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Improved Saw-mill.

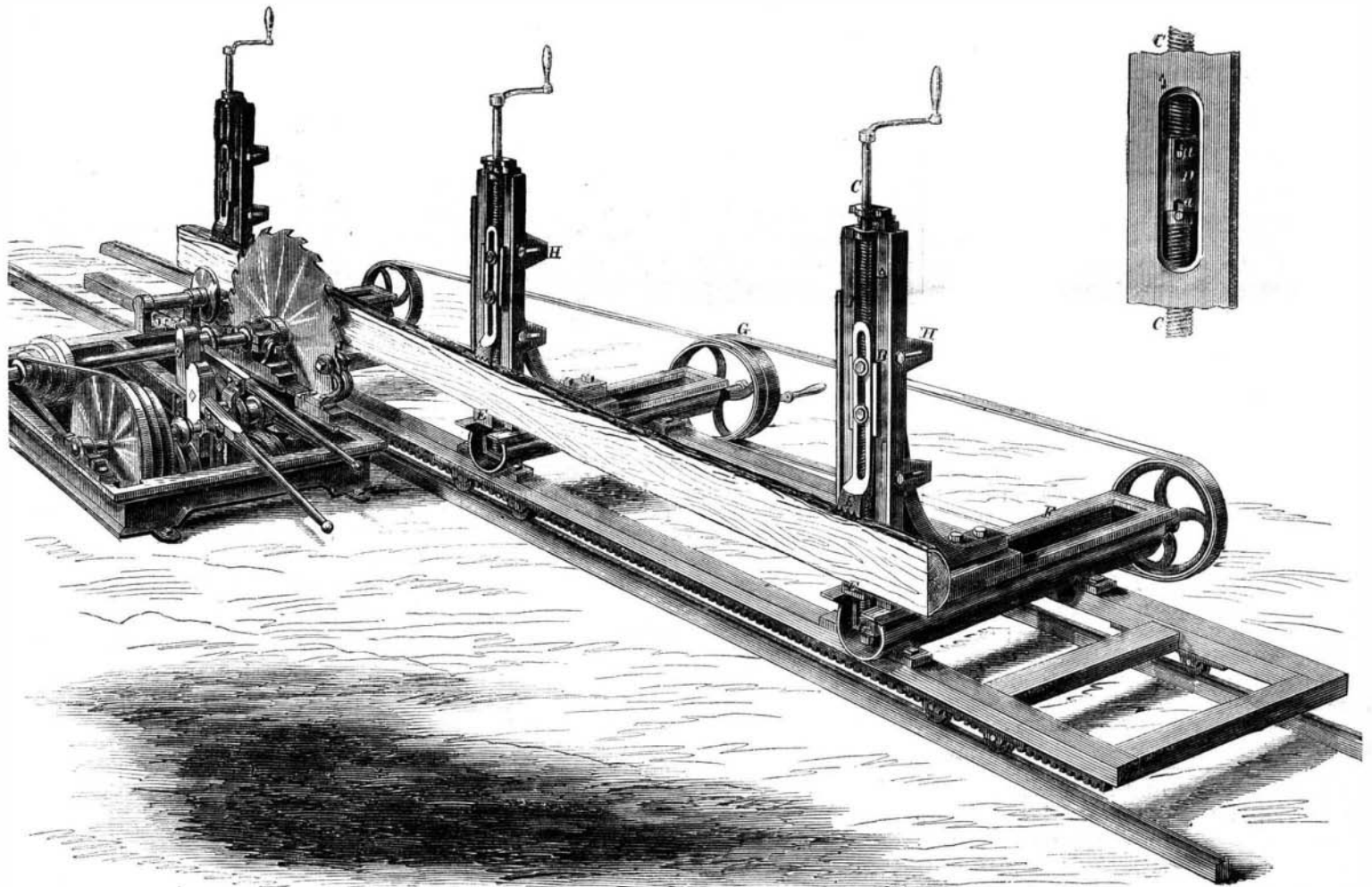
It is well known to lumbermen, mill owners, and sawyers, that much difficulty and loss is sometimes experienced from the crooked and inconvenient shape of the logs that are to be cut up. Nature does not always consult the convenience of man in growing trees, and it devolves upon the inventor to construct some apparatus that will hold the most intractable stick as easily and surely as the straight and perfect one. In getting out ship timber, knees, &c., it is particularly desirable to cut the planks according to

from, or advance toward each other at the same speed, but when the top screw is lifted up, the bottom dog remains stationary, and the upper one can be drawn to any point desired. By inspecting the engraving it will be seen that the upper dog has a long slot in it, by which any degree of vertical adjustment is permitted, independent of the screw arrangement; thus providing additional facilities for securing the work.

The upright A, and all its attachments, slides on the ways, F, at the bottom; being moved thereon by

uprights, and by this means they are prevented from twisting or bearing against the screws when the dogs are forced against the log. The end of the lower screw is also carried in a permanent step. These are the principal details of the mill.

Every intelligent person can easily see that the improvements in the upright head are of a practical nature, and such as to give the mill a wide range of usefulness. Any taper can be sawed by moving the knees in or out; and squares, polygons, or many-sided forms can be as easily executed as the simplest



REQUA'S IMPROVED SAW-MILL.

the natural curve of the wood, and in the ordinary saw-mills, the operation of securing the log is tedious and involves a great expenditure of time. In the accompanying engraving we present a view of a new and improved chuck, or dog, whereon the most obstinate and awkward stick can be as quickly set in place as a straight and fair one. The correctness of this assertion will be apparent by perusing the subjoined description. The upright casting, A, has a sliding block, B, upon it, which is worked by right and left screws, C; these screws have a peculiar connection, which is shown in an enlarged form in the side figure. The tubular sleeve, D, has two slots, *a*, one in each end, which receive pins in the ends of the screws. When the upper screw is pushed down into this slot, both screws turn, and the dogs, E, recede

a screw and hand wheel, as all other machines of that class are. The carriages may all be moved at one time by the central wheel, G, or the belts can be speedily thrown off, and either one set at varying distances from a straight line, to suit the nature of the work. The dogs also have an offset in them which enables the sawyer to set lumber intended to be re-sawed, with the greatest facility. The gage, H, is attached to the upright A, by means of screws, and the slots permit of movement in or out as circumstances require. It will be found useful in re-sawing or slitting lumber, and also for guarding the log from contact with the dogs while running it on, or the carriage back. The nuts in which the right and left screws work have grooves in them which fit accurately to metallic guides, I, on the edges of the

clapboard. For sawing fence stuff, these adjustable dogs are very useful, and will save a large amount of lumber that would otherwise be lost, through the impossibility of holding it securely in a convenient manner for work. Ship knees have been cut on this machine, and other work of a similar character not usually done upon ordinary circular saw-mills. Mr. Hezekiah Alberts, proprietor of a large saw-mill near Hackensack, N. J., has used these improvