

SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class Matter.]

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XLVII.—No. 20.
[NEW SERIES.]

NEW YORK, NOVEMBER 11, 1882.

\$3.20 per Annum.
[POSTAGE PREPAID.]

MACHINE FOR DRAWING AND GLOSSING SILK IN SKEINS.

The object of drawing and glossing is to give the necessary brilliancy to silk in skeins after dyeing and drying. These operations permit likewise of dressing and equalizing the fibers of a hank of silk so as to render them very even. Since the origin of this industry, which arose at Crefeld, on the banks of the Rhine, the want of special workmen, and the difficulty of initiating others into an operation of this kind, which is laborious and difficult of acquisition, has led to the seeking of a means of doing the work by mechanical means. This gave rise, then, to machines for glossing and drawing. Those which are still in operation in the province of Düsseldorf are scarcely anything more than primitive ones that have undergone but few improvements.

Later on, when the mechanical means adapted to this

through the humid heat developed. The fibers thus become less brittle.

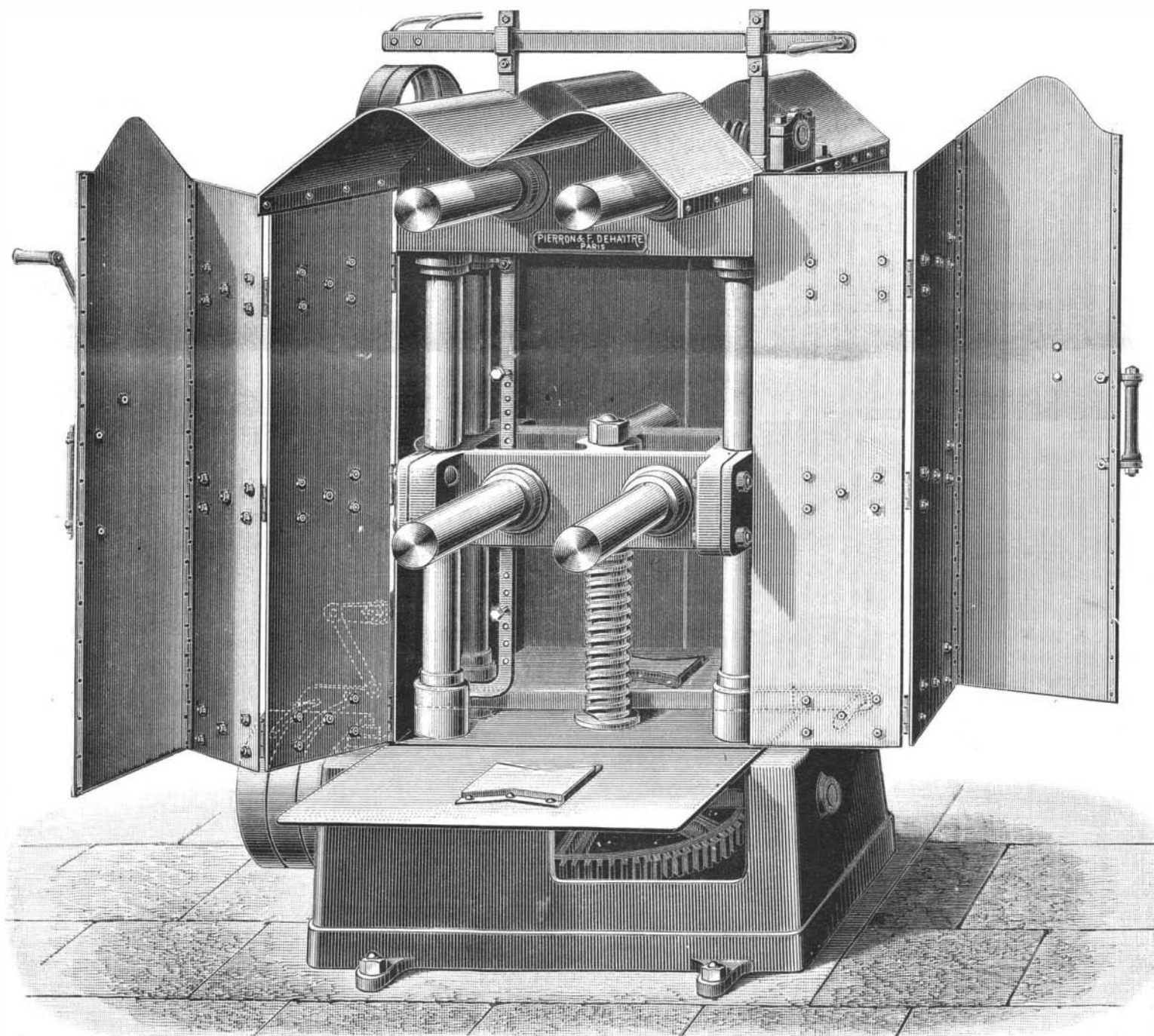
The Prussian machines have only two cylinders, and so they can treat but one hank at a time. Besides, the tension and rotation in these are effected by hand. For these reasons the quantity treated is limited, and the expenses of manipulation are high.

