

(No Model.)

L. S. LEWIS.

APPARATUS FOR AUTOMATICALLY FILLING LAMPS WITH OIL.

No. 521,171.

Patented June 12, 1894.

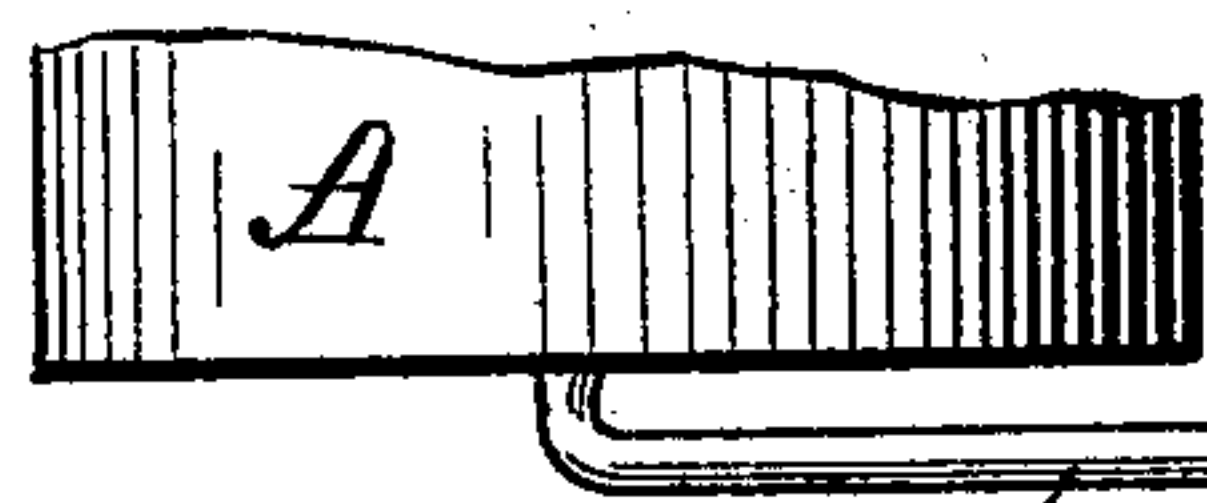


Fig. 1.

Fig. 3.

Fig. 2.

