

W. B. SCHULTE.
BATTERY LIGHTING OUTFIT.
APPLICATION FILED JUNE 25, 1918.

Patented Dec. 3, 1918.
2 SHEETS—SHEET 1.

1,286,800.

Fig. 1,



Fig. 2,

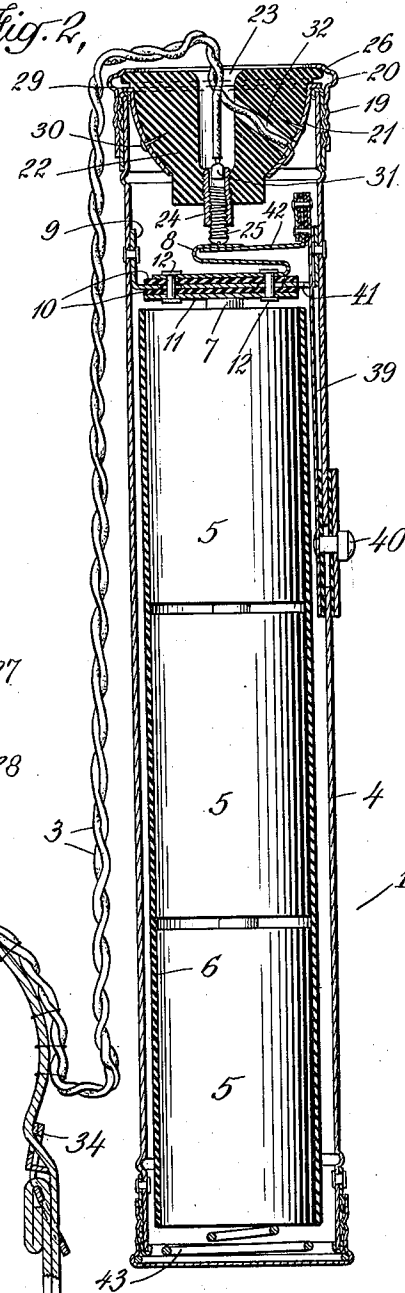


Fig. 3,

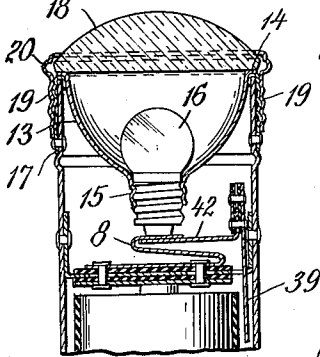
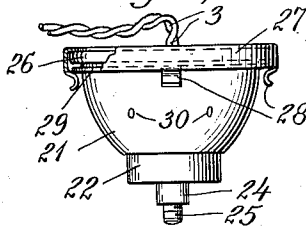
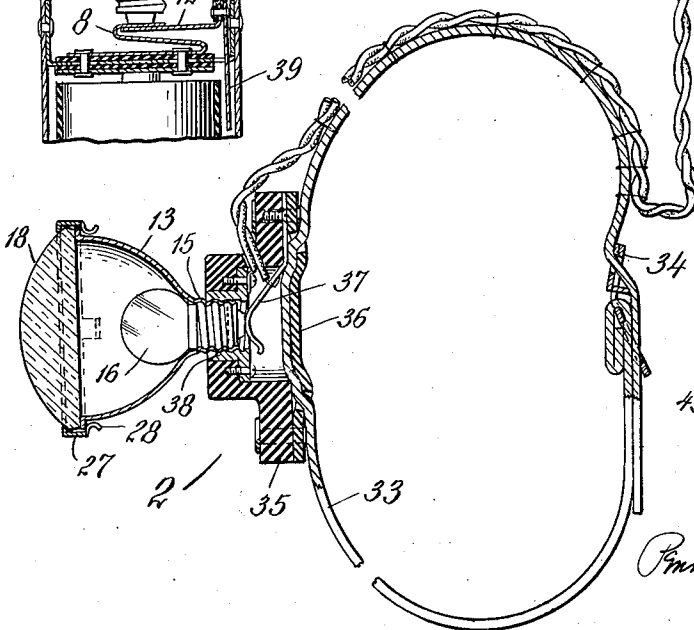


Fig. 4,



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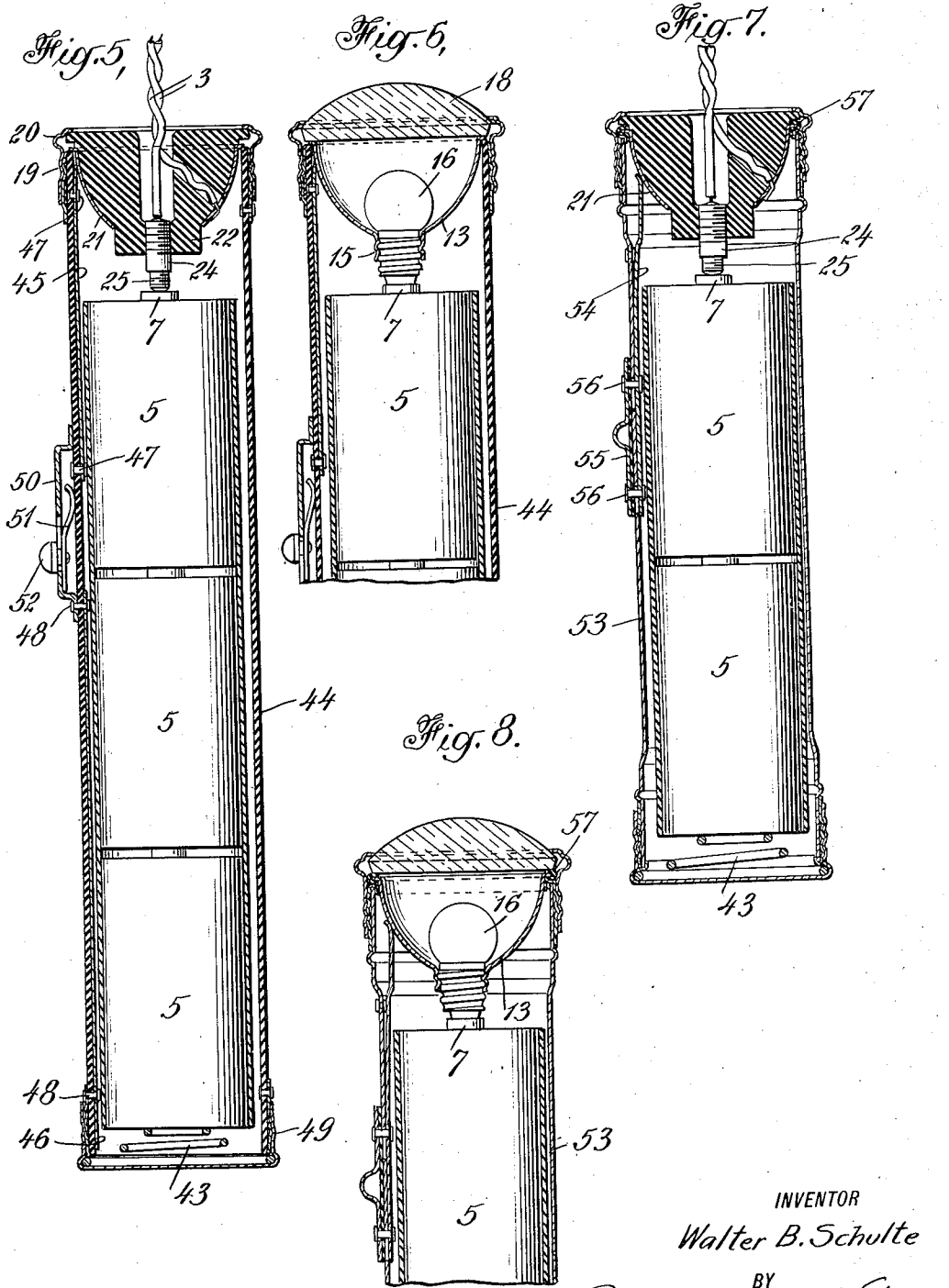
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ATTORNEYS

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UNITED STATES PATENT OFFICE.

