

(Model.)

2 Sheets—Sheet 1.

H. I. COE, J. L. SMEDLEY & W. A. CROMWELL.

ELEVATOR LOCK.

No. 413,297.

Patented Oct. 22, 1889.

Fig. 1.

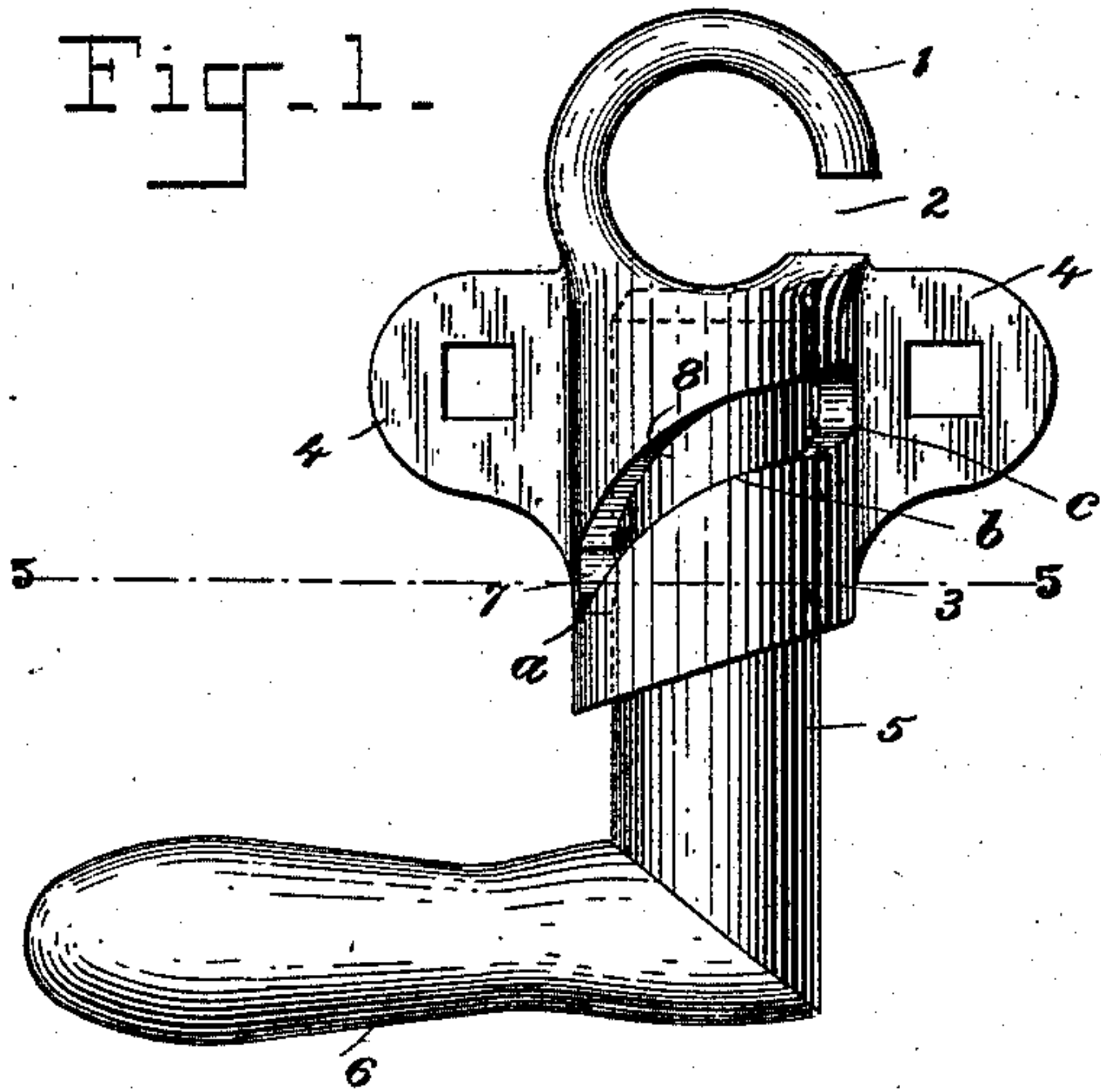


Fig. 2.

