

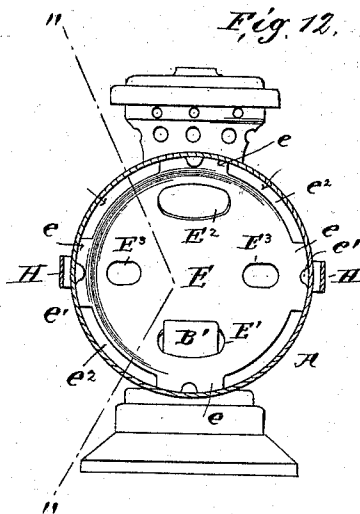
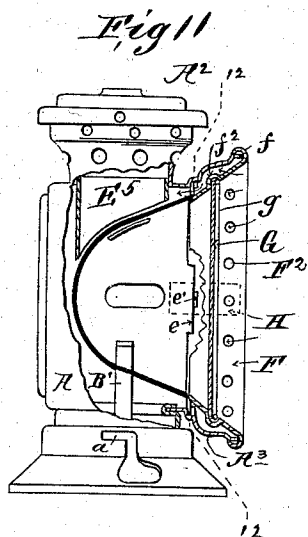
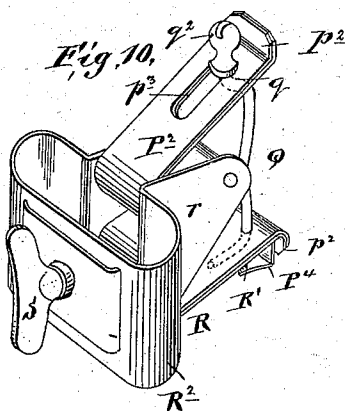
(No Model.)

2 Sheets—Sheet 2.

L. F. BETTS.
LAMP.

No. 540,296.

Patented June 4, 1895.



WITNESSES:

C. M. Benjamin
M. J. Boyle

INVENTOR

Lewis F. Betts

BY

Stetson Bourne
his ATTORNEYS

UNITED STATES PATENT OFFICE.

LEWIS F. BETTS, OF BROOKLYN, NEW YORK, ASSIGNOR TO GEORGE B. WILSON, TRUSTEE, OF PHILADELPHIA, PENNSYLVANIA.

LAMP.

SPECIFICATION forming part of Letters Patent No. 540,296, dated June 4, 1895.

Application filed February 18, 1895. Serial No. 538,617. (No model.)

To all whom it may concern:

Be it known that I, LEWIS F. BETTS, a citizen of the United States, residing in Brooklyn, Kings county, in the State of New York, have invented a certain new and useful Improvement in Lamps, of which the following is a specification.

The invention relates more particularly to improvements in that class of lamps which can be used upon bicycles or analogous vehicles, as well as utilized in the form of a lantern to be carried around.

One of the main objects of this invention is to so arrange the parts of the lamp as to supply the flame with the requisite amount of air to produce proper combustion while at the same time regulating the entrance and exit of the air in such manner that the flame will burn steadily under all conditions of use. By this means I prevent sudden gusts of air from extinguishing the flame or causing it to flicker or smoke, while at the same time any jarring that the lamp may be subjected to will not cause the flame to be extinguished.

Another object of the invention is to provide improved means by which the lamp can be resiliently supported on the frame of a bicycle and readily detached from said support so as to enable it to be carried around by hand.

