

No. 897,932.

PATENTED SEPT. 8, 1908.

R. SAMPSON.
TIRE PLUG.

APPLICATION FILED JAN. 29, 1907.

Fig. 1.

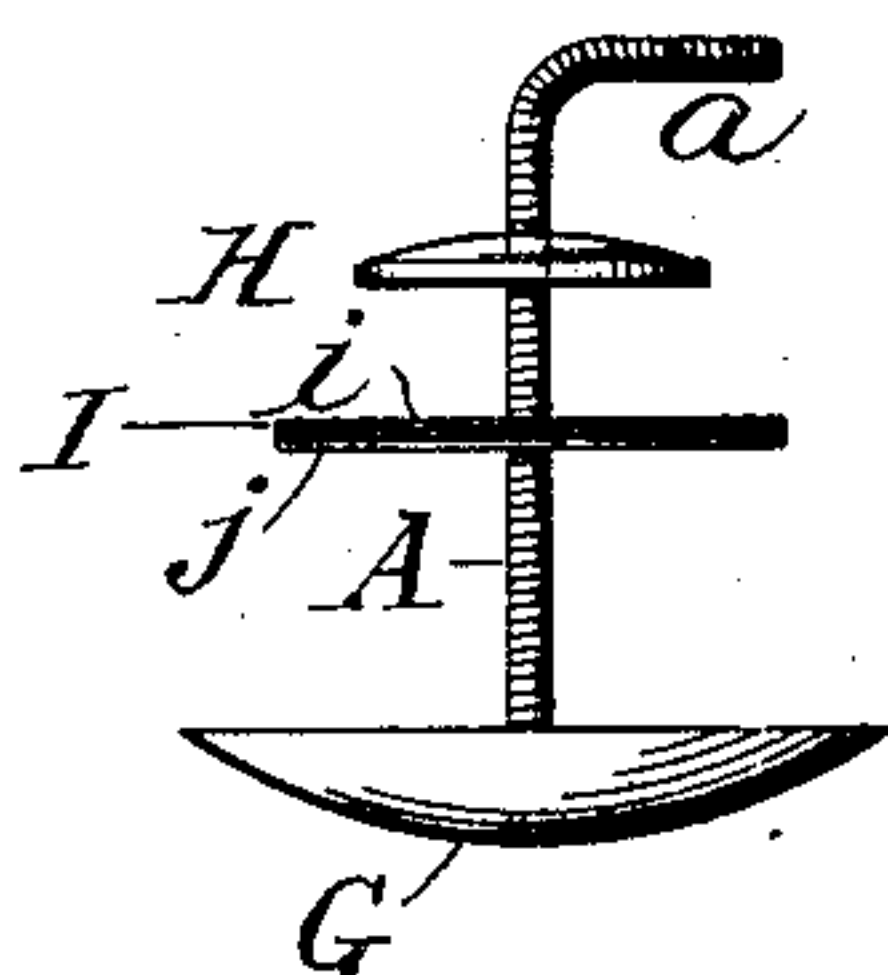


Fig. 2.

