(No Model.)

B. B. MERRILL.

TUBULAR LANTERN.

No. 323,710. Patented Aug. 4, 1885.

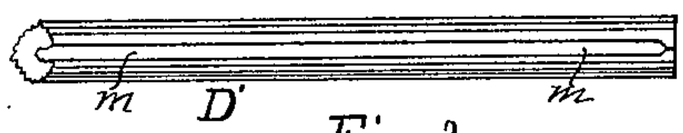

Fig. 3.

Fig. 4.

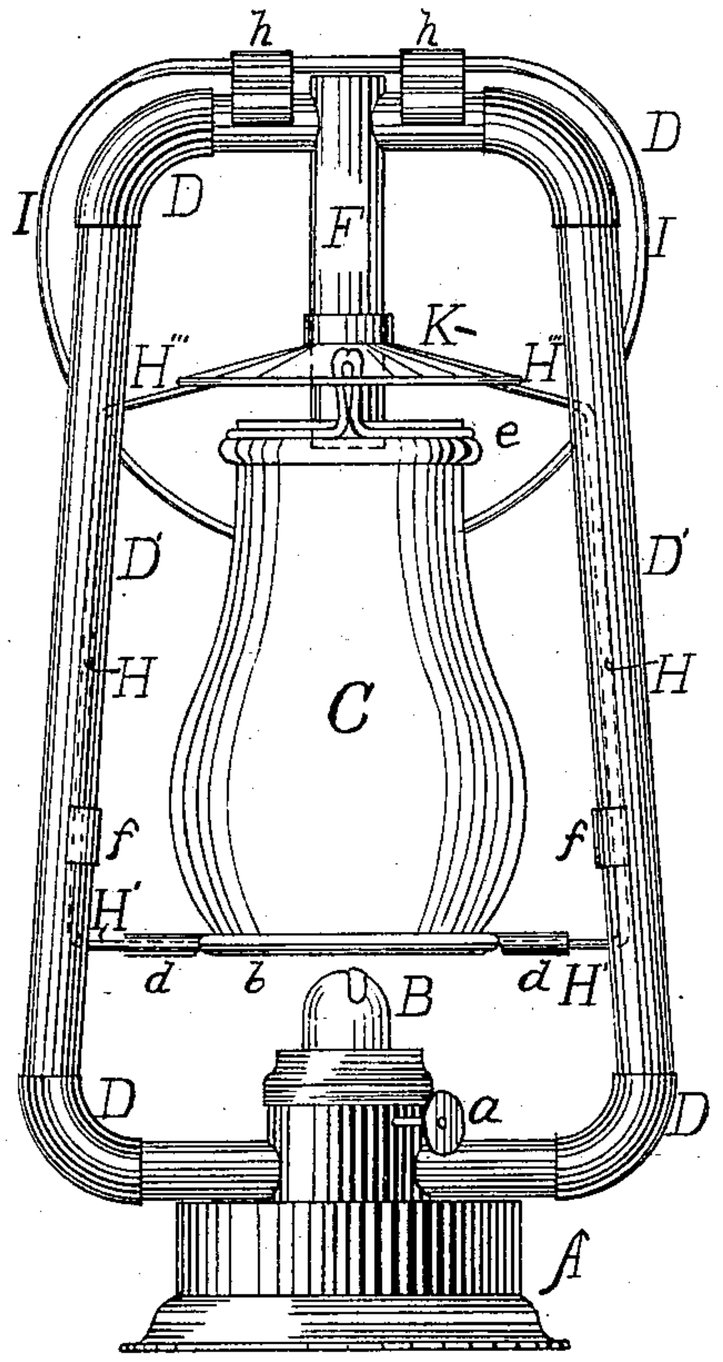

Fig. 1.

