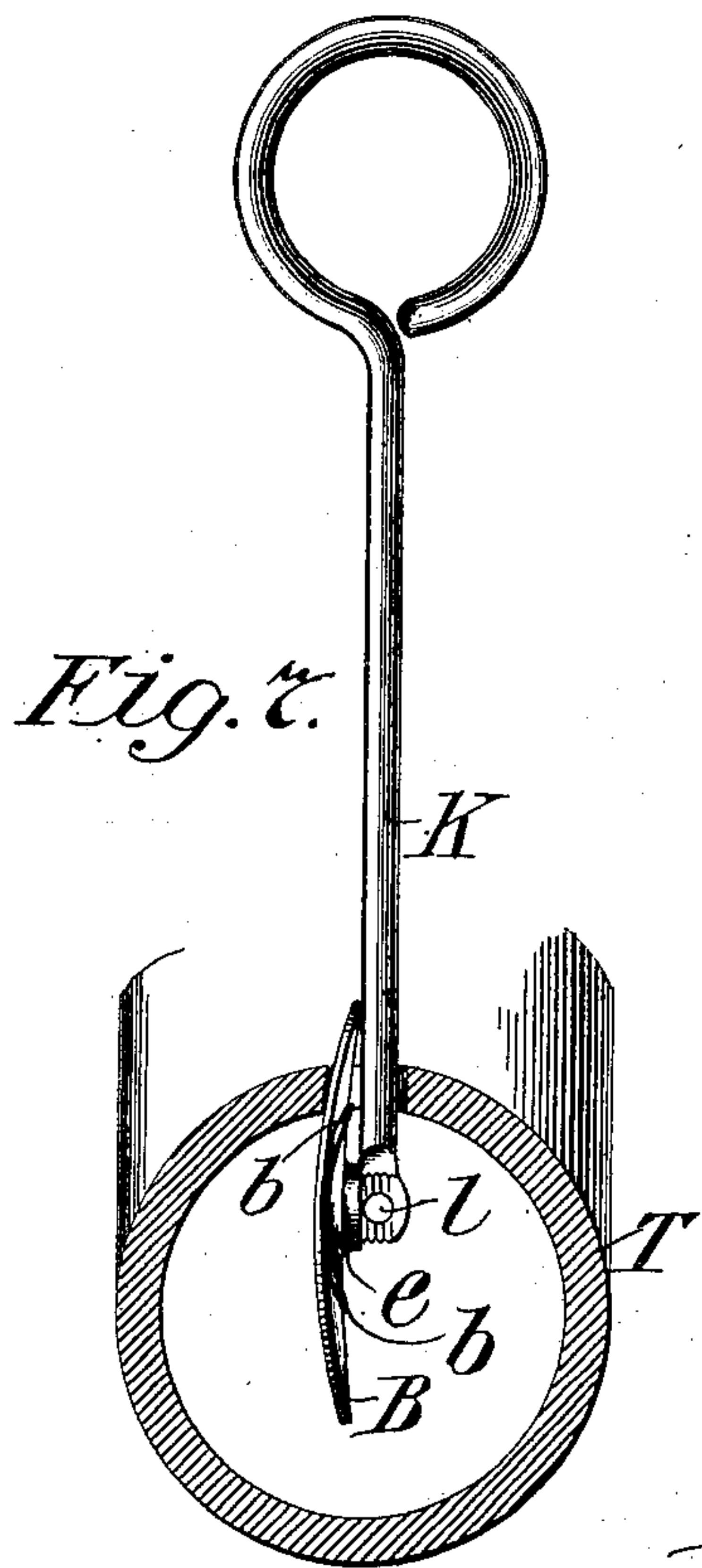
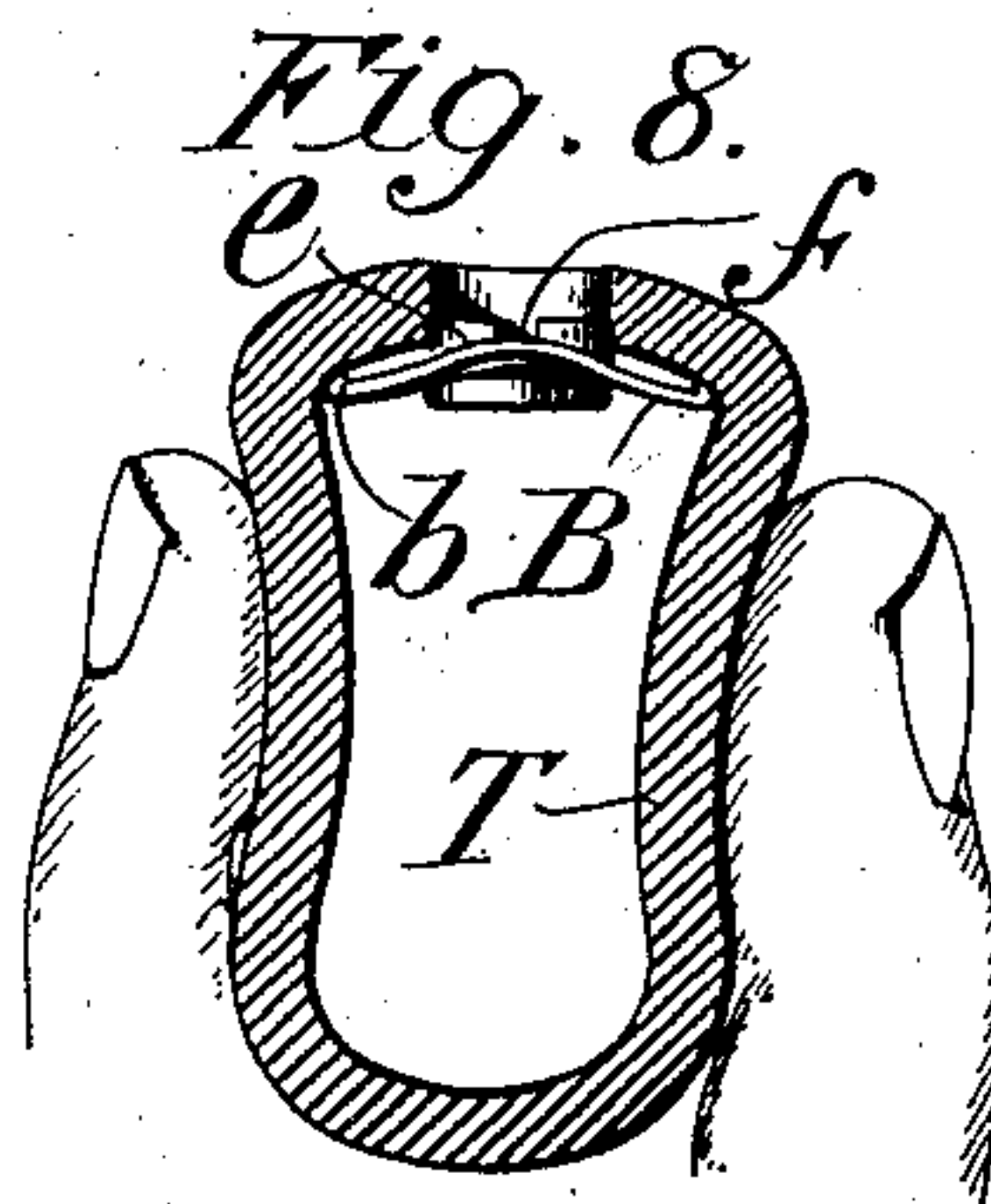