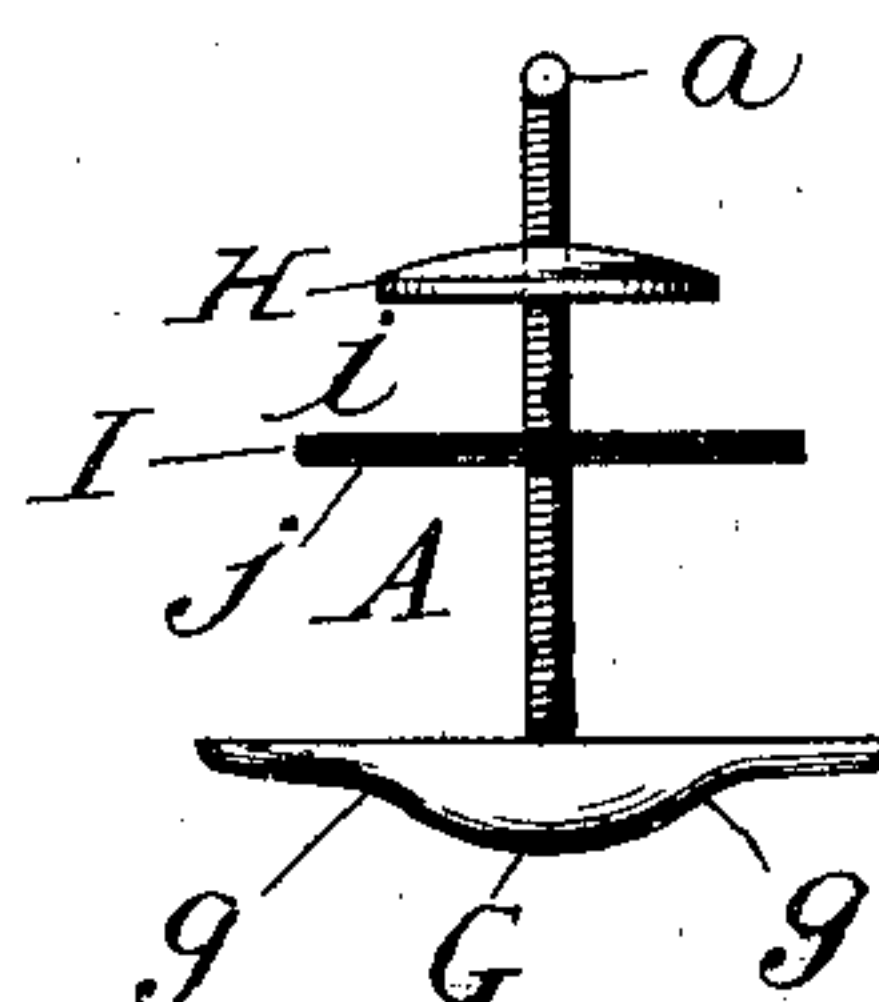


Fig. 3.

