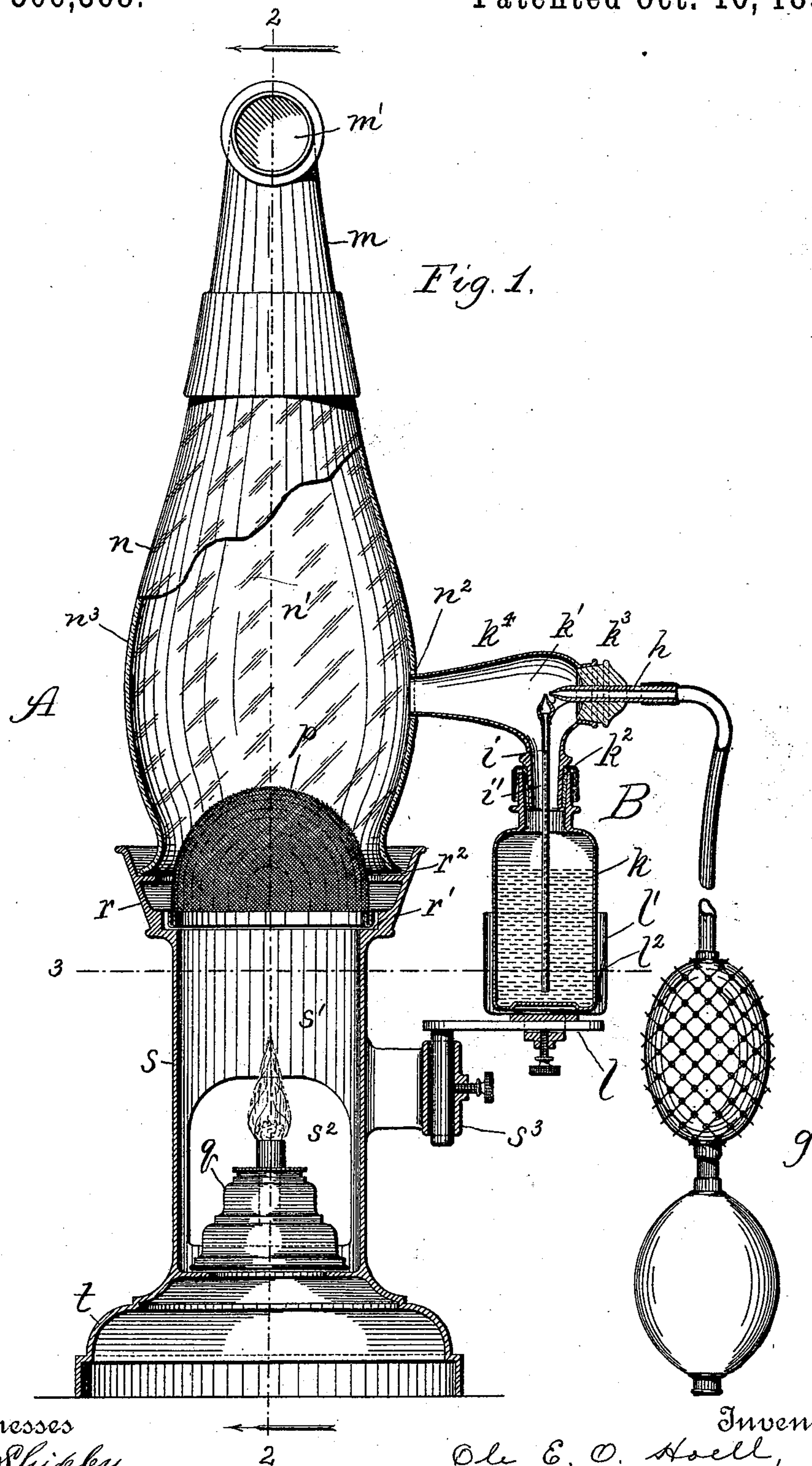


O. E. O. HOELL.  
INHALING APPARATUS.

No. 506,368.

Patented Oct. 10, 1893.