The Lyons machines have four cylinders, and are capable of treating two hanks at a single operation. The cylinders are actuated by a motor that acts directly, or through the intermedium of a belt. Here again the tension is exerted by hand.

The new type shown in the accompanying cut has eight cylinders, on which may be drawn and glossed four hanks simultaneously. Moreover, the rotation of the cylinders and tension of the hanks are effected by mechanical devices

insertion and removal of the skeins to be operated upon. Near the lower part of these compartments are situated the cocks for distributing the steam, and which are covered at a few millimeters distance by a copper counter-plate for preventing the steam from being projected directly on the skeins.

The construction and operation of this machine present some interesting peculiarities. The two lower cylinders run in the bearings of a movable iron carriage, to which the columns serve as guides, and whose middle cross-piece is traversed by a screw, by means of which the carriage is made to rise and descend. This screw, which, like the cylinders, is of steel, is firmly connected to the carriage by a nut, and is guided in bearings belonging to the base. The motive nut, which is of bronze, is held between the bearings, and is keyed to a cog-wheel gearing with a pinion that receives



MACHINE FOR DRAWING AND GLOSSING SILKS IN SKEINS.

kind of work were imported into Lyons, manufacturers of machinery, taking a more practical view of the subject, brought out machines that possessed important advantages over the first. Meanwhile the problem still existed as to the final improvements to be reached, and it was for the purpose of solving it perfectly that Messrs. Pierron & Dehaitre were led to study a new type of machine which goes to increase the series of apparatus that they are manufacturing for dyeing and finishing.

In the operation of glossing, the silk in hanks (sometimes still a little damp after dyeing and drying) is submitted to a slight drawing by means of polished iron or steel rollers revolving in the same direction. A jet of steam forced into a chest containing the skeins hastens the operation, and facilitates the drawing by softening the fibers of the silk

that are grouped upon the machines. The role of the workman is limited, then, to a manipulation of the hanks—placing them on the rollers and taking them off when the operation is finished. One man is sufficient to operate one machine, and the production reaches double the amount obtained with other machines; these latter requiring two operators, one for placing the hanks, and the other for giving them the requisite tension.

In principle, the new machine consists of a combination of four headstocks, each formed of two cylinders for receiving the skeins. In the figure only two headstocks are visible in the front part of the apparatus; but the other side has precisely the same arrangement. The mechanism is inclosed within a chest or closet of plate iron, that opens at each side by folding doors, which permit of the ready

a small vertical axle. This latter revolves through the action of two gearings, one of which brings about a quick return during the ascent of the carriage. On the horizontal shaft, which carries three pulleys, are keyed two pinions, which gear with beveled wheels on the intermediate vertical axles. The pulley nearest the frame is loose on its axle, and connected with the one of the pinions that actuates the carriage in one direction. The external pulley, like the second pinion, is fastened to the shaft so as to give the screw, and consequently the carriage, a motion contrary to the preceding. Finally, the loose pulley in the middle is the one that permits of stopping the machine.

