

(No Model.)

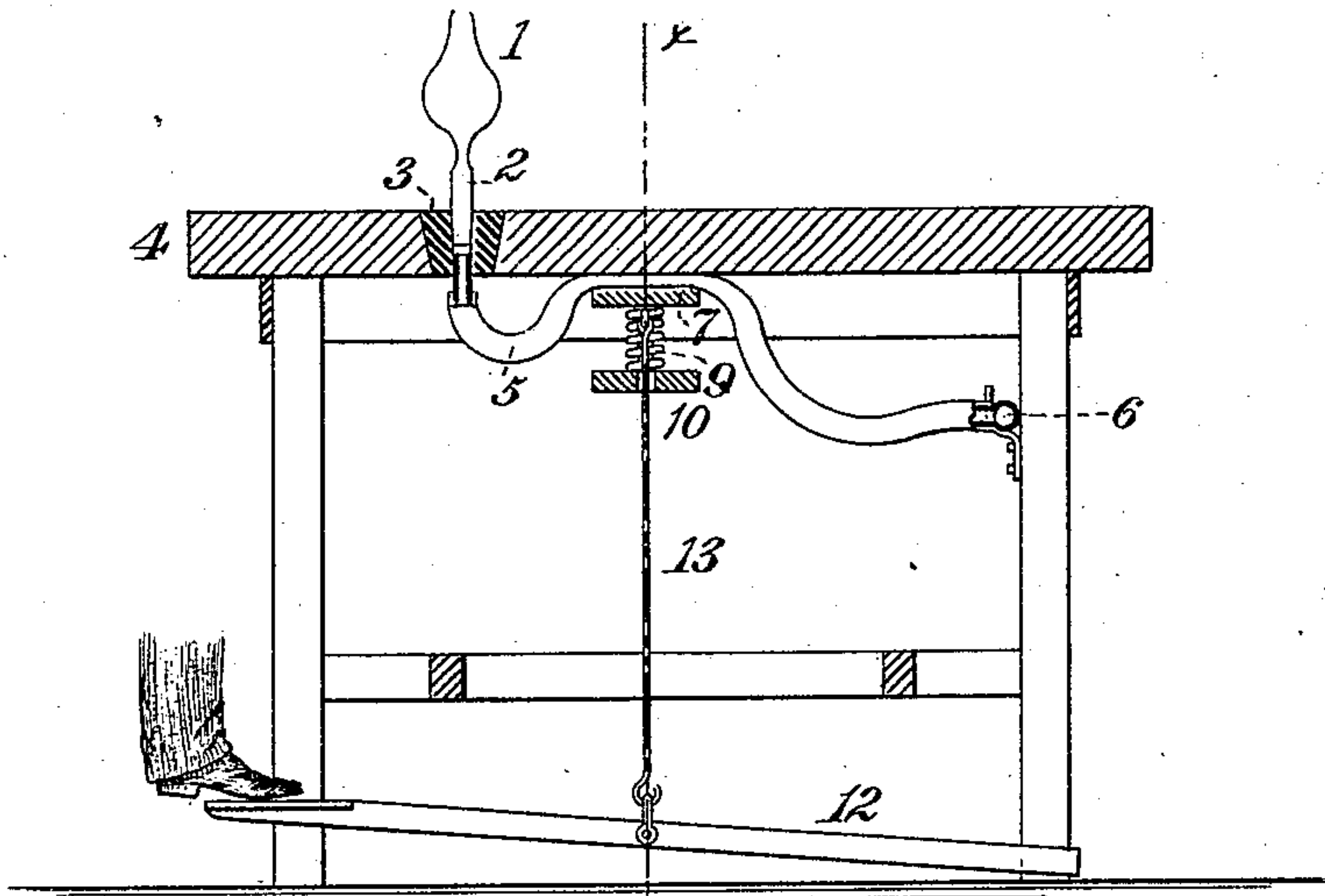
A. L. REINMANN.

METHOD OF DRYING INCANDESCENT ELECTRIC LAMP BULBS.