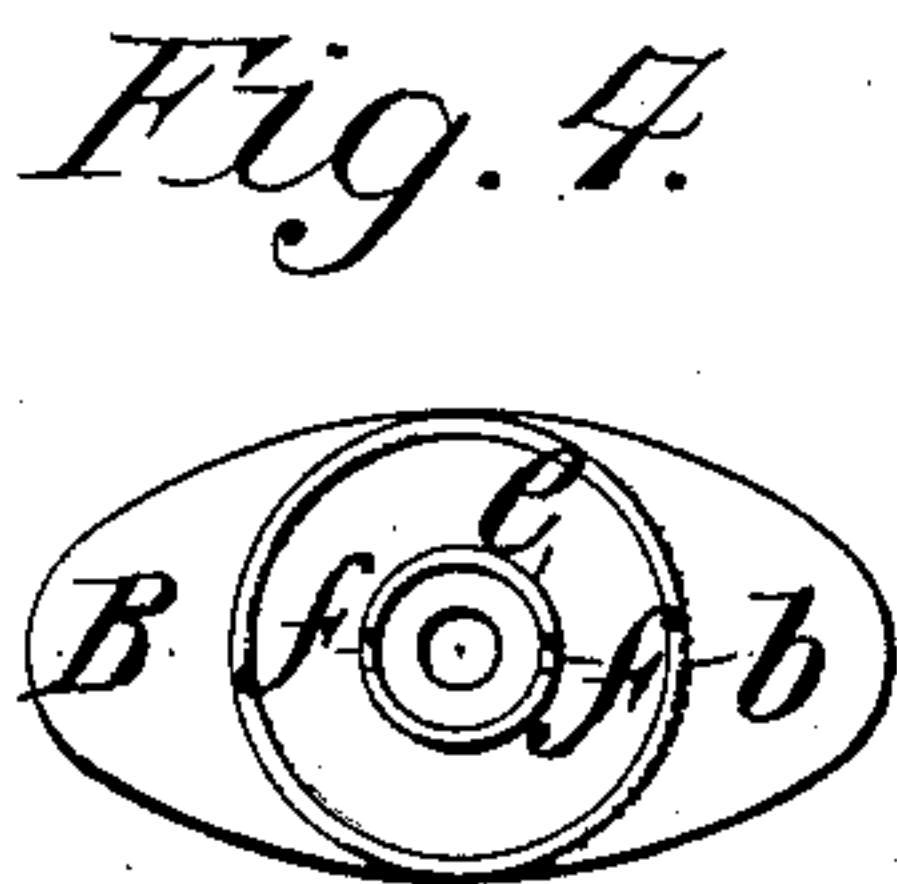