In carrying out the first-mentioned portion of my invention, I provide a main body or casing, into the bottom of which a suitable lamp-fount may be thrust and attached, as found most suitable. Within said casing I place a reflector, preferably of parabolic form, which is provided with a lower opening through which the wick-tube can project. Said reflector extends to the forward portion of the frame or casing, and is so arranged as to permit air to pass back of it between it and the forward walls of the casing. The forward end of the reflector meets a ring which carries a protecting glass, which ring, forward of the glass, is provided with a series of apertures to permit air to enter the casing, and to thus pass back of the reflector. In the back of the casing opposite the reflector, are a series of apertures for the exit of air, and at the opposite sides of the casing, slightly above the normal position of the wick, are side ap-

ertures, outside of which are located shields, windows or doors which are pivoted on the casing and are arranged so as to shield the openings at the sides of the casing, but not to tightly close the same. In the sides of the reflector, substantially in line with the said apertures of the casing, are apertures somewhat above the normal position of the wick, so arranged as to supply air to and draw air from the wick, but the reflector so shields the wick as to prevent sudden gusts of air reaching it. In the upper portion of the reflector, is also placed an aperture for the outlet of the heated products of combustion, which may pass through perforations in the top of the casing.

By means of the above described arrangement a proper quantity of air is supplied to the flame and at the same time the flame is so shielded that in whichever direction the lamp may be moved, or if it is jarred, or receives concussions from any cause, the air will be prevented from suddenly attacking the flame, because the inlets and outlets for the air are so arranged that the wick is protected, while at the same time supplied with the requisite quantity of air.

In carrying out the second-mentioned portion of my invention, I inclose the wick in a metal tube and make it capable of movement with gentle friction up and down. I provide a spring of sufficiently long action to support such tube, with the effect of allowing it to dance to a considerable extent up and down with the motion of the bicycle carrying the lamp, and thus relieve the flame from concussions in traveling.

As to the third-mentioned portion of my invention, I have devised an improved construction of spring connections by which the lamp can be resiliently carried upon a bicycle. For this purpose I utilize a spring having two forwardly bent arms adapted to spring outwardly and to engage at their free ends with the frame of the lamp. These spring arms are carried in a clip composed of two parallel side arms forming a socket or space to receive a support on a bicycle, and provided with suitable means for holding said socket upon said support, such as a thumb-screw or frictional clamping device.

The invention further consists in the novel details of improvement and the combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

5 The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation of my improved lamp complete. Fig. 1^a is a detail on the line *x x* in Fig. 1. Fig. 2 is a vertical cross-section thereof. Fig. 3 is a plan view of the lamp. Fig. 4 is a front elevation thereof. Fig. 5 is a detail view of a lamp-fount provided with my improved dancing-wick, the construction of the fount being slightly different from that shown in Fig. 1. Fig. 6 is a detail side elevation of the wick-cartridge and its spring. Fig. 7 is a corresponding view looking at right angles to Fig. 6. Fig. 8 is an enlarged side view, and Fig. 9 a plan view, of the wick-support. Fig. 10 is a perspective view of the spring-support for the lamp. Fig. 11 is a partly-sectional side view of the lamp on the line 11 11 in Fig. 12, and Fig. 12 is a partly-sectional face view thereof on the line 12 12 in Fig. 11.

In the accompanying drawings, the letter A indicates the main casing of my improved lamp, which is shown provided at the top with a suitable perforated dome A², and having provision at the lower portion to receive and hold a lamp fount, B. I have shown the lamp-fount connected with the casing A by means of a bayonet-joint *a*, so arranged as to receive the wick-shaft *b* of the lamp-fount, so that by turning the latter, said wick-shaft will pass into the horizontal portion of the L-shaped slot *a*, to hold the lamp-fount in position. To hold the shaft *b* in proper position in the slot *a*, I have shown a spring-band B², having an aperture *b'*, to receive the end of the shaft *b* to lock it in position. The spring B² is suitably secured to the casing A, and its free end may be bent outwardly to permit the end of the shaft *b* to readily ride under it. In detaching the fount from the casing it is only necessary to push the spring B² outwardly to release the shaft *b* from the aperture *b'*. Any other suitable means may be provided for removably connecting the lamp fount with the casing A.

In the back of the casing A is an enlarged opening C, over which is placed a perforated plate or mesh D,—see Fig. 2,—which may be held in place by any suitable means, as by spinning a portion of the casing over said perforated plate or mesh, and riveting it thereto if desired.

