A SHORT NOTE

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AN INEXPENSIVE POWER SUPPLY FOR VALVE CHARACTERISTICS

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Detailed Study of an In-expensive Power Supply which has been Constructed and Tested for Studying valve-Characteristics.

INTRODUCTION

Generally experimenting with valves (diodes & triodes etc.) for studying their characteristics, the major requirement is a good H.T. Power Supply. Usually expensive and delicate Power Supplies are asked for such experiments, mostly beyond the purchasing capacity of ordinary Science Institutions. Further, the replacements and repairs of such equipment is not an easy job for most of the Institutions, the need of an in-expensive Power Supply with easy repairs and replacements is evident. We have tried different rectifier circuits with market current stock and have found a Doubler Circuit very conveniently solving these difficulties.

METHODS AND MATERIALS

The circuit with details of components is given in Fig. A through Fig. C.

Fig. A gives the Doubler Circuit with components used. Heater voltage can be supplied from a 6.5v, 2A, Step-down Transformer, while the main circuit supply has been taken directly from 220 vac mains. A mains' switch and a safety fuse should be incorporated in the in-put circuit. EZ 81 tube has been tried (as a single diode) for this circuit, thus increasing its capability to handle normal over-loadings safely.

Fig. B gives the details of the out-put filter circuit. In this circuit condensers used were 50Uf + 50Uf, 350 VDC. To handle the high voltage and heavy out-put current safely, four such condensers were arranged in a paralell and series combination (Fig. B), ultimately acting as C_1 and C_2 (Fig. A).

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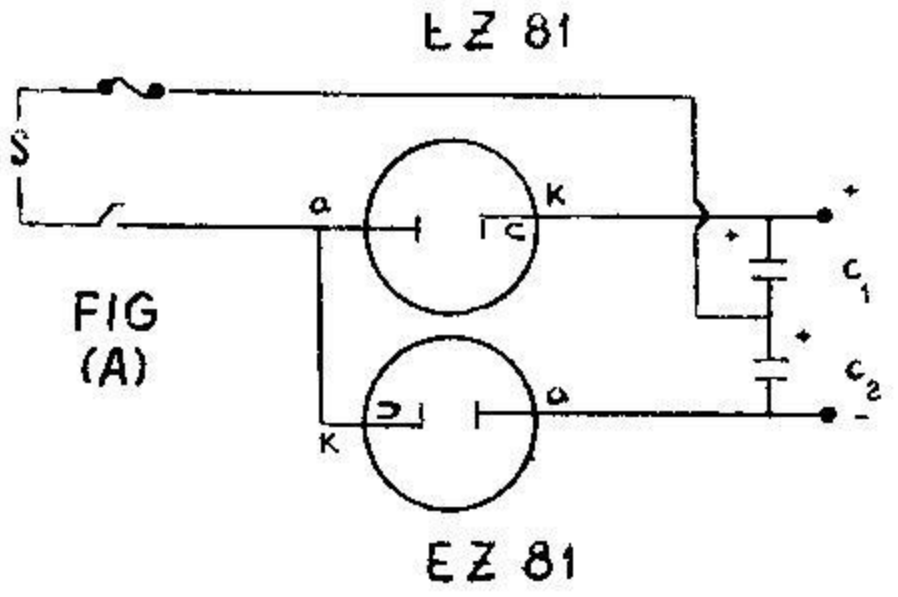

FIG (A)

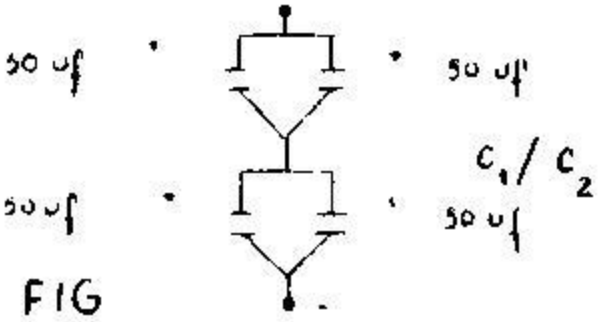

FIG (B)

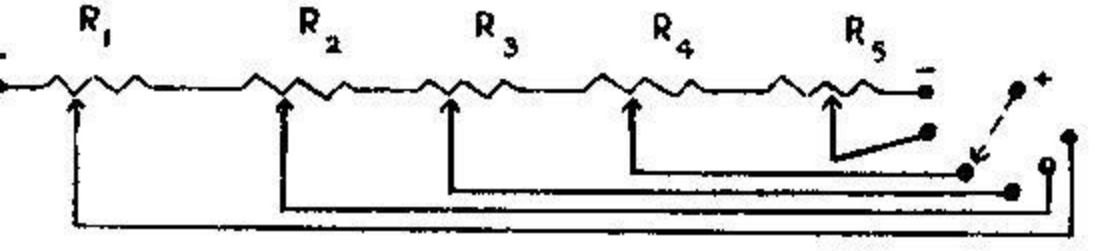

Fig (C)

Fig. (C) deals with the Potential Divider Circuit. Five Potential Dividers of 3500 Ohms were placed in series and the central tappings were connected through a rotary switch for the out-put connection (Fig. C). This assembly was again durable and safe for the required voltage and current out-put ranges.

RESULTS AND DISCUSSIONS

Typical Data Under Normal Operations :

1.	Direct Out-put	680 VDC
2.	Across the Potential Divider Terminals	640 VDC
3.	Upto 50 ma External Drain	620 VDC

The data given above shows that the Power Supply is very useful in handling valves, with maximum drain upto 50 ma. This range has been tried and tested for long intervals of time without any serious heating effect. The total complete circuit has given very good results, and is in use in our laboratory since 1964 without any serious failure, thus proving its worth. The components used are available in the local market at very nominal cost.

Note : The in-put can be supplied through an in-put Transformer of 275-0-275 v and 150 ma for still higher voltages for Seed Treatments etc., (i. e. of the order of 1500 VDC —— with heavy duty P.D. Circuits).

ACKNOWLEDGEMENTS

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