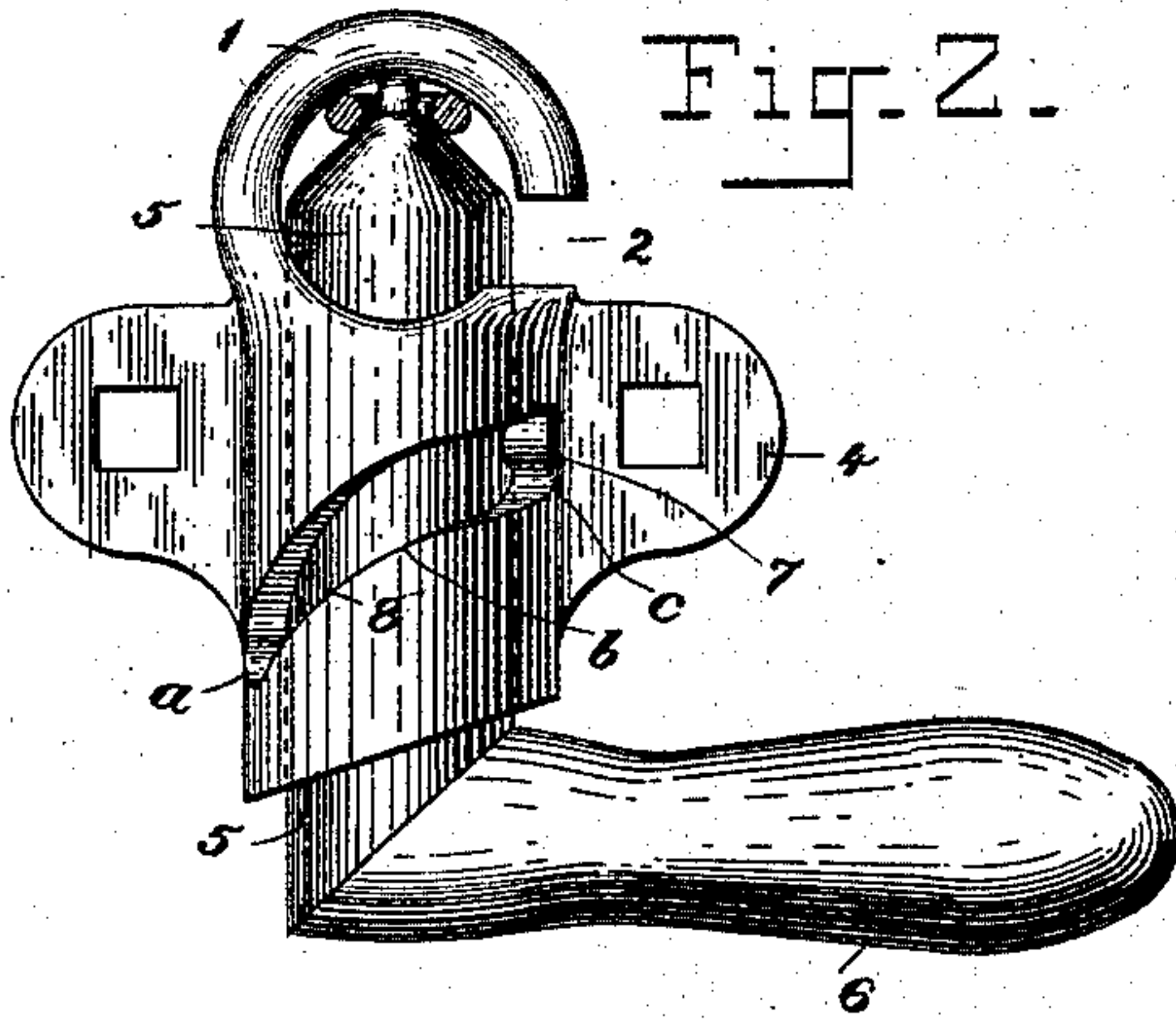


Fig. 3.