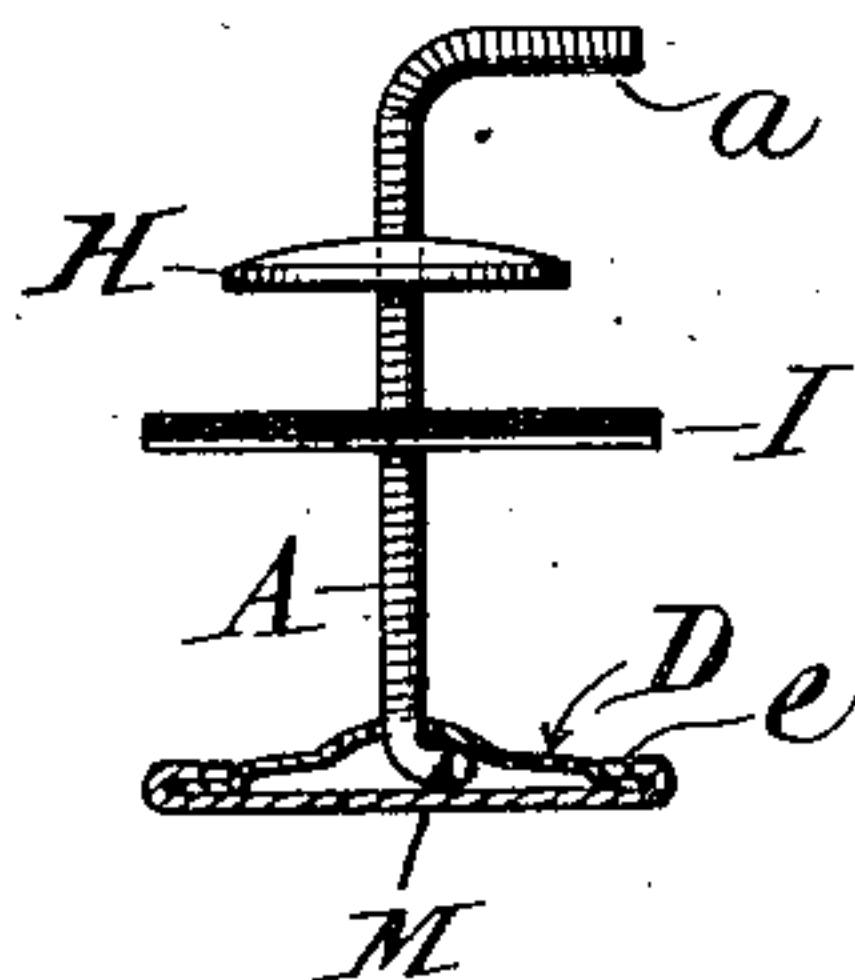
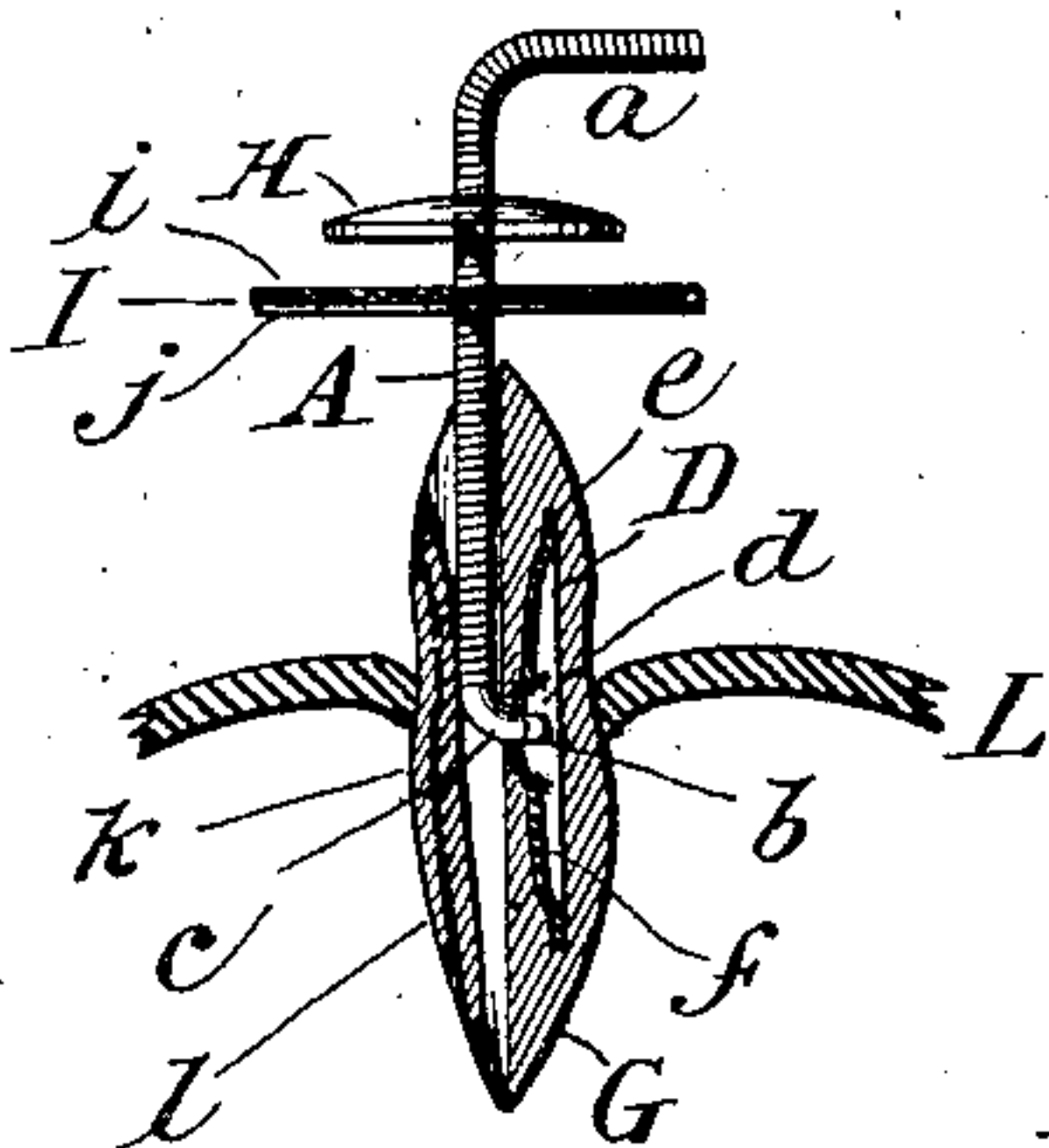


Fig. 5.