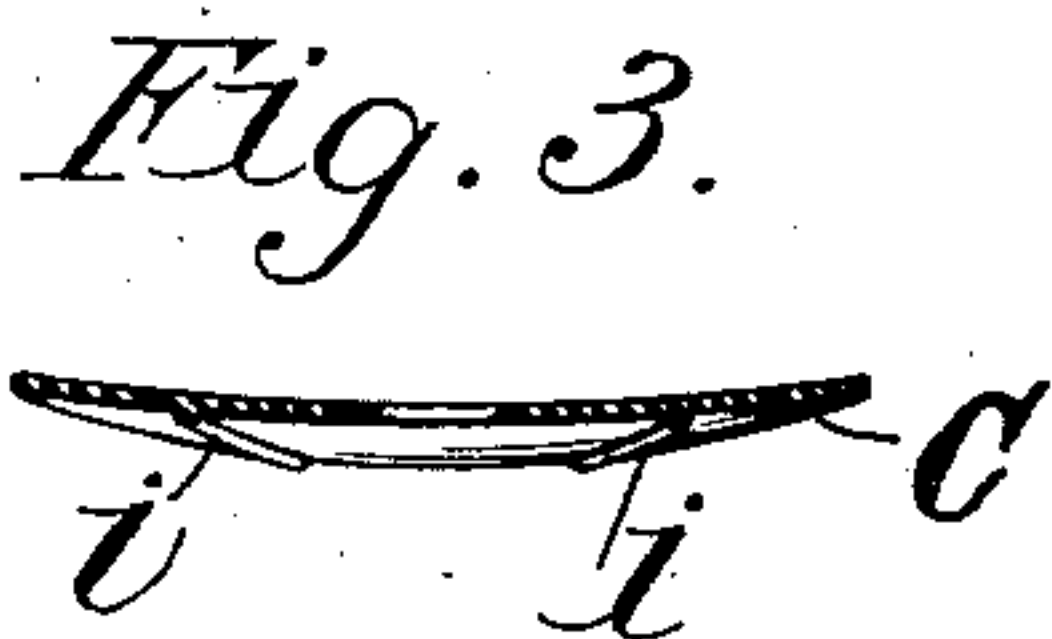
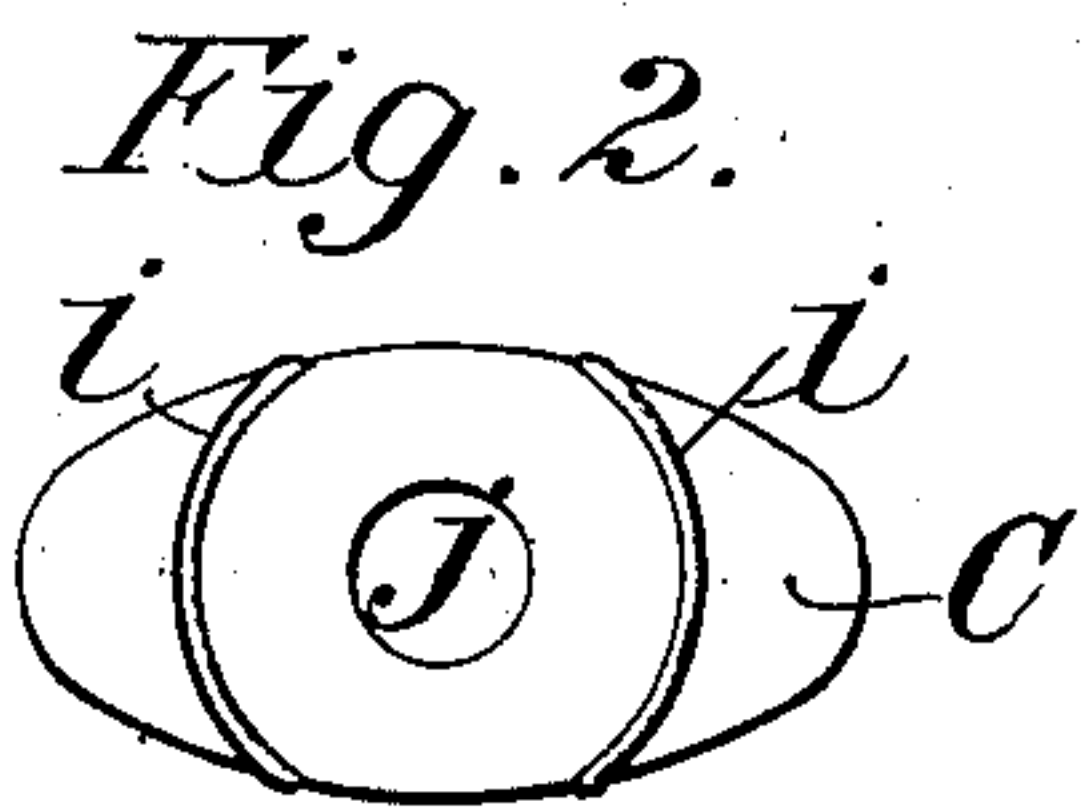