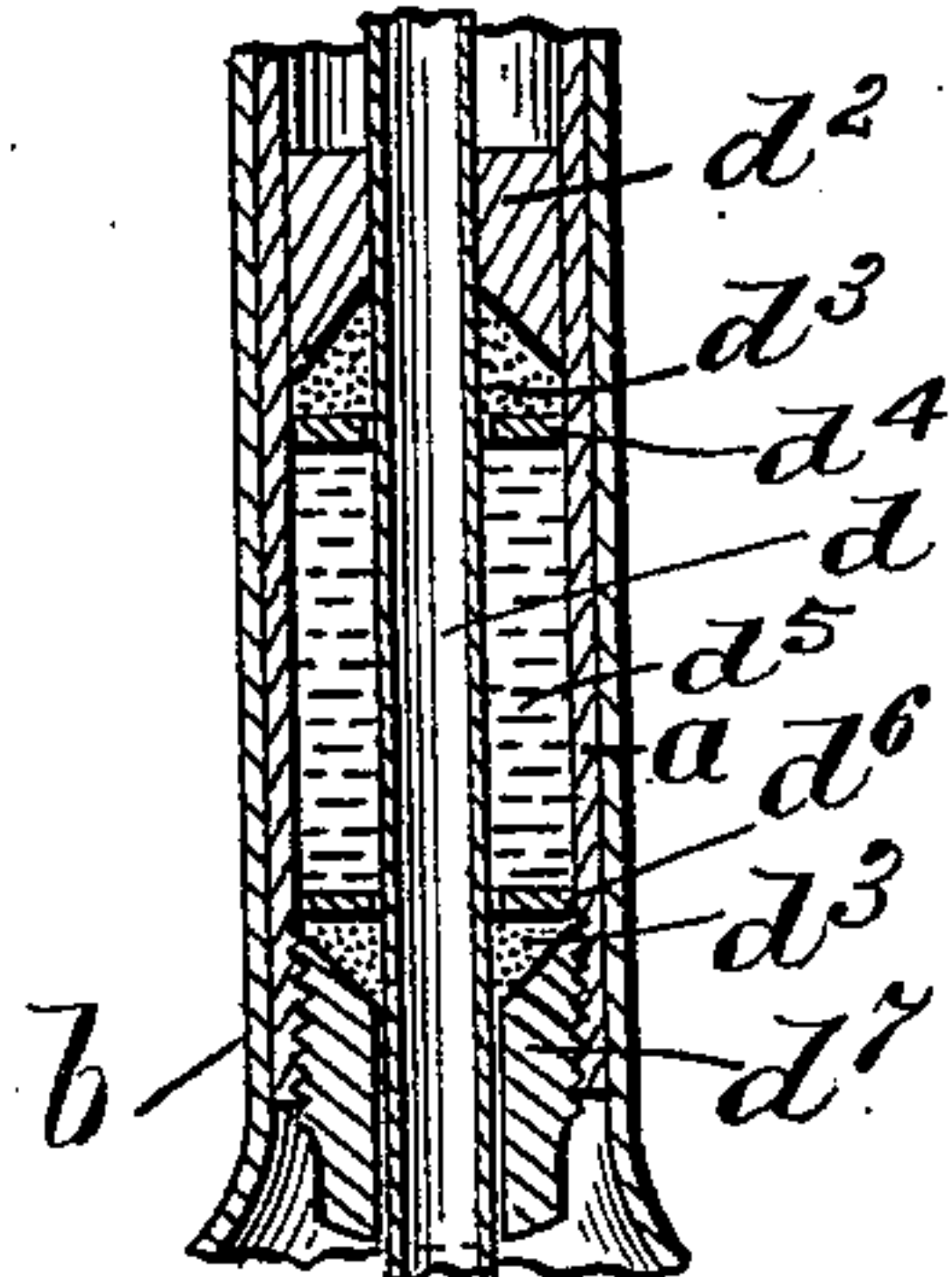
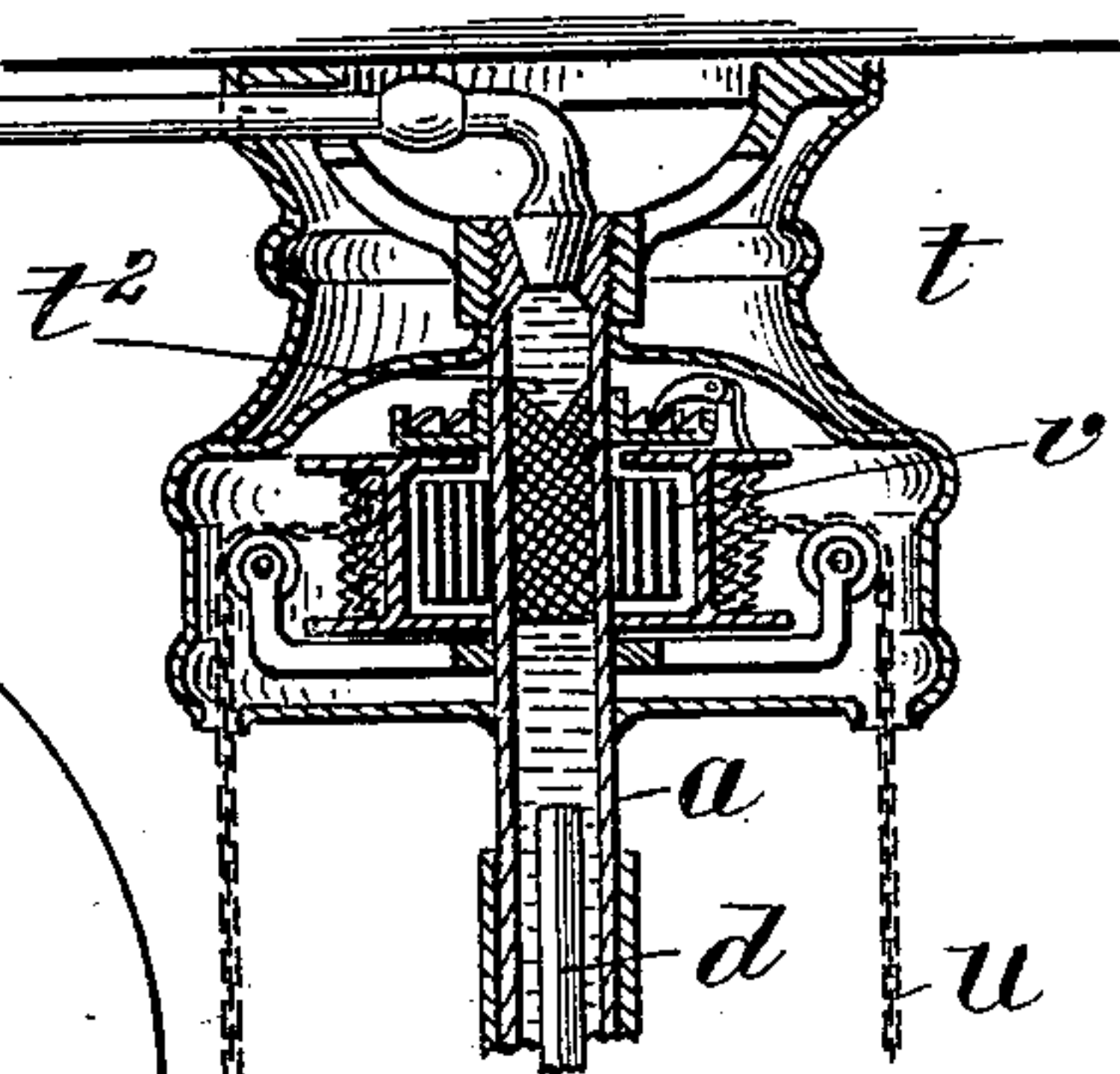
