

FABRIC PRINTING MACHINE.

We present herewith an engraving of a machine for printing textile fabrics in eight colors, the invention of Herr C. Bialon, of Berlin, Germany. It is of the form known to calico printers as a perrotine, a term used to distinguish those presses in which the printing is effected by flat forms which produce an embossed design, thus imitating the work of hand printing. *Engineering*, from which we copy the illustration, describes it as follows:

$a_1 a_2 a_3 a_4 a_5$ are the forms, fastened to iron supports, which are carried by the pressure bars, $b_1 b_2 b_3 b_4 b_5$. These latter execute an interference motion, which, as may be examined in the case of the pressure bar, b_1 , is produced by the two crank pins, c and d —of which c makes twice as many revolutions in a given time as d ,—by the joint levers, e and f , and the stay or frame, g . Through the rotation of the crank pins, c and d , the forms are at first fully drawn back, while, by means of a special combination of levers, all the color plates, h , are placed between the forms, $a_1 a_2 a_3 a_4 a_5$, and the printing tables, $i_1 i_2 i_3 i_4 i_5$. The color plates are flat cast iron plates covered with an elastic material, upon which color is transferred while passing the color rollers, $k_1 k_2 k_3 k_4 k_5$. The printing tables, which are also covered with an elastic material, serve as a support for the stuff during the operation of the printing. The stuff to be printed is rolled

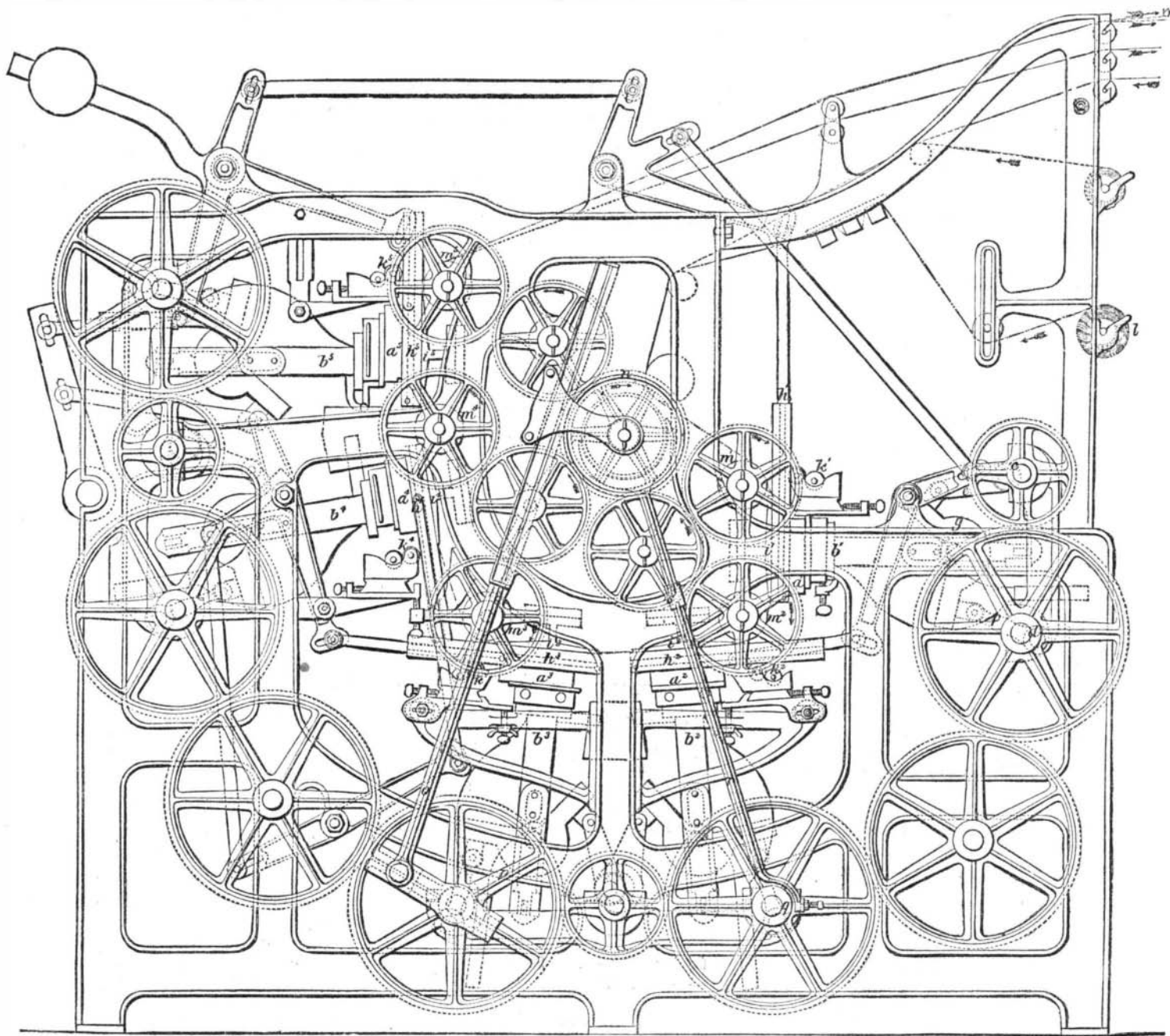
and the wheel, p , but only in the direction indicated by the arrow, the wheel, n , not being moved when the rack is drawn back; this effect is attained by transferring the motion by means of a ratchet with wheel and brake. In order to shift the stuff exactly as much as required by the width of the form, the rack has to be adjusted for each width, and the position of the draw pin of the former, with respect to the center of the wheel, p , has to be altered accordingly, for which purpose the sliding piece is provided with a scale.

