Planing Machines.

(Concluded from our last.)

Formation of saws and other cutters, to work with a rotative motion. The most obvious mode is, the making the cutter of one piece, consisting of steel, or iron with steel welded on to it, as far as is necessary for strength and sharpness. In some instances, however, there may be an advantage in making it in pieces, for instance, in annular segments, fastened to an included cylinder: the larger it is, the greater will be the advantage in thus composing it; and, if a part only is worn out, or damaged, that part may be replaced, without injury to the rest. Another mode of composition is, to make the teeth distinct from each other, as well as from the cylinder from which they are to project: they will thus be separately bedded in the cylinder, taking on and off, as occasion may require. This is a mode I have practised with particular advantages, in the instance of the moulding cutter, and the planing roller, above spoken of. For the construction of borers, see the article of boring. p. 293 to 305.

How to present the same determinate parts of a number of pieces successfully to the action of a tool. First, Where the intended stations are disposed along the length of a piece. In this case, fix the piece on a sliding bed, in such a manner as to be moveable in the direction of its length: let the sliding bed be furnished with a stop, in the form of a pin or bolt, projecting, for example, from the side, to be inserted, or to drop of itself, into holes or notches in the bench, one for each of the positions required. Or, instead of being made in the bench itself, these holes or notches may be made in a piece of wood or metal, moveable in a groove, or otherwise, along the course which the sliding-bed is to take. In this way, similar pieces may, at equi-distant or otherwise correspondent points of their respective lengths, be exposed to the action of a borer, for example, a saw, a file, or any other tool adapted to the hole, incission, or mark, which they may be intended to receive. pp 375, 376.

Advancement, viz. of the piece to the tool, or of the tool to the piece. For the case where the motion by which the work is performed is of the reciprocatiog kind, instructions have, under the head of Sawing by a reciprocating motion, being given by reference to present practice. When the motion is of the rotative kind, though the advancement may be performed by hand, yet regularity may be more effectually insured by the aid of mechanism. For this purpose, one expedient is the connecting, for instance, by cogged wheels, the advancing motion of the piece with the rotative motion of the tool: another expedient is, employing a power so as to gain purchase; in which case, the facility of insuring regularity will be according to the quality of purchase gained. For short distances, this may be done commodiously enough by a lever or screw; but, where the advancement is to have a long range, the rack and pinion is more convenient; the rack, for example, being fixed to the sliding bed, in a direction parallel to that of its motion, and the pinion which moves it turned by a winch. Or, instead of the action of the hand, a weight may be employed; or, for a very short space, a spring. pp. 383, 384.

The several modes of working above spoken of are the fruit of my own invention, matured more or less by my own practice. The description I have given of them is such as, according to the best of my judgment, would be sufficient to enable any man that chose it to put them in practice to advantage. In some of the instances, the contrivance is no more than what any intelligent mechanic, conversant in the particular branch of work which it is calculated to facilitate, may, by help of these instructions, be able to execute for himself, for the purpose at least of that particular branch of work. In others, especially where the invention is such as to comprise a new and entire machine, the assistant of a millwright or engineer by profession, whose business implies an acquaintance with machinery in general, may require to be called in. These several inventions I accordingly claim the exclusive right of exercising, and that in all the variations of which they are susceptible, and in respect of all sorts or materials to which they are applicable, saving such variations in which, and such materials on which, they may have already been practiced without my knowledge. As to the mode of giving motion to any of the above machines, in addition to the modes in common use, one may be the putting the machine, if not too bulky, into a carriage, and driving the power from the rotation of the wheels on which the carriage runs: in this way, besides the advantage of propability, the power of horses, or other beasts of draught, may be applied, at an expense less than that of erecting a horse-mill. In witness thereof, &c. pp. 387, 388. of the Repertory of Arts, Vol. 10, London 1793.

Opium Drunkenness.

The opium smoker in his heaven is a fearful and sad sight, although, perhaps, not so degrading to the eye as the drunkard from spirits, lowered to the level of the brute, and wallowing in his filth. The idiot-smile and deathlike stupor of the opium debauchee has something far more awful to the gaze than the brutality of the latter. Pity, if possible, takes the place of other feelings, to behold the faded cheek and haggard look of the being abandoned to the power of the drug; whilst disgust is uppermost at the sight of the human creature levelled to the beast by intoxication.

One of the streets in the centre of Singapore, East Indies, is wholly devoted to shops for the sale of this poison; and here, in the evening may be seen after the labors of the day is over, crowds of Chinese, who seek these places to satisfy their depraved appetites.

