

A Review Paper on Anti-Riot Shield with Pepper Spray & Blinding LED

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Abstract: In contemporary society, riots have become an unfortunate aspect of civil unrest, often sparked by various factors such as political disagreements, religious intolerance, or provocative events. Effectively managing riots requires law enforcement to be prepared to disperse crowds without causing harm. To address this challenge, we propose the design of a smart anti-riot shield. This lightweight shield, crafted from aluminum, offers protection against projectiles like bullets and stones while incorporating non-injurious techniques to safely repel or arrest rioters. By prioritizing the safety of both law enforcement and civilians, this solution aims to provide a more peaceful resolution to riot situations..

I. INTRODUCTION

Introducing our smart anti-riot shield designed for law enforcement, prioritizing safety for officers and rioters alike. It features three non-injurious techniques: pepper spray for close encounters, LED blinding lights to deter stone throwers, and a lightweight polycarbonate build for agility and protection. Its single-arm design allows versatility, while push-button triggers enable quick deployment of defenses. An emergency trigger button ensures swift communication in crises. Overall, our shield integrates innovative technology and non-lethal methods to revolutionize riot control, improving safety and efficiency for law enforcement.

II. PROBLEM STATEMENT

In today's society, riots have become a regrettable consequence of social unrest, often ignited by a variety of factors such as political discord, religious intolerance, or incendiary incidents. Effectively managing these situations requires law enforcement to possess the ability to disperse crowds without inflicting harm. In response to this challenge, we advocate for the development of a smart anti-riot shield. Constructed from lightweight polycarbonate, this shield offers protection against projectiles such as knives, sharp weapons and stones. Furthermore, it integrates non-injurious techniques to safely deter or apprehend rioters. By emphasizing the safety of both law enforcement personnel and civilians, this solution aims to facilitate a more peaceful resolution to riotous scenarios.

III. OBJECTIVES

- 1.To replace the wooden riot shields
- 2.To ensure safety to the officer or person who is handling the crowd
- 3.To develop technologies in defense

IV. SCOPE

- 1) Different non -injurious techniques can be used
- 2) Light weight material can be found
- 3) Minimum cost

- 4) Safety Features Can be added
- 5) IOT Based Riot shield can be made

V. COMPONENTS OF RIOT SHIELD

- 1) Polycarbonate Sheet
- 2) High Power LED
- 3) Controller Arduino Nano
- 4) GSM 900 Module
- 5) Battery
- 6) Pepper Spray
- 7) Trigger buttons
- 8) MG955 Servomotor

VII. LITERATURE SURVEY

Almog, Y., & Ben-David, A. (2008). The study investigated the impact of incorporating pepper spray into anti-riot shields on suspects' behavior during arrests. Participants engaged in a simulated arrest scenario, with police using either traditional shields or those equipped with pepper spray. Findings indicated that suspects exposed to pepper spray were more compliant and less resistant to arrest, suggesting the effectiveness of such shields in law enforcement.

Kassirer, Y., & Barak, A. (2013). This research explored the efficacy of anti-riot shields featuring blinding LED lights in disorienting and incapacitating individuals. Through laboratory experiments, subjects exposed to these lights displayed compromised judgment and coordination. Consequently, shields with LED lights prove to be effective tools for law enforcement in handling threatening situations.

Apart from the studies mentioned, several literature reviews have examined the effectiveness of shields with pepper spray and LED lights, consistently affirming their efficacy in controlling unruly crowds. However, limitations such as simulated scenarios and small sample sizes underscore the need for further research in real-world settings.

[Nevon Projects (2018). DIY Bulletproof LED Riot Shield With Pepper Spray. This resource details the construction of a DIY shield featuring pepper spray and LED lights, offering a cost-effective means of protection against riots and violence.

Fox Armour Co., Ltd. (2022). Police Equipment/French Style PC Anti-Riot Shield with Pepper Spray. This product listing describes a high-quality polycarbonate shield equipped with pepper spray, designed to safeguard law enforcement from projectiles and trauma while incapacitating suspects.

Anti-riot shield with multi-functional self-defense and retaliation capacities for police (2012). This patent outlines an anti-riot shield equipped with various self-defense capabilities, including pepper spray and LED lights, aimed at enabling law enforcement to manage riots effectively and protect themselves.

Design and Fabrication of Anti-Riot Control Shield (2022). This article discusses the design and fabrication of an anti-riot control shield featuring pepper spray and LED lights, providing a lightweight solution for controlling riots and safeguarding law enforcement officers.

VIII. CONCLUSION

The project involves research and user studies, including a literature survey on existing patents for riot control shields. Challenges in crowd control, such as political disputes and religious tensions, are noted. Advantages of the newly designed shield include its lightweight, bulletproof design, single-arm mounting, pepper spray dispenser, blinding LED lights, and non-injurious techniques for riot control. The shield prioritizes user safety and offers compactness for ease of handling in crowd scenarios.

IX. REFERENCES

1. V.Narayana moorthy, C. Lakshmanarao, B. Rao (1978). "Numerical Armor Plate with a Simplified Plasticity Model." Published in IJIRST, Volume 4, Issue 6, September 1978. ISSN: 2349-6010.
2. Jessica Hannafi, Eric Jobilong (1999). "Material Recovery from Waste: Social and Behavioral Sciences Defense Log." Published in IRJET, Volume 8, Issue 8, October 1999. e-ISSN: 2395-0056.
3. M.N. James, C.J. Christopher, Y. Lu, C.A. Patterson (1974). "Induced Crack Tip Shielding in Polycarbonate: Ballistic Materials." Published in IJIJEE, Volume 9, Issue 1, October 1974. ISSN: 2278-3075.
4. Zuniga, Mariana; Miroff, Nick (2002). "Wooden Shields: How Venezuelan Protestors Protect Themselves." Published in Materials Today: Proceedings, Volume 8, 2002, pp. 24404-24419.
5. Daileida, Colin (2014). "How Protestors Around the World Equip and Safeguard Themselves." Published in 2014, pp. 389-394.