

(No Model.)

2 Sheets—Sheet 1.

C. L. BETTS.
TUBULAR LANTERN.

No. 598,072.

Patented Feb. 1, 1898.

Fig. 1.

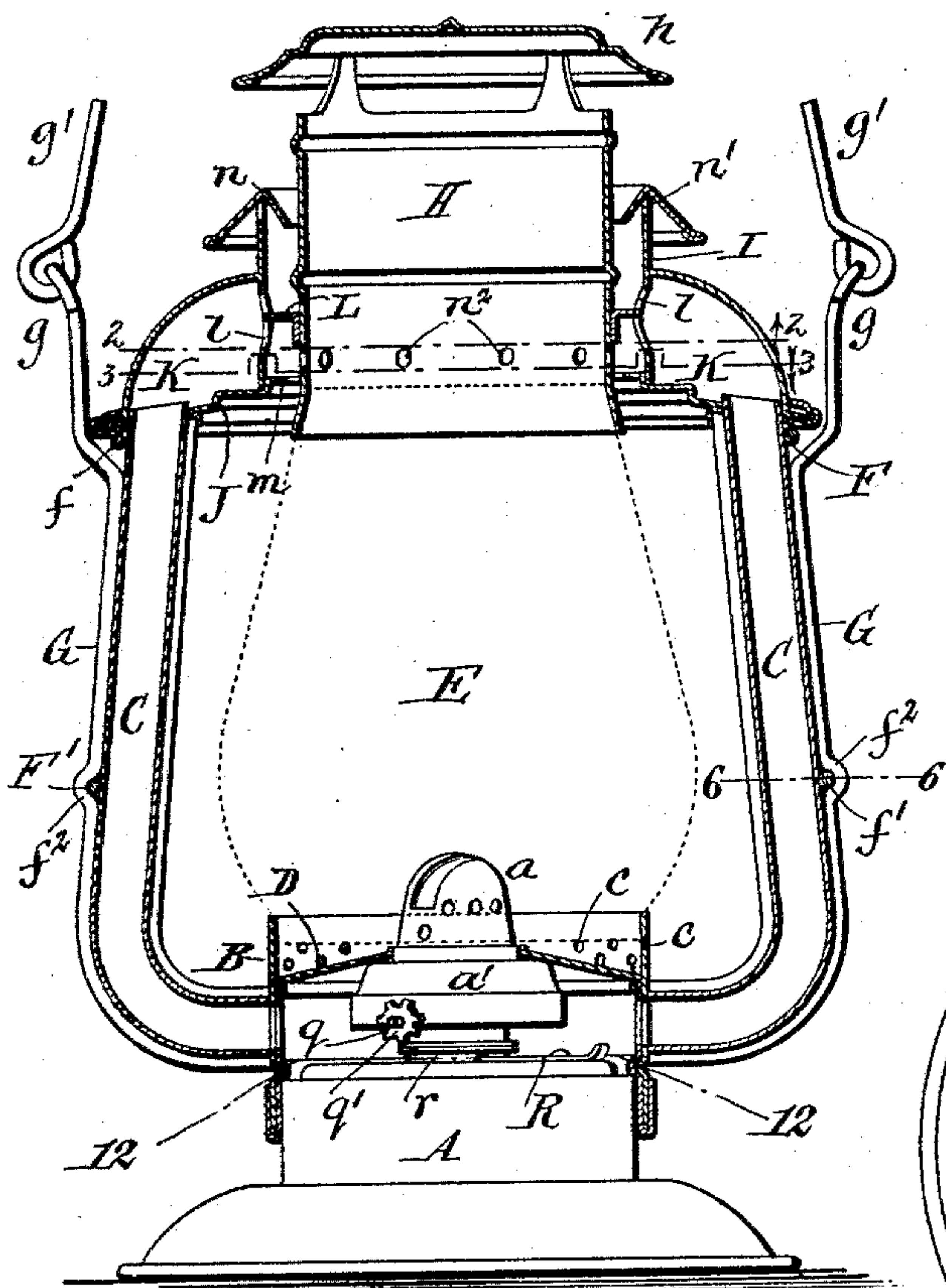


Fig. 2.