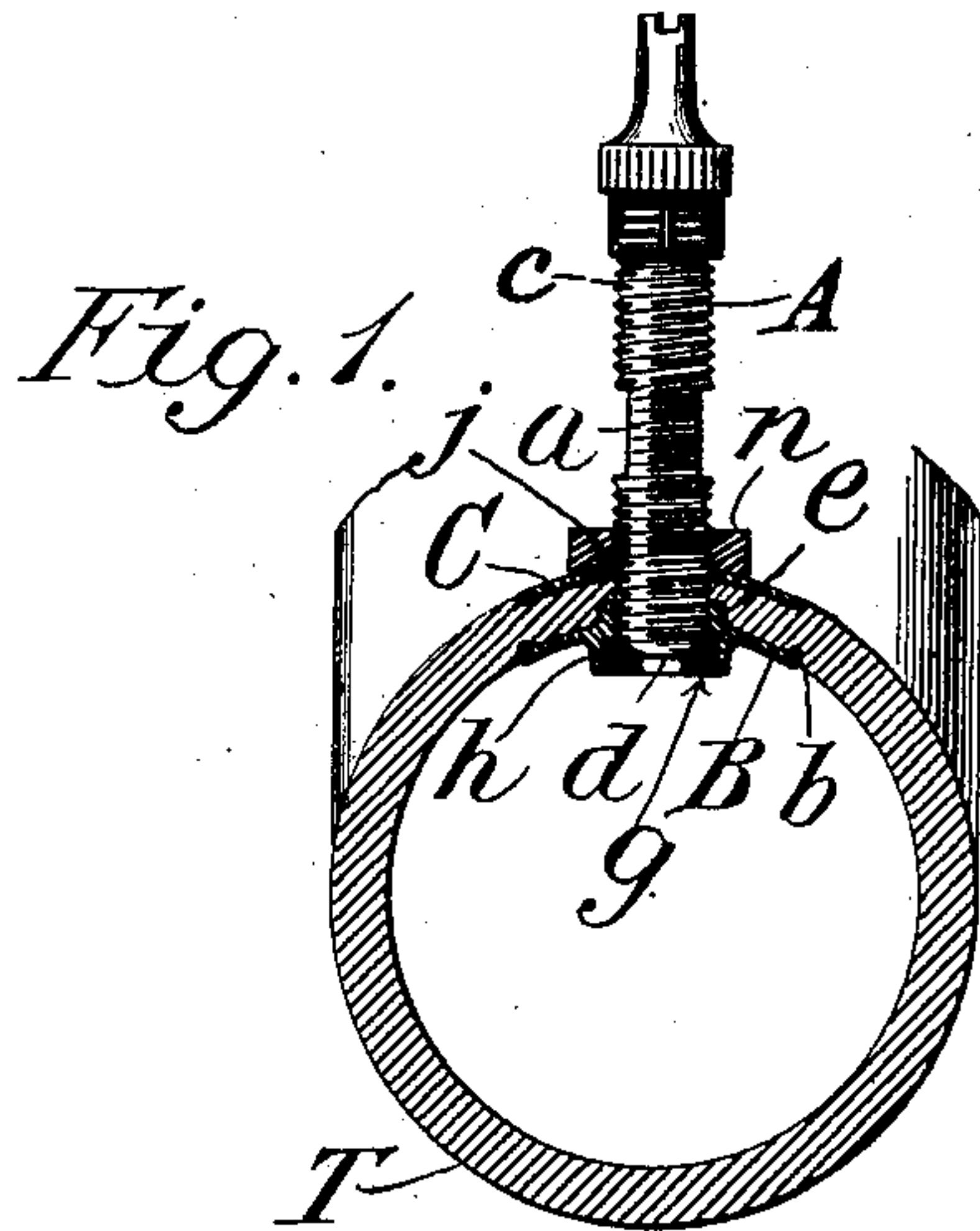


