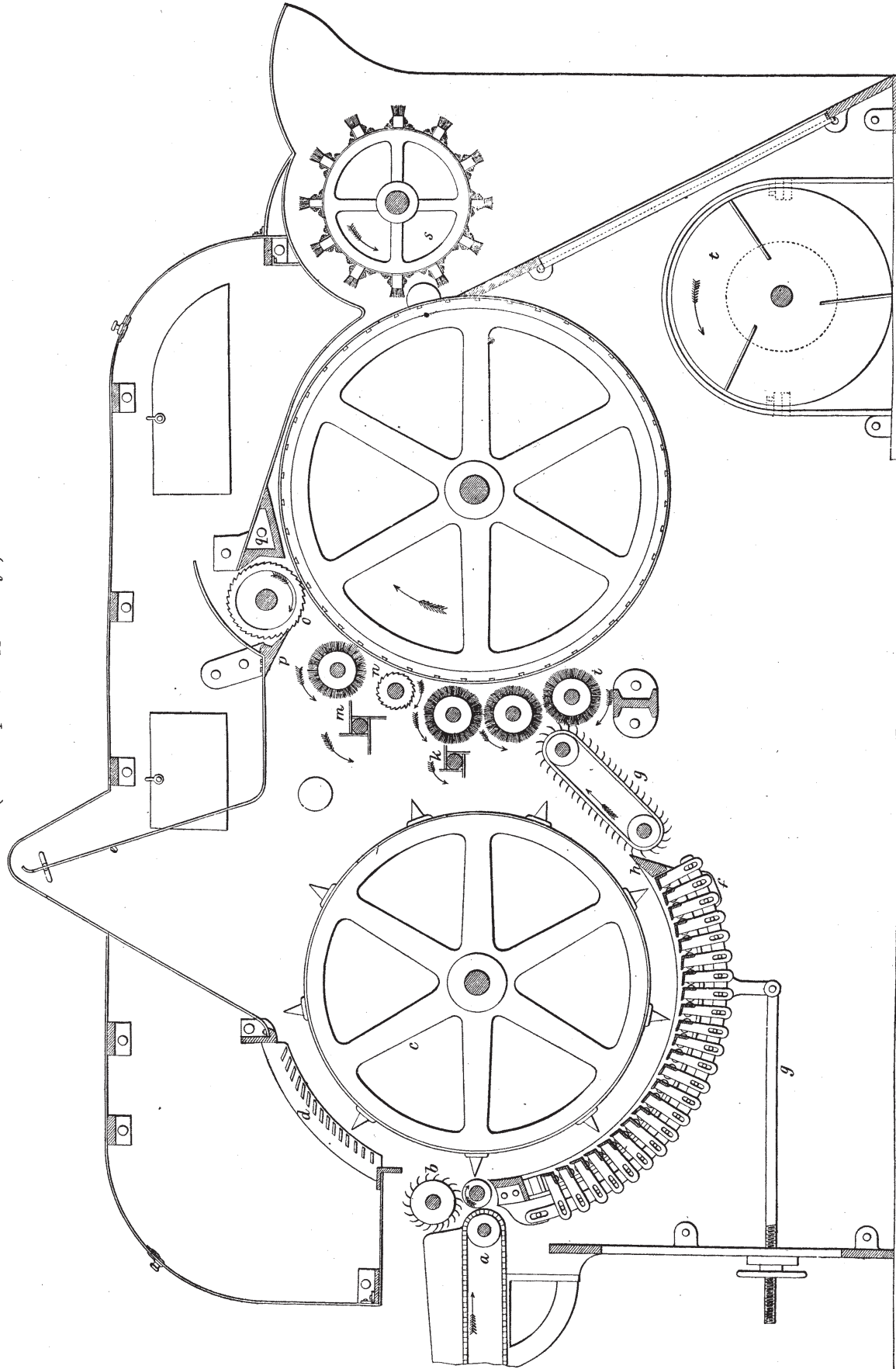


WOOL-OPENING MACHINE, AT THE VIENNA EXHIBITION.

CONSTRUCTED BY M. CELESTIN MARTIN, ENGINEER, VERVIERS, BELGIUM.

