

WHY I CREATED LENS-LIGHT

My name is Leonard Chapman, President and CEO of Chapman/Leonard Studio Equipment, Inc. I graduated Cum Laude from UCLA in 1956 with a degree in engineering and I am a lifetime member of the TAU Beta Phi Engineering Honorary Society.

My father, Ralph Chapman, a visionary of the motion picture industry, started what was known as Chapman Studio Equipment in 1945. With a background in special effects and a passion for the industry, Ralph helped set the standard for what motion picture equipment is today. I joined my father as Chief Engineer of Design and Development of new equipment in 1956. We have been manufacturers of motion picture and television equipment for over 60 years. We manufacture Camera Cranes, Dollies, Pedestals, Vibration Isolation Systems, Remote Camera Systems, Gyro Stabilized Remote Heads, Telescoping Cranes and many other items used in the film and television industries.

Over our many years of business, we have received awards, such as, Academy Awards, Emmy Awards, Fuji Gold Medal Award and the European Cinec Award. This fascinating industry makes an unbelievable investment in energy and artistic value in the presentation of scenes on the screen. Producing, in my opinion, the greatest form of entertainment ever conceived.

INSPIRATION AND MOTIVATION

The need for an improved flashlight first became apparent to me when my Mother developed Macular Degeneration and needed to have a flashlight in order to help her read. It then became a goal for me to develop a light that would help and assist people like my mother. In my research, I found that there are lights that do a good job in certain situations but not all. It has long been my feeling that something better could be done, so we decided to investigate and see if we could develop a flashlight that would fill this void.

The need for light can be a spontaneous thing. The ability to always carry a small light has the potential to greatly assist someone in time of need. You might be in a theater and drop something, or looking for a keyhole in a door, or perhaps be in a dark parking lot and needing to illuminate your car from a distant. Having a light with you, that is convenient to carry, became apparent as one of those voids that existed. We wanted a powerful flashlight that could light our way to safety in a dangerous situation.

On a motion picture set, there are times when using a bright light is not wanted. For example, the cameraman needs to be able to read the writing on the buttons of a camera or the writing displayed on a TelePrompter. A sudden bright light could be offensive to the action that is taking place on a motion picture set. Being able to confine the light and focus it on a target would not create added disturbances. We could not find a light that met our expectations, so we felt compelled to develop our own product. We decided to combine our expertise in the motion picture and television industry with our goals to create a light to fill the void.

DESIGN CONCEPT

We were looking for a small flashlight in the realm of about 2.8 to 2.9 ounces that would be smooth of contour, so that it could fit into a pocket or purse and not be obtrusive. We wanted a light with great endurance that would not inadvertently drain the batteries. We wanted a light that was waterproof, environmentally tough and able to withstand being dropped. To sum it up, we wanted a light that was beautiful, smoothly contoured, compact and ergonomically sound to handle and do all the things that we described.

DEVELOPMENT AND SPECIFICATION

We observed that the reflector type flashlights affected the quality of the light contributing shadows and flares. So we decided to go in the direction of lens. Lenses are the most efficient means to focus the light. Using quality lens, you can bend the light and shape it to focus at a target with high efficiency and with minimum shadows or distortions.

To satisfy our requirements, we chose to use an LED as our light emitter. The incandescent bulbs in flashlights are very susceptible to damage and relatively inefficient, needing to be replaced often, thereby, making them a poor choice. The decision to use an LED was obvious. The life of the LED is typically 100,000 hours. An LED works on a photon level of providing light, whereas, incandescent bulbs, invented by Thomas Edison, work by heating an element to provide the light. The efficiency difference between these systems is 10-15 times, with the LED being the winner. We then examined all the different possibilities of using an LED. We found a good selection range available to us. After much examination and testing, we decided to use Luxeon's 1-watt LED for our 2.8-ounce flashlight.

We decided to incorporate a timer to automatically shut the light off in order to prevent accidental wasting of energy. We had a timer designed that would remain on for 7 1/2 minutes. After this time the light will shut off automatically. Closing the actuator and then opening it again will turn the light back on for another 7 1/2 minutes. In normal use, 7 1/2 minutes would be sufficient. There are times, however, when the automatic timer mechanism is unwanted. A bypass switch was therefore installed, allowing the light to stay on for as long as needed.

