Stun Gun Circuit

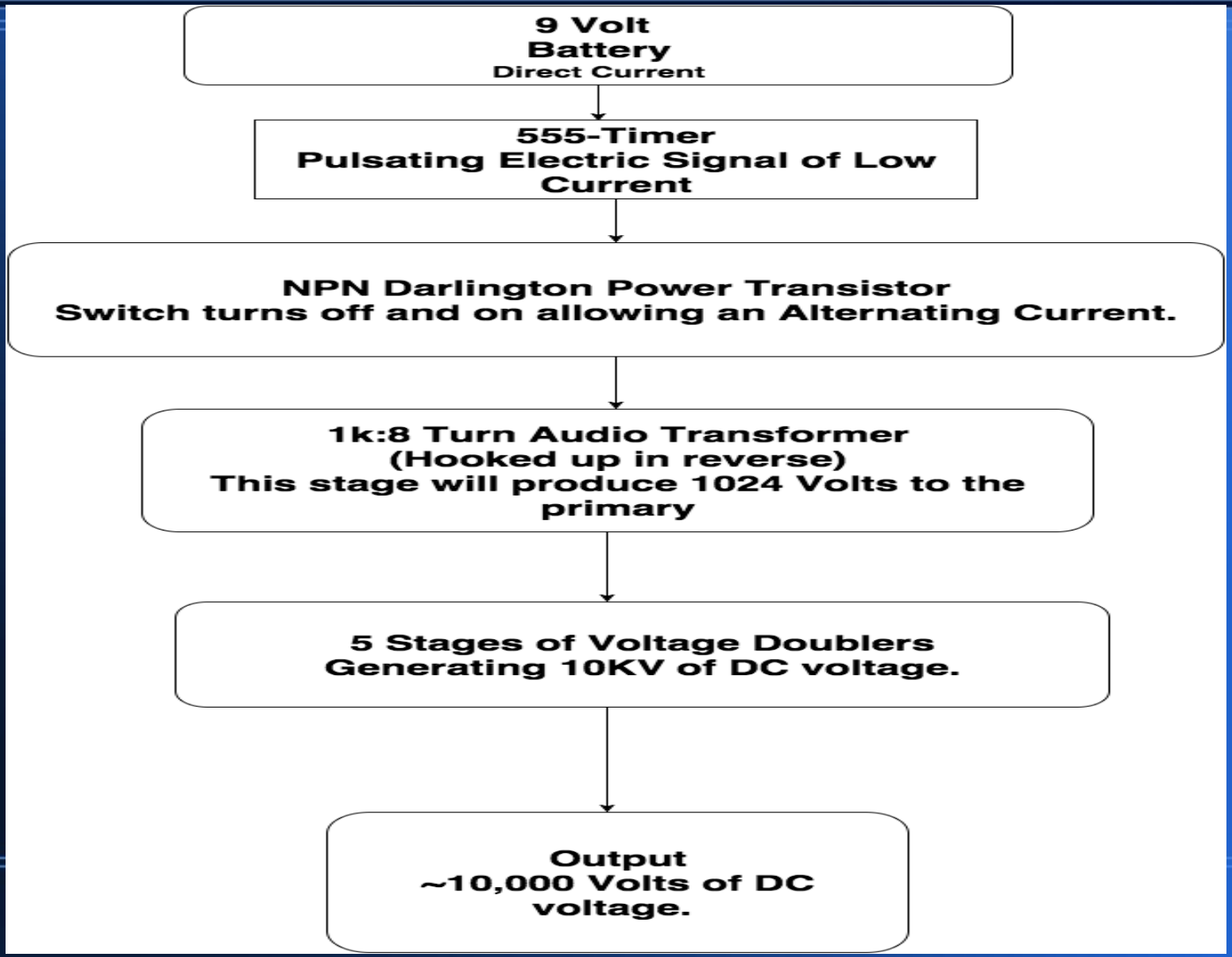
by
Kenyon Smith

Stun guns are used today as an alternative to a firearm. Stun guns are used to subdue a target. It uses high voltage to stun and send shock waves through the targets body to weaken or paralyze the target.

