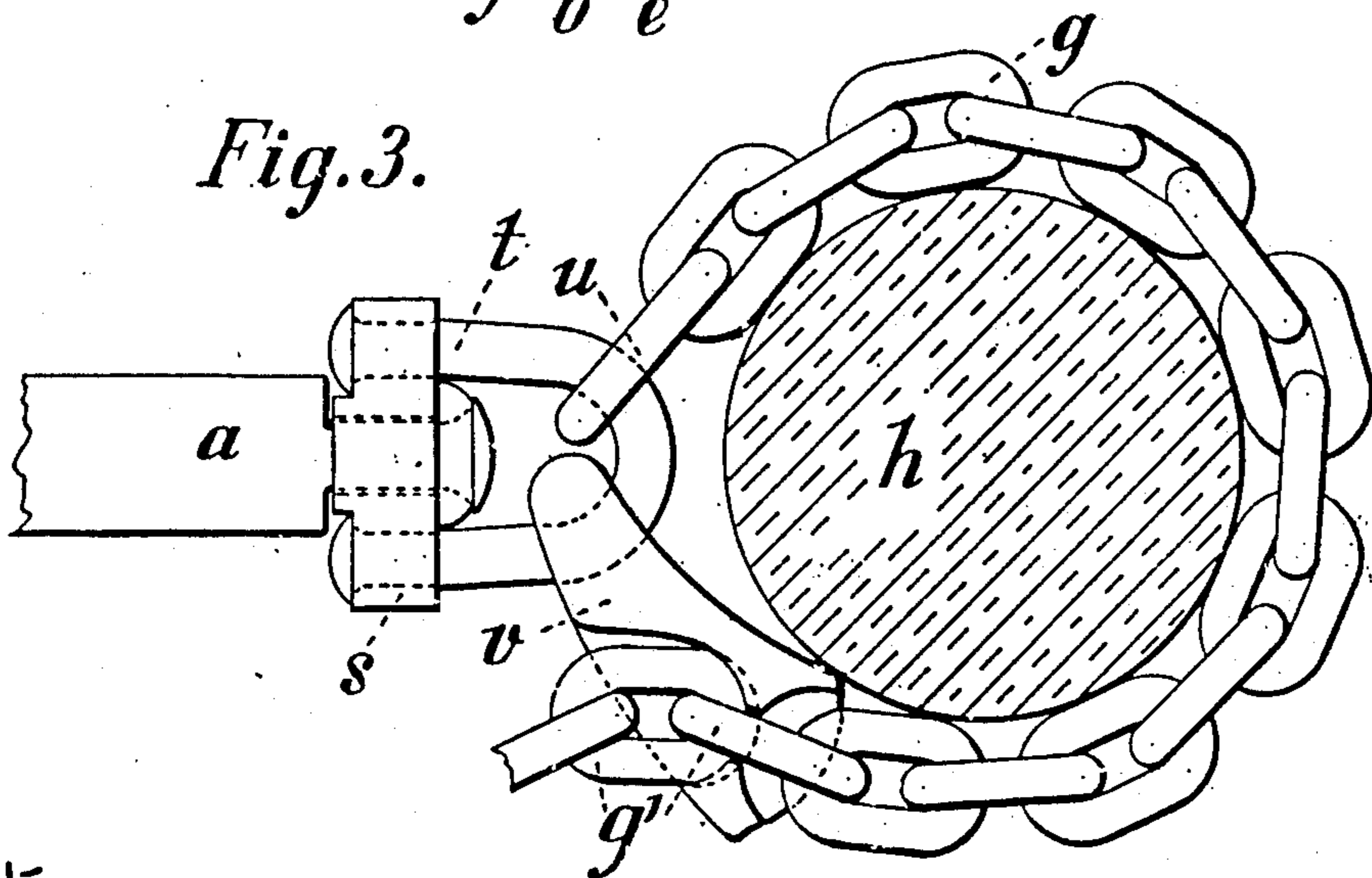
