weight, W, and (3) the horizontal force, P, acting towards the left at E, is zero; that is—

$$W r_1 = P \times OE + F r_2$$

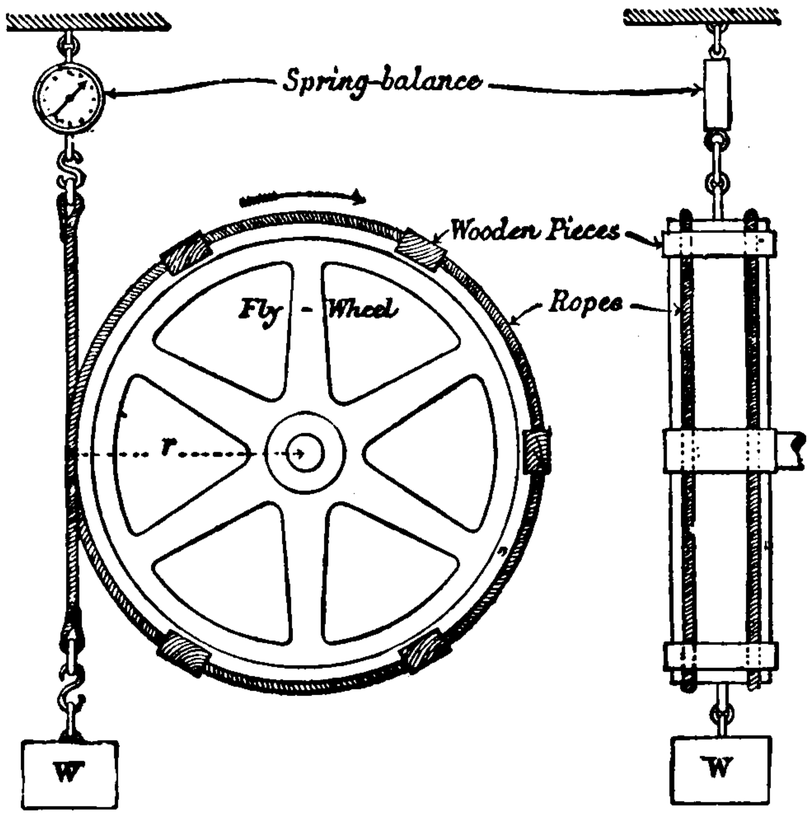
The amount of this horizontal force, P, can be easily measured by a spring-balance. With a low coefficient of friction, the tension on the brake-strap has to be increased; and since the ratio existing between T_2 and T_3 is constant, depending on the proportions of the lever, it follows that, P, may be of considerable amount; and any quantitative results calculated without taking it into account will be erroneous. With a high coefficient of friction the force, P, may be small, and the results might probably be not far wrong, even if, P, were left out of account. In every case, however, where accuracy is desired, the moment of, P, must be considered.

In the same correspondence on friction-brake dynamometers, Professor A. Jamieson stated that about a year ago he had occasion to make a series of tests on a Griffin gas-engine. The brake proposed by the makers of this engine was the same as that used by the Royal Agricultural Society described and commented upon in the Paper. Owing to the evident defects of the Agricultural Society's brake, one of the following form was

adopted instead, which gave fairly good results with the gas-engine, developing 13·6 brake H.P. The chief objections, however, to it were:—1. That even for that small power, it was necessary to have two brakes, one brake upon each fly-wheel. 2. That the lubrication of the brakes required considerable

attention. 3. That the back pull, indicated by the Salter's balances, varied considerably, and hunted up and down within limits which necessitated some guessing and frequent observations. 4. That the oil or grease for lubricating the fly-wheels bespattered the floor, the wall opposite, and the observer's clothes, when reading the Salter's balances.

He had again, December 14, 1888, had an opportunity of testing an identically similar gas-engine at Kilmarnock. This time he employed only one brake fixed on one of the fly-wheels. The next figure illustrated this form of brake, which he understood was the same as that which had been used by the jurors at



the late gas-engine trials under the auspices of the Society of Arts. The following Table showed the more important results:—

Mean revolutions of brake fly-wheel per minute, .	205
Maximum deviation from mean speed, per cent., .	5½
Dead load, W, in lbs., ...	157
Mean back pull on balance, in lbs., ...	4
Radius of dead load, W, from centre of brake wheel, = r in feet, ...	2·552
Size of each of the two small ropes, diameter in inches,	0·6