

CIGARETTE MAKING BY MACHINERY.

We called attention, recently, to the remarkable increase which has taken place in the production of cigarettes, as evidenced by the many hundred brands of them now in the market, as compared with the very few of ten years ago. It seemed probable that this might be accounted for, in this country, by the general monetary stringency which has induced many to retrench by giving up the cigar in favor of the less costly cigarette; but it appears that the same increase has taken place abroad, where good cigars have always been more expensive than here, and where, at the same time, cigarette smoking has been far more prevalent. In France, where the cigarettes are made in government factories, the aggregate total yearly produced has grown from 10,000,000 ten years ago to 649,000,000 in 1877; so that, as a consequence, hand work and simple machinery have proved inadequate to making the supply, and the attention of inventors has been called to the necessity of mechanism for manufacturing cigarettes rapidly, cheaply, and in large numbers.

Hand made cigarettes often rolled, as they are required, by smokers themselves, consist simply of a little loose tobacco enveloped in a rectangle of paper. This last is usually made of rice, or, for Havana cigarettes, of nearly pure cellulose, and the tobacco is either in the form of broken leaf or in fine shreds. To imitate the peculiar deftness of the fingers of the skilled roller of the cigarette, by means of machinery, requires considerable ingenuity, and, as in most apparatus of the kind, where very little motive power is expended, the necessary movements are best imitated by means of cams. These mechanical devices underlie the operation of the new machine which has lately been introduced in France, an engraving of which, taken from *La Nature*, is herewith presented, in which A is a cylindrical, and B a plane cam. The work consists in making the paper tube, and then filling it with tobacco. To accomplish the first by means of the carriage, C, a strip of paper is unrolled from the coil, D. This paper is previously prepared, in a band of about 3 inches in breadth, equaling the length of the cigarette. When a sufficient quantity (about 1 inch) is unwound it is cut off and presented to a mandrel, E, temporarily introduced into one of the tubes of the mould carrier, P. This mandrel has a clamp which grasps the paper, rolls it, and at the moment the latter escapes from the carriage its free end is brought down upon a rubber pad covered with mucilage. This part of the apparatus is concealed in our illustration by the carriage, C. The paper tube is now left in the mould, the mandrel being extracted by the cam, A. The mould carrier is then turned one ninth of a revolution by the cam, B, a new tube comes in line, and the operation already described is repeated.

The next process is to fill the tube with tobacco. After six paper tubes are completed, the first one made is pushed by a small piston, G, which is actuated by a cam, H, upon the end of the filling or funnel tube. Immediately after the rod, I, actuated by cam, A, drives into this tube a portion of the tobacco prepared in the "compressor," K. In preparing this tobacco, the work of the operative is necessary to dispose the material in regular layers on a carrier, by which it is transported into the compressor. When the cigarette envelope is filled, the mould carrier again makes part of a revolution, and the finished cigarette is pushed out of the mould by the rod, J, also actuated by cam, A. There is a device which lastly introduces the finished cigarettes into the box, M, at the bottom.

A good workman can make about 1,200 cigarettes in ten hours by hand labor only; with the aid of this machine it is stated that 9,600 can be produced in the same period.

A STEEL STEAMER 216 feet long and 30 feet beam, the first large vessel of the kind, was recently launched on the Tyne, England.

The Sponge Trade of the Bahamas.

The uses of the sponge have become so universal and multifarious throughout the world that the demand is constantly increasing, and already the sponge fisheries form an important industry in at least two sections of the world. The sponges of commerce are obtained chiefly from the Bahama Islands and the Grecian Archipelago or eastern Mediterranean Sea. The numerous uses of the sponge can hardly be reckoned in a brief article; but it is almost impossible that in cheapness and utility any substitute for this article can ever be found. It enters largely into our domestic economy, and for toilet purposes is almost a necessity. Sponges are an indispensable article for surgeons' use, both in the hospital and on the battle field, or for any use requiring their moisture absorbing and moisture giving qualities. The exterior is both elastic and prickly, so that in cleansing delicate or polished surfaces the finer sponges have no equal, much less a superior. Within the past few years sponges have been much used in packing delicate glassware and statuary, being better for that purpose than either cotton, straw, or shavings, and mattresses or cushions made of sponges are neither new nor