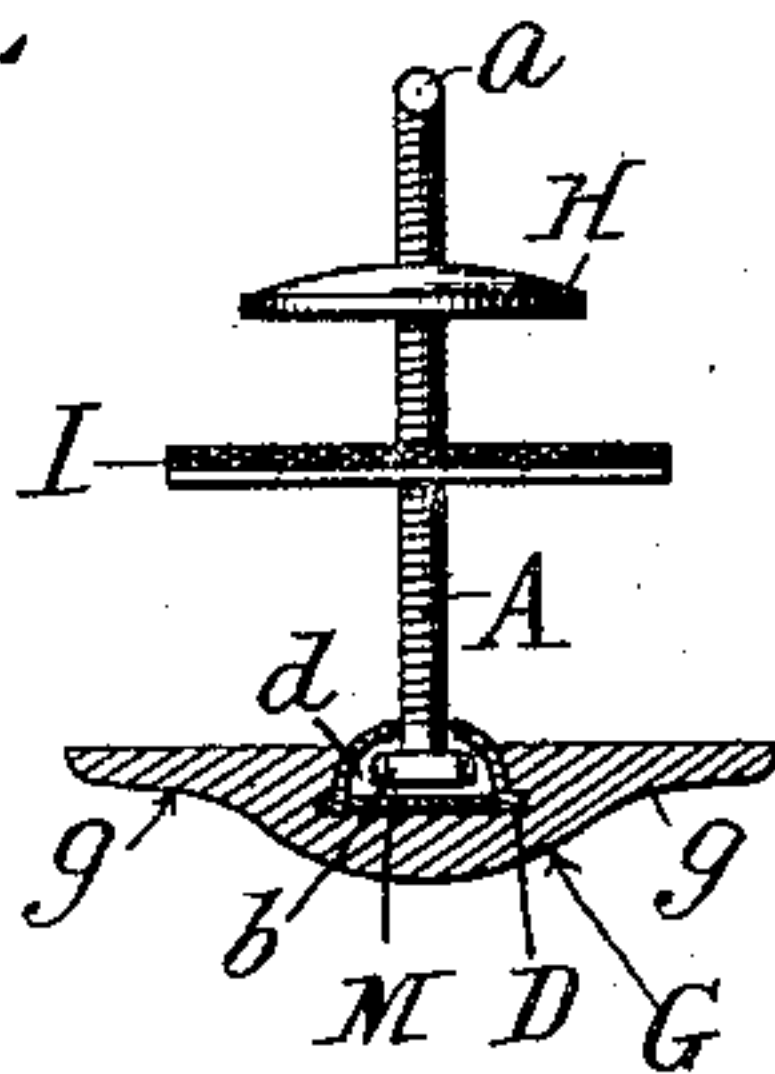


Fig. 6.

