To all whom it may concern:

Be it known that I, Townsend Stites, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Welsbach or other Incandescent Burners, of which the following is a specification.

The invention relates to Welsbach and other Incandescent burners. Its object is to provide simple, efficient, and comparatively inexpensive means for yieldingly supporting the mantle so that the same will be immune to sudden shocks and undue vibrations.

Stated in general terms, the invention comprises a torsional spring-supported burner-head, which serves as a carrying frame for the mantle.

The nature, characteristic features, and scope of the invention will be more clearly understood by reference to the accompanying drawings, forming part hereof, and in which—

Figure 1 is a central vertical section, partly in elevation, of an incandescent burner embodying features of the invention. Fig. 2 is a plan view of the spring and its support shown in Fig. 1. Fig. 3 is a sectional view illustrating the use of two springs starting and ending at different points, and Fig. 4 is a sectional view illustrating a modification.

Referring to the drawings, 1 represents a suitable casing, having an air-chamber 2 served with a shutter 3 and through which projects a Bunsen tube 4, which frictionally engages a socket or tubular member 5, co-extensive with the upper wall of said air-chamber. The Bunsen tube is connected to a gas-supply-pipe 6 and has the usual check 7.

Near the top of the casing there is provided an annular groove 8, in which is seated a torsional spring 9, of spring-wire made into the form of a flat spiral and capable of sustaining a heavy body without losing its general transverse shape. The heavy weight or body may be that shown at 10, which is attached to the base of the burner-head 11 and has suitable means, as the head 12, for positively engaging the inner convolution of the spiral, the outer convolution being seated in the groove 50.

Both the weight 10 and the burner-head encircle the neck 5 and its inclosed Bunsen tube and both are sustained axially in respect to the spring 9, which tends at all times to seek its equilibrium, so that the arrangement forms an efficient buffer, which damps concussions and undue vibrations, and thus prolongs the life of the mantle.

As a means for closing the annular space between the neck 5 and the weight 10 I provide a flat disk or follower 13, which is free to slide on the neck 5 and abuts the bottom of the weight 10, said follower being supported by a spring 14, coiled upon the neck 5, so that it accommodates itself to every move of the weighted body.

15 is a collar having the side support 16, in which is borne the mantle 17.
18 is a gallery-ring from which extend the uprights or posts 19 for supporting the chimney.

In Fig. 3 two flat springs a and b are employed, and they start from different points on the gallery and end at different points on the burner-head. They are both normally in the same horizontal plane, and one of the advantages of using two of them is that more points of support are provided than if only one were used. In Fig. 4 the disk or follower is provided with a lip c, loosely accommodated by a groove d on the weight or body. This makes a neat loose connection between the parts.

It will be obvious to those skilled in the art to which the invention appertains that modifications may be made in details without departing from the spirit and scope of the same. Hence I do not limit myself to the precise construction and arrangement of parts hereinabove described, and illustrated in the accompanying drawings; but,

Having thus described the nature and objects of the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in an incandescent burner of a rigid support, a flat spiral spring having its outer convolution attached to said support, a weighted burner-head supported
and carried by the inner convolution of the spring, and a connection for supplying gas to said burner-head, substantially as described.

2. The combination in an incandescent burner, of a burner-head provided with a weight, a flat spiral spring which normally supports and carries the burner-head and retains its general transverse shape, and a tubular connection for supplying gas to said burner-head, substantially as described.

3. The combination in an incandescent burner, of a torsional spring-supported burner-head, and means supported independently of said spring for supplying a mixture of air and gas to said head, and a yieldingly-supported follower for said burner-head, substantially as described.

4. The combination in an incandescent burner, of a burner-head, a flat spiral spring for supporting and carrying said head, a Bunsen tube, and a yieldingly-supported follower for the burner-head, substantially as described.

5. The combination of a spring-supported burner-head and a yieldingly-supported follower, substantially as described.

6. The combination in an incandescent burner, of a rigid support, a flat spiral spring having its outer convolution attached to said support, a weighted burner-head supported and carried by the inner convolution of the spring, and a Bunsen tube extending into the base of said burner-head, substantially as described.

7. The combination in an incandescent burner, of a rigid support, a flat spiral spring, a weighted burner-head axially supported by said spiral, a Bunsen tube extending into the base of said burner-head, and a yieldingly-supported follower for the burner-head, substantially as described.

8. The combination in an incandescent burner, of a rigid support provided with a groove, a flat spiral spring having its outer convolution seated in said groove, a burner-head carrying a mantle, a heavy body secured to the base of the burner-head and supported and carried by the inner convolution of the spring, and a connection for supplying gas to the burner-head, substantially as described.

9. The combination in an incandescent burner, of a weighted burner-head, a mantle carried thereby, a Bunsen tube extending into the base of the burner-head, a torsional spring supporting said burner-head and a yieldingly-supported follower for the burner-head, the arrangement being such that the burner-head is normally sustained in axial relation to the spring, substantially as described.

10. The combination in an incandescent burner, of a mantle, a burner-head constructed to carry the mantle, a heavy body secured to the base of said burner-head, a peripherally-sustained flat spiral spring the inner convolution of which carries said heavy body and constitutes its sole support, and a Bunsen tube extending into the burner-head, substantially as described.

11. The combination in an incandescent burner, of a mantle, a burner-head constructed to carry the mantle, a heavy body secured to the base of said burner-head, a flat spiral spring the inner convolution of which encircles said heavy body and constitutes its sole support, a Bunsen tube extending into the burner-head, and a spring-pressed follower for the burner-head, substantially as described.

12. The combination of a burner-head having a mantle, a weight constructed to carry the burner-head, a suitable casing having an annular groove or seat, a flat spiral spring whereof the outer convolution takes into said groove and whereof the inner convolution sustains said weight, a connection for supplying a mixture of air and gas to the burner-head, and a spring-pressed follower, substantially as described.

13. The combination of a spring-supported burner-head, a spring-supported follower, and a loose lip-and-groove connection between the two, substantially as described.

In testimony whereof I have hereunto signed my name.

TOWNSEND STITES.

In presence of—
W. S. KRIEBEL,
L. THATCHER.