

F. BATTER.
 PORTABLE FOOT AND BODY WARMER.
 APPLICATION FILED APR. 26, 1906.

912,527.

Patented Feb. 16, 1909.
 3 SHEETS—SHEET 1.

Fig. 1.

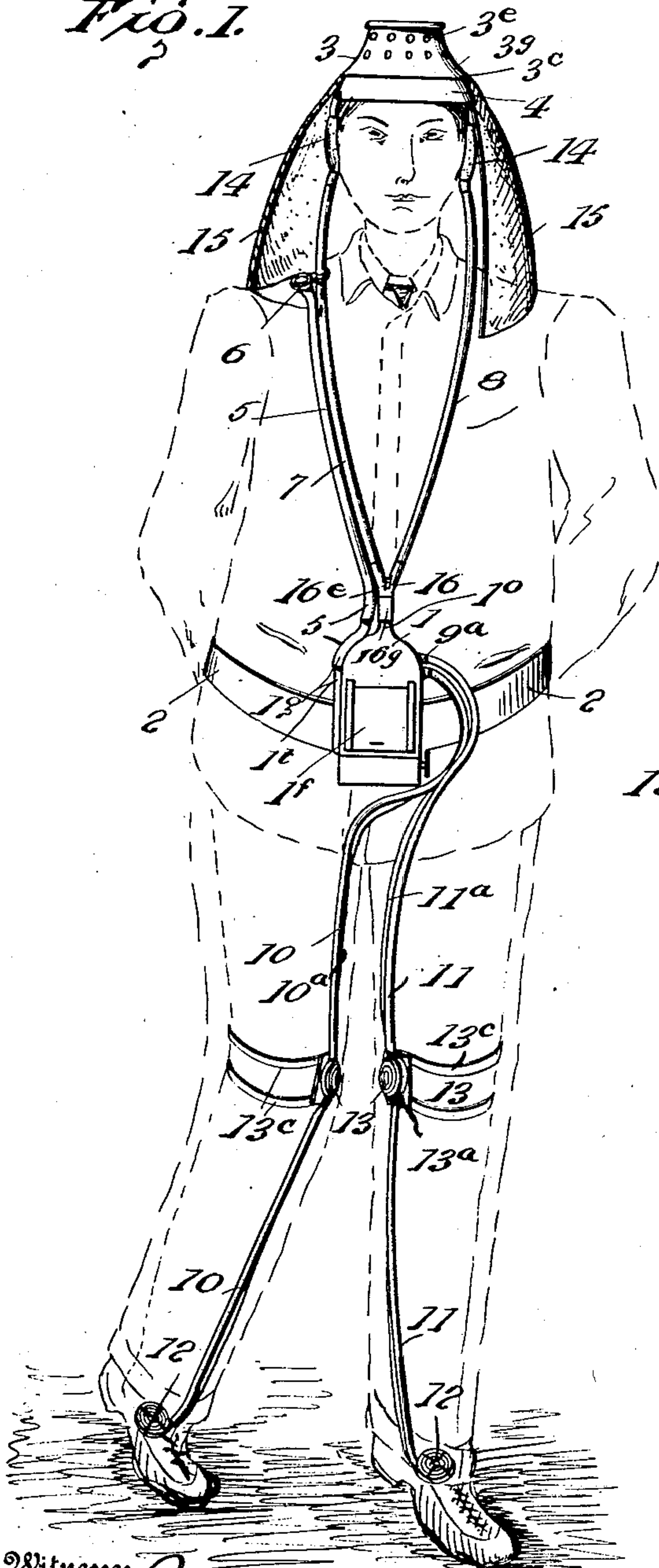


Fig. 2.

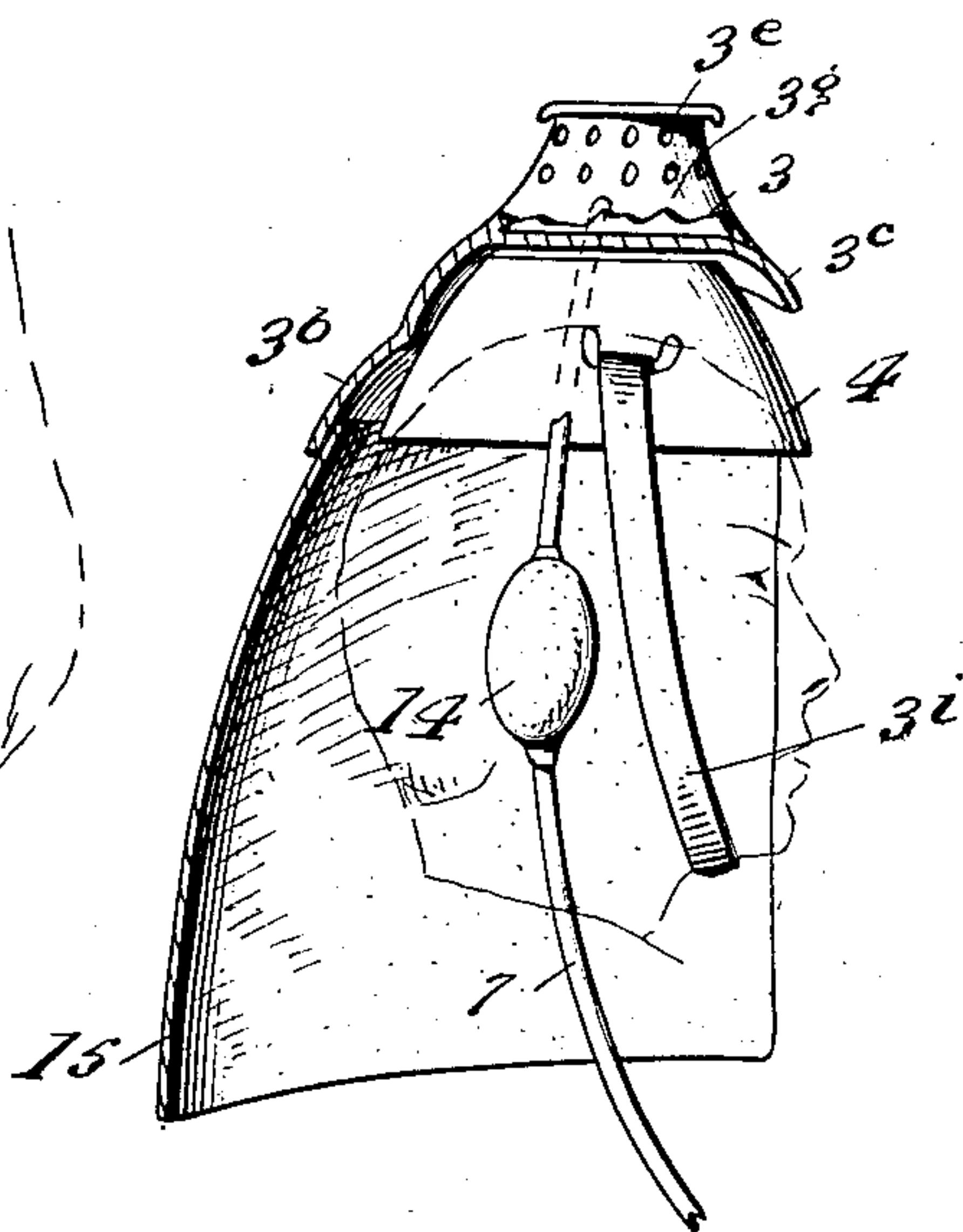


Fig. 12.

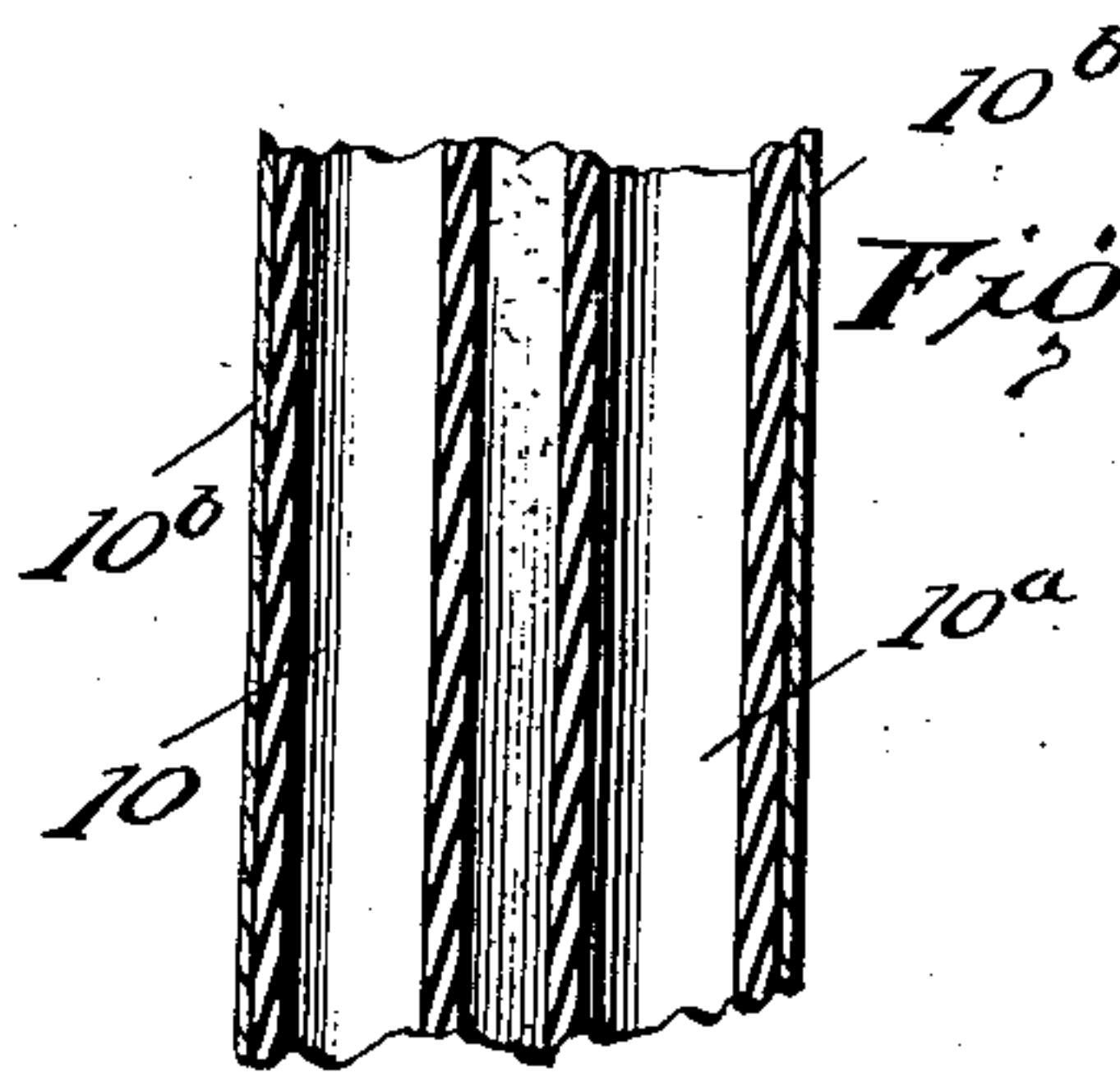
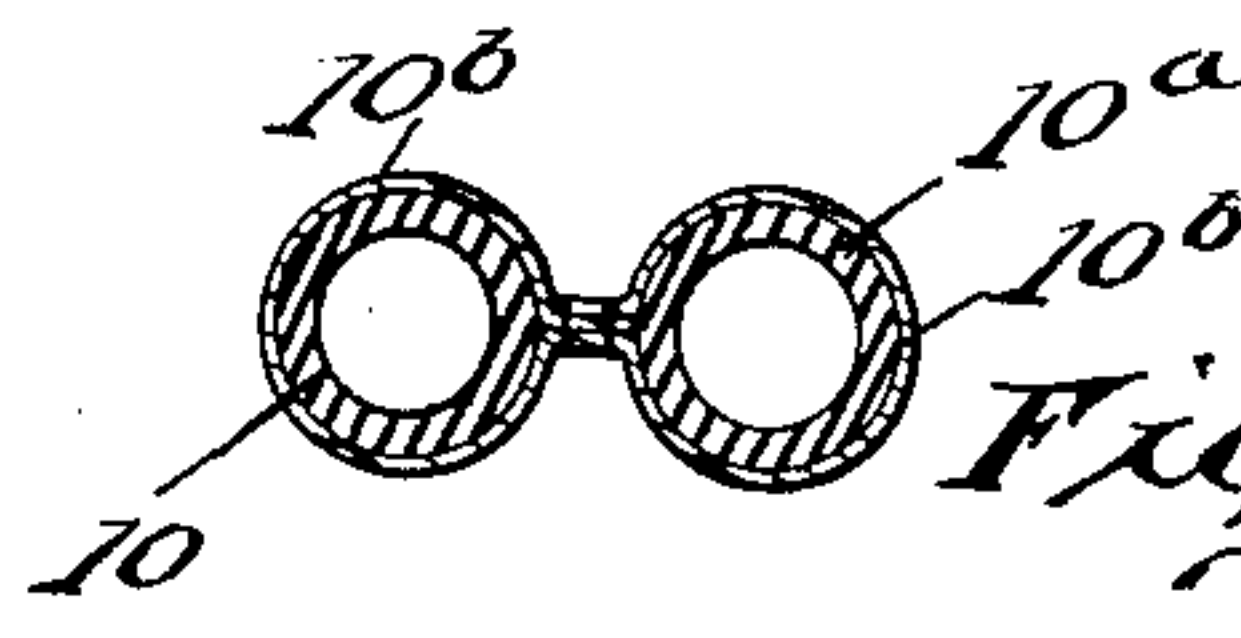


Fig. 13.



Witnesses

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3 SHEETS—SHEET 2.

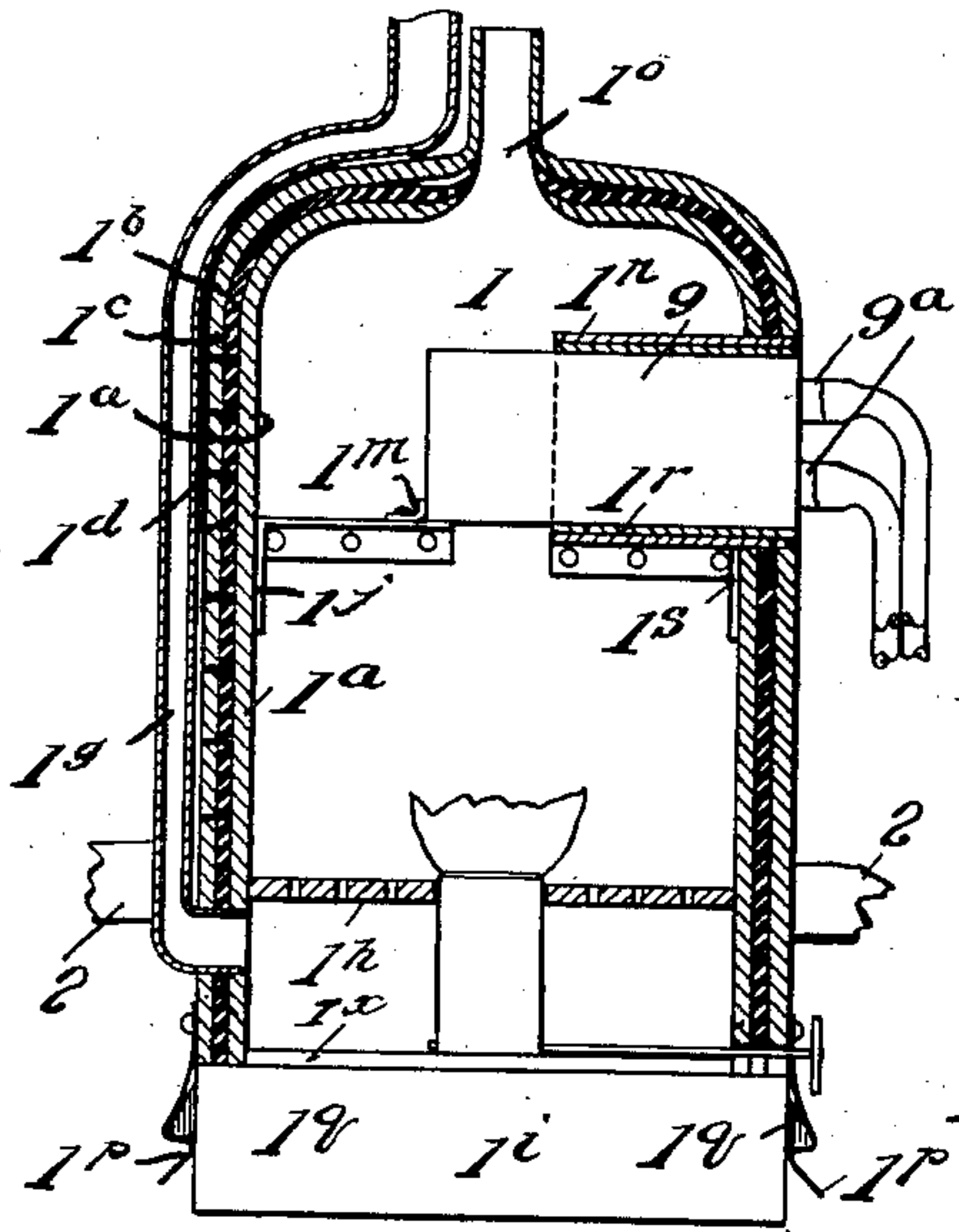


Fig. 3.

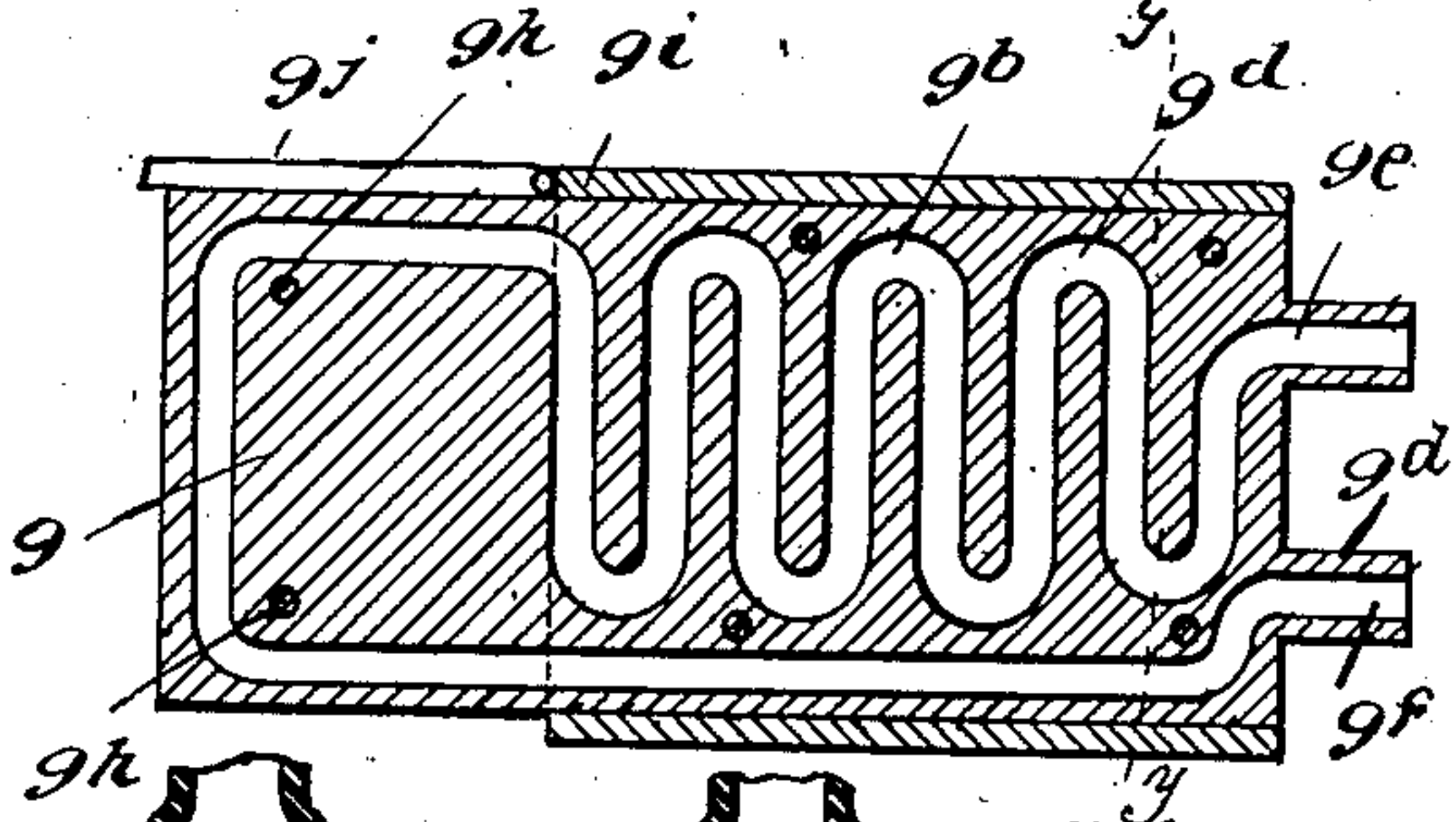


Fig. 4.

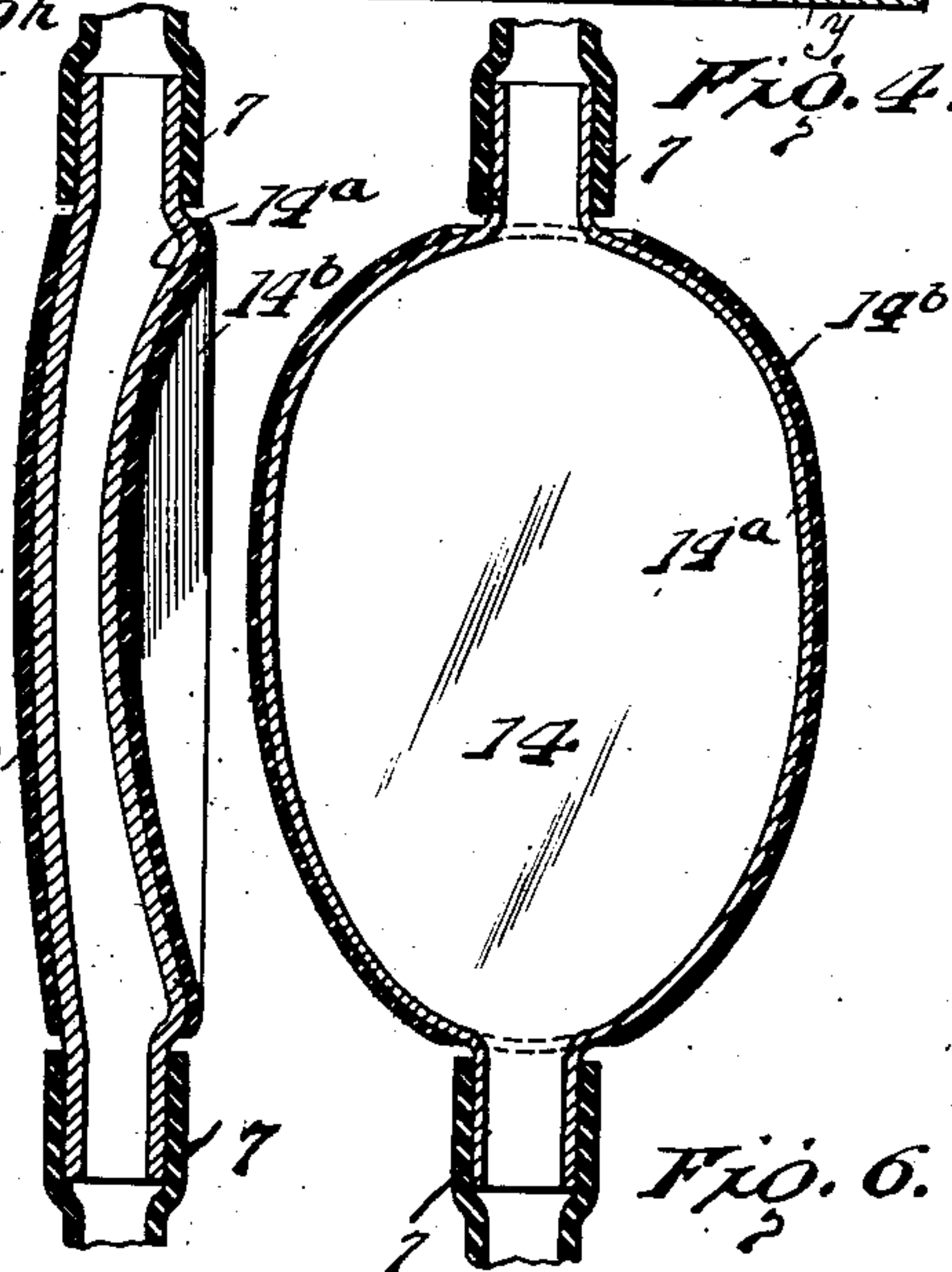


Fig. 5.

Fig. 6.

