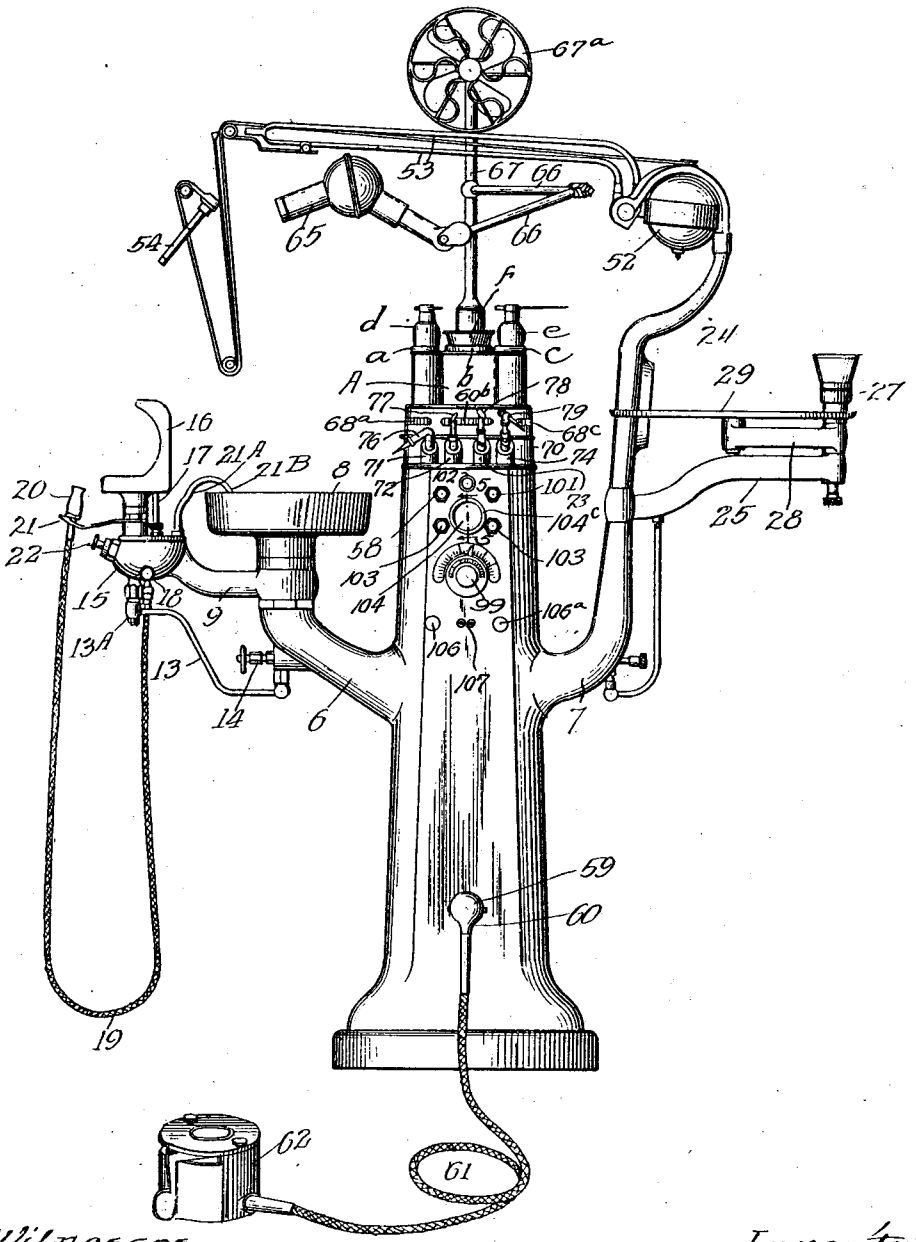
July 2, 1929. O. H. PIEPER ET AL 1,719,306

DENTAL APPARATUS

Filed March 18, 1925 3 Sheets-Sheet 1

Fig. 1.



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DENTAL APPARATUS

Filed March 18, 1925 3 Sheets-Sheet 2

Fig. 2.