E is a reflector, shown of substantially parabolic form, its forward end having outwardly extending lugs *e*, which rest against the flaring mouth A³ of the casing A. Lugs or projections *e'* may be provided on the flaring mouth A³, to assist in holding the reflector in position within the casing, the insertion of the reflector being effected by first moving the lugs *e* out of line with the lugs *e'*, and then turning the

reflector to cause said lugs to align, see Figs. 11 and 12; but other suitable means may be employed for this purpose, if desired. Between the lugs *e* of the reflector E and the corresponding wall of the flaring mouth A³, of the casing, are produced openings *e''*,—see Figs. 4 and 12,—which permit the passage of air into the casing and around the exterior of said reflector.

F is an annular cone-like ring, adapted to fit into the open end of the casing A, as into its flaring mouth A³, the inner edges of this ring F lapping the forward edges of the reflector E. See Fig. 11.

The cone-like ring F is shown provided with a curled edge *f*, adapted to lap over the outer edge of the flaring mouth A³ of the casing A, and the ring F is also provided with an annular groove *f''*, in which fits a glass G.

g is a wire ring, also fitting into the groove *f''*, and adapted to retain the glass G in position.

The ring F in front of the glass G is provided with a series of apertures F², which lead to the space between the ring F and the flaring mouth A³ of the casing, so as to permit air to pass through said apertures and into the casing back of the reflector through the openings *e''*, as before stated.

The ring F is preferably made removable, and for this purpose I have shown spring arms H, which are attached to the sides of the casing A, and have outwardly curved ends *h*, which take under the curled edge *f* of the ring F, thereby holding said ring in position on the flaring mouth A³ of the casing A,—see Fig. 3,—the curved ends of the springs H being there shown in dotted lines. By merely pressing a spring-arm H inwardly, the ring F will be released, the outward spring tendency of said arms H serving to hold the curved ends *h* of said spring arms against the curl *f* of the ring F.

In the lower portion of the reflector E is an aperture E', into which the wick-tube B' of the lamp-fount B may project, whereby the flame can burn within said reflector.

E² is an aperture in the reflector E directly above the aperture E', and permits the exit of the heated products of combustion which may pass therefrom through the apertured dome A² of the lamp-casing A.

E³ is a metal tube adapted to fit within the upper opening of the casing A, at its connection with the dome A², and serves as a chimney to direct the products of combustion from the flame up into the dome. The lower edge of the tube E³ is inclined rearwardly, and is given the necessary curve to conform to the outline of the reflector E, where it joins said reflector. See Figs. 1 and 2.

E⁴ are apertures in the side walls of the reflector E, and located on a plane a little above the normal position of the wick, and so arranged as to supply air to, as well as to draw air from, the interior of the reflector, whereby a moderate circulation of air within said re-

reflector can take place, the air within said reflector being prevented from suddenly attacking the flame.

A⁴ are apertures in the sides of the casing A and substantially in line with the side apertures E³ of the reflector E, the apertures A⁴ serving when air travels past them to draw air from the casing and from the reflector E through the apertures E³, whereby a moderate circulation of air is produced.

In order to modify the draft of air through the apertures A⁴, and at the same time to permit the said apertures to serve as openings through which the flame can supply side-lights, I provide shields, windows or doors I, which are pivoted as at *i* on the casing A, and extend across the openings A⁴. The shields, windows or doors I are located at a slight distance from the side of the casing A, to permit the circulation of air between said casing and said shields, windows or doors, as shown in Figs. 3 and 1^a, a projection *i*² on the windows serving in conjunction with the hinges *i* to hold said windows or doors at the desired distance from the casing.