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DETACHABLE VALVE AND IMPLEMENT FOR ATTACHING SAME.

APPLICATION FILED OCT. 7, 1902.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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DETACHABLE VALVE AND IMPLEMENT FOR ATTACHING SAME.

SPECIFICATION forming part of Letters Patent No. 736,025, dated August 11, 1903.

Application filed October 7, 1902. Serial No. 126,364. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. SAMPSON, a subject of the King of Great Britain, and a resident of the city of Quebec, Province of Quebec, in the Dominion of Canada, have invented certain new and useful Improvements in Detachable Valves and Implements for Attaching the Same, of which the following is a specification.

My invention relates particularly to valves which are intended to be applied to flexible material—as, for instance, bicycle-tires and similar tubing—and my improvements are directed particularly to the means whereby the valve is secured to such flexible material so as to make a close and serviceable connection therewith, while at the same time the valve may be readily removed from the material, if that is desired.

In the drawings, Figure 1 is a cross-sectional view of a bicycle-tire with my improved valve attached thereto, the clamping portions of the valve being shown in cross-section. Fig. 2 is a view of the under side of the clamping-cap. Fig. 3 is a longitudinal sectional view of the same. Fig. 4 is a top view of the clamping-shoe. Fig. 5 is a longitudinal sectional view of the same. Fig. 6 is a view of the tool or implement for inserting the valve-shoe in the tire. Fig. 7 is a view of a cross-section of a tire, showing the bottom shoe in process of insertion; and Fig. 8 is a cross-section of a tire, showing how the bottom shoe is held in place after the inserting-tool is withdrawn and until the valve-stem is screwed into the shoe.

