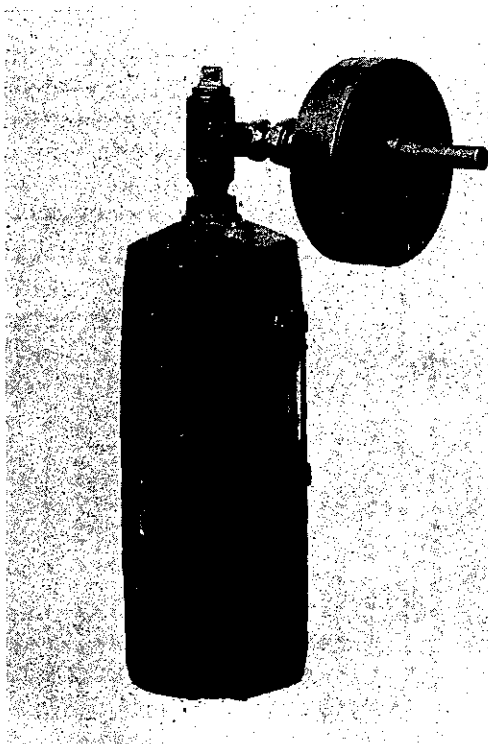


THE ELLIS MOTOR.

THE DEVELOPMENT OF AN INTERESTING INVENTION.

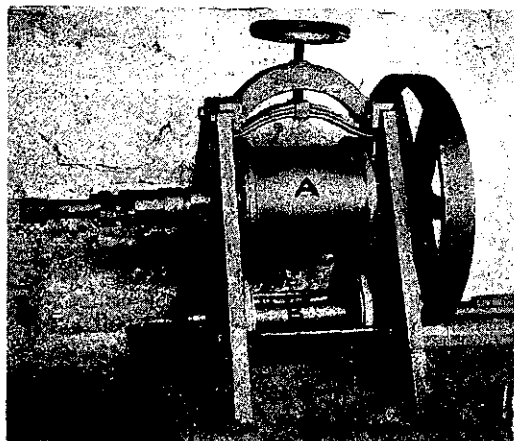
MOST inventions of value have a gradual evolution from the embryonic to the mature stage, sometimes passing through extraordinary phases in the process. We illustrate herewith the gradual development of the "Ellis" motor which is now showing remarkable results, and is commanding the attention of engineers. The engine shown in Fig 6 is working at Messrs. Luke's Foundry in Wellington, and was built by Messrs. Andrews and Manthel of that city.

Taking the invention at its commencement, Fig. 1 shows the first small model, the boiler being constructed out of an old quicksilver

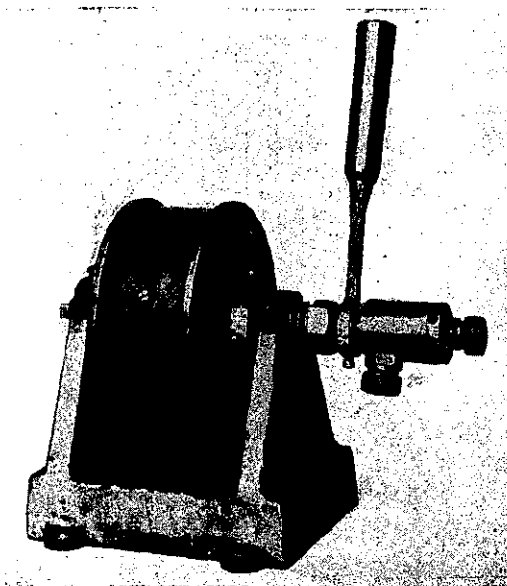


THE ELLIS ENGINE : FIG. 1.

bottle. This crude apparatus was fitted up to test the principle which the inventor had hit upon. It was found to work and reverse its motion, thus realising his sanguine expectations. The principle is founded on the fact known to every school-boy:—that a wheel will run down hill by the force of gravitation acting at the centre of the wheel, which centre is always in advance of the point of contact of the rim of the wheel with the road. See sketch Fig. 4. Now, by putting this principle into a piece of mechanism whereby



THE ELLIS ENGINE : FIG. 2.



THE ELLIS ENGINE : FIG. 3.

the periphery of a cylinder acts as the road, and the motor (within the cylinder) as the wheel, substituting the force of steam for gravity, a corresponding effect is produced; with the advantage that the periphery of the cylinder is an *endless road* for the wheel to run upon, the position of the wheel with respect to the *cylinder road* forming an artificial incline reversible at will. Although the engine is exceedingly simple, it is somewhat difficult to describe without a model, but the drawings will enable some idea to be obtained of its construction.

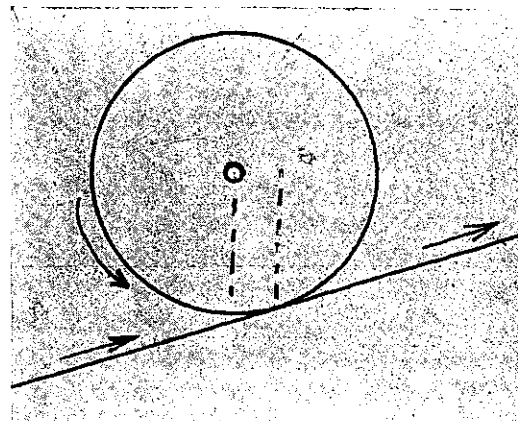
Fig. 1.—Shows the embryonic motor as already mentioned.

Fig. 2.—The next stage fitted up to show its application to locomotive driving; the outer cylinder or drum (A) having its ends shaped like locomotive wheel tyres to run on rails; rollers (B) being substituted for rails—or the railway track—for the sake of experiment and demonstration, and a fly wheel placed on the shaft for momentum.

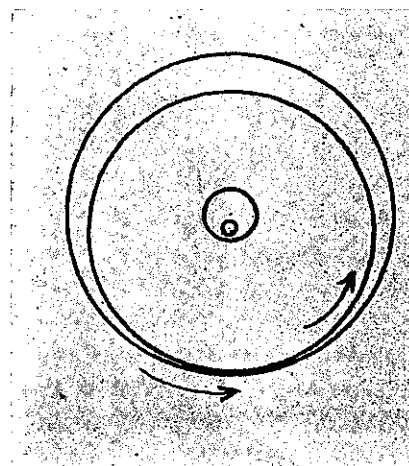
Fig. 3.—The next stage, when extraneous abutments (such as shown by the rollers in Fig. 2) are dispensed with, the shaft passing through bearings eccentric to the bearings for the outer drum. It should be stated here that this outer drum revolves in the same direction as the inner wheel or motor. For instance, if a wheel is running on a road or railway, the road or railway may be considered as running in the same direction as the wheel, see sketch (Fig. 4). In the engine the rail or road becomes circular and therefore endless as shown by sketch (Fig. 5).

Fig. 6.—Shows the latest model arranged for marine, or stationary driving; the engine is reversible at full speed. Further developments are obvious now that the principle has been prov-

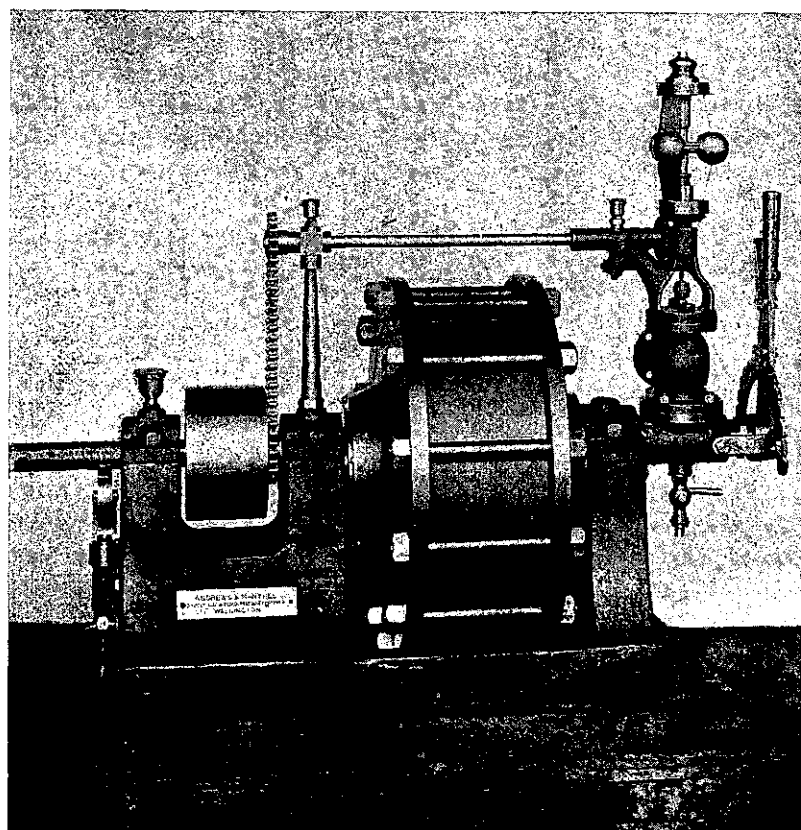
ed workable, and it is hard to say to what length these developments may reach, the inventor having in mind several applications with a long vista of probabilities. In his own words "The changes may be rung to an almost unlimited extent on the same general principle." From what has transpired with the trials already made, important results may reasonably be expected from future developments.



THE ELLIS ENGINE : FIG. 4.



THE ELLIS ENGINE : FIG. 5.



THE ELLIS ENGINE : FIG. 6.