

crank-pin. The casing contains an annular space through which the cylinders pass, and which is used as a water jacket. Each cylinder forms, as it were, a

end cap on the crank-pin, the whole of the connecting rods and pistons can be removed without the use of a spanner. The connecting rods are of forged

In small machines a standard high-speed motor is used, and the compressor is driven by gear wheels.

Illustration 2 shows one of these machines, which for mining work is frequently fitted with wheels attached directly to the bed to make the whole machine portable.

Larger machines have motors of a slow-speed type, so that they may be directly coupled to the compressor, enabling gears to be dispensed with.

There are then only two bearings for the motor and compressor together, the field magnet castings being bolted direct to the bed-plate which carries the compressor, while the commutator is built up on a sleeve and fits on to the compressor shaft.

The ample bearings provided on the compressor, together with the motor outer bearing, carry the weight of the revolving armature, and also sustain the pressure due to the working of the compressor, and are provided with ring oiling, as is usual in modern dynamo practice. Illustration 3 shows one of these machines.

For high pressures two or more of the cylinders are put in series with inter-coolers placed in between so as to divide the work of compression into a number of stages, depending on the final delivery pressure.

Large numbers of these machines have been made of the three-stage type for pressures up to 2,000 lbs. pressure per square inch.

Since the introduction of this machine, more than 1,000 have been built, and they are largely used in mining, in engineering and shipbuilding for pneumatic tools, in chemical works, in hotels and factories for water lifting by the air lift system, and in other industries too numerous to mention where compressed air in various forms is used.

Fig. 2—Single-ended air compressor, driven by electric motor through gearing

separate single-acting compressor, and as they all deliver into a common delivery passage, a practically continuous delivery of air is secured, because the compressor, owing to the pressure being always in one direction, can be run at relatively high speeds.

The section through the shaft bearing and casing shows clearly the circumferential delivery port. The section through the cylinders shows a small balance or pilot piston, which is fitted to the larger sizes of these single stage compressors, in order to obtain the constant thrust which is the special feature of this compressor, as it ensures silent working, even after wear has taken place.

The compressor has no suction valves, air being admitted above each piston by means of a port in the latter, which coincides with a similar port in the top of each connecting rod, during the suction stroke; and near the end of this stroke the piston overruns the ports cut through the cylinder wall, as shown, thus making direct communication between the cylinder and the inside of the compressor casing, which is arranged to form a suction chamber.

This feature alone results in a gain of at least 5 per cent. in the volumetric efficiency, as compared with compressors having spring-loaded valves, the cylinders being filled with air at atmospheric pressure at each stroke, instead of a reduced pressure due to the resistance of the valve springs.

A special feature about the construction of this quadruplex compressor is the simplicity of construction and the ease with which the machine may be dissected for examination or repair, for on removing the nut which retains the

steel and the gudgeons of hard cast iron accurately ground.

The arrangement of cylinders in this compressor makes it particularly suit-

able for electric driving. The torque on the shaft is practically constant, and this enables the motor to work efficiently, and without sparking.

An attractive pamphlet of 32 pages is issued by the company to anyone interested, on application to Mr. J. F. B. Vandeleur, 3 Dineen Buildings, Toronto.

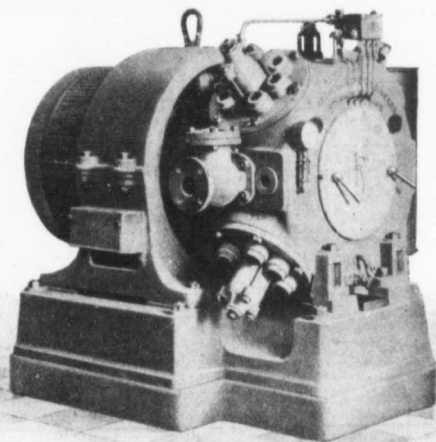
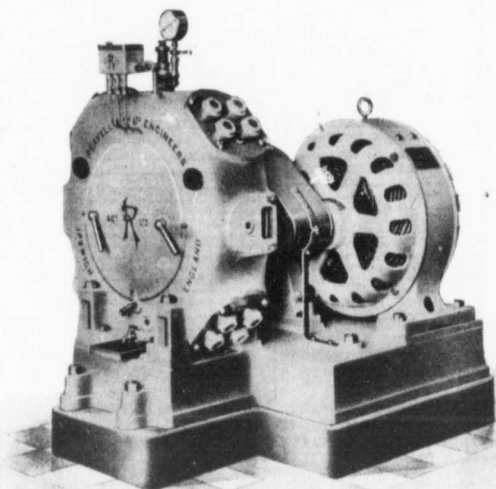


Fig. 3—Single-ended direct coupled motor-driven compressor.