# STRUCTURAL ANALYSIS
OF THE PENDULOUS VIBRATORS WITH
ONE DIRECTION ADJUSTABLE DISTURB FORCE

DRĂGAN Nicuşor

Engineering Faculty of Brăila, "Dunărea de Jos" University from Galaţi
ndragan@ugal.ro, dragannicu64@yahoo.com

Keywords: structural analysis, pendulous vibrators

This study presents the phases of the physical model' elaboration of unidirectional pendulous vibrators utilized in equipment which generate technological vibrations for civil engineering or building materials industry (vibrating drums, plates, hammers, beams, riddles, eaves, a.s.o.). Also, it presents the principle scheme of a device with two rotary unbalanced masses for continuous variation of the amplitude of the vibrations. The work has a real utility in designing, in manufacturing as well as in the exploitation of this type of technological equipment. The constructive model of pendulous vibrator that this study proposes can led to achieving a rigorous physical model and as calculus, to evidence the dynamic and energetic aspects related to the functioning of this type of one direction vibrations generator. It can be demonstrated that, if some dimensional and functional conditions are fulfilled, under certain working hypotheses, we may have the undesired horizontal vibrations annulled, and the swinging vibrations (in θ "direction") decoupled from the vertical (useful, technological) vibrations. Under the hypothesis of decoupling of both motions and considering that the system has small oscillations, it can be demonstrated that these vibrations are quasiharmonical, with the pulsation equal to that of the driving motor.
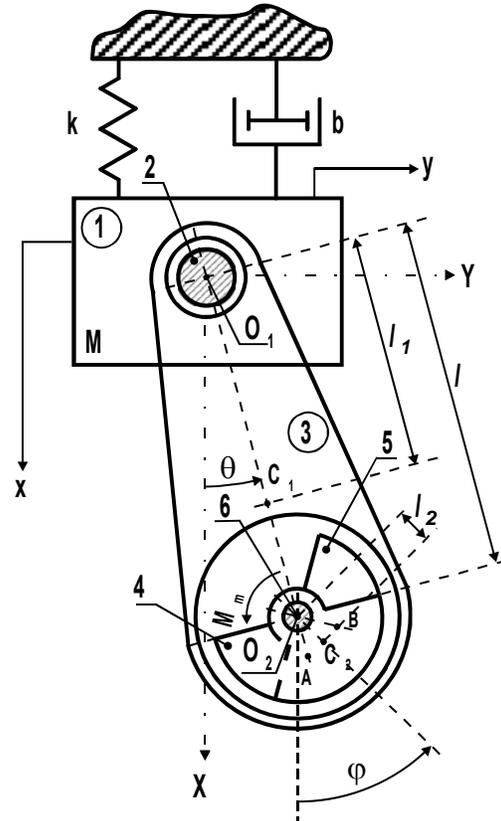
The principle scheme of the one-direction pendulous vibrator with continuous variable perturbation force

5. REFERENCES

[1] Axinti, G., Oproescu, Gh. - "Dinamische Modelierung der einzelnrichtungsvibrationsgeneratoren von pendeltyp", Analele Universităţii "Dunărea de Jos" fascicula XIV inginerie mecanică, Galaţi, 1996

[2] Axinti, G., Stoica, Gh., Axinti, A. S. - "Comportarea dinamică a generatoarelor de vibraţii unidirecţionale de tip pendular acţionate hidraulic, utilizate pe miniutilaje de construcţii", Buletinul celui de-al VI-lea Simpozion Naţional de Utilaje de Construcţii vol. I pp. 177-183, U.T.C., Facultatea de Utilaj Tehnologic, Bucureşti, 26-27 iunie 1997

[3] Bratu, P. P. - "Vibraţiile sistemelor elastice", Editura Tehnică, Bucureşti, 2000

[4] Buzdugan, Gh., Fetcu, L., Radeş, M. – "Vibraţii mecanice", E.D.P., Bucureşti, 1982

[5] Dragnea, O. - "Geometria maselor", Editura Didactică şi Pedagogică, Bucureşti, 1972

[6] M. Rădoi, E. Deciu - "Mecanica", Editura Didactică şi Pedagogică, Bucureşti, 1977