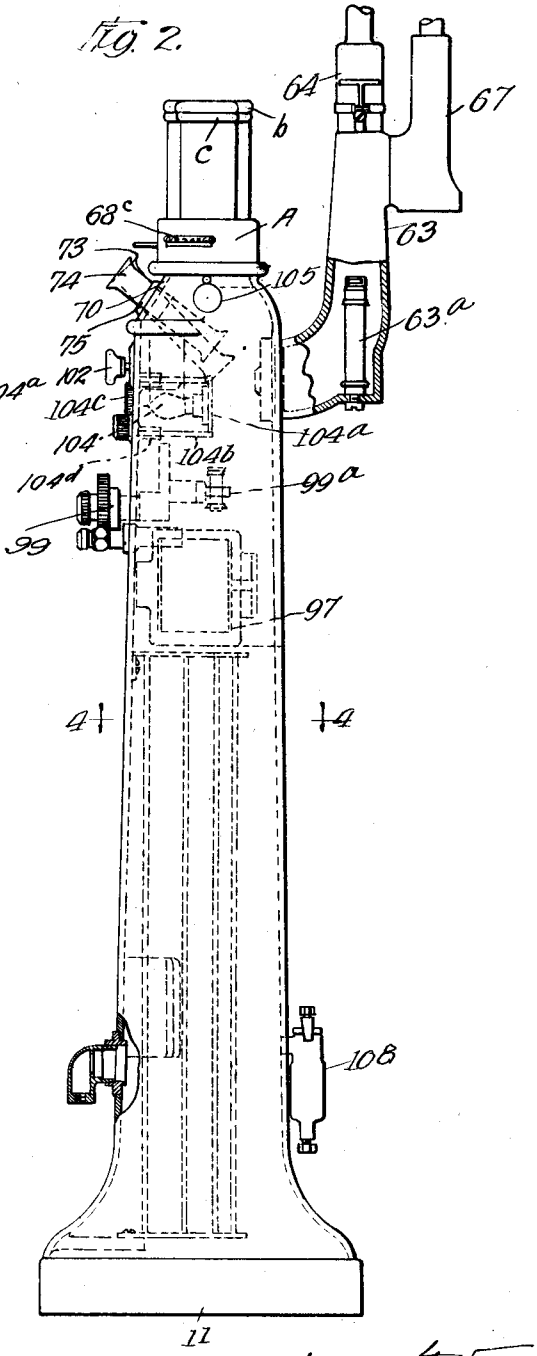


Fig. 5.

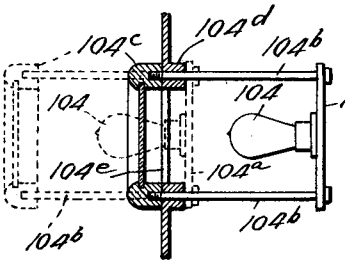
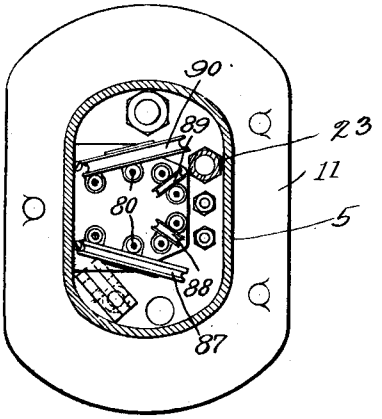


Fig. 4.