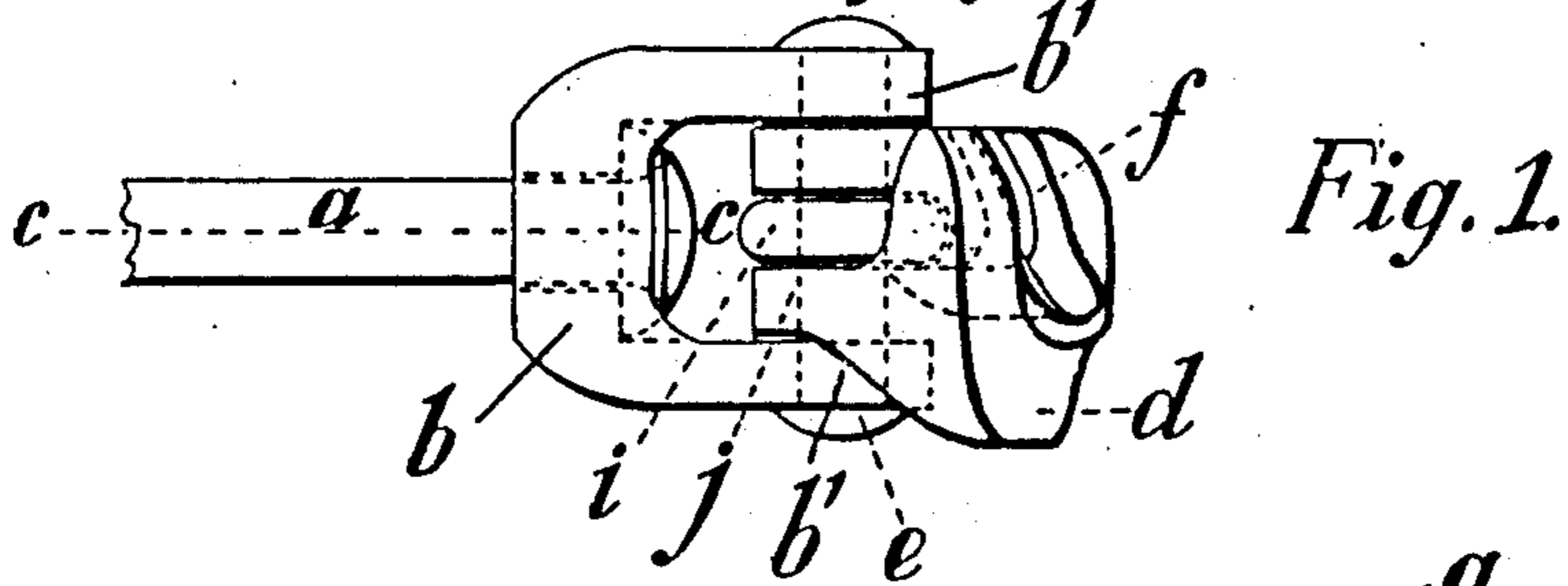