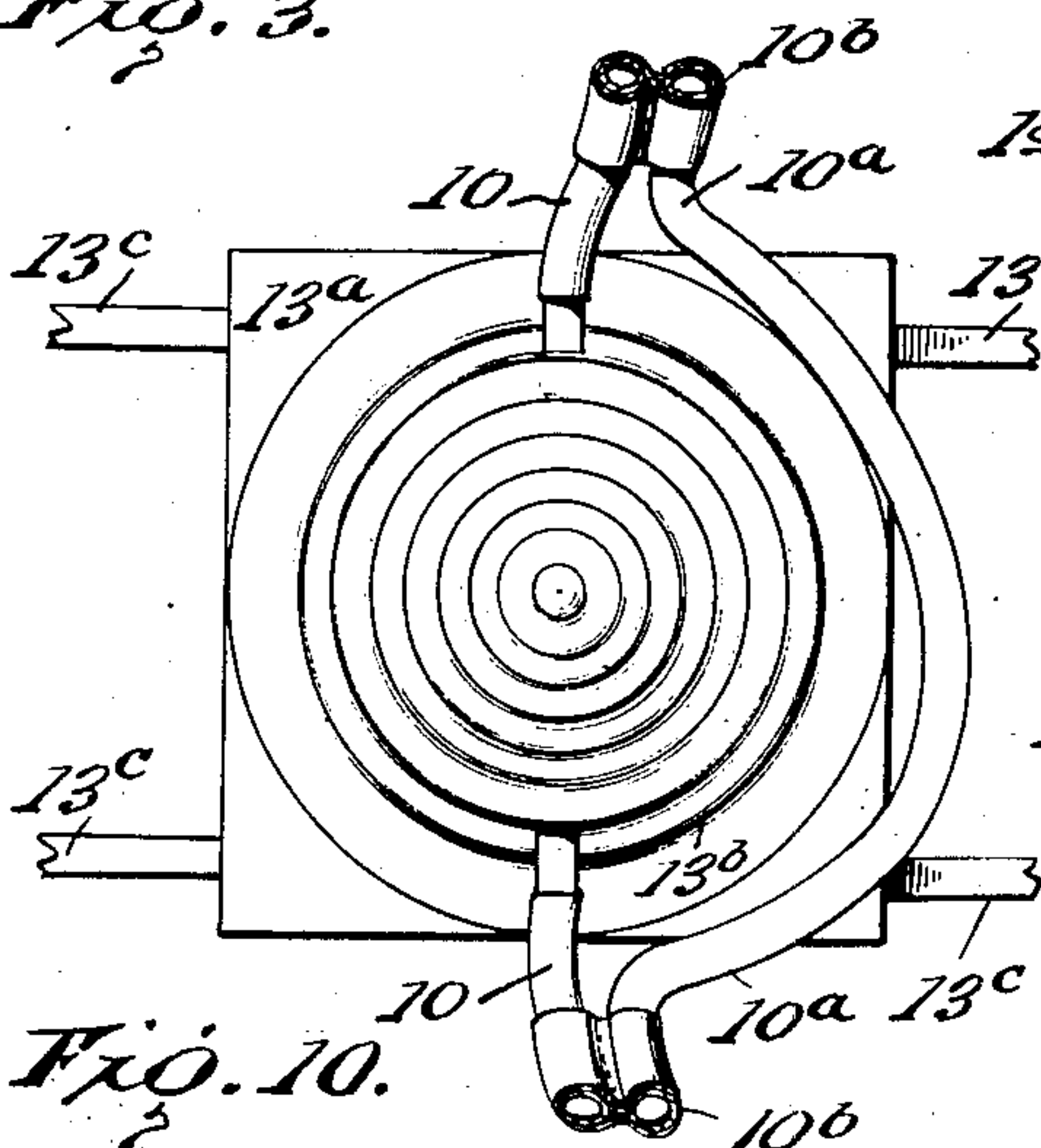


Fig. 7.

Fig. 8.

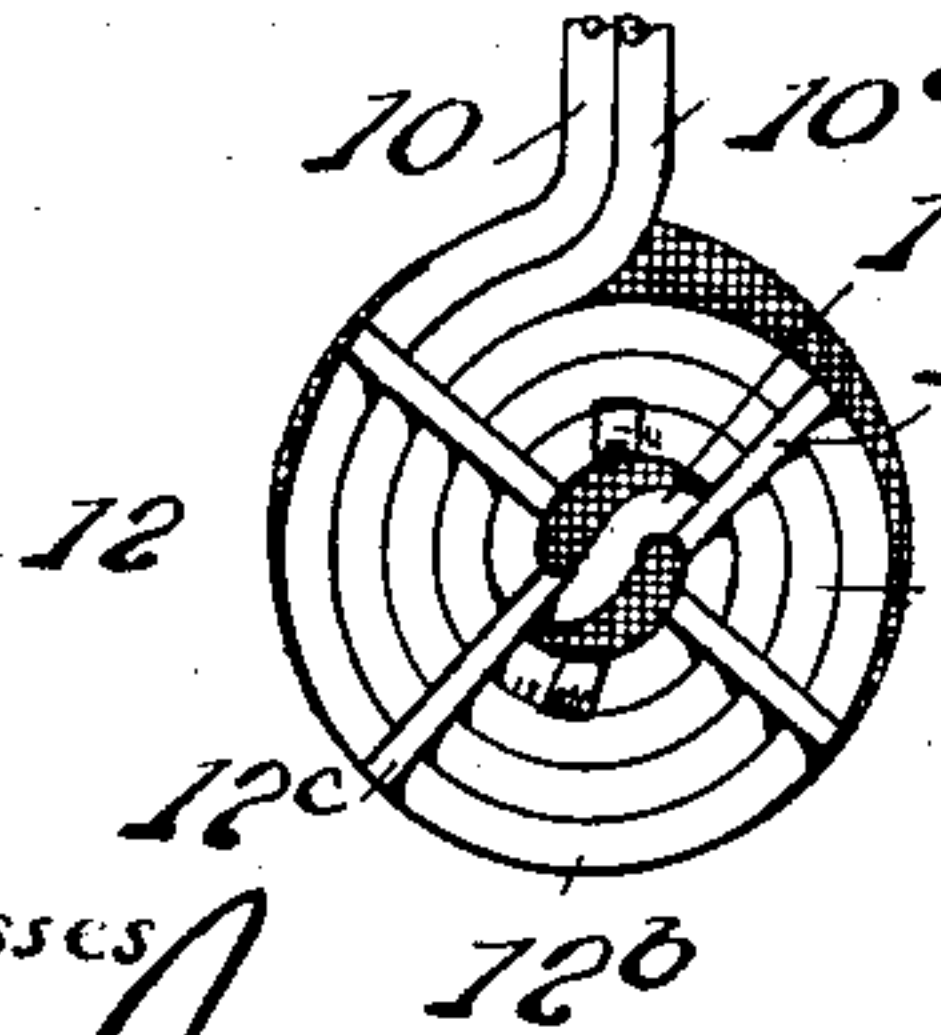
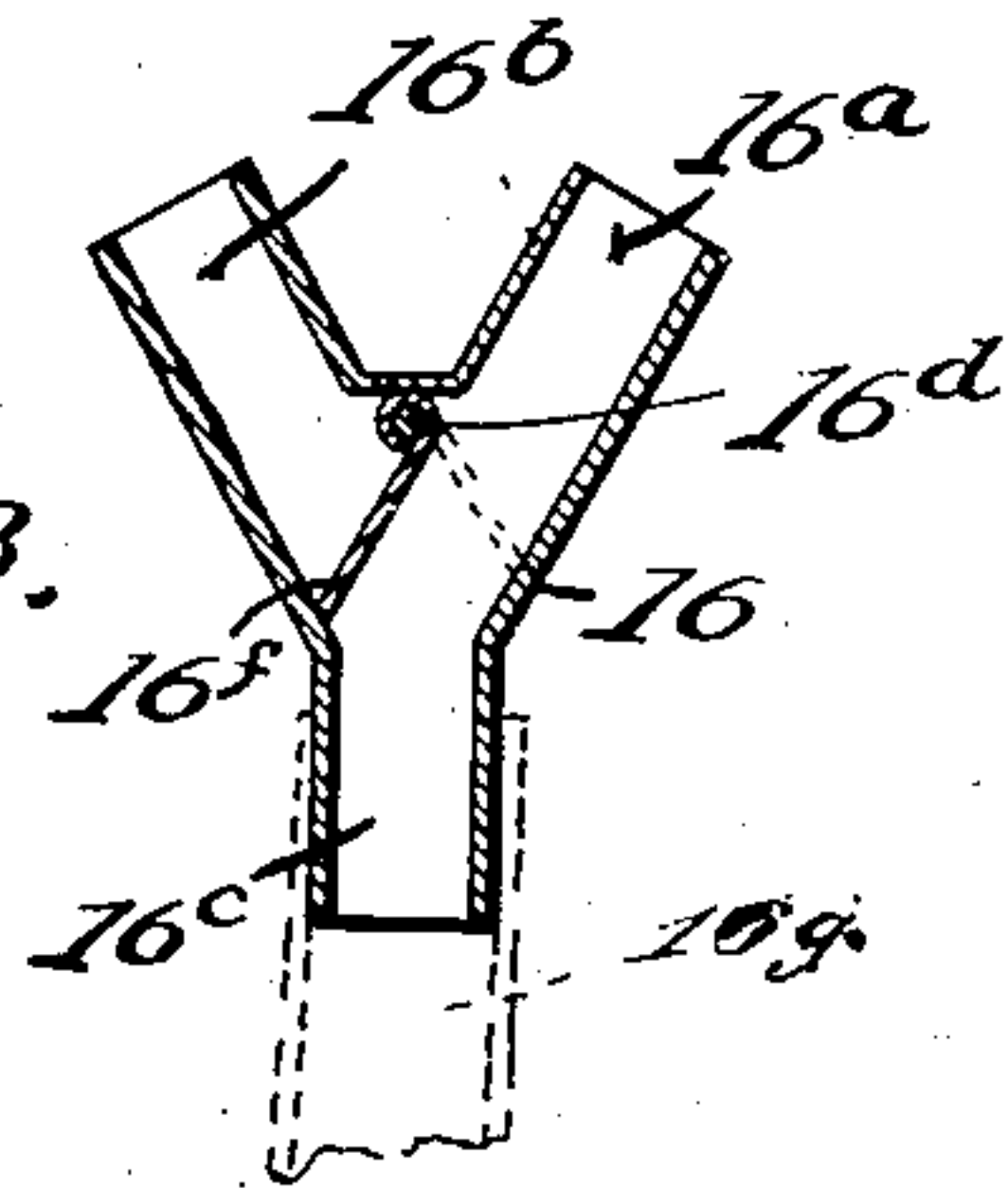


Fig. 9.

