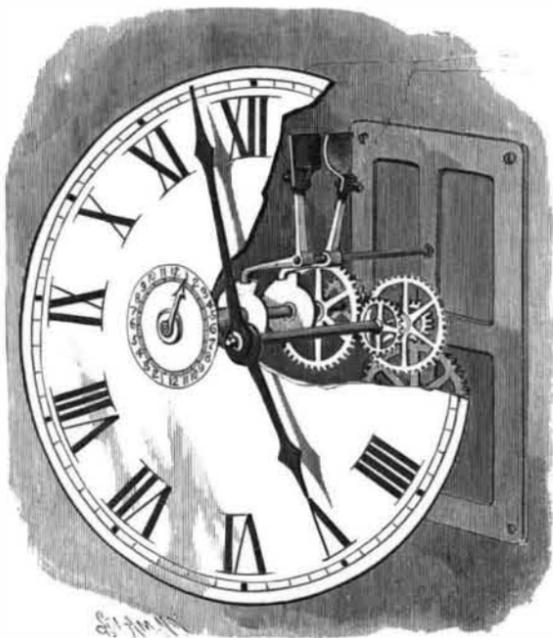


**AN AUTOMATIC ELECTRIC TIME SWITCH.**

The illustration represents a switch designed for use on any kind of electric circuits to open or close them at any desired time of the day or night. It has comparatively few parts, and is designed to work with but little friction, thus assuring accuracy and quickness of action. It has been patented by Addison B. Williams, and is being manufactured by the Williams Electric Time Switch Company, of Waco, Texas. The illustration shows the improvement behind the broken-away portion of a clock dial, on which is a setting scale, and to set the switch it is only necessary to turn the small finger piece until the pointer is opposite the point desired.



WILLIAMS' ELECTRIC TIME SWITCH.

The switch comprises rocking levers carrying contact plates, insulated from the levers, the plates being movable from each other without rubbing action. A cam governs each lever, the two cams being of like construction. To adjust the length of time for the burning of the lamps, one cam is adjusted relatively to the other by holding the pointer on the setting scale and turning the sleeve on which such pointer is mounted, the sleeve also carrying one of the cams, until the proper time is reached. The time switch automatically turns the lights on and off for the desired prearranged periods of time. The improvement is also designed to be especially advantageous for electric light supply stations, which may thus be enabled to furnish arc lights by the hour from the regular all night circuit, the switch being in this respect a time meter.

**Distance Gas Lighting Devices.**

On this "burning" question, since the general introduction of incandescent gas light, Engineer Von Morstein spoke, the other day, at a session of the Society for the Advancement of Industry, in Berlin. The lecturer reviewed, with the aid of numerous sketches and working models, the various systems and constructions, arranged in groups, which have been devised for the purpose of a convenient and safe ignition of gas flames. First of all, he mentioned the system consisting of continually burning small flames, which ignite the main flame when the latter is turned on. These, of course, cause a steady consumption of gas. Next in line were the automatic gas lighting contrivances, which are constructed on the old principle of Döbereiner's platinum match box. A platinum sponge is rendered glowing by the outflowing gas, which, in its turn, ignites the gas by means of a thin platinum wire; but in order to insure the preservation of the igniting composition for a reasonable length of time, a complicated apparatus of valves, etc., becomes necessary. The last style of gas lighting devices are the electric ones, which utilize the various qualities of the electric current for igniting purposes. With the first group a fine platinum wire is caused to glow by the electric current, but it is destroyed in a short time. Ignition can also be effected by two pole wires of an electric battery scratching together. Several devices are based upon this principle, mostly for distance gas lighting, as they make it possible to ignite the gas from any place, the gas cock opening and closing electromagnetically. This method, however, only admits of igniting or extinguishing one flame at a time. The latest contrivance, which the lecturer considers the best one, is the multiplex gas lighting device constructed by him, which is sold in Germany by the German Incandescent Gas Light Company (patent Auer). The underlying principle is widely different from that upon which all former electric igniting devices are based. The battery currents are converted into induction currents of high tension, which easily overcome all resistance, and breaking through the air, in the shape of sparks, ignite the gas. The generation of these currents is brought about in a most simple and ingenious manner, and their uses