Witnesses
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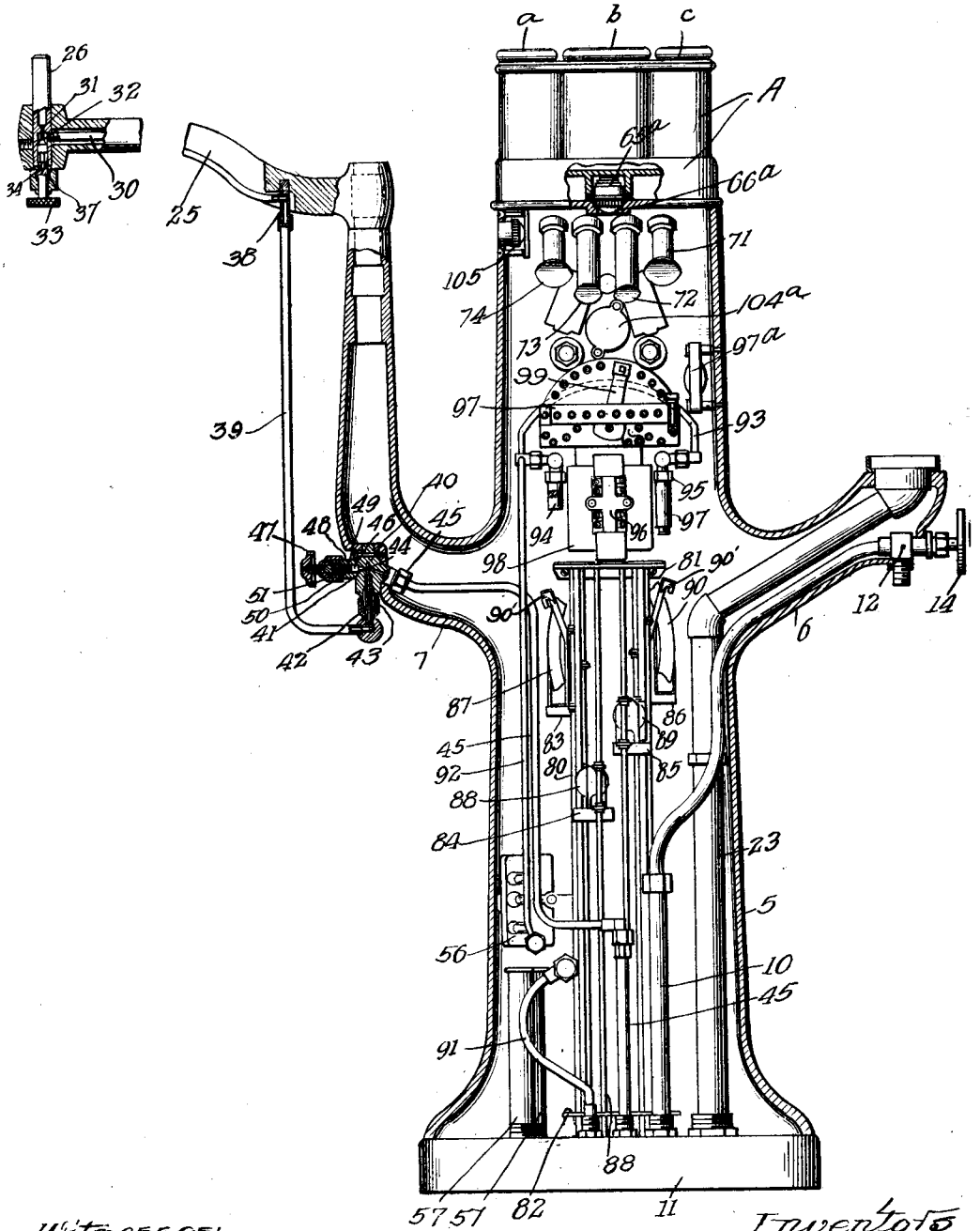
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DENTAL APPARATUS

Filed March 18, 1925 3 Sheets-Sheet 3

Fig. 3.



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Patented July 2, 1929.

1,719,306

UNITED STATES PATENT OFFICE.

OSCAR H. PIEPER AND ALPHONSE F. PIEPER, OF ROCHESTER, NEW YORK.

DENTAL APPARATUS.

Application filed March 18, 1925. Serial No. 16,267.

Our invention relates to dental apparatus and contemplates a new structure of the type known as unit equipments, i. e. equipments which comprise numerous dental instruments in unitary assembly.

The invention lies in the particular manner of mechanically mounting various devices requiring supplies of compressed air, water, gas and electric current, and its object is to do so simply and efficiently and in such a way that a compact, well balanced assembly of good appearance, with all the operating devices of ready access and control, will result.

Our invention is illustrated in the accompanying drawings, in which,

Figure 1 is a front elevational view of the unit;

Figure 2 is a side elevational view of the unit, parts being shown in dotted lines and parts being broken away and shown in section in order to illustrate the interior construction;

Figure 3 is in part a rear elevational view, in part a vertical sectional view of the unit on approximately a central plane viewed from the back;

Figure 4 is a horizontal sectional view taken on the line 4—4 of Figure 2 and looking downwardly, and Fig. 5 is an enlarged sectional view on plane 5—5 of Fig. 1.

