



DESIGN AND FABRICATION OF ANTI-RIOT CONTROL SHIELD

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Abstract: Riots are these days a district of each civilized society. Disagreement for state selections, non secular intolerance, events, hateful content etc are a number of the most reasons which will simply spark riots. To handle a riot police, army should be ready to pacify/disperse the group while not harming them. To unravel this issue we tend to here style a wise anti-riot protect that permits police personnel repel/arrest rioters while not harming themselves or the rioters. The good protect makes use of non-injurious techniques alongside few alternative options for this purpose. The protect may be a one arm light-weight weight protect created of aluminum for cover against bullets and stones. so the protect provides an answer to protection from riots.

I. OBJECTIVE:

- To replace the wooden riot shields
- To ensure safety to the officer or person who is handling the crowd
- To develop technologies in defence

II. LITERATURE REVIEW:

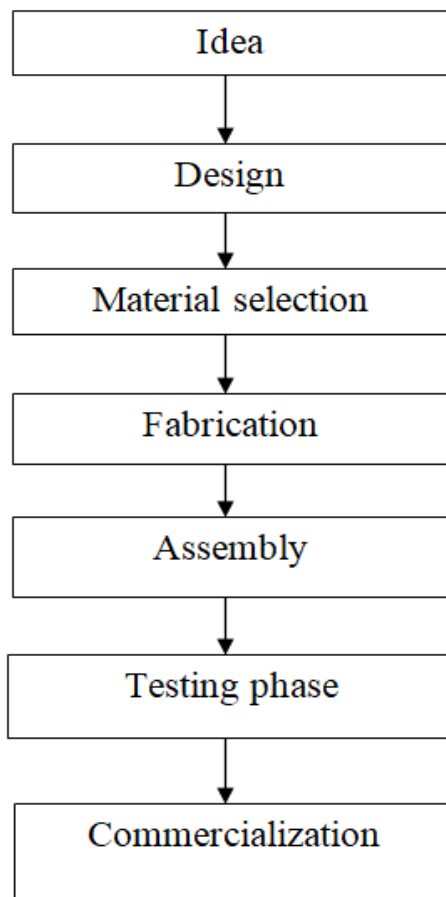
- **V.Narayanamoorthy, C.Lakshmanarao, B.Rao** et al....,[1](1978) designed a Numeric Armour Plate with a Simple Plasticity Model and proved the importance of armour and defence materials.
- **Jessica Hannafi, Eric Jobilonget** al....,[2](1999) presented a paper on Material Recovery Wastes, and improved several defence-oriented shields on riot controls and showed the importance of waste material recovery and refurbishing in defence.
- **M.N.James, C.J.Christopher, Y.Lu, C.A.Patterson** et al....,[3](1974) presented a topic on ballistic materials and their importance to the society and Induced crack tip shielding in polycarbonate and hence proved that crack propagates through the pores with usually high velocity.
- **Zuniga, Mariana; Miroff, Nick** et al....,[4](2002) presented a topic on materials today on Wooden shields

and proved that how venezuellas protestors are protecting themselves against crowds and riots.

- **Daileda, Colin** et al....,[5] (2014), presented a paper on how protestors around the world suit up and protect themselves in the disagreement of government decisions, religious tolerance events and hateful decisions given by their respective governments.
- **Mulrie, Patrick** et al....,[6] (2017), presented a paper on however Bombs, Bullets and trajectory shields policing Ireland's frontier and showed that bombs bullets and therefore the border examines Irish agency security policy and therefore the role compete by nation army on the border throughout a number of the worst years of troubles.
- **Bhatnagar, Ashok** et al....,[7] (2016), they both carried out projects on Light weight ballistic composites and proved the importance of composite materials in defence-oriented projects.
- **Mogollon, meryet** al....,[8] (2017) developed many defence oriented projects on gas masks, wooden shields and presented many papers on how venezuellas protestors are protecting themselves from the riots and crowds.
- **Hambling, David** et al....,[9] (2011), proved that Riot shield could dispose crowds with more advanced techniques like LED blinders with a simple plasticity model.

III. METHODOLOGY:

The sequence of techniques and methodologies that we used and applied for making this anti-riot control shield is mentioned as follows.



5).COMPONENTS AND THEIR FUNCTIONS:

5.1).Aluminum frame:

An aluminum frame of dimensions 3*2 feet is used for making the anti-riot shield. The shield which is made of aluminum protects the person from injury, who is handling the crowd. The frame or shield gives protection from stones thrown from crowd and also gives minimum protection from small riffles and bullets used by the persons in the crowd.

5.2).Aluminum Weld mesh:

A weld mesh which is made up of the material aluminum of dimensions (3*2feet) is fixed additionally to the aluminum frame to give additional protection to the person who is handling the riots. It also provides strength and rigidity to the frame. A fiber glass is placed in between both frame and weld mesh to provide sight to the person who is handling the crowd .it also provides protection to the person who is handling the crowd from acid attacks.