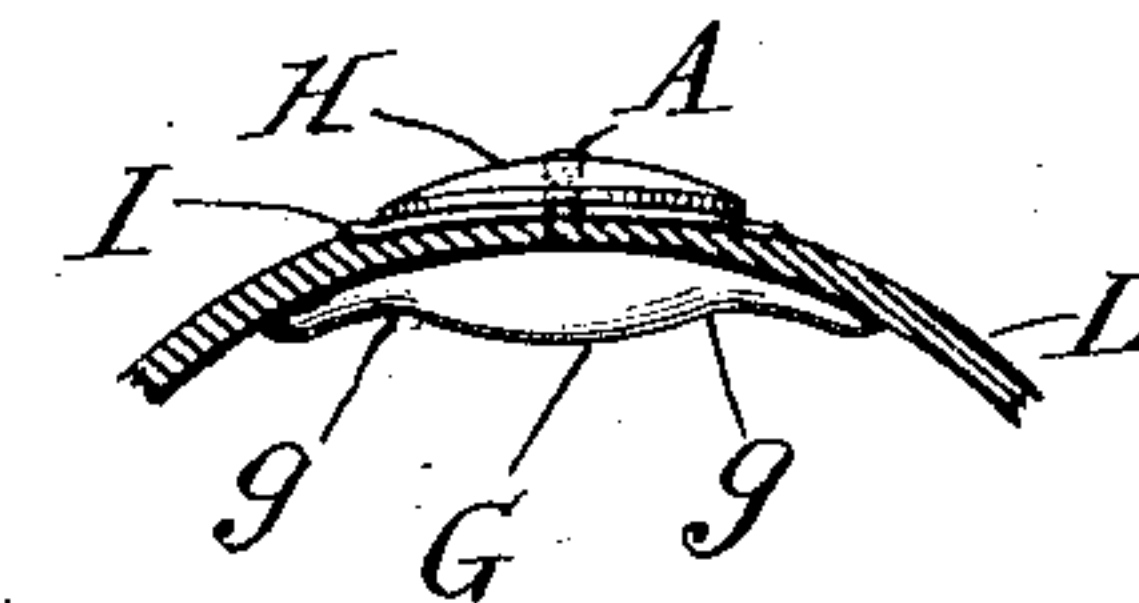


Fig. 7.

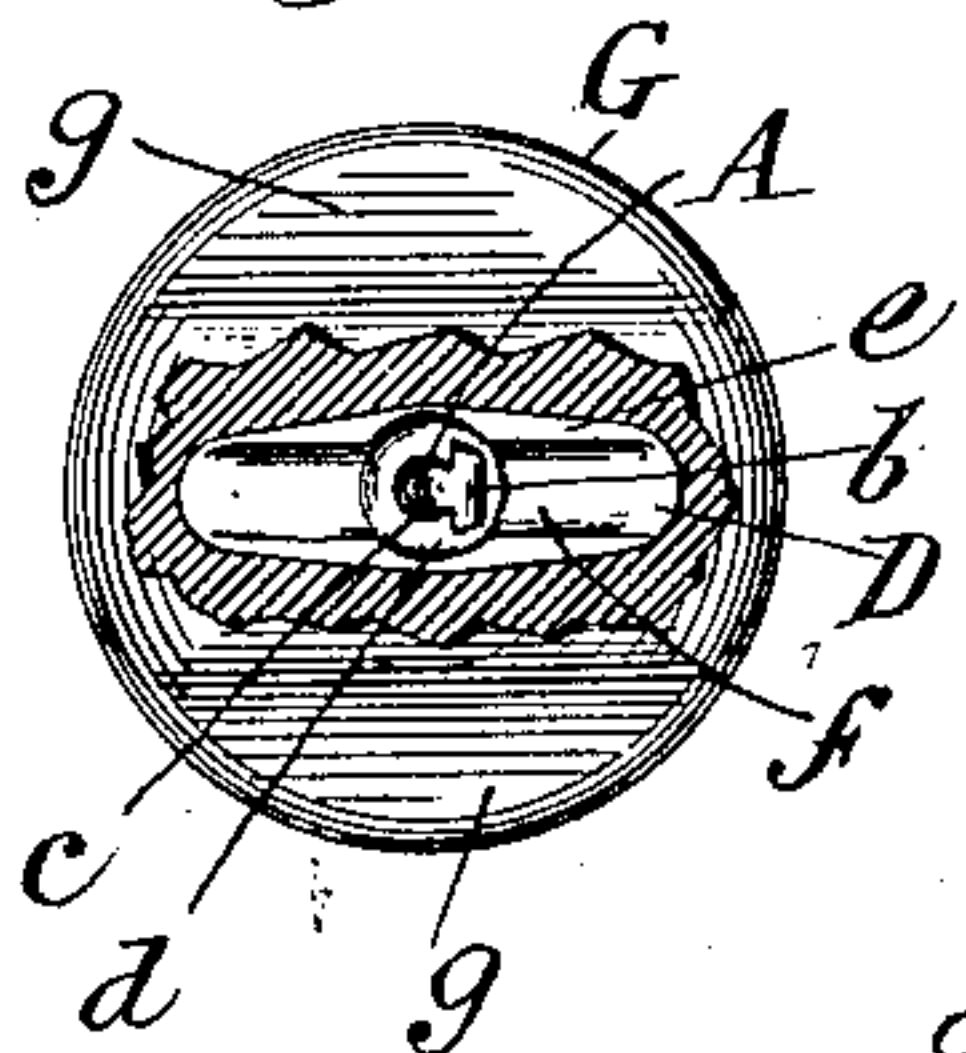


Fig. 8.