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BATTERY LIGHTING OUTFIT.

1,286,800.

Specification of Letters Patent.

Patented Dec. 3, 1918.

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To all whom it may concern:

Be it known that I, WALTER B. SCHULTE, a citizen of the United States, residing at Madison, in the county of Dane, State of Wisconsin, have invented certain new and useful Improvements in Battery Lighting Outfits; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to battery lighting outfits; and it comprises an improved device of the general class or character indicated which embodies a lamp carrier and a hand lamp connectible together by flexible conductors of considerable length, thereby enabling the lamp carrier to be fitted on the head, arm or other portion of the body of the user, and the hand lamp to be inserted in a conveniently-located pocket in his clothes, leaving both hands of the user free. The invention is primarily designed for use for military purposes; and, when worn in the manner above referred to, renders it possible for the soldier, if on night sentry duty, to inspect a person approaching his post without requiring the constant use of one hand to hold and manipulate the lamp as would otherwise be the case; and, similarly, if on signal, inspection or repair duty at night, to have the free use of both hands in actuating the signal devices or apparatus, and in examining and repairing the munitions, machinery or other materials involved, as well as in carrying out other operations of like nature.

The invention resides primarily in providing, in a battery lighting outfit, an interchangeable arrangement of parts which enables the lamp element proper,—i. e., the bulb, reflector and lens—of a standard hand lamp to be removed therefrom and inserted in a socket in the carrier, and its place taken by a plug which is shaped as the counterpart of the reflector and is connected by the afore-mentioned flexible conductors with the carrier socket. The terminals of the conductors are connected with the plug in such a way that the movement of the controlling switch carried by the hand lamp will close and open the lamp circuit in the usual manner. The lamp element and the plug are readily insertible and removable from the carrier and hand lamp; and since the afore-

said lamp element may be applied with equal ease to either the hand lamp or the carrier, it will be apparent that the former may be used in the ordinary way without being connected to the carrier, or may, alternatively, be utilized as a part of the complete device including the said carrier. When put to the latter use, it is merely necessary to manipulate the switch to close the lamp circuit, after which the circuit will remain closed until broken by reverse manipulation of the switch.

The construction of parts is preferably such as to provide for an adjustment of one of the contacts attached to the plug, so as to permit the latter to be used in cases of different types, the adjustment of said contact serving to position it for engagement with the cooperating contact in the battery circuit.

Other and further objects and advantages will appear as the description of the invention proceeds; but it is to be understood that the invention is not limited to the precise disclosure here presented, excepting in so far as may be necessitated by the language of the appended claims, since modifications and changes may well be made within the scope of said claims, and parts of the invention may be used without others and in other and different environments, and utilized for purposes other than those stated.

In said drawings:

Figure 1 is a view showing the complete invention in use;

Fig. 2 is an enlarged view, for the most part in section, showing the invention removed from the wearer;

Fig. 3 is a fragmental, sectional view showing the reflector and associated parts constituting the lamp element in place in the lamp case;

Fig. 4 is a detail view of the plug;

Figs. 5 and 6 are sectional views respectively showing the plug and lamp element applied to a different type of case; and

Figs. 7 and 8 are views similar, respectively, to Figs. 5 and 6, but showing the application of the plug and lamp element to another type of case.

