

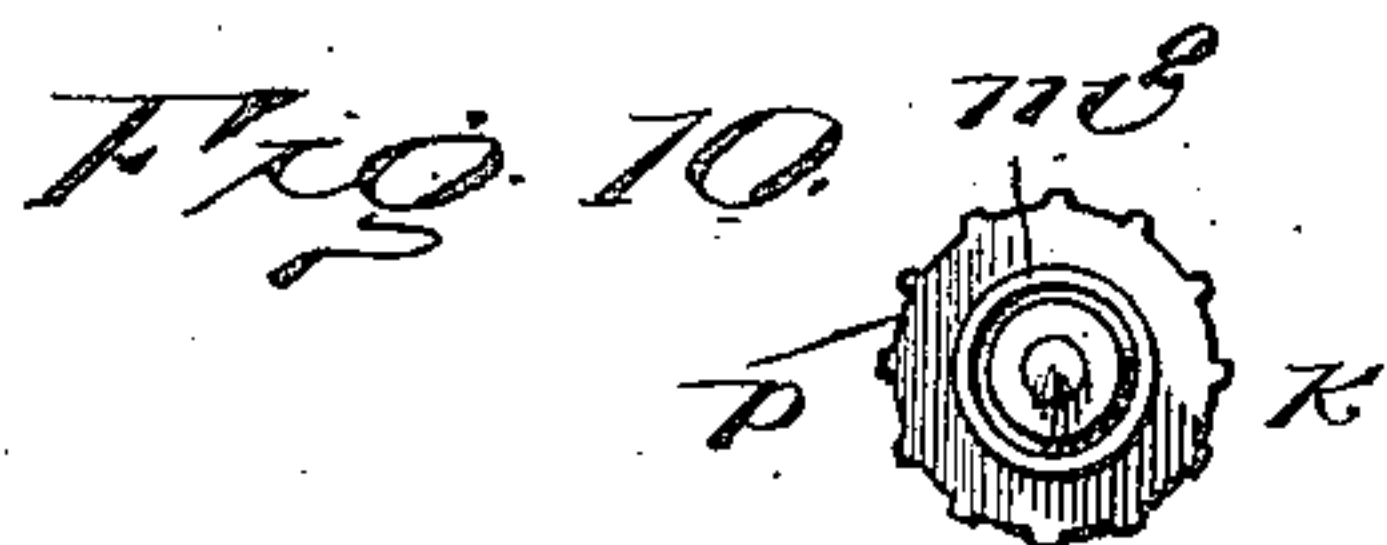
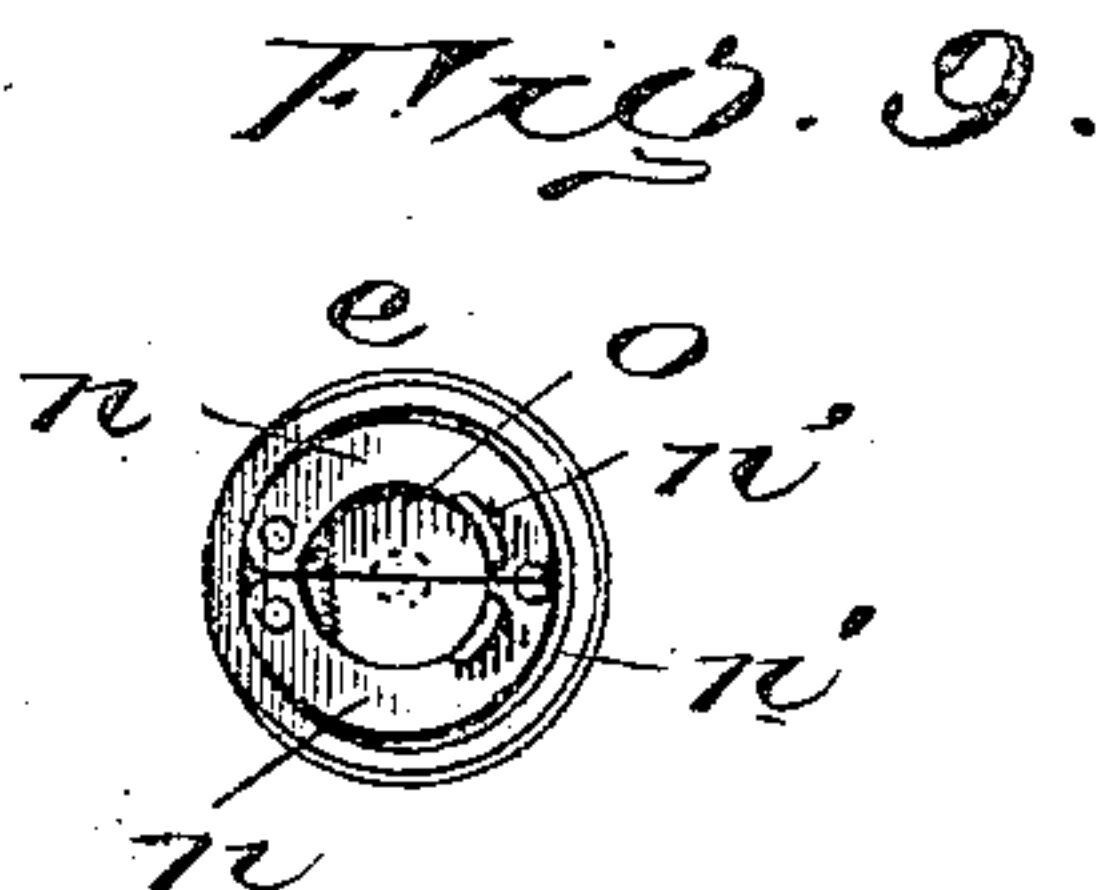
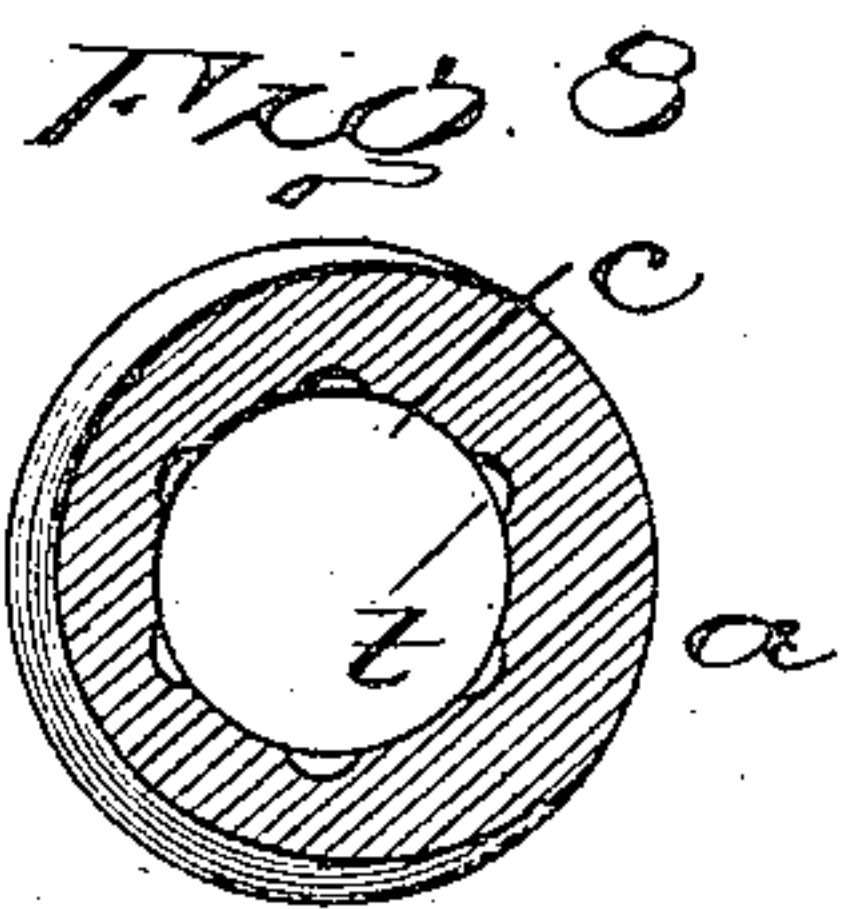