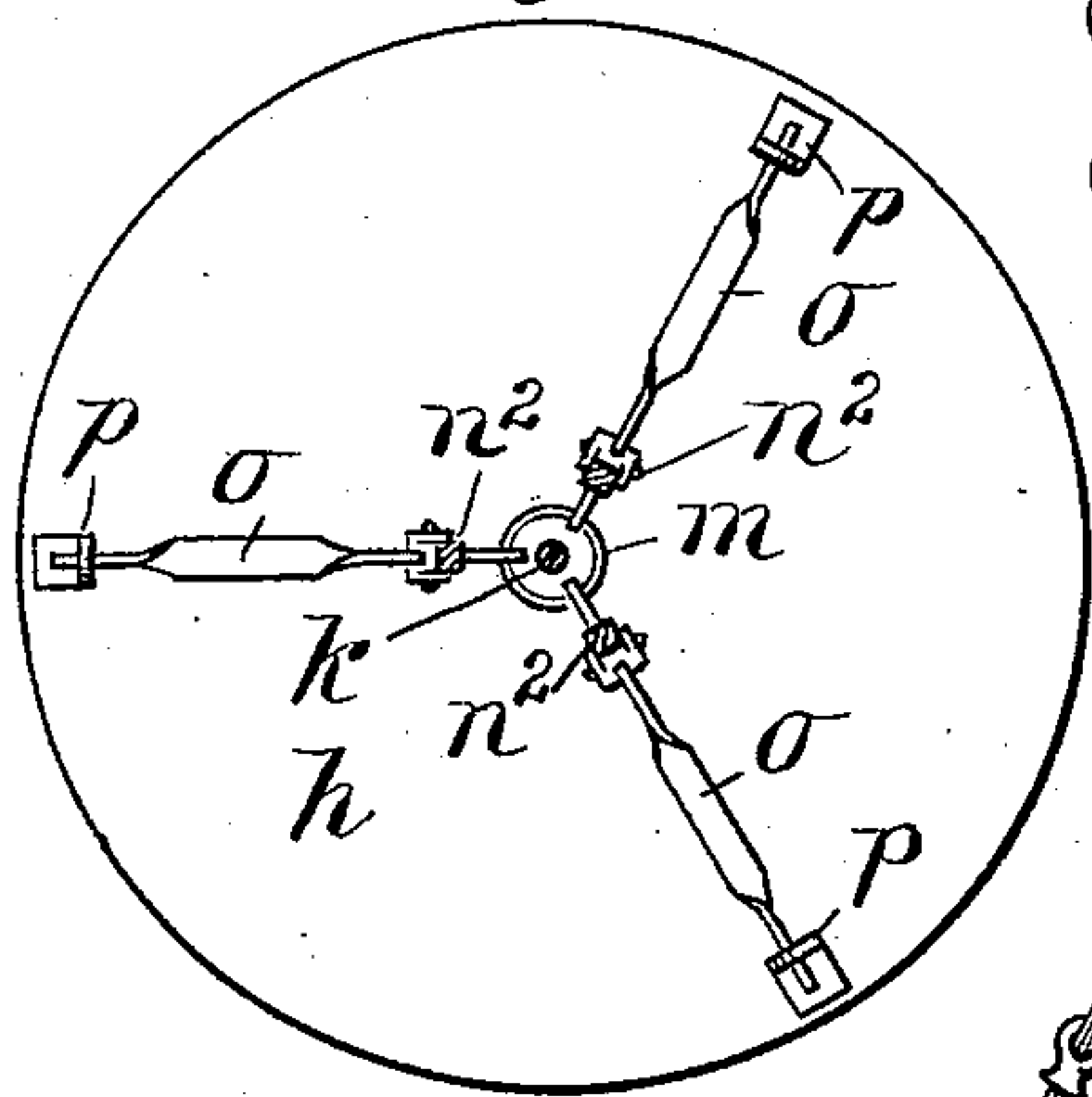


