

A ROUGH-AND-READY DYNAMOMETER FOR SMALL MOTORS.*

I HAVE been requested to bring to your notice a friction-brake dynamometer that is by no means new, but is one that is deserving of being more widely known by electricians than appears to be the case.

Like the well-known Prony brake, it acts as an absorption

Institution of Civil Engineers, London, November 13, 1888, and published in 1889 in the Proceedings of the Institution.

Its construction requires only the use of a leather belt with a spring balance attached to one end, and a suitable weight to the other. The belt is to be thrown over the belt pulley of the motor, the spring balance is fastened to the floor base, or support of the motor to be tested, and the weighted end hangs pendant on the side of the pulley which, when in motion, will tend to lift the weight. When the motor is at rest, the strain of the weight should be read off the spring balance. This reading we will call W . When the current is switched on and the motor is run at a speed, the spring balance should again be read off, since the friction of the pulley on the belt will have a tendency to raise the weight; this reading we call W' . The difference between W' and W in pounds, multiplied by the circumference of the pulley in feet (including one-half the belt thickness on each side), and this by the number of pulley revolutions per minute will give the foot-pounds of mechanical energy,

which can be compared with the electrical energy required to produce it, in the usual manner.

Thus, in a few minutes with the aid of a speed counter tachometer, a voltmeter and an ammeter, the efficiency of a motor can be determined, and its ability to do a desired amount of work ascertained at once, instead of being left to guess-work, as would be the case if more bulky or elaborate apparatus were needed.

It should not be imagined from these remarks that this form of dynamometer is applicable to small motors only; but it is evident that for testing larger machines where many horse-power have to be measured, the apparatus needs more elaboration, especially in the use of friction blocks, under the belt or pulley strap, their lubrication, and the use of a dash-pot to steady the brake when the motive power is irregular.

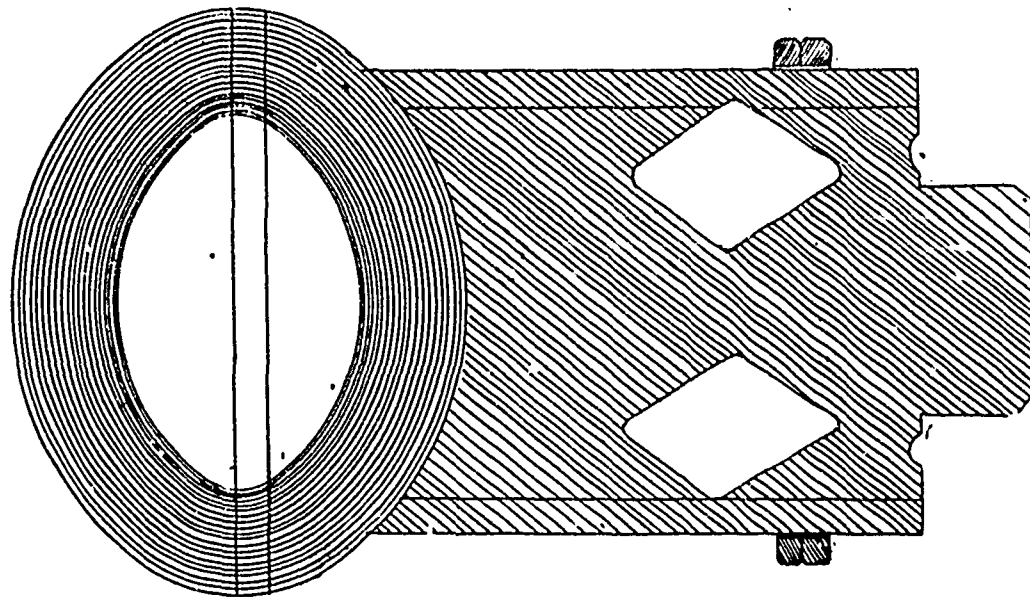


FIG. 2. --CHAMBER, SHOWING VALVE ATTACHED.

dynamometer; and without detracting from the acknowledged value of this instrument, especially for testing the value of large prime-movers, yet we need something more portable, more convenient to use, in the very numerous cases where it is desirable to test the efficiency of small motors.

