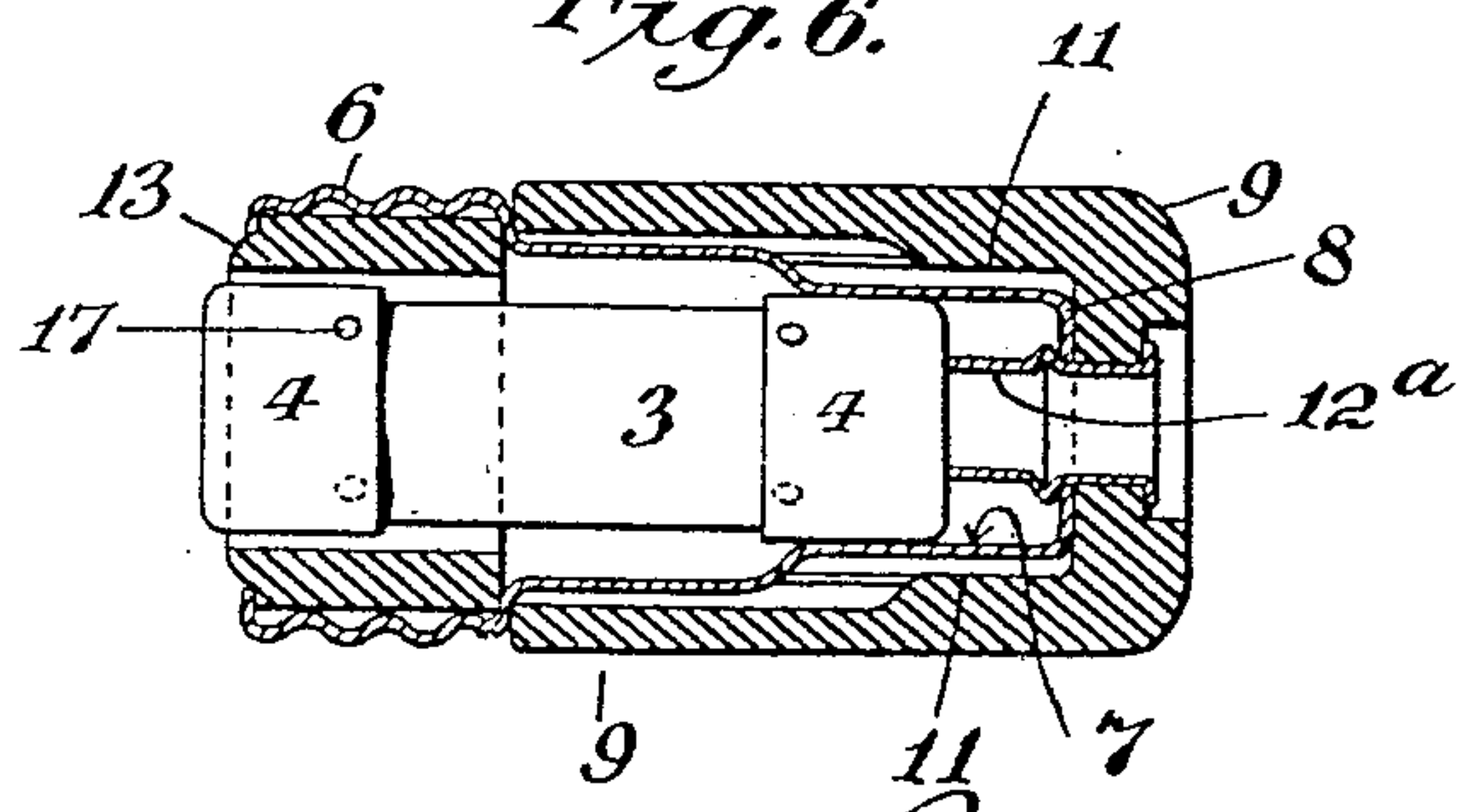
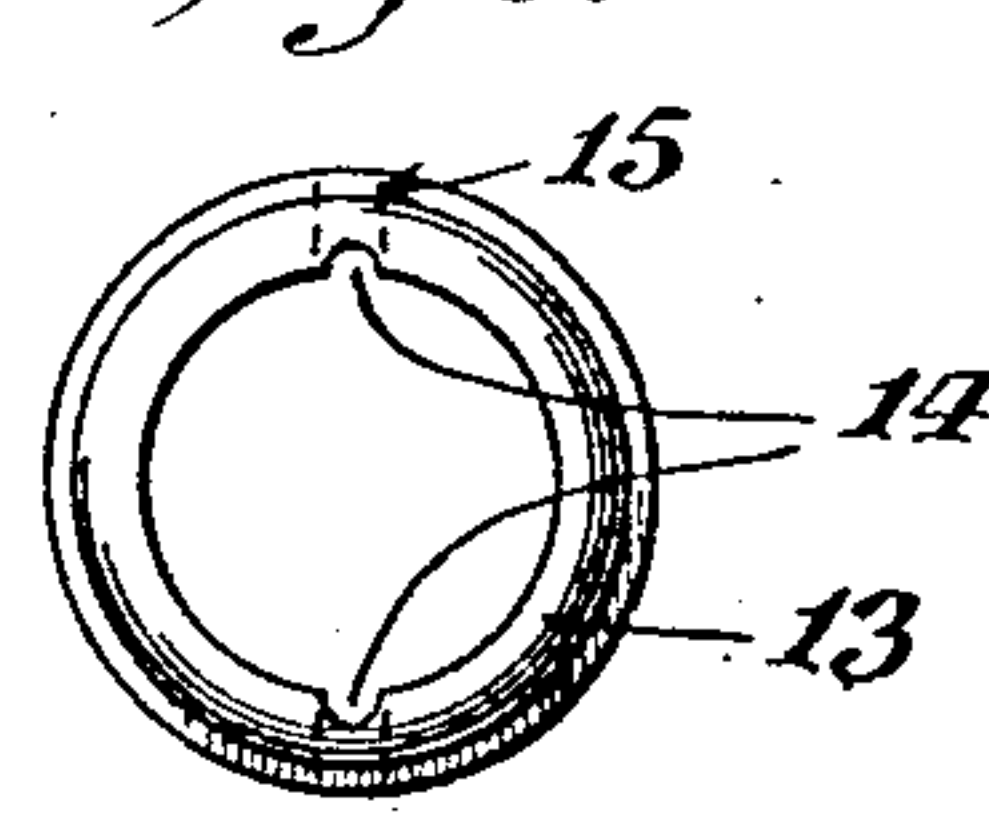