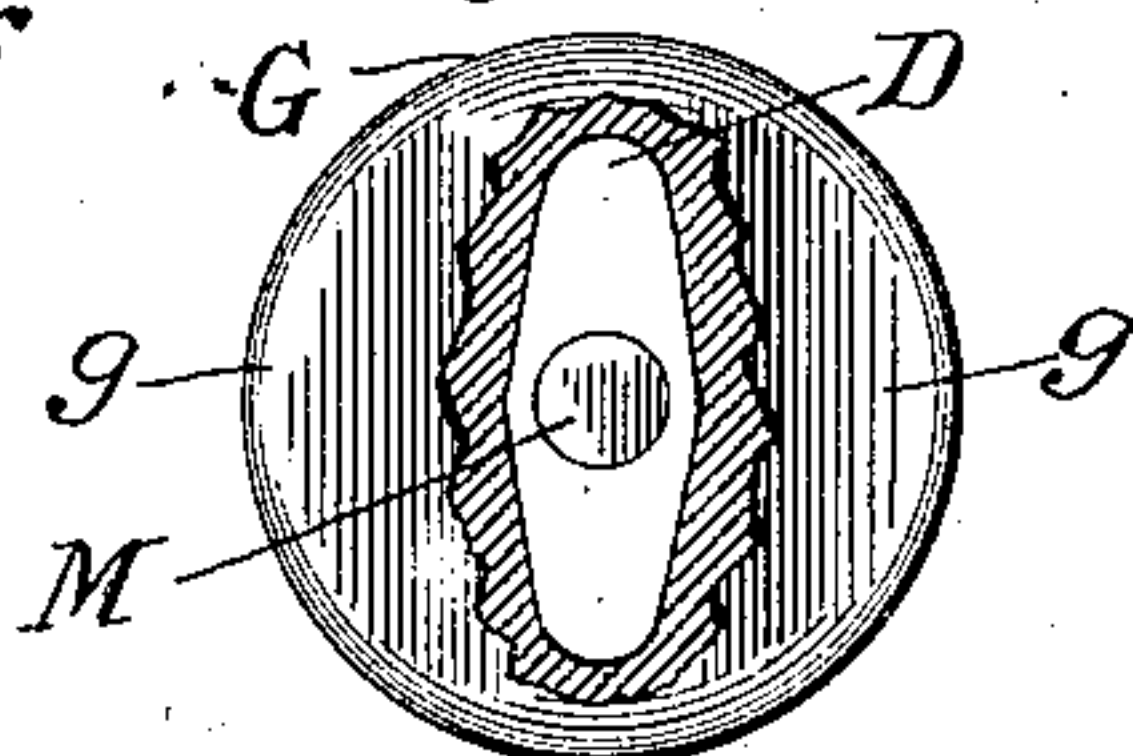
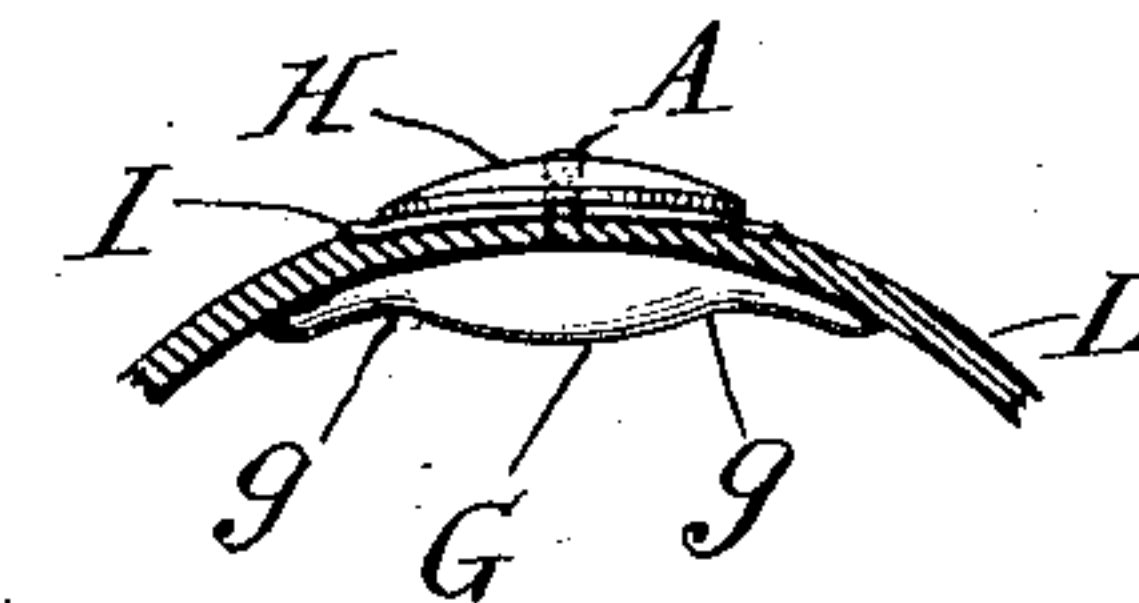