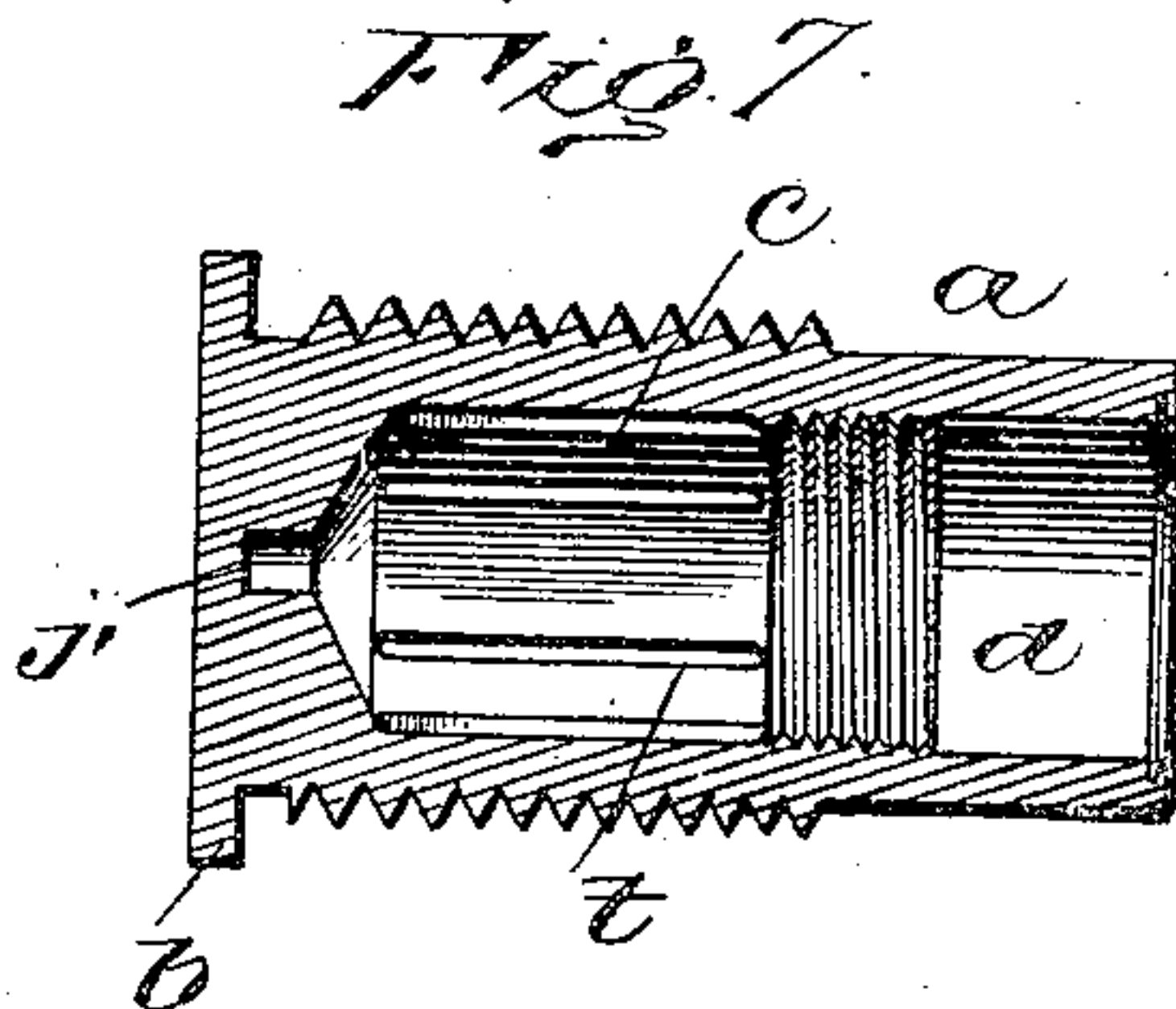
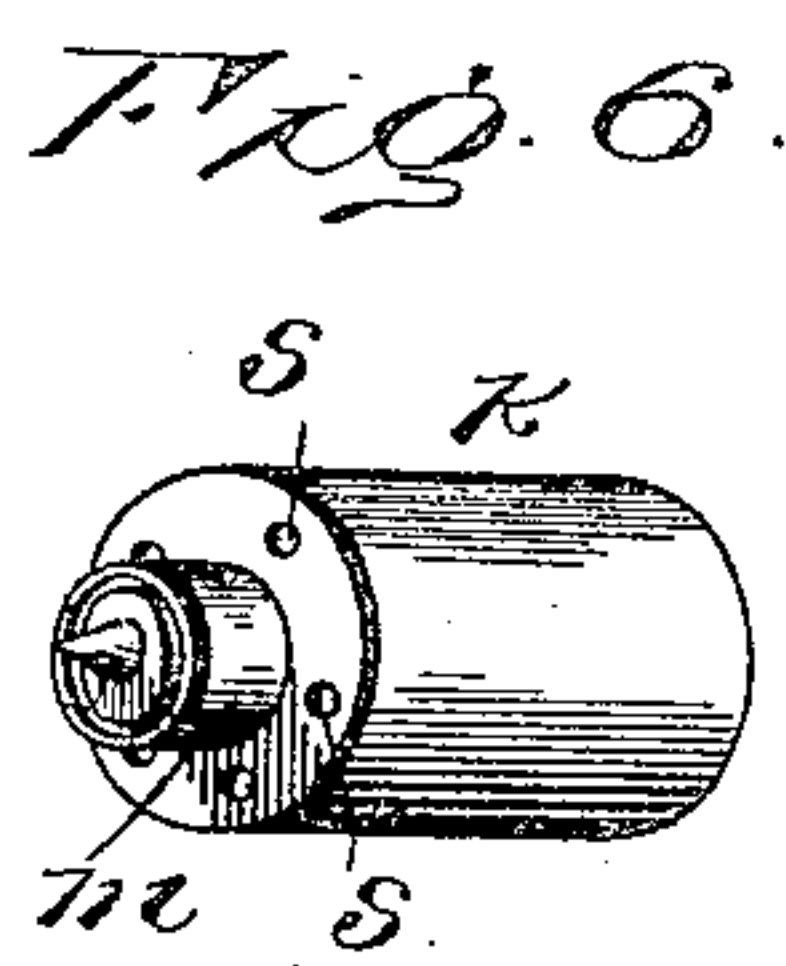