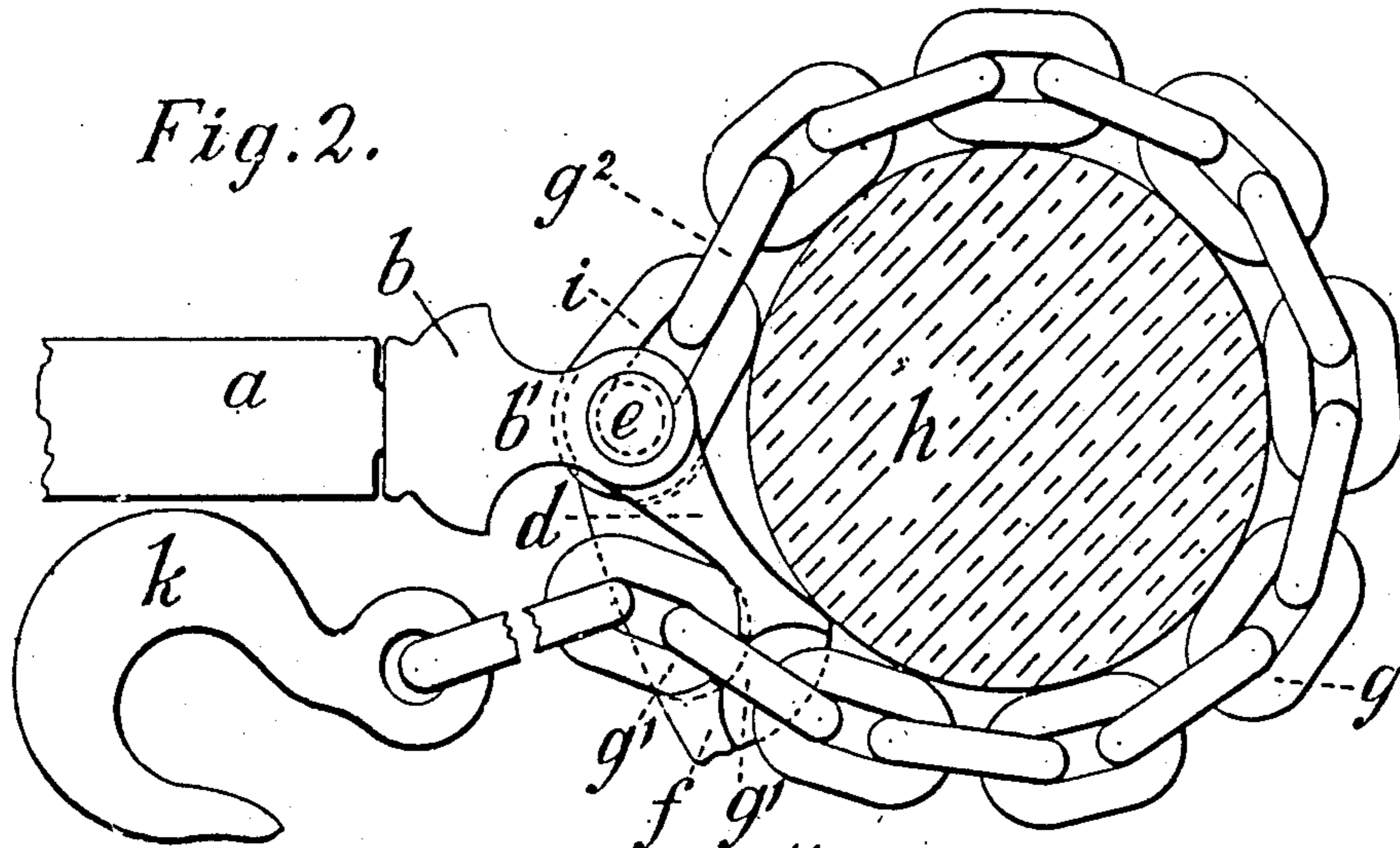