and probably the finest kind known for the bath. The velvet is a softer variety, and is much used for packing; it is also a good sponge for toilet purposes, but is not so tough or durable as the sheepwool. Silk or glove sponges are the most delicate and elastic of all the varieties, and are the sponges used by surgeons. Its ashes were once a favorite remedy for scrofulous diseases, but iodine and bromine, from which the ashes derived their value, are now given in other forms. The reef sponge resembles the glove, but is coarser. It is used for packing, making mattresses and cushions, and for the toilet. Yellow, hardhead, honeycomb, and grass sponges are useful for various household purposes, washing carriages, rubbing down horses, and also for packing and padding.

The sponge fisheries give employment to about 500 vessels and 2,000 persons, mostly colored. The vessels cruise among the different islands, the best sponges coming from off Abaco. Their trips extend from two to six weeks, according to the size of the vessel and the state of the weather, as the divers are unable to work in rough water. When first taken from the sea the sponge is a black, gelatinous mass, emitting a very disagreeable odor, which increases as the mass putrefies.

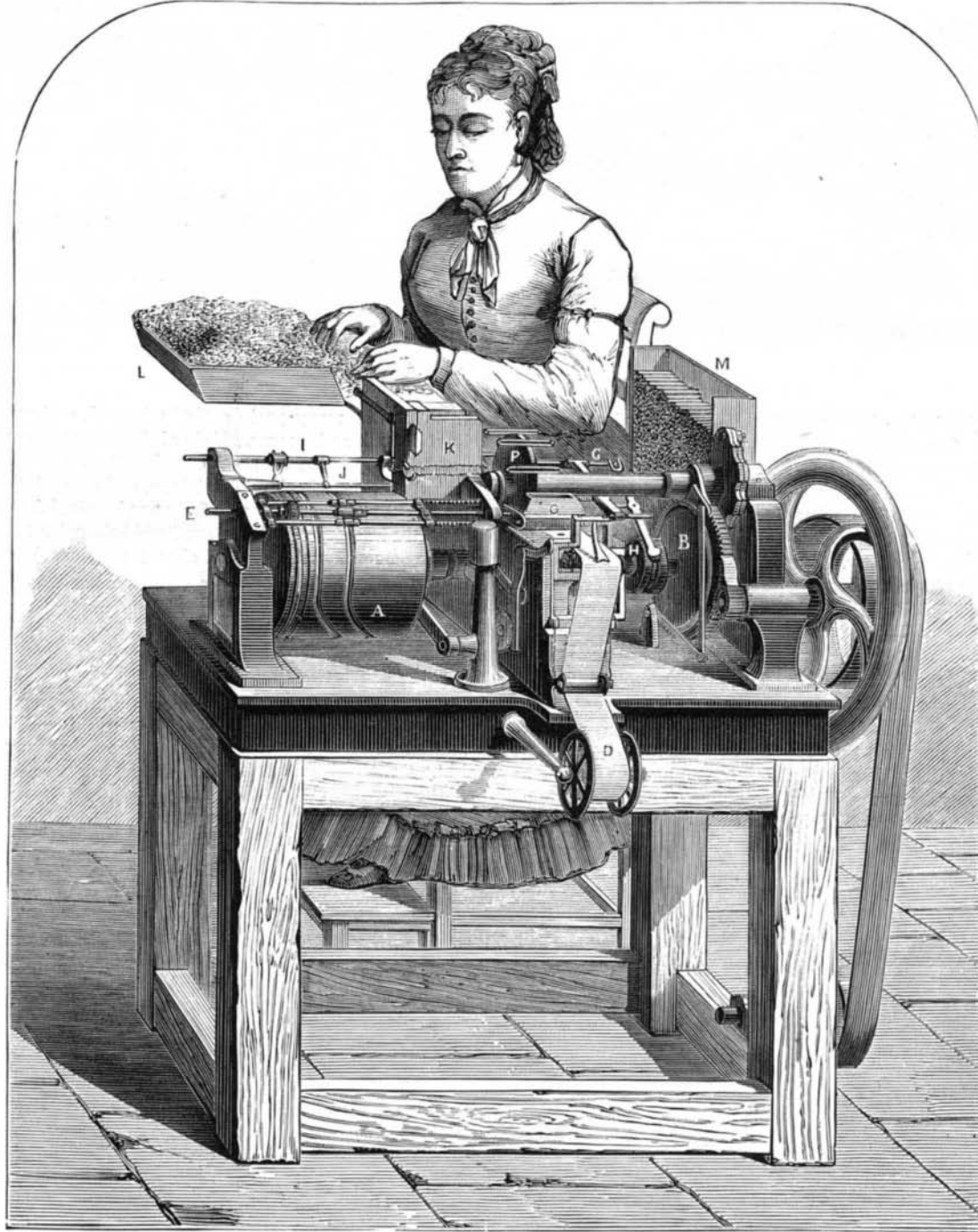
After the divers have gathered a sufficient quantity, these black masses, forming the sponges, are taken ashore, where they are either buried in the sand or exposed to the sun for several days; after decomposition has ceased the sponges are beaten with clubs, this beating removing many of the dead animals in the form of black dust. This is followed by a thorough washing in sea water, after which they are stowed in the vessel's hold. The former method of cleansing the sponges was to put them in a wire cage (after the sand burial) and expose them to the action of the tide, which would remove all extraneous matter; but as the salt water would also rot the sponge, the old method is not now practiced.