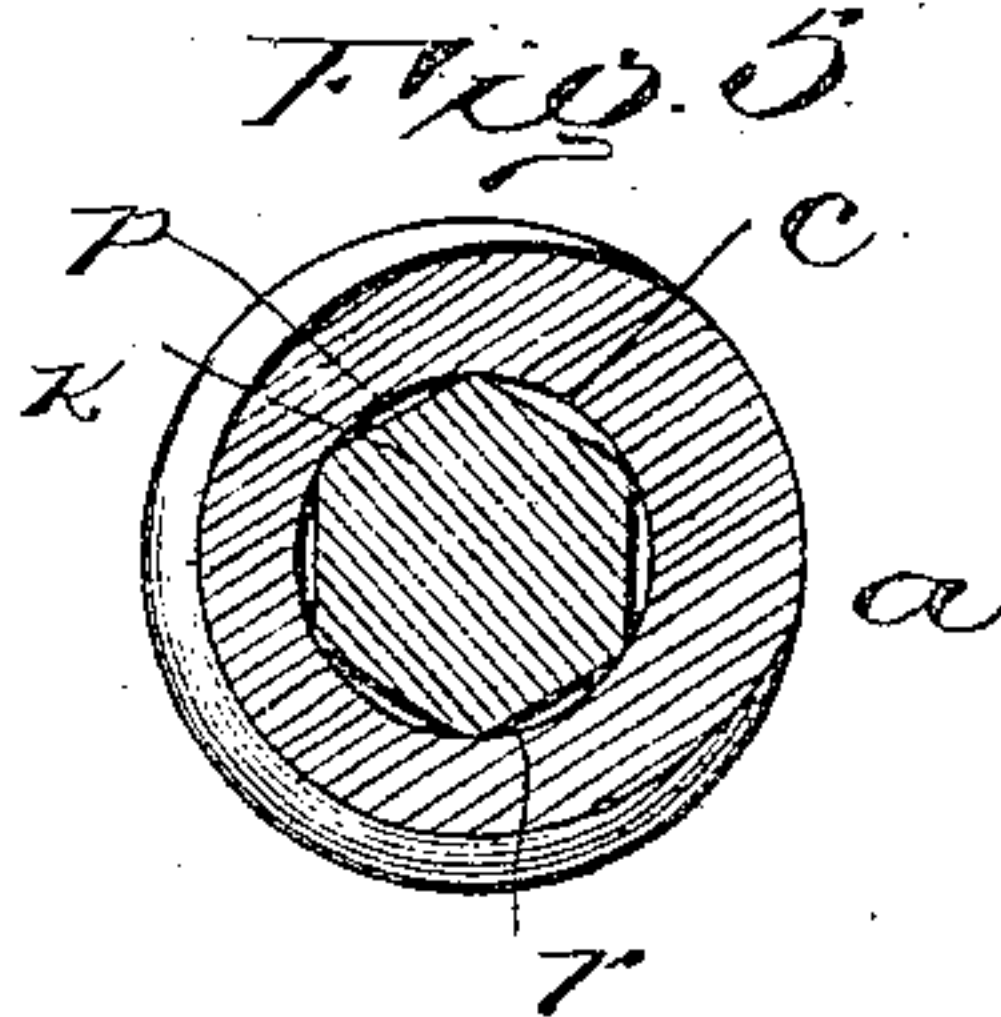
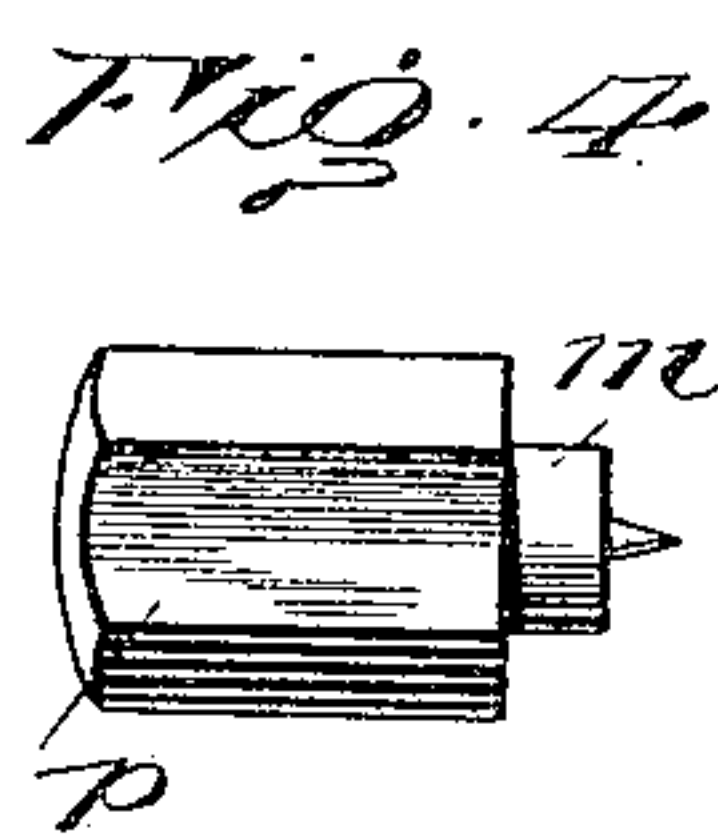