Fig. 9.



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UNITED STATES PATENT OFFICE.

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TIRE-PLUG.

No. 897,932.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed January 29, 1907. Serial No. 354,600.

To all whom it may concern:

Be it known that I, ROBERT SAMPSON, a subject of the Kingdom of Great Britain, residing at Montreal, Province of Quebec, and Dominion of Canada, have invented certain new and useful Improvements in Tire-Plugs, of which the following is a specification.

My invention relates to a puncture closer which embodies a head pivoted or hinged upon the end of a shank, the head being adapted to be brought parallel with the shank, or approximately so, and passed through a puncture or opening in a pneumatic tire or similar article, and held against the under-side of the puncture by means of the shank and suitable holding mechanism; and my improvements consist in certain particulars which are hereinafter more fully set forth.

In the drawings Figure 1 is a side elevation of one of my improved plugs; Fig. 2 is a similar view taken at right angles to Fig. 1; Fig. 3 is a vertical view, with the head in section, of one of my plugs being inserted through a puncture in a section of an inner tube; Fig. 4 shows the plug inserted and clamped in place below the puncture; Fig. 5 is a bottom view of one of my plugs with the rubber covering partially broken away to show the end of the shank and the metal head; Fig. 6 is a cross sectional view of an inner tube with one of my improved plugs applied thereto and with the end of the shank cut off; and Fig. 7 is a modification wherein a metal face is substituted for the rubber covering of the head; and Figs. 8 and 9 are respectively a vertical sectional view and a bottom view of a modification.

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

A, is a screw-threaded shank provided with an offset or handle *a*, at its outer end, to afford a grip for rotating the shank, and with an offset T-head *b*, at its lower end, which is shown as connected with the vertical portion of the shank by a curved neck *c*, and which engages in a socket *d*, in the metal head D, which head is preferably stamped from a piece of sheet metal, and is provided with an approximately flat rim *e*, and longitudinal rib or elevation *f*, and a central socket *d*.

Around the metal head D I mold a rubber covering G, which is, preferably, circular in outline, its upper face being approximately flat and its lower face being convex. The

portions of this rubber covering adjacent to the sides of the metal head D, are reduced in thickness, as indicated by *g g*, so as to make those portions of the rubber thinner and more flexible, and permit their edges to fold more readily around the shank when the plug is rolled together, as shown in Fig. 3, and also so as to permit the said sides to conform more readily to the inner curve of a tire, as shown in Fig. 6.

When the plug has been inserted through the puncture the edges of the puncture are necessarily more or less stretched and displaced; and, particularly in the case of inner tubes, there is a tendency for the edges to creep or slip from beneath the clamping cap H, when it is applied directly upon the tire. To more effectually hold the edges of the puncture in position, and prevent such slipping and displacement, I interpose between the cap H and the tire, a flexible but non-extensible disk I, preferably composed of a thickness of canvas or similar material *i*, provided upon its under face with a coating of cement or the like, to assist in securing it more effectually over the puncture.