Fig. 4.

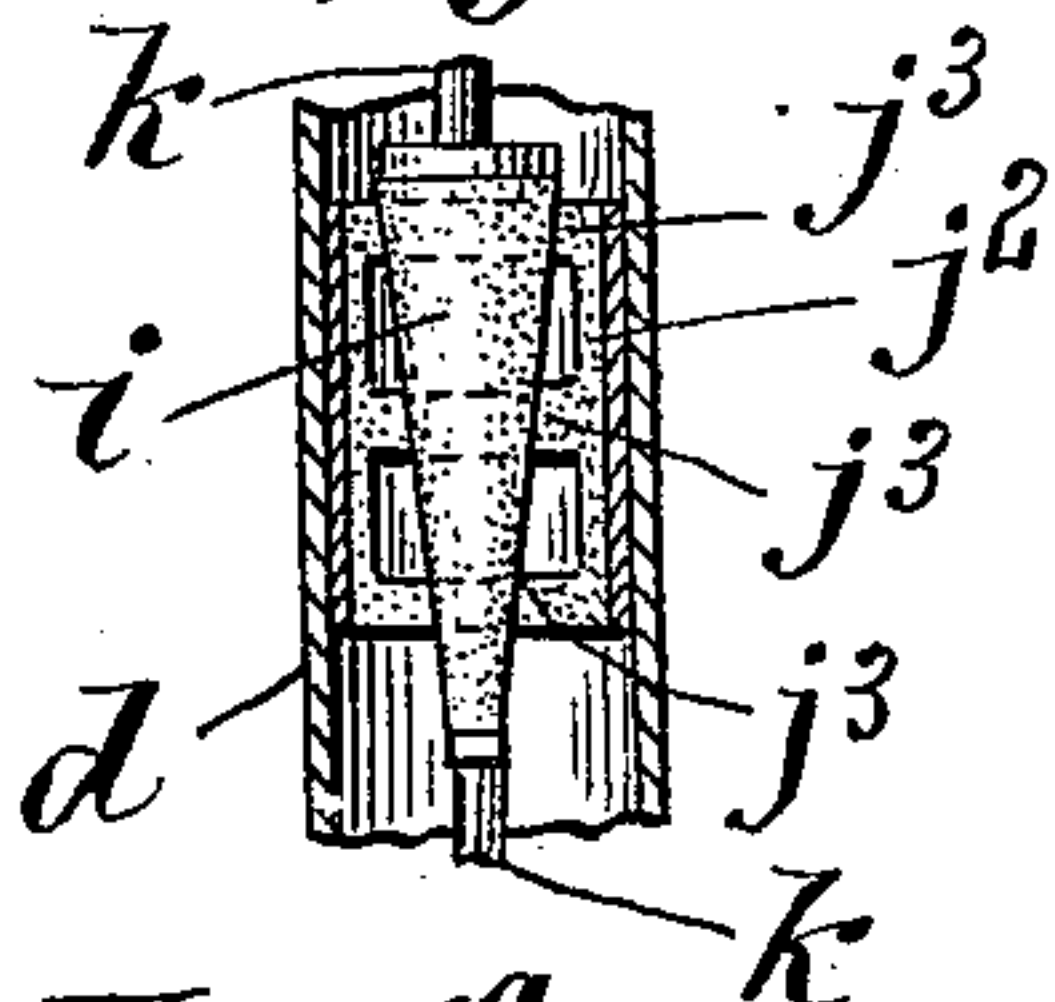
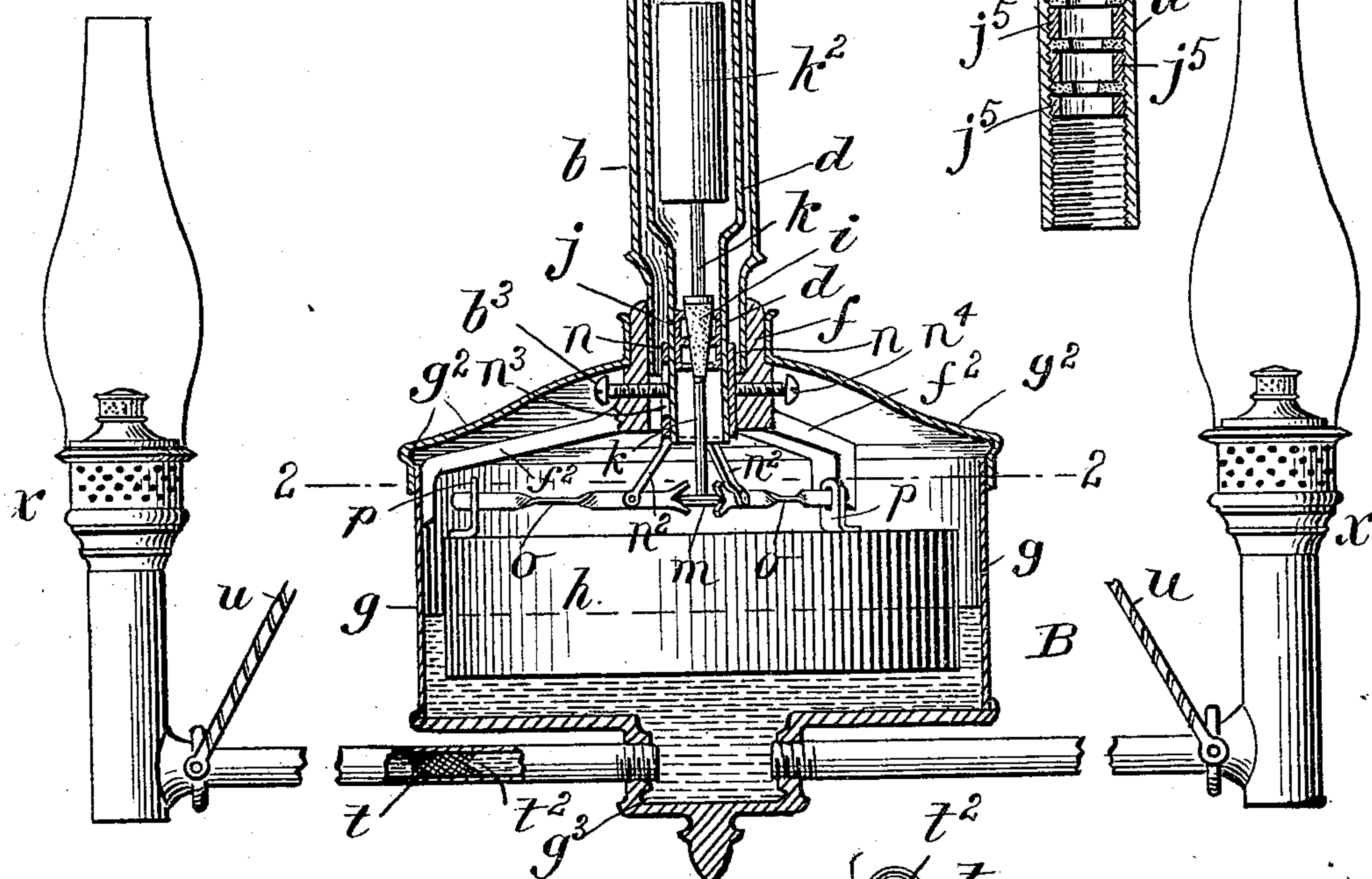