The shields, windows or doors I are shown in the form of framings I², provided with glass I³, which may be colored if desired, to serve as the usual distinguishing side-lights of bicycle lamps. The shields, windows or doors I may be held in the closed position by any suitable means, and can be opened to permit a match to be thrust through the apertures A⁴, E³, in the casing and the reflector respectively, for the purpose of lighting the lamp without removing the fount.

For convenience of manufacture I have shown the shields, windows or doors I as held in the closed position by the spring arms H, which for this purpose have a bend at *h*¹, forming a spring-acting bar *h*², against which the edge of the corresponding window or door I may press. By this means the spring arms H serve two purposes, one, holding the shields, windows or doors closed, the other holding the ring F in position; but of course, the shields, windows or doors I can be otherwise suitably held upon the casing.

When in use the air is supplied to the flame in my improved lamp substantially, as follows: It will enter the casing through the openings F² in the ring F, and pass back of the reflector E, through the spaces *e*² between the reflector and the casing, some of the air entering the reflector through the apertures therein, and when the lantern is being transported, the apertures in the plate D serve to create a moderate draft through the lamp casing, the reflector protecting the flame from sudden gusts. The side openings A⁴ also serve to supply air to the casing, while at the same time, as said openings A⁴ are not wholly closed, the up-and-down movements that the lamp may be subjected to, cause a circulation of air past the openings A⁴, between them and the shields, windows or doors I, whereby a steady, moderate and equalized movement of

air within the casing is produced, because the air within the reflector is not suddenly drawn away from the flame, but a circulation around it is induced, as through the lower opening E², and out through the side opening E³, as well as downward through the upper opening E², and out through the openings E³, according to whether the lamp sinks or rises through the unevenness of travel; but this circulating action is moderated by the capacity of the openings in the reflector, so that under all conditions a substantially steady flame will be sustained without danger of being extinguished by a scarcity of air, or by a sudden gust of air reaching it.

The windows I not only serve to generate a circulation through the apertures A⁴, but also act as a shield to prevent air from suddenly rushing into said apertures to interfere with the free burning of the lamp.

J is a bail, suitably curved and pivotally attached to the lamp as by suitable connection with the dome A³, by which means the lamp can be carried around conveniently as a lantern. This bail may be made of spring wire so as to enable it to be readily detached from the lamp, if desired, by merely spreading its ends to release it from the dome A³.

I have shown the fount B as provided with an annular groove B³ having an aperture *b*² leading back into the fount, whereby any oil that drips from the wick or oozes from the upper portion of the lamp fount will find its way back into the fount. At the outer side of the fount I provide an aperture *b*³ in the inclined surface of the fount leading back to the interior thereof for the purpose of catching and retaining any oil which reaches that point. These annular recesses contribute to the cleanliness of the lamp under all ordinary conditions.

The portion of my invention relating to what I term a "dancing wick" may be described as follows:

K is a casing, shown as attached to the upper part of the fount B, said casing having a plate *k*¹ at its upper end, provided with an aperture *k*², aligned with an aperture in the fount B beneath it, the construction of the fount B being slightly different from that shown in the other figures.

L is a tube which may be of suitable shape to contain a wick, and M is a sufficiently long coiled or helical spring surrounding the tube L, and located within the casing K. The spring M is attached near its middle as at *l*, to the tube L and bears at its upper and lower extremities against the top and bottom of the inclosing casing K. When the lamp is subjected to concussion the wick tube L and its contents may dance within the casing K by the yielding of the spring M. It follows that such yielding allows the wick to dance, so that any shock imparted to the lamp will be reduced in violence or not felt by the wick tube and its contents.

N is a tube shown located in the tube L and

provided with perforations n , and inclosing a wick O , which may be of asbestos or other durable fibrous material adapted to perform the functions of a wick and to maintain itself in position for long periods. This tube N I term a cartridge. The lower end of the tube L or of the cartridge or tube N , should reach nearly to the bottom of the interior of the fount B , so as to receive oil so long as any depth of oil remains in the fount.

