



TRADE AND COMMERCE  
CANADA

SD-GA.28

## STANDARDS DIVISION

OTTAWA, December 12, 1952.

TYPE APPROVALBAILEY FLUID METER INTEGRATOR

The apparatus specified and illustrated herein has been duly approved by the Standards Division under the provisions of the Gas Inspection Act, Chapter 82, R.S.1927, as amended, and may be admitted to verification in Canada.

Apparatus Approved: Escapement Type Integrator, manufactured by the Bailey Meter Company Limited, Montreal, P.Q.

Application: For use in conjunction with Flow Mechanisms, for the measurement of heating gases.

Rating of Apparatus: Its rating is dependent on associated apparatus. It may be used with any approved Flow Mechanism.

Description: Construction of the escapement type integrator is illustrated in the figure on back of circular. The escape wheel is driven by a synchronous motor through a friction clutch arrangement. It rotates only when the pawl is disengaged from the teeth on its periphery. The escape wheel has 250 teeth, this number being divided by engraved marks, located near the circumference, into ten equal groups of 25 teeth each. The roller arm is pivoted near its left end to the meter flow arm, so that the position of the pivot varies only with changes in the rate of flow. The right end of the roller arm moves up and down under the action of the rotating cam, causing the pawl operating pin to move up and down also. This operating pin is responsible for engagement and disengagement of the pawl with the escape wheel.

At the maximum flow for which the meter was built to register, the pawl does not come into engagement with any teeth on the escape wheel and, at this point, under a normal setting of the adjustments, the escape wheel makes one complete revolution for each revolution of the cam; in other words, the maximum of 250 teeth per revolution pass under the pawl at maximum chart reading. At 50% of maximum chart or scale reading, the pawl is engaged with the escape wheel just  $\frac{1}{2}$  of a complete revolution, thus allowing only 125 teeth to pass by the pawl. At 10%, only 25 teeth will pass by, etc. Therefore, each engraved mark on the escape wheel indicates the passage of 25 teeth or a flow equal to 10% of the maximum meter capacity.

Calibration of the integrator may be secured by counting the number of teeth which are disengaged from the pawl at each successive 10% of capacity. In order that error in the integrator calibration may be reduced to a minimum, ten engagements of the pawl with the escape wheel are taken for each check on the integrator adjustment. This permits ten revolutions of the escape wheel at maximum capacity; nine revolutions of the escape wheel at 90% flow; eight revolutions of the escape wheel at 80%, etc.

*R. W. MacLean*  
R. W. MacLean,  
Director,  
Standards Division.

*E. F. Power*  
E. F. Power,  
Assistant Director (E&G),  
Standards Division.

Ref: A-284