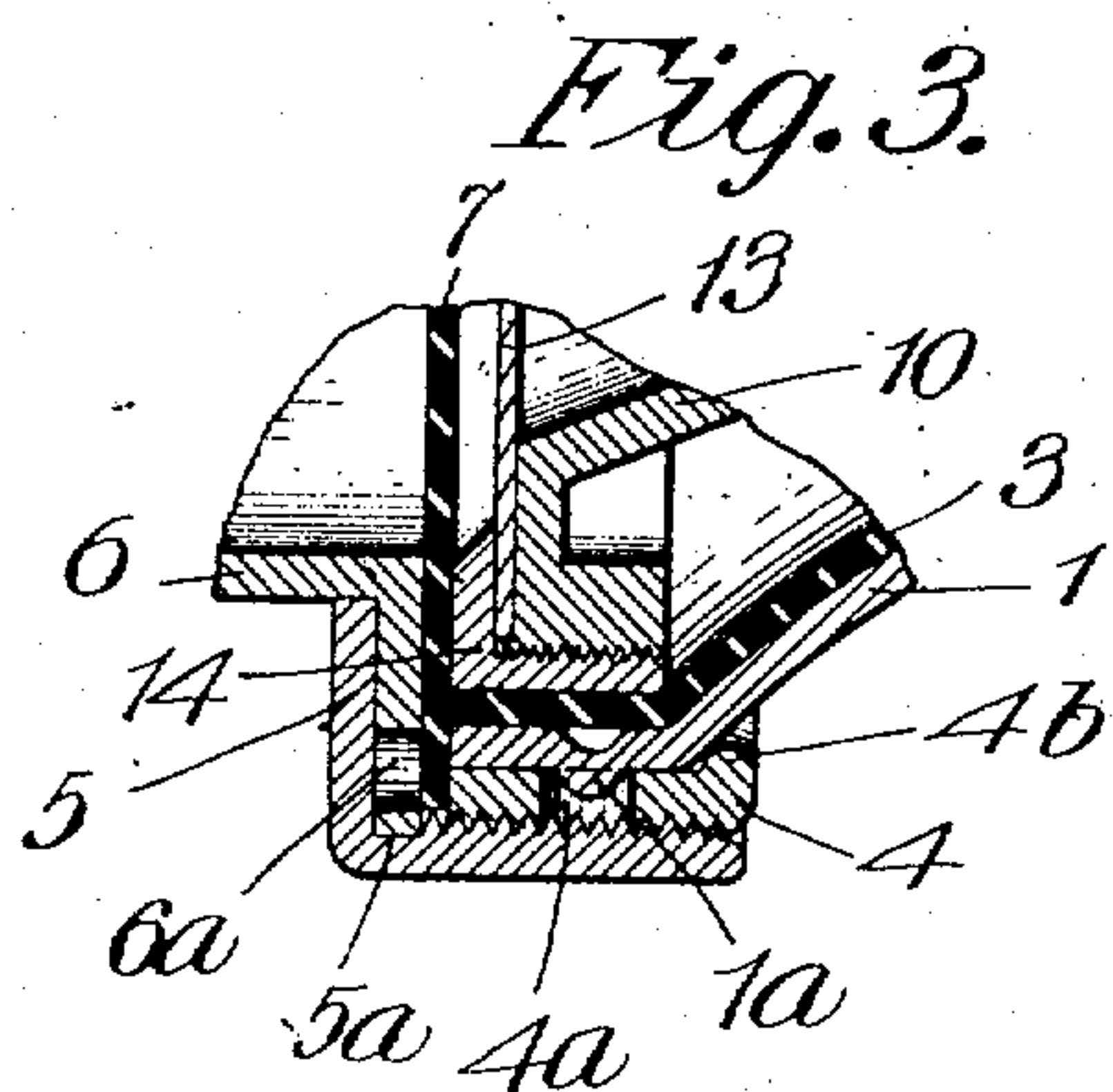
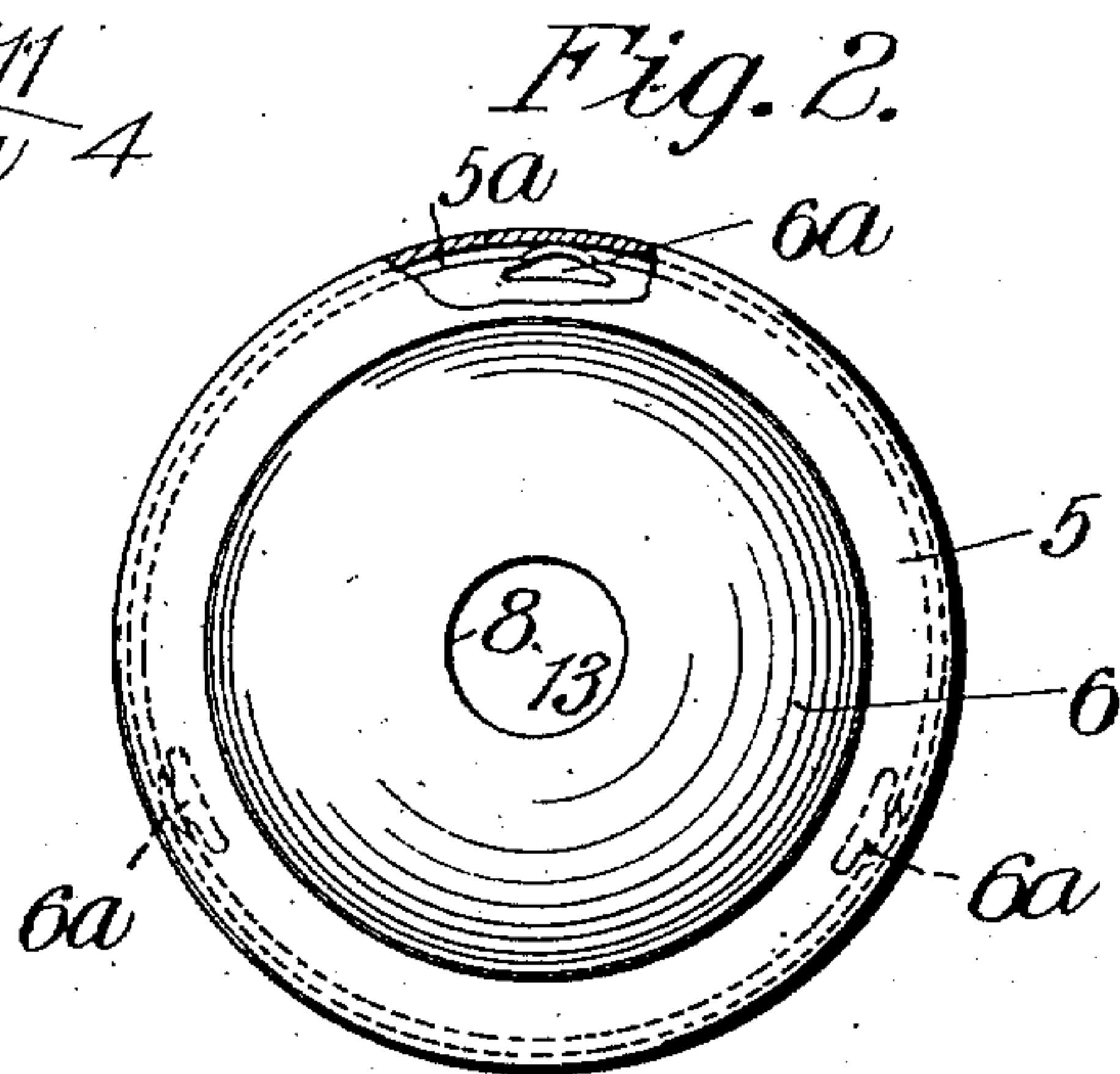