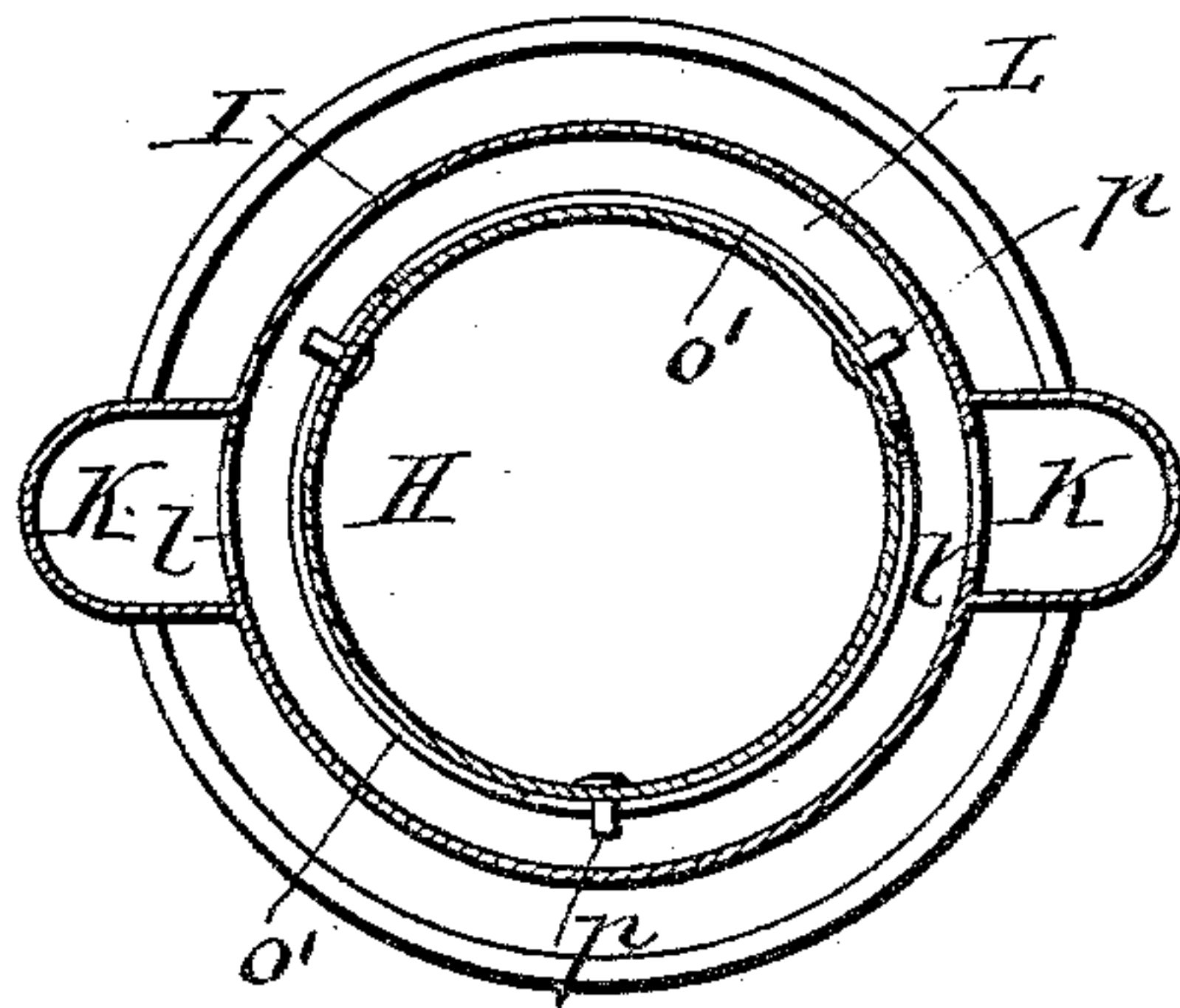


Fig. 3.

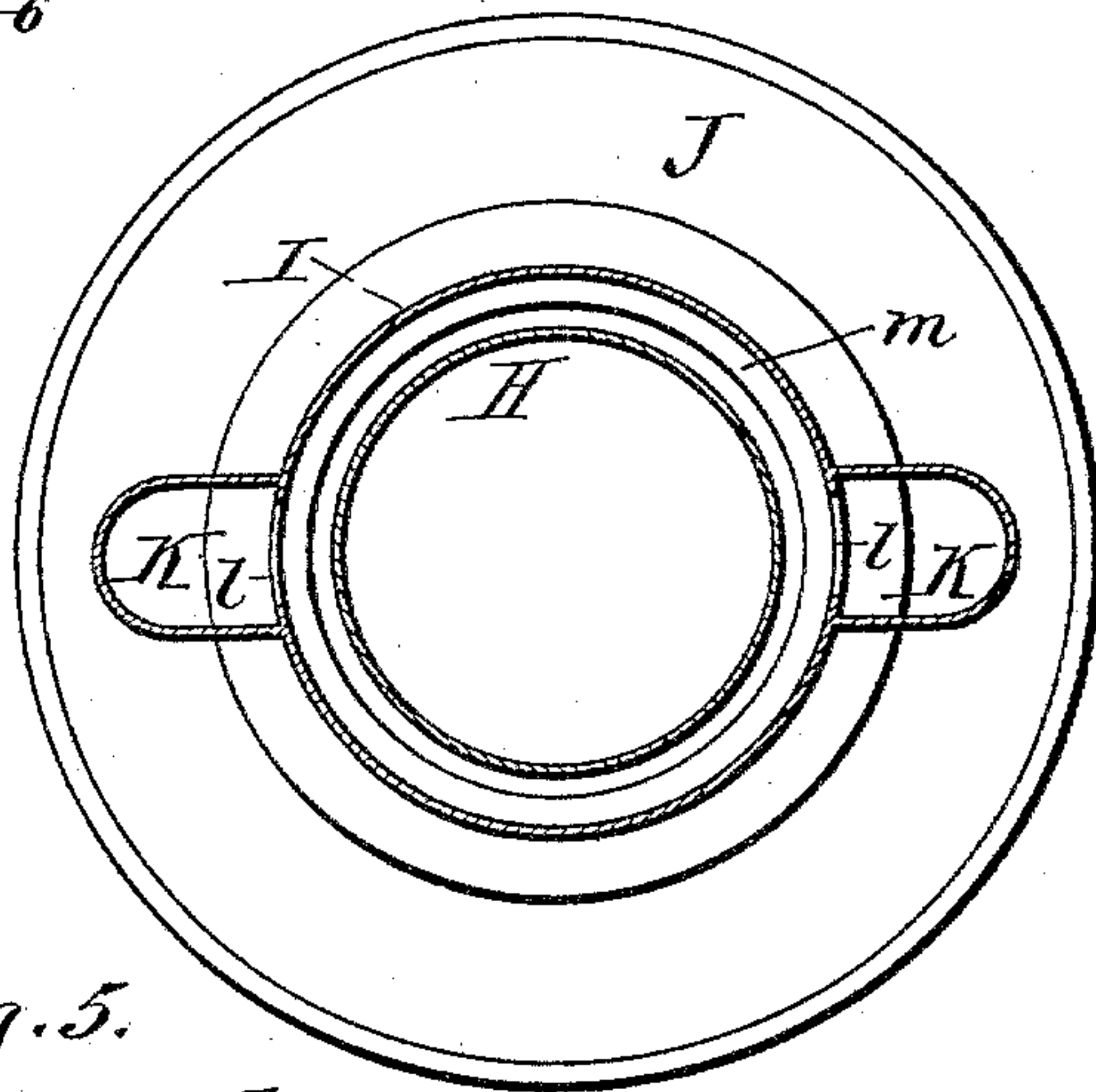


Fig. 4.

