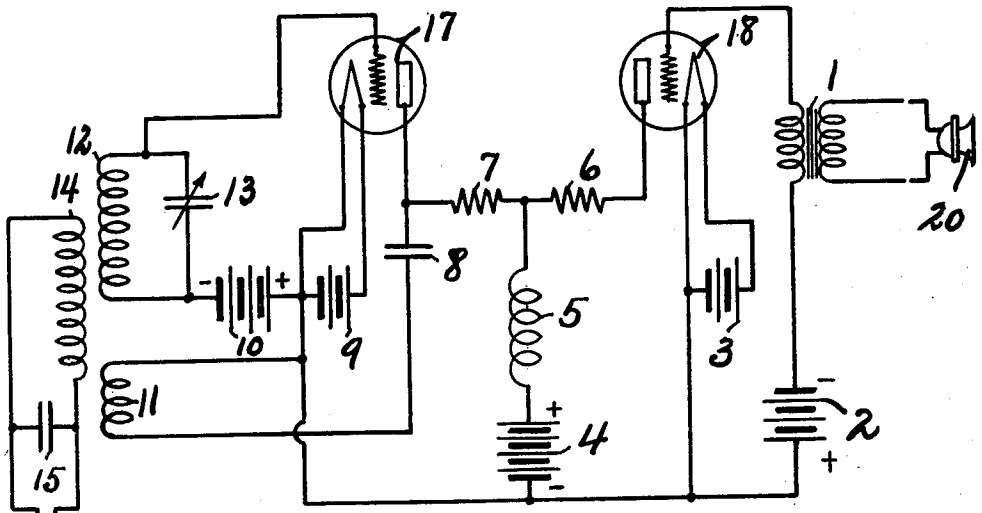
Nov. 21, 1933. T. W. CASE 1,935,940

CONDENSER LIGHT

Filed Dec. 14, 1928

FIG. 1.



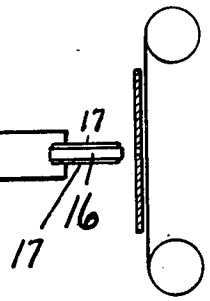


FIG. 2.

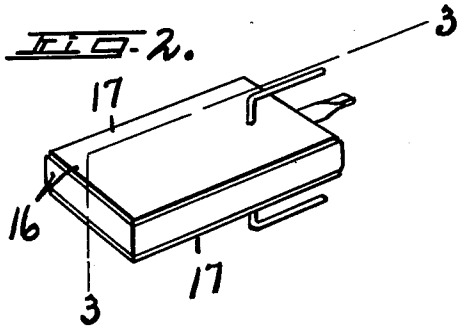
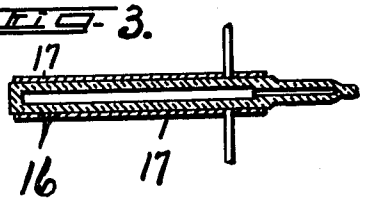


FIG. 3.



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CONDENSER LIGHT

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Serial No. 326,109

13 Claims. (Cl. 176—122)

This invention relates to certain new and useful improvements in sources of light, and more particularly to a source of light which I term a condenser light.

An object of the invention is the production of a condenser light of specific form adapted to be connected in a high frequency oscillating circuit, and of such construction as to permit the application of almost any amount of power or voltage without having the structure break down, and in which the intensity of the light gradually decreases to no light as the power applied is gradually decreased, thus distinguishing it from lights which suddenly go out at a substantial intensity.

Another object is the production of an extremely intense source of light or sheet of light which varies in intensity accurately and sharply in accordance with the modulated current supplied to it.

Further, the shape of the enclosing bulb or container is of importance in that it produces a sheet of light of desired width and thickness ideal for focussing upon a film to produce a photographic record of light waves corresponding to electrical variations.

Other objects and advantages relate to the details of the structure and the form, relation and size of the parts thereof, all as will more fully appear from the following description taken in connection with the accompanying drawing, in which:—

Figure 1 diagrammatically illustrates an embodiment of this invention.

Figure 2 is a perspective view of the condenser light.

Figure 3 is a section on line 3—3, Figure 2.

In the operation of this condenser light it is essential to its operation that high frequency current should be supplied to it, preferably a current above a frequency of 500,000. To supply modulated high frequency current to the light I may use a circuit similar to that shown in Figure 1 which embodies an application of the known constant current modulation system. I do not, however, wish to be limited to this circuit or to the use of electron tubes for the generation and modulation of high frequency current, as other applicable systems are well known to those skilled in the art and may be readily applied in place of the apparatus and circuits shown in Figure 1.

Referring to Figure 1, 1 is an input transformer linking the electrical sound input with the grid circuit of the modulator tube 18. 2 is a biasing battery of proper voltage for the apparatus used. 3 is a battery which serves to light the filament of the tube 18. Battery 4 supplies the plate potential for both tubes 17 and 18. 5 is an audio-frequency choke coil of large inductance. 6 and 7 are radio frequency chokes. 8 is a blocking condenser. Battery 9 serves to light the filament of the tube 17. 10 is a biasing battery for the oscillator tube 17. Coil 12 and condenser 13 form an oscillatory circuit which when influenced by coil 11 in the proper direction and with the proper mutual inductance produces self-oscillation in the tube 17 in a manner well known to those skilled in the art.

The recording light 16 may be inductively coupled to the oscillating circuit by means of coil 14 and condenser 15, or it may be directly connected with or without a series condenser or inductance between any two suitable points on the coils 11 and 12, as will be understood.

I may prefer to operate the light directly by connecting it in series with condenser 8, in which case coil 14 may be eliminated.

