Further, the leakage path may be divided up into portions; also the leakage path may join the main magnetic circuit between the poles and the yoke of the field magnet, thus bridging a portion of the magnetic circuit upon which the main magnetomotive force is impressed.

The Parsons and Law method of regulation further relates to the regulation of alternators, dynamos, and the like, with the object to improve the regulation of voltage of two or more phase machines, and also rotary convertors, that is machines for converting from one, two, or more phases to continuous current, and to provide means for easy adjustment of the apparatus to meet different working conditions.

According to the method described above it has been found that in alternations with two or more phases the insertion of a leakage path winding in one phase only, causes an inequality of the phases, and for many reasons this inequality may prove objectionable.

In the following arrangements, therefore, separate leakage paths are provided governed by all or part of the phases. For instance, in a 3-phase alternator there may be three leakage paths, one connected to each phase. There may also be, in cases where a wire is led from the star connection, another leakage path in that, if desired.

Leakage paths to rotary convertors for the purpose of regulation are also described.

The leakage paths may be placed, as described above, on one side of the pole pieces, or may be distributed, some between one pair of pole horns and some between the other, or leakage paths may be placed on both polar horns in series or in parallel with one another, and in the case of multipolar machines the leakage paths may be either all in series or all in parallels, or some poles may have leakage paths connected to one phase and some to another phase. In fact, the distribution of these leakage paths may be as universal as possible but it is preferable to have approximately equal amount of leakage path between each pair of poles on the exciter or main magnets, so as to equalise the effect on the field as much as possible, and also to have equal amounts on each phase. The amount of compounding given by these leakage paths can be varied by varying the number of the leakage paths For instance, in some cases, if a three-phase plant be run on non-inductive load only, the windings on one or two leakage paths may be used, and the others are then short-circuited or otherwise rendered inoperative; for a power factor of 90 per cent. two may be used, and for a power factor of 80 per cent. all three may be in use.

An adjustable air gap between the leakage paths and the poles for adjusting the amount of compounding has been referred to above. Similarly, an adjustable air gap may be provided in one or both limbs of the leakage paths themselves, or a separate winding may be placed on the leakage paths, having an adjustable resistance or induction or condenser in circuit with it; by altering this resistance or induction or condenser the magnetic flux through the leakage paths can be varied, if desired. Similarly, a resistance or choking coil or condenser can be put in shunt across the leakage paths, which choking coil or resistance or condenser can be made adjustable. In cases where the current for the leakage paths is supplied from a transformer or transformers, these transformers may be made adjustable in any well-known manner.

In one example, a transformer supplied with primary current may supply secondary current to the leakage path. The adjustment of the compounding may in this case be effected by shunting either the primary current or the secondary current. A variable inductance resistance or condenser may be placed in the shunt if desired. Also the transformers may be used for cutting out the leakage paths as and for the purposes described above.

Arrangements of current transformers and leakage paths in a three-phase system, in which each phase has one current transformer controlling a single phase leakage path, each phase winding of the alternator is connected to a common bar or lead, after it has passed through the primary winding of its transformers. This bar also forms the neutral of the alternator. The leakage paths, which are in practice arranged behind one another on the pole pieces of the exciter in this form, are excited by the secondary transformer windings, one end of each of which is connected to a common bar, and the other end to another common bar, the arrangement being such that the secondaries of the transformers and the leakage paths are encircled in series between the two bars

In some cases it is preferable to combine two or more phases on one or more transformers, and supply one or more leakage paths from these transformers; for instance, in a three-phase machine the transformer or transformers will convert from three-phase into single-phase, the transformers being so arranged that each circuit of the three-phase current gives a portion of its effect to the single-phase, and this single-phase current may then be wound round one or more leakage paths.

The whole of the above devices can be applied to alternators of one or more phases, rotaries, motor generators, or motor convertors, and, in fact, to any alternating current machinery where there are poles excited by continuous current between which leakage paths can be put.

Messrs. L. C. Knight and Co., 50 Cuba street, have secured the contract for supplying and erecting the large storage battery for the Eketahuna Borough Council. This will consist of 120 Fritchett and Golds cells of the seven-plate type, with a guaranteed discharge of 45 amperes for three hours. This is a similar battery to that ordered for the Christchurch abattoirs by the same firm, and speaks well for this accumulator, which is recognised as one of the heaviest type of cell on the market The same firm also have the order for the booster and switchboards. The latter will consist of four special polished panels, and will be made up in their workshops to meet the exact requirements of the Eketahuna Borough Council. Mr H. A. Smith will personally supervise the above work.

* * * * *

The tallest lighthouse on British coasts is the Skerryvore, off Argyllshire. It is 240ft. high. It contains 4308 tons of masonry, and cost £90,268.