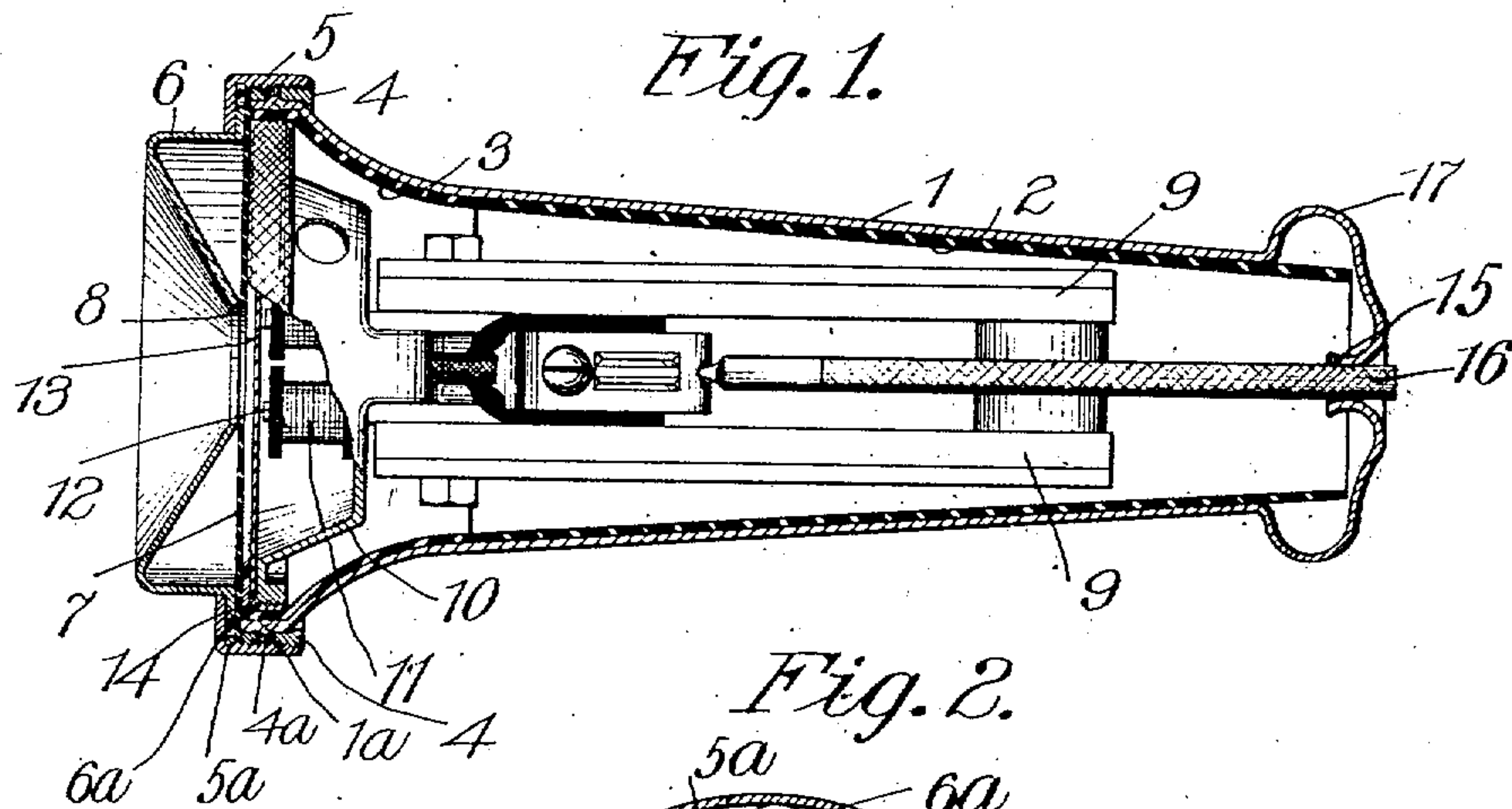


J. HALLDOW.
TELEPHONE RECEIVER SHELL.
APPLICATION FILED OCT. 8, 1908.

988,706.

Patented Apr. 4, 1911.



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UNITED STATES PATENT OFFICE.

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TELEPHONE-RECEIVER SHELL.

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To all whom it may concern:

Be it known that I, JOHN HALLDOW, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented a certain new and useful Improvement in Telephone-Receiver Shells, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to telephone receivers and has for its object the construction of a receiver shell of metal which shall accomplish all of the purposes heretofore secured in connection with shells for such instruments, and having the additional advantage of lightness, durability, improved appearance and cheapness.

Receiver shells have commonly been made heretofore of insulating material of one form or another which, generally speaking, is very brittle in nature and therefore easily broken. To avoid this difficulty the shells have usually been constructed of considerable thickness with the result that they are both clumsy and heavy. By my invention I construct these shells of thin sheet metal and use in conjunction therewith separate threaded rings, one adapted to be secured to the body portion of the shell and the other to be secured to the receiver cap. The receiver cap may be constructed in one piece or it may be constructed in a manner similar to the body portion of the shell. In my present invention I secure the threaded rings to the parts of the receiver shell in a very simple and effective manner, which permits the shells to be manufactured very cheaply. This particular means for securing the threaded rings to the main portions of the receiver shell and cap forms the subject matter of this invention and will be referred to in detail in connection with the drawings accompanying this specification. If preferred, a cap of insulating material may be used in connection with the metal shell instead of the metallic cap above referred to.