However much the roughness of the road may communicate shocks to the lamp, the tube L and cartridge N and its contained wick will travel comparatively unaffected by such shock, because of the yielding of the spring M . The steadiness with which the tube L and the inclosed cartridge N are carried allows the flame to be maintained at substantially uniform level and of the uniform size, not only avoiding extinguishment, but any serious fluctuations in the size of the flame and the quantity of light emitted as well.

The material O serving as the wick may be adjusted to the desired height within the cartridge or tube N , by any suitable means, as by a pin inserted obliquely through the upper open end of the cartridge and properly manipulated or inserted through any of the holes n of the cartridge and so worked as to move the contents upwardly relatively to the cartridge N .

By using asbestos the wick in the cartridge case will serve a long period without further attention.

The tube or cartridge N may be held in the tube L by frictional contact or by any other preferred means.

The cartridge case N is conveniently made by bending a sheet of previously perforated metal to form a tube of the required size and shape, and the edges may abut or be secured together as desired. The perforations n allow the oil to be absorbed freely where it is immersed, and permit the vapor produced by the rapid evaporation of oil at and near the top of the wick-tube to escape not only through the extreme end but also laterally when the cartridge is set sufficiently high in the wick-tube to expose any of the perforations above the latter.

It is important that the friction between the exterior of the wick-tube L and the casing K in which it is inclosed, shall be sufficient to gently restrain the dancing motion of the wick and prevent it from becoming excessive in any case; and it is also important that it shall be so little that the wick-tube and its contents may dance, or more properly, may stand still while the lamp with its casing K makes slightly vertical movements with the jolting motions to which the lamp may be subjected.

My improved means for supporting the lamp upon a bicycle are as follows:

P is a spring of suitable material shown bent in substantially W -form, its free ends

having an outward spring-tendency, the said ends being bent at p , to take under lips p^2 on the lamp casing. By this means the outward spring tendency of the arms of the spring P serves to hold said arms in connection with the lamp. In order to prevent the weight or swinging action of the lamp from causing spontaneous detachment of the lamp from the supporting spring P , I have shown a brace Q , which extends from the lower arm P' of the spring P to the upper arm P^2 thereof. This brace Q is preferably of spring metal, having a tendency to move toward the lamp, and its upper part is so bent as to have a shoulder q , and is provided with a knob q^2 , which are adapted to pass into and through a suitably-shaped aperture p^3 in the arm P^2 of the spring P . When in the normal position the shoulder q of the brace Q will rest under the arm P^2 of the spring P , and thus hold said arms apart and in connection with the respective portions of the lamp.

When it is desired to remove the lamp from its supporting spring P , the brace Q is moved backward passing through the slot p^3 of the arm P^2 of the spring P , thereby permitting said arm P^2 to be depressed to release it from the lamp.

I have shown the spring P as supported by a clip R , which has two parallel arms r that receive the spring P between them. The arms r of the clip R , are shown extending from the main portion of the clip, which is bent in substantially oblong form to produce a socket R^2 , into which a suitable support from a bicycle may project. The connection between the arms r of the clip R and the spring P , is illustrated as made by rivets r^2 , r^3 or the like, which pass through the arms r of the clip R , and enter the corresponding curved portions of the spring P , as clearly shown in Fig. 2. By this means the rivets r^2 , r^3 , serve to hold the arms r of the clip R in position against the contained spring P , and also serve to hold said spring in position while allowing free movement to the material of said spring.

S is a suitably arranged thumb-nut shown carried by the clip R for connecting the latter with a support on a bicycle, but if preferred the well-known rubber friction tube heretofore in use, may be provided.

In order to prevent too much rocking of the lamp upon the spring P , I may swing the bail J backward and under the spring P , and hold it in position against said spring by means of a clip T' carried by said spring, as shown. To thus adjust the parts the spring P is first removed and the bail swung down to the desired position, the spring being then passed through the bail and connected with the lamp, the bail then being swung into its clip T' ; but of course the clip T' may be otherwise arranged to connect the bail with the spring P , if desired. On the under side of the arm P' of the spring P , I have shown a

shoulder P⁴, which may rest against the lamp casing and serve as an abutment to assist in sustaining the lamp upon the spring P.