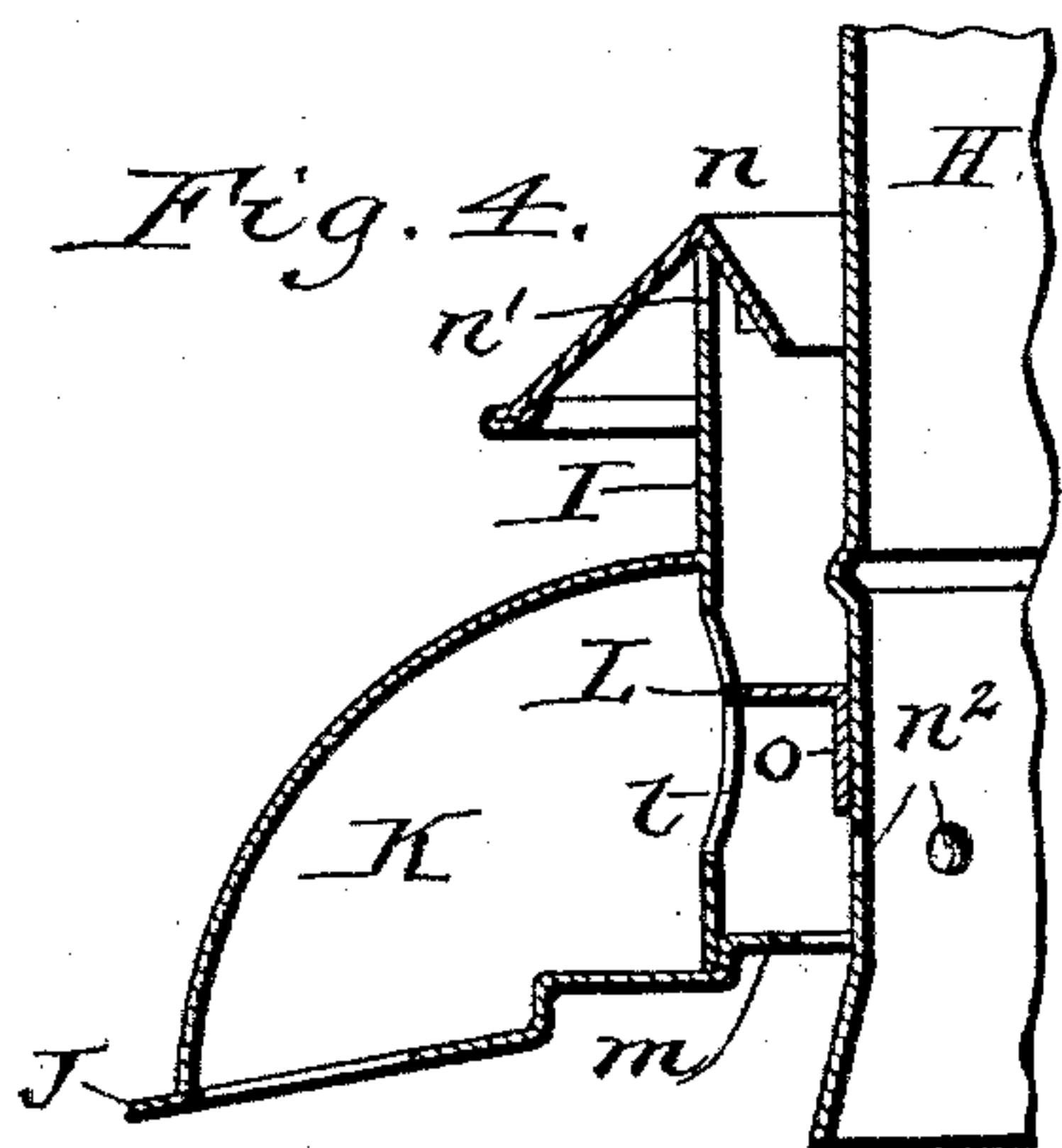


Fig. 5.