Witnesses  
E. R. Shipley  
Jno. A. Christanson

Inventor  
Ole E. O. Hoell,  
By his Attorneys  
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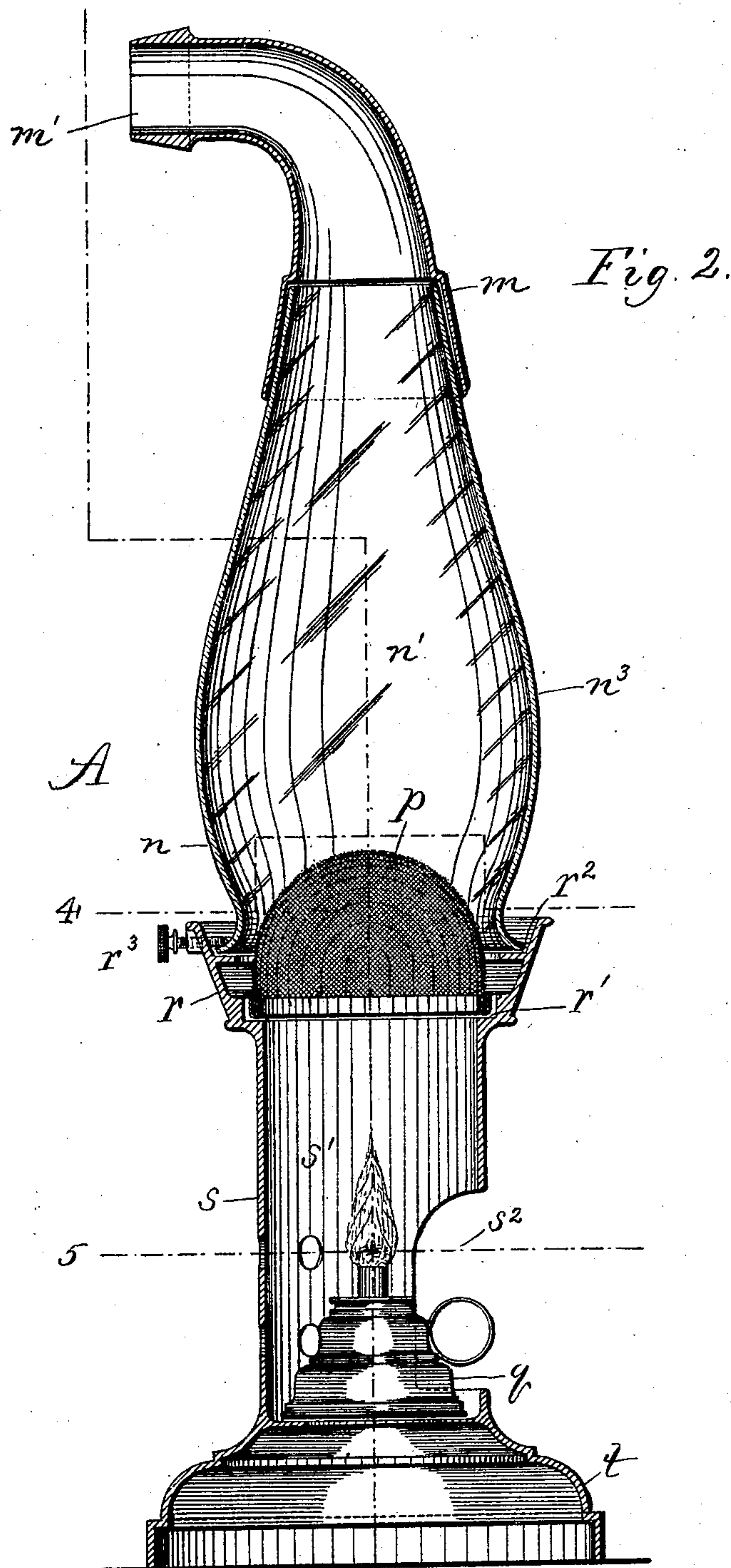
(No Model.)