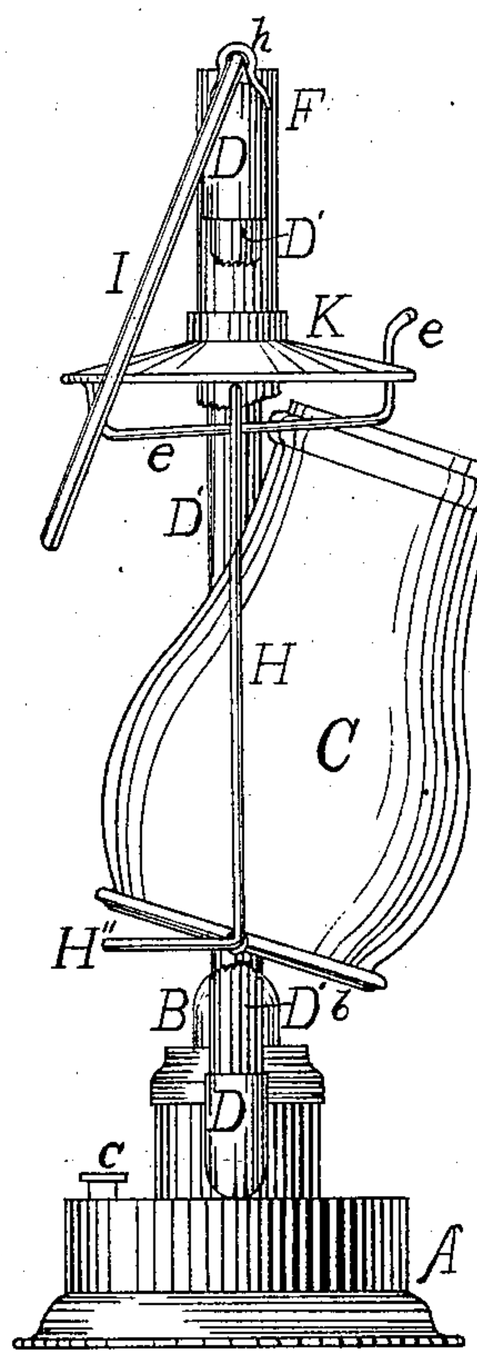

Fig. 2.

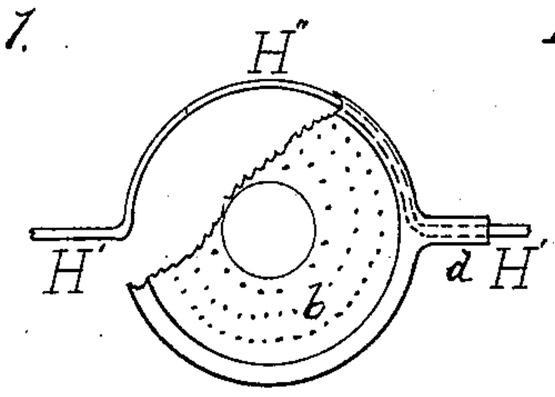

Fig. 5.

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BISBEE B. MERRILL, OF BREWER, MAINE.

TUBULAR LANTERN.

SPECIFICATION forming part of Letters Patent No. 323,710, dated August 4, 1885.

Application filed December 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, BISBEE B. MERRILL, a citizen of the United States, residing at Brewer, in the county of Penobscot and State of Maine, have invented a new and useful Improvement in Tubular Lanterns; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in the vertically-sliding cages or frames in tubular lanterns used to support and retain the lantern-globe and raise and lower the same, and in the method of securing the perforated disk upon which the globe rests and tilts, and is fully illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a tubular lantern, showing the sliding cage or frame raised, the dotted lines showing the side wires of the sliding cage in grooves formed in the sides of the tubular frame of the lantern. Fig. 2 is a side view of a tubular lantern, with the sliding cage raised and the tubular frame broken away in front and the globe partially removed, showing the bottom wire of the wire cage bent in the form of a semicircle to form a seat for the perforated disk. Fig. 3 is a front view of the grooved or channeled portion of the tubular frame. Fig. 4 is a sectional view of the grooved or channeled portion of the tubular frame at the point where the walls of the groove or channel are pinched together and the groove terminates. Fig. 5 is a top view of the perforated disk and the seat for the same, formed by bending the bottom wire of the wire cage, the perforated disk being partially broken away to show the seat. This figure also shows the perforated disk attached or hinged to the bottom wire of the wire cage by sleeves.

The same letters indicate like parts through the drawings.

C is the globe of a tubular lantern. D D D′ D′ is the tubular frame. D′ D′ are the channeled or grooved side pieces of the tubular frame. F is the draft-tube. H H are the side pieces or straps of the sliding wire cage or frame. H′ H′ are the straight portions of the bottom wire of the wire cage. H″ is a semicircular bend in the bottom wire of the wire cage, forming a seat for the perforated disk *b*. H‴ H‴ are the upper ends of the side pieces of the wire cage bent inwardly and rigidly secured to the concave disk K. *b* is the perforated disk. *d d* are sleeves hinging the perforated disk *b* to H′ H′. *e* is a spring, which holds the globe C down upon the perforated disk *b*. *f f* are straps or bands to secure the side pieces, H H, in the grooves or channels *m m*. K is a concave disk sliding on the draft-tube F. *m m* are channels or grooves in the side pieces, D′ D′, of the tubular frame.