Similar letters of reference designate similar parts in all the figures.

A is the valve stem or body, which has the usual interior arrangement of valve and is provided with an exterior thread *c* and is reduced at *a*, so as to afford a grip for a wrench.

B is the bottom shoe or base of an elliptical form and curved longitudinally and transversely to correspond with the interior curve of the tire *T*, against which it is to rest. This shoe is also provided with an annular rim or bead *b*, raised upon its upper surface, and with an interiorly-threaded socket *e* to receive the lower end of the valve stem or body, and said shoe is also provided with a

socket *g* to receive a washer or packing *h*, against which the conical end of the valve stem or body is forced, thereby insuring a tight joint. The socket *g* has a central opening *d* directly beneath the nozzle of the valve-stem.

C is the clamping-cap, preferably of the same size and outline as the shoe B and also curved longitudinally and transversely to correspond with the curvature of the tire upon which it rests. This cap C is provided with a central opening *j* for the valve-stem to pass through and with two segmental ribs or beads *i i*, placed sufficiently far from the central opening so that they will fall outside of the sweep of the annular bead *b* on the shoe B.

Upon the valve-stem A is a lock-nut *n*, which serves to lock the parts firmly together when the same are connected, as shown at Fig. 1.

K is the tool for inserting the shoe B through the usual valve hole or opening in a tire. This inserter consists, essentially, of a shank or handle K, with a threaded pivoted end *k* secured to the shank by a pivot-pin *l*. This threaded end *k* is screwed into the socket *e* of the shoe B and the shoe is then swung around until its upper end comes against the shank of the inserter K, the lower end of the shank swinging into the slots *f f* in the rim of the socket *e*. The lower end of the shoe B is then pushed through the valve-hole in the tire, and the body of the shoe and the stem of the inserter are crowded through the hole until the shoe has entirely passed in. The elliptical form of the shoe facilitates its being crowded through the narrow valve-hole and permits of the shoe being given the maximum size which can be put through the hole as above. When the shoe has been passed entirely through the opening in the tire, it is swung down at right angles to the stem of the inserter and is then drawn up by the inserter into the proper position beneath the valve-hole, where it is held by the tire, being compressed around it by the fingers or otherwise, as shown in Fig. 8. The inserting-tool is then unscrewed and withdrawn and the cap C is placed upon the outside of the tire. The valve stem or body A, with the nut *n* upon it, is then passed through the

hole in the cap C and screwed into the socket in the shoe B, being forced firmly down upon the packing or washer *h* by means of a wrench or tool grasping the valve-stem at the reduced portion *a*. The lock-nut *n* is then run down against the cap C and screwed firmly against the same, thereby compressing and gripping the tire between the cap C and the shoe B, the beads *i i* on the cap C and the bead *b* on the shoe B gripping into the tire and serving as additional preventives against sliding or displacement of the valve under stress of "creeping" of the tire or other strain.

It will be seen that by the above arrangement I am able to quickly, simply, and firmly secure the valve to the tire or other flexible base, so as to make a strong, serviceable, and air-tight joint connection between the same, while at the same time the valve can be quickly and simply removed and a new one substituted, if desired. By giving the shoe B and cap C the outline and the curved form which I have shown to correspond to the curves of the tire to which they are to be applied I adapt them to grasp the tire firmly and evenly over their whole surface and avoid any abnormal stress or strain on the tire at any point of its contact with the cap or shoe. In inserting the base through the valve-hole and into the tire if the valve-hole should be torn or ruptured the length of the shoe and cap secured by adopting the elliptical form shown will be more than sufficient to lap well beyond any tear or rupture which would be caused by passing the narrow diameter through the hole, so that a tight and effective connection between the valve and the tire will be insured, even if the tire is cut or ripped, as aforesaid, in inserting the shoe.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, with a flexible fabric, of a valve-body passing through the same, a detachable shoe to engage with said valve-body beneath said fabric, a detachable cap engaging with said valve-body above said fabric, and means to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