3 Sheets—Sheet 2.

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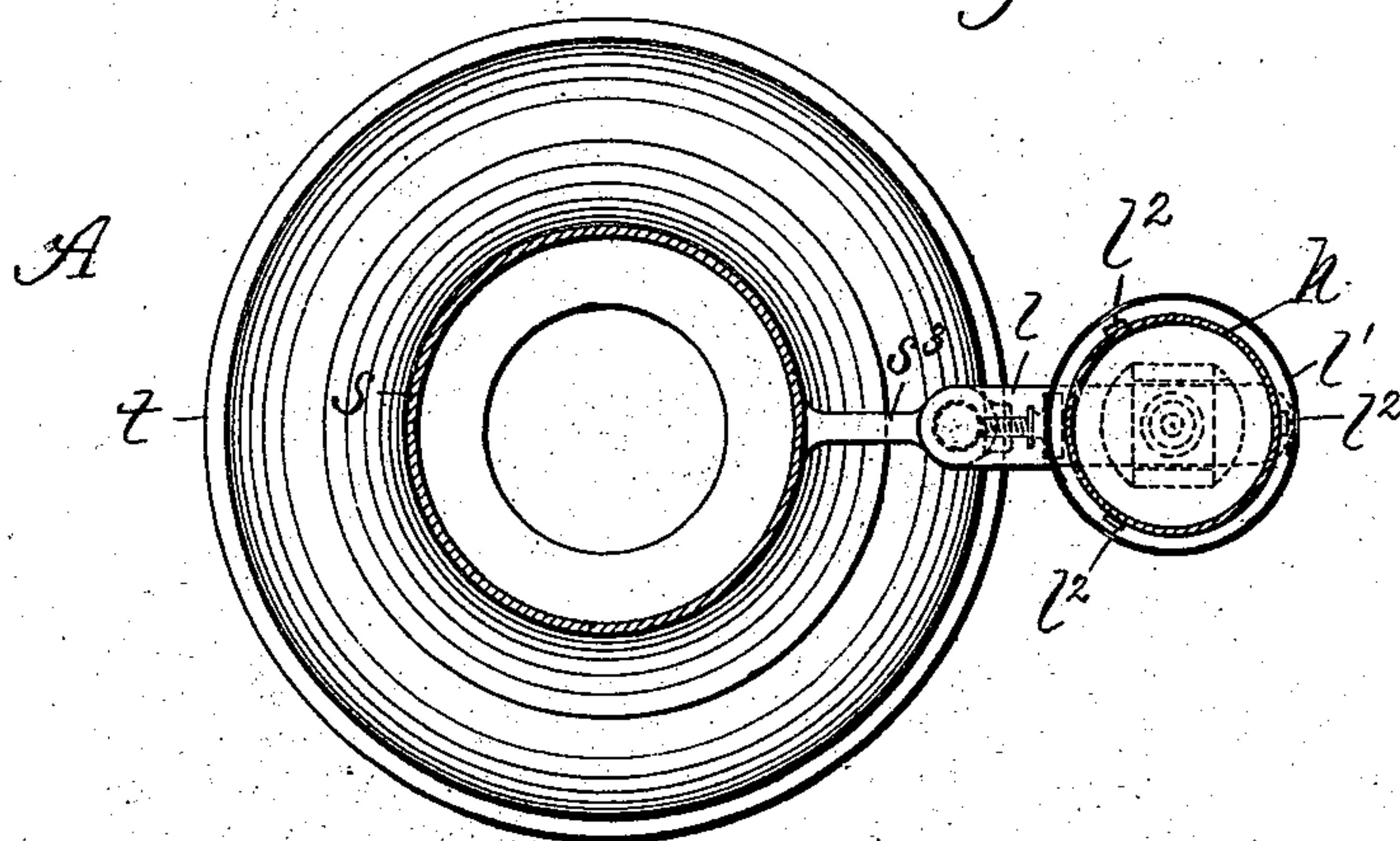
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