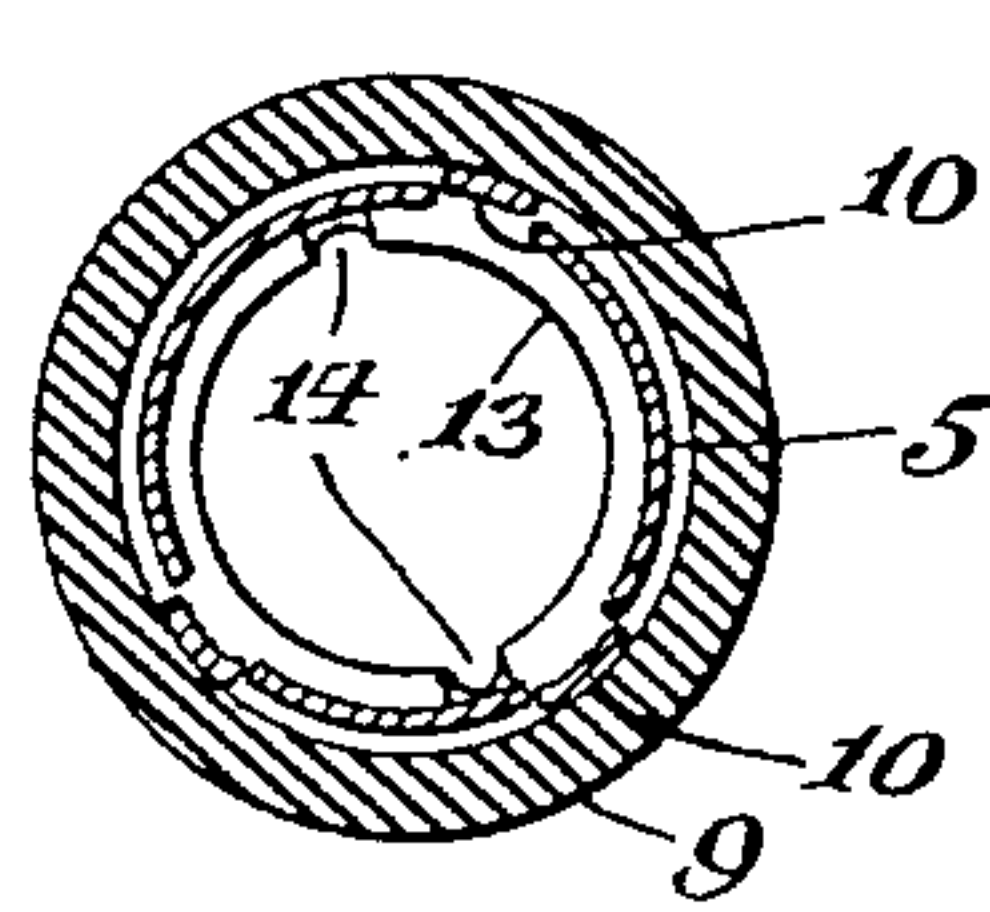
