ACOUSTO OPTICO METHOD OF ANALYSIS OF DYNAMIC ROCK STRUCTURE.

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SYNOPSIS

When a plate (Rock Structure) is subjected to static or dynamic load, the average stress density in the rock-structure is substantially uniform over the plate, except the pattern of strips in which, their is an excess of energy. These patterns are traced using the acousto optico method developed by authors. The distribution of stress can be visualized on the photograph.

INTRODUCTION

Finding stress in a dynamic rock-structure is one of the most complex cases of analysis. Yet the problem is of great importance specially in the zones of sesmic areas. Inspite of advances in the numerical methods, the proposed acousto optico method will have suprimacy in the analysis.

EXPERIMENTAL SETUP

The schematic arrangement is shown in FIG. 1. The speciman is clamped in a steel frame, and is subjected to load static/dynamic supported at the end (presenting as cantilever). The plate was driven by the speaker, excited by an amplifier, driven by the signal generator. The patterns were obtained by spreading sand on the pattern tracer and then photographed. The various patterns are shown in the accompanying FIG. 2.1 to 2.4.

CONCLUSIONS

(1) The existance of excess energy due to stress condition can be seen on the pattern.
(2) The stress, have different patterns under static and dynamic conditions.
(3) Ramdom vibration analysis is also possible using the above reported technique.
(4) This will greatly solve the problems of future investigation.

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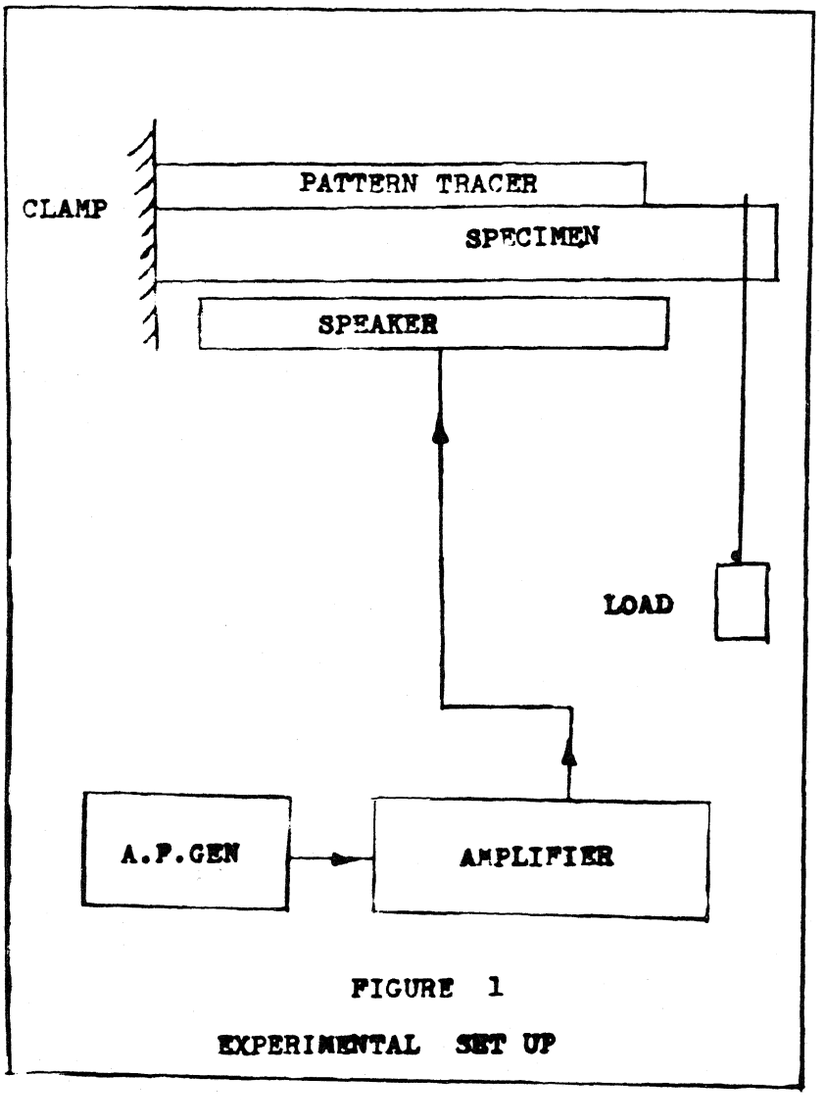

FIGURE 1

EXPERIMENTAL SET UP

FIGURE 2.1

PATTERN WITHOUT LOAD AT 500 Hz

FIGURE 2.2

PATTERN WITH LOAD AT 500 Hz

FIGURE 2.3

PATTERN WITHOUT LOAD AT 1000 Hz

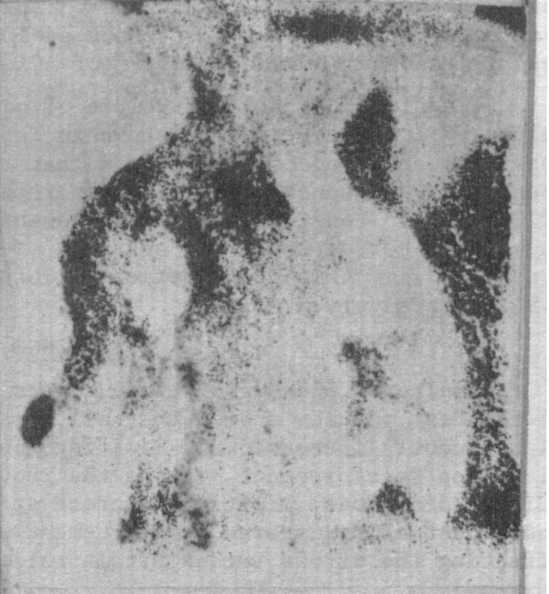

FIGURE 2.4

PATTERN WITH LOAD AT 1000 Hz