are quite numerous; thus several eight-flame chandeliers in the lecturing hall were lighted and extinguished all at once; likewise staircase lights, show window foot lights, etc., were simultaneously ignited. The multiplex and distance gas lighting devices have now been in use for about one year and have given great satisfaction.—From the Zeitschrift fuer Beleuchtungswesen.

**Artificial Black Marble.\***

A new discovery has been made by a Calabria engineer—the manufacture of artificial black marble; and this industry is now being carried on here in Catania by the firm Tortorici & Grasso, who are the owners of the gas works and manufacture various by-products. The artificial marble has been patented in Italy and other countries. It can be made into any form desired, and fully takes the place of black marble, resembling it so closely that it is difficult to distinguish it from the real article, while its cost is said to be very much less.

The process is said to be as follows: Common white sandstone is first cut into the desired shapes; then the various pieces are placed in a large, square iron tank, upon a heavy wire grating, the latter resting a few inches above the bottom of the tank, in order to keep the stone from touching the bottom and to permit the fluid to penetrate freely everywhere; the stones must not touch each other. Then, through an iron pipe, a molten mass of volcanic asphalt and coal tar pitch, mixed, I believe, in equal parts, is let into the tank from an adjoining boiler until the molten mass fully covers the pieces of sandstone. This liquid is kept boiling in the tank for thirty-six hours; then the stones are taken out, placed upon a brick floor to cool off and dry, and are afterward polished in the same manner as other marble.

The artificial product is said to resist acids, is not damaged by atmospheric action, moisture, heat or cold, and is claimed to be aseptic.

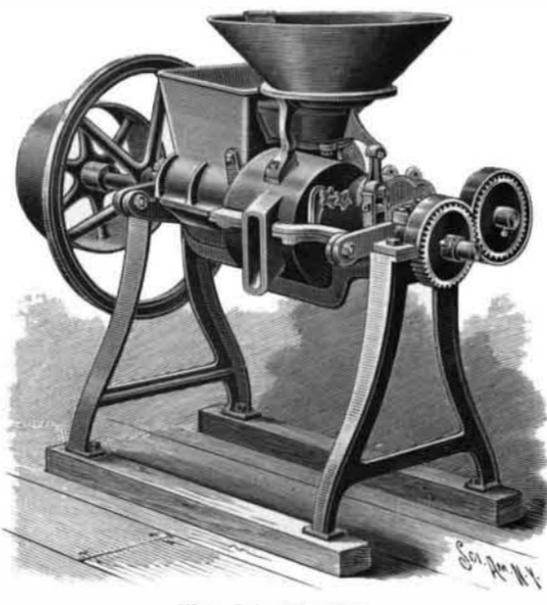
In the same manner the firm also prepares pressed tilings for flooring, roofing, etc., which are said to be perfectly watertight and aseptic.

I am told that a mass of sand, cement and water, after having been thoroughly kneaded, is put into forms, put under a press, which works quite rapidly, taken out and dried awhile, and then placed in the tank boiler for thirty-six hours, as in the manufacture of the artificial black marble, and, after being cooled off, is placed in a rotary grinding or polishing machine. This machine consists of a large, round, stationary grindstone, upon which revolves an iron frame, with partitions therein for holding the tiles in place.