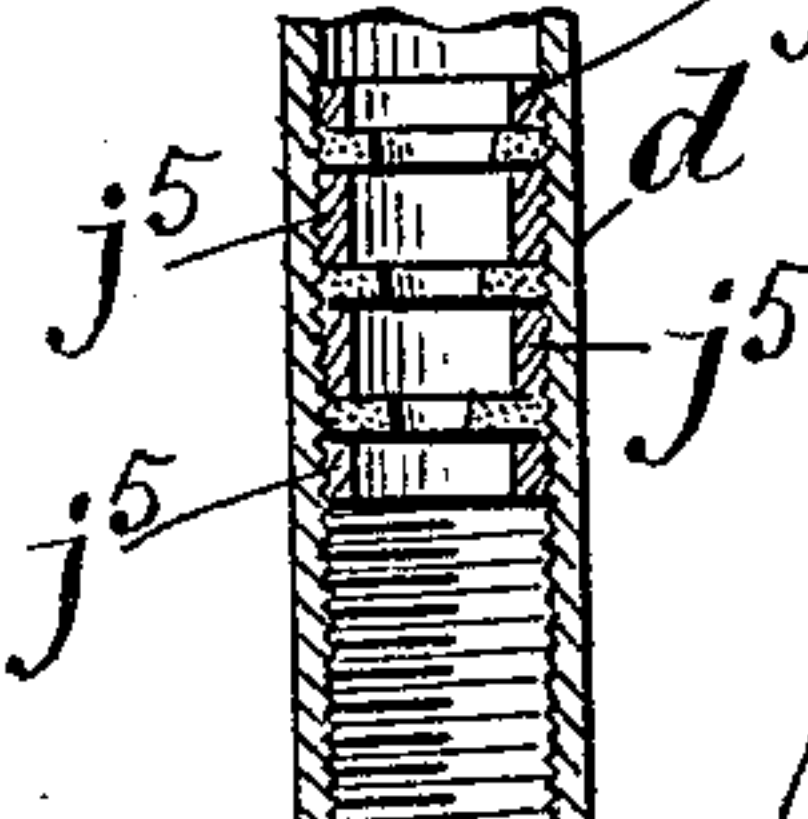
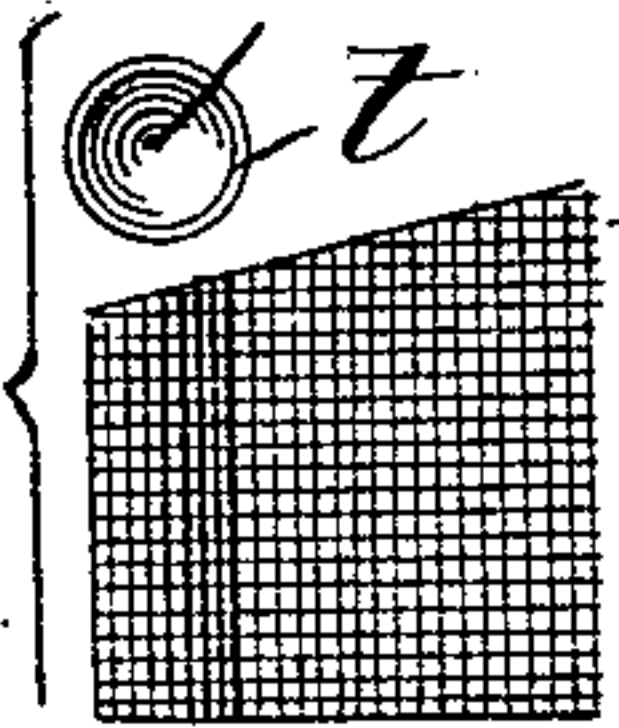