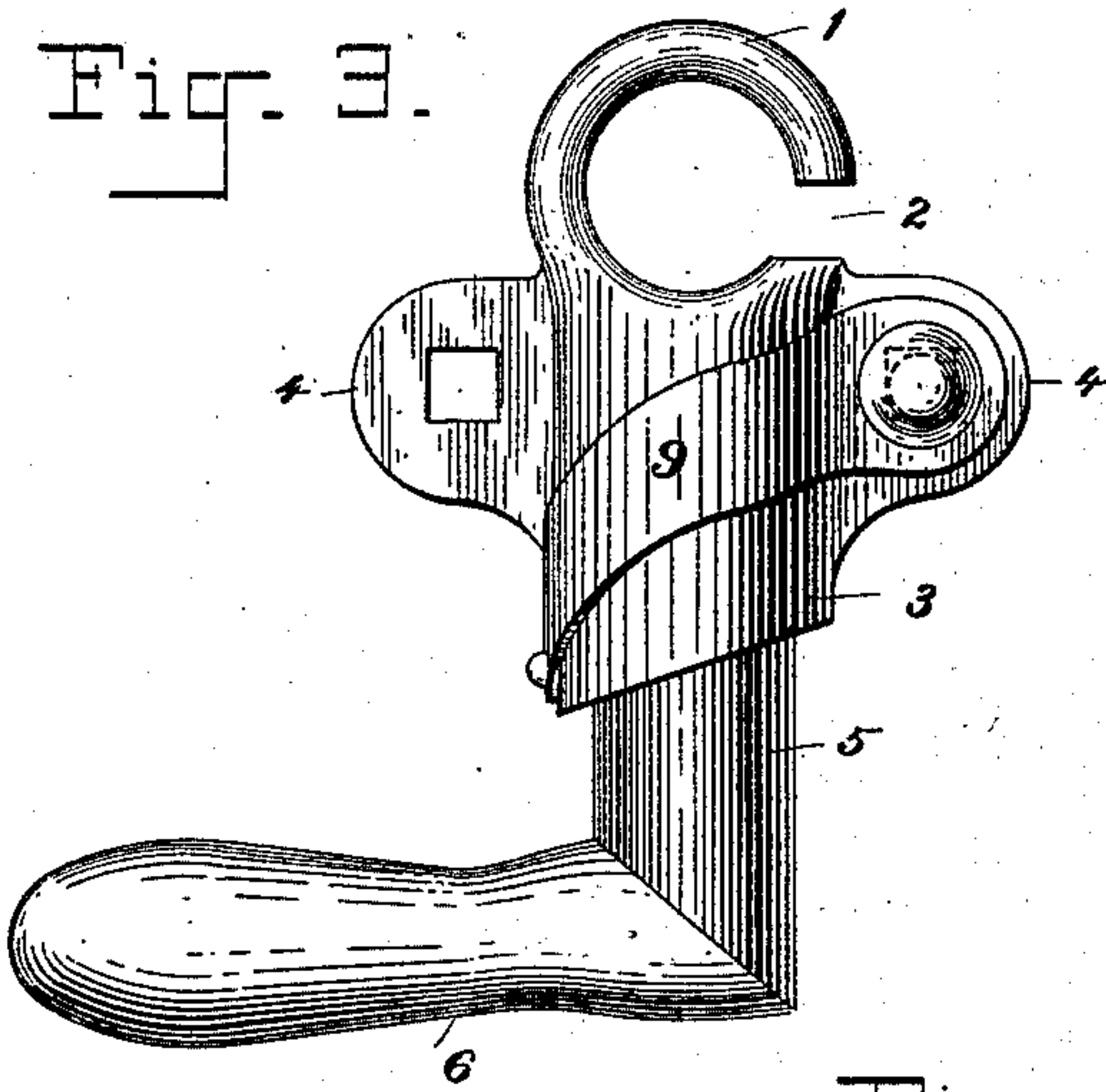


Fig. 4.

