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RT mixing of a thin liquid layer on the rigid wall moving with deceleration

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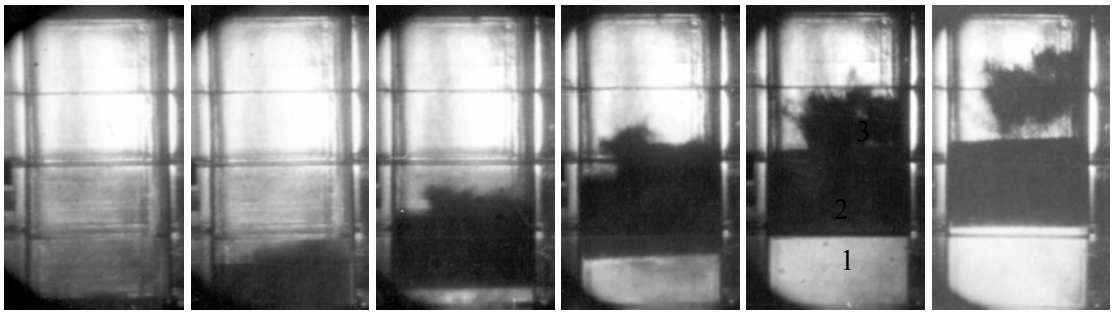
Results of investigation of development of RT mixing air and a thin (~0.5 mm) a layer of water at an end face of the piston moving with deceleration (~$2 \cdot 10^4$-10^5m/s^2) are presented. These experiments confirm an opportunity of realization of a method to obtain of a mix atomized liquids with gas by means of the piston machine [1].

The opportunity of use of the given effect: a) for obtaining of a mix atomized waters with air for suppression of fires and b) preparation of a fuel-air mix in engines of internal combustion is discussed



t = 0 ms 0,43 ms 0,86ms 1,29 ms 1,72 ms 2,15 ms

Developments of turbulent mixing of a thin layer of water at a stage deceleration of the piston (2) due to development of RT instability. The flat piston with thickness of ~22 mm was accelerated in the channel of square section 40×40mm^2 by pressure of products of a detonation of a mix of acetylene with oxygen (1). The layer of water thickness of ~0.5 mm (in a small deepening (15×15mm^2) at an end face of the piston) turns to a drop cloud (3) with the thickness of ~25 mm. Time is counted from the moment of occurrence of the piston in the frame.

References

1. E.Meshkov, N.Nevmerzhitsky. A method of receiving of a mix atomized liquids with gas. Patent RF #2220009, 2003.