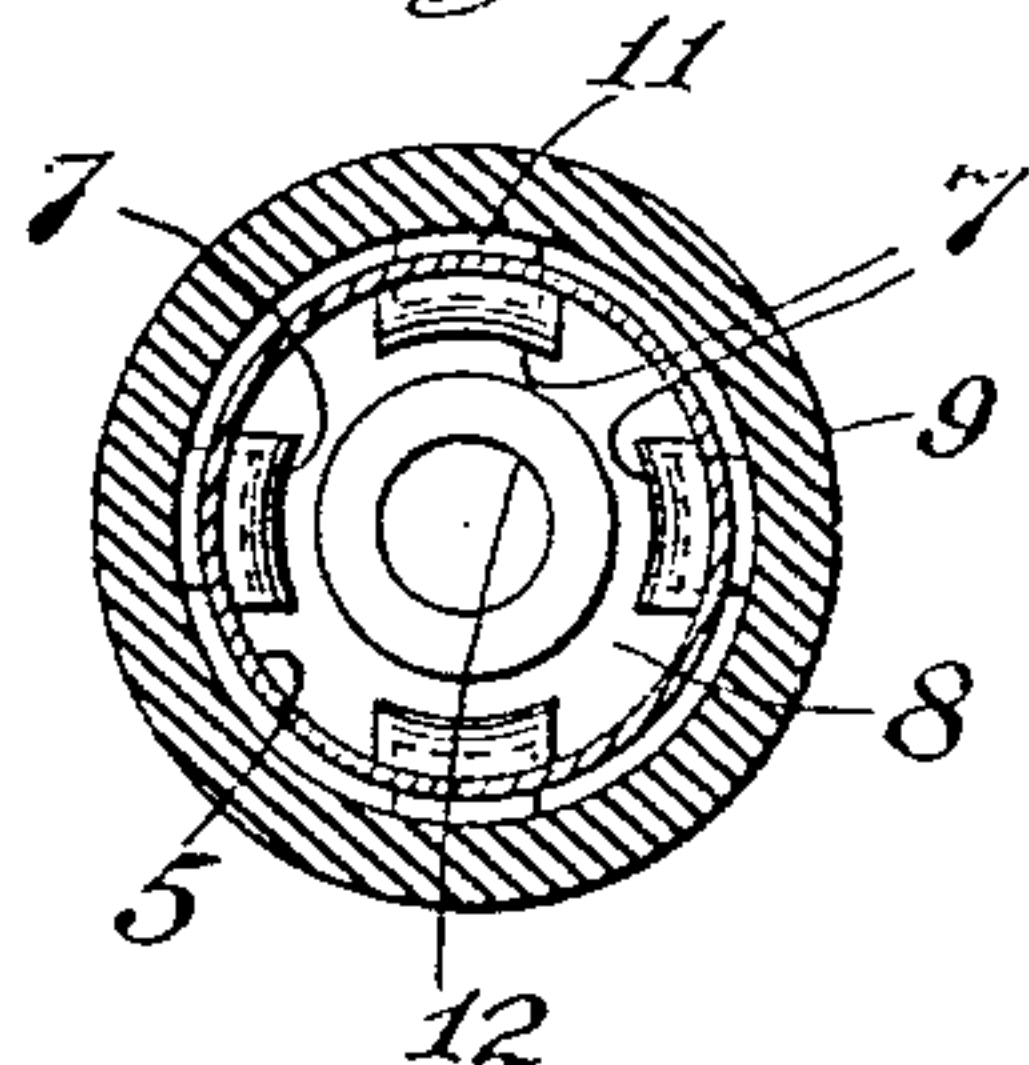
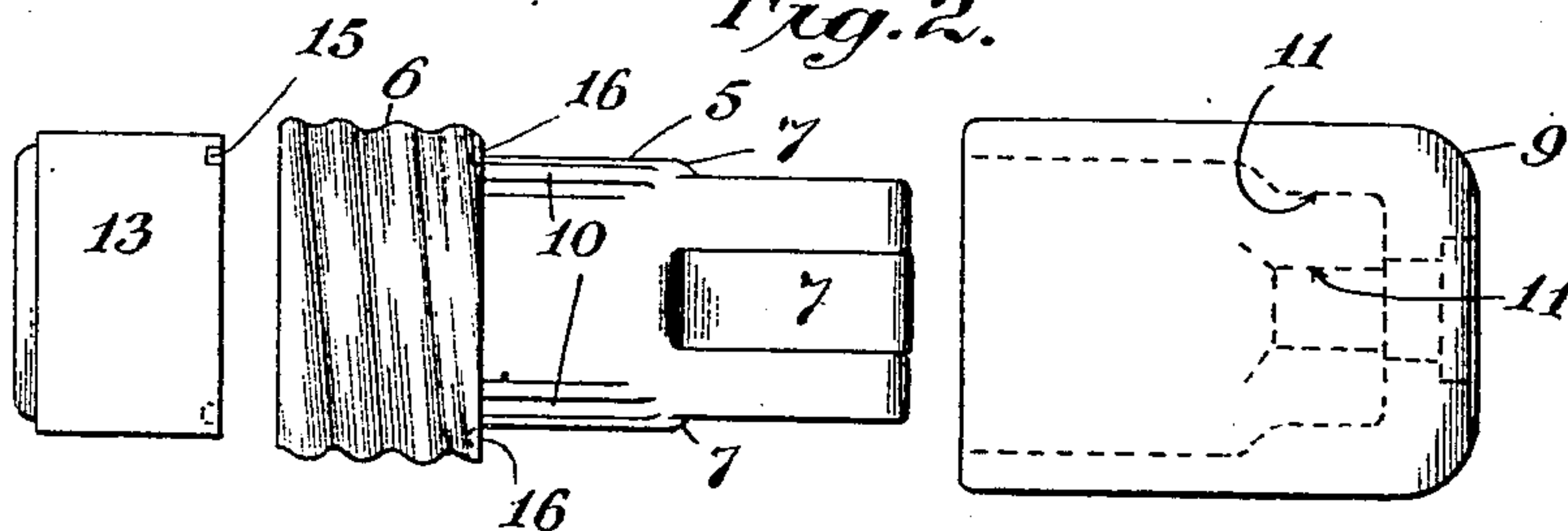