The source of light, as illustrated, is of peculiar shape and form and comprises a comparatively thin flat substantially rectangular tube, preferably formed of quartz to reduce as far as possible any undesirable effect resultant from the temperature produced in operation of the light. The electrodes 17 may be secured or positioned upon the opposite flat surfaces of the bulb 16 so as to be spaced apart a distance equal to the thickness of the bulb. These electrodes may perhaps preferably be produced by vaporizing the metal in any suitable manner, as by a spray pistol upon the opposite flat surfaces of the bulb 16 so as to substantially cover the entire flat opposed surfaces of the bulb. However, a sheet of platinum or other suitable metal may be secured to opposite flat surfaces of the bulb to constitute the electrodes, or comparatively heavy silver plates may be secured in any suitable manner to the opposite flat surface of the bulb, and such electrodes will substantially assist in conducting away the heat from the bulb.

For illustration, a satisfactory source of light may include a bulb substantially two inches in length, one inch in width and one-thirty-second to one-eighth of an inch in thickness of the space between the opposed flat rectangular walls of the bulb. Preferably in thickness of this space between the walls of the bulb is extremely small so as to produce at any edge of the bulb a narrow elongated line of light.

The bulb after evacuation is filled or partially filled with an ionizable gas, and preferably the majority of the gas filling is either hydrogen or

helium, which act to rapidly dissipate the generated heat. However, the lamp may be operated as described with various and many ionizable gases or combination of gases.

It is found that in the operation of a bulb of this type shaped substantially as described, a thin sheet of light is produced at the center of the space between the opposed flat walls of the bulb and this sheet of light is bordered upon opposite sides by a so-called "dark space". From any edge of this bulb the appearance is of an extremely intense line of light very desirable for use in many relations, as for illustration those above set forth, and is peculiarly adapted for the production of a photographic record of light waves varied in accordance with sound waves in that a line source of light is ideal for focusing upon a sensitized strip or film, and it is found in practice that the source of light here described varies its intensity accurately, sharply and instantaneously in accordance with the modulated current supplied to it, as for instance when the high frequency oscillating current is modulated in accordance with sound waves as effected through the operation of a microphone 20. In Fig. 1 there is shown a film or sensitized element 21 moving past a narrow slit 22 in a wall 23 with the modulated source of light positioned adjacent the slit to produce a sound record.

And altho I have shown and described a specific construction, form and shape of a condenser light and a particular high frequency modulated circuit connected therewith, I do not desire to restrict myself to the details of form, construction, size or arrangement of the said source of light, or the circuit connected thereto, as various and many changes may be made within the scope of the appended claims.

I claim:

1. A condenser light comprising a substantially flat bulb, opaque electrodes arranged upon opposed surfaces of the bulb, and means for supplying to said electrodes high frequency modulated current.

2. A glow light including a bulb two opposing sides of which are flat and closely spaced, opposed electrodes spaced apart upon the exterior of the bulb, and means for supplying to said electrodes high frequency modulated current.

3. A glow light including a bulb two opposing sides of which are flat and closely spaced, plate-like opaque electrodes disposed in substantially parallel relation upon opposed surfaces of the bulb, and means for supplying to said electrodes high frequency modulated current.

4. A glow light including a bulb two opposing sides of which are flat and closely spaced, opposed electrodes spaced apart upon the exterior of the bulb, an ionizable gas within the bulb and means for producing a line of light along an edge of the bulb.

5. A condenser light comprising a substantially flat bulb, electrodes arranged upon opposed surfaces of the bulb, means for supplying to said electrodes high frequency modulated current, and an ionizable gas within the bulb.

6. A glow light including a bulb two opposing sides of which are flat and closely spaced, opposed electrodes spaced apart upon the exterior of the bulb, means for supplying to said electrodes high frequency modulated current, and an ionizable gas within the bulb.

7. A glow light including a bulb two opposing sides of which are flat and closely spaced, plate-like electrodes disposed in substantially parallel relation upon opposed surfaces of the bulb, means for supplying to said electrodes high frequency modulated current, and an ionizable gas within the bulb.

8. A condenser light comprising a substantially flat bulb having its opposed flat walls spaced apart a distance sufficiently short to produce within the bulb a thin sheet of light giving a line of light at an edge of the bulb and means for rendering the flat walls opaque.

9. A condenser light comprising a substantially flat bulb having its opposed flat walls spaced apart a distance sufficiently short to produce within the bulb a thin sheet of light giving a line of light at an edge of the bulb, electrodes disposed upon the opposite flat surfaces of the bulb, and means for supplying high frequency current to said electrodes.

10. A condenser light comprising a substantially flat bulb having its opposed flat walls spaced apart a distance approximately $\frac{1}{32}$nd to $\frac{1}{8}$th of an inch, an ionizable gas within the bulb, substantially parallel plate-like electrodes disposed upon the exterior of the opposed surfaces of the bulb, and means for supplying high frequency current to said electrodes.

11. A glow light comprising a flat bulb, opposing electrodes spaced apart upon the exterior of the bulb, and means for producing a line of light between said electrodes.

12. In an apparatus for producing a modulated line of light, a condenser light comprising a bulb having substantially flat sides, two of which are closely spaced, electrodes spaced apart on opposed flat sides of said bulb, and an ionizable gas within the bulb, and a high frequency source of electrical potential for exciting said condenser light thereby producing a line of light along an edge of the bulb.

13. In an apparatus for producing a straight and continuous line of light, a condenser lamp having opposed substantially flat closely spaced opaque sides and a light transmitting end, and means for energizing the lamp with a high frequency source of potential.

THEODORE WILLARD CASE.