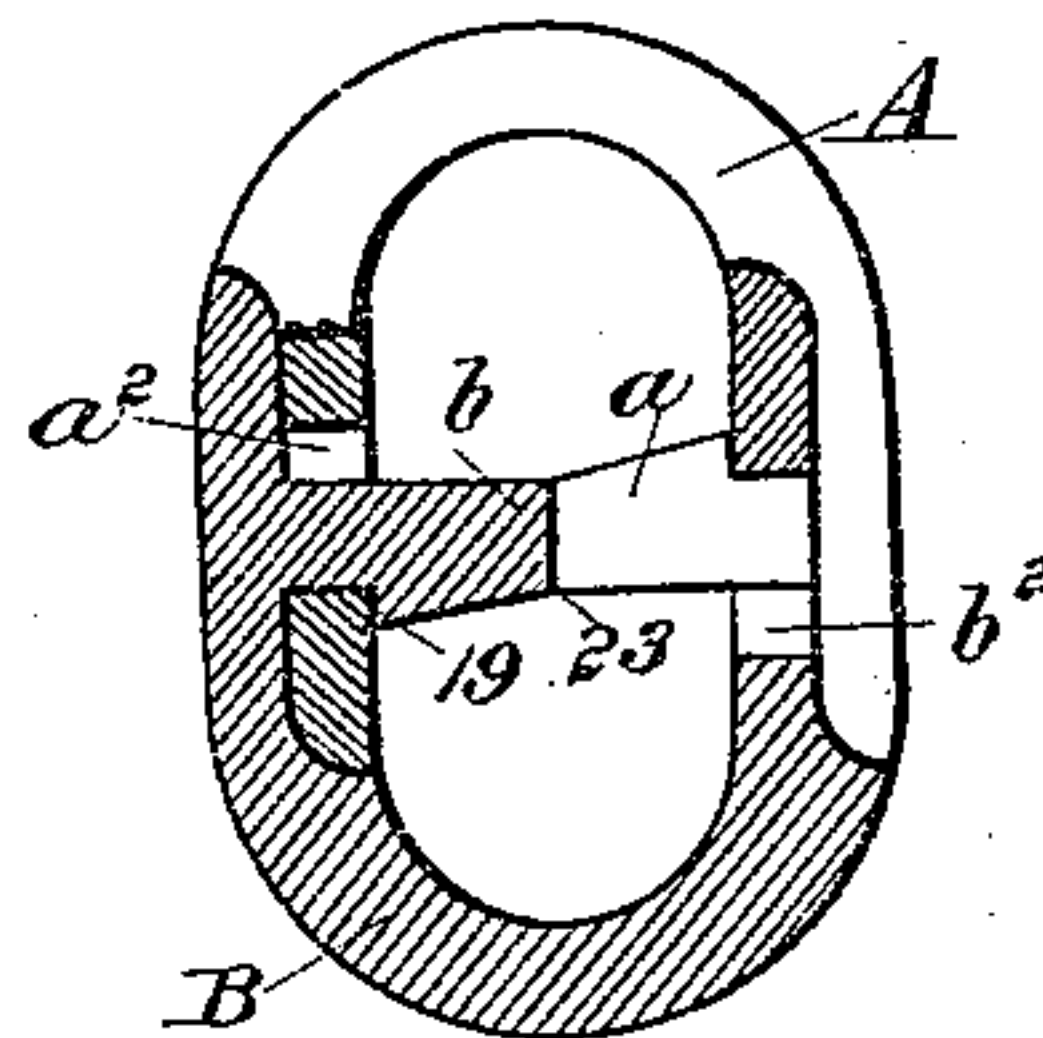


Fig. 12.