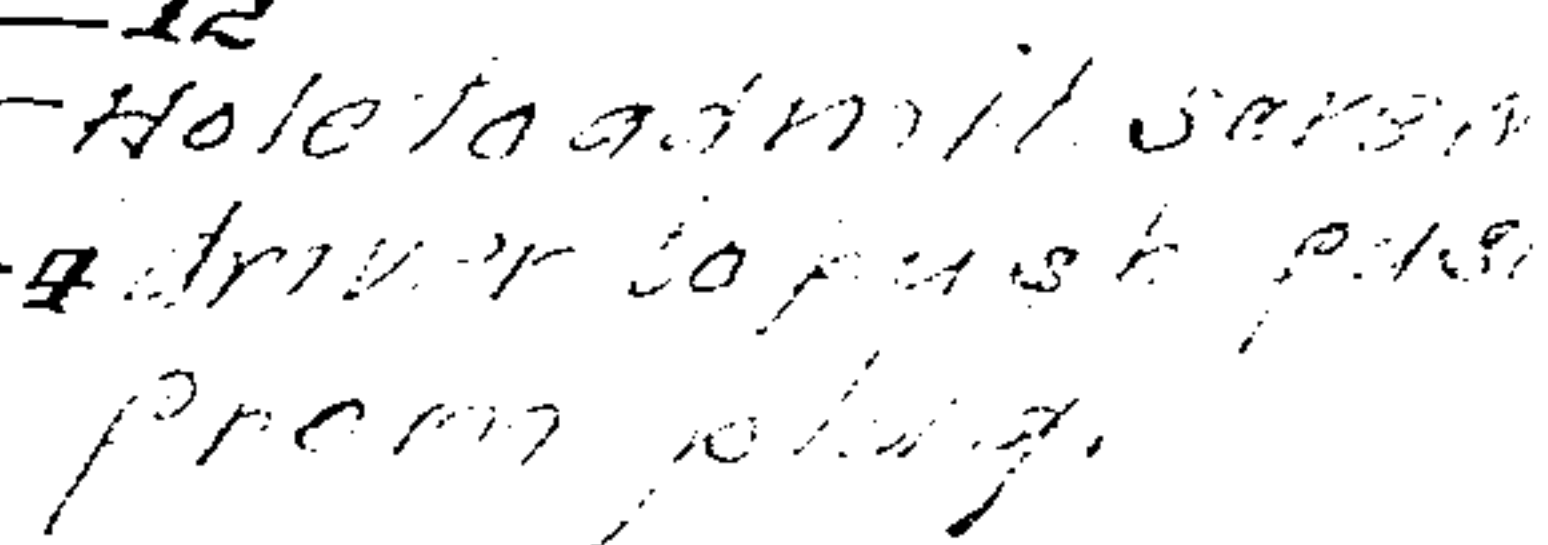