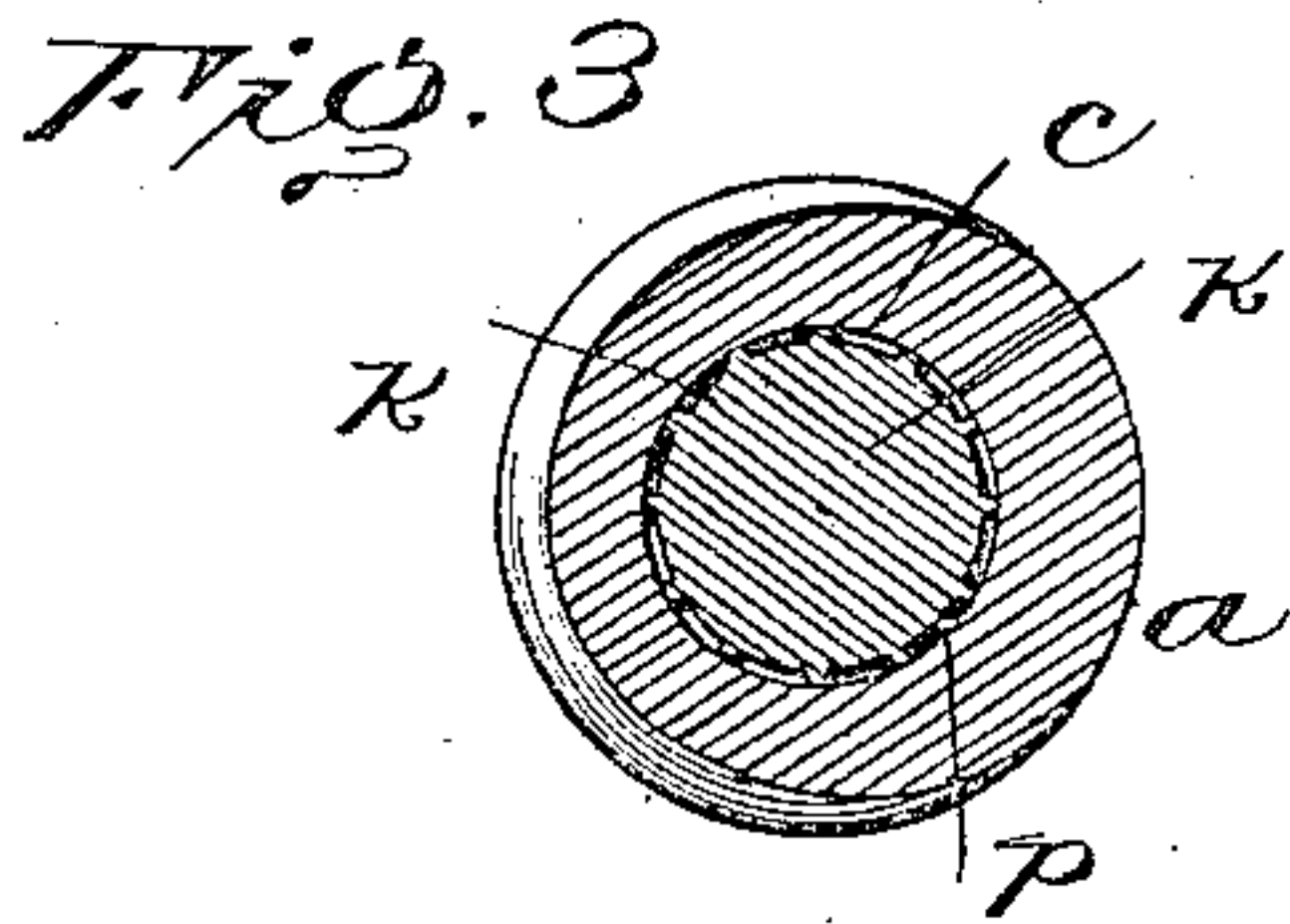
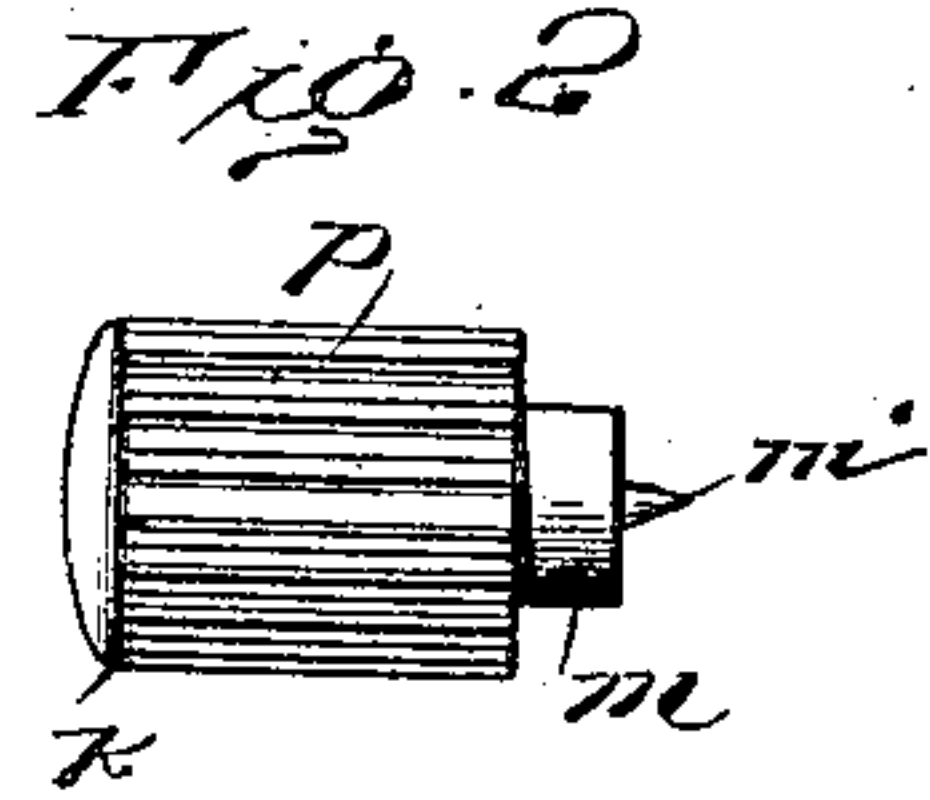