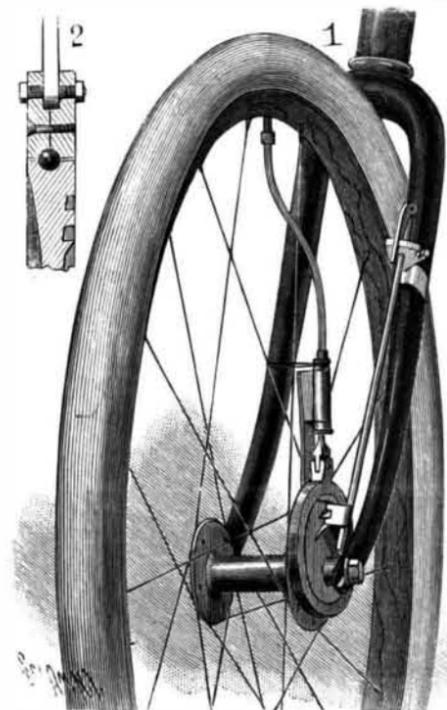
**AN IMPROVED DOUBLE GRINDING MILL.**

A double grinding mill presenting some novel features, grinding the same feed through two mills on the same spindle, where the grinding pressures balance each other, is represented in the accompanying illustrations. The mill is adapted for grinding corn and cobs, feed and table meal, the grain passing through the first mill into a screw conveyor and being carried past both mills and emptied into the back mill, where it is ground the second time and discharged onto the floor or into the elevating sacker. This mill has been but recently introduced by Messrs. A. W. Straub & Company, of No. 3737-41 Filbert Street, Philadelphia, Pa. One of the illustrations shows the top half of the mill laid open to change the disks, an extra spindle with all the parts separated being laid in front. A center partition divides the two grinding cases. The trammings ring and all parts in the first mill are the same as in the single mills heretofore made by this firm, but the second mill has its trammings ring hung like a mariner's compass, in a meal-proof case, with a bridge tree behind, to set it up by means of two temper screws, thus causing the mills to grind either coarse or fine. Both

\* United States Consular Reports. Louis H. Brühl, consul, Catania.

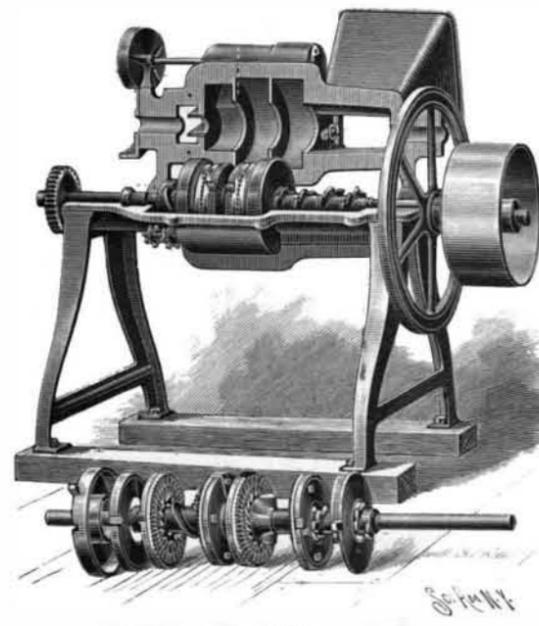


MILL READY FOR WORK.



SIMPSON'S PUMP FOR PNEUMATIC TIRES.

eccentric turns idly around with the wheel. The upper end of the rod has a latch, which, in connection with a ratchet plate on the fork, serves to hold the rod in either of its two positions. An eccentric strap mounted with antifriction balls on the periphery of the eccentric, as indicated in Fig. 2, is connected with a piston rod, arranged to operate a piston in the cylinder, thus forming an air pump to be operated at pleasure when the wheel is in motion by simply moving the latch on one arm of the fork. When the dog on the lower end of the rod and the lug on the eccentric are disengaged, the wheel in turning carries the cylinder around with it, and the eccentric and eccentric strap play idly around the axle, the piston not being operated and the device being inactive.



TOP HALF OF MILL OPEN TO CHANGE DISKS.

STRAUB'S DOUBLE QUAKER CITY GRAIN MILL.