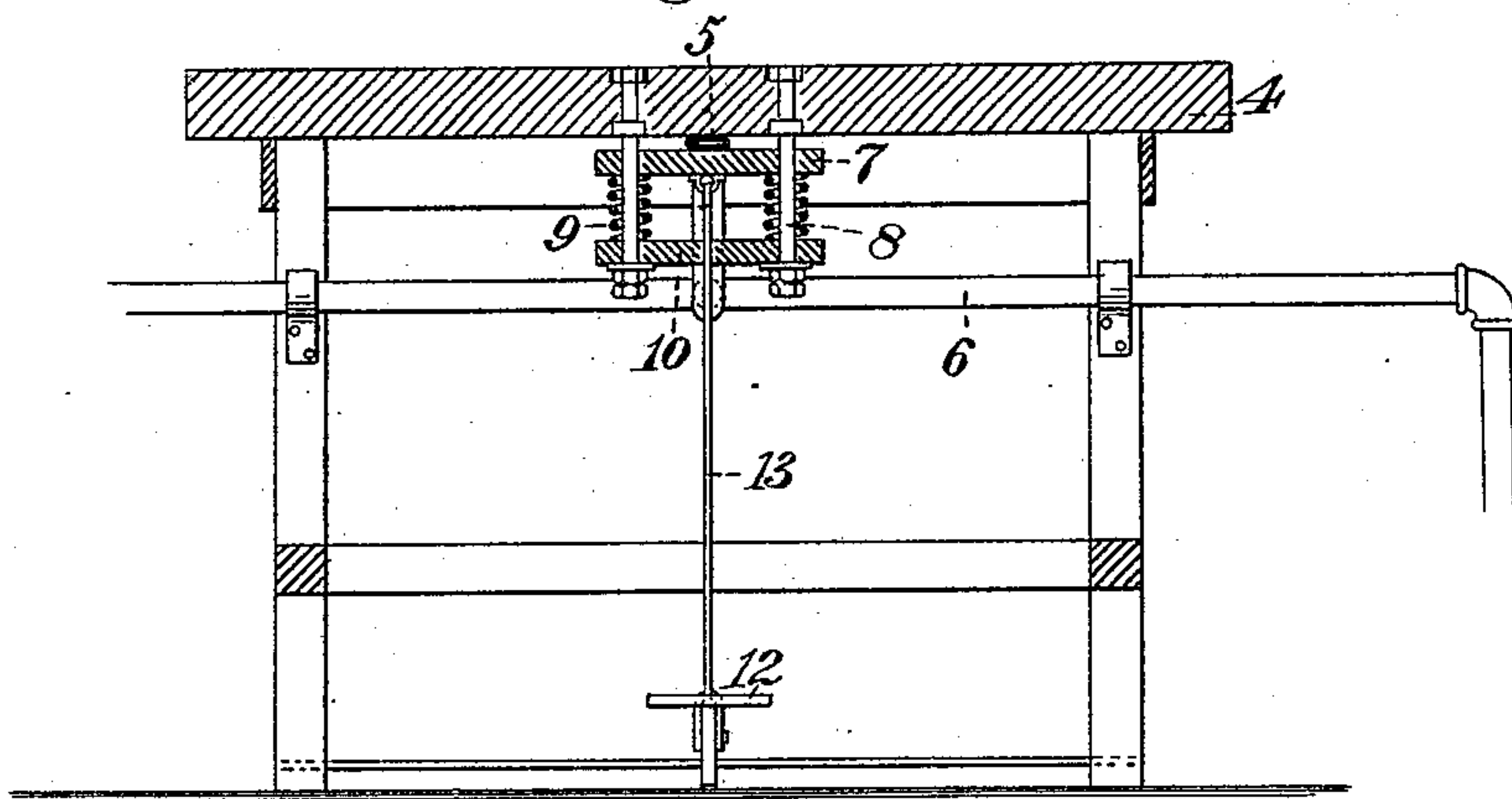
No. 355,714.

Patented Jan. 11, 1887.