(For Description, see opposite Page.)



DOCK ACCOMMODATION AT SWANSEA.—Meetings have been held at Swansea to consider the question of improved dock accommodation. The general opinion of the merchants and shippers appears to be in favour of Captain Davies' plan of a large dock in Fabian's Bay.

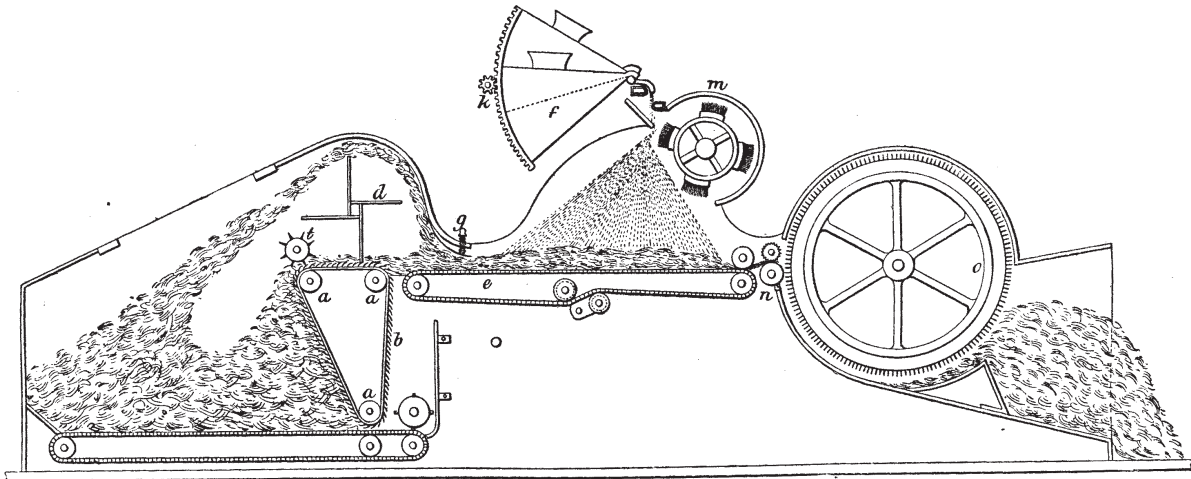
A TELEGRAPH TO JAPAN.—The United States steamer Tuscarora, which has been detailed to make surveys for a cable between the United States and Japan has arrived at Seattle, Washington Territory. The starting point of the cable will be Cape Hattery.

SPANISH RAILWAYS.—In the midst of her great national troubles, Spain has contrived to open another railway in the shape of a line from Cordova to Belmez. The Northern of Spain Railway continues to suffer a good deal from the Carlist war.

THE UNITED STATES NAVY.—Commodore King, Inspector-General of United States Navy Yards, has arrived in London after a month's tour of visits to the navy yards of sundry European states. He is now engaged in visiting the dock yards and engineering works in England.

SELF-ACTING OILING MACHINE FOR WOOL, AT THE VIENNA EXHIBITION.

CONSTRUCTED BY M. CELESTIN MARTIN, ENGINEER, VERVIERS, BELGIUM.



TEXTILE INDUSTRY AT THE VIENNA EXHIBITION.—No. VIII.

By DR. H. GROTHE.

WOOL-SPINNING MACHINERY.

M. CELESTIN MARTIN, of Verviers, deserves special acknowledgment for having exhibited at Vienna the most complete set of machinery for the spinning and carding of wool. M. Martin is known as one of the leading engineers in this branch of textile industry, and at previous exhibitions he has always brought out something new. This is also the case at Vienna. His spinning machine is a new step towards the solution of the question whether carding wool could be spun for *all* purposes by means of the simple water frame. This question will certainly be solved; and M. Martin already gives his answer as "Yes." M. Martin's first exhibit is a breaking cylinder, which is used for the tearing open of hard spinning threads, yarns, and waste pieces of cloth and other stuffs. This is one of the most important machines for a spinner or manufacturer, on account of its enabling all waste to be used up without fear of damaging the carding machine. The drum is made of cast iron, whilst the wooden covering is provided with steel teeth. This covering is fastened by screw bolts, and can be taken off or changed with the greatest readiness.