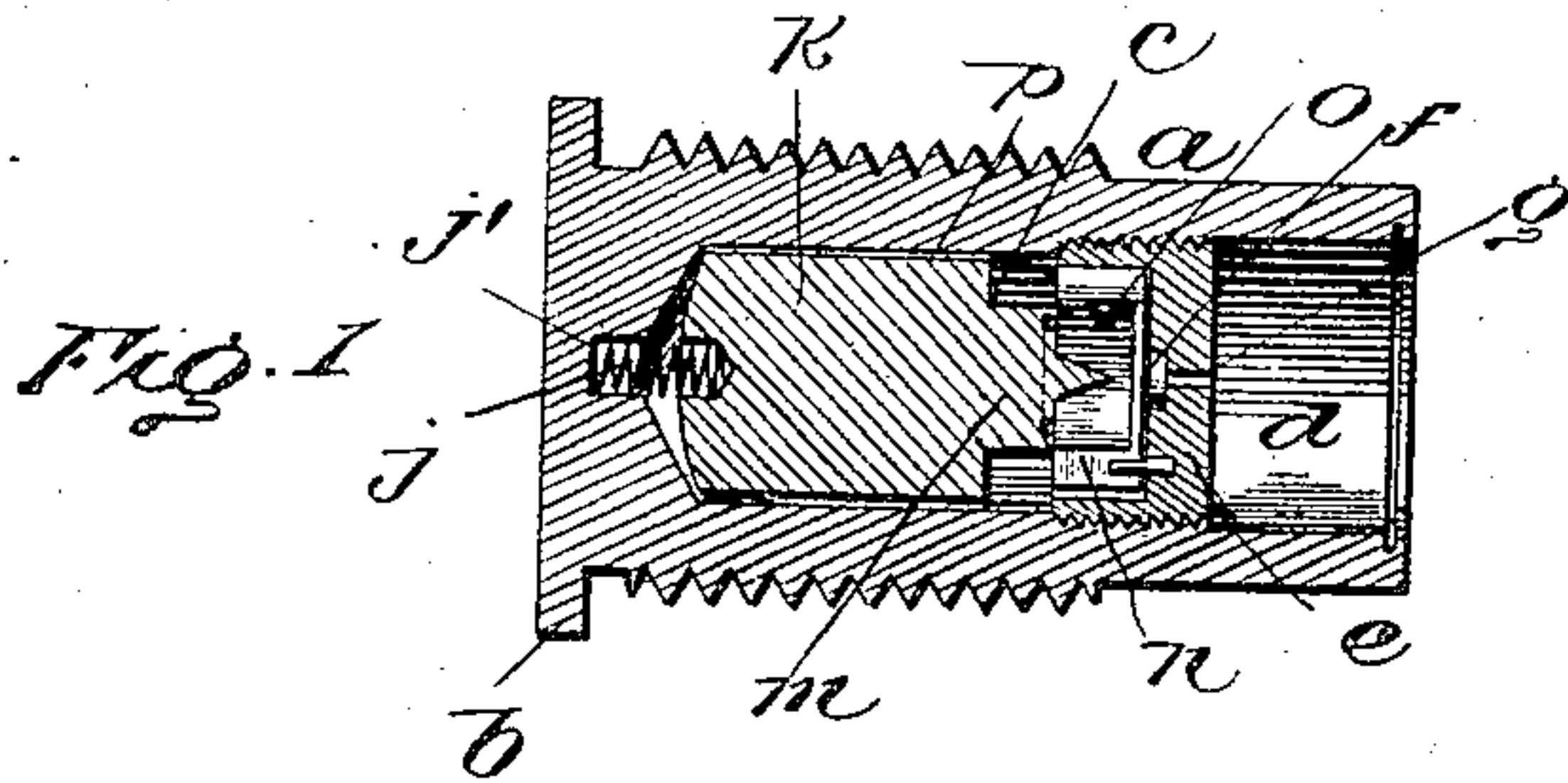
No. 763,230.