W. SYLVESTER.  
PULLING JACK.  
APPLICATION FILED SEPT. 23, 1909.

963,095.

Patented July 5, 1910.

2 SHEETS—SHEET 1.



Witnesses.

Percy Sylvester  
John H. Copeland

*Inventor*

Walter Sylvester

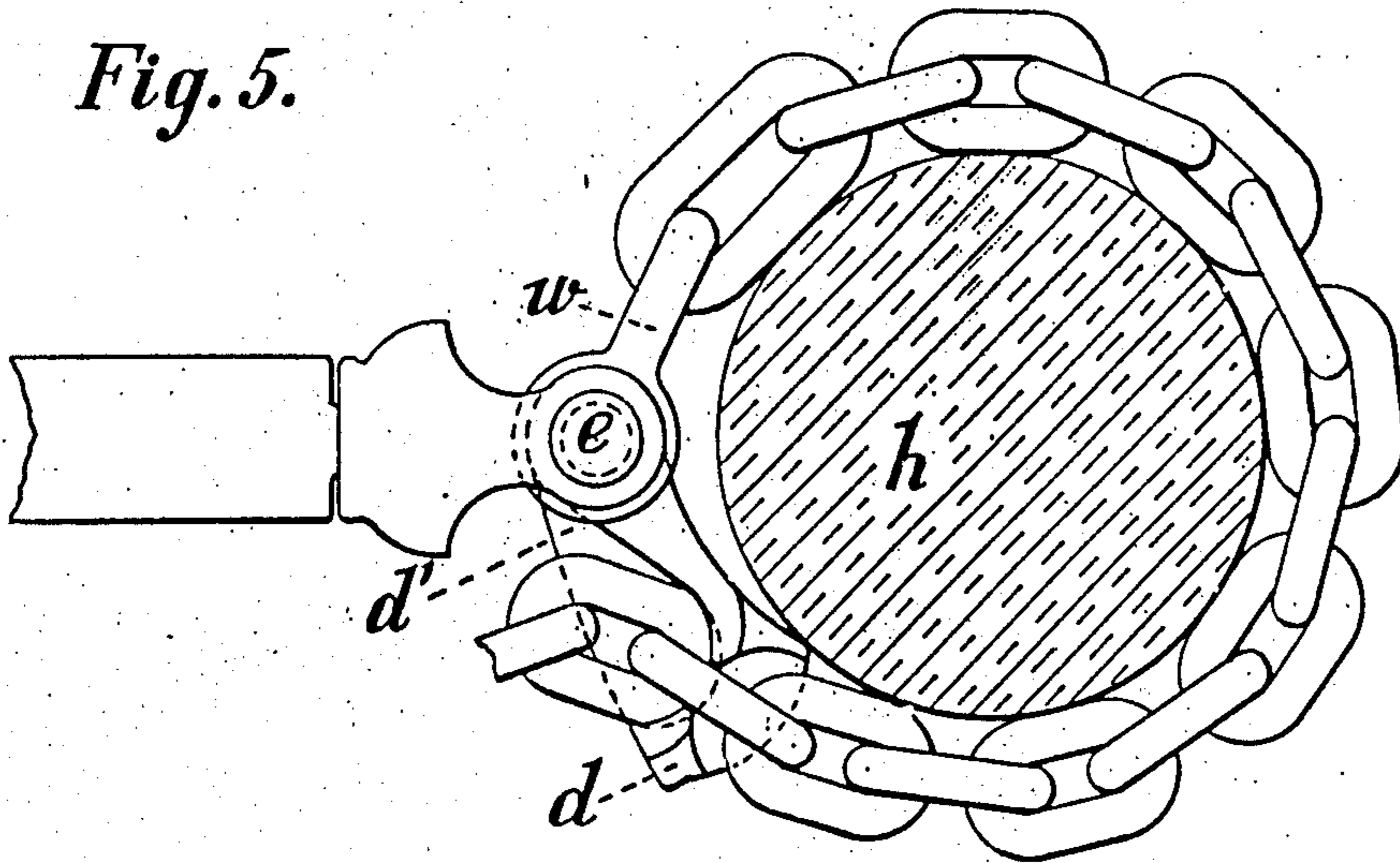
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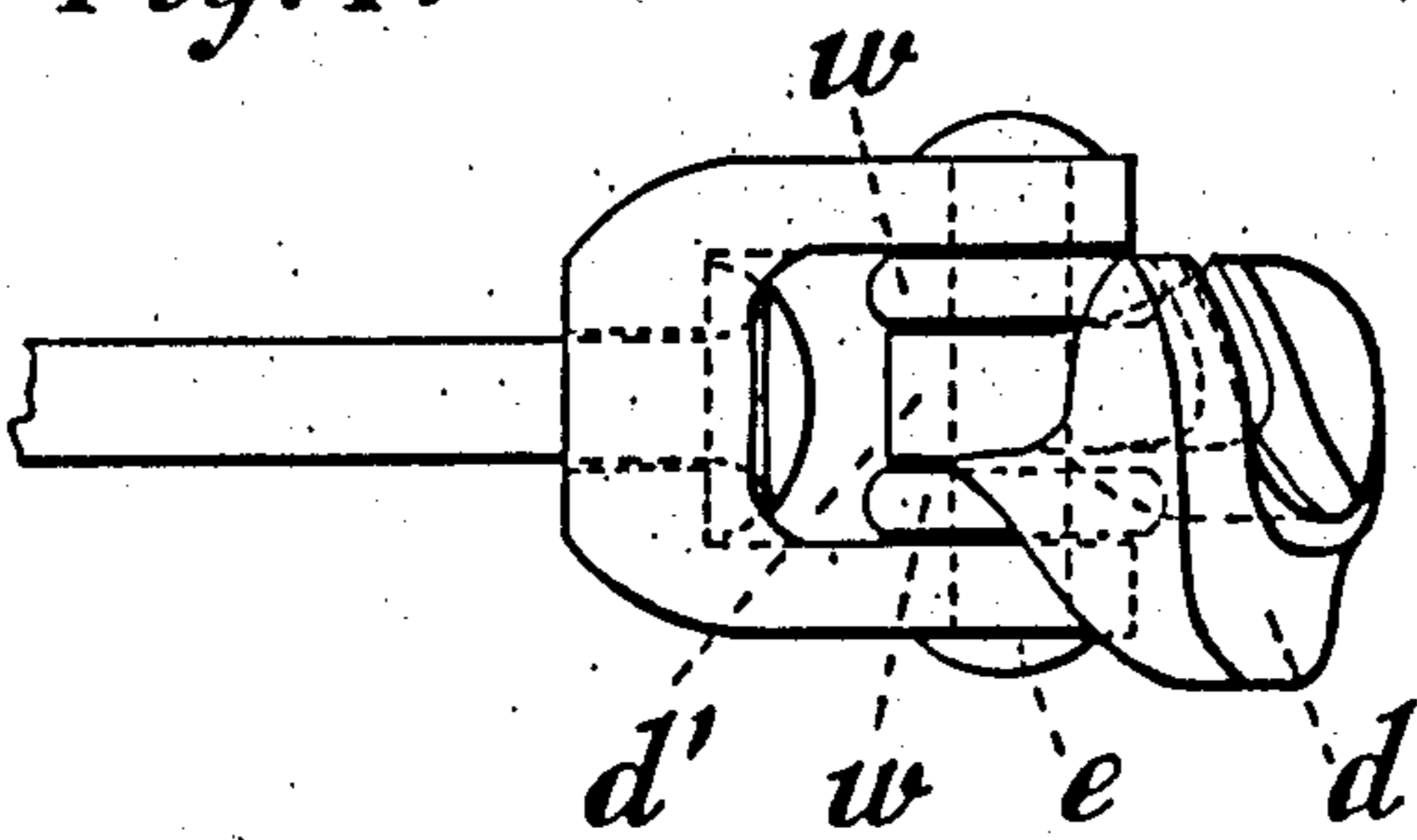
Patented July 5, 1910.