Fig. 4^a.



Witnesses:
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Fig. 5.



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UNITED STATES PATENT OFFICE.

LEROY S. LEWIS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE EMPIRE LIGHT COMPANY, OF NEW JERSEY.

APPARATUS FOR AUTOMATICALLY FILLING LAMPS WITH OIL.

SPECIFICATION forming part of Letters Patent No. 521,171, dated June 12, 1894.

Application filed June 30, 1893. Serial No. 479,248. (No model.)

To all whom it may concern:

Be it known that I, LEROY S. LEWIS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Apparatus for Automatically Supplying Lamps and other Burners with Oil, of which the following is a specification.

10 This invention relates to improvements in apparatus for burning hydrocarbon, the same being designed for utilization for both illuminating and heating purposes.

15 The invention particularly relates to improvements in a regulator for automatically delivering the oil for consumption, the same having adequate capabilities for the positive and sensitive governing action, for the absolute shut off and avoidance of leakage when the burner or burners are not lighted; for 20 adjustment whereby the height of oil may be as desired in the service or regulator tank fount or founts; and, moreover, the apparatus is designed with especial reference to the greatest simplicity and cheapness of production, consistent with efficiency.

25 In the accompanying drawings,—in Sheet 1 the apparatus is shown as embodied in an oil burning chandelier light for a house, while in Sheet 2 the new regulating apparatus is 30 shown as applied to both an oil stove, and a street light; and in said drawings, Figure 1 is a vertical sectional view of the chandelier burner with a pendent telescoping support and the novel devices of this invention applied thereto. Fig. 2 is a plan view of the 35 regulator drum and regulator levers, as seen below the plane indicated by the line 2—2, Fig. 1. Fig. 3 is an enlarged vertical sectional view of the packing for the joint between the sections of the telescoping pendant. Fig. 4 is a sectional view through the valve-seat which is provided adjacent the regulator, the valve also being shown therein. Fig. 4^a 40 is a sectional view of a modification of the valve seat. Fig. 5 represents the strainer device.

Similar characters of reference indicate corresponding parts in all of the views.

50 In the drawings, A represents the supply

tank which may be at any suitably elevated place, and which may supply one or several lamps, chandeliers, or burners.

B indicates the chandelier, the pendent support for which consists of the upper vertical stationary section, *a*, and the lower vertically sliding section, *b*, which telescopes the section, *a*, and extends below the lower end thereof. The supply pipe, *c*, leads from the supply tank, A, to a suitable connection with 60 the upper end of the depending section, *a*, while within and below the said section, *a*, is the vertical tube, *d*, which, at its lower end, is connected to move as one with the surrounding telescoping section, *b*, and the chandelier or burner devices carried thereby. 65 The said tube extends upwardly within the section, *a*, to a point higher than that to which the upper end of the outer telescoping section, *b*, is projected. The valve devices, 70 operated by the regulator float, are arranged within the suitably formed lower end of the tube section as will be hereinafter described; and the said tube, *d*, is extended through the packing at the lower end of tube section, *a*, 75 for a close sliding fit, but one which, nevertheless, is oil tight and which is constituted substantially as follows, reference being had to Figs. 1 and 3:—A short distance above the lower end of the tube section, *a*, is firmly 80 brazed, or otherwise secured, the collar, *d*², with the flaring opening in the lower part into which the fibrous packing, *d*³, is placed to surround the pipe, *d*. A washer, *d*⁴, is provided next below the packing, *d*³, closely fitting the interior of pipe, *a*. The annular plug nut, *d*⁷, screws into the lower screw-tapped end of the pipe section, *a*, loosely through 85 which an intermediate part of the tube, *d*, passes; the upper part of the plug nut, *d*⁷, is upwardly flaring receiving therein also a fibrous packing, *d*⁸, overlaid by the washer *d*⁶; these parts are so arranged that there is a considerable space between the two washers within which I place, before assemblage of 95 all the parts, a heavy, pasty substance which I compound as follows:—one part mutton suet, four parts glycerine, two parts plumbago, one part paraffine, and one part beeswax, which may be united by heating and stirring 100

together. Through the so formed packing there can be no oozing or leakage of the petroleum, or other form of the hydrocarbon employed, down between the vertical tube, d , and the tube, a .

I do not desire to confine myself to the exact combination or proportion of the ingredients above set forth, but these have been found by me to be very effective and advantageous.