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3 SHEETS—SHEET 3.

Fig. 14.

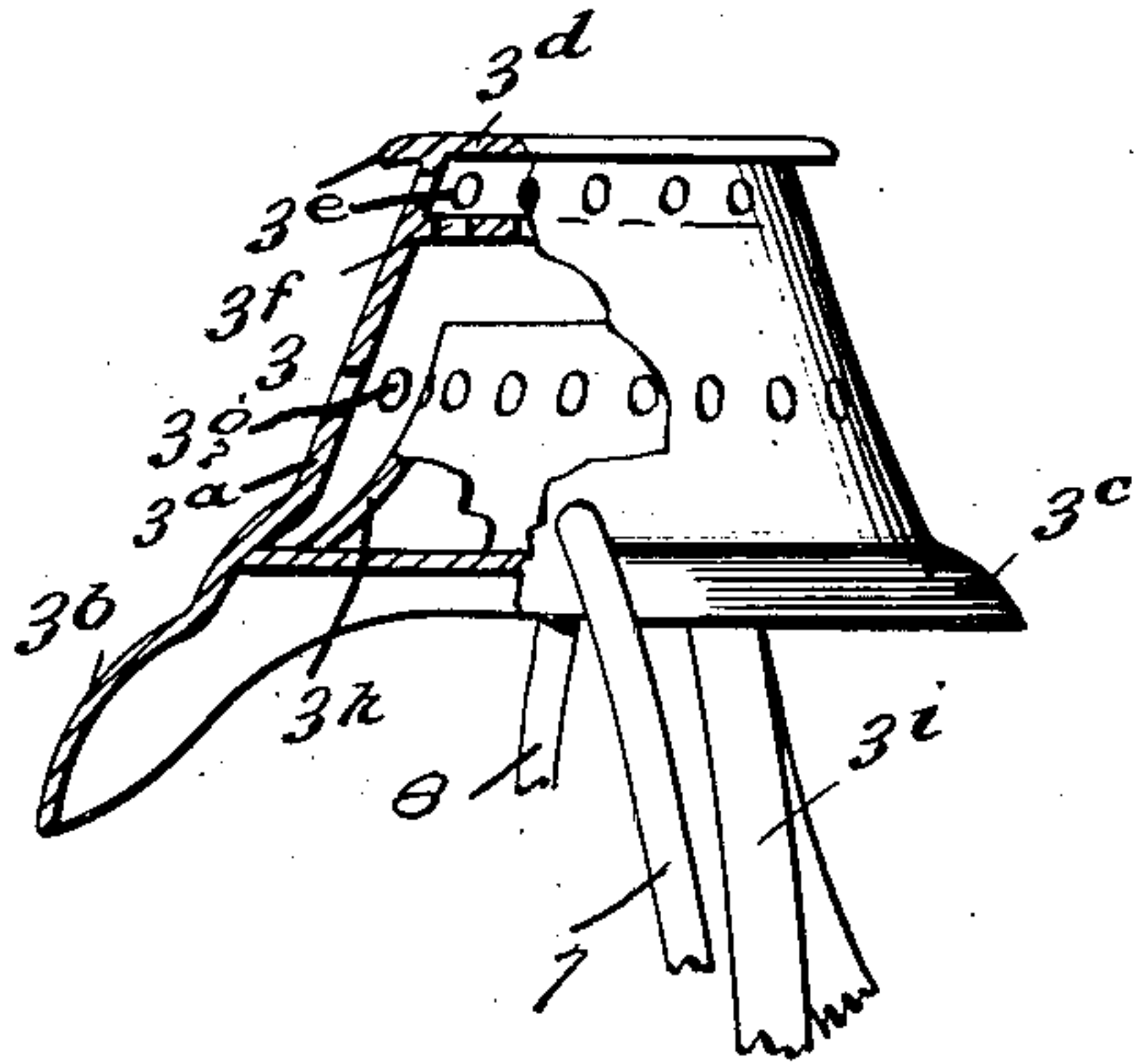


Fig. 11.

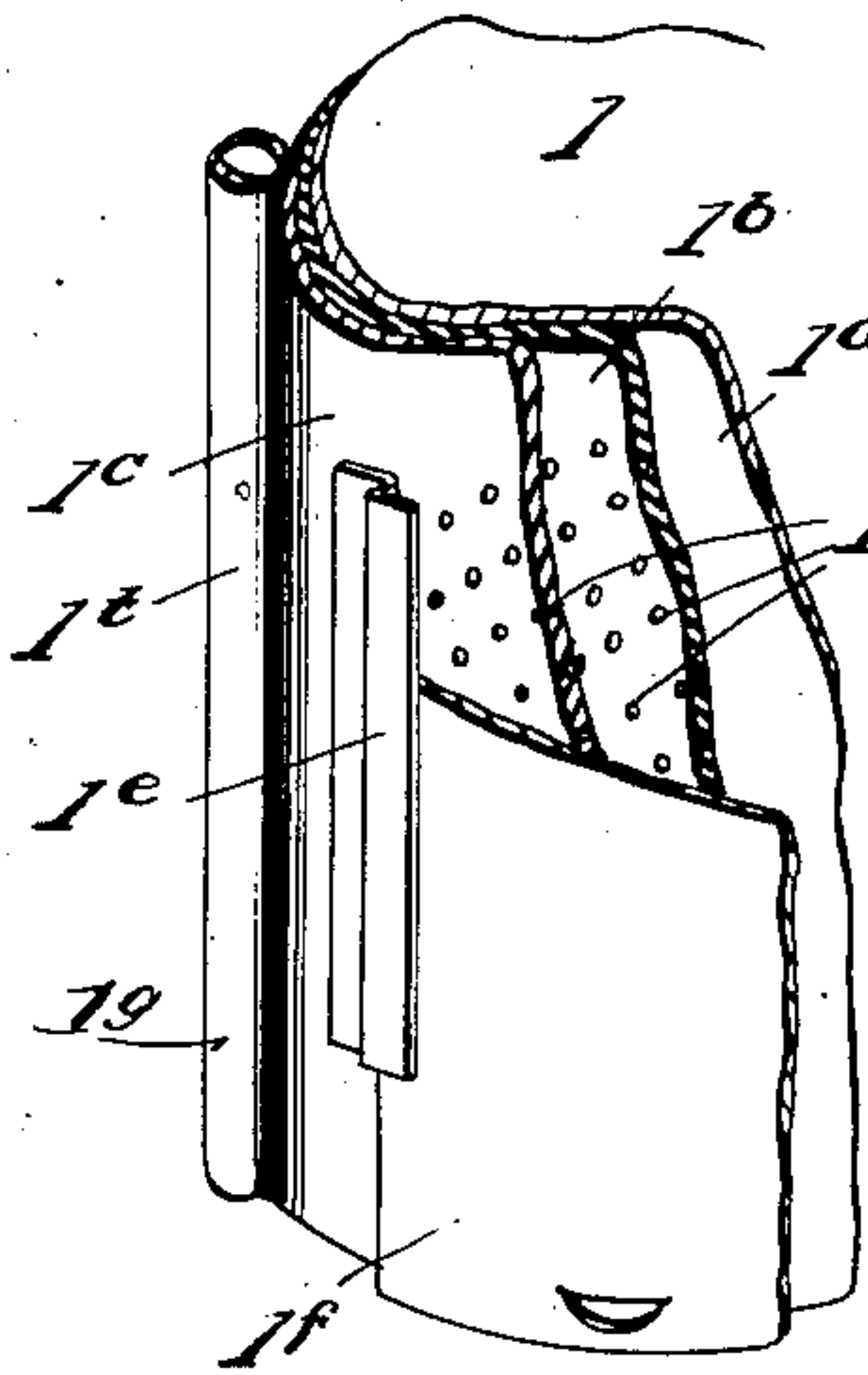
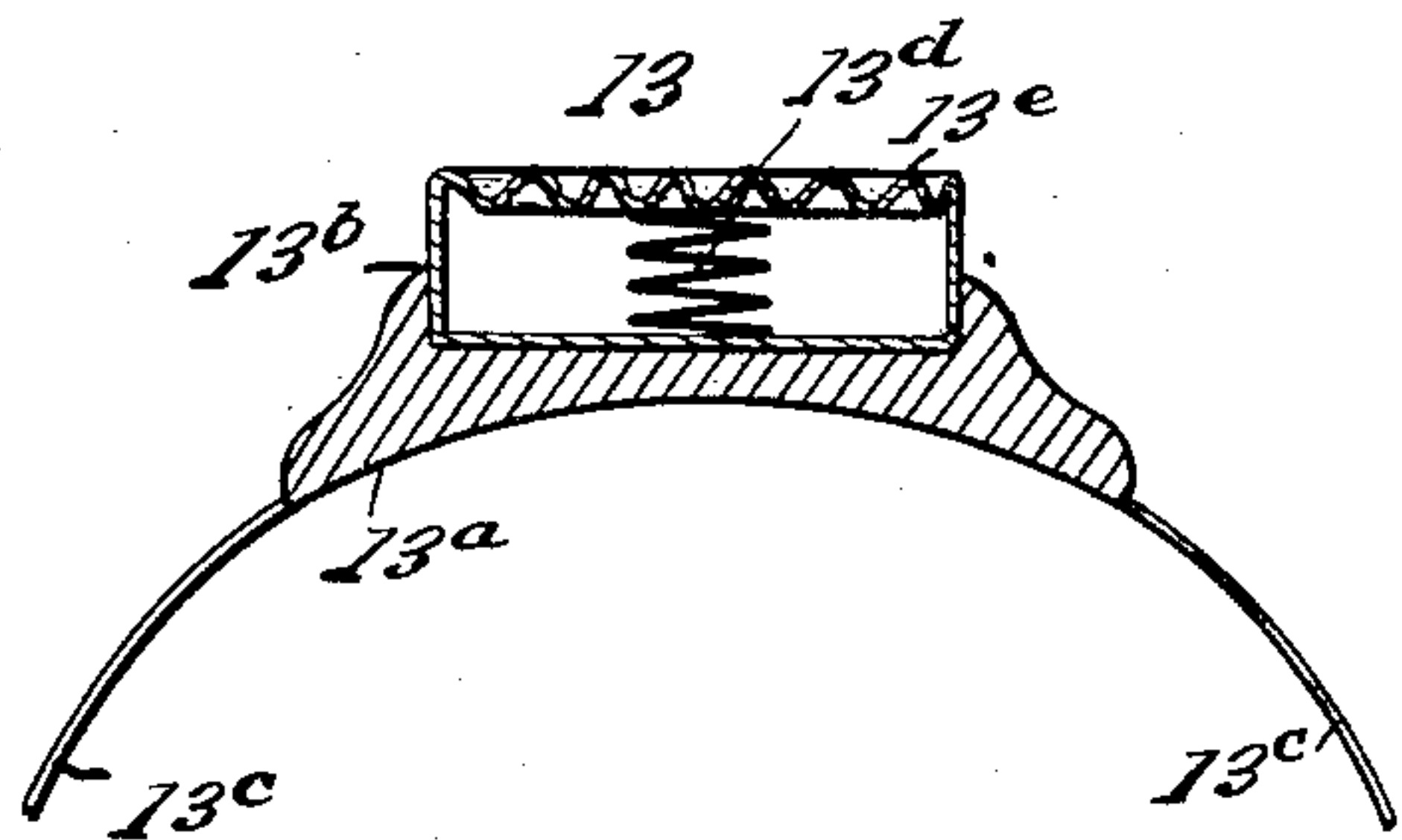


Fig. 15.

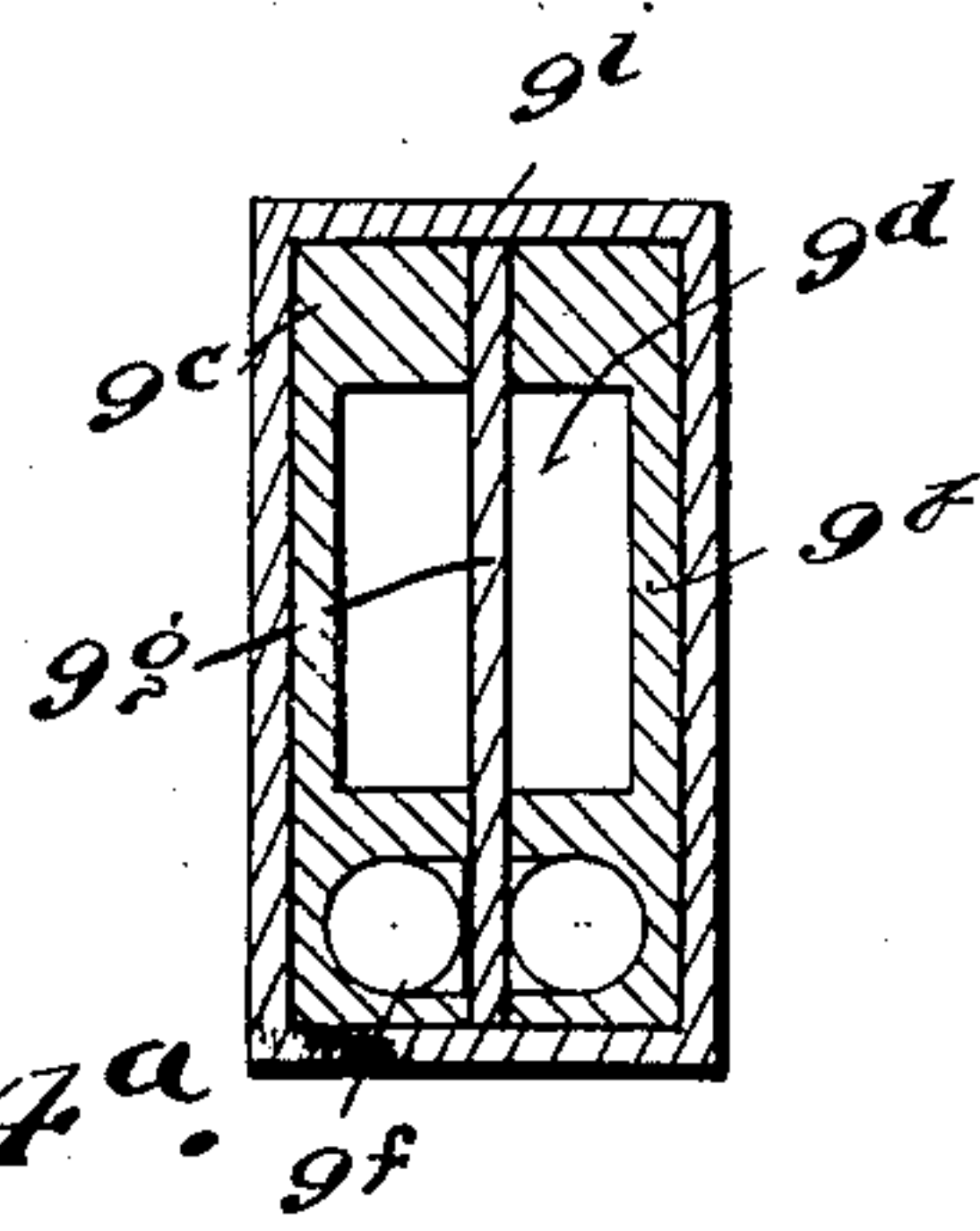


Fig. 4a.

Fig. 9.