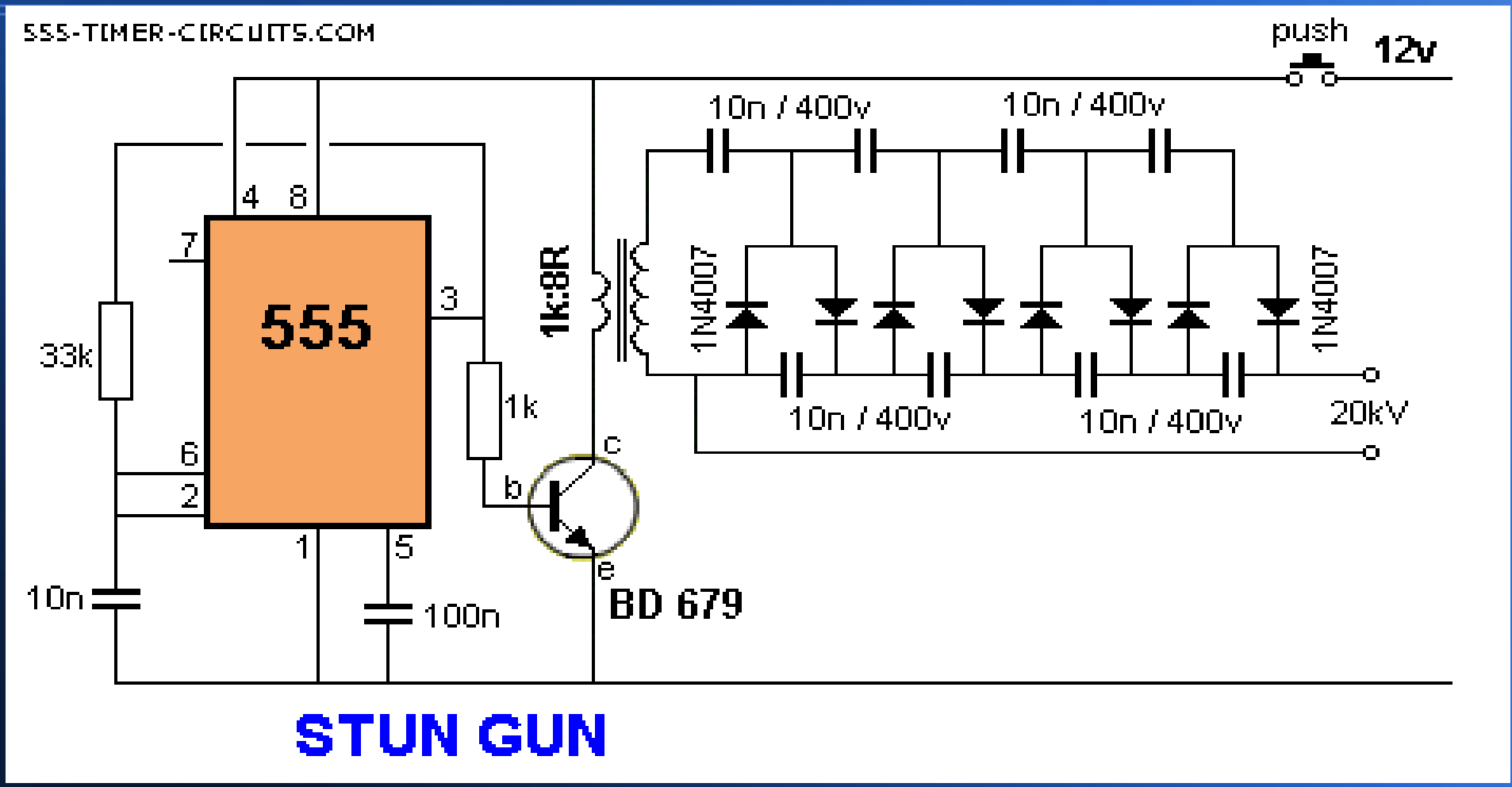
Introduction

- Using a 555 timer produce a current fluctuating signal.
- Then this low current fluctuating signal will be fed through a NPN power transistor creating a AC voltage.
- Then ramp up the voltage using a step down transformer in reverse and five stages of voltage doublers.
- The stages will consist of capacitors and diodes.

Block Diagram



Circuit Schematic



Provided by http://www.555-timer-circuits.com/stun-gun.html

Specifications

- Timer set to a 50/50 duty cycle.
- Low Voltage(LV) Analysis:

  R1= 32.2k Ohms and C = 9.8nF
  Time Constant of Timer:
  Frequency= .72/(R1xC)= 2,281.7 Hz
- Transformer Specifications:

  Frequency Range: 300Hz to 3,400Hz

  Primary:1kOhms Secondary: 8 ohms

Results

- Timer/Transistor: Output of 5.64 Volts at 1948Hz.
- Able to produce 3628 Volts on the output of the circuit.
- Fixing the connectivity issue should allow the circuit to obtain the 10,000 Volts that was the goal of the
- Transformer began to start making noise which concludes testing the high voltage stage of the circuit.

Problems

- Transformer is making noise due to it being magnetically excited by an alternating voltage and current so that it becomes extended and contracted twice during a full cycle of magnetization.[2]
- I personally did not have a soldering iron and was not able to solder my whole circuit which would have made the circuit function correctly.

Conclusion

- Circuit takes a 9 Volt battery input and converts it to High Voltage between 1000 Volts to 10,000 Volts.
- Circuits need to be soldered to make sure that each component is making good contact with one another to produce the maximum 10,000 Volts.
- Transformer parameters are not being met or being exceeded in some aspect.

References

- [1] www.555-timer-circuits.com/stun-gun.html
- [2] http://federalpacific.com/literature/dry-type-literature/10transformernoise.pdf

Acknowledgements

- Brett – Help me with sanity checks on circuit setups when troubleshooting.
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