PATENTED SEPT. 10, 1907.

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Inventor:
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UNITED STATES PATENT OFFICE.

ROBERT C. COLE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE JOHNS-PRATT COMPANY,
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FUSE-PLUG.

No. 865,567.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed March 4, 1907. Serial No. 360,566.

To all whom it may concern:

Be it known that I, ROBERT C. COLE, a citizen of the United States, and a resident of Hartford, Hartford county, Connecticut, have invented certain new and
5 useful Improvements in Fuse-Plugs, of which the following is a full, clear, and concise specification.

My invention relates to fuse plugs, and consists of a simplified and improved construction of such devices whereby their durability in use and facility of manu-
10 facture are materially increased, and whereby, also, other advantages are obtained, which will be apparent from the subjoined description and the appended claims.

Referring to the drawings, Figure 1 is a longitudinal
15 central section of a fuse-plug constructed in accordance with my invention and having a cartridge fuse shown in elevation therein; Fig. 2 is a side elevation of the parts of Fig. 1, excepting the fuse, in disassembled relation; Fig. 3 is a cross-section of Fig. 1 on the line III—
20 III in the direction of the arrows; Fig. 4 is a similar view on line IV—IV; Fig. 5 is an end elevation of the insulating bushing; and Fig. 6 is a longitudinal section of a modified form.

The reference characters 1 and 2 of Fig. 1 represent
25 respectively in diagram the outer and inner contact terminals of an ordinary socket terminal device with which the fuse-plug is adapted for use, it being understood that said contact terminals are insulated from each other and respectively connected with the ends of the two
30 conductors of an otherwise complete or operative electric circuit. The fuse-plug when inserted or screwed into the socket terminal serves to form a connection between the parts 1 and 2 thereof through the cartridge fuse contained within the plug, so that the said fuse is
35 electrically interposed in and forms a part of the operative circuit. Cartridge or inclosed fuses are well known in the electrical art, and are comprised essentially of a fuse-link made of easily fusible metal, not shown in the present drawings, but contained within the
40 tubular fuse casing 3 and connected at each end with the metallic ferrules 4, herein called the fuse terminals. The construction of the fuse-plug is such that when inserted in the socket with a cartridge fuse contained within it, one terminal of the latter projects out of the
45 plug into direct contact with the socket terminal 2, while the other fuse terminal is connected with the other socket terminal 1 by means of a conducting shell, indicated generally by the reference 5.