2. The combination, with a flexible fabric, of a valve-body passing through the same, a detachable shoe to engage with said valve-body beneath said fabric, and having an upper surface corresponding in form with the under surface of said fabric, a detachable cap engaging with said valve-body above said fabric, and means to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

3. The combination, with a flexible fabric, of a valve-body passing through the same, a detachable shoe to engage with said valve-body beneath said fabric, a detachable cap engaging with said valve-body above said fab-

ric and having an under surface corresponding in form with the upper surface of said fabric, and means to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

4. The combination, with a flexible fabric, of a valve-body passing through the same, a detachable shoe to engage with said valve-body beneath said fabric and having an upper surface corresponding in form with the under surface of said fabric, a detachable cap engaging with said valve-body above said fabric, and having an under surface corresponding in form with the upper surface of said fabric, and means to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

5. The combination, with a flexible fabric, of an exteriorly-threaded valve-body passing through the same, a detachable shoe provided with a threaded socket to engage with said valve-body beneath said fabric, a detachable cap, provided with a central hole, to engage with said valve-body above said fabric, and means, consisting of a lock-nut, to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

6. The combination, with a flexible fabric, of an exteriorly-threaded valve-body, provided with reduced gripping portions, and passing through the same, a detachable shoe, provided with a threaded socket to engage with said valve-body beneath said fabric, a detachable cap, provided with a central hole, to engage with said valve-body above said fabric, and means, consisting of a lock-nut, to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

7. The combination, with a flexible fabric, of an exteriorly-threaded valve-body, provided with a conical or tapered end, and passing through the same, a detachable shoe, provided with a threaded socket, carrying an annular packing, to engage with said valve-body beneath said fabric, a detachable cap, provided with a central hole, to engage with said valve-body above said fabric, and means, consisting of a lock-nut, to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

8. The combination, with a flexible fabric, of a valve-body passing through the same, a detachable shoe to engage with said valve-body beneath said fabric, and having an upper surface provided with a raised gripping-bead and corresponding in form with the under surface of said fabric, a detachable cap engaging with said valve-body above said fabric, and means to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

9. The combination, with a flexible fabric, of a valve-body passing through the same, a detachable shoe to engage with said valve-

body beneath said fabric, a detachable cap engaging with said valve-body above said fabric, and having an under surface provided with a raised gripping-bead, and corresponding in form with the upper surface of said fabric, and means to clamp said cap and shoe toward each other and against opposite sides of said fabric, substantially as described.

10. The combination, with a flexible fabric, provided with a valve-hole therein, of a valve shoe or base of greater length and width than said valve-hole, provided with a socket to receive a detachable inserter, and with an airport opening from the bottom of said socket through said valve-shoe, and a detachable inserter for passing said shoe through said valve-hole, substantially as described.

11. The combination, with a flexible fabric, provided with a valve-hole therein, of a valve shoe or base of greater length and width than said valve-hole provided with a socket to receive a detachable inserter and with an airport opening from the bottom of said socket through said valve-shoe, and a detachable inserter provided with a swiveled end, for passing said shoe through said valve-hole, substantially as described.

12. The combination, with a flexible fabric, provided with a valve-hole therein, of a valve shoe or base of greater length and width than said valve-hole, a centrally-located and interiorly-threaded socket therein, and a detachable inserter, provided with a threaded,

swiveled end to engage in said shoe-socket for passing said shoe through said valve-hole, substantially as described.

13. The combination, with a flexible fabric, consisting of a pneumatic tire, and having a valve-hole therein, of a valve-body passing through said valve-hole, a detachable shoe curved to correspond with the interior curve of said tire to engage said valve-body within said tire, a detachable cap, curved to correspond with the exterior curve of said tire and engaging with said valve-body above said tire, and means to clamp said cap and shoe toward each other and against said tire, substantially as described.

14. The combination, with a flexible fabric, consisting of a pneumatic tire, and having a valve-hole therein, of a valve-body passing through said valve-hole, a detachable elliptical shoe, curved to correspond with the interior curve of said tire to engage said valve-body within said tire, a detachable elliptical cap curved to correspond with the exterior curve of said tire and engaging with said valve-body above said tire, and means to clamp said cap and shoe toward each other and against said tire, substantially as described.

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