

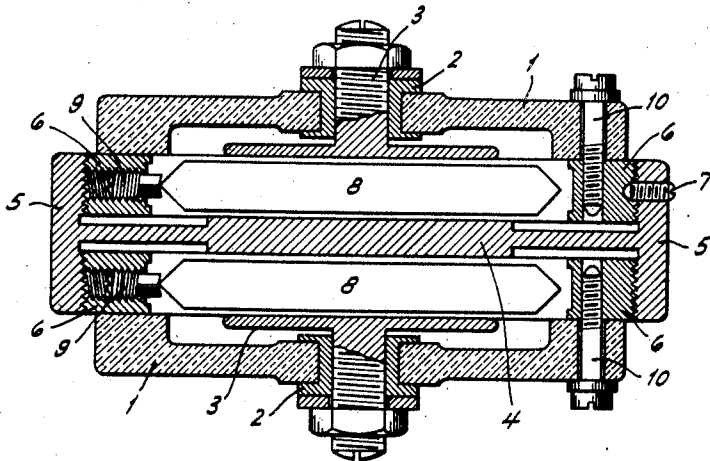
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PIEZOELECTRIC CRYSTAL HOLDER

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PIEZOELECTRIC CRYSTAL HOLDER

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This invention is concerned with novel ways and means for supporting, holding or mounting piezoelectric crystal oscillators. It is more particularly concerned with the disposition and accommodation of two oscillatory crystals inside a minimum amount of space. An arrangement of this nature is particularly adapted for heterodyne arrangements in which two crystals of quartz are to oscillate at different frequencies, while preserving as constant as possible a frequency difference between them. To insure such a stable frequency difference it is advantageous and expedient to mount the two crystals under similar conditions and as closely together as feasible, while care must be taken so that they will be subject to the same external conditions, temperatures, etc.

The object of the present invention satisfies these demands, while at the same time it solves the problem to mount and hold the crystals inside a minimum amount of space.

The invention shall now be described more fully by reference to the single figure of the drawing, which figure shows a cross-section of the piezoelectric crystal holder. The ceramic shells 1 support the electrodes 3 which are arranged in the bushes or sleeves 2 in such a way that they are adjustable. The median electrode 4 has a collar-shaped or annular peripheral expansion 5, with internal circumferential screw-threads being cut therein bilaterally. Screw-fitted into these threads are the crystal plate support rings 6; the rings by the aid of clamp screws 7 may be locked in a certain position. In the supporter rings or holder members 6 the quartz crystals 8 are held by the screws 9; by turning the holder rings in their screw threads, their spacing apart from the central electrode may be adjusted at will. The exterior mounting parts described above and indicated at 1, 2, 3, are secured on the supporter rings 6 by the aid of screws 10. As a result, a stable, rugged, and safe union is established between all of the elementary parts.

One particular advantage of the arrangement as just outlined is that each of the oscillator crystals may be adjusted in reference to the central electrode and that also the outer electrodes individually may be adjusted without there being any necessity for demounting the device. To set the crystal oscillator in relation to the central electrode, all that is necessary to do is to unscrew the clamp screw 7 in order to allow the turning of the whole upper part comprising the crystal, holder rings, ceramic shells and outer electrode whereby the distance between the crystal and the

central electrode is variable. The setting of the outer electrodes 4 is effected by turning in the screw-thread in the brushes or sleeves 2. It will be noticed that the adjustment of the inter-electrode distances is independent of the other, without the adjustment of one of these electrode distances affecting that of the other in any way whatever.

In lieu of providing an arrangement wherein the mounting rings are adjustable in reference to the central electrode, it will, of course, also be feasible to use a simplified form of construction in which the mounting rings are firmly fitted upon the central electrode and in screw union therewith.

What is claimed is:

1. Holder for piezoelectric crystal oscillators, with the characteristic feature that two quartz crystals are mounted bilaterally with respect to a common central electrode, said central electrode being externally provided with an annular expansion in which the rings serving to hold the quartz crystal are screwed.

2. Holder as claimed in claim 1, with the characteristic feature that the spacing between each of the crystals and the central electrode is individually adjustable by turning crystal holder ring in a screw-thread cut in the central electrode.

3. Holder as claimed in claim 1 with the characteristic feature that a ceramic shell is screwed on each side upon the crystal holder ring by means of a plurality of screws and an outer electrode being adjustably arranged therein.

4. A piezoelectric crystal holder comprising a metallic member having a central electrode portion, a flange on each side of said central electrode portion, a ring member located within each one of said flanges, means in said ring member for securing the outer periphery of a crystal thereto, a ceramic member secured to each one of said ring members, and an electrode located in each ceramic member.

5. A piezoelectric crystal holder comprising a metallic member having a central electrode portion, a flange on each side of said central electrode portion, a ring member located within each one of said flanges, means including a plurality of set screws located in said ring member for securing the outer periphery of a crystal thereto, a ceramic member secured to each one of said ring members, and an electrode located in each ceramic member.

6. A piezoelectric crystal holder comprising a metallic member having a central electrode por-

tion, a flange on each side of said central electrode portion, a ring member located within each one of said flanges, means in said ring member for securing the outer periphery of a crystal thereto, a ceramic member secured to each one of said ring members, and an adjustable electrode located in each ceramic member.

7. A piezoelectric crystal holder comprising a metallic member having a central electrode por-

tion, a flange on each side of said central electrode portion, a ring member located within each one of said flanges, means in said ring member for securing the outer periphery of a crystal thereto, a ceramic member secured to each one of said ring members, a threaded bushing in each ceramic member, and an adjustable electrode secured to each ceramic member.

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