The main supporting element is in the form of a hollow pedestal 5 which is adapted to rest upon a base, which, in turn, rests upon the floor and which pedestal, at about the middle, on opposite sides, is provided with hollow supporting arms 6 and 7, respectively.

A spittoon 8 and a secondary supporting arm 9 is mounted upon the supporting arm 6. A water supply pipe 10, suitably connected with a main water supply pipe preferably coming up through the floor, leads upwardly from the base 11 of the pedestal 5, through the pedestal and the arm 6, to a union 12 from which there is a lead 13 terminating in a union 13^a, this lead being controlled by the cut-off valve 14.

The secondary arm 9 terminates in a head 15 upon which is mounted the tumbler holder and shield 16, to which water is led by way of piping 17 which connects with the union 13^a, the flow of water through piping 17 being controlled by valve 18. Flexible tubing 19, leading from an ejector in the head 15, leads to a mouth piece at 20, forming a saliva ejector, being hung, when out of use, upon the hook 21 supported from the stud by way of which the tumbler holder and shield is mounted upon the head 15. The feed of water is directed either through the ejector and to the spittoon through exhaust tube 21^a or directly to the spittoon through flushing spout 21^b by a suitable valve 22.

A waste pipe 23 leads from the bottom of the spittoon, through the arm 6 and downwardly through the pedestal to the base 11 where it is adapted to be suitably connected to a main waste pipe in the floor.

The arm 7 supports the dental engine, the table, and a Bunsen burner. The arm 7, at its top, receives the pivotally mounted engine bracket 24, the lower end of which provides means for pivotally mounting the laterally extending auxiliary hollow or channel arm 25, as shown.

In a suitable vertical bore in the outer end of the arm 25 a tube 26 is secured and Bunsen burner 27 is screwed into the end of this tube. That portion of the tube which extends upwardly beyond the bore in which it is set also affords a bearing for the bracket 28 upon the end of which the table 29 is mounted.

A gas pipe 30 extends through the arm 25 and threads into the tube 26 below a valve seat 31 therein. A needle valve 32, which forms a shut-off valve for the burner, cooperates with this seat, being adapted to be moved into and out of contact therewith by means of the valve-handle 33 into the stem of which the end of the needle-valve is threaded, as shown at 34, whereby the valve, which is held against angular movement by means of pin 35, is moved upwardly or downwardly according to the direction of rotation of the valve handle. The stem of the valve handle is confined for angular movement by the ring 36 and a suitable gland 37 is provided to prevent leak of gas.

Near the axis upon which the arm 25 swings, the pipe 30 leads into the union 38, set into the arm 25, and from the bottom of this union a pipe 39 leads downwardly. The arm 7 being curved, the axis upon which the arm 25 swings passes out of it and, upon this axis where it intersects the wall of the arm 7, a valve housing 40 is disposed. The valve chamber thereof is at 41, and leading downwardly therefrom and coaxially therewith is a bore in which a short pipe 42, extending downwardly out of the housing, is rotatably mounted, a suitable gland 43 being provided to prevent the escape of gas. The lower end of the pipe 39 is turned toward the lower end of the pipe 42 and there the two ends are connected together. The result is that as the arm 25 swings about its axis, so do the pipes 39 and 42 swing about the same axis.

The valve seat, within the housing, is at 44, to which the gas line 45 leads, this gas line coming up from the base 11, where it is adapted for connection with the gas line in the floor, through the pedestal 5 and arm 7.

Cooperating with the valve seat 44 is a needle shut-off valve 46 which is adapted to be moved into and out of contact therewith by means of the valve handle 47 into the stem of which the end of the needle valve is threaded, as shown at 48, whereby the valve, which is held against angular movement by means of pin 49, is moved inwardly or outwardly according to the direction of rotation of the valve handle. The stem of the valve handle is confined for angular movement by the ring 50 and a suitable gland 51 is provided to prevent leak of gas.