When in the specification I say "shields, windows or doors, I," it means such parts as serve to prevent gusts of air from rushing into the casing through apertures A⁴, while allowing air to circulate or travel between the casing and the part I³.

I do not limit my invention to the precise details of construction herein set forth, as they may be varied without departing from the spirit of my invention. It will be understood that the part marked E, which I have described as a reflector, is at the same time a shield.

Having now described my invention, what I claim is—

1. In a lamp the combination of a casing having a side opening and a shield for said opening, held at a distance from the casing, with a reflector within said casing having a side opening to serve with said opening in the lamp casing, and means to permit air to enter said casing and to surround said reflector, substantially as set forth.

2. In a lamp the combination of a casing having a side opening and a shield therefor held at a distance from the outer wall of said casing, but in line with said opening, to permit air to circulate between said casing and said shield, with a reflector within said casing having a side opening to correspond with the opening in the casing, means to permit air to enter said casing and surround said reflector, and perforations in the back of said casing for the passage of air, substantially as set forth.

3. In a lamp the combination of a casing having a side opening and a shield therefor, with a reflector within said casing having a side opening to correspond with said opening in the casing, a transparent protector located at or near the forward portion of said reflector, means to permit air to enter said casing forward of said protector and to pass within said casing around said reflector, said casing having apertures at the back for the passage of air, substantially as set forth.

4. In a lamp the combination of a casing having suitable air-outlets, with a reflector within said casing having apertures E', E², means to permit air to enter said casing at the forward portion of said reflector around the latter, a ring located at the forward portion of the casing and adapted to direct air back of said reflector and forming part of the means to permit air to enter the casing, and a transparent protector between said apertures and said reflector, substantially as set forth.

5. In a lamp the combination of a casing having air outlets and an aperture A⁴ at one side thereof, and a shield carried by said casing in line with the aperture A⁴ and arranged to form a space between the casing and said shield, with a reflector having apertures E',

E², and an aperture at one side to correspond to the aperture A⁴ in the side of the casing, means to permit air to pass into the casing from the forward portion of said reflector so as to surround the latter, a ring F adapted to be connected with the forward portion of said casing and to lead to said reflector, a transparent protector carried by said ring, the arrangement being such that air can enter said casing through the ring and pass back of and surround the contained reflector, substantially as set forth.

6. In a lamp the combination of a casing having apertures for the exit of air, a side aperture A⁴, a window or door hinged to said casing so as to extend across the opening A⁴, and means to hold said window or door at a distance from said casing to permit the circulation of air between said door and casing, with a reflector having apertures E', E², and a side aperture E³ to correspond with the aperture A⁴ in the casing, a transparent protector at or near the forward portion of said reflector, and a ring having apertures, the latter being located in front of said protector, the parts being arranged so as to permit air to enter said apertures and to pass into said casing around said reflector, substantially as set forth.

7. In a lamp the combination of a casing having air-outlet apertures, a side aperture A⁴ and a shield for said aperture, arranged to permit air to circulate across said aperture with a reflector having lugs at its forward edge to provide spaces between said reflector and said casing for the passage of air said reflector having an aperture E³ to correspond with the aperture A⁴ in the casing, a ring F having apertures leading into said casing, and a protector located between the apertures in said ring and the main portion of the reflector, substantially as set forth.

8. In a lamp the combination of a casing having air-outlet apertures, a side opening A⁴ and a shield for said opening, arranged substantially as set forth, with a reflector carried within said casing, and adapted to permit air to pass around it into the said casing, a ring F located at the flaring mouth of said casing and having a curled edge f adapted to receive the flaring mouth of said casing, and a transparent protector, said ring having apertures located forward of said protector to permit air to pass into the casing back of the reflector, and a spring arm H having a curved end to take under the curl of said ring, said spring arm being carried by the casing, substantially as set forth.