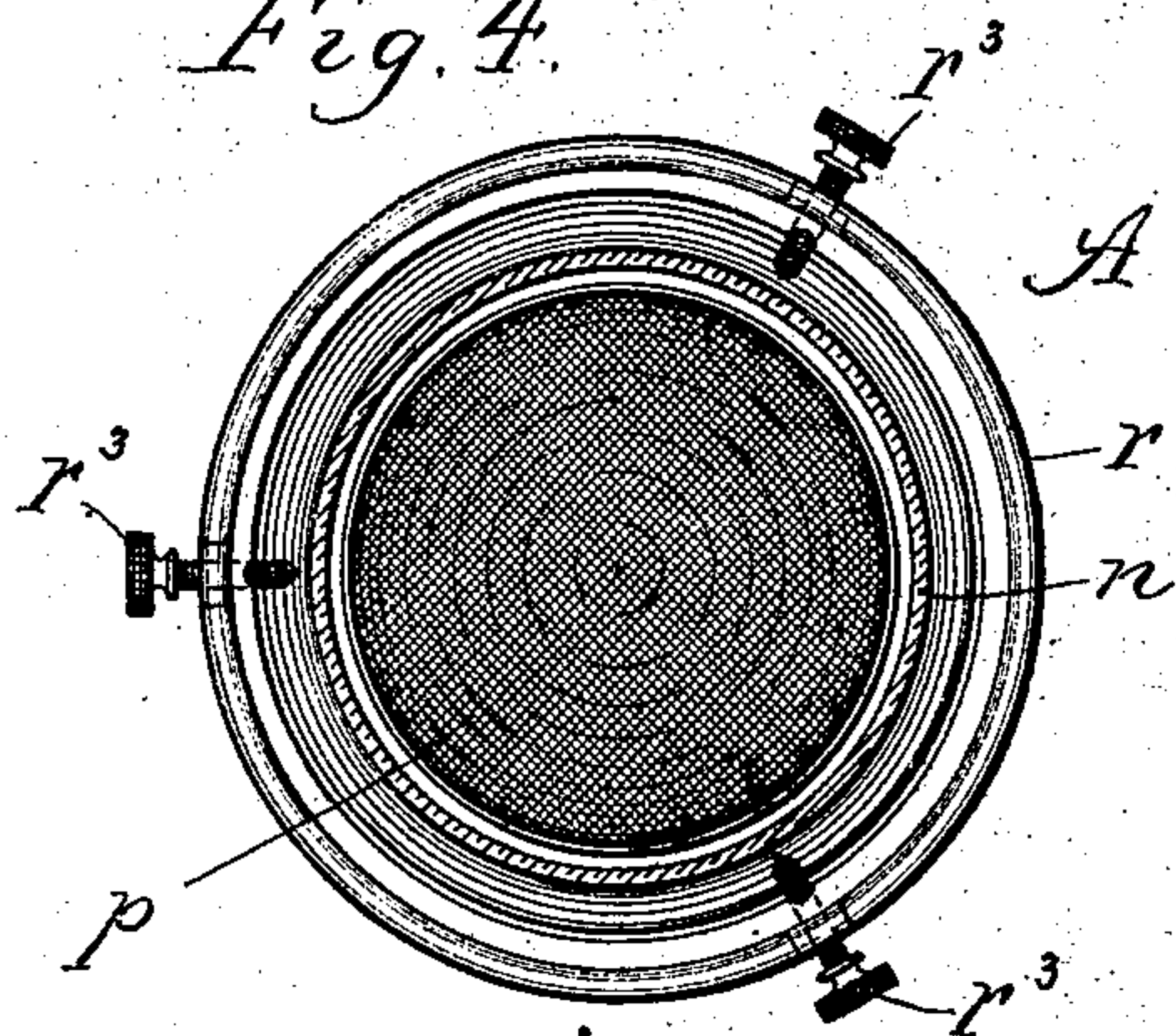
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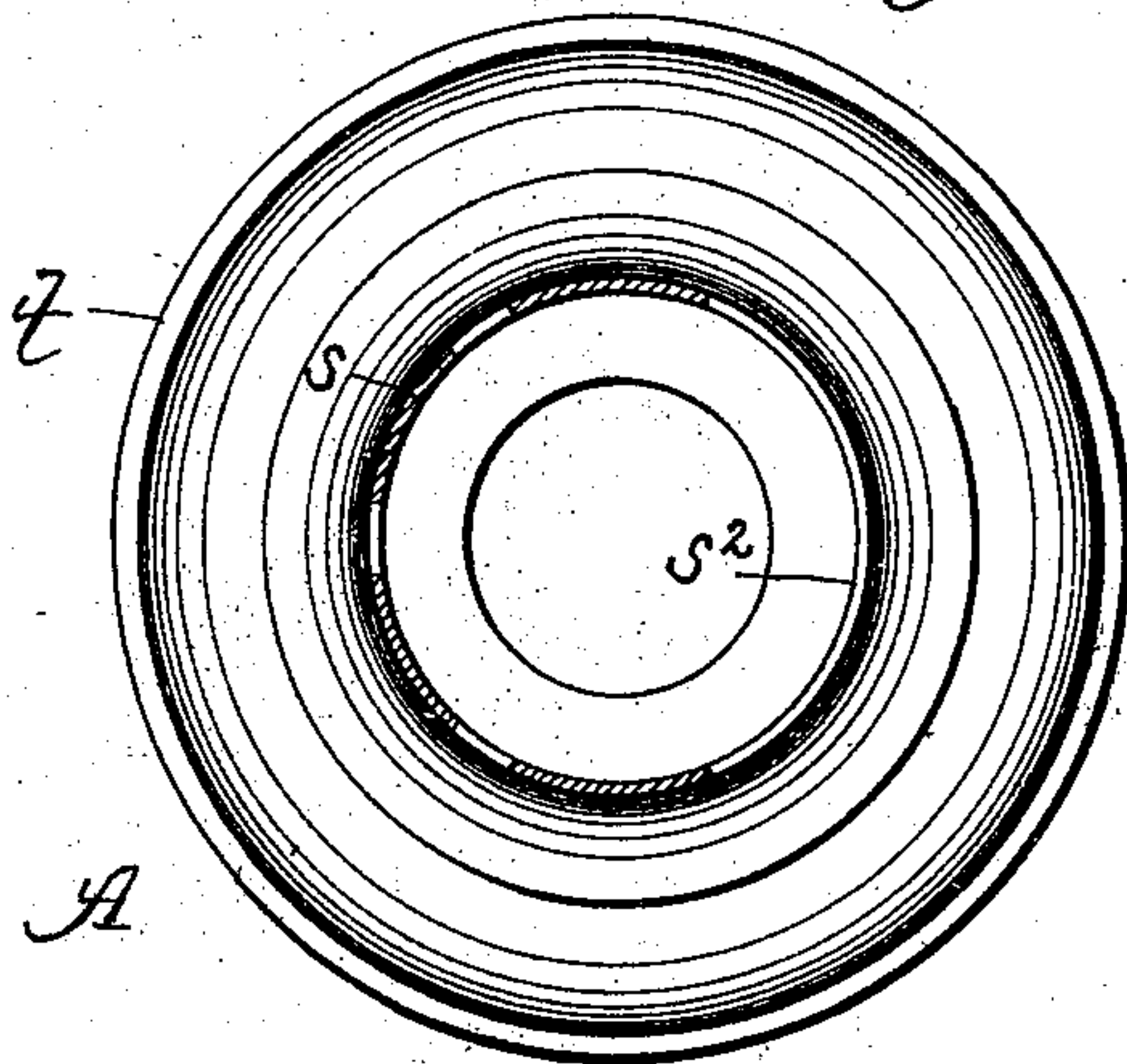
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