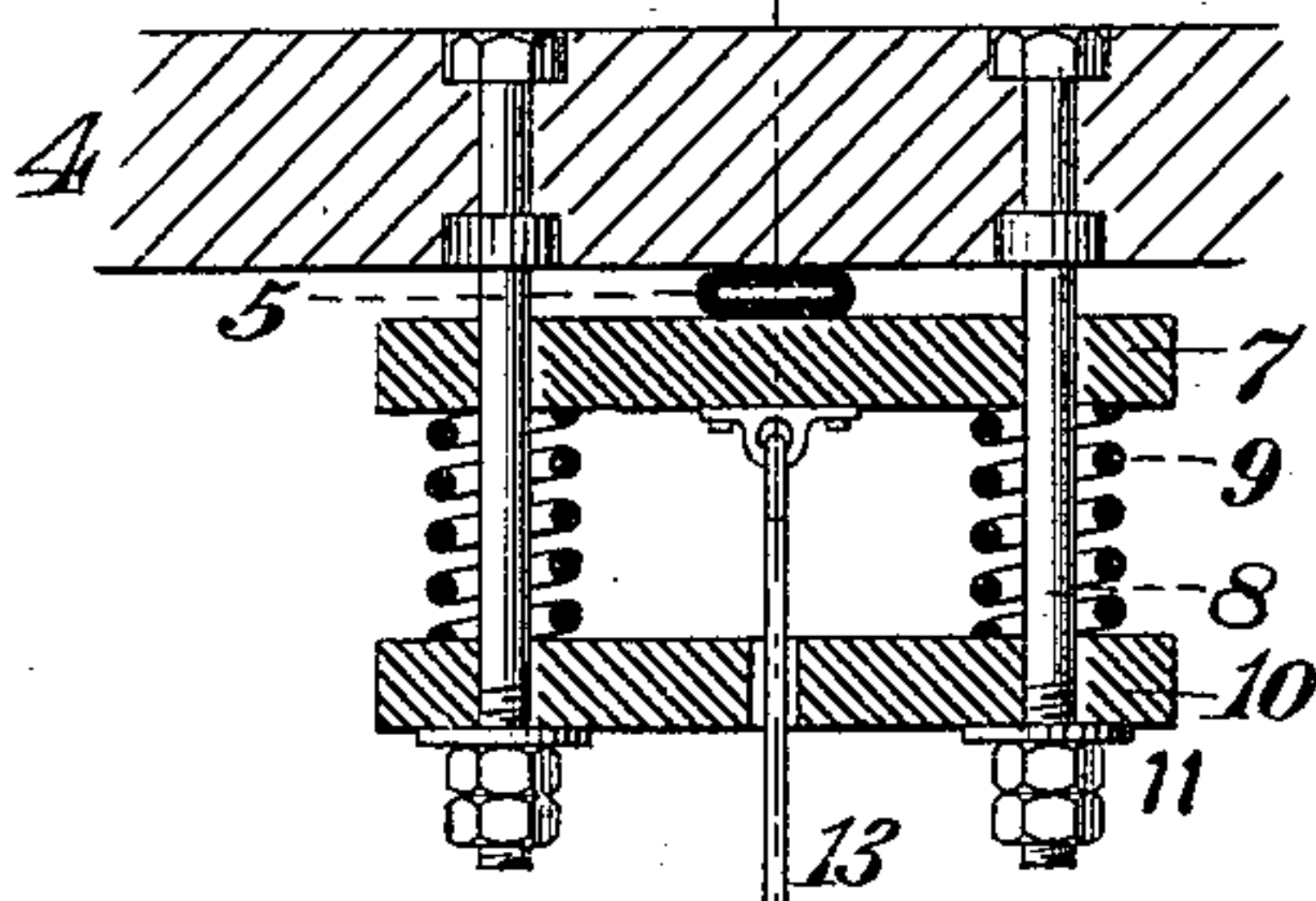
*Fig. 1.*



*Fig. 2.*



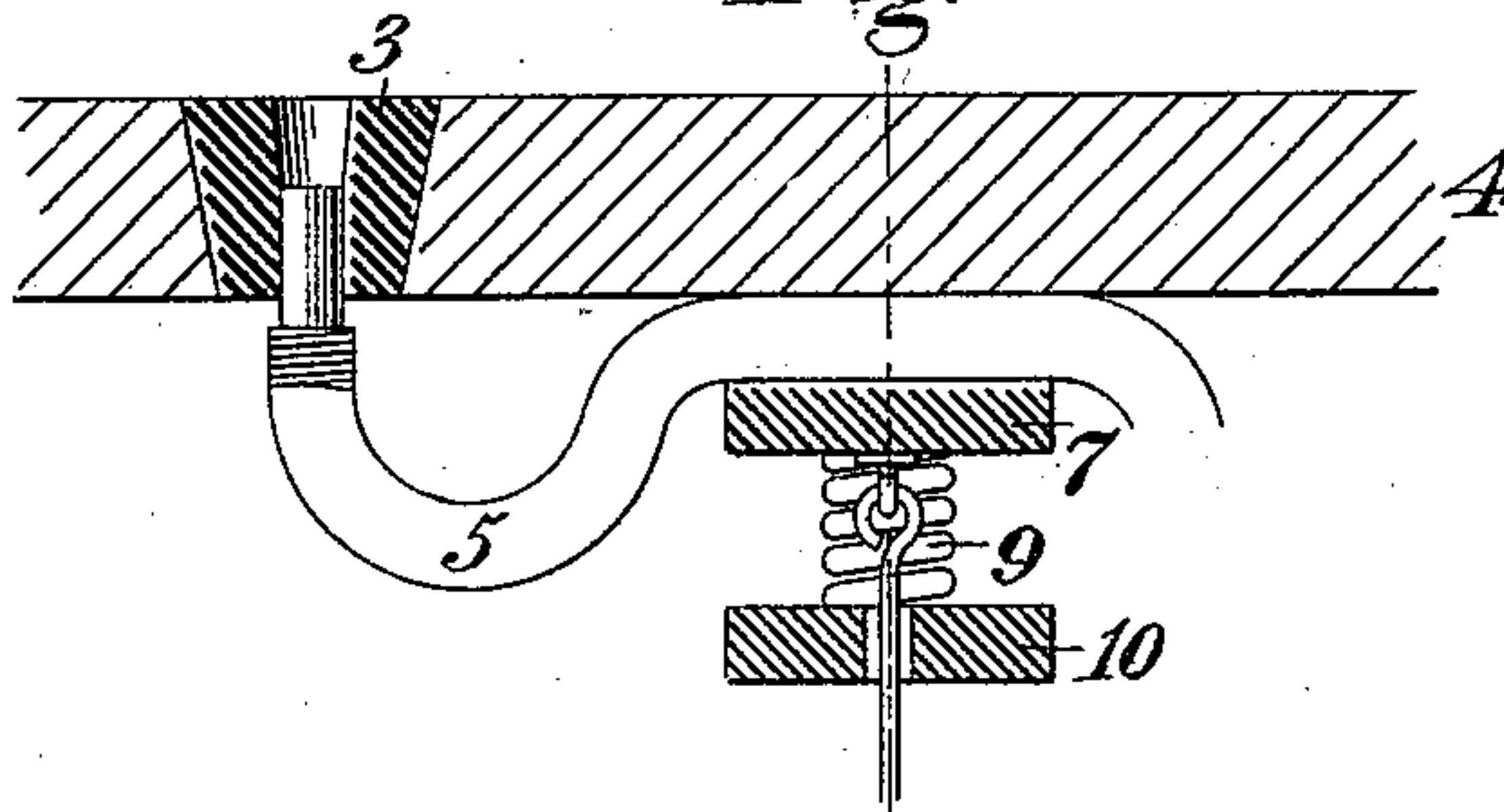
*Fig. 4.*



WITNESSES:

*C. M. Clark.*  
*R. H. Whittlesey*

*Fig. 3.*



INVENTOR,

*Albert L. Reinmann.*  
*By Daniel S. Wolcott*

Att'y.



# UNITED STATES PATENT OFFICE.

ALBERT L. REINMANN, OF PITTSBURG, PENNSYLVANIA.

## METHOD OF DRYING INCANDESCENT ELECTRIC-LAMP BULBS.

SPECIFICATION forming part of Letters Patent No. 355,714, dated January 11, 1887.

Application filed August 7, 1886. Serial No. 210,269. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT L. REINMANN, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in the Method of Drying Incandescent Electric-Lamp Bulbs, of which improvements the following is a specification.