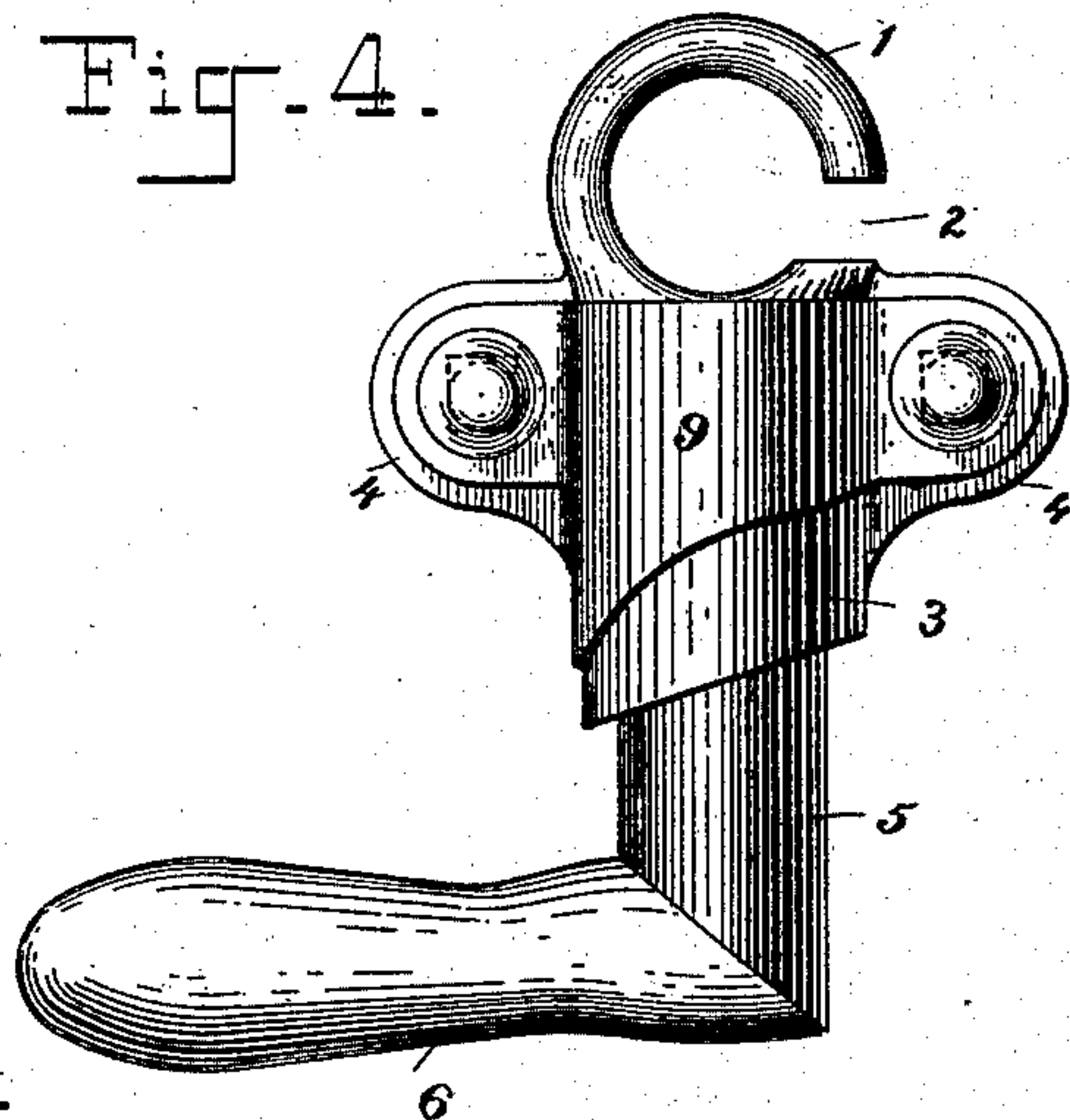