The lower cylinders are free in their bearings, and revolve by virtue of the tension and motion transmitted by the skeins as they are moved by the upper cylinders. Between

these latter, and in a reservoir contrived in the frame, there are fastened toothed wheels that gear with endless screws. The latter are actuated by a special shaft which carries fast and loose pulleys that connect with a disengaging gear. Owing to a peculiar arrangement, the wheels dip constantly into oil, and, in their motion, carry the lubricant to the steel endless screws. At the beginning of the operation, the compartments of the chest and the cylinders are heated with steam that enters in a continuous current. This introduction of steam must be kept up until there is no longer to be feared any condensation of it on the internal parts of the machine with subsequent vaporizations. When the carriage occupies a position sufficiently high to permit of putting the skeins on the cylinders, the horizontal reversing bar is acted upon so as to throw into gear the mechanism that determines the descent of the carriage. Then, the moment the skeins possess a definite tension, the upper cylinders are made to rotate, and the workman who runs the machine closes the doors of the apparatus. Steam is afterward admitted for a second time in order to render the silk warm and moist, to prevent the breakage of the threads, and so as to begin the glossing, the latter being effected principally on the lower cylinders. As these latter are carried along solely through the effect of the great tension of the skeins, there takes place on all the cylinders a slipping which proves very effectual in bringing about the glossing.

After the operation has proceeded for a few minutes, the tension is increased so as to render regular the threads and skeins that have been relaxed by the heat. The stress to be exerted varies according to the nature of the silk and the effects to be obtained.

The vertical travel of the carriage is limited automatically in its ascent and descent by means of a disconnecting gear consisting of a vertical rod connected through several levers with the horizontal reversing bar.

By reason of the length of the skeins the carriage acts sooner or later on the vertical bar by means of tappet-cams placed at the limits of the travel, and such action effects the transfer of the belt to the loose pulley. In order to obtain a completer glossing, there may be added to the upper cylinders top rollers for pressing the skeins. Such an arrangement, being optional, and applicable to special articles, is not shown in the cut.

Although these machines are more especially constructed for treating silk, they may be employed for cotton and for the delicate woolen threads that serve for making bareges, grenadines, and gauzes. Such threads, which are much twisted, readily assume a spiral form after bleaching or dyeing, and it then becomes necessary to draw and fix them by a vaporization in order to fit them for the operation of weaving.—Revue Industrielle.

Professor Wohler.

Professor Wöhler, of Göttingen, the Nestor of German chemistry, at the ripe age of eighty-two, peacefully died at Göttingen, of the university of which he has so long been the ornament. Born in the first year of the century, when our science was also young, Wöhler has lived to see it assume its present gigantic dimensions, much of its growth being due to his own labors. In Wöhler's death is dissolved the principal living connection and tie uniting in life experience and memory the early infancy with the now ripper maturity of our science. Berzelius was his early friend, and Liebig his colleague in middle and advanced life. The year 1828 is memorable as that of, perhaps, his greatest discovery, when he broke down the barrier between the two great divisions of our science by the artificial production of urea. His researches extend over the whole domain of chemical science; the early ones with Liebig marked an era in the progress of organic chemistry, while his later ones were no less productive in the inorganic branch. Urea, benzoyl, cyanic acid, aluminum, silicon, and boron, call to mind discoveries with which the name of Wöhler will be for ever connected. No longer shall we see the familiar name "F. Wöhler" on the yellow cover of the *Annalen*, but it will always be retained in the minds and hearts of chemists as recalling to them the steady, fruitful, lifelong work of a great laborer in the vineyard of science.—Jour. Soc. Chem. Ind.

The Advantage of Knowing how to Swim.

The Sydney Morning Herald of August 25 says: "We learn from a correspondent that, a short time ago, Mrs. G. A. D. McArthur Campbell, formerly a resident of Coonamble, distinguished herself by a deed of admirable bravery. Mrs. Campbell was a passenger in a steamer from Hongkong to one of the northern ports of Queensland, and one day a little boy about four years of age, to whom the lady was much attached, fell overboard, the accident occurring through a sudden lurch of the vessel. With the exception of Mrs. Campbell and the man at the wheel, all the passengers and crew were at dinner. Without waiting for a life buoy or divesting herself of any clothing, and simply saying to the man at the wheel, "Don't tell the child's mother," Mrs. Campbell plunged into the water, swam to the boy, and held him up till both were rescued, the steamer having been promptly stopped and a boat lowered. Neither the lady nor the boy was much the worse for the immersion."

It is asserted that in the three years ended 1880 there were no fewer than 252 theaters destroyed by fire, or partly so, resulting in 4,870 deaths, and about 8,400 injuries.

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 261 BROADWAY, NEW YORK.

O. D. MUNN. A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

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One copy, six months postage included 1 60

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NEW YORK, SATURDAY, NOVEMBER 11, 1882.

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(Illustrated articles are marked with an asterisk.)

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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 858,

For the Week ending November 11, 1882.

Price 10 cents. For sale by all newsdealers.