The next exhibit of M. Martin which we have to mention is an opening machine of larger dimensions, the construction of which is based upon an old system. The machine, which we illustrate on the opposite page, is arranged in the following manner: The wool is slowly carried by the cloth *a* to the feeders, the latter consisting of a pair of rollers, the lower one being smooth and the upper one *b* having teeth. The two rollers pass the wool to the drum *c*, which is provided with eight lines of teeth. The lower semicircle of the drum is surrounded by a grate or "grille," consisting of separate angle irons and angular plates, which are fastened at both sides to small arms, each of which turns at the top round an axis, and contains at the lower end a slot, into which is fitted a pin. All these small pins are fastened at both sides to a curved bar, which can be moved by the rod and screw *g*, the openings of the grate being thus made wider or narrower. The wool acted upon by the teeth of the drum passes over the grate, and is carried over the movable triangle *h* to the feeding cloth *g*, from whence it is taken by the brush rollers *i*, and is carried to the doffing cylinder. This cylinder has a large diameter, and the cards, arranged parallel to the longitudinal axis, are of a strong and convenient shape. Between these teeth, along the whole width of the cards, grooves are cut in such a manner that each tooth of any one card is opposite to the groove of the preceding card. Each groove is about $\frac{1}{8}$ in. deep and wide, and being exactly rectangular to the axis of the doffing cylinder and to the card, it runs exactly parallel with the periphery of the roller. The result of this arrangement will easily be understood, it being evident that the fibres of the wool, after having been grasped by the teeth, will and must lay into these grooves. Notwithstanding their small size, neither a burr nor seed can do this; they must remain on the surface

of the doffing cylinder, and are thrown back, whilst the wool, being freed from any foreign substance, passes through. The care with which the teeth are rounded off makes a damaging or tearing of the fibres of the wool impossible. The remaining rollers *n* and *o* are used for taking off the impurities which their teeth withdraw from the cards, this being especially effected by the larger roller *o*, which moves in an opposite direction to the doffing cylinder in connexion with the adjustable knife *p*. The scutchers *m k* take off the waste wool, which has been carried off from the cards of the doffing cylinder by the brush rollers. This waste wool is thrown back upon the feeding cloth *g*. The cleaning drum *s* takes the wool from the doffing cylinder by means of the brushes, whilst the fan *t* draws the dust from the machine, and acts above the small, and below the large grate *d*. M. Martin states that 400 lb. of wool may be worked on this machine per hour.

The self-acting oiling apparatus, exhibited by M. Martin at Vienna, and illustrated by us on page 273, has been provided with some new arrangements since we saw it exhibited at Paris in 1867. In this machine the wool is thrown into the box at the left-hand side, and is carried by the endless cloth at the bottom of the box to the right-hand side, where it is caught by the spikes of the cloth running over the three rollers *a a a*, and is passed by the roller *t* to the feeding cloth *e*.

Before, however, the wool reaches the cloth *e* the wings *d* take off the superfluous mass, and carry it back into the box, whilst the remaining mass gets uniformly distributed to the cloth *e*. The height of the mass of wool can be regulated by the position of the bent and feathering plate *g*. On its way to the feeding roller *n* the wool is oiled, the self-acting feeding apparatus consisting of a double vessel *f*, one part of which is filled with water, and the other with oil.

The back of this vessel is provided with a pinion and rack, whilst the front is carried by a fixed strong wire, which serves as an axis or hinge on which the vessel turns. The oil and the water run in drops towards an inclined plane, at the end of which they are simultaneously caught by the revolving brushes *m*, and are distributed in minute particles over the wool. The latter, oiled in this manner, passes over the roller *n* to the opening machine *o*. A single workman can oil with this machine about 3000 lb. of wool in twelve hours, and the arrangement of the machine is so simple that any labourer will be able to attend to it, as he has really nothing to do but to supply the self-acting feeder of the machine with wool, and to fill the two compartments of the vessel *f*, the one with oil and the other with water. The quantities which these vessels have to distribute over a certain amount of wool are regulated by a set of wheels, which are conveniently exchanged and fixed.