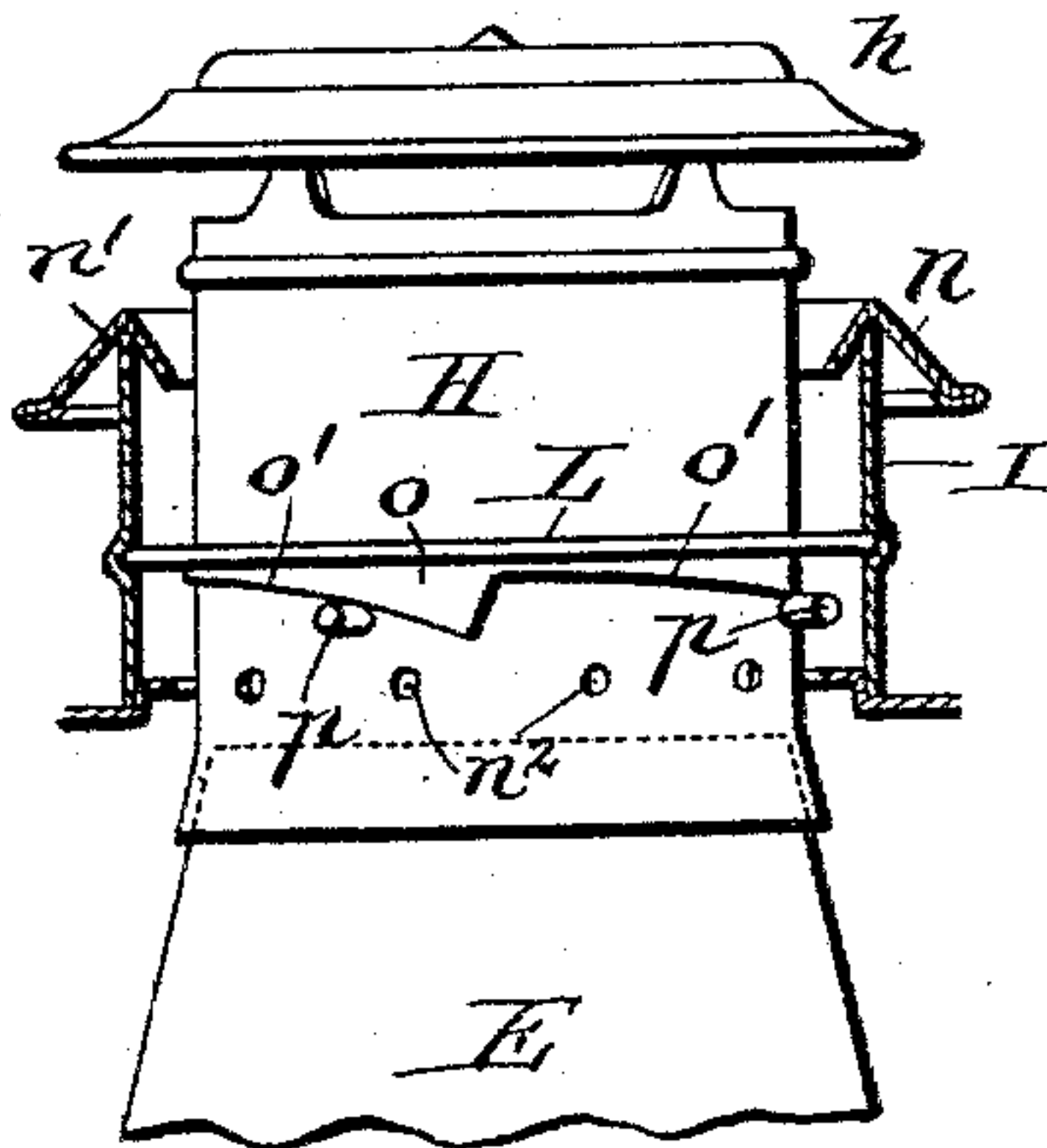
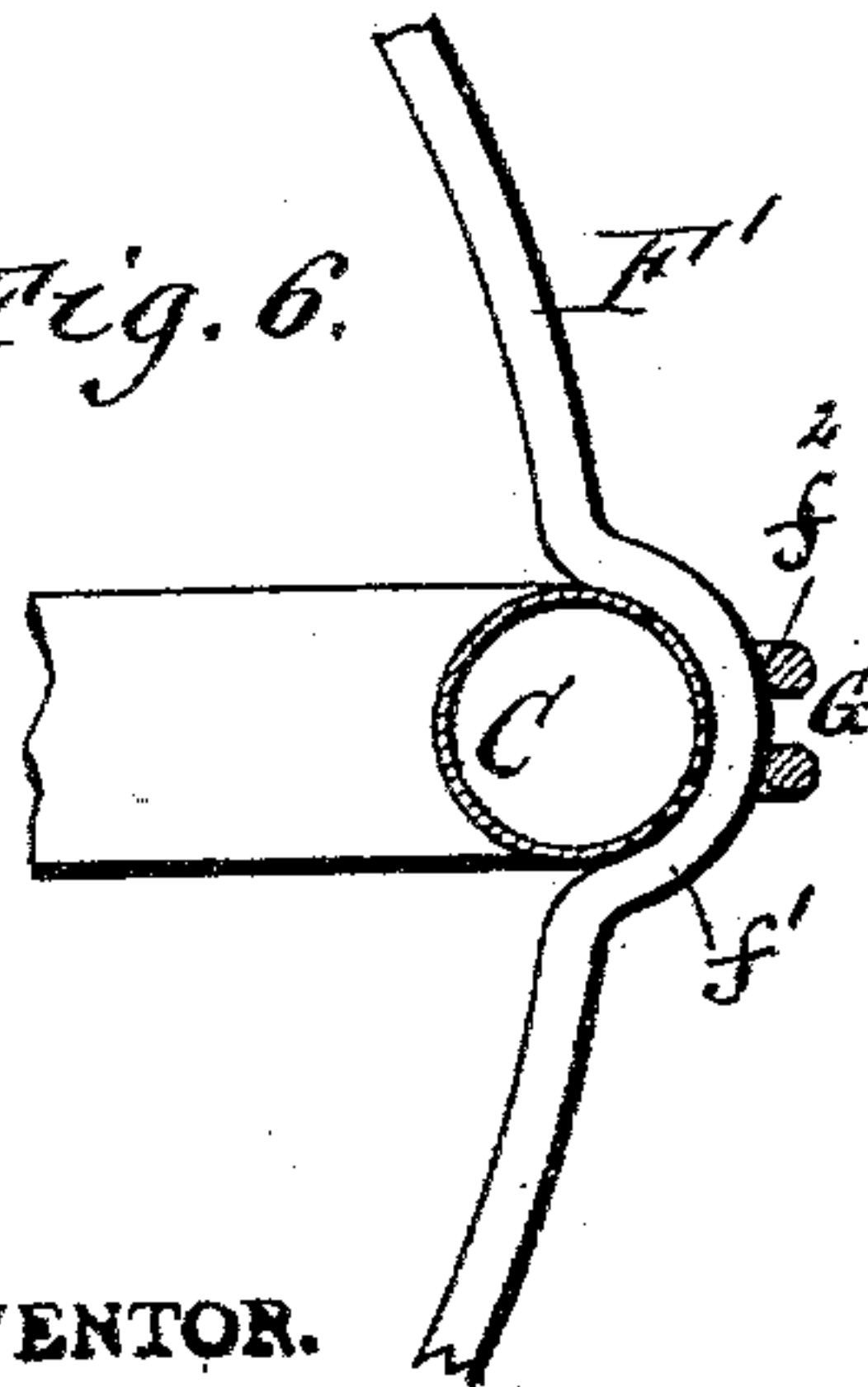


Fig. 6.



WITNESSES:

Chas. F. Burkhardt.
Theo. L. Popp.

Chas. L. Betts INVENTOR.
By Wilhelm & Popp ATTORNEYS.