On reaching port the sponges are put in care of the vessel's agent, who divides them into different portions or lots. The sponge merchants or brokers then write their bid or tender for each lot and hand it to the agent, who awards each lot to its highest bidder; the profits of the sale, after paying the vessel's expenses, to be divided among the crew and divers. The purchasers then send their sponge carts to convey their newly bought property to their respective yards. The cart used for this purpose is a two wheeled vehicle, surmounted by high framework to hold the sponges, and is usually drawn by a donkey or diminutive horse. In the yard the sponges are sorted and thoroughly dried; the coarser varieties being washed with lime water to whiten them. They next pass into the hands of the clipper, who with a pair of shears clips off the roots and hard or coarse parts of the sponge. This

process requires skillful workmen, as inexperienced hands are apt to cut either too much or not enough off the sponge. After clipping the sponges are ready for the press, where they are baled for shipment. A sponge press is something like a cider press on a large scale, but is made of iron and requires from two to eight men to turn the screw.

As the sponges are sold by the pound and the merchants buy them in quantities, considerable skill is required to make a correct estimate of the number of pounds of clipped sponges in each lot, but the older merchants rarely make a mistake against their own interests. The prices paid in Nassau range from twenty-five cents to \$1.50 per pound, according to quality and the state of the market, but the average is about sixty cents. Few of the merchants have grown rich in the trade, but the prospective increase in the demand renders them hopeful for the future. W. H. W.

A FEMALE sperm whale forty feet long was sighted off Sandy Hook May 9, and was driven by fishermen toward the shore until it grounded on a shoal opposite Applegate's Landing. It was then killed with a scythe and towed to Port Monmouth, where it was cut up for oil. Its yield is estimated at sixteen hundred gallons.

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uncommon. In fact, there seems to be no limit to the variety of uses to which this product of the sea may be adapted.

We may readily infer from the increase of trade in sponges that the industry is yet in its infancy, and that in years to come it will grow to the rank and dignity of a commerce, employing large capital, fleets of vessels, and thousands of skilled workmen in all branches of the business. Our own interests in this trade are more closely allied to those of the Bahamas. Our proximity and frequent communication with their chief port and capital city, Nassau, N. P., make New York the natural entrepot of this trade, and having recently visited those islands I beg leave to present a few facts which may prove of interest.

In the year 1877, 250,000 pounds, or about \$125,000 worth, of sponges were exported from the Bahamas. Of this amount nearly 100,000 pounds were brought to the United States, and the remainder sent to England and Canada; and the resident merchants expect a large increase in the trade this year.

The varieties of sponges known to commerce (given in order of their value) are: the sheepwool, silk or glove, velvet, reef, yellow, honeycomb, hardhead, and grass. The sheepwool is the most valuable, being a tough, elastic sponge,