J. H. BOARDMAN.

LAMP-BURNER.

No. 187,090. Patented Feb. 6, 1877.

Fig. 1.

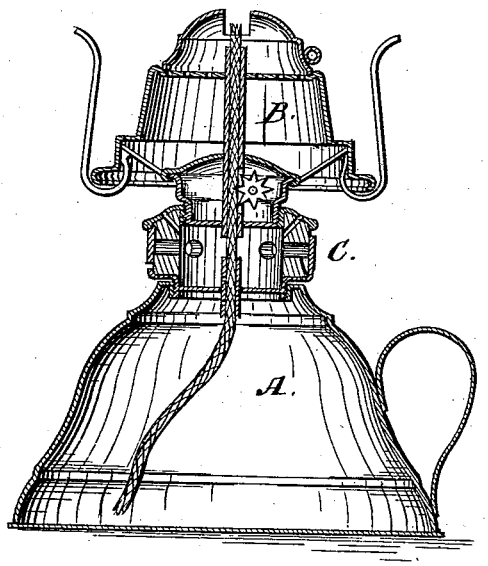


Fig. 2.

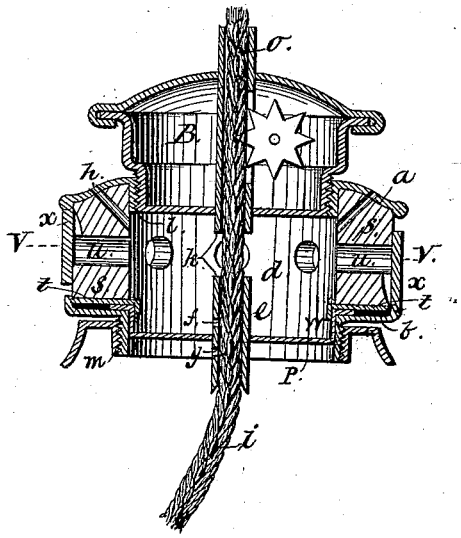


Fig. 3.

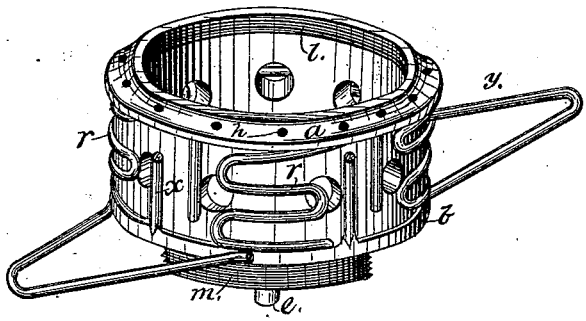
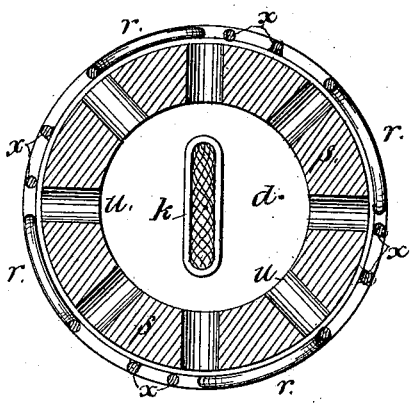


Fig. 4.



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IMPROVEMENT IN LAMP-BURNERS.

Specification forming part of Letters Patent No. **187,090**, dated February 6, 1877; application filed September 28, 1876.

To all whom it may concern:

Be it known that I, JOHN H. BOARDMAN, of the city and the county of Baltimore, and State of Maryland, have invented a new and useful Improvement in Lamp-Burner Attachments, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to prevent the explosion of gas within the fount of a lamp, and its often direful consequences, by placing a heat-intercepting and gas-stopping attachment on the lower part of the burner, thus preventing the heat of the burner from being communicated to oil in the fount, and shutting off from the principal part of the fount gas generated at the lower end of the burner wick-tube.

Figure 1 is a central and vertical section, in which C denotes the attachment connected with a lamp burner, denoted by B, and with a lamp-fount, denoted by A. Fig. 2 is also a central and vertical section of the attachment, including a part of the burner and a part of the wick, on a larger scale. Fig. 3 is a perspective view of the attachment, and Fig. 4 is a horizontal sectional view of the attachment through line V V of Fig. 2.