The tube, d , below the last described joint is of increased diameter for the accommodation of the valve devices, and the tube section, b , is also correspondingly enlarged. The enlargement of the tube, b , has at its lower end the collar, f , with the radially extended arms, f^2 , which constitute the support for the regulator tank, g , the cap, g^2 , thereof being removable. The regulator tank has, at its bottom, the depression, g^3 , for the connection of the chandelier arms or branches which extend to and support and feed the lamps, x, x . h represents the float or drum within the regulator tank. i represents the valve controlled thereby and j represents the valve-seat. The valve-seat is separately formed within the lower end of the vertical tube, d , by a sleeve section, j^2 , having the inwardly extended annular ribs, j^3 , with the circular flaring openings within them, and with the annular spaces between them. This valve seat is non-metallic and is composed of a hard, impervious, non-corrosive, and slightly elastic substance, as is also the valve. Such a substance may be produced by digesting wood or other fiber for the production of a pulp, mixing with such pulp a small quantity of shellac, and then bringing the whole into a solid, dry and hard condition. The valve-seat may be integrally formed of the aforesaid material, as represented in Fig. 4, or, as represented in Fig. 4^a, it may be composed of several of the hardened fiber rings which are held separated by the intermediate spacing sleeve sections, j^5 , which are externally screw-threaded and screw into the pipe section in which the valve-seat is comprised. As the conical valve (the seat bearing portion of which I also preferably form by said hardened fibrous material) moves axially to its seat the annular lips or ribs may yield or be deflected slightly permitting the valve and seat to more closely conform the one to the other.

The spaces intermediate between the annular valve-seat-lips, j^3 , constitute annular traps or cushions of accumulated air which, furthermore, reduce the liability of the leakage of oil at the valve while closed. The valve i , has the stem k , upwardly and downwardly projected therefrom. The upwardly projected part of the valve-stem has the weight k^2 , while the lower part of the stem has the disk m , with the doubled beveled or V-edge. Surrounding the lower portion of the tube, d , within which is said valve-seat, is a sleeve, n , which is vertically adjustable by sliding, being held in place by the set-

screw which passes through the aforesaid collar f . This sleeve has the depending arms n^2 , on the lower ends of which the levers, o, o , of the regulator are toward their inner ends, pivotally connected. The inner arms of the levers are bifurcated, or specifically, have V-recesses within their ends which engage the doubly beveled edge of the valve-stem-disk, m . The outer extremities of the said levers, o , enter the apertured lugs, p , which project above the top of the regulator drum. These levers may be formed of comparatively thin metallic strips, their end portions being given a half twist as indicated,—the horizontally arranged middle flat portions, which are arranged in a plane at right angles to the direction of swing of said levers, having spring capabilities, which conduce to a better operation of the regulator devices, overcoming any inequalities in the rising and falling movements of the regulator drum, and obviating any tendency to abrupt or violent closure of the valve to the seat.

It is desired to have the governing devices adjustable so as to be set for the height of oil at any level within the regulator tank. The fulcrum supports for the regulator levers are, therefore, vertically adjustable about and relative to the valve-seat, by the means described as consisting in the collar, n , and the set screw, n^2 , therefor, so that by either raising or lowering such fulcrum support the normal level of the oil in the tank will be higher or lower, as consequent upon the correspondingly higher or lower position of the float at the time the valve is closed upon its seat. The valve-seat with the tube, d , is also vertically adjustable relative to the tank and section, b , giving larger scope to the adaptability for varying the normal oil level in the regulator tank, and this is insured by forming the collar, n , slotted as seen at n^3 , so that the set screw, b^3 , may be passed through the collar, f , (which surrounds the lower end of telescoping tube section, b ,) and, without interference with the collar, n , carrying the levers to a detachable connection with the valve-seat tube, d .

For practicability of construction and assemblage, the tube, d , is formed in sections, screw united substantially as shown in Fig. 1, or as the convenience of the constructor may demand or indicate as advantageous. In the drawings here given, the upper section of the tube, d , has at its lower end the inverted cup-like enlargement, d^3 , externally screw-threaded, while the upper end of the enlarged lower tube section is internally screw-threaded to make the union with said cupped and threaded part of the upper section.

The chandelier or lamps, the regulator devices, and the tube sections, b and d , moving bodily, vertically, as one, are counter-balanced in the usual manner by means of the flexible suspension connections, u, u , and spring take-up spool, v , therefor; and it will

be manifest that in the raising or lowering of the chandelier, or the maintenance thereof stationary, there can be no leakage of oil upwardly between the tube sections, *a*, *b*, to the upper end of the latter.

One or more straining devices are provided in the oil conduits of the apparatus which are composed as follows: Sheets of fine wire gauze are tightly rolled to form a plug, *t*, of cylindrical form, and driven into the pipes suitably near the coupling thereof. Thus is formed a very efficient strainer for the oil.

In practice I prefer to have one edge of the sheet of the gauze, from which the rolled up plug is formed, angular to its opposite edge, whereby a depression, *t*², is formed in the end of the strainer plug, which relative to the oil flow, is rearward.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with the burner, the regulator tank connected therewith, and the oil supply pipe leading into the tank, and having therewithin, near the tank, a valve-seat, the valve with the depending stem, and the float drum, the several arms depending below the valve-seat, which are vertically adjustable, and the radially arranged levers intermediately pivoted on the said depending arms and having their inner ends engaged with the depending valve-stem and their outer ends with the drum, substantially as described.