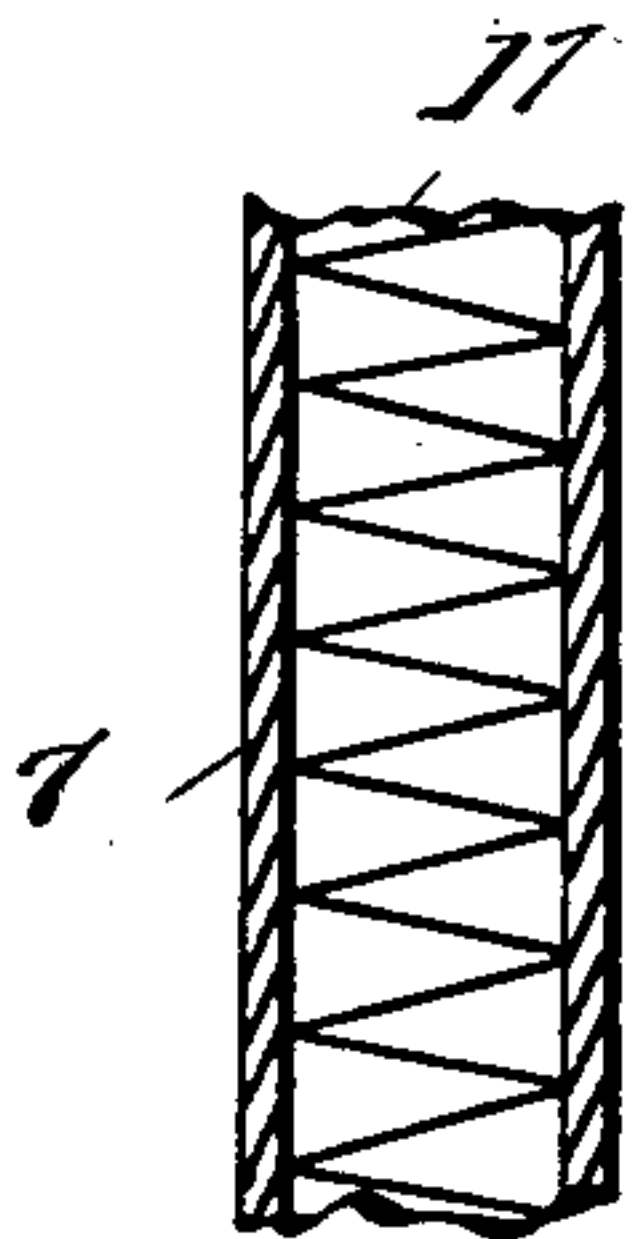
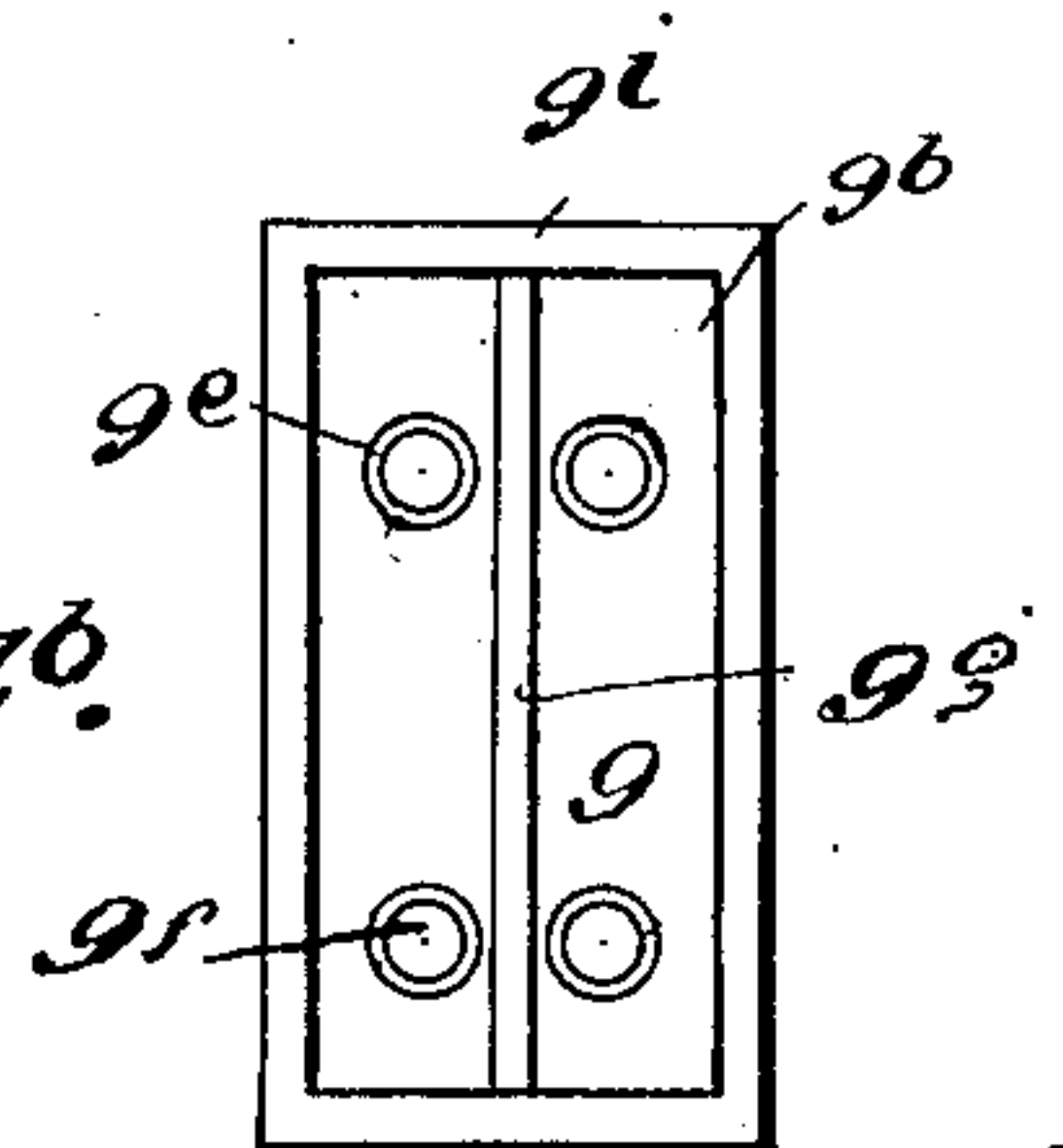


Fig. 4b.



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PORTABLE FOOT AND BODY WARMER.

No. 912,527.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed April 26, 1906. Serial No. 313,841.

To all whom it may concern:

Be it known that I, FRANK BATTER, a citizen of the United States, and resident of St. Johns, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Portable Foot and Body Warmers, of which the following is a specification, reference being had to the accompanying drawings as constituting a part thereof.

This invention relates to devices which are designed to be worn on the person as a means for artificially warming the body, head and feet, so as to enable the person to better stand exposure to cold weather.

To this end, my invention comprises the contrivances, combination and features hereinafter described and illustrated in the drawings.

In the drawings, Figure 1 represents a front view of a person wearing my apparatus; Fig. 2 represents a section of the helmet and devices connected therewith. Fig. 3 shows a section of the lamp or heating chamber of my apparatus and of the means used in combination therewith for causing a circulation of heated fluid through a pad to be placed under the hollow of each foot; Fig. 4 is a vertical longitudinal section of the fluid heater provided in my contrivance; Fig. 4^a is a cross section taken approximately on a line *y—y* of Fig. 4; Fig. 4^b is a right-end view of the fluid heater; Fig. 5 is a plan section of the pad to be placed under the hollow of each foot for warming the same by means of the circulation of the heated fluid; Fig. 6 is a vertical longitudinal section of one of the ear pads of my apparatus adjusted over the ear of the person, and constituting a part of the outlet-tubes for the vitiated heated air of the lamp-chamber; Fig. 7 is a vertical transverse section of the same part; Fig. 8 is a sectional detail of a switch provided in my apparatus, for conducting the exhausted hot air to either of the exhaust tubes, so as to heat either side of the face; Fig. 9 is a sectional detail of a part of the flexible tubing through which the vitiated air of the lamp is discharged; Fig. 10 is a detail of one of the compressible valve bulbs by which the heated fluid is caused to circulate through the pads placed under the hollow of the foot; Fig. 11 is a central cross section of Fig. 10; Figs. 12 and 13 show a longitudinal section and a cross section respectively, of the incasement of

the two circulation tubes connecting a valve bulb with the fluid heater and the pad placed under the foot, so as to join the two tubes side by side; Fig. 14 is a detail, partly in section, of the helmet part of my device; and Fig. 15 is a sectional detail illustrating the construction of the casing of the lamp-chamber of my device.

The numerals designate the parts referred to.

In its general arrangement, my device comprises a lamp-chamber 1, provided with straps 2, whereby it is adapted to be fastened to the waist of the person, as shown in Fig. 1.

3 is a helmet under which the user wears a skull cap 4. The lamp-chamber 1 is provided with a fresh air, flexible tube 5, which is fastened at the shoulder of the wearer, by a strap 6, fastened to the exhaust tubes 7, 8. The upper ends of the exhaust tubes lead into the helmet 3, which in its construction is designed to serve as a flue or discharge for the vitiated air of the lamp-chamber.

In the upper part of the lamp-chamber 1 is removably supported a fluid-heater 9, to which are attached two pairs of tubes 10 10^a, 11 11^a, connecting at their extremities with a hollow pad 12, to be placed under the hollow of each foot. One of each pair of tubes is provided with a pump-bulb 13, and the whole being arranged to circulate the fluid heated in the heater 9, through the foot-pad 12. For convenience, each pair of said fluid-circulating tubes is arranged alongside of one of the legs of the wearer, and the pump-bulbs 13 are mounted on pads 13^a adapted to be affixed on the inner side of the legs near the knees by bands 13^c. The outlet air tubes 7, 8, are respectively provided near their upper ends with a hollow-disk 14, shown in plan section and cross section in Figs. 6 and 7, and comprising substantially an inner shell 14^a, having an outer covering of cloth or like fabric 14^b, and the whole being arranged to be adjusted over the ears of the wearer. Thus the heat of the lamp serves to warm the body, the air-outlet-tubes 7, 8, to supply warmth to the face, and the fluid heater 9, and its connections including the pads 12, to warm the lower extremities of the wearer.