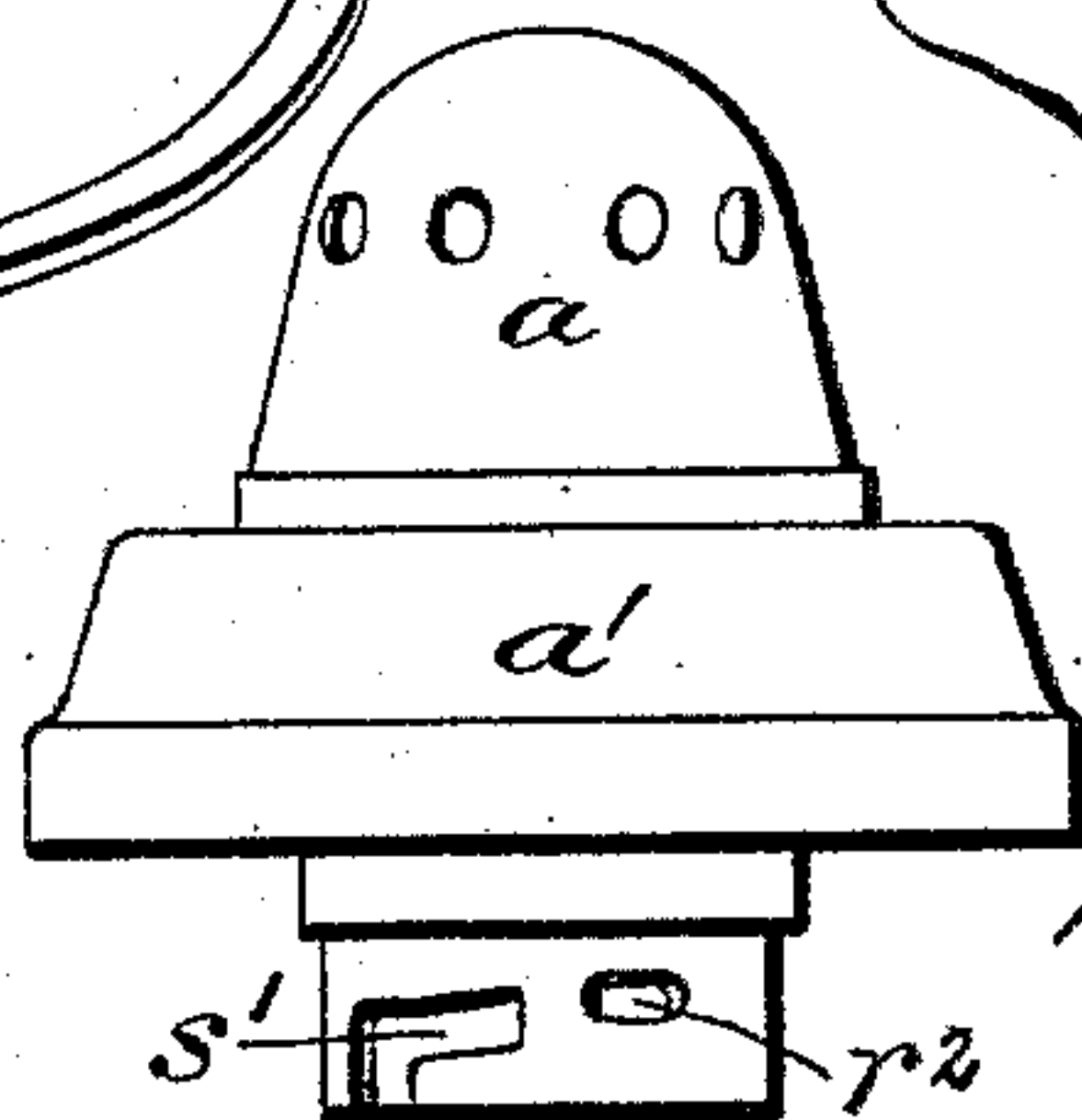
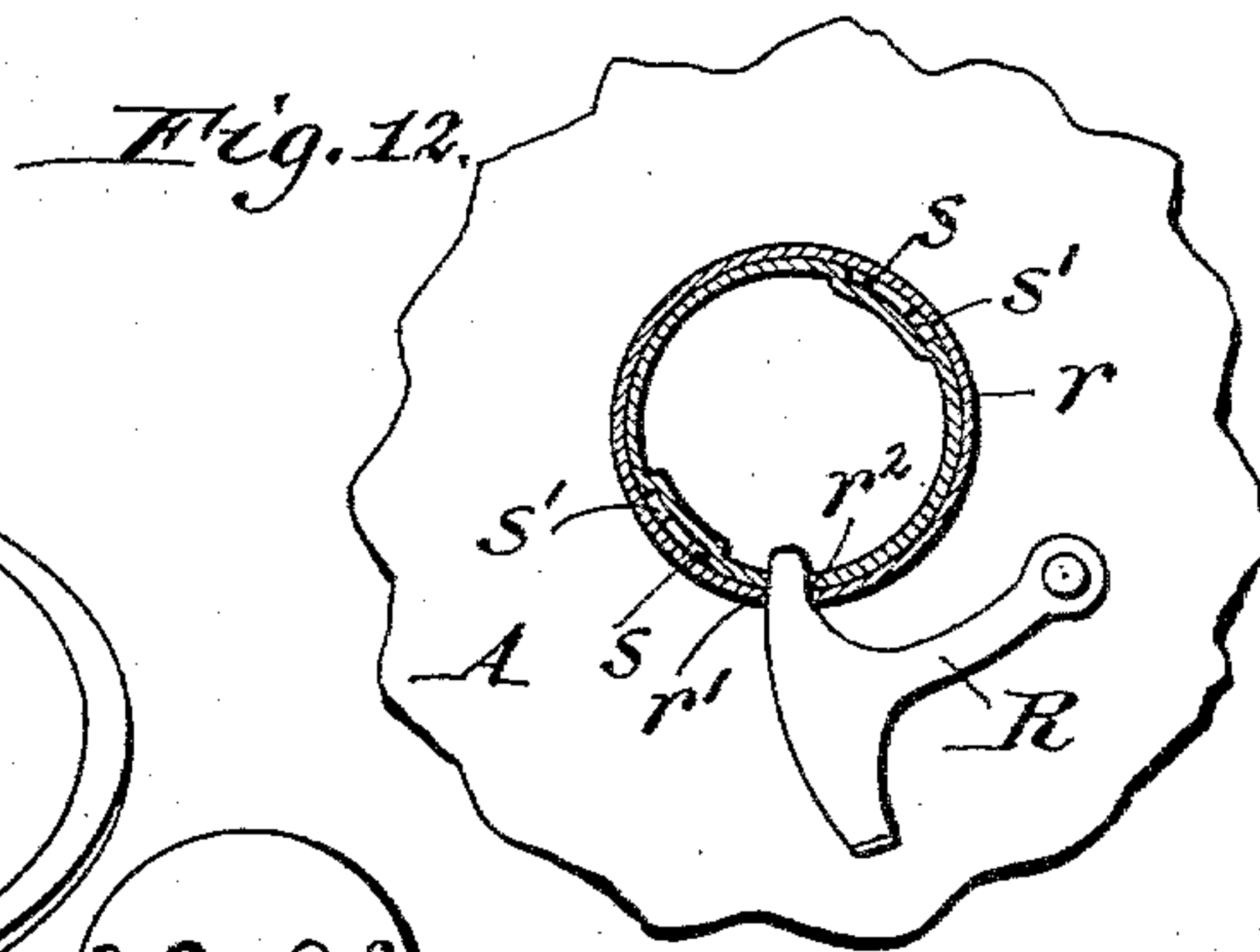
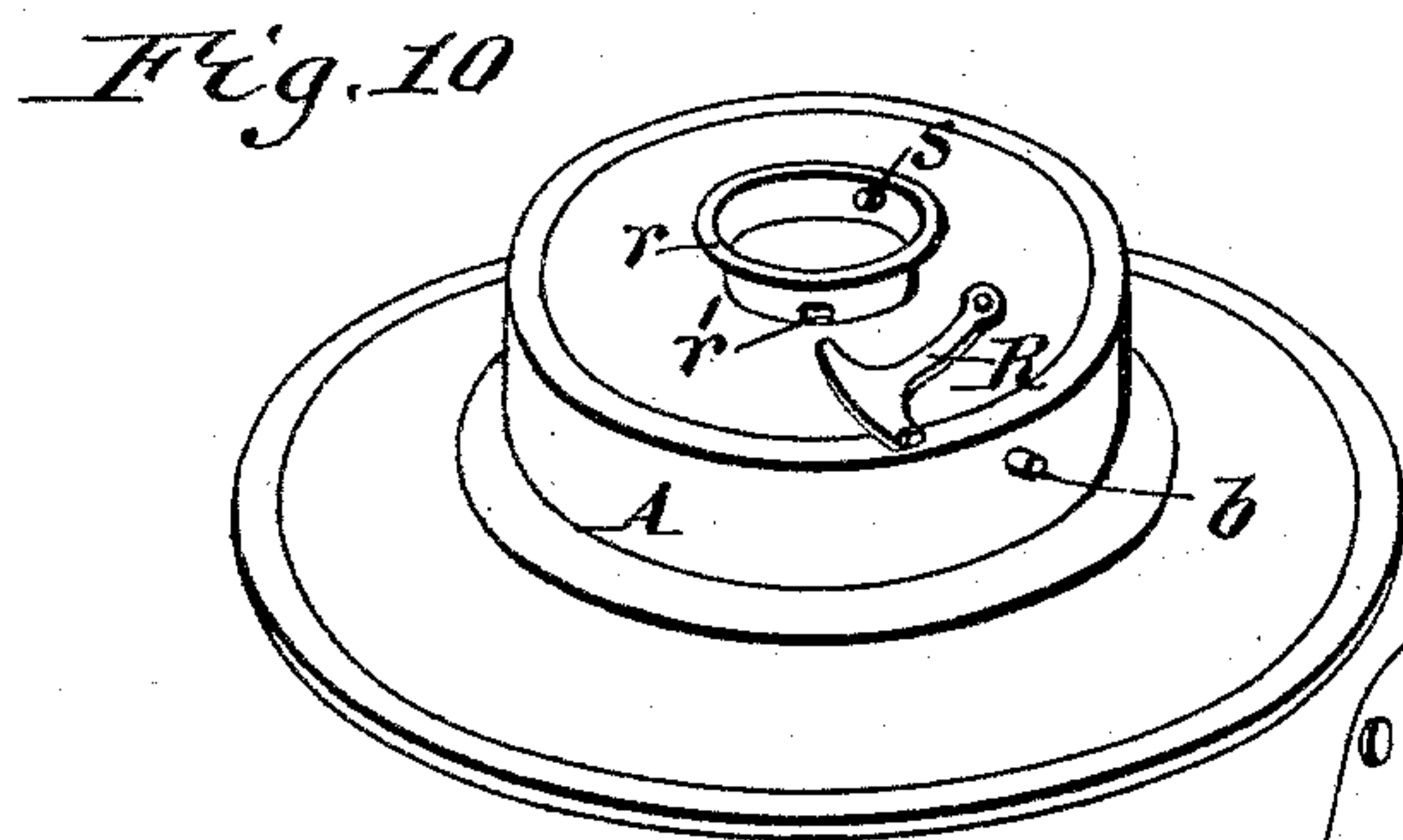
