R. & E. SUDIAH.

LAMP FOR BURNING METALS.

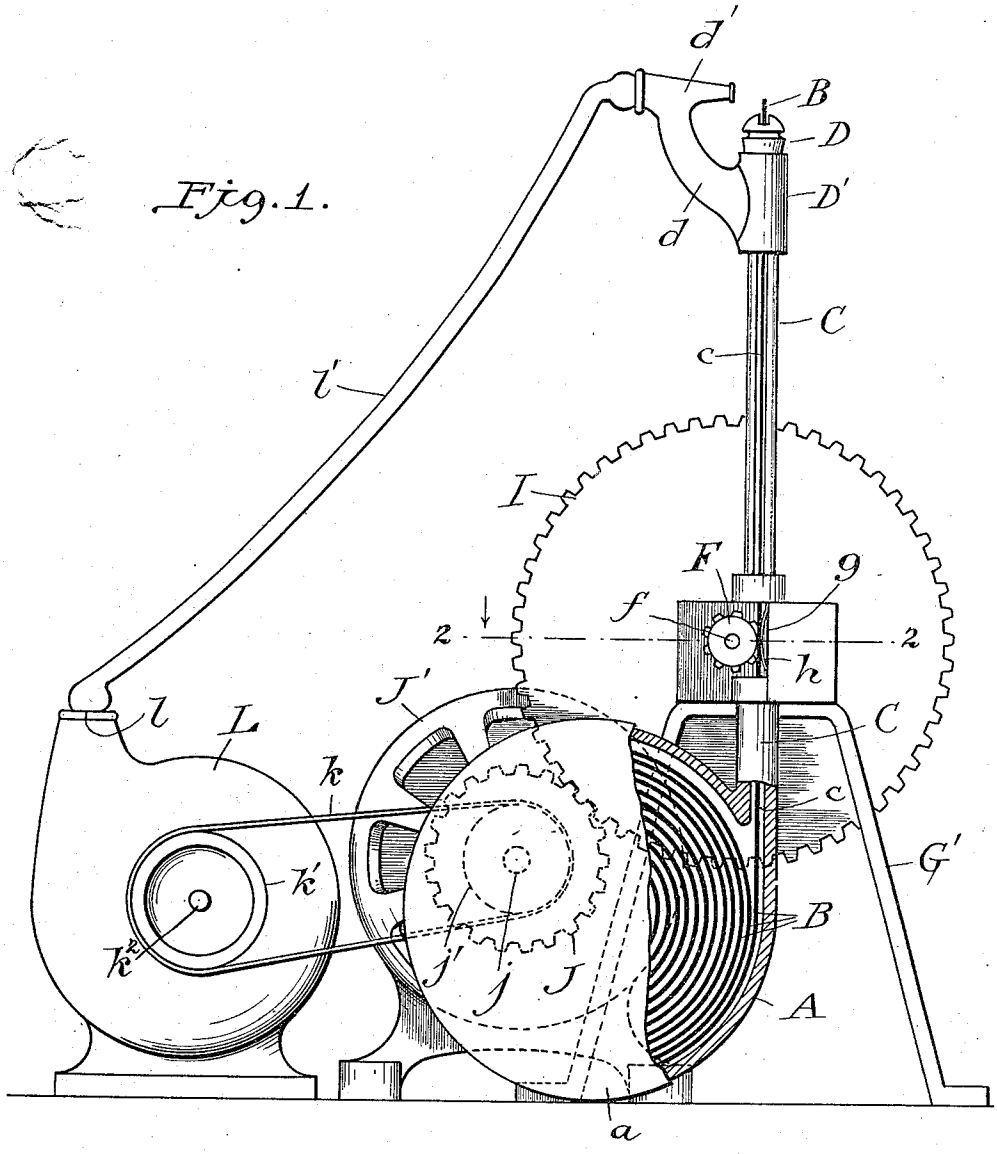
APPLICATION FILED SEPT. 22, 1914.

1,146,973.

Patented July 20, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

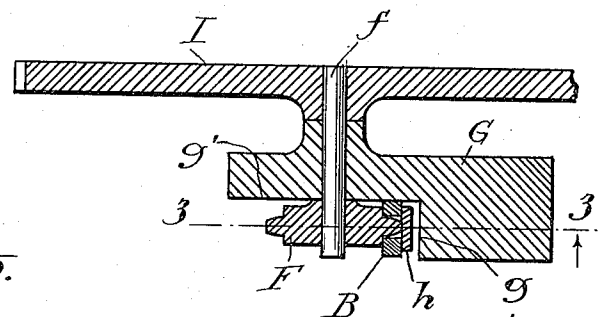


Fig. 5.

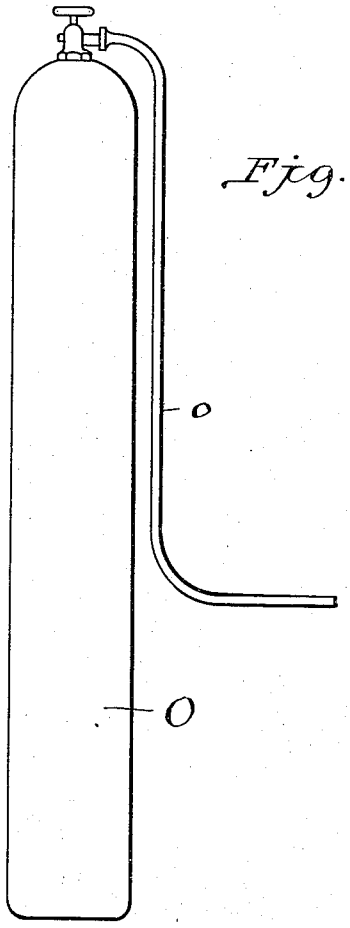
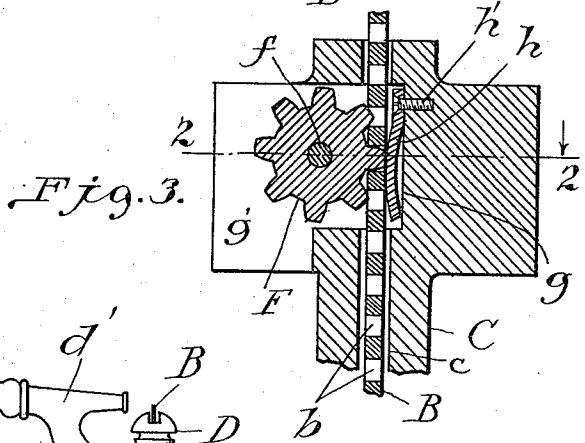


Fig. 3.



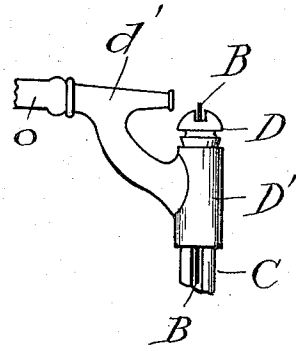
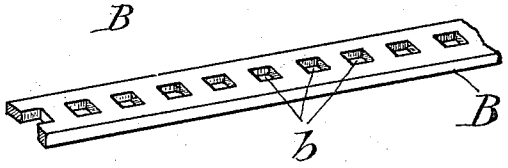


Fig. 4.



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UNITED STATES PATENT OFFICE.

RACHEL SUDIAH AND ESTHER SUDIAH, OF NEW YORK, N. Y.

LAMP FOR BURNING METALS.

1,146,973. Specification of Letters Patent. Patented July 20, 1915.

Original application filed April 29, 1914, Serial No. 835,093. Divided and this application filed September 22, 1914. Serial No. 862,890.

To all whom it may concern:

Be it known that we, RACHEL SUDIAH and ESTHER SUDIAH, both citizens of the United States, residing in the city of New York, borough of Bronx, county of Bronx, and State of New York, have invented a certain new and useful Improved Lamp for Burning Metals, of which the following is a specification.

This invention is an improved lamp of the general character disclosed in our application Serial No. 835,093, filed April 29, 1914, of which the present application is a division. This type of lamp is employed in burning metals, and particularly magnesium. According to the present invention, strip magnesium is fed to a burner by suitable mechanism, at which burner the strip is burned to furnish light.

The objects of the present invention are to provide improved means for advancing the strip magnesium to the burner and the provision of means for maintaining the burning end of the strip free from the products of combustion at all times.

A salient feature of this invention resides in maintaining the burner and the burning end of the magnesium strip at all times free from the products of combustion by means of a current of air or gas, which current of air or gas may embody more or less oxygen, as desired, to produce a flame of lesser or greater brilliancy, as occasion may require.

A further feature of the invention resides in the novel method of advancing the strip magnesium in a simple and positive manner and the simultaneous operation of this mechanism with the means for supplying the air current at the burning point.

Features of the invention, other than those specified, will be apparent from the following description taken in conjunction with the accompanying drawings.