By a special contrivance it is rendered possible to cause each form to strike the stuff on one and the same placetwice successively, after having taken up color in the intermediate time. This is accomplished by throwing the guide motion out of gear between the first and second print, whence the stuff remains in the same position during the two impressions. For this purpose the shaft, q , carries in front of the spur wheel an eccentric, which transfers during one revolution of the shaft, q , an oscillating motion to the lever, r , with its fulcrum at s , while at the following revolution the lever is kept in its position. In this manner the short arm of the lever, r , moves a conical slide, disengaging the trigger or catch which transfers the motion from the main guide wheel, n , through the spur wheels to the needle rollers, whence the latter are prevented from rotating. If the lever, r , passes back again into its original position, the guide again follows

and thence is lifted by elevators so as to flow into the machine. This is composed of a floor of iron heated by a fire under the feeding end. On the floor is a frame carrying a series of transverse scrapers which are so arranged as to revolve and scrape the bed. Their construction is also such that from each scraper, at its return stroke, a portion of the sludge is passed to the next scraper; so that the material travels the length of the floor, and emerges dry and pulverized. The heated air passes first under the floor and then over it. The machine is self-feeding, self-acting, and easily adjusted; it requires very little power to work it, and produces from three to four tons of dried manure per day of twenty-four hours, with a consumption of one ton of common slack coal.

QUICK REMEDY FOR SUNSTROKE.

Thirty or forty years ago, when our cities were not so crowded with ignorant laborers as now, and when ice water was almost unknown, there were but few cases of sunstroke. Yet, occasionally a native farm hand in the haying field would get overheated and chilled, and become senseless. A good doctor of that period used to use the following simple remedy in such cases, and never failed to restore the sufferer: As soon as possible, he poured a teaspoonful of laudanum down the man's throat; and in a very brief time, the



IMPROVED FABRIC PRINTING MACHINE.

off the beam, l , and passing over one stretching roller, three stretching bars, and a wooden guide roller, is carried by means of the needle rollers, $m_1 m_2 m_3 m_4 m_5$, over the printing tables, passing out of the machine at w , and being then led off to a drying apparatus. With a further rotation of the crank pins, the pressure bars advance so far only that the forms touch the color plates, the embossed designs of the former thus being caused to receive color from the latter. The pressure bars, $b_1 b_2 b_3 b_4 b_5$, are now withdrawn with the form covered with color, while the color plates pass back in the meantime to the coloring apparatus, where they receive a fresh supply. Another rotation of the crank pins advances the forms close to the printing table, and presses the design covered with color upon the stuff in front of the printing tables. After this operation the forms are drawn back, the color plates are again placed between the forms and the printing tables, and the same operations are repeated during the following rotations of the crank pins.

During the time the coloring plates are moved up and down again, or, in other words, during the time in which the forms are not in contact with the stuff, the latter advances as much as the width of the form (length of guide), so that the next impression takes place close behind the one previously executed. The stuff is moved forward by means of the guide mechanism, while the five needle rollers, $m_1 m_2 m_3 m_4 m_5$, are moved by means of spur wheels gearing into the main guide wheel, n ; this latter is put in rotation by the rack, o ,

the action of the rack. This arrangement facilitates finishing heavy stuffs, of which large surfaces have to be printed uniformly with color, in a clear and proper manner.

These machines are constructed for one, two, three, four, and five colors, and nearly 500 of them have been supplied to Germany, Switzerland, Austria, Russia, England, and this country. They are preferred to the cylinder printing machines, on account of the flat forms being considerably cheaper to produce than the engraved copper rollers of the cylinder machines, and on account of their being readily worked by manual power, while the cylinder printing machines require steam or other motors.

SCIENTIFIC AND PRACTICAL INFORMATION.

MACHINE FOR DRYING SEWAGE.

In preparing town sewage so as to render it available for fertilizing purposes, the most difficult part of the precipitation process is the drying of the deposit after the superfluous defecated water has been allowed to run off. Messrs. Milburn & Co., of Hatcham Iron Works, England, have, we learn from *Iron*, recently introduced a new machine for this purpose, which has given excellent results. The General Sewage and Manure Company of Whitby use the apparatus as follows: The sewage is first strained, then mixed with a chemical solution and partially defecated. Milk of lime is added, and precipitation takes place in large tanks. The precipitate drawn off from the latter goes to drying rooms,

sweat would start out and the man begin to revive. The quickness with which laudanum produces perspiration is remarkable.

A NEW NIAGARA BRIDGE.

Surveys are now in progress for a new bridge to cross the Niagara river just below Black Creek. The structure is erected in the interest of the Canada Southern Railroad in order to render that line independent of the present single track bridge, and also to allow its trains to go around Buffalo instead of passing through the city at slow speed. Suitable branch roads, connecting with the Erie and Central lines, will be built to carry out this purpose. The new bridge is to have a double track and double carriage, and will be completed, it is expected, in August, 1875.

THE WELLAND CANAL IMPROVEMENTS.

Canada is evidently omitting no effort in her plans for diverting our Western trade through her highways. The improvements now contemplated upon the Welland Canal include an entirely new and separate canal from Marlott's Pond, above Thorold, to Port Dalhousie; while from the Pond to Lake Erie the old work will be enlarged. The new line will be a trifle shorter than the old one, and will have one lock less. The average depth of water will be fourteen feet, so that, as regards the capacity of sailing vessels and propellers, Lake Ontario will be placed on a par with Lake Erie.