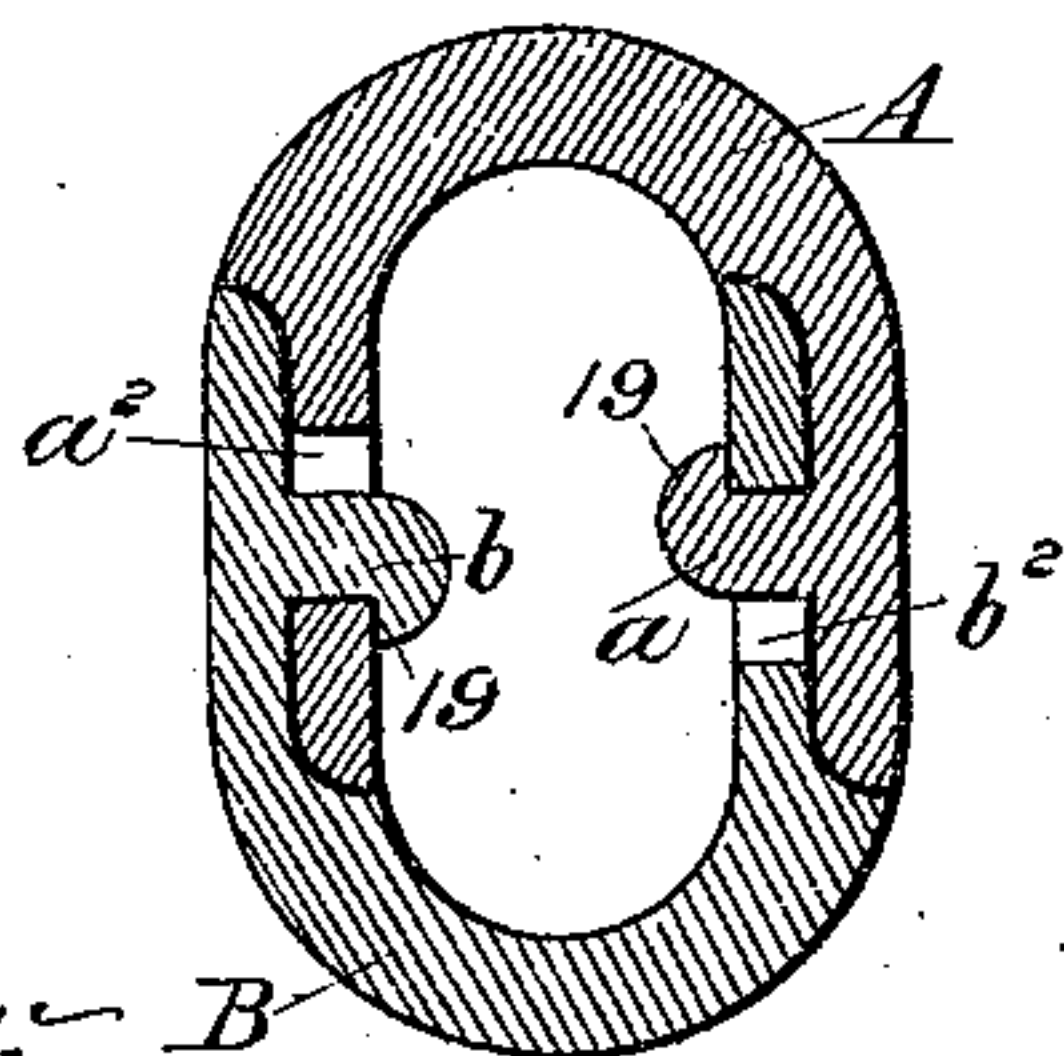
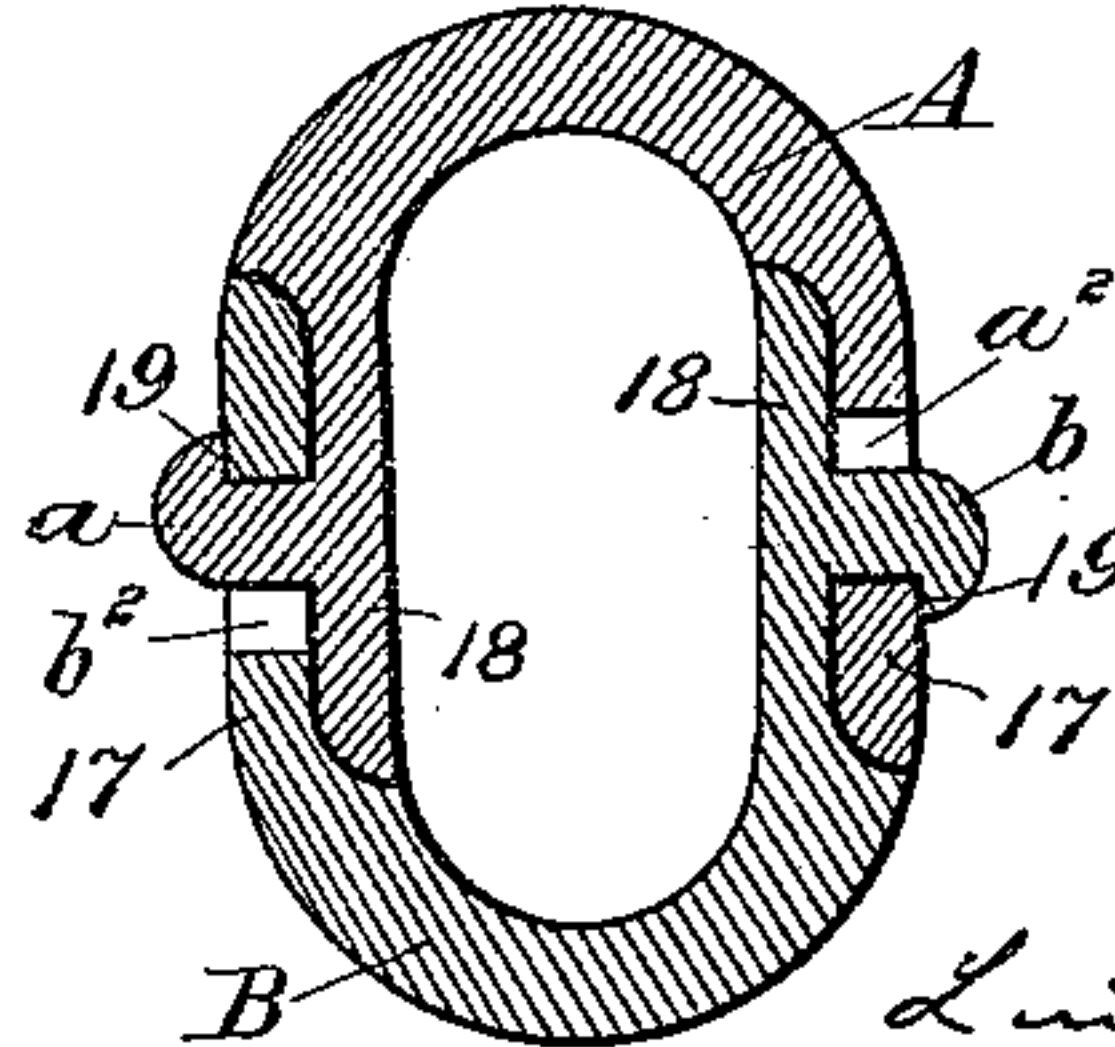