2. The combination with the burner, the regulator tank connected therewith, and the oil supply pipe leading into the tank, and having therewithin, near the tank, a valve-seat, the valve with the depending stem, and the float drum, the several arms depending below the valve seat and the radially arranged levers intermediately pivoted on the said depending arms which levers are adapted for slight springing movements in the direction of their swinging movements and having their inner ends engaged with the depending valve stem and their outer ends with the drum, substantially as described.

3. The combination with the depending stationary pipe-section connected with the supply, of a tube section telescoping the stationary section and having the regulator tank supported at its lower end, with which the burners are in communication, an inner tubular part open at its upper and lower ends and within and movable with the said telescoping section and having a close sliding fit within the said stationary section and having a valve-seat at its lower end, a valve thereat, a regulator float in the tank, which has operative connection with the valve, substantially as and for the purpose set forth.

4. The combination with the depending stationary tube section to be connected with the oil supply of a tube section telescoping the stationary section and having the regulator tank supported at its lower end with which

tanks the burners are in communication, an inner tubular part open at its upper and lower ends and within and movable with the said telescoping section and having a valve-seat at its lower end formed by two or more separated annular lips, said inner tube extending with a packed sliding fit within the said stationary section, a valve at said seat, and a regulator float in the tank which has operative connection with the valve, substantially as described.

5. The combination with the depending stationary section, *a*, the telescoping outer section, *b*, having the regulator tank connected at its lower end, the tube section, *d*, movable as one with tank and section, *a*, and having the valve-seat, and the enlargement thereabove, the valve with the upwardly and downwardly extended stem, the weight on the upper stem portion within said enlargement, the regulator-float having operative connection with the lower portion of the valve-stem, substantially as described.

6. The combination with a vertical downwardly opening tube section having a valve-seat near its lower end, and a regulator tank in communication therewith, of a valve at said seat with a depending stem, a collar surrounding and vertically adjustable on the lower end of said valve-seat tube and having the depending arms or lugs, *n*², the regulator float and the levers pivotally hung upon said arms, *n*², and engaging the drum, and valve-stem, substantially as described.

7. The combination with the stationary section, *a*, and the telescoping section, *b*, with the regulator tank connected at the lower end thereof, the tube and valve seat section, *d*, and the valve with depending valve-stem, the collar, *n*, with the vertical slot, *n*³, and the depending arms, *n*², *n*², the set-screw, *b*³, passed through a part which is of, or united to, the section, *b*, through said slot and against the tube section, *d*, and another set-screw passed to a confining engagement against said collar, *n*, the float and levers, all substantially as and for the purposes set forth.

8. The combination with the stationary tube section, *a*, having near its lower end the annular shoulder, *d*², of the telescoping tube section, *b*, and the inner tube section, *d*, within the section, *b*, and extending up within and through the said annular shoulder, the annular screw plug, *d*⁷, the compressible fibrous packings, *d*³, *d*³, the washers, *d*⁴, *d*⁶, and an intermediate mass of plastic material, substantially as described.

9. The combination with the stationary tube section, *a*, having near its lower end the annular shoulder, *d*², of the telescoping tube section, *a*, and the inner tube section, *d*, within the section, *b*, and extending up within and through the said annular shoulder, the annular screw plug, *d*⁷, the compressible fibrous packings, *d*³, *d*³, the washers, *d*⁴, *d*⁶, and an intermediate mass of plastic material which is compounded of suet, glycerine, plumbago, par-

affine and beeswax, and all arranged, shown, and substantially as set forth.

10. In combination, the supply tanks, the stationary depending tube section, *a*, with
5 packing devices and material at its lower end, the telescoping tube section, *b*, having secured to its lower end the collar, *f*, with the arms, *f*², which support the regulator tank, *g*, lamps
10 and branch tubular connections leading there- to from the tank, the tube section, *d*, with the enlarged lower portion, and the valve-seat, the valve with upwardly and downwardly ex-
tended stems, with the weight, *k*², and bevel edged disk *m*, the slotted collar, *n*, with the
15 arms, *n*², the set screws, *b*³ and *n*⁴, the regu- lator float drum with the apertured lugs, *p*, *p*, and the radially arranged levers with the

forked ends, all substantially as shown and described.

11. In an apparatus of the character de- 20 scribed, section *a*, and the telescoping section, *b*, with the inner tubular section, *d*, movable therewith, having an inverted cup-like lower end enlargement which is screw-threaded, and the lower enlarged tubular section screw-en- 25 gaging said cup-like part at its upper end, and having the valve-seat and float operated valve at its lower end, and the weight for the valve in the enlarged tube section below the coupling, substantially as described.

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Witnesses:

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