In constructing my improved receiver shell I make use preferably of forming dies to form sheet metal into the desired conformation. In order to be readily manipulated so as to assume the form required, the sheet metal used must be preferably relatively thin. This thin material, however, is

not adapted to be threaded, since the threads would be so fine necessarily as to be of no use. Furthermore, the threaded portion would not possess sufficient rigidity to readily engage the cooperating threaded member. I eliminate this difficulty by using in conjunction with the thin metal forming the body portion of the shell a separate ring which is preferably of metal, although other material may be used if desired, which is secured to the body portion of the shell in a manner that will appear below. This ring serves to permit the forming of threads of suitable size to be practical and also serves to reinforce the larger end of the shell. A further advantage secured by this construction is that the receiver shell is comparatively light. In the event of forming the shell of material thick enough to be properly threaded, the shell would be so heavy as to practically prohibit its use.

A further advantage secured by my improved construction is to be found in the case in which the main portion of both the shell proper and the cap are formed, for the sake of cheapness, of thin sheet steel. The construction used, which is described above and forms the subject matter of this invention, permits the use of threaded rings of other material in connection with the formed steel members, as a result of which the possibility of corrosion of the threads engaging each other may be eliminated. If a steel shell had formed directly thereon the threads for engaging the cap, serious difficulty might result from the corrosion of the steel threads, and in many cases would make it practically impossible to remove the cap from the receiver after the same had been in use for some time. This result would occur particularly in the case in which both the receiver shell and the cap were made of steel, each having the threads carried thereby formed directly in the steel itself.

In connection with the use of sheet steel for forming the main portion of the shell proper and the cap I employ a protecting varnish or coating, as for example enamel or japan, to thoroughly protect the steel from the contact of moisture. This means could not be used satisfactorily to protect the steel screw threads above referred to, since evidently the screw threads, in order

to properly perform their function, must be clean and free from any foreign matter. In addition to the insulation thus secured by the enamel coating within the shell, I may

5 employ separate insulating means between the shell and the cooperating mechanism of the receiver contained therein. This, however, does not form a part of the present invention and is not claimed herein.

10 The several drawings illustrating my invention are as follows:

Figure 1 is a longitudinal sectional view taken through the receiver shell proper and the receiver cap, and shows the cooperating mechanism contained within the shell. Fig. 15 2 shows in end view taken from the left the receiver cap 6 and the screw ring 5, as well as the means used to secure the ring to the cap. Fig. 3 is an enlarged sectional view of a portion of the receiver shell and a portion of the receiver cap and shows the means employed for securing the threaded rings to the shell and the cap.

Similar numerals refer to similar parts throughout the several views.

As shown in the several drawings, the receiver shell 1 is of tubular conformation having a slight taper, as indicated, and is enlarged at its left-hand end to cooperate with a threaded ring used to engage the receiver cap. The threaded ring 4 has formed therein a plurality of holes 4^a, as shown in Fig. 3, into which the body portion of the receiver shell is forced by means of a center punch or similar tool, as shown at 1^a. The result of this is that the ring 4, even though it may not be a tight fit on the receiver shell, is prevented from being removed therefrom by the several projections 1^a formed from the receiver shell 1 into the holes 4^a. When the screw threads formed on the outer surface of the ring 4 are engaged by the receiver cap, a shoulder 4^b serves to communicate the stress exerted upon the ring 4 to the body portion 1 of the receiver shell. The smaller end of the shell 1 has an enlarged annular portion 17 formed thereon, which is adapted to engage the receiver hook when the receiver is not in use. The material of the shell is continued around the smaller end and has an opening 15 formed in the end through which the conductor 16 is adapted to pass. The edges of the opening 15 are formed inward, as indicated, so that the sharp edges of the opening cannot come in contact with the conductor cord.

The cooperating mechanism of the receiver is of the well-known type in which such mechanism is completely assembled independently of the receiver casing. As shown in the drawings, it consists essentially of permanent magnets 9, 9 having secured to their left-hand ends a metal cup 10, within which the receiver coils 11, 11 are located. The outer edge of the cup 10 is threaded and

adapted to cooperate with a threaded ring 14, the diaphragm 13 of the receiver being clamped between the threaded ring 14 and the cup 10 in operative relation to the poles 12 extending through the coils.

The cooperating mechanism just described is insulated from the shell 1 by means of tubes 2 and 3 of insulating material, such as vulcanized fiber or the like, which effectually prevents contact between the metal of the shell and any part of the cooperating mechanism.