OLE E. O. HOELL, OF CHICAGO, ILLINOIS.

## INHALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 506,368, dated October 10, 1893.

Application filed April 10, 1893. Serial No. 469,785. (No model.)

*To all whom it may concern:*

Be it known that I, OLE E. O. HOELL, a subject of the King of Sweden and Norway, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Inhaling Apparatus, of which the following is a specification.

My invention relates to an improvement in inhaling apparatus of the class employed in applying vaporized liquid medicament in a more or less dry atomized state for the relief and cure of catarrhal, pulmonary and other diseases; and my object is to provide an apparatus of the above class of an improved construction which shall render it particularly desirable for all the purposes for which it is intended.

In the drawings—Figure 1, is a view of my improved apparatus, partly in elevation and partly in section, the section being taken on line 1—1 of Fig. 2, and viewed in the direction of the arrow; Fig. 2, a section taken on line 2 of Fig. 1; Fig. 3, a plan sectional view taken on line 3 of Fig. 1; and Figs. 4 and 5 sections taken respectively on lines 4 and 5 of Fig. 2, and viewed in the downward direction.

A is the inhaling apparatus, and B an atomizer of the construction I prefer to employ. The lower or stand portion of the inhaling apparatus is preferably of metal cast in one piece, and comprising a base  $t$ , a drum-portion  $s$ , and an upper rim-portion  $r$ . The drum-portion affords a lamp chamber  $s'$ , and it is provided at one side with a large opening  $s^2$ , to permit ready insertion and withdrawal of a spirit lamp  $q$ . In the rim-portion  $r$  is a seat  $r'$  for a preferably dome-shaped cap  $p$ . The cap  $p$  may be a plate provided with numerous perforations, though it is preferably formed of wire gauze, as shown. Around the cap  $p$  above the seat  $r'$  is a seat  $r^2$  for a preferably glass cylinder  $n$  affording a spray chamber  $n'$ . The cylinder  $n$  is expanded, as shown at  $n^3$ , to enlarge the chamber in the horizontal plane. The cylinder  $n$  may be formed of an ordinary lamp chimney, and it is fastened upon the seat  $r^2$  by means of thumb screws  $r^3$ . Fitting over the top of the cylinder  $n$  is a preferably metal cap piece  $m$ , bent, as shown, to the horizontal plane, and provided with a reduced opening  $m'$  at its end. At

one side of the drum  $s$  is a bracket  $s^3$ , and removably fastened to the bracket is an atomizer stand  $l$  surmounted by a cup-shaped receptacle  $l'$ .