We need a rough-and-ready instrument that is portable, inexpensive, readily used, and at the same time reliable.

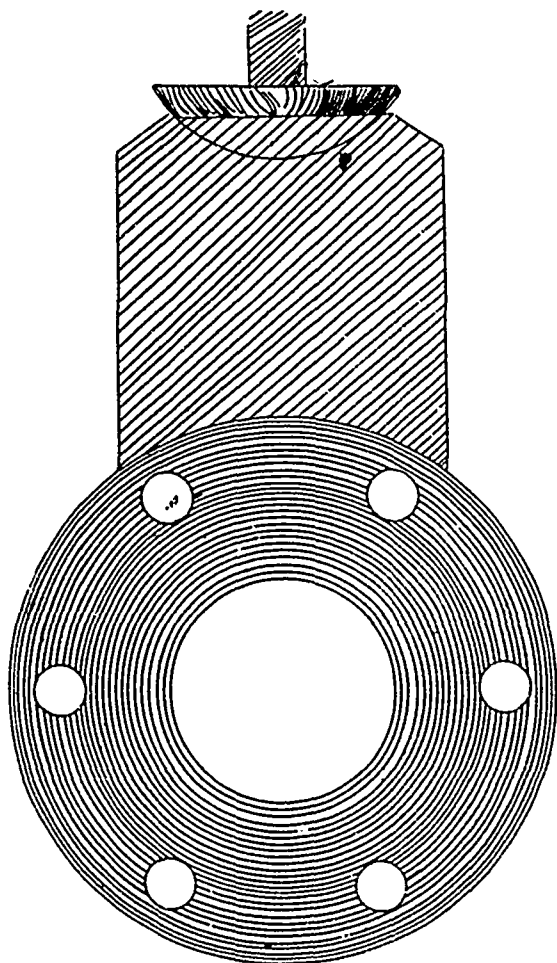


FIG. 3. --SHOWING COVER THAT BALANCES THE VALVE.

This we find in a friction-brake dynamometer, one of the many modifications of those illustrated by Mr. Wm. Worby Beaumont, in his paper on friction-brake dynamometers, read before the

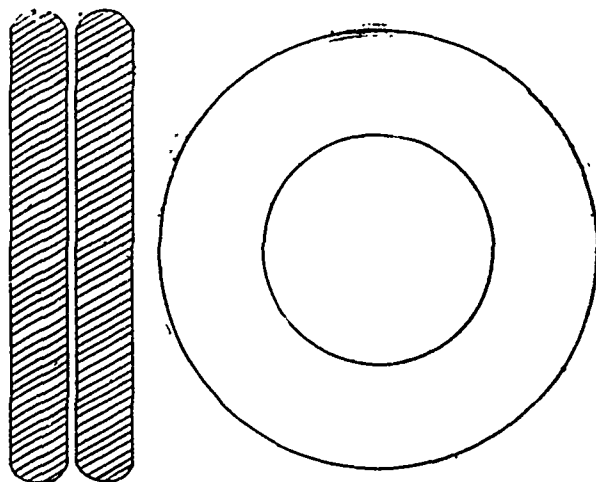


FIG. 4. --SHOWING THE WEIGHTS THAT FIT ON THE COVER, SHOWING TWO VIEWS.

But I need not enlarge on this, except to say that in these particulars, whether using steel strap, or leather belting with friction-blocks, or rope friction, the same care is needed as in the Prony brake to obtain correct readings.

A recent despatch from Kingston Ont., says a successful test has been made of a new diver's telephone invented by Mr. A. F. Smith, of that city.

The Dominion Parliament has passed a Bill incorporating the Anglo-Canadian Electric Storage and Supply Co. The projectors are. Francis Clemow, Charles H. Mackintosh, J. A. Gemmill, J. W. McRae, William McDougall, C. B. and C. C. Ray, of Ottawa, and Arthur Shippey and Henry Woodward, of London, Eng. The capital stock is placed at \$50,000, and the headquarters of the company at Ottawa.

* From a paper read by John Hoskin before the Franklin Institute.