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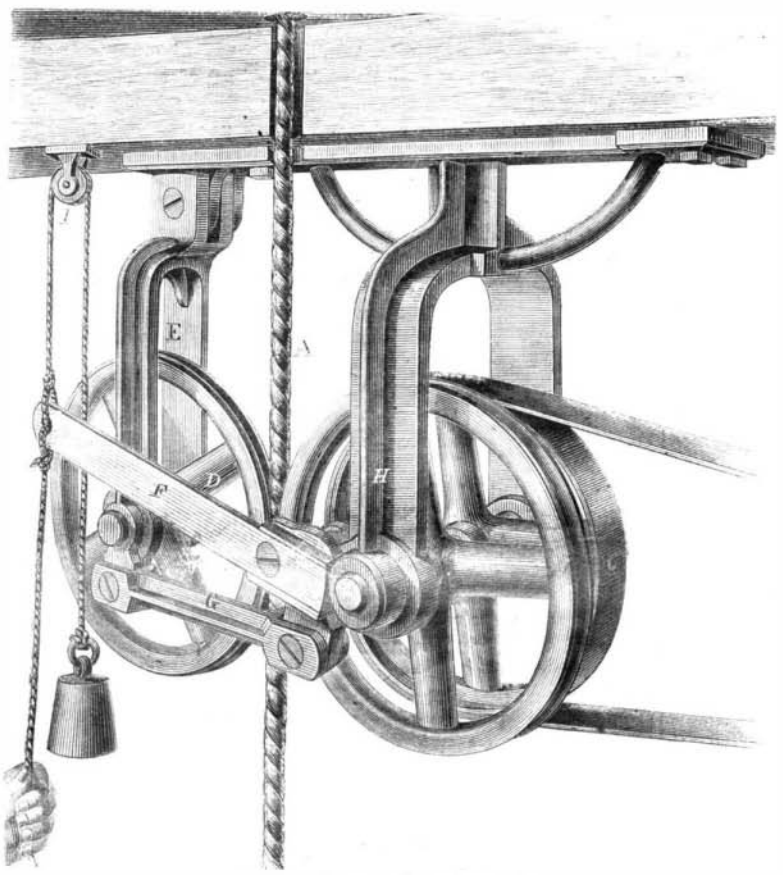
Improved Hoisting Machine.

In all hatchways where goods are hoisted and lowered by the common wheel and axle, manual power is employed. Whether the articles be light or heavy, nearly the same time is required to lift them, for the hatchway is generally so high that the speed the men work at must be moderate, or time taken for rest. This machine is intended to apply to all ordinary hoistways where steam power can be made available, either from the same building or an adjoining one. Its construction is so simple that it cannot possibly get out of order, and enables it to be sold at the very low price of fifty dollars. It can be placed on any floor of the building, and is operated from either above or below with equal facility. If at any time it is desired to use the hoistway by hand, it can be done as readily as before, as the machine does not interfere with the working of it in the least. The details are as follows:—



MARVIN'S HOISTING MACHINE.

The shaft of the grooved pulley, B, has a belt wheel, C, which is to be driven by power derived from any convenient source. In the same bed plate is another grooved pulley, D, working on a shaft in the jointed hanger, E, said hanger being connected by lever, F, and bar, G, to the hanger, H. From the end of the lever, F, a rope passes up over a pulley, I, the end passing down through the floor as far as may be desired. A rope also passes up to the top of the building. As the grooved pulley, B, is constantly revolving, whenever the rope is drawn tight, it pulls the grooved pulley, D, into contact with the grooved pulley, B, pressing the rope, A, between them and thereby forcing it downward. It can easily be held in gear by one hand, and raises goods very rapidly. When the rope is released the weight immediately throws it out of gear. The grooved pulleys are covered with vulcanized rubber so that with very little power a great deal of friction is obtained, and it does not wear the rope in the least. It can be put up by any one in less than an hour.

Parties interested can do well to examine this machine. Manufactured and for sale by Marvin & Co., No. 265 Broadway, New York.

Inspiring of Air.