Fig. 13.



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# UNITED STATES PATENT OFFICE.

LINCOLN KING, OF NEW YORK, N. Y.

## SHACKLE FOR WIRE GUYS, &c.

SPECIFICATION forming part of Letters Patent No. 547,642, dated October 8, 1895.

Application filed May 26, 1894. Serial No. 512,552. (No model.)

*To all whom it may concern:*

Be it known that I, LINCOLN KING, a citizen of the United States of America, and a resident of New York, in the county and State of New York, have invented a new and useful Improvement in Shackles for Wire Guys, &c., of which the following is a specification.

This invention relates to shackles for derrick-guys and other rigging and for hoisting-tackle and the like, and the improved shackles are primarily designed for use in connection with wire guys and in like situations where superior adaptation to resist great strains is a leading desideratum. The term "shackle" as hereinafter employed refers to a shackle of the kind above indicated.

The invention consists more particularly in certain novel combinations of parts, embodied as a whole in an interlocking "stud-shackle," as hereinafter set forth and claimed.

The primary object of the invention is to construct a shackle on the principle of the stud-link for chains and which shall bear the same or a like relation to ordinary shackles of the same size and weight as stud-chains bear to common chains—that is to say, at least one-third stronger—such stud-shackle providing at the same time for disconnecting at will the guy or the like to which it is attached like other shackles.

Additional objects are to further strengthen the shackle by interlocking the parts of its divided stud with each other, so as to secure the full benefit of such stud in an improved shackle of the preferred construction hereinafter described; to adapt a shackle to be locked and unlocked in a peculiar manner more quickly than ordinary shackles and without any small part readily dropped and lost; to prevent a two-part shackle from becoming unlocked accidentally and to preclude its opening while loaded unless torn apart by direct strain in excess of its capacity; to adapt a two-part shackle to "break" around a corner or conform itself thereto by a hinge-like action, so as to keep the improved shackle from becoming bent or broken when thus strained, and to so form and locate the connecting portions, slots, and locking projections of a shackle of said preferred construction as to render the improved shackle symmetrical, easily handled, and of maximum strength.

Two sheets of drawings accompany this specification as part thereof.

Figure 1 of the drawings is a face view of a shackle of the preferred construction above mentioned. Figs. 2 and 3 are longitudinal sections of the same on the line 2 3, Fig. 1, showing the respective sides of its interior. Figs. 4 and 5 are, respectively, a face view and a section on the line 5, Fig. 4, showing the shackle in its locking and unlocking position. Figs. 6 and 7 are small-scale views illustrating the operation of the same shackle. Fig. 8 is a group of face and edge views showing two parts of the same shackle separated; and Figs. 9 to 13, inclusive, are small-scale views of modified shackles, as hereinafter more particularly described.