The details of my device in other respects are as follows:

The helmet 3 is constructed of a metal body 3^a provided with neck-shield 3^b, and a rim 3^c. The top is covered by a cover 3^d,

leaving air escape apertures 3^e. Near the top of the helmet is provided a perforated partition 3^f, and the body walls 3^a, are provided with perforations 3^g. Within the helmet is provided an inner inclined wall 3^h, serving to prevent any air blowing in through holes 3^g down into the lamp with such force as to extinguish the same. To the helmet is removably fastened a short cloak 15, to be arranged over the shoulders, approximately as shown in Fig. 1, for the purpose of retaining the heat radiated by the outlet tubes 7, 8, about the face. The helmet is secured in place by bands 3ⁱ.

The lamp-chamber 1 comprises a three-part skin-casing, as illustrated in Fig. 15; namely, an inner metal skin 1^a, an intermediate sheeting of asbestos 1^b, and an outer sheeting of metal 1^c. The intermediate and the outer sheetings are respectively made with registering holes 1^d, and the exterior is provided with vertical guides 1^e, in which is slidably held a slide 1^f, which when drawn down uncovers the holes 1^d, and allows part of the hot air of the lamp-chamber to radiate through said holes; and supposing the wearer to have on an overcoat or cloak, said radiated heat serves to warm the body. When the heat of the lamp-chamber is not to be so utilized, the slide 1^f may be adjusted to cover the holes 1^d.

Entering the bottom of the lamp and extending upward is an air-inlet tube 1^g, to which is attached the flexible air-tube 5, above referred to. In the lower part of the lamp chamber is a perforated false bottom 1^h, to diffuse more evenly the stream of cold fresh air entering through the tube 1^g.

The lamp 1 is removably secured in place by spring arms 1^p engaging with lugs 1^q, and the top of the lamp is conveniently made with a flange 1^r, fitting within the open bottom of the lamp-chamber.

The inner sheet 1^a of the lamp casing has no perforations so as to prevent smoke being blown out.

In the upper part of the interior of the lamp casing are provided brackets 1^j, and 1^k. The bracket 1^j is provided with a stop 1^m, and the bracket 1^k supports a chamber 1ⁿ, open at both ends and adapted to receive the fluid-heater 9, which when inserted rests by its inner end on the bracket 1^j, and is stopped in its proper place by stop 1^m. The fluid-heater 9 is provided with inlet and outlet necks 9^a, 9^b, to which the tubes 10 10^a, 11 11^a, are fastened.

In order to provide for the circulation of an ample volume of fluid through the heater 9, over as great a surface of heated metal as practical, the fluid-heater 9 is preferably made of the construction shown in Figs. 4, 4^a, 4^b. It comprises substantially two parts 9^c, 9^d, each made with a worm-like duct 9^a, provided with inlet and outlet orifices, 9^e,

9^f, through the necks 9^a, respectively; the two parts are separated by a partition 9^g, the whole being rigidly fastened together by rivets 9^h, or other correspondingly convenient means.

Since the inner end of the fluid-heater 9 will be exposed to the flame of the lamp, and become more or less soiled by reason of a deposit of soot thereon, I provide a sheath 9ⁱ, made with a hinge part 9^j; and when the fluid heater is removed from the lamp-chamber, the sheath 9ⁱ is moved over the blackened inner end so as to drop the hinge part 9^j and prevent the soiling of the hands or pockets when carrying the fluid heater about.

The tubes 10, 10^a, 11, 11^a, connecting the heater with the foot pads 12, are preferably arranged as illustrated in Figs. 10, 12, 13. That is to say, I found it convenient to inclose both of said tubes within a common outer casing 10^b, made of cloth, wrapped around the same, substantially as shown in the cross section Fig. 13, to hold the tubes side by side. The pump bulbs 13 I found convenient to make of metal like a circular box, the top 13^e of which has concentric circular flutings so as to be springy; and I have provided an auxiliary coil spring 13^a to insure that the top will retain the required resiliency to obtain the pump effect by merely pressing in said top and then allowing the same to spring back to its normal state. Each of the pump-bulbs 13 is fastened to a pad 13^a, provided with a socket 13^b, the pad being made of rubber, and the object of the construction described being to render the whole convenient to be affixed to the legs of the wearer by band 13^c. I have found it convenient to arrange the pump bulbs opposite to each other near the knee so that they may be operated, to cause a circulation of heated fluid from the heater 9 through the pads 12, as often as desired, by simply pressing thereon with the knee.

Each of the pumps 13 is supposed to be provided with suitable valves for controlling the ingress and egress of the circulating fluid; the details of which valves are not shown, being well known.

Each of the pads 12 comprises a base 12^b, in the center of which is secured an S-tube 12^a made of metal or hard rubber, to the ends of which are affixed the ends of the circulation tubes (10, 10^a *e. g.*) coiled on the base as shown in Fig. 5. The coiled tubing is held in place by bands 12^c. The S-tube is provided to prevent the ends of the rubber tubes becoming kinked.

The upper end of the lamp chamber 1 is contracted to a discharge neck or outlet 1^o adapted to receive a piece of the flexible tubing 16^e, to connect therewith a duplex outlet valve 16, a detail of which is shown in Fig. 8. Such valve 16, comprises a body

provided in the upper part with necks 16^a, and 16^b, constituting duplex outlets, and below with an outlet neck 16^c, on which is affixed the upper end of the tubing 16^e. On 5 the upper-necks 16^b are affixed the lower ends of the outlet tubes 7, 8, and in the body part 16 is journaled transversely a short shaft 16^d, provided with a wing 16^f; and exterior of the valve casing, the shaft 16^d is 10 made with a turn button 16^e see Fig. 1, so that the wing 16^f may be arranged to one side or the other, for the purpose of causing the discharging heated air to ascend through the tube 7 or the tube 8; and there- 15 by enabling the wearer of my apparatus to cause the heated air to ascend over that portion of the face which is exposed to the greatest cold.

To prevent the tubes 7, 8, being collapsed and thereby retarding the escape of vitiated air discharged from the lamp, I prefer to use for such tubes, tubing provided with an inner spiral wire or rib 17, as illustrated in Fig. 9.

25 I claim:

1. In a device of the character mentioned, in combination with a lamp-chamber, foot-pads, and means for circulating fluid through the latter, a fluid heater supported 30 in the lamp-chamber and comprising two sections each made with worm-like ducts for the circulating fluid, and provided with inlet and outlet necks, having said fluid circulating means connected thereto.

35 2. In a device of the character mentioned, in combination with a lamp-chamber, foot-pads, and means for circulating fluid through the latter, a fluid heater removably supported in the lamp-chamber and comprising two sections each made with worm-like ducts for the circulated fluid, and provided with inlet and outlet necks, hav- 40 ing said fluid circulating means connected thereto.

45 3. In a device of the character mentioned, the combination of a closed lamp-chamber, a helmet arranged to serve as a flue, outlet tubes connecting the top of the lamp-chamber with the helmet, and an air-inlet tube 50 entering the base of the lamp-chamber, the

outlet tubes being respectively made with enlarged flat parts adapted to be arranged over the ears, for the purpose of imparting warmth to the side of the face.

4. In a device of the character mentioned, 55 the combination of a closed lamp-chamber, a helmet arranged to serve as a flue, outlet tubes connecting the top of the lamp-chamber with the helmet, and an air-inlet tube entering the base of the lamp-chamber, the 60 outlet tubes being respectively made with enlarged flat parts adapted to be arranged over the ears, for the purpose of imparting warmth to the side of the face; and valve like means, whereby the flow of the hot 65 gases discharged from the lamp through the outlet tubes is controlled, for the purpose set forth.

5. In a device of the character mentioned, comprising a lamp-chamber, a fluid heater, 70 foot-pads, and means for circulating the heated fluid through the latter, a pump contrivance comprising a circular metal casing connected with the circulating means, a sup- 75 porting-pad and means for affixing the latter to the leg, the top of such casing being made resilient and provided with concentric annular flutings, whereby its resiliency is increased, and a coil-spring arranged cen- 80 trally with the casing to bear against its said top.

6. A device of the character mentioned, comprising a closed lamp-chamber, a helmet arranged to serve as a flue, outlet tubes con- 85 necting the top of the lamp-chamber with the helmet, an air-inlet tube entering the base of the lamp-chamber, a fluid heater removably supported in the lamp-chamber, and comprising two sections, each made with worm-like ducts terminating exterior of the 90 heater body in inlet and outlet necks, foot-pads, and means for circulating the heated fluid through the latter, said circulating means being connected to the outlet necks of the fluid heater.

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