In Fig. 2, *a* and *b* denote two sheet-metal rings, of suitable size for the purpose. *l* denotes a screw-thread formed on the inside of ring *a*, for connecting the attachment to a lamp-burner. *m* denotes a screw-thread formed on the outside of the lower part of ring *b*, for connecting the attachment to a lamp-fount. *h* denotes orifices made through ring *a* to the central space, for the escape of gas, and *y* in Fig. 3 denotes a handle on ring *b*, for use when putting the attachment on and in removing it from the fount, that it may not be twisted nor put into a condition unsuitable for use, as well as for convenience.

It will be perceived that the handle is not merely a result incidental to the form or style of the heat-intercepting and gas-stopping part of the attachment, but is a separate idea, and so constitutes a distinct feature in the invention.

I use brass as the most suitable material of which to make rings *a* and *b* and the handle, on account of its cheapness and its well-known qualities.

In Fig. 2, *p* denotes a plate, supported on ring *b*, for the purpose of closing the opening through such ring, thus shutting off the gas-space around the lower end of the flame wick-tube from the principal part of the fount, if not from all of it, through the center of which plate is a wick-passage, to be filled by the wick.

w denotes an oil-cup surrounding the lower wick-passage, for the purpose of catching oil which may rise through the wick, by capillary attraction or otherwise, and overflow. I form the principal part of such oil-cup by making plate *p* dishing.

Plate *p*, when forming, in part, oil-cup *w*, and with its wick-passage closing the opening through ring *b*, is a somewhat cheaper mode of construction than that of making ring *b* and plate *p* in one piece, for they may be stamped out of thinner metal than is required if stamped in one piece, in order to give sufficient firmness for screws *m;* and also there is a saving in the cost of the dies required, for the one set of dies used in stamping ring *b* when the lower wick-passage is adjustable may also be used when adjustability is not required, as with a round wick; and, besides, when plate *p* is in a separate piece from ring *b* the lower wick-passage can be set high or low, and be better adapted to different forms of founts and to different grades of oil, and may be set lower than is consistent with stamping the oil-cup and ring in one piece.

In Fig. 2, *e* denotes a wick-tube through plate *p*, for use only in connection with the flame wick-tube, and of such size as to be completely filled by the wick in passing once through it from the flame wick-tube to the fount, thus preventing gas from descending through it without compressing the wick too much for the oil to rise through it and the ratchet to elevate it. The greater wick-surface of wick-tube *e* renders it much more effective for the same purpose, including preventing the oil from spilling when the lamp is inclined, than is an opening only through a thin plate.

It is best to form a bevel on the lower end

of wick-tube *e*, thus making the entrance to its lower end slightly larger than the balance of such passage, to facilitate the upward movement of the wick.

f denotes an oil-passage from oil-cup *w* through the side of wick-tube *e*, and *g* denotes a vent to the upper part of the fount, through the side of wick-tube *e*.

After connection made with the burner in the manner shown and described, when wick-tube *e* has a flattened form, as shown, plate *p*, supported loose on ring *b* in such case for such purpose, may be turned and wick-tube *e* adjusted to correspond transversely with the wick-tube of the burner without loosening the connection of ring *a* with the annulus, nor the connection between rings *a* and *b*.

t denotes a fastening above plate *p*, for holding it in place on ring *b*.

In Fig. 2, *s* denotes a short tube or a ring, of a material which is a non conductor of heat, or a very poor conductor of it, called a non-conductor of it, between rings *a* and *b*, separating them, for the purpose of giving ring *a* a non-conducting support. It permits the use of very slight metallic connections between the two rings *a* and *b*. *u* denotes lateral openings made through non-conductor *s*, venting chamber *d*.

As non-conductor *s* is liable to shrink and to expand by the action of heat and of cold, it is held firmly during such variations by metallic spring-holders and metallic spring-supports, described as follows: In Fig. 3, *x* denotes metallic spring-holders, of which I use eight. They are attached at one end only to rings *a* and *b*, alternately, having their detached ends rest upon non-conductor *s*. In this manner they may have proper action as springs, and do not furnish a metallic communication for the heat. *r* denotes a metallic spring-support, of which I use four, for the purpose of permanently connecting-rings *a* and *b*, as well as for holding non-conductor *s*. They are of such length and size of material that but little or no appreciable heat is transmitted through them. I use a small brass wire as the best material to make them of, on account of its elasticity and strength in proportion to its size, as well as for other qualities. I also use brass as the best material of which to make spring-holders *x;* but I do not limit myself to any particular material of which to make any particular part of the attachment, any further than to insure the general qualities stated in connection with the description of the several parts—as "sheet metal," "metallic," and "non-conductor of heat"—unless a further limitation exists in a claim. Folded spring-supports *r* not only act as springs, holding non-conductor *s*, but they hold rings *a* and *b* firmly, preventing either from being turned alone, and give a more steady support for the burner. It is best to curve them to correspond to the circumference of ring *a*.