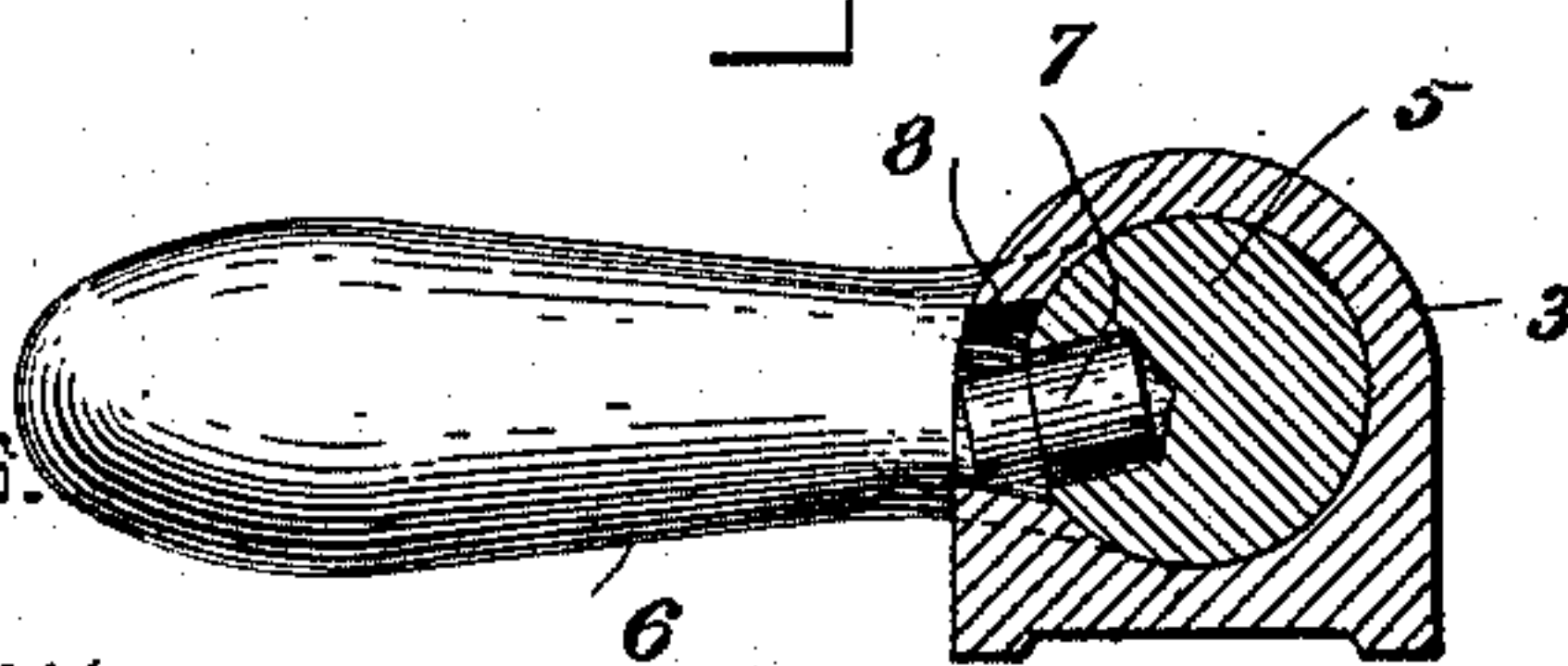