The rooms where they sit and smoke are surrounded by wooden couches, with places for the head to rest upon, and generally a side room is devoted to gambling. The pipe is a reed of about an inch in diameter, and the aperture in the bowl for the admission of opium is not larger than a pin's head. The drug is prepared with some kind of incense, and a very small portion is sufficient to charge it, one or two whiffs being the utmost that can be inhaled from a single pipe; and the smoke is taken into the lungs, as from the hooka in India. On a beginner, one or two pipes will have an effect, but an old stager will continue smoking for hours. At the head of each couch is placed a small lamp, as fire must be applied to the drug during the process of inhaling; and from the difficulty of filling and properly lighting the pipes, there is generally a person who waits upon the smoker to perform the office. A few days, says Lord Joselyn, of this fearful luxury, when taken to excess, will impart a pallid and haggard look to the features, and a few months, or even weeks, will change the strong and healthy man into little better than an idiot skeleton. The pain they suffer when deprived of the drug, after long habit, no language can explain; and it is only to a certain degree under its influence that their faculties are alive. In the hours devoted to their ruin, these infatuated people may be seen, at nine o'clock in the evening, in all the different stages. Some entering, half distracted, to feed the craving appetite they have been obliged to subdue during the day; others laughing and talking under the influence of the pipe; while the couches around are filled with their different occupants, who lie languid, with an idiot-smile upon their countenance, too completely under the influence of the drug, to regard passing events, and fast merging into the wished for consummation. The last scene in this tragic play is generally a room in the rear of the building, a species of *morgue*, or dead-house, where lie those who have passed into the state of bliss an opium-smoker madly seeks—an emblem of the long sleep to which he is blindly hurrying."

Names in Nautical Aerhitecture.

The principal Plans in Ship-building are: 1. The *sheer-draught, sheer-plan* or *elevation*, which is a vertical and longitudinal view of the ship representing her outboard works from the wales upwards and also keel, stem, and stern-post, with a sectional view of the frames laid off at their proper distances upon the keel and marked from the dead flat in numerical figures towards the stern-post and in letters of the alphabet towards the stem. 2. The *half breadth plans*, or *floor plans*, which are sections upon a longitudinal plane, whereon are represented the water-lines and the ribband-lines. 3. The *body plan*, which is a representation of vertical transverse sections before, at, and abaft the dead-flat. Of the Models used in ship-building we may notice the following: A *bulkshead-model*, is one formed by vertical pieces of board representing half frames which are fastened to a board corresponding with the centre line of the vessel; A *key-model*, or *water-line model*, is formed of pieces of board laid on each other horizontally: these boards being all shaped from the lines on the paper, when put together and fairly adjusted present the true form of the ship. The Lines employed in ship-building are as follows: The *bearding-line*, *buttock-lines*, and *bow-lines*, longitudinal curves at the buttock and bow representing the ship's body cut in vertical sections. The *cutting-down line*, a curve in the sheer-draught corresponding to the upper surface of the throats of the floor amidships, and to the under side of the keelson. *Diagonal lines* or *ribband-lines*, cutting the body-plan diagonally from the timbers to the middle line; they regulate the position of the ribbands and when laid down on the floor-plan give points (called surmarks) at their intersection of the frames for the bevellings of the timbers. The *level-line*, a horizontal line struck between the surmarks of a floor timber upon which line a large square is placed with a plummet in order to set the floor-timber when laid upon the keel to proper level. The *middle-line*, or *centre-line*, a line run from the stem to the stern-post, dividing the ship into two equal parts; *rising-line*, an elliptical line drawn on the plan of Elevation to determine the sweep of the floor-heads throughout the ship's length and thus ascertain the shape of the bottom as to its being full or sharp. The *top-timber line*, or *top-breadth line*, a curve describing the height of the top-timbers, which gives the sheer of the vessel.

The ships built in this city, are copied after faultless models—and every outline is preserved, The model is cut and carved until it suits the tast of the naval architect

The Great Wall of China.

The famous wall which divides China from Tartary, is a wonder of the world. The Chinese say it is more than 3000 miles in length; but it does not exceed fifteen hundred. Its course is not always even sometimes descending into deep valleys, at others rising to the top of lofty mountains. Its height constantly varies; being much greater in certain situations, especially in the valleys, whilst in some places it does not rise higher than fifteen feet. In some parts this wall is built entirely of stone and brick mixed; and such is its breadth that carriages can drive along the top at ease. The interior of the wall is filled up with earth and it was built of that breadth not only for convenience in time of war, but also to facilitate the transport of materials when it was building, as it otherwise would have been impossible to carry it over steep and precipitous spots. It would in fact, have been beneath their advanced civilization to pass rocks, ravines and mountains, without providing a passage for horse and foot soldiers.—Although it was built more than eighteen hundred years ago it is still so perfect that it does not appear to have been finished above a century. It is decayed only in a few places, and these dilapidations the Tartars, who are now in possession of China, do not trouble themselves to repair They only preserve and defend the gates through which there is much traffic. Under the native Chinese Government, one million of soldiers were employed to guard and garrison this marvellous work.

The Business of Rochester.

There are now at Rochester twenty flouring mills, with over one hundred runs of stones. Forty daily, weekly and semi-weekly mails arrive and depart. Forty churches and religious societies. The quarterly receipts of the post office are $5000; the third largest in the State. Four daily and eight weekly newspapers. There were manufactured there in 1847 over 700,000 barrels of flour. And the present population is believed to be between 35 and 40,000.

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(To be continued.)

TO CORRESPONDENTS.

"H. D. T."—If you were told that if you made it pass over two magnets your fortune was made, it was intended to convey the idea that a constant motion must first be produced. You say you can pass seven magnets but for some reason the machine sticks at the eighth. Only pass the eighth and produce thereby a constant movement and you will have found the Philosopher's Stone. You will have no lack of assistance then.

"W. O. of Vermont."—We will attend to your request. We have never seen the blue clay used for the purpose you describe. The back geer of the lathe however, has been used some time inside of the pulley. But your plan may be an improvement. We will be glad to receive and notice your invention, if by a fuller description it will appear to be new.

"F. M. of Md."—Find the number of cu-

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