In use, the head of the plug is swung into the position shown in Fig. 3, the curved neck *c* slipping up through the central hole in the metal head D, and the cross head *b* engaging centrally under the sides of the socket *d*. The edges of the rubber are then folded around the shank A, in Fig. 3, *k* being a section of the edge coming from the rear, and *l* being a section of the edge folded from the front; and the plug, having been coated with cement to facilitate its passage through the puncture and to assist in joining it to the under side of the tube L, is pushed through the puncture and again swung at right angles to the shank A, and drawn up against the under side of the puncture, as shown in Fig. 4, the curved neck *c*, passing down through the central opening in the metal head D, and the cross head *b*, slipping out toward the circumference of the socket *d*, and the cement J, serving to bind the rubber head covering G, to the under side of the tube L. The disk I is then slid down the shank so as to rest over the puncture, fresh cement being preferably applied between the disk I and the tubing and, uniting with the cement coating *j*, serving to attach the disk I to the outer surface of the tubing. The cap H is then run down the shank A, on top of the disk I, and the shank is then, by means of the handle *a*,

screwed up through the cap H, the T-head b, rotating in the socket d, the punctured portion of the tire being thus securely gripped between the upper and lower members of the plug so that the edges of the puncture cannot slip or creep from between the clamping members of the plug.

I have shown my plug as applied to a section of an inner tube, in which case the function of the disk I, in holding the edges of the puncture, is most important. But I wish it to be understood that my plug can also be applied to the built up tube of a single tube tire, and to punctures and openings in other similar articles.

The modification shown in Fig. 7 embodies the novel features of the connection between the shank A and head D, but instead of a rubber covering for the head D, I have shown in that figure a metal face M as crimped around the edges of the head D.

In molding the rubber covering around the metal head, it is necessary to carefully avoid clogging the shank by the spreading of the plastic rubber into the opening around the neck of the shank and below its head. This may be effectually accomplished by making the walls of the socket d a trifle deeper and more abrupt, as shown in Fig. 8, and by closing the bottom of the socket by a disk or washer, M, of metal or other material pressed thereinto; and in addition to this I raise the crown of the socket d above the face of the rubber G, so as to prevent the smearing of the rubber through its central opening or around the shank A.

By means of my improvements I obtain a plug, the metal portions of which are simple and efficient in construction, and in the primary form of which the gripping faces of the plug members are of flexible material so as not to cut the tire by the direct contact of metal clamps, and which practically and effectually closes a puncture without danger of leaks through the metal fastenings.

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

1. In a tire plug, the combination of a head, having a socket therein, with a shank provided with an offset end slidably engaging within said socket, and a clamp cooperating with said shank.

2. In a tire plug, the combination of a head, having a socket therein, with a shank provided with an offset end, formed by bending the shank to one side, rotatably engaging within said socket, and a clamp cooperating with said shank.

3. In a tire plug, the combination of a

head, having a socket therein, with a shank provided with an off-set end slidably and rotatably engaging within said socket, and a clamp cooperating with said shank.

4. In a tire plug, the combination of a head having a socket therein, a screw threaded shank provided with an offset end, formed by bending the shank to one side, engaging within said socket, a cooperative cap threaded upon said shank, and a flexible, non-elastic, member embodying a textile body with a layer of cement upon the under side thereof carried upon said shank between said head and said cap.

5. In a tire plug, the combination of a head embodying an elongated, dished, metallic member having a central opening therethrough, and embedded in a mushroom cap of rubber, having reduced, lateral edges, a threaded shank provided with an offset end rotatably and slidably engaging through and beneath said metallic head, a clamping cap threaded upon said shank, and a textile member with a cement covered under side interposed between said cap and head.

6. In a tire plug, the combination of a head embodying a single, integral, metallic member having a socket therein provided with top and bottom openings thereinto, a flexible covering surrounding said metallic member and extending over the rear of said socket, a shank provided with an end slidably and rotatably engaging within said socket, and a clamp cooperating with said shank.

7. In a tire plug, the combination of a head embodying a single, integral metallic member provided with a socket therein with top and bottom openings thereinto, a closure for the bottom opening of said socket, and a rubber cap molded around said metallic member, a shank provided with an end slidably and rotatably engaging within said socket, and a clamp cooperating with said shank.

8. In a tire plug, the combination of a head embodying a metallic member provided with a socket therein having abrupt walls, an opening into the top and a bottom closure for the bottom of said socket held between its abrupt walls, and a rubber cap molded around said metallic member, a shank provided with an end rotatably engaging within said socket, and a clamp cooperating with said shank.

ROBERT SAMPSON.

Witnesses:

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