Referring more particularly to the drawings, the two main parts of the improved lighting outfit, viz; the hand lamp and the lamp carrier, are indicated in Figs. 1 and 2 by the numerals 1 and 2, and are shown as connected with each other by the flexible

conductors 3. The hand lamp 1 may vary greatly in detail, and comprises, in the present instance, a cylindrical metal case 4 containing a plurality of battery cells 5, which are mounted in series connection within a pasteboard or other suitable jacket 6. In the figures mentioned, the central electrode 7 of the uppermost cell is electrically connected with a spring metal contact 8 carried by a metal bridge 9 which is fastened at its opposite ends to the wall of the case, the body portion of said bridge having insulating strips 10 disposed against its opposite faces. The outer face of the lower insulating strip has disposed against it, in turn, a metal strip or plate 11, the latter directly engaging the terminal of the electrode 7, while the upper insulating strip supports the base member of the contact 8, which in this instance is substantially Z-shaped. The parts 8, 9, 10 and 11 are all connected together in superposed relation by means of rivets 12, but the openings in the bridge part 9 through which said rivets pass are sufficiently large to prevent the rivets from contacting with the edges thereof, whereby the bridge is kept insulated from the contact 8 and plate 11, as will be understood.

The terminal of the contact 8 is designed for engagement with a cooperating contact provided either on the lamp element or the plug, according as one or the other of those parts is applied to the lamp case. The lamp element comprises a metal reflector 13, which is approximately parabolic in shape and is formed at its upper edge with an out-turned flange 14 and at its bottom with a threaded, axial neck or stem 15 to receive the stem of the bulb 16. The flange 14 extends outwardly across the in-turned upper edge of a threaded collar 17, which is fitted over and secured to the upper end of the lamp case, and serves as a support for the lens 18, the latter being held in place by means of a threaded sleeve 19 that is removably engaged with the collar 17 and is formed at its upper edge with a clamping lip 20. The plug is constructed, in effect, as a counterpart in shape of the lamp element, as has already been stated, its metal outer part or shell 21 having exactly the same shape and size as the reflector 13 and being made, in fact, by the same dies as said reflector. This shell 21 incases a similarly shaped body part 22 of insulating material having an axial recess 23, in the lower end of which is fitted an adjustable contact for cooperation with the contact 8, the said adjustable contact comprising outer and inner telescopically-connected members 24 and 25, here shown as provided, respectively, with internal and external threads, the arrangement being such as to enable the inner contact member 25 to be moved inwardly or outwardly of the outer member 24. The upper edge of the plug is

formed with an outwardly projecting lip 26 for engagement by the lip 20 on collar 19, or, alternatively, by an auxiliary clamping device 27 in the form of a metal ring which is provided with a series of depending spring fingers 28, as hereinafter explained. The aforesaid lip 26 overhangs the outwardly-projecting flange 29 on the upper end of the shell 21, the latter being preferably fastened to the insulating body part 22 by pins 30 or other suitable devices. Both conductors 3 are attached at one end to the plug, one conductor extending through the enlarged upper portion of the recess 23 and terminating in a head 31 which fits in the open upper end of the outer member 24 of the adjustable contact, while the other conductor extends through a branch passage 32 leading from the main passage or recess 23 and has its terminal projecting through an opening in the metal shell 21 and engaged with said shell.

By reason of the substantially counterpart construction of the reflector and plug, as above described, it will be apparent that either of those elements may be inserted in the end of the lamp case, and withdrawn therefrom and replaced by the other when desired, the element so applied to the said case being held in place by the lip 20 of the clamping sleeve 19, with its flange 14 or 29 resting upon the in-turned edge of the collar 17. When the reflector and its associated bulb and lens are applied to the case of the lamp, the latter may be used as a hand lamp in the ordinary manner; but when the plug is inserted in the case, then the lamp element is applied to the carrier 2, as shown in Fig. 2. The latter element may advantageously comprise a flexible strap 33, adapted to be passed around the forehead of the user, or around some other part of his body if desired, in which instance the lamp case is inserted in a pocket in the coat of the user, for example, in the manner indicated in Fig. 1, the ends of the strap being held together in adjusted position by a suitable buckle 34. The central portion of the strap is equipped with a socket for the lamp element, comprising a base 35 of insulating material which rests against and is secured to a pad 36, the latter being attached to the strap. Between the parts 35 and 36 is fastened a spring contact finger 37, which is designed to normally engage the inner terminal of the lamp, the outer terminal of which fits in the neck 15 of the reflector, said neck fitting in an internally-threaded metal sleeve 38 fixed in a recess provided for it in the base part 35. The conductors 3 are stitched or otherwise secured to the head strap for a portion of their length, and their adjacent terminals are connected, one to the contact finger 37, and the other to the metal sleeve 38, so that when the contacts 8 and

25 are brought into engagement, the circuit will be closed and the bulb will be illuminated. When the parts are assembled in the manner just described, the auxiliary clamp 5 27 is utilized to secure the lens to the reflector, said clamp being applied to the plug when the latter is removed from the lamp case, as represented in Fig. 4.