Upon the swinging bracket 24, a dental engine, comprising the usual electric motor 52, articulated belt frame 53, and handpiece 54, is mounted, the electrical conductors 55, for the motor, coming up to it from the pedestal 5, through the arm 7, and through the bracket 24 which is hollow for that purpose and the purpose of lightness. These conductors lead from the connecting block 56, in the pedestal 5, to which electric current is brought from the line wires through conduits 57, 57 leading upwardly from the base 11, the main line switch 58, on the front of the pedestal 5 near the top, intervening, however, to control all current to the unit. On the front of the pedestal 5, near the bottom, an electrical plug receptacle 59 is mounted, this receptacle being connected in the motor circuit and being adapted for the reception of a plug 60 at the end of a flexible conductor 61 leading from the motor regulator 62.

From the back of the pedestal 5, in the center near the top, another hollow supporting arm 63 extends slightly rearwardly and then upwardly. At its end this arm is provided with two branches, the branch 64, extending directly upwardly, supporting the spot light 65, by way of the members 66, 66 connected together through universal friction joints, and the branch 67 supporting the electric fan 67^a. The electrical conductors for the spot-light and fan come up from the pedestal 5 and through the arm 63, and a resistance 63^a may be provided in the arm 63 for the spot light circuit if the high voltage is 220 volts instead of 110 volts.

We provide a spray-bottle and tumbler heater structure A which may be set upon the top of the pedestal 5. This structure comprises three cylindrical receptacles, *a*, *b* and *c*, for the spray-bottles *d* and *e* and the tumbler *f*. Each receptacle is provided with a suitable heating element connected with an electrical circuit by way of the socket 65^a and plug 66^a when the structure is set on top of the pedestal. The heating elements are provided with controls 68^a, 68^b and 68^c, respectively, whereby the current to each of them may be turned on and off and regulated independently of the others.

At the top of the pedestal 5, at the front, an oblique panel 70 is provided, and this panel is mortised for the reception of an instrument holder comprising four tubular receptacles 71, 72, 73 and 74 and an escutcheon plate 75, the axes of the middle receptacles being inclined relative to those of the outer receptacles, as shown. In these receptacles various instruments, requiring electric current or air, or both, for operation, are disposed, and flexible connections for these operating mediums, in the way of cord circuits, are provided, the instrument handles being adapted to be lodged against suitable stops within their respective receptacles and their respective cord circuits extending out of the lower ends thereof. The lower ends of the receptacles are belled to avoid abrasion of the cords, and the upper ends are belled for the same purpose when the instruments are in use. The inclined relation is to avoid interference of the cords with adjacent parts.

A hot air syringe 76 is disposed in the receptacle 71; a mouth lamp 77 is disposed in the receptacle 72; a heating instrument, such as a spatula, root canal drier or excavator, 78, is disposed in the receptacle 73; and an air control 79 for use with the spray bottles is disposed in the receptacle 74.

Within the pedestal 5 a series of vertically disposed guide rods 80, 80 are mounted between upper and lower supports 81 and 82, respectively, and on these guide rods counterweights 83, 84, 85 and 86 are slidably mounted. These counterweights are provided with pulleys 87, 88, 89 and 90, respectively, for the reception of the respective instrument cords. Pulleys 87 and 90 are larger than the others since they receive air tubes, while the others receive simply electrical conductors. The cords and tubes have been omitted from the drawings to avoid confusion, the description sufficing to make full disclosure. Compressed

air is supplied from below, through the base 11, being then led upwardly, by way of piping 91, 92, 93, to the two air connections 94 and 95.

The air connection 94 is for the spray bottles, flexible tubing leading therefrom passing downwardly around the pulley 87 and then upwardly to the air control 79 in the receptacle 74. The air connection 95 is for the hot air syringe, flexible tubing leading therefrom passing downwardly around the pulley 90 and then upwardly to the hot air syringe 76 disposed in the receptacle 71. Electric current is also led to the hot air syringe, this being accomplished by leads from the connection block 96, which will be referred to later, passing into the hot air syringe air tube by way of the special insulating connection 97, and then through the tube to the syringe. Guides 90′ hold the tubing to their pulleys. From the connection block 96 electrical conductor pairs lead downwardly, and around the pulleys 88 and 89 respectively, and then upwardly to the mouth lamp 77, in the receptacle 72, and to the heating instrument 78, in the receptacle 73, respectively.