According to this invention the shell is tubular and
50 preferably cylindrical in shape, being drawn up out of a single piece of metal and having one end 6 provided with rolled screwthreads or formed otherwise for contact with the socket terminal, while the other end is provided with one or more inward projections adapted

to engage the cartridge fuse and to hold it firmly in 55
central position within the shell. The inward projections are formed by longitudinally slitting the end of the shell and bending inwardly or depressing certain of the slitted portions, such as 7, so that the said portions form resilient fuse-retaining means which hold the fuse 60
within the plug by friction against its innermost terminal when the same is pushed into the shell. By this means the fuse is removably held within the plug with one terminal projecting slightly therefrom and the other terminal in perfect electrical contact with the shell. 65
The slits in the shell are so terminated as to leave an annular uncut portion, preferably in the form of the annular flange 8, which is integral with the ends of the depressed portions and therefore serves to reinforce and stiffen the same to increase their friction on the fuse 70
terminal.

The shell is secured within an insulating covering or cap 9, which preferably surrounds all but the contact portion 6 thereof and serves as a handle by means of which the said contact portion may be screwed into 75
the socket terminal. The cap is desirably made of porcelain and the shell is centered and held snugly within it by means of the several longitudinal ribs 10 which are struck up from the body of the shell with more or less taper towards the inner end thereof so 80
that the said ribs bind firmly on the interior of the cap when the latter is pushed over the shell. The cap is provided with one or more interior projections or lugs 11 which are adapted to engage in one or more of the depressions or recesses left on the exterior of 85
the shell by the depression of the slitted portions 7 above described, and thereby the fastening of the cap to the shell is effectively reinforced, especially as against the danger of the cap being turned on the shell or being wrenched off of the same, when the plug is 90
screwed too tightly in the socket.

The cap may be permanently secured to the shell by means of cement if desired, but it is preferred to fasten the parts together by means of an eyelet 12, upset within the aligned apertures in the ends of cap 95
and shell, and through which a screw-driver or similar pointed instrument may be thrust to eject the fuse from the plug.

The modification shown in Fig. 6 illustrates a method whereby the securing means may be made 100
use of to adapt the device for use with shorter fuses. In this figure the eyelet 12^a or similar securing means is provided with an inward extension forming an abutment adapted to engage the inner end of a short fuse when the same has been pushed a proper distance 105
into the plug.

The invention further contemplates the formation of the shell of the plug in two diameters, the threaded

portion 6 being of standard diameter for fitting ordinary sockets, while the remainder of the shell, which receives the porcelain cap, is considerably smaller, and the said cap is therefore permitted to be made with its outer surface flush with the contact portion 6 or substantially so, which reduces the size of the plug as a whole without affecting its capacity.

The projecting terminal of the fuse which is adapted for contact with the central socket contact 2 is spaced or separated from the threaded part 6 by means of a ring or bushing 13 of porcelain or similar insulating material, which is provided with two interior longitudinal channels or grooves 14, and likewise with one or more end notches 15. The bushing is secured within the shell by bending or spinning the edge thereof over upon it, and it is held in non-rotative connection with the shell by means of one or more dents or inward protuberances 16 (shown by dotted lines in Fig. 2) which are adapted to engage with the said notches. The longitudinal grooves 14 are intended to accommodate cartridge fuses which happen to have their terminals secured to the inclosing casing by means of headed pins, such as shown at 17 in Fig. 1, and when the bushing is secured in the non-rotative position above described, the said grooves are longitudinally offset from the fuse-holding projections 7 so that the pins of a fuse thrust into the plug will be directed into the space between the said projections without interfering with the bearing of the latter upon the fuse terminal. It will be manifest, however, that it is immaterial whether the notches are formed in the porcelain bushing or in the shell, for accomplishing this purpose, although the former construction is preferred.