Detailed table of contents for the supplement, including sections on Engineering and Mechanics, Technology and Chemistry, Botany, Electricity, Hygiene and Medicine, Architecture, and Astronomy.

AN IMPORTANT DECISION BY THE COMMISSIONER OF PATENTS.

A decision of considerable interest and importance, especially to manufacturers and patentees, has lately been made by the Commissioner of Patents relative to the registration under the design patent law, of new forms for patterns and articles of manufacture.

Heretofore the Patent Office has held that this provision of law was applicable only to ornamental objects; and the practice of the Patent Office has been to allow patents only for new designs for decorative work; such, for example, as the beadings upon the edge of a spoon handle, or a new style of edging for lace; but when application was made for a patent for a new and better shape for the frame of a steam engine or other machine, or for a better form for a chair, table, or article of manufacture without reference to its adornment, in all such cases it has been the custom of the Patent Office to reject the application. This has greatly limited the value and utility of the design patent law. Last year, out of 31,000 new applications made for patents and caveats only 854 were for design patents.

For many years we have contended that this official practice was illegal and contrary to the intent and spirit of the statute. We have maintained that the design patent law was intended to encourage the production of new forms and designs, in every possible branch and ramification of industry, and to secure protection therefor to the designer and manufacturer, substantially in the same manner that a copyright secures the rights of an author.

If an individual writes a history of America he may at once obtain a copyright, which amounts to a patent, for the contents of his particular book. It does not prevent other people from writing histories of America; but it secures to him, for a few years, the exclusive right to make and sell copies of his special production. We think that the design patent law was intended in like manner to protect designers and manufacturers of improved or better forms of goods and other objects.

We are glad to observe that the Hon. E. D. Marble, the Commissioner of Patents, has adopted this view of the subject, and that the Patent Office is now open to the reception of design patent applications on this basis. The commissioner's new decision, rendered October 2d last, was given in a case in which the applicant claimed a design patent upon an improved form for a "T shaped shingle machine frame." This application was rejected in the customary manner by the primary examiner, on the ground that it was not ornamental; and the Board of Examiners in Chief confirmed the rejection. An appeal was then taken to Commissioner Marble, who reversed the previous decision and ordered the patent to be granted. He says:

"I think, in articles of manufacture like the one under consideration, if the applicant has by his industry, genius, and efforts made a design of an article of manufacture, viz., the frame of a shingle machine, which, because of its design and not because of its mechanical structure, commends itself to persons desiring to purchase such articles, it is useful, and the applicant should be protected in its manufacture and sale. It is not necessary that it should be ornamental, although it may be, to entitle the applicant to a patent therefor. The utility in an article of this kind consists in having a shape or configuration of such a character that persons needing it will purchase it because of its shape or configuration, in preference to other articles for the same purpose, but different in shape and configuration. Applicant, however, must strike out of his application everything descriptive of the mechanical functions of the device."

This is clear and plain reasoning, and while Commissioner Marble remains in office the primary examiners will understand that the old practice is set aside, and that patents are now to be allowed upon all improved forms of machines, or other articles of manufacture, or the parts thereof.

One of the conveniences of the existing design patent law is that a patent may be taken for a brief term at a small cost. The law permits the applicant to elect, one of three periods for the life of his patent, the costs being governed accordingly, namely, three and a half years, government fee, \$10; seven years, \$15, and fourteen years, \$30. Where the nature of the article is such that the public demand for the new pattern is likely to be transient or soon over, the applicant may take a patent for the shortest term of three and a half years; but it is to be remembered that the term first chosen cannot be afterwards extended. If the patent is granted for three and a half years, it expires at the end of that term, and it cannot be extended by making a new payment.

To the costs above mentioned are to be added the expenses of making the specifications, claims, drawings, etc., which are substantially like those connected with other patents. Manufacturers and others who desire further information may obtain it, free of charge, by writing to the publishers of this journal, Messrs. Munn & Co., who for now going on forty years have made it a large and successful branch of their business to obtain patents, caveats, trade mark registrations, etc., for authors and inventors.

We have no doubt that Commissioner Marble's decision will give a new impetus and create a new departure in the art of designing in this country. It is a field of study and labor that is open to women as well as to men; all, in fact, who have the wit or genius to produce a better style or form for any species of industrial work or object may secure a patent therefor.

The design patent law also presents to manufacturers the