The atomizer B comprises a bottle-shaped receptacle  $k$ , which fits into the cup  $l'$ , and is held therein by springs  $l^2$ ; an atomizing chamber  $k'$  having a tubular extension  $k^2$  fitting like a stopper into the neck of the bottle  $k$ ; and a tubular extension  $k^3$ . A flexible liquid-tube  $i$  extends through the stopper-portion  $k^2$  from near the base of the bottle  $k$  to about the center of the atomizing chamber. Around the tube  $i$  and leading from the chamber  $k'$  to the interior of the bottle through the stopper-portion  $k^2$  are one or more passages  $i'$ . The blast tube  $h$  of the atomizer extends through the part  $k^3$ . The spout  $k^4$  of the atomizing chamber comprises a tube of gradually decreasing diameter smallest at the discharge end, at which it fits into an opening  $n^2$  in the cylinder  $n$ . The blast is furnished by means of rubber bulbs  $g$  in the usual way.

In operation, the bottle  $k$  is filled with the medicine to be sprayed, and the lamp  $q$  is ignited. The atomizer B is then operated to discharge the medicine in the form of a spray into the chamber  $n'$ . The lamp  $q$  causes heated air currents to rise through the cap  $p$  into the spray chamber  $n'$  and the currents of heated air operate to decompose the liquid portion of the medicine and carry the more or less dry particles thereof to the outlet  $m'$ . The nozzle  $k^4$  terminates just within the opening  $n^2$  in the extended part of the chamber  $n'$ , and the vaporized medicine is sprayed in the horizontal plane across the chamber. The vapor from the nozzle  $k^4$  thus becomes thoroughly mixed with the heated air in the expanded portion of the chamber, and is freed of the greater part, at least, of its moisture. The cap  $p$  operates on the principle of the Davy lamp to shield the medicine sprayed into the chamber  $n'$  from contact with the flame of the lamp. Thus if the medicine is of a nature which might become ignited or be exploded by contact with the flame, the perforated cap  $p$  will obviate any such danger. The cap also operates to spread the hot air currents and cause them to rise equally throughout the spray chamber.

Constructed as shown and described, the



inhaling apparatus is of a comparatively inexpensive and durable construction. The parts may be readily disengaged from each other for purposes of packing or cleaning the device, and it affords a particularly safe, convenient and desirable apparatus for the application of vaporized medicine in a more or less dry form.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an inhaling apparatus, the combination of the lamp chamber  $s'$ , spray chamber  $n'$  above the lamp chamber, perforated cap between the said chambers, and an atomizer B provided with a nozzle  $k^4$  extending into the spray chamber, substantially as described.

2. In an inhaling apparatus, the combination of the lamp chamber  $s'$ , a perforated cap on the lamp chamber, a spray chamber  $n'$  having the expanded part  $n^3$ , provided with an opening  $n^2$  and curved and reduced upper

portion  $m$ , and an atomizer B having the discharge nozzle  $k^4$  extending into the opening  $n^2$  and terminating at one side of the expanded portion  $n^3$  to discharge the vapor across the chamber  $n'$ , substantially as described.

3. In an inhaling apparatus, a metal stand portion comprising a base  $t$ , a drum  $s$  having an opening  $s^2$  and affording a lamp chamber, and a rim  $r$  affording seats  $r'$   $r^2$ , a perforated metal cap  $p$  on the seat  $r'$ , a cylinder  $n$  affording a spray chamber having the expanded portion  $n^3$  and an opening  $n^2$  at one side of the expanded portion, a curved cap piece  $m$  on the cylinder and an atomizer B provided with the discharge nozzle  $k^4$  extending into the opening  $n^2$ , substantially as described.

OLE E. O. HOELL.

In presence of—

M. J. FROST,

W. N. WILLIAMS.