10 In the accompanying drawings, which make part of this specification, Figure 1 is a sectional elevation of the apparatus employed in carrying out my invention. Fig. 2 is a similar view, the section being taken on the line *x x*, Fig. 1. 15 Figs. 3 and 4 are enlarged sectional views of the clamp, the section being the same as those shown in Figs. 1 and 2, respectively.

The invention herein relates to certain improvements in the method of manufacturing incandescent electric lamps, whereby the inner surface of the bulb is prevented from being spotted during the operation of inserting the filaments and finishing the lamp. The bulb as it comes from the glass house is closed 25 at the top, and the neck is in such a condition as to require considerable change in form and dimensions for the reception and sealing of the filaments and leading-in wires.

The first step in the operation of finishing 30 the lamp is to open the upper end and attach a short tube thereto, which serves as a blow-pipe during subsequent manipulations necessary for sealing in the filaments. During these operations it is necessary to apply internal 35 pressure to the bulbs and their connections while heated, and this is done by the workman blowing through the tube at the top with his mouth. The air thus forced in is necessarily very moist, and the subsequent cooling of the 40 bulb causes the moisture in the air within the bulb to condense and form drops on the inner walls of the bulb, and these drops collecting dust dry and form spots, which detract from the appearance of the lamp when finished.

45 The object of the invention herein is to so treat the bulbs during the operation above stated as to remove the moisture from the bulbs, and thus prevent the formation of spots or blotches on the bulbs.

50 In general terms, the invention consists in

the method substantially as hereinafter described and claimed.

In carrying out my invention the bulb 1 is opened at the top, and the tube 2 is secured thereto in the usual manner. As soon 55 as the tube has been secured to the bulb, the end of the tube is inserted into the opening in the rubber plug 3, let into the working table or bench 4, as shown. Into the opposite end of the opening in the plug is inserted one 60 end of a rubber pipe, 5, the opposite end of said pipe being connected to the pipe 6, leading to a fan or other suitable source of wind-supply. The air from the pipe 5, rushing through the tube and bulb, will thoroughly remove all 65 moist air and moisture from the bulb. In order to regulate the flow of air through the tube 5, the latter is passed between the table and a movable board, 7, mounted on rods 8, depending from the table. This board is normally 70 held up against the pipe 5 by the springs 9, surrounding the rods 8, and interposed between the movable board and a stationary board, 10, slipped onto the lower ends of the rods and supported by the nuts 11. The ten- 75 sion of the springs 9 is such as to compress the pipe together when free to act, and the board 7 is drawn down from the pipe by the treadle 12, to which it is connected by a rod, 13. By these or any other suitable means—as, for ex- 80 ample, a valve in either of the pipes 5 and 6—the operator is able to control the flow of air to the bulb.

After the tube 2 has been secured to the bulb and the moist air removed, the neck of the 85 bulb is heated, and then properly shaped for the reception of the filaments and the leading-in wires and the sealing in of the latter, during which operation it is necessary to blow into the bulb, thereby filling the latter with moist 90 air. Immediately after each blowing operation by the workman, the tube 2 is inserted in plug 3 and the treadle depressed, thereby permitting dry air to pass through the bulb, thus removing the moisture therefrom. If it is nec- 95 essary to apply internal pressure to the bulb after the neck has been sealed, the tube 2 may be placed in the plug and the desired pressure be obtained by the air from the pipes 5 and 6; or the internal pressure may be applied 100

by the workman, the moist air being immediately removed by exhausting the air from the bulb while the latter is in a heated condition, as fully described and claimed in Patent No. 5 323,205, granted to me July 28, 1885. Even if internal pressure be applied, as above stated, by air from the pipes 5 and 6, I prefer that the bulbs be exhausted while heated, thus insuring the certain removal of all moisture.

10 If desired, the air from the pipes 5 and 6 may be passed through any suitable drying material in a manner well known in the art.

I claim herein as my invention—

As an improvement in the art of manufac-

turing incandescent electric lamps, the method 15 herein described, which consists in forcing dry air through the heated bulb during the operations or manipulations incident to the insertion and sealing in of the filament and leading-in wires, and then exhausting the air from the 20 bulb while the same is in a heated condition, substantially as set forth.

In testimony whereof I have hereunto set my hand.

ALBERT L. REINMANN.

Witnesses:

R. H. WHITTLESEY,  
DARWIN S. WOLCOTT.