Fig. 5.



Witnesses.

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2 Sheets—Sheet 2.

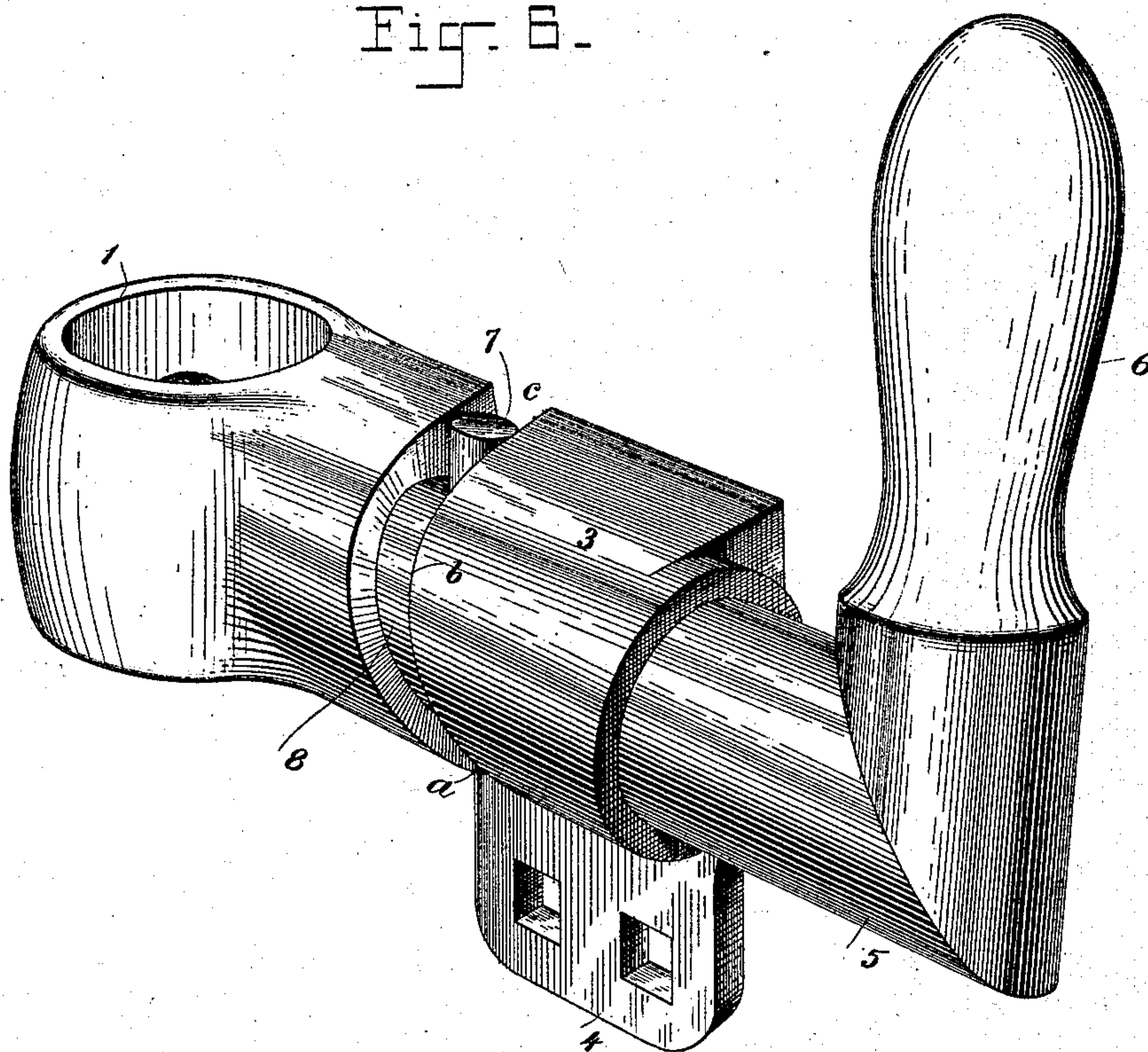
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Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## ELEVATOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 413,297, dated October 22, 1889.