The spring contact 8 which coacts with 10 the adjustable contact 24, 25, to close the electric circuit through the lamp, is shifted into and out of circuit-closing position by means of a switch device which may be, as shown, of the type disclosed in U. S. Patent 15 to Hipwell and Hipwell, No. 1,149,913, issued August 10, 1915. Reference may be had to said patent for a complete description of the said switch and its mode of operation, it being considered sufficient for all 20 present purposes to state that it comprises a longitudinally - arranged switch rod 39, which is movable in either direction in the usual manner by a button or finger piece 40 secured to its lower end, and which projects 25 through a slot 41 in the bridge 9, said rod being provided at its upper end with an angular tongue 42, the horizontal wing of which extends toward and is soldered to the terminal of the said contact 8. The vertical 30 wing of the tongue is secured in insulated relation to the rod end in a manner somewhat similar to that in which the parts 8, 9, 10 and 11 are fastened together. By virtue of this construction, the forward move- 35 ment of the switch rod will cause the afore-said horizontal operating wing to press the terminal of the contact 8 in the same direction, thereby forcing it against the contact member 25, the parts being retained in this 40 position by the friction exerted upon the wall of the case by the insulating material associated with the finger piece and switch rod. Similarly, rearward movement of the 45 switch rod will result in the terminal portion of the contact being moved away from the adjustable contact, and, consequently, in the breaking of the circuit. The lowermost cell 5 rests upon a helically coiled spring 43, which fits in the bottom of the case and establishes electrical connection in the usual 50 way between said cell and case.

The constructions represented in Figs. 5 to 8 differ from that just described only in the details of the switch or circuit-closing 55 devices, the operation and mode of use being substantially identical for all forms of the invention as a whole. In the form shown in Figs. 5 and 6, the case 44 is made 60 of insulating material, fiber for example, instead of metal, and is provided upon its interior with upper and lower metallic contact strips 45 and 46 which are secured thereto by pairs of rivets 47 and 48 respectively. The lower rivet 48 provides electrical 65 connection between the strip 46 and the

metal socket 49 at the bottom of the case, while the upper rivet 48 provides electrical connection with a slotted metallic housing 50 and also serves in part as the attaching means for said housing. The rivet 47 at the 70 lower end of the strip 45 projects within the housing and functions as a contact for engagement by a spring contact finger 51 slidably disposed within the housing and operated by a finger piece or button 52, the 75 upper end of said strip 45 being bent slightly inward so as to engage either the reflector 13 of the lamp element or the metal shell 21 of the plug, according as one or the other of those parts is applied to the lamp case. 80 The projecting end of the central electrode 7 of the uppermost cell is directly engageable with the adjustable inner member of the plug contact 24, 25, or alternatively, with the inner terminal of the lamp bulb 16, 85 this also holding good for the construction illustrated in Figs. 7 and 8. The flanges 14 and 29 rest upon the upper edge of the fiber case, but do not extend far enough across it to contact with either the collar 17 90 or the sleeve 19.

In the construction last mentioned, as in the first form, the lamp case 53 is made of metal and a sliding switch rod 54 is employed, said rod being operated by a finger 95 piece 55. The finger piece 55 and switch rod 54 are fastened together by rivets 56 which pass through guide slots in the case, and the free end or terminal of said rod is bent inward so as to alternatively engage 100 the shell 21 and reflector 13 when the finger piece is moved in the proper direction and to the required extent. To prevent short-circuiting, a ring of insulating material 57 105 is applied either to the flange 14 on the reflector or to the flange 29 on the metal shell of the plug, according as one or the other of those parts is fitted in the lamp case, it being understood that this ring can be readily removed from the flange of one of the 110 parts and applied to that of the other part, prior to the insertion of the latter part in the lamp case.