The following interesting results were obtained from the experiments of Dr. Edward Smith on the quantity of air inspired throughout the day and night under various influences. The total quantity of air inspired in twenty-four hours, allowance being made for intervals amounting to 40 min., during which records were not taken, was 711,000 cubic inches; or an average of 29,627 cubic inches per hour, and 493·6 per minute. The quantity was much less during the night than during the day. There was an increase as the morning advanced, and a decrease at about 8.30 P.M., but most suddenly at about 11 P.M. The average depth of respiration was 25·6 cub. inches, with a minimum of 18· cub. inches in the night, and a maximum of 32·2 cub. inches at 1.30 P.M. The mean rate of the pulse was 76 per minute. The amount of breathing was greater in the standing than in the sitting posture. It was increased by riding on horseback, according to the pace, also by riding in or on an omnibus. In railway traveling the increase was greater in a second than in a first-class carriage, and greater in the third class and on the engine. Bending forward while sitting lessened it. The quantity of inspired air was increased by exposure to the heat and light of the sun, and lessened in darkness. When tea was taken an increase was the result; coffee caused a decrease. Supper of bread and milk also caused a decrease, but milk by itself or with suet caused an increase. An increase was obtained with the following articles of diet, viz., eggs, beef steak, jelly, white bread, oatmeal, potatoes, sugar, tea, rum. The following caused a decrease, viz., butter, fat of beef, olive oil, cod-liver oil, arrowroot, brandy, and kirchenwasser.

Photography in Colors.

The old year has passed away, having recorded in its last weeks another important discovery of M. Poitevin. This is nothing less than *the production of photographs in their natural colors on paper*. Hitherto these colored pictures have been produced by a few scientific experimenters upon silver plates alone; now a simple process is published by which any one conversant with ordinary photographic manipulation may obtain veritable helio-chromographs. M. Edmund Becquerel was good enough to inform me that this important step in his own discoveries of 1848 was about to be communicated by him, on behalf of M. Poitevin, to the *Academie des Sciences;* and I have had an opportunity of examining these remarkable pictures, and seeing them in process of printing, through the kindness of M. Poitevin himself. The paper upon which they are taken is prepared with the subchloride of silver, and presents the appearance of sensitized plain paper which has been exposed to the light. This paper is brushed over with a solution, composed of equal parts of—

Saturated solution of bicromate of potash,
Saturated solution of sulphate of copper,
Solution of chloride of potassium (twenty grains to the ounce).

When dry this paper will remain sensitive in the dark for several days. It is not sufficiently sensitive to be employed in the camera, but can be used for obtaining pictures in an enlarging apparatus. To obtain a colored picture, expose a sheet of this sensitized paper under a transparent colored print or painting (a sheet of varnished diaphanie answers the purpose) during five or ten minutes, according to the light, the transparency of the negative, etc. The progress of the print can be watched as with ordinary photographs, the colors being produced as the printing process goes on. To fix these prints wash them in water acidulated with chromic acid, then with water containing bichloride of mercury, then with a weak solution of nitrate of lead, and finally in distilled water to remove all soluble matter. Like their elder relations, the helio-chromographs on silver plates, they can only at present be preserved in diffused light; they become brown from exposure to direct sunlight. However, they can be kept in albums, or even hung in rooms, if not exposed to strong light. M. Poitevin suggested to me that if a negative, which was intended to be used to obtain an enlarged print, be carefully colored in pure transparent colors, the resulting enlargement printed by this process would exhibit the colors of the negative. Although the colors of these photographs are not quite so brilliant as those on silver plates, as might be expected from the difference of the sensitive surfaces, the pictures are very good; and photography in natural colors will, I think, receive such an impetus by this discovery that the boldest hopes of its disciples will be realized sooner than they have expected.

When I found how the pictures were produced, I instantly thought of forming a violet subchloride of silver in collodion films on glass as a means of obtaining helio-chromographic negatives. The simultaneous action of light and oxidizing agents on violet subchloride is to "bleach" instead of blacken; hence an ordinary negative would yield a negative picture on the subchloride of silver paper, white light producing a white color. In the sensitizing mixture the bichromate of potash is the principal agent; it may be replaced, but without advantage, by chromic acid. The sulphate of copper facilitates the reaction, and the chloride of potassium preserves the whites when they are formed.

It may be interesting to observe that the method adopted by M. Edmund Becquerel for obtaining naturally-colored photographs and that of M. Poitevin are similar in principle.—*Correspondence British Journal of Photography.*

An artificial cave has been discovered in Lookout Mountain, Ga., and explored for a distance of 175 feet. Various Indian relics were discovered, and the place is thought to have been a refuge for Indians in former times.