In Fig. 2, *d* denotes a central chamber within non-conductor *s*. This chamber, in connection with vents *u* and *h*, serves to keep the lower part of the burner more cool, and to furnish an escape for the gas generated at the lower end of the burner wick-tube, which gas is drawn up by the draft of a chimney and is consumed. *k* denotes the space between wick-tube *o* and wick-tube *e*, breaking the communication of the heat. *i* denotes a wick extending through both wick-tubes. Within space *k* the wick is exposed to air or gas. *o* denotes the flame wick-tube of a burner; and the ratchet shown denotes a wick-elevator connected with the flame wick-tube of a burner, and having its teeth or wick-contact part above the lowest point of such flame wick-tube. With the ratchet so placed, there is no difficulty in elevating the wick through the space between the two wick-tubes—a distinguishing and important fact in connection with upper and lower wick-tubes.

The annulus of the burner shown denotes the annulus of a burner having a screw on its lower part.

To use the attachment, first connect it firmly with the burner. Then, if necessary, adjust the lower wick-tube to correspond to the burner wick-tube, and, by means of a string attached to a point formed on one end of the wick, draw the wick through both wick-passages, so as to trim the burner, and then connect to the fount.

I claim as my invention—

1. The combination of adjustable plate *p*, fastening *t*, wick-tube *e*, and ring *b*, as and for the purpose substantially as set forth, for use with wick-tube *o*.

2. The combination of wick-tube *e*, having oil-passage *f*, oil-cup *w*, wick *i*, wick-tube *o*, and the ratchet, as and for the purpose substantially as described.

3. The combination of wick-tube *e*, having vent *g*, the fount-chamber, plate *p*, ring *b*, wick *i*, and wick-tube *o*, as and for the purpose substantially as set forth.

4. The combination of non-conductor *s*, of tubular form, chamber *d*, of cylindrical form, ring *a*, having screw-threads *l*, the annulus, the ratchet, placed as specified, wick-tube *o*, ring *b*, and plate *p*, forming, in part, oil-cup *w*, as and for the purpose substantially as described.

5. The combination of non-conductor *s*, having openings *u*, chamber *d*, ring *a*, having orifices *h*, ring *b*, and plate *p*, as and for the purpose substantially as set forth, for use with a flame wick-tube.

6. The combination of non-conductor *s*, spring-holders *x*, ring *a*, ring *b*, and folded spring-supports *r*, as and for the purpose substantially as described.

7. The combination of ring *b*, having screw-threads *m*, plate *p*, turnable on ring *b*, and forming, in part, oil-cup *w*, and fastening *t*, as and for the purpose substantially as set forth, for use with a flame wick-tube.

8. The combination of non-conductor *s*, of

tubular form, chamber *d*, of cylindrical form, folded spring-supports *r*, placed and curved as shown and specified, ring *b*, and plate *p*, as and for the purpose substantially as described, for use with a flame wick-tube.

9. In a detachable lamp-burner attachment for a complete burner, and for the purpose as specified, the combination of ring *b*, having screw-threads *m* and a handle, with plate *p*, as and for the purpose substantially as set forth.

10. The combination of wick *i*, exposed in space *k*, wick-tube *o*, of flattened form, the ratchet, placed as specified, wick-tube *e*, when a flattened tube, plate *p*, forming, in part, oil-cup *w*, and ring *b*, as and for the purpose substantially as described.

11. The combination of folded spring-supports *r*, made of brass wire, ring *a*, having screw *l*, ring *b*, plate *p*, forming, in part, oil-cup *w*, and wick-tube *e*, as and for the purpose substantially as set forth, for use with an upper wick-tube.

12. In a detachable lamp-burner attachment to a complete burner, for the purpose specified, the combination of wick-tube *e*, having the entrance to its lower end slightly larger than the balance of such passage, plate *p*, ring *b*, nonconductor *s*, and ring *a*, having screw-threads *l*, as and for the purpose substantially as described, and for use with an upper wick-tube.

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Witnesses:
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