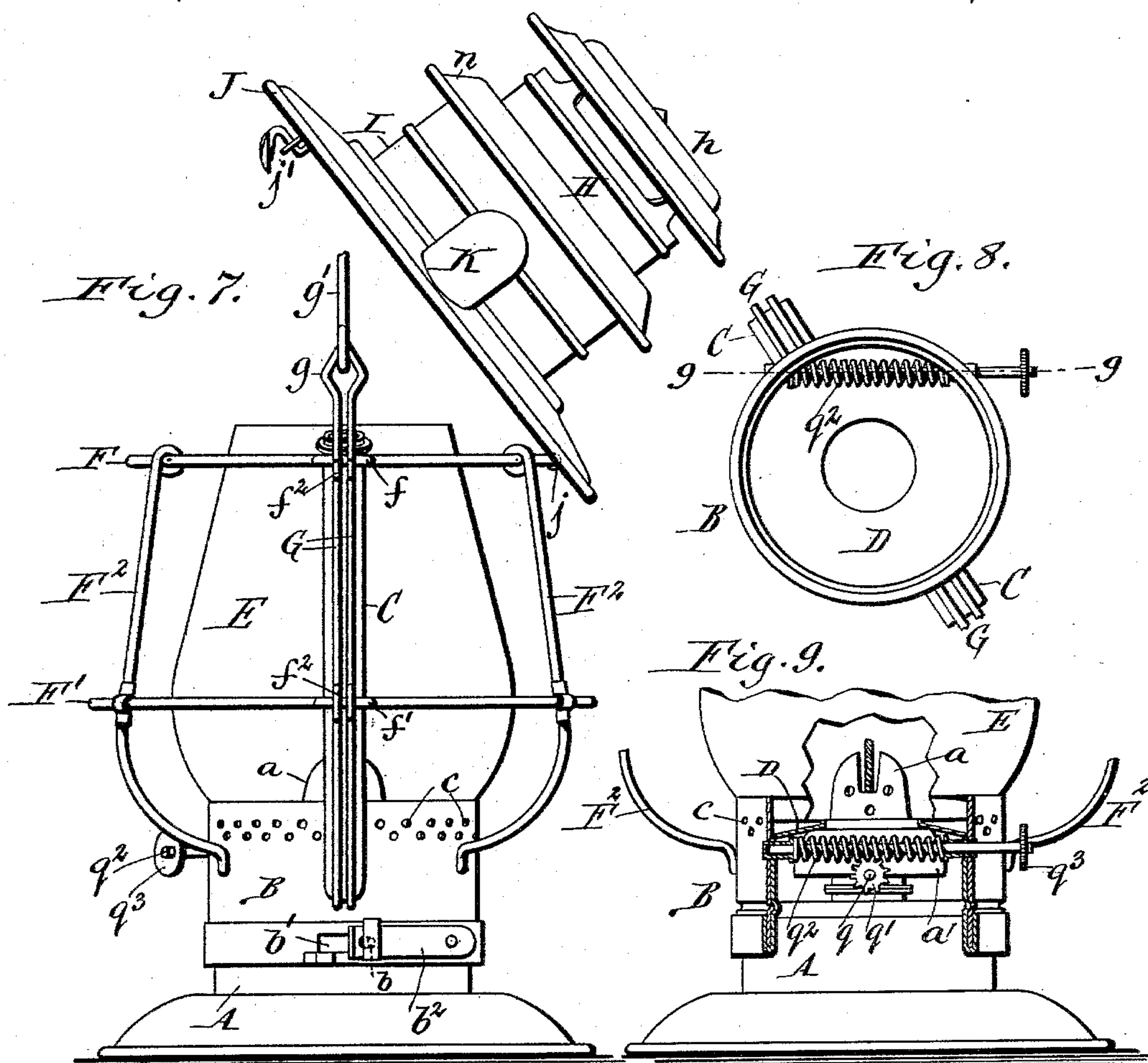
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2 Sheets—Sheet 2.