2 SHEETS—SHEET 2.

*Fig. 5.*



*Fig. 4.*



Witnesses

Percy Sylvester  
John H. Hopcraft

Inventor

Walter Sylvester

# UNITED STATES PATENT OFFICE.

WALTER SYLVESTER, OF TUNSTALL, ENGLAND.

## PULLING-JACK.

963,095.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed September 23, 1909. Serial No. 519,189.

*To all whom it may concern:*

Be it known that I, WALTER SYLVESTER, a subject of the King of Great Britain and Ireland, residing at Tunstall, Staffordshire, England, have invented Improvements Relating to Pulling-Jacks, of which the following is a specification.

This invention relates to jacks of the kind wherein flexible means such as a chain or chains or the equivalent thereof is or are placed under tension for the purpose of moving an object or objects.

In some services, for example the drawing of pit props, it is desirable that the jack should be capable of being connected closely to one of the resisting supports for which purpose it has been proposed to form the head of the jack with serrated means for preventing the jack and its securing chain or equivalent slipping down its anchor prop but such an arrangement has not proved satisfactory in practice.

The object of the present invention is to provide an improved construction of head or arrangement whereby the necessity of employing serrated means for the prevention of slipping is avoided and whereby the loop of chain encircling the anchor prop is caused to bear against or embrace a larger portion of the prop than heretofore, the head being such as not to interfere with the use of the jack by connection to the anchor prop or support through a hook as ordinarily. For this purpose, the construction or arrangement of the parts of the head is such that after the chain or equivalent has been passed around the anchor prop or the like and appropriately fastened, the pulling action of the jack on the said chain, due to its own weight, and also to the tightening up of the chain by the jack, will cause the arc of contact over which pressure is exerted by the chain to be increased and the prop to be tightly embraced. The function aforesaid is achieved by so arranging the parts that, with the retractile movement of the head of the jack from the prop or the like, the ends or portions of the chain or equivalent connected to the head are brought closer together.

Pulling jacks embodying the invention can be constructed in various forms.

In the accompanying drawings, Figure 1

is a side elevation and Fig. 2 a plan of an improved jack head according to the invention. Fig. 3 is a plan illustrating a modification and Figs. 4 and 5 are respectively a side elevation and plan of a further modification.

As shown in Figs. 1 and 2, the rack or pulling bar *a* of the jack has a swiveling and bifurcated head piece *b* jointed thereto so that it can turn about a longitudinal axis *c—c* and so formed that a block *d* can work hinge fashion about a pivot pin *e* extending transversely between the forked limbs *b<sup>1</sup>* of the head piece *b* so that the two parts *b* and *d* form a universal joint with the rack bar. The said block *d* is formed with a gap or jaw *f*, which, if intended to receive a chain, may be shaped in a known way and as shown in Fig. 1, so as to receive and securely hold a link or links *g<sup>1</sup>* of the chain *g* inserted side-wise therein. One end *g<sup>2</sup>* of the chain is permanently fastened, as by a link *i*, to the pivot pin *e*, preferably by forming the block *d* with a bifurcated portion *j* for its reception, and the other end of the chain is or may be provided with a hook *h* which can be used in the ordinary way, when required. As will be seen, with the arrangement described, when a comparatively short length of the chain *g* is loosely passed around a prop *h*, designed to serve as an anchor or support, and connected to the jaw *f* of the block *d*, the weight of the rack bar *a* will cause the block *d* and link *i* to turn toward each other and assume the relative positions shown in Fig. 2, so that the chain *g* will then tightly embrace a larger portion of the circumference of the prop *h* than before for the purpose hereinbefore explained.

In the modification shown in Fig. 3, a flat head piece *s* is attached swivel fashion to the rack bar *a* or equivalent jack portion, and has a bent or loop shaped yoke *t* bolted or otherwise secured thereto so that a shackle-like device results to which one end of the chain *g* is directly connected by a link *u* while another portion of the chain *g* can be directly connected thereto through a block *v* shaped to engage one or more links of the chain in a similar manner to the block *d* shown in the example described with reference to Figs. 1 and 2 of the drawings, the said block *v* working loosely on the yoke *t*,

the arrangement being such that the link *u* and the said block *v* will approach one another for the purpose hereinbefore explained upon retractile movement of the head *s t* from the anchor prop or support *h* to which the chain *g* is connected. In some cases the head piece *b*, or *s t*, may be formed on or be rigidly secured to the rack bar *a* or equivalent instead of being swiveled thereto, but the latter arrangement is preferred.

As a modification of the jack head shown in Figs. 1 and 2, the link *i*, in lieu of directly engaging the pivot pin *e* may, as shown in Figs. 4 and 5, be connected thereto by a shackle link *w* so that the bending stress on the said pin *e* is reduced, the block *d* in this case, instead of being bifurcated, being formed with a solid tail piece *d'* disposed between the limbs of the shackle link *w*.