In most flashlights that we tested, after approximately 45 minutes, the brightness is less than one-half of what it was when you first turned the flashlight on. After another 45 minutes elapsed, you practically had no light at all. In some flashlights, you had a lingering light that would not be sufficient to do the job at hand. To solve this problem, we developed what is called a current controller. This is an electronic device that will sustain the brightness of the light, at the initial level, throughout the useable life of the battery. The light was tested with a potentiometer to create a Lux vs. time graph at different settings. This provides the data to determine our economy mode for normal use. A push button at the rear of the flashlight provides maximum brightness when actuated. This button is a momentary functioning button to avoid the wasting of energy.

Having batteries rather than mechanical devices to provide the energy to power the light was another factor that we wanted to consider. We had contemplated the use of mechanical devices, solar energy, and re-chargeable batteries. We wanted a system that gave long life to the light, without having to change the batteries, except after long use. Our battery of choice was the low cost AAA battery. They are light, small, easily replaced and readily available.

The lenses are mounted on shock absorbers that are in the form of O-rings, which also serve as seals to keep the water out. The batteries are mounted on a spring that is used to maintain contact but also acts as an added shock absorber. The internal system is totally sealed off from water and all internal components are protected from moisture or other contaminants.

PRODUCT COMPARISONS

We now have a flashlight that after just a short period of time beats all the competition. Although it is a smaller and lighter flashlight, we still have the bright light we had when we initially turned it on, while the others faded. Because of our ability to focus the light, we were able to brighten the target at a close

and distant range. Some LED flashlights showed good brightness at close range but failed at lighting distant targets. Our flashlight, however, being the world's first focusable LED flashlight will take those spreading beams of light and bring them together and focus them on that distant target. We wanted the current controller that we designed to match the toughness of our flashlight and our tests prove that it does!

We tested our flashlights against some of the markets best competitors in both hot and cold environments. We graduated those temperatures and we found that in a heated environment our flashlight survived at a temperature of 250 degrees Fahrenheit. All the other flashlights had failed at between 160 to 200 degrees. Because we use a specially selected material that lines the housing for the battery, insulated by the type 3 hard anodize, with the use of thick non-plastic lenses, our flashlight was given the ability to survive where others had failed. In addition to using type 3 anodize, high grade 7075 T6511 aluminum, that other manufactures of flashlights would most likely avoid due to the difficulty of machining was selected. Our flashlight was able to withstand -86.7 degrees Fahrenheit, the temperature of dry ice. The flashlights using incandescent type bulbs failed. The LED type flashlights in most cases survived. Some of the other flashlights failed the cold temperature test due to other internal electronic components. We perfected our electronic current controller to be able to survive at that temperature. Military standards require 360 hours of salt spray testing, so we submitted our flashlight to a salt spray test of over 1200 hours, with no signs of deterioration. The materials that we selected greatly exceed military standards.

FINAL ANALYSIS

In the end, we have a small, smoothly contoured flashlight that is focusable, waterproof, hot and cold resistant, impact resistant, has an installed timer, bypass switch and uses AAA batteries.

We thought one of the most important features of our flashlight was the ability to vary the focus of an LED, so we decided to name our flashlight the LENSLIGHT. We designed the flashlight to have interchangeable lenses to accommodate different applications more effectively. Our single lens system is perfect for relatively close work up to 50 feet. An alternative choice is the triple lens system that will increase the range up to 150 feet.

To manufacture the LENSLIGHT with all these great features, it becomes more costly. The price of the single lens flashlight is \$148.00, while the cost of the triple lens flashlight is \$171.00. You may be concerned about the cost and affordability, but I'll explain why it's a good investment. A very popular flashlight that is used by the military and considered in the same brightness category as our flashlight, can cost as much as \$5.00 an hour to use due to the necessary replacement of batteries. The LENSLIGHT costs approximately 1/10th that amount to operate. This is based on the amount of light that we are getting from the LENSLIGHT, and being able to deliver it to a close or distance target. It would not take a long time using it to prove that you have paid for its cost many times over. The LENSLIGHT is your answer.

We provide a 5-year guarantee and will replace any damaged part that is due to manufacturers' defect or normal wear and tear. The LENSLIGHT is a tough flashlight; a cost saving flashlight and a lifetime user's flashlight.

We present to you the LENSLIGHT. We are passionate about the LENSLIGHT and hope you will appreciate and understand our commitment to providing the public with a superior flashlight. On behalf of everyone at Chapman/Leonard Enterprises, Inc., we thank you for your patronage and look forward to providing you with the LENSLIGHT.