From the connection block 56 leads are carried up to the regulating transformer 98 by means of which low voltage is supplied to the connection block 96. To control the voltage of the low voltage circuit the regulator 99 is provided, the handles therefore being exposed on the front of the pedestal 5 near the top, as shown in Figure 1, as part of a switchboard. This really comprises two regulators, one for the mouth lamp and one for the heating instruments, the voltages being independently regulatable from three to twelve volts. A resistance 99^a is connected in series with the mouth lamp to prevent excessive current passing through the lamp even at the highest point. This switch-board also includes the main line switch 58, which controls all current to the unit, as before stated, and a low voltage switch 101, which controls the circuit to the transformer, assuming the device as a whole to be supplied with alternating current. In the case of direct current this switch controls a rotary converter connected to the electric connection block 56. The switchboard also includes a push button 102 for a call bell or buzzer, main line fuse receptacles 103, 103, and a pilot lamp 104. This lamp is mounted on a small supporting plate 104^a on the inner ends of the rods 104^b which extend from the glazed frame 104^c and are slidable in the lugs 104^d on the pedestal wall adjacent to the opening 104^e in the wall. Pulling the frame away from the opening brings the lamp through the opening and permits easy replacement of the bulb.

From the low voltage connection block 96 a pair of leads controlled by the voltage regulator also go to the low voltage plug receptacle 105, conveniently located at the side of the pedestal 5, near the top, as shown in Figure 2, where connection may be made, by plug and cord, for any additional low voltage instrument desired, such as operating light, head light or the like.

Air valves 106 and 106^a are provided for the hot air syringe and spray bottle air lines, respectively, these valves being conveniently located as part of the switchboard.

A receptacle 107 is also provided on the front of the pedestal 5 for a tooth tester, the low voltage current to which is taken from the small step-up transformer 97^a the primary of which is regulated by the voltage regulator for the mouth lamp. An air filter 108 may be connected between the piping 91 and 92 if desired.

We claim:—

1. A dental equipment comprising a pedestal, a unitary heating device set upon and forming a top for said pedestal, said device comprising receptacles for a tumbler and bottle, respective electric heating elements therefor, means for regulating said elements, and means for electrically connecting said elements to a circuit within said pedestal by setting said device thereon.

2. A dental equipment comprising a support having an electric circuit, a unitary heating device forming a top for said support and comprising a receptacle, a heating element, and means for regulating said heating element, and means for electrically connecting said element to said circuit by setting said device upon said support.

3. In a dental equipment, a hollow support having an opening in one of its walls, a frame at the outside of said support for fitting over said opening, rods extending from said frame into the support, means for guiding said rods, a supporting plate mounted on the inner end of said rods, and an electric lamp mounted on said plate, withdrawal of said frame from said opening causing said plate to move outwardly to expose said lamp through said opening.

4. In a dental equipment, a wall having an opening therein, a frame slidably mounted on said wall, a closure on the outer end of said frame for covering said opening, a lamp supported on the inner end of said frame, outward movement of said frame to uncover said closure from said opening causing exposure of said lamp through said opening.

5. In a dental equipment, a supporting pedestal having an opening in its side wall, guide lugs on said wall adjacent to said opening, guide rods slidable through said lugs, a closure frame on the front ends of said rods for engaging against the outside of said wall to cover said opening, a plate on the inner ends of said rods, and a lamp on said plate, withdrawal of said frame from said opening

causing outward slide of said rods and exposure of said lamp through said opening, said frame being glazed.

6. In a dental equipment, a pedestal having an opening in one of the side walls, stationary guide lugs adjacent to said opening, a frame slidable through said lugs, a closure member on the outer end of said frame for closing said opening, and a lamp on the inner end of said frame, outward shift of said frame causing removal of said closure from said opening and exposure of said lamp through said opening.

Signed by the said OSCAR H. PIEPER, at Berlin, Germany, 22nd day of January, 1925.

OSCAR H. PIEPER.

Signed by the said ALPHONSE F. PIEPER at Rochester, in the county of Monroe and State of New York.

ALPHONSE F. PIEPER.