Application filed November 17, 1888. Serial No. 291,093. (Model.)

*To all whom it may concern:*

Be it known that we, HENRY I. COE, JAMES L. SMEDLEY and WILLIAM A. CROMWELL, all citizens of the United States, residing in the city of New York, county and State of New York, have invented certain new and useful Improvements in Elevator-Locks, of which the following is a specification.

Our invention relates to that class of elevator-locks which are carried by the floor or other part of the cage or platform and adapted to be operated to clamp the shipper cable or chain firmly whenever desired, and so prevent any movement of the platform or cage except by the will of the operator in the cage or on the platform. This class of locks has been heretofore designed to have the operating rope or cable thrown into them by the operator just previous to the locking operation, and to be thrown out either by hand or automatically under tension of the cable or chain when the latter is released. Thus in the United States Letters Patent of R. D. Thackston, No. 386,367, a rigid jaw is attached to the platform or floor, and has an opening through which the cable is passed by the operator when about to stop the platform. A bolt having screw-bearing in this jaw is then turned by the operator and forced forward so as to clamp the cable or chain. On the release of this bolt the cable springs from the jaw by its own tension. In the United States Letters Patent of E. J. Herman, No. 382,980, a somewhat similar arrangement is shown. Here, however, the bolt carries a pin which slides in an inclined slot in the fixed jaw. It has been found in many cases, however, impossible to allow that amount of room on the platform necessary for the operation of such a lock, and in practice we have frequently been obliged to place the lock so close to the operating chain or cable that the latter will not automatically spring out of the lock when released. These earlier forms of the lock not having been devised with the intention of allowing the cable to run in them, the cables were rapidly worn by the action of the lock, and in some instances broken or thrown off the lower sheave by careless handling. We have therefore

been obliged to devise a form in which the cable might run constantly in the jaw, and to this end we have formed the cavity in the fixed jaw large enough to receive and allow free motion of a chain or cable such as is employed on elevators now in use. This enlargement of the jaw, however, introduced other difficulties, for it required in the case of a small cable a considerable motion of the bolt before the cable could be clamped. It will be seen that to obtain such a motion with the form of groove shown in the Herman patent above referred to was not possible, for if the groove were made sufficiently inclined to enable it to force the bolt against the small cable with the approximately one-half revolution which can be given to such a bolt, it will be so steep as to not offer sufficient frictional resistance to the return movement of the bolt, and the bolt would therefore not lock. Another difficulty was to retract the bolt sufficiently to prevent abrasion of the cable. In order, therefore, to obtain a slot or groove which will both retain the bolt securely in locked position and advance and retract it rapidly, so as to enable it to clamp and avoid abrading a cable of any ordinary thickness, we have made the present invention.

The invention also relates to certain details of construction, which will be first fully described with reference to the accompanying drawings, and then pointed out in the claims.

In said drawings, Figure 1 is a plan view of the lock shown open. Fig. 2 is a similar view shown closed. Fig. 3 is a plan view showing hinged shield or cover. Fig. 4 is a similar view showing shield bolted at both ends. Fig. 5 is a section on the line 5 5, Fig. 1; and Fig. 6 is a perspective view of another form of my invention.

The lock has a fixed jaw 1, having an opening 2 sufficiently large to allow the passage of a valve-operating chain or cable of any ordinary size, and to enable the cable or chain to play freely within it. It is carried by a housing 3, which may have lugs 4 4, adapted to be bolted to the platform-floor or other part of an elevator-cage, though in some cases



a lug projecting from beneath the lock may be used, as shown in Fig. 6.