PATENTED JUNE 21, 1904.

C. P. WATSON.
SHELL FUSE.

APPLICATION FILED DEC. 21, 1903.

NO MODEL.



Witnesses

[Signature]
[Signature]

Inventor

Chas. P. Watson

By

[Signature]

Attorney

UNITED STATES PATENT OFFICE.

CHARLES P. WATSON, OF YORK, PENNSYLVANIA.

SHELL-FUSE.

SPECIFICATION forming part of Letters Patent No. 763,230, dated June 21, 1904.

Application filed December 21, 1903. Serial No. 185,932. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. WATSON, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Shell-Fuses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to percussion-fuses for explosive shells; and it has for its principal object to provide for the escape of the air from the rear of the hammer or plunger as said hammer or plunger "sets" back to the front thereof and from the front to the rear of the hammer or plunger when projected forward, thus providing against any possible cushioning effect of the air when the hammer or plunger is caused to move by "shock" in firing or by impact, and the consequent "sticking" or "hanging" of said hammer or plunger, as is the case with the hammers or plungers of the ordinary construction.

With this object in view, and other objects which will become apparent upon a further disclosure of the invention, the invention consists, essentially, in providing certain novel means by which the air is forced from the rear to the front of the hammer or plunger, and vice versa, as will be hereinafter fully described in this specification and briefly stated in the claims thereof.

In the drawings, Figure 1 is a longitudinal sectional view of a shell-fuse provided with my improvements; Fig. 2, a side plan view of a hammer, showing one form of means for permitting the escape of the air; Fig. 3, a transverse sectional view of the stock, showing the hammer shown in Fig. 2 seated therein; Fig. 4, a side plan view of a hammer, showing another form of means for permitting the air to escape; Fig. 5, a transverse sectional view of the stock, showing the hammer shown in Fig. 4 seated therein; Fig. 6, a perspective view of the hammer, showing still another form of means for the escape of the air; Fig. 7, a longitudinal sectional view of the stock, showing other means for the escape of the air; Fig. 8, a transverse sectional

view of the same, showing a hammer seated therein; Fig. 9, a plan view of the inner face of the cap-carrying plug, showing the wings pivoted thereon and in normal or closed position; and Fig. 10, a plan view of the reduced end portion of the hammer, showing the locking-seat therein.

Referring to the several views, the letter *a* indicates a stock of usual construction, being externally screw-threaded and provided with a flanged head *b*. The stock is provided with a hammer-chamber *c* and a priming-chamber *d*. A portion of the inner wall of the priming-chamber is screw-threaded to receive a screw-threaded plug *e*, carrying a detonating-cap *f*, said detonating-cap being provided with a firing channel or hole *g*, communicating with the priming-chamber *d*. The inner end of the plug *e* is counterbored, and pivoted in said counterbored end are two wings or jaws *n*, having their free ends normally held together by a spring *o*, the spring being attached to the respective wings at such a point distant from their pivots so that said wings will readily separate under the force of centrifugal action developed by the rapid rotation of the shell during its flight.

The outer fuse of each wing is provided with a locking segmental lug *n'*, the purpose of which will be hereinafter explained.

Loosely seated in the chamber *c* is a hammer *h*, having a reduced end portion *m*, provided with a firing-pin *m'*. The outer surface of the hammer is provided with a plurality of longitudinal corrugations or grooves *p*, which form air channels or passages between the front and rear ends of the hammer. The hammer *m* is provided with a circular groove or seat *m²*, in which the locking-segments *n'* are seated to lock the wings against accidental opening, the locking engagement being maintained by the pressure of a spring *j*, seated in the depression *j'* and overcome by the shock of firing, which forces the hammer back against the pressure of the spring. The centrifugal force developed by the rapid rotation of the shell armed with my improved fuse causes the wings to separate, and the tensioned force of the spring *j* causes the hammer to move forward a distance sufficient for

its reduced end to enter between the wings and hold them separated, so as to allow the hammer to be projected against the cap upon impact. By providing the hammer with the corrugations or grooves the air is prevented from cushioning at either end thereof, for when the hammer is forced to its "set-back" position the air instantly passes to the front, and when it is forced forward upon impact the air instantly passes to the rear. These corrugations or grooves may be formed close together to give a fluted appearance to the surface or they may be spaced apart, as may be deemed the most desirable and advantageous construction, the passage of the air from the front of the hammer to the rear thereof, and vice versa, not being dependent upon the number of corrugations or grooves.