Like reference letters and numbers refer to corresponding parts in all the figures.

In the said preferred construction (illustrated by Figs. 1 to 8, inclusive) the improved shackle while at work resembles, ordinarily, a stud-chain link, as in Figs. 1, 2, and 3, and is constructed on the same principle in part as above set forth, its two separable parts A B being locked together and at the same time immensely strengthened as compared with ordinary shackles by means of a stud composed of coincident stud parts *a b* on the respective shackle parts interlocked with each other at their inner ends and so interlocked by a tenon 14 at the extremity of said part *a*, in the form of a truncated cone, and a socket 15 in the extremity of said part *b*, tightly fitted to said tenon, surrounded by abutment-shoulders 16, which come into close contact as well as the ends of the tenon and socket, in order to secure the full benefit of the stud. This interlocking effectively prevents the otherwise possible deflection of the respective stud parts by strain, which is indicated by the arrows *x* and *y* in Fig. 1, while putting the parts together or locking the shackle, and is not interfered with, owing to the tapering form of the tenon 14 and the location of the interlocking devices, as above. Said stud parts *a b* project rigidly from "connecting portions" 17 of the shackle parts A B through slots *a<sup>2</sup> b<sup>2</sup>* in overlapping connecting portions 18 of the respective shackle parts, said stud part *a* projecting through the slot *b<sup>2</sup>* of the shackle part B, and said stud part *b*



through the slot  $a^2$  of the shackle part A, and each of said stud parts has a locking projection 19, which, when the shackle parts are in ordinary working position, as aforesaid, are in solid contact with the slotted connecting portions 18 away from the matching portions of their slots, as in Figs. 2 and 3, so as to prevent the separation of the parts while the shackle is so locked. The heel or attached end of each of said stud parts  $a b$  is round in cross-section, as shown in Figs. 2, 3, 5, and 8, and one end of each of said slots  $a^2 b^2$  is fitted to the matching stud part and is concentric therewith, as are also said interlocking tenon 14 and socket 15, and the shackle parts turn freely on the center of motion common to these concentric portions, as on a hinge. When they are in the relative positions represented by Figs. 4, 5, and 6, the shackle parts may be taken apart or put together in an instant, and after they are thus put together it is only necessary to flatten the link, as in Figs. 1, 2, and 3, to securely lock the parts together. To unlock the shackle, it is necessary to turn one or each shackle part in a particular direction. (Indicated by the arrow  $z$  in Fig. 3.) If only one (B) is turned, it must in the preferred arrangement for ordinary use be given nearly a half-revolution in said particular direction, and the eyes or rings C D, interlinked with the respective shackle ends, must be made to avoid each other, as in Fig. 6, before the shackle will close, so as to unlock. Accidentally unlocking the shackle or unlocking it while loaded is thus effectually prevented. The shackle parts A B will turn to a less extent in the same direction or to a greater extent in the opposite direction without unlocking, and this hinge-like action (illustrated by Fig. 7) relieves the parts from bending or breaking strains when the shackle is drawn flatwise against a corner E—for example, as in the figure. The ends of a pair of wire guys, for which the shackle is primarily intended, as aforesaid, are represented at F F in this figure.

The connecting portions 17 18 are preferably flattened out and let into matching recesses 20, Figs. 1 to 5 and Fig. 8, in the respective shackle parts, the requisite strength being obtained by widening them, as in Figs. 2, 3, 5, and 8. Curves at the ends of the recesses 20, as in Figs. 1, 4, and 8, render the shackle strong at these points, and the corresponding shape of the extremities of the shackle parts, as at 21, Figs. 4 and 8, facilitates assembling the parts.

The slots  $a^2 b^2$ , Figs. 2, 3, 5, and 8, are only slightly elongated, and this in the direction of the length of the shackle and at mid-width the connecting portions 18, and such elongations, matching the locking projections 19, taper in width and terminate in rounded ends, and being thus constructed they do not injuriously weaken the slotted metal.

The locking projections 19, Figs. 1 to 5 and Fig. 8, have flat shoulders to engage with the

slotted connecting portions 18; otherwise their surfaces merge into the periphery of the stud on all sides, and they are thus adapted to be made small with reference to small slots and free from liability to be fouled by anything, while they aid to facilitate quickly assembling the parts, as above.

Fig. 9 represents a sectional view, similar to Fig. 5, of a modified shackle. In this modification the locking projections represented at 19 are formed on the stud parts represented at  $a$  at a different angle, so that in a shackle for very heavy work the shackle parts will lock or unlock when at right angles—for example, as in the figure. A slot  $b^2$  and a locking projection 19 of a somewhat different shape from those above described are also shown to illustrate such variations.