I claim as my invention:

1. The combination, with a battery hand 115 lamp having a casing, a battery therein and a lamp element comprising a bulb, a lens and a reflector; of a plug adapted to replace said lamp element in establishing electrical connection with said battery; and flexible con- 120 ductors connected to said plug, substantially as described.

2. The combination, with a battery hand 125 lamp having a casing, and a lamp element comprising a bulb, a lens and a reflector, and a lens-supporting sleeve for holding said reflector in place in said casing; of a plug adapted to replace said lamp element in establishing electrical connection with the bat- 130 tery, and to be engaged by said sleeve under

such condition; and flexible conductors connected to said plug, substantially as described.

3. The combination, with a battery hand lamp having a lamp element which comprises a lens and a reflector, and a sleeve engaging said lens and holding said lamp element in place; of a reflector-shaped plug adapted to replace said lamp element in establishing electrical connection with the battery, and to be engaged by said sleeve under such condition; and flexible conductors connected to said plug, substantially as described.

4. The combination, with a battery hand lamp having a lamp element which comprises a reflector, and a sleeve for holding said lamp element in place; of a reflector-shaped plug adapted to replace said lamp element and having a central terminal to establish electrical connection with the battery, flexible conductors connected to said plug; and a lamp socket connected to said conductors.

5. The combination, with a battery hand lamp having a reflector, a bulb in said reflector, and means clamping said reflector in position; of a plug adapted to replace said reflector and bulb in establishing electrical connection with the battery; flexible conductors connected to said plug; and a socket connected to said conductors and in which said bulb will fit.

6. The combination, with a battery hand lamp having a reflector, a bulb therein, and means clamping said reflector in position; of a reflector-shaped plug adapted to replace said reflector under said clamping means and having a central contact to take the place of said bulb in completing electrical connection with the battery; flexible conductors connected with said plug; and a socket connected with said conductors and adapted to receive said bulb and reflector.

7. The combination, with a battery hand lamp having a reflector, a bulb therein, a lens for said bulb and a sleeve for clamping said lens and reflector in position; of a plug adapted to replace said reflector and lens under said sleeve; flexible conductors leading from said plug; a socket connected to said conductors and adapted to receive said bulb

with its reflector; and auxiliary means for securing said lens to said reflector.

8. An attachment for battery hand lamps, comprising a plug adapted to replace the bulb, the reflector and the lens thereof; flexible conductors connected with said plug; a socket connected with said conductors and adapted to receive said bulb; and a supporting strap secured to said socket.

9. An attachment for battery hand lamps, comprising a plug adapted to replace the bulb, the reflector and the lens thereof, said plug having a reflector-shaped metal part through which one battery connection is established and an insulating part provided with a central contact through which the other battery connection is established; flexible conductors connected with said plug; a socket connected with said conductors and adapted to receive the bulb; and a strap connected with said socket.

10. The combination, with a battery hand lamp, having a reflector, a bulb therein, a lens for said bulb and means for clamping said lens and reflector in position; of a plug adapted to replace said lens and reflector in establishing electrical connection with the battery, and to be engaged by said clamping means under such condition; flexible conductors leading from said plug; a socket connected to said conductors and adapted to receive said bulb with its reflector; and auxiliary means for securing said lens to said reflector when the latter is received in said socket.

11. The combination, with a battery hand lamp having a reflector, a bulb therein, a lens for said bulb and means for clamping said lens and reflector in position; of a plug adapted to replace said lens and reflector in establishing electrical connection with the battery, and to be engaged by said clamping means under such condition; flexible conductors leading from said plug; a socket connected to said conductors and adapted to receive said bulb with its reflector; and auxiliary means for securing said lens to said reflector when the latter is received in said socket, said auxiliary means being normally attachable to said plug.

In testimony whereof I affix my signature.
WALTER B. SCHULTE.