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TUBULAR LANTERN.

No. 598,072.

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WITNESSES:

Chas. F. Burkhardt.
Theo. L. Popp.

Fig. 11.

Chas. L. Betts

INVENTOR.

By *Wilhelm H. Bonner*,
ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES L. BETTS, OF NEW YORK, N. Y., ASSIGNOR TO THE R. E. DIETZ COMPANY, OF SAME PLACE, AND THE STEAM GAUGE AND LANTERN COMPANY, OF SYRACUSE, NEW YORK.

TUBULAR LANTERN.

SPECIFICATION forming part of Letters Patent No. 598,072, dated February 1, 1898.

Application filed December 30, 1895. Serial No. 573,765. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. BETTS, a citizen of the United States, residing at New York, in the county and State of New York, have invented a new and useful Improvement in Tubular Lanterns, of which the following is a specification.

This invention relates to lanterns which are provided with tubes through which air for the support of the flame is conducted to the burner from the upper part of the lantern.

The principal object of my invention is to produce a short or low lantern which produces a large and powerful flame and in which the oil-pot and globe are removable from the lantern-frame in the same manner in which these parts are now removable in ordinary railroad-lanterns.

Other objects of my invention are to improve the construction of the devices whereby a constant air-supply in the proper direction is maintained through the tubes and to provide convenient means for adjusting the wick and for securing the burner in place.

In the accompanying drawings, consisting of two sheets, Figure 1 is a vertical section of a lantern provided with my improvements. Fig. 2 is a horizontal section in line 2 2, Fig. 1, looking upward. Fig. 3 is a horizontal section in line 3 3, Fig. 1, looking downward. Fig. 4 is a fragmentary vertical section, on an enlarged scale, of the air-injecting devices in the upper part of the lantern, the plane of section extending through the central lines of the air-tubes, as in Fig. 1. Fig. 5 is a sectional elevation of the chimney and connecting parts in the upper part of the lantern, the plane of section being at right angles to the plane of the air-tubes and at right angles to the plane of section of Fig. 1. Fig. 6 is a horizontal section through one of the tubes in line 6 6, Fig. 1. Fig. 7 is a side elevation of the lantern at right angles to Fig. 1 and showing the top released and partly swung back. Fig. 8 is a bottom plan view of the lower collar of the lantern-frame and connecting parts. Fig. 9 is a sectional elevation of the lower collar of the lantern-frame and the oil-pot, the section being taken in line 9 9,

Fig. 8. Fig. 10 is a perspective view of the oil-pot with the burner removed. Fig. 11 is an elevation of the burner. Fig. 12 is a horizontal section through the burner and its socket in line 12 12, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A represents the oil-pot, carrying the burner *a*.

B represents the lower collar or cylindrical hoop of the lantern-frame, in which the oil-pot is removably secured in any suitable and well-known manner, so that the oil-pot can be inserted into this collar from below and can be removed downwardly. The oil-pot is secured in this collar by any kind of suitable and well-known fastening devices—for instances, studs or pins *b*, secured to the sides of the oil-pot and entering slots *b'* in the collar in the manner of a bayonet-fastening, and a locking-spring *b²*, which prevents the accidental turning of the oil-pot in the collar.

C represents the air-tubes, which are secured with their lower ends to the collar B and which open into the same below an annular plate D, which is secured to the collar above the lower enlarged portion or skirt *a'* of the burner-cone. This annular plate surrounds the burner-cone and forms the top of an air-chamber within the collar, which air-chamber is inclosed at the top by this annular plate, at the bottom by the top of the oil-pot, and at the side by the collar B. The open lower end of the skirt of the burner-cone stands at a short distance above the top of the oil-pot, as shown in Fig. 1, so that the air entering this chamber from the air-tubes enters the lower portion of the burner-cone and passes upwardly through the latter and so supplies the flame.

c represents perforations which are formed in the upper portion of the collar B above the annular plate D and through which air enters the lower portion of the globe E outside of the burner. The air-tubes extend upwardly to the level of the top of the globe or thereabout and are connected at their upper ends by a guard-ring F, of wire or other suitable material. A similar guard-ring F' is secured to

the tubes farther down, and these two rings and the lower collar B are connected by upright guard wires or bars F^2 , so that the tubes, the horizontal guard-rings, the upright guard-wires, and the lower collar form together a lantern-frame into which the oil-pot is inserted from below and the globe from above, the globe being seated upon the lower collar. The outer exposed portions of the tubes are reinforced and protected by upright wires G, which are secured by soldering or tinning to the tubes along the outer portions thereof. These wires extend from the lower to the upper ends of each air-tube and are provided at their upper ends with outwardly and upwardly projecting ears g , in which the ends of the bail g' engage. Each set of reinforcing wires or strips is preferably formed of a single length, bent to form a bail-ear and having its two parts or branches extending downwardly side by side from the ear to the lower end of the tube, as shown in Fig. 7. The horizontal guard-rings $F F'$ are formed with bent portions $f f'$, which straddle the outer sides of the tubes and by which the guard-rings are held against lateral displacement. The upright reinforcing-wires G are formed with bent portions f^2 , which straddle the bent portions f' of the lower ring F' , as shown in Figs. 1, 6, and 7, so that these upright wires may serve not only to protect the tubes, but also to bind the lower guard-ring on the tubes.

H represents the metallic chimney, which extends upwardly from the globe and which carries the usual top plate h .

I represents the outer cylindrical wall of an air-chamber, which surrounds the lower portion of the chimney H and which is open at its upper and lower ends.

J represents a horizontal flange or rim which is secured to the lower end of the cylindrical wall I and extends outwardly from the latter beyond the upper guard-ring F. This flange is hinged to the upper guard-ring on the rear side of the lantern, as shown at j , Fig. 7, and is secured to the upper guard-ring on the front side of the lantern by a spring-catch j' of any ordinary or suitable construction.

K represents pipe-elbows secured to the cylindrical wall I and the flange J and so arranged as to communicate at their lower ends with the upper ends of the air-tubes when the lantern-top is closed down. These elbows open through the cylindrical wall of the air-chamber, so as to receive the air therefrom and conduct it to the tubes.