The vertically-sliding cage or frame H H′ H″ H‴ is constructed of wire in one piece. Its sides are inclined toward each other from the bottom upward at the same angle as the sides of the tubular frame, and its width is such as to allow its side pieces, H H, to fit loosely in the grooves or channels *m m* of the side pieces, D′ D′, of the tubular frame. The vertically-sliding cages of tubular lanterns have hitherto moved entirely within the space inclosed by the tubular frames and clear of the tubular frames to which they have been attached and guided when moved up and down by metal loops or rings. Where the side straps of the wire cage are thus attached to the tubular frame they are liable to become bent, warped, or sprung, and the free vertical movement of the cage through the loops to become obstructed. To remedy this defect I form channels or grooves *m m* on the inner sides of the side pieces, D′ D′, of the tubular frame of a form and shape adapted to receive the side straps, H H, of the wire cage and permit a free vertical movement of the side straps in the grooves. The wire cage is formed wider than the cages heretofore used in order to fit into the grooves *m m* in the sides D′ D′ of the tubular frame, and I construct the grooves *m m* deep enough to receive and hold the wire cage loosely when it is pushed down, and to permit the cage to be raised without causing the side straps, H H, to bind in the grooves *m m*. The side straps, H H, are bent at the tops H‴ H‴, nearly at a right angle, and the ends rigidly secured to the concave disk K, which slides upon the tube F when the cage

is raised or lowered. The side straps, H H, bent ends H‴ H‴, and bottom H′ H″ H′ of the cage are all formed of one piece of wire, the bottom piece containing a bend, H″, in the form of a semicircle and in the direction of its horizontal plane, which serves as a seat or support for the perforated disk *b*. The seat H″ is concentric with the perforated disk *b*, and with a slightly lesser radius, so that it may receive upon it the outer edge of one-half the disk *b*, which is firmly held down upon the seat H″ by the globe C and spring *e*.

In extension of the sides of the perforated disk *b*, opposite the side pieces, D′ D′, of the tubular frame, I form wings or projections adapted to be bent around the straight portions H′ H′ of the bottom wire of the cage, which serve to secure the disk *b* to the cage, and, acting as hinges, permit the disk *b* to tilt upward and forward from the seat H″ when the cage is down and the spring *e* lifted, thus allowing the globe C to be easily secured in and removed from position without raising the cage. For convenience in drawing, Fig. 2 shows the disk *b* tilted forward and the globe C partially removed when the cage is raised; but in practical use the disk is tilted and the globe removed when the cage is fully pushed down and without raising the cage.

An incidental advantage of the form of construction of my invention is that the whole cage can be raised and lowered by applying the necessary force to the bottom wire, H′ H′, of the cage, instead of to a catch or knob upon the tube F, where the metal has become heated, as has been done heretofore.

I do not claim a wire cage or frame for connecting the disks *b* and K; nor do I claim, broadly, the combination, with the lantern tubes, of a globe-supporting cage having a vertically-sliding engagement with the tubes; nor do I claim the perforated disk *b*, or any seat for the same heretofore used; but

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

1. In a tubular lantern, the combination, with the side tubes provided with longitudinal grooves and the globe-holding devices, of a sliding cage or frame carrying said devices and having side pieces substantially parallel with the side tubes, said side pieces being situated within the grooves of the tubes, as and for the purposes described.

2. In a tubular lantern, the combination, with the sheet-metal side tubes bent to form longitudinal grooves, and the globe-holding devices, of a sliding frame carrying said devices, and having side pieces substantially parallel with the side tubes, said side pieces being situated within the grooves of the tubes, as and for the purposes described.

3. In a tubular lantern, the combination, with the tubular frame, of the vertically-sliding wire cage or frame H H′ H″ H‴, formed to move freely in the grooves or channels *m m* of the side pieces, D′ D′, of the tubular frame, the bottom wire, H′ H″ H′, of said cage being constructed with a semicircular bend or seat, H″, of such radius as to receive and support one-half the outer edge of the perforated disk *b*.

4. In a tubular lantern, the combination of the grooved or channeled side pieces, D′ D′, of the tubular frame with the wire cage or frame H H′ H″ H‴, said cage being formed of such width as to allow its side pieces or straps, H H, to fit loosely and move freely up and down in the channels or grooves *m m* of the side pieces, D′ D′, of the tubular frame.

5. In a tubular lantern, the combination of the grooved or channeled side pieces, D′ D′, of the tubular frame, the vertically-sliding wire cage or frame H H′ H″ H‴, and the perforated disk *b*, attached to the straight portions H′ H′ of the bottom wire of said wire cage by sleeves, loops, or any equivalent device, all as shown and described, and substantially as and for the purpose specified.

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