What I claim is:—

1. A pulling jack head comprising a head piece, a flexible connector, means articulated to the head securing one end of the connector thereto and means also articulated to the head for securing the connector at a point intermediate of its length to such head piece so that retractile movement of the head piece from a support around which the flexible connector is passed, will bring the securing points of the connector closer together.

2. In a pulling jack adapted to be secured to an anchor prop by an encircling flexible connector, a head piece for attaching the flexible connector at one end to the head piece, and a device also articulated to the head piece for attaching the flexible connector, intermediate of its length to the head piece and adapted to increase the arc of contact of the flexible connector around the prop with retractile movement of the jack.

3. A pulling jack head comprising a head piece, a device hinged to the head piece for permanently securing one end of a flexible connector thereto and a block also working hinge fashion upon the head piece and to which the flexible connector can be secured at any desired point in its length.

4. A pulling jack head comprising a bifurcated head piece, a pivot pin extending transversely between the forked limbs of the head piece, a block working hinge fashion about said pivot pin, means for securing a flexible connector to the pivot pin and means for securing the flexible connector at another point in its length to said block.

5. A pulling jack head comprising a swiveling and bifurcated head piece, a pivot pin extending transversely between the forked limbs of the head piece, a block working hinge fashion about said pivot pin, means for securing a flexible connector to the pivot pin and means for securing the flexible connector at another point in its length to said block.

6. A pulling jack head comprising a bifurcated head piece, a pivot pin extending transversely between the forked limbs of the head piece, a link for securing one end of a flexible connector to the pivot pin, a block having a portion working hinge fashion about the pivot pin, and means for securing the flexible connector at an intermediate point in its length to said block.

7. A pulling jack head comprising a swiveling and bifurcated head piece, a pivot pin extending transversely between the forked limbs of the head piece, a link for securing one end of a flexible connector to the pivot pin, a block having a portion working hinge fashion about the pivot pin, and means for securing the flexible connector at an intermediate point in its length to said block.

8. A pulling jack comprising a retractile member, a head piece attached thereto, a chain having a hook at one end, means for permanently attaching the other end to the head piece and a movable block mounted on the head piece to hold the chain at a point intermediate of its length and bring the two points of connection of the chain closer together with retractile movement of the said jack member.

9. A pulling jack comprising a retractile member, a bifurcated head piece attached thereto, a chain having a hook at one end, a pivot pin extending transversely between the forked limbs of the head piece, a block working hinge fashion about said pivot pin and having a jaw adapted to engage and hold the chain at a point intermediate of its length, and means for permanently attaching the other end of the chain to the pivot pin.

10. A pulling jack comprising a retractile member, a swiveling and bifurcated head piece attached thereto, a chain having a hook at one end, a pivot pin extending transversely between the forked limbs of the head piece, a block working hinge fashion about said pivot pin and having a jaw adapted to engage and hold the chain at a point intermediate of its length, and means for permanently attaching the other end of the chain to the pivot pin.

11. A pulling jack comprising a retractile member, a bifurcated head piece attached thereto, a chain having a hook at one end, a pivot pin extending transversely between the forked limbs of the head piece, a link securing one end of the chain to the pivot pin and a block having a portion working hinge fashion about the pivot pin, and carrying a jaw adapted to receive a link intermediate of the length of the chain.

12. A pulling jack comprising a retractile member, a swiveling and bifurcated head piece attached thereto, a chain having a hook at one end, a pivot pin extending

transversely between the forked limbs of the  
head piece, a link securing one end of the  
chain to the pivot pin and a block having a  
portion working hinge fashion about the  
5 pivot pin, and carrying a jaw adapted to re-  
ceive a link intermediate of the length of the  
chain.

Signed at Burslem, in the county of Staf-  
ford, England, this eleventh day of Septem-  
ber 1909.

WALTER SYLVESTER.

Witnesses:

PERCY SYLVESTER,  
JOHN H. COPESTAKE.