L, Figs. 1 and 4, represents an annular air-injecting plate arranged horizontally within the cylindrical wall I about opposite the middle of the openings l , by which the pipe-elbows communicate with the air-chamber, so that the air is injected into the pipe-elbows from above as well as from below. When the lantern is raised or swung by the bail or exposed to a downward current of air, the air in the chamber strikes against the upper surface of

the injecting-plate and is thereby deflected into the elbows and tubes. When the lantern is lowered or exposed to an upward air-current, the air in the chamber strikes the lower surface of the injecting-plate and is thereby injected into the elbows or tubes, so that under all conditions of motion or exposure downwardly-flowing supply-currents are maintained in the tubes and a reversal of these currents is prevented. The annular opening through which the air enters the lower end of this air-chamber is preferably contracted by an annular flange m , projecting inwardly from the wall of the air-chamber. This prevents an excessive supply of air, which would tend to cut down the flame, and also prevents back suction in raising the lantern.

n represents an angular injecting-ring arranged above the upper end of the air-chamber and shaped to inject air into the same. This ring is secured to the upper portion of the cylindrical wall by short legs or standards n' , so as to hold it at the proper height above the upper edge of the cylindrical wall.

The chimney is preferably provided with a row of openings n^2 , which establish a communication between the chimney and the surrounding air-chamber, and by which the air-pressure is to a certain extent equalized in these parts.

The annular injecting-plate L is soldered to the cylindrical wall I of the air-chamber, and the chimney H is preferably made vertically adjustable, so that its position in the lantern-top can be regulated to fit globes of different heights, as there is frequently a slight difference in the height of globes of the same size. For this purpose the annular injecting-plate is provided at its inner edge with a downwardly-projecting cylindrical flange o , in which the chimney fits loosely, so that it can be raised and lowered in said flange, and the latter has its lower edge composed of several cams or inclines, as shown at o' , Fig. 5, and the chimney is provided with a corresponding number of laterally-projecting pins or studs p , which engage underneath these cams or inclines, so that by turning the chimney the latter is raised or lowered. Upon releasing the spring-catch at the front of the lantern-top the entire top, consisting of the chimney and surrounding parts, can be swung back on its hinge, as in an ordinary railroad-lantern, for inserting or removing the globe or other purposes. When the globe has been inserted and the top has been closed down, the pipe-elbows of the top are seated closely upon the upper ends of the tubes, and the air-supply or injecting contrivances in the top furnish the tubes with fresh air, which is delivered by the tubes to the air-chamber in the lower collar and thence to the burner. This construction of the lantern permits the globe and the oil-pot to be inserted and removed in the manner usual in railroad-lanterns and furnishes a lantern in which kero-

sene-oil can be burned with safety by reason of the tubular feature and which is no higher than an ordinary railroad-lantern.

5 q is the wick-raiser shaft of the burner, provided with a toothed wheel q' for turning the shaft.

10 q^2 is an actuating screw-shaft journaled in the lower collar of the lantern in such a position that when the oil-pot is secured in the collar the toothed wheel of the wick-raiser shaft engages with this screw-shaft, so that the turning of the latter will turn the wick-raiser shaft. The screw-shaft is provided outside of the collar with a button or thumb-wheel q^3 for turning it.

R, Figs. 1, 10, and 12, represents a hook or catch pivoted to the top of the oil-pot, so as to be capable of swinging horizontally toward and from the burner.

20 r is the burner-socket, which is secured in the top of the oil-pot in the usual way and which is provided in its upper projecting portion with an opening r' , through which the nose of the hook or catch R projects into an opening r^2 in the lower portion of the burner, which is seated in said socket. Upon swinging the hook outwardly it is disengaged from the burner, and upon swinging it inwardly it is engaged with the burner. In addition

30 to this hook-fastening the burner is further secured in the sleeve by two bayonet-fastenings, consisting of two pins s , secured in the sleeve r on opposite sides thereof, and two L-shaped depressions or grooves s' , formed in the lower portion of the burner and engaging therewith by first moving the burner downwardly to seat it in the socket and then turning it until the ends of the horizontal portions of the grooves strike the pins. These

40 bayonet-fastenings secure the burner in the proper position in the socket, and the hook-fastening prevents the burner from being accidentally turned in the socket out of its proper position—for instance, by the operation of the wick-raiser screw-shaft. While

45 these bayonet-fastenings facilitate the placing of the burner in the proper position, they are not indispensable and can be omitted, if desired.

50 I claim as my invention—

1. In a tubular lantern, the combination with the metallic chimney, of a cylindrical wall surrounding the chimney and forming therewith an air-inlet chamber which is open

55 at its upper and lower ends, air-tubes open-

ing through said cylindrical wall to receive the air from said chamber, and an annular air-injecting plate arranged in said chamber across the openings of said air-tubes, substantially as set forth.

2. In a tubular lantern, the combination with an annular air-inlet chamber and air-tubes opening through the outer wall thereof, of an annular air-injecting plate arranged within said chamber across the inlet-openings

60 of the air-tubes and secured at its outer edge to the outer wall of said chamber and provided at its inner edge with a cylindrical flange, and a metallic chimney arranged within said flange and made vertically adjustable

65 therein, substantially as set forth.

3. The combination with an open-topped lantern-frame composed of a lower portion, air-tubes and a guard secured together and adapted to have the globe inserted from above,

75 of a hinged top containing a metallic chimney, a cylindrical wall surrounding the chimney and forming therewith an annular air-chamber which is open at its upper and lower ends, tube-elbows opening through said cy-

80 lindrical wall and an annular air-injecting plate arranged within said cylindrical wall across the openings of said tube-elbows, substantially as set forth.

4. The combination with the lower lantern-

85 collar, of a transverse screw-shaft journaled in the same and provided at its outer end with a thumb-wheel, and a removable oil-pot and burner adapted to be inserted into the collar from below, said burner having its

90 wick-raiser shaft provided within said collar with a toothed wheel which is arranged below said screw-shaft and engages therewith when the oil-pot is in place in the collar, whereby the oil-pot and burner can be removed

95 without removing the screw-shaft, substantially as set forth.

5. In a tubular lantern, the combination with the air-tubes, of a guard-ring provided with bent portions which straddle the outer

100 surfaces of the tubes, and protecting wires or strips secured along the outer surfaces of the tubes and extending over the bent portions of said guard-ring, substantially as set forth.

Witness my hand this 24th day of December, 1895.

CHARLES L. BETTS.

Witnesses:

OSCAR WARNER,
FRED VAN DUYN.