In the modified form shown in Figs. 4 and 5 the outer surface of the hammer is formed with a plurality of planes p , preferably eight in number, forming an octagon-shape hammer in cross-section, and when seated in its chamber a plurality of air-channels v , in communication with the front and rear ends of the hammer-chamber, are formed.

In Fig. 6 a plurality of air-channels s are shown passing longitudinally through the hammer, and in Figs. 7 and 8 a plurality of air-channels are formed by grooves t , made in the inner wall of the hammer-chamber.

When the several parts are assembled together, as shown in Fig. 1, it will be seen that the hammer cannot possibly come in contact with the cap until the wings are acted upon by centrifugal action, and the wings are so constructed and arranged as to at all times when in closed position cover or partially cover the detonating-cap, so that should the said cap by any means become loosened in its seat it would be prevented from falling out and becoming accidentally exploded.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a shell-fuse, the combination with a suitably-chambered stock, having a closed end and an open end, a hammer seated in the chamber, and a removable cap-carrying plug secured in the open end, of a pair of wings or jaws pivoted on the face of the cap-carrying plug, means normally holding the wings or jaws in closed position, and additional means normally locking said wings or jaws in said closed position.

2. In a shell-fuse, the combination with a chambered stock, a hammer seated therein, and a removable cap-carrying plug, of a pair of wings or jaws pivoted on the face of the cap-carrying plug, means normally holding the wings or jaws in closed position, and additional means normally locking said wings or jaws in said closed position.

3. In a shell-fuse, the combination with a chambered stock, a spring-pressed hammer

seated therein, and a removable cap-carrying plug, of a pair of wings or jaws interposed between the cap-carrying plug and the hammer, means normally holding the wings or jaws in closed position, and additional means normally holding said wings or jaws in said closed position.

4. In a shell-fuse, the combination with a chambered stock, a hammer seated therein, and a removable cap-carrying plug, of a pair of wings or jaws interposed between the cap-carrying plug and the hammer, means normally holding said wings or jaws in closed position, and a temporary connection between the wings or jaws and the hammer, whereby said wings or jaws are normally held in said locked position.

5. In a shell-fuse, the combination with a chambered stock, a hammer seated therein, and a removable cap-carrying plug, of a pair of wings or jaws interposed between the cap-carrying plug and the hammer, means normally holding said wings or jaws in closed position, and locking-segments on the wings or jaws and a groove in the end of the hammer, whereby said wings or jaws and said hammer are normally locked in said closed position.

6. In a shell-fuse, the combination with a chambered stock, a spring-pressed hammer seated therein, and a removable cap-carrying plug, of a pair of wings or jaws interposed between the cap-carrying plug and the hammer, means normally holding said wings or jaws in closed position, and locking-segments on the wings or jaws and a groove in the face end of the hammer, whereby said wings or jaws and said hammer are normally locked in said closed position.

7. In a shell-fuse, the combination with the stock having a hammer-chamber and a priming-chamber, a hammer seated in the hammer-chamber, a cap-carrying plug removably secured in the priming-chamber, a pair of wings or jaws pivoted on the face of the cap-carrying plug, means normally holding the wings or jaws in closed position, and additional means normally locking said wings or jaws in said closed position, of means preventing the air cushioning at either end of the hammer.

8. In a shell-fuse, the combination with a chambered stock, a hammer provided with longitudinal air-channels, and a cap-carrying plug, of wings or jaws interposed between the cap-carrying plug and the hammer, means normally holding the wings or jaws in closed position, and additional means normally locking said wings or jaws in said closed position.

9. In a shell-fuse, the combination with a chambered stock, a hammer provided with longitudinal air-channels, and a cap-carrying plug, of wings or jaws interposed between the cap-carrying plug and the hammer, means normally holding the wings or jaws in closed

position, a connection between the wings or jaws and said hammer, whereby said wings or jaws are normally locked in said closed position.

5 10. In a shell-fuse, the combination with a chambered stock, a hammer provided with longitudinal air-channels, and a cap-carrying plug, of wings or jaws interposed between the cap-carrying plug and the hammer, means
10 normally holding the wings or jaws in closed

position, and a locking-segment on said wings or jaws and a groove in the face end of the hammer, whereby the wings or jaws and said hammer are normally locked together.

In testimony whereof I affix my signature in 15
the presence of two witnesses.

CHARLES P. WATSON.

Witnesses:

T. M. JOHNSON,
E. F. CAVERLY.