most convincingly to the sentiment in favor of simplicity, durability and absence of repairs.

To remove any possible objection in regard to the starting current, which ordinarily would be equal to the full load current, and under some conditions of load slightly in excess, a special starting device was provided for the larger size motors, ranging from 50 h.p. to 300 h.p. capacity. These devices had a number of steps so that the voltage increments were gradual and resulted in an increase of not more than 10 amperes per step of the starter, which made the load at the central station increase very gradually instead of by jumps of from 50 to 300 h.p. at a crack.

The operation of starting consists only in closing the switch or circuit-breaker, and moving the handle of the starter from step to step until the motor was started and full voltage applied to the terminals. With the small motors, on account of the lesser quantities of current absorbed, the ordinary auto-starter was used, which is operated in two motions to start the motors. A low voltage depending upon the amount of load to be started, being first applied, the switch being reversed into a position where full line voltage was applied to the terminals after the motor had gathered speed. To provide a space for the motors, so as not to encroach upon the floor space in the mill, which would interfere with the placing of machinery, towers were designed and erected at the rear of the mill at most convenient locations for transmitting the power to the shafting in the mills. These towers were constructed with a steel framework, and brick curtain walls with concrete floors and iron stairs, provision being made in one corner for an elevator well. The illustration on opposite page shows the general arrangement and construction of these towers.

It will be noticed that the floor levels in the towers do not correspond with the floor levels in the mill; this arrangement being adopted so as to bring the motors to a sufficient elevation to allow the belts to pass into the mill at sufficient height to give ample head room below the galvanized iron ducts which enclose the belts in their course from the point where they pass through the aperture between the tower and the mill to the pulley on the jack shaft, the pulley itself being entirely within the box and only a sufficient space being left through which the shaft can freely pass without rubbing on the sides of the casing. The belts thus encased leave no opening whereby drafts of air could carry flame from one floor through the tower and into the next floor above, and serves as a fire cut-off as well as to prevent the flyings from the mill coming into and accumulating on the machinery in the motor tower. As these towers are all steel, brick and concrete, and nothing inside of a combustible nature, the sprinkler system, which is installed throughout the balance of the mill, was omitted as it was considered that the water risk was a greater hazard than the possibilities of fire damage.

By reference to the cuts, the general arrangement will be noted. The section of tower "A" shows the only synchronous motor now remaining in the installation located on the lower floor. The floor above this is occupied by a Sturtevant heater, which heats the No. 3 mill, the arrangement of the apparatus being very similar to that shown in the section of tower "B," except that it is smaller. The story above the heater is occupied by a 200 h.p. induction motor and a 300 h.p. three-bearing induction motor is located in the story above this, and for driving the mule room a 150 h.p. induction motor is installed; tthe upper floor being occupied by the switchboards for the power service, the elevator machinery and motor driving it and storage room for a few electric supplies. The fourth floor of each of the electric towers has an equipment of 4-60 k. w. transformers for reducing the voltage from 2200 volts to 550 or 110 volts, the transformer secondaries being split into five coils, which reduces the drop on inductive load, at the same time making the transformers interchangeable for either lighting or power work. These transformers supply current to motors of 100 h.p. and under, located at various points about the mills where it was inconvenient to drive the power from either of the two towers.

The plan of the fourth story of tower "A" shows the location of the motors and transformers, the elevator and the iron stairs leading from the motor tower to the mill and to other floors of the tower. Double swing doors are provided between the elevator shaft and the tower, besides which there are automatic fire doors between the elevator shaft and mill and the entrance to motor tower and mill. The section of tower "B" shows practically the same arrangement as in tower "A", with the exception that the entire equipment in this tower is of induction motors—one of 200 h.p., 3 of 300 h.p., a 5 h.p. on the top floor immediately over the elevator well for driving the hoist, and a 20 h.p. motor on the ceiling of the floor below which is belted to the air compressor which supplies a system of piping in both towers, a hose connection being provided on each floor so that a connection can be made with a small jet for blowing air into the motors, remove dust and for general cleaning purposes. The air compressor system is also tapped with connections under the transformers so that when running at heavy load a small quantity of air can be supplied to the transformers, which as it expands reduces the temperature and helps to cool them. The galvanized iron piping for the Sturtevant system is carried up in a convenient location in the tower so that no space in the mill is occupied by these risers. The horizontal pipes, of course, are carried through the mill just below the beams and outlets provided with dampers to control the quantity of hot air supplied to each room or to various parts of the same room.