Fig. 10 represents a face view of another modified shackle. In this modification one of the shackle parts—A, for example—is made with a tackle-block loop or arch 22, by which to fasten it into a block for hoisting purposes. The shackle represented, including its stud parts  $a b$ , is otherwise identical with the shackle first described.

Fig. 11 represents a face view, partly in section, showing another modification in which the stud parts  $a b$  have flat adjoining extremities 23 to cheapen the manufacture of the shackle. The deflection of the stud parts by strain, as above, may be prevented in the modified shackle by making the parts heavier for given work.

Figs. 12 and 13 represent sectional face views of two other modified shackles. In the modification represented by Fig. 12 the stud feature is wholly dispensed with in order to get more space within the shackle. In this arrangement the “heel ends” of the stud parts, as they may still be termed, (shown at  $a b$  with sufficient of the locking projections 19,) form locking-buttons. Otherwise the modified shackle is or may be like the one first described. In the modification represented by Fig. 13 the entire space within the main inner outlines of the shackle is rendered available to accommodate large lashings by attaching the shortened stud parts  $a b$  of Fig. 12, with their locking projections 19, to the inner connecting portions 18 of the shackle and forming the slots  $a^2 b^2$  in the outer connecting portions 17, said stud parts projecting outwardly instead of inwardly, as shown in the figure. The operations of locking and unlocking the shackle are not materially changed.

Other like modifications will suggest themselves to those skilled in the art.

In all its forms the improved shackle is intended to be made complete from two drop-forgings. The stud parts  $b$  are socketed and the slots  $a^2 b^2$  are cut, of course, after the pieces are forged.

Having thus described the said improvement in shackles for guys and the like, I claim as my invention and desire to patent under this specification—



1. A shackle constructed with a collapse-resisting stud and composed of two laterally separable parts, each part having a pair of overlapping connecting portions provided respectively with a stud-part and with a slot through which the other stud-part projects inwardly, substantially as hereinbefore specified.

2. A shackle composed of two laterally separable parts, each part having a pair of overlapping connecting portions provided respectively with a stud-part and with a slot through which the other stud-part projects inwardly, said stud parts uniting end to end to form a collapse-resisting stud and being provided at their inner extremities with a tenon and a socket respectively to interlock them against deflection under strain, substantially as hereinbefore specified.

3. A shackle composed of two separable parts having a pair of overlapping connecting portions provided respectively with a stud-part having a locking projection and with a slot through which the other stud-part passes in one position, substantially as hereinbefore specified.

4. A shackle composed of two separable parts having overlapping connecting portions provided with stud-parts each of which has a round heel-end and an eccentric locking projection, and with slots fitted to said heel-ends, and to said locking projections in one position, and having a center of motion with which said heel-ends are both concentric, said locking projections coinciding with said slots when the ends of the shackle are brought nearly together by movement around said center in one direction, substantially as hereinbefore specified.

5. A shackle constructed with a hinge-like center of motion at or about midlength, and composed of two laterally separable parts, each having a pair of overlapping connecting portions, provided respectively with a stud-part at the center of motion having a concentric round heel-end and with a round-ended

slot through which the other stud-part projects, substantially as hereinbefore specified.

6. A shackle, composed of two separable parts, having overlapping connecting portions, and provided with stud-parts which coact with each other to form a collapse-resisting stud and have shackle-locking projections and slots fitted to the heel-ends of said stud-parts and to said projections in one position, with a center of motion common to all, substantially as hereinbefore specified.

7. A shackle, composed of two separable parts, having overlapping connecting portions which are provided with stud-parts having locking projections and with slots fitted to the heel-ends of said stud-parts and to said projections in one position, said connecting portions being flattened and widened as shown, and each shackle-part recessed to admit the connecting portions of the other shackle-part, substantially as hereinbefore specified.

8. A shackle, composed of two separable parts, having overlapping connecting portions which are provided with stud-parts each having a round heel-end and a locking projection on one side, and with round-ended slots fitted to said heel-ends and to said projections in one position, said slots being at midwidth and longitudinal with reference to the length of the shackle, substantially as hereinbefore specified.

9. A shackle, composed of two separable parts, having overlapping connecting portions which are provided with stud-parts each having a round heel-end and a locking projection on one side, and with round-ended slots fitted to said heel-ends and to said projections in one position, said projections having flat shoulders to coact with the slotted connecting portions, and merged gradually into the stud-parts on all other sides, substantially as hereinbefore specified, for the purposes set forth.

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Witnesses:

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