9. In a lamp a casing having air-outlets and a side opening A⁴, a transparent window carried by the casing at a distance from said opening, so as to permit the circulation of air past said opening, with a reflector having an opening corresponding to the opening A⁴ in the casing, and means to permit air to enter said casing in advance of said reflector so as

to pass around the latter, substantially as herein specified.

10. In a lamp the combination of a casing having air-outlet openings, and a side opening A⁴, a window I consisting of a framing I² hinged to the casing and carrying the transparent protector I³, said frame having a projection I², which with the hinge serves to hold the window at a distance from the side of the casing, with a reflector within said casing having a side opening E³ to correspond with the opening A⁴ in the casing, and also having openings E', E², with means to permit air to enter said casing in advance of said reflector so as to pass around the same within the casing, substantially as set forth.

11. The combination of a casing having a flaring mouth A³ and a side opening A⁴, with a window or shield covering said opening, adapted to permit circulation of air past said opening, a reflector within said casing having openings E', E², and a side opening E³, to correspond with the opening A⁴ in the casing, a ring F having a curled edge to engage the edge of the flaring mouth of the casing, a transparent protector carried by said ring and located at or near the forward end of the reflector, said ring having apertures forward of said protector, a spring arm H carried by the casing and having a curved end to take under the curl of the ring F, and a bar h² to hold the free edge of said window substantially as set forth.

12. The combination of a casing having perforations at its top, a flaring mouth A³ at one side, said casing having perforations on the side directly opposite said flaring mouth, said casing also having openings A⁴ on opposite sides, shields or windows over said openings held at a distance from said casing to permit a circulation of air past said opening between said windows or shields and said casing, with a reflector carried within said casing and having openings E', E², at the bottom and top thereof, side openings E³ adapted to substantially align with the openings E⁴ in the casing, said reflector having means at its forward portion to permit air to pass between it and the casing, a cone-like ring F, adapted to lap the forward edges of said reflector, said ring having apertures forward of the transparent protector adapted to permit air to pass into the casing and between it and the reflector,

and means for removably holding the ring F upon the casing, substantially as set forth. 55

13. The combination of a spring having two outwardly extending arms adapted to be attached to a lamp, the central portion of said spring being doubled upon itself in substantially W-form, with a clip having two parallel arms to inclose said doubled portion of said spring, substantially as set forth. 60

14. The combination of a spring having two outwardly extending arms adapted to be attached to a lamp, the central portion of said spring being doubled upon itself in substantially W-form, with a clip having two parallel arms, said clip forming a socket to receive a support, and rivets, bolts or the like connecting said arms of said clip, and passing respectively through the looped portions of said spring, substantially as set forth. 65 70

15. The combination of a spring having two outwardly extending arms one of said arms having an opening or slot with a brace secured to the opposite arm, and having a shoulder adapted to rest against the arm having the slot, said brace being adapted to pass into said slot, to release the spring arm from the shoulder and brace, substantially as set forth. 75 80

16. A spring having two outwardly extending arms, the outer ends of said arms being bent side-wise, and a shoulder or abutment carried by one of said arms, substantially as set forth. 85

17. In a lamp the combination of a casing and a bail carried thereby, with a spring support adapted to be attached to said casing, and arranged to connect with said bail to steady the lamp upon said spring, substantially as herein specified. 90

18. In a lamp the combination of a casing and a bail carried thereby, with a spring adapted to be attached to said lamp to support the latter, said spring being adapted to be connected with said bail, to steady the lamp, and a clip to retain the bail in proper connection with the spring, substantially as set forth. 95

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses. 100

LEWIS F. BETTS.

Witnesses:

T. F. BOURNE,

M. F. BOYLE.