The cap used to close the larger end of the shell 1 and to secure in position therein the cooperating mechanism consists of a main portion 6 of thin sheet metal formed as indicated and adapted to cooperate with a separate internally threaded ring 5 so formed as to surround the portion 6 and extend into engagement with the threaded portion of the body of the receiver shell to clamp the cap 6 against its left-hand end. The ring 5 has formed just inside of its end flange an annular counterbore 5^a which is extended a slight distance below the threads formed on the inner surface of the ring 5. The cap 6, which is first formed of an outer diameter slightly smaller than the internal diameter of the screw threads in the ring 5, is secured to the ring 5 by perforating the edge of the cap 6 at several places around its periphery, as indicated at 6^a in Fig. 2, and forcing the portion of the cap outside of the perforations into the counterbore 5^a. This serves to lock the ring 5 to the cap 6 so as to prevent their becoming separated, although the nature of the engagement may not be such as to secure them rigidly together. An insulating disk 7 of the fiber or similar material is used to prevent contact between the cooperating mechanism of the receiver and the receiver cap.

While I have shown my invention in the particular embodiment herein described, I do not, however, limit myself to this construction, but desire to claim broadly any equivalent modification that will suggest itself to those skilled in the art.

What I claim is:

1. A telephone receiver shell consisting of a body portion and a cap, such cap comprising a perforated member conformed to communicate sound waves from the receiver to the ear, and a separate threaded ring loosely secured thereto and cooperating therewith for engaging the body portion of the receiver shell.

2. A telephone receiver shell consisting of two elements one of which is the body portion of the shell and the other a cap, each of such elements comprising a main member and a separate threaded ring loosely secured thereto and cooperating therewith, such rings adapted to engage each other.

3. A telephone receiver shell consisting of

two elements one of which is the body portion of the shell and the other a cap, each of such elements comprising a main member formed from thin sheet steel and a threaded ring of other material loosely secured thereto and cooperating therewith, such rings adapted to engage each other.

4. A telephone receiver shell consisting of two parts, each of such parts formed from thin sheet metal, and a separate threaded ring loosely secured to each part surrounding and cooperating with the same, such rings adapted to engage each other.

5. A telephone receiver shell consisting of a receiver cap, a body portion, and a separate threaded ring cooperating therewith and adapted to engage the receiver cap, such ring secured to the body portion by cooperating projections and recesses carried by such parts.

6. A telephone receiver shell consisting of a body portion and a cap, such cap comprising a perforated member conformed to communicate sound waves from the receiver to the ear, and a separate threaded ring cooperating therewith to engage the body portion of the receiver shell, such ring secured to the body portion by cooperating projections and recesses carried by such parts.

7. A telephone receiver shell consisting of two elements one of which is the body portion of the shell and the other a cap, each of such elements comprising a main member and a separate threaded ring cooperating therewith, such rings adapted to engage each other, each of such rings secured to the cooperating element by cooperating projections and recesses carried by such parts.

8. A telephone receiver shell consisting of a receiver cap, a body portion formed by punching and drawing from thin sheet metal, and a separate threaded ring co-

operating therewith and adapted to engage the receiver cap, such ring having holes formed therein for engaging projections on the body portion to secure the ring to the body portion.

9. A telephone receiver shell consisting of a body portion and a cap, such cap comprising a perforated member conformed to communicate sound waves from the receiver to the ear, and a separate threaded ring cooperating therewith to engage the body portion of the receiver shell, such ring having a groove formed therein to engage projections formed on the perforated member to secure the ring to such member.

10. A telephone receiver shell consisting of a body portion and a cap, such cap comprising a perforated member conformed to communicate sound waves from the receiver to the ear, and a separate threaded ring cooperating therewith to engage the body portion of the receiver shell, such ring having an internal groove formed therein to engage peripheral projections formed on the perforated member to secure the ring to such member.

11. In a telephone receiver shell, the combination of a main portion expanded into an enlarged part at one end, a separate threaded ring surrounding said enlarged part, a projection on said ring engaging the edge of the enlarged part to retain the ring thereon, and cooperating projections and recesses in said ring and main portion holding said ring thereon and a cap engaging said threads.

In witness whereof, I hereunto subscribe my name this 5th day of October A. D. 1908.

JOHN HALLDOW.

Witnesses:

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A. D. T. LIBBY.