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

1. In a fuse-plug, a conducting shell having an integral portion thereof at one end bent inwardly to receive and hold by friction one of the terminals of a cartridge fuse and formed at the outer end for contact with an annular socket terminal, in combination with means at said last named end for spacing the other fuse terminal from said shell.

2. In a fuse-plug, a tubular metallic shell, having one end formed for contact with a socket terminal and provided at the other end with slitted portions forming frictional retaining means for a cartridge fuse inserted into said shell and means separating the free end of said fuse from contact with said shell.

3. In a fuse-plug, a tubular conducting shell having one end formed for contact with a socket terminal and the other end provided with longitudinal slits of appropriate extent to leave an annular portion of the shell uncut, one or more of the slitted portions being depressed inwardly to form frictional engaging means for a fuse within the shell.

4. In a fuse-plug, a tubular conducting shell having one end formed for contact with a socket terminal and its other end formed of reduced diameter adapted to receive the terminal of a cartridge fuse, in combination with an insulating covering surrounding said portion of reduced diameter.

5. In a fuse-plug, a cylindrical conducting shell having one end formed for contact with a socket terminal and

its other end formed of reduced diameter and provided with inwardly bent portions adapted to hold the terminal of a cartridge fuse, and means for insulating the other terminal of the fuse from the said contact end of the shell.

6. In a fuse-plug, a tubular conducting shell having one end formed for contact with a socket terminal and its other end provided with means for contacting with an interior cartridge fuse terminal and having an exterior recess therein, in combination with a covering for said shell provided with an interior projection engaging said recess and providing a non-rotative connection therewith.

7. In a fuse-plug, a conducting shell having one end formed with depressed portions providing one or more recesses on the exterior of the shell and one or more projections on the interior thereof adapted to engage with a fuse terminal, in combination with an insulating cap for said shell having a portion adapted to engage with one of said exterior recesses to provide a non-rotative connection with said shell.

8. In a fuse-plug, a conducting shell having one end provided with one or more inward projections and the other adapted to engage a socket terminal, in combination with an insulating ring in said last named end provided with an interior channel longitudinally offset with respect to said projections.

9. In a fuse-plug, a shouldered conducting shell adapted to receive a cartridge fuse and having an inward dent or protuberance on the shoulder thereof, in combination with an insulating ring secured in the shell having a longitudinal interior channel and a recess at its end adapted to engage said protuberance.

10. In a fuse-plug, an insulating cap and a conducting shell therein having one end formed for contact with a socket terminal and the other adapted to receive a cartridge fuse terminal, said shell being provided with one or more longitudinal ribs on its exterior adapted to bind against the interior of said cap.

11. In a fuse-plug, an insulating cap and a shouldered conducting shell having its smaller diameter within said cap and adapted to receive a cartridge fuse terminal in combination with a series of longitudinal ribs struck up from the portion of the shell of smaller diameter and adapted to form resilient centering means for the shell with respect to its cap.

12. In a fuse-plug, a conducting shell having one end formed for contact with a socket terminal and adapted to hold a cartridge fuse terminal within its other end, in combination with an insulating cap for said shell, said cap and shell being provided with aligned apertures and a tubular means for fastening said parts together secured within said apertures.

13. In a fuse-plug, a conducting shell having exterior depressions or recesses and an insulating cap having interior projections engaging in the same, said cap and shell being provided with aligned apertures, in combination with a securing means in said apertures for fastening said cap and shell together.

14. In a fuse plug, the combination of a conducting shell adapted to receive and hold a cartridge fuse, a cap surrounding said shell, and means for fastening the end of said shell to the cap, said fastening means being provided with a part extended interiorly away from the said fastened end of the shell and located in position therein to serve as a positive abutment adapted to limit the inward movement of a fuse thrust into the shell.

In testimony whereof, I have signed my name to the specification in the presence of two subscribing witnesses.

ROBERT C. COLE.

Witnesses:

DUNCAN C. HOOKER,
N. M. HENRY.