5 is a bolt seated in the housing 3, and having a heavy handle or lever 6 at one end. In the cable-lock the other end of the bolt is smooth, so that when it is forced against the cable it will grasp the same without abrading it. In the chain-lock the front end of the bolt is beveled to compel the links of the chain to lie flat or nearly flat against the fixed jaw, as shown in Fig. 2.

7 is a stud or pin carried by the bolt 5, and on the same side of the bolt as the lever 6, but preferably not exactly parallel therewith. There is sufficient angle between the planes of the lever 6 and pin 7 to insure that the lever shall have passed beyond its own center of gravity when the pin has reached a position at which it will lock the bolt. This pin is preferably simply placed loosely in the hole in the bolt, so as to be readily removed therefrom. The housing 3 has a slot 8, within which travels the pin 7. This slot is of such length as to allow a one-half revolution or nearly one-half revolution of the bolt. It is formed with a rapid inclination from the point *a* to the point *b*, while from the point *b* to the point *c* its inclination is much less steep—that is to say, it is from *b* to *c* almost circumferential of the bolt. By this means the rapid retraction of the bolt during the latter portion of its movement is secured, so that it is completely freed from the cable or chain, and yet the bolt is securely locked when in its most projected condition, and it is enabled to grasp a shifting cable of any ordinary size now made.

In order to lessen friction and increase the ease of operation of the lock, the slot 8 from *a* to *b* may be undercut, as shown in Fig. 5, so that only the upper edge of the pin 7 bears on the sides of said slot. In order to at the same time hold the pin 7 in its seat and exclude dirt from the slot 8, we employ a shield or cover 9, which may, as shown in Fig. 3, be hinged or removably pivoted to the housing at one or both ends, or, as shown in Fig. 4, one or both ends of the shield may be bolted down on the lugs 4 or otherwise pinned or fastened at both ends. The pin being preferably loose in its seat, so that it may be readily removed and replaced, the employment of this shield for retaining it in position is important, especially in cases where the lock is supported on a vertical surface. This shield is in practice found very important to preserve the free and easy action of the lock, which is liable to be impeded by the dirt that would otherwise gather in the slot.

We are aware that in a form of elevator-

lock adapted to be operated only by hand it has been suggested that a slot in the housing could be formed with a portion longitudinal with the bolt and the other portion nearly circumferential therewith. It will be readily seen, however, that such a lock is quite different from ours. The bringing of the slot in position longitudinal with the bolt prevents the turning of the handle more than a quarter-revolution, while a nearly half-revolution is a necessity in a lock which, like ours, is intended to be locked by gravity in either retracted or projected condition. This quarter instead of longer revolution leaves the bolt in a position dangerous to the elevator machinery, which may be suddenly brought to a stop and damaged by the lock being joggled into a locked position at the wrong time. Intelligent engineers refuse, therefore, to take the risk of accidents from such a slot. Such form of slot also requires manipulation, which first forces forward the bolt and then turns it, making a hard double uncertain movement. Our bolt, it will be seen, is turned by a continuous easy rotary movement of the handle, which can as well be effected by the foot as by the hand, and is instantaneous and safe.

To extend further the adjustability of the lock to cables of different sizes, we may employ pins of varying diameter at top. In Fig. 5, therefore, we have shown a pin which is narrow at the upper end to allow greater play to the bolt. When the slot widens by use, a pin with a head enlarged sufficiently to meet the wear can easily be substituted for the straight pin.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. A lock for the operating cable or chain of an elevator, having housing 3, jaw 1, rigid on said housing and having an enlarged opening, and bolt 5, having heavy handle 6 and pin 7, the said housing having slot 8 extending approximately one-half way around the bolt, having a steep inclination from *a* to *b* and inclined at a less angle from *b* to *c*, substantially as and for the purposes set forth.

2. In combination with the bolt 5, having handle 6 and removable pin 7, the housing 3, having slot 8 for said pin, and shield or cover 9, fixed over said slot, substantially as and for the purposes set forth.

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