5.3).High power LED:

Light Emitting Diodes(LED) are fixed at the top of the shield to give poor eye sight to the crowd who is creating

problems. LEDs of 4 no's are fixed at the top of the shield with a gap of two and half inches each, when the trigger button for led is turned on the light emitting diode burns pink color which prevents the crowd from moving forward and attacking the persons who is handling the crowd.

5.4).DC Battery:

A DC power supply is given from a motorcycle battery which is fixed at the battery cup which is placed at the left bottom corner of the shield. The battery gives power supply to both led's and 12v diaphragm motor which is used to spray pepper spray from the pepper spray tank. Power connections are supplied through wires to the led and motor from the battery.

5.5).Pepper spray tank:

A pepper spray tank is fixed at the right bottom corner of the shield which stores pepper spray for dispersing the crowd .when the valve at the bottom of the pepper spray tank is turned on and the diaphragm motor is triggered using the trigger buttons the pepper spray moves out through the half inch tubes to the nozzles which is fixed outside the shield it disables the crowd from moving forward and makes their eye irritating for some minute so that the crowd controller can move towards a safer position.

5.6).Trigger buttons:

Two push and pull trigger buttons are used to control the on and off of led and motor. The trigger buttons are attached to the led and motor through wires.

5.7).Handle and arm strap:

A handle and an arm strap which is made of plastic which is used in cars at the top for giving controls over any discomforts are used here for holding the shield. The handle is fixed according the centre of gravity of the shield which provide a proper balance for the person who is holding the shield and handling the crowd.

5.8).Diaphragm pump:

A diaphragm pump is fixed attached to the shield by means of screws. It allows the movement of pepper spray from the pepper spray tank to the nozzles when the trigger buttons are pushed on. The power to the diaphragm pump is given by a dc battery power supply through wires.

5.9).Wirings:

A system of wires provides electric circuits for a device. Electrical wiring is an electrical installation of cabling and associated with devices such as switches, distribution, boards, sockets etc., such that the wirings here provide power supply from a dc battery source to a high power led blinder and a diaphragm motor.



5.10).1/2-inch hose and hose clips:

½ inch hose and hose clips are used for movement of water or pepper spray from pepper spray tank to the nozzles through a diaphragm motor. The hoses are clamped tight to the hose collars by means of ½ inch hose clips.

5.11).1-1/2-inch UPVC clamp:

A 1-1/2-inch UPVC pipe clamp is used to hold the pepper spray tank in correct position without any movement or shake.

5.12).Bolts and Nuts:

Bolts and Nuts of 1 dozen is bought together for fixing all the spares together to the shield, in-fact the aluminium frame and weld mesh are clamped together using bolts and nuts and also using buttons.

5.13).Control valve:

A control valve is fixed at the bottom of the fuel tank and is used to control the movement of fluid out of the tank when it is not necessary.

5.14).plumbing items:

Plumbing items such as brass nozzles, brass bands, brass tee and brass hose collars are used for proper movement of pepper spray from tank without any interruption and is clamped together.

6).Working:

Riots are these days a district of each civilized society. Disagreement for state selections, non secular in-tolerance, events, hateful content etc are a number of the most reasons which will simply spark riots. To handle a riot police, army should be ready to pacify/disperse the group while not harming them. To unravel this issue we tend to here style a wise anti-riot protect that permits police personnel repel/arrest rioters while not harming themselves or the rioters. The smart shield makes use of non-injurious techniques along with few other features for this purpose. This riot control shield is attached with more advanced technologies like LED blinders and pepper spray system which is used to control the crowd and provide protection to the person who is handling the crowd. The protect may be a one arm lightweight protect created of aluminum for cover against bullets and stones. The protect is integrated with a electrical switch trigger to spray aerosol bomb onto rioters United Nations agency equal enough to carry the protect. This sprays aerosol bomb that ends up in eye etching and repels them. For stone pelters United Nations agency throw stones from a distance, the protect includes another trigger that allows diode blinders..The working of pump is controlled by a push and pull switch. The size & weight of the shield are reduced by introducing a light weight material. The working of LED lights is controlled by using a push and pull switch. The power to LED is supplied by

using a DC battery. Pepper spray is stored in a storage tank where the bottom is mount with a on and off valve to control leakage of water through tubes. Thus the smart shield makes use of non-injurious techniques along with few other features for controlling Riots.

IV. CONCLUSION:

The project comprises of research and user study. Literature survey is carried out based on the existing patents on riot control shield and is observed that there are many difficulties in controlling the crowd in any Disagreement for government decisions, religious in-tolerance, events, hateful content etc. Below are some of the advantages based on newly designed product and its functions.

- Light Weight Design
- Bulletproof and Stone Proof Design
- One arm mounted
- Pepper Spray Repellent for Close Encounters
- Blinding LEDs for Stone Pelters
- The smart shield makes use of non-injurious techniques along with few other features for controlling Riots.

About the market, this model is compact and ensures safety to the person who is handling the crowd.

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