In the accompanying drawings, we have illustrated different practical embodiments of the invention, but the constructions shown therein are to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a side elevation of a lamp embodying the present invention, a portion of said lamp being shown in section in the interests of clearness. Fig. 2 is a horizontal section through the strip advancing means, said section being taken on line 2—2 of Figs. 1 and 3. Fig. 3 is a vertical section through the strip advancing means, which section is taken on line 3—3 of Fig. 2. Fig. 4 shows a short length of the strip magnesium in perspective, illustrating means whereby the advancing mechanism is adapted to coöperate therewith for the purpose of feeding said magnesium strip to the burner, and Fig. 5 is a diagrammatic view illustrating a modified form of our invention wherein the air or gas, which is employed for cleaning the burner and magnesium strip of the products of combustion, is contained within a tank and fed to the burner through a suitable duct.

Referring to the drawings, A designates a magazine within which is adapted to be coiled a strip of magnesium B. This magazine may be of any desired form, but, as illustrated, has a stationary casing, the front of which is open to allow of the insertion of the strip magnesium. A cover *a*, part of which is broken away in Fig. 1, is utilized to close the front of the casing. The magazine is provided at one side with an upwardly extending stem C, having an interior passage *c*, through which the strip B may be passed to a suitable burner D. The stem C is cut away intermediate its ends to allow of the coöperation with the magnesium strip of suitable feeding mechanism. This feeding mechanism comprises a cog-wheel F fixed on a shaft *f* which is mounted in a bearing block G, supported on any suitable standard G'. The cog-wheel F is positioned within a recess *g'* in the bearing block G, the edge of which recess forms a substantially vertical shoulder *g* close to the circumference of said cog-wheel. These parts are so positioned relative to the stem C of the magazine A, that the strip magnesium, passing through the passage *c* therein, lies between the shoulder *g* and the cog-wheel F.

In order to obtain a positive feed of the strip B, said strip is perforated, as at *b*, to receive the teeth of the cog-wheel F. Thus, the rotation of the cog-wheel F, with its teeth in engagement with the apertures in the strip B, insures a positive advancement of said strip. In order to compensate for slight differences in thickness of the magnesium strip, we preferably cut back the shoulder *g* sufficiently to allow of the positioning of a leaf spring *h* between said

shoulder and the path of the strip. This leaf spring is secured by suitable means, such as the screw h', and is bent to contact with the circumference of the cog-wheel F. Thus, the strip magnesium is resiliently pressed at all times against the cog-wheel to secure proper relative engagement and, at the same time, said spring is adapted to compensate for slightly varying thicknesses of the magnesium strip. It will thus be manifest that the rotation of the cog-wheel F in a counter-clockwise direction will feed or advance the magnesium strip to the burner D. This rotative movement of the cog-wheel is accomplished through the medium of a gear I, secured at the opposite end of the shaft f from that occupied by the cog-wheel F. The gear I is driven from any suitable source of power, such as the motor J', operating through a pinion J fixed on the armature shaft j of said motor. Thus, as the motor operates to rotate the pinion J, the gear I, which is in mesh therewith, is rotated and the power thus generated operates through the shaft f to rotate the cog-wheel F and advance the magnesium strip to the burner.

According to the present invention, means are provided whereby the burner, as well as the burning end of the magnesium strip, are kept free at all times from the products of combustion, and this means embodies devices which cause an air or gas current at the burning point. This current is of sufficient strength or velocity to blow away the products of combustion and thus render the burner free from encumbrances which would preclude the maximum efficiency or brilliancy of the lamp.

In the preferred form of the invention illustrated, a collar D', which supports the burner D on the stem C of the magazine, is provided with an arm d which supports a nozzle d' of any desired and approved form. The nozzle d' is positioned so that the discharge thereof is adjacent the burning point, whereby the current of air or gas emanating therefrom passes across the burner.

The means for supplying the air or gas under pressure to the nozzle d' may vary somewhat, and we have shown two methods of supplying such air or gas under pressure. In Fig. 1 of the drawings, a device is shown as particularly adapted for utilizing atmospheric air. The lamp, in this embodiment of the invention, is provided with a centrifugal blower L which is driven by a belt k passing around pulleys k', j', secured on the blower shaft k^2 and the armature shaft j of the motor, respectively. The outlet l of the blower L is connected to the inlet end of the nozzle d' by any suitable duct, such as the flexible tube l' illustrated. Thus, as the motor J' is operating to feed the strip magnesium B, as hereinbefore stated, it is simultaneously operating the blower L and supplying air under pressure to the nozzle d'. On the other hand, the structure illustrated in Fig. 5 of the drawings contemplates the use of air, but more particularly gas, under pressure. In this embodiment of the invention, the gas or air under pressure is contained within a tank O, from whence it is led by any suitable means, such as the tube o, to the nozzle d'.

In both of the forms of the invention referred to, the result is substantially identical, namely, the current of air or gas under pressure, passing over the burner, frees, or blows away, the magnesium oxid or other products of combustion and thus maintains the burner, as well as the burning end of the magnesium strip, at all times clear and unobstructed, so that the maximum efficiency of burning magnesium may be secured and the greatest brilliancy assured.

It may be stated, in passing, that it is well known that the feeding of oxygen to a flame greatly enhances its brilliancy and, accordingly, oxygen may be fed through the nozzle d' to increase the brilliancy of our lamp, if so desired.

It has been heretofore suggested to feed oxygen through an outlet at the burning point of a lamp to increase the brilliancy thereof, and we make no claim to this feature. However, never before, so far as applicants are aware, has an air current been employed to maintain the burning point of a magnesium lamp free from magnesium oxid or other products of combustion.

Throughout the foregoing description, the lamp has been described as particularly adapted to the burning of magnesium, but it will be understood that other materials may also be utilized with high efficiency in the production of light or heat or the carrying out of chemical reduction.

Having thus fully described the invention, what we claim as new, and desire to secure by Letters Patent is:—

1. In a lamp of the class described, the combination of a burner, strip magnesium adapted to be ignited at said burner, and means for passing a current of air or gas under sufficient pressure across the burner to remove the products of combustion from the magnesium strip and from the burner.

2. In a lamp of the class described, the combination of a magazine adapted to receive strip magnesium, a burner, means for advancing the magnesium strip to the burner, and means for passing a current of air or gas under sufficient pressure across the burner to remove the products of combustion from the magnesium strip and from the burner.

3. In a lamp of the class described, the combination of a magazine adapted to receive strip magnesium, a burner, means for

advancing the magnesium strip to the burner, a nozzle positioned adjacent said burner, and means for feeding air or gas under pressure to said nozzle, whereby a current of air or gas under sufficient pressure may be passed across the burner to remove the products of combustion from the magnesium strip and from the burner.

4. In a lamp of the class described, the combination of a burner, strip magnesium adapted to be ignited at the burner, a nozzle positioned adjacent said burner, and means for continuously feeding air or gas under pressure to said nozzle, said air or gas being discharged from the nozzle and passed across the burner under sufficient pressure to remove the products of combustion from the magnesium strip and from the burner.

5. In a lamp of the class described, a magazine adapted to receive strip magnesium, a burner, advancing means for feeding the magnesium strip to the burner, means for operating said advancing means, in combination with a nozzle positioned adjacent the burner, and means operated by the means which operates the advancing means, for supplying air or gas under pressure to the nozzle, whereby a current of air or gas is passed over the burner while the lamp is in operation, said current of gas or air being under sufficient pressure to blow off the products of combustion from the burner and the end of the magnesium strip, thereby assuring the maximum efficiency of the lamp.

6. In a lamp of the class described, a magazine adapted to receive strip magnesium, a burner, and means positioned intermediate the magazine and the burner for feeding the magnesium strip to the latter, said means embodying a rotatable cog-wheel adapted to coöperate with apertures in the magnesium strip, and means for rotating said cog-wheel.

7. In a lamp of the class described, a magazine adapted to receive strip magnesium, a burner, and means positioned intermediate the magazine and the burner for feeding the magnesium strip to the latter, said means embodying a rotatable cog-wheel adapted to coöperate with apertures in the magazine strip, a spring adapted to engage with the magnesium strip and maintain the same in engagement with the teeth of the cog-wheel, and a motor operatively connected with said cog-wheel for rotating the same.

8. In a lamp of the class described, a magazine adapted to receive strip magnesium, a burner, and means positioned intermediate the magazine and the burner for feeding the magnesium strip to the latter, said means embodying a rotatable cog-wheel adapted to coöperate with apertures in the magnesium strip, means for flexibly maintaining the magnesium strip in engagement with said cog-wheel, and means for rotating the cog-wheel.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

RACHEL SUDIAH.
ESTHER SUDIAH.

Witnesses:
CORNELIUS ZABRISKIE,
JAS. H. GRIFFIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."