The management of the firm of W. Van Whitall, New York, are the perfectors of a new system for concrete distribution by means of compressed air furnished by a blower as illustrated in the accompanying illustration. The blower consists of a steel drum or receiving hopper bolted to a cast steel discharging pan. A shaft, passing through the drum, is connected by suitable gears and bevel to an Ingersoll-Rand four-piston air motor. The air is admitted through a handcontrolled valve to a flanged pipe leading directly to the air



Blower for Transporting Concrete by Compressed Air.

chamber. A 2-in. by-pass leading to the air motor is placed in this pipe in front of the air chamber. In this way the operation of the machine starts simultaneously with the admission of air to the line. Globe valves are placed on this by-pass line to permit of proper control of the pressure. Water is admitted through two connections at the front and back of the air chamber. The concreting materials are spread in alternate layers of stone, cement and sand and shoveled directly into the drum. As they pass from the latter into the air chamber the water spray is encountered and the combination of air and water results in a thorough mixing.

CROSS-WISE BENDING TESTS OF RAIL FLANGES.

The failure of the rail which caused the wreck on the Wabash Railroad near West Lebanon, Indiana (U.S.A.), on March 7th, seems to have been caused by the seaminess of the metal in the base of the rail. Mr. James E. Howard. engineer-physicist of the United States Bureau of Standards, in a report of his investigation issued by the Interstate Commerce Commission, writes: "The steel was seamy, and the initial line of rupture occurred along the line of a seamy streak. Herein is exhibited a structural defect which is prevalent, to a marked degree, in many rails. It is a defect. the presence of which is well recognized and admitted. Notwithstanding these circumstances, rails are accepted under specifications and tests in which this, the most comman cause of breakage, is not guarded against." Mr. Howard mentions the fact that this seaminess of the metal can be revealed by cross-wise bending of the flanges. About 27 per cent. of the head of the rail in question was worn down, and careful track inspection should have revealed this, but the seamy streak in the base, which, no doubt, caused its rupture, could not have been detected by inspection. As the author states, this was a defect of manufacture which current specifications and tests are not adequate to discover, though not less than 80 per cent. of broken rails reported, covering certain periods, are of the type here encountered.

COMPRESSED-AIR SEWAGE DISPOSAL.

Some interesting details concerning the compressed-air plant for removing the sewage of the small town of Allenstein, in Eastern Prussia, are given by R. Luckhardt, the director of the municipal gas and waterworks of the town, on the strength of thirteen years' experience. The town of Allenstein, though still a small country place of not more than 35,000 inhabitants, has rapidly grown in the last four decades; in 1870 the population barely amounted to 6,000 people. The River Alle, on which the town is situated, runs through a hilly country. and there are level differences of more than 100 ft. in the main streets. The Shone system of canalization having been shown at the Berlin Trade Exhibition of 1896, its municipality sent a committee over to England to study this system, and the contract was entrusted to the Gesellschaft Hydow, of Berlin. The plant was completed in 1800. There were difficulties at first, but on the whole the system has answered, and, as little has been published on the subject, Luckhardt's report in the "Zeitschrift des Vereines Deutscher Ingenieure" of November 2nd, 1912, will be found of interest. The working expenses amount to 0.67 mark per head per year, and the annual cost of the whole plant, including interest and depreciation and settling-tanks is estimated at 2.66 marks (58 cents) per head.

LARGE GAS ENGINE ORDERS.

The Mesta Machine Company, Pittsburg, Pa., have received two orders for gas engines in the past month which are worthy of particular mention on account of some features not usually encountered in this class of work.

The first order comprises three single tandem, horizontal double-acting, four-cycle engines, having cylinders 28-inch diameter by 36-inch stroke, to operate at a speed of 150 r.p.m., each arranged to drive direct connected a 500kw., 60-cycle, 3-phase, 600-volt, alternating current generator. These engines are to be installed by the Canadian Car and Foundry Company, at their new Fort William, Ontario Province, plant, and will be the largest producer gas engine plant in Canada.

The main gas plant consists of four double bituminous coal generator sets furnished by the R. D. Wood & Company, Philadelphia, Pa. The gas plant was originally intended for fuel gas purposes, but as it is necessary to intermittently change from water gas operation to producer gas it was decided to utilize the waste, or producer gas, for power purpose. This gas will contain more than 10 per cent. hydrogen by volume, and is particularly suitable for use in gas engines.

The fuel gas which will be used for furnace work will have a heat value of 300 B.t.u. per cubic foot, and will contain 50 per cent. H and 30 per cent. CO. The operation of the producers will be such that it will be practically impossible to mix the gases, that is to say, the regulation of the gas will be automatic, eliminating any liability of water gas being carried to the engines. In the use of double generator sets the gas is drawn off the top of one generator and down through the incandescent mass of the other, the tar being consumed and converted into gas, thereby increasing the efficiency of the plant. Soot, of course, will be the resulting deposit. This soot will be disposed of through Thiesen washers.

The other order comprises three engines of exactly the same size for the Alpha Portland Cement Company, Easton, Pa. The engine will be located at Cementon, N.Y., near Catskill, and will operate in parallel with four producer gas engines now in service. Gas is generated through R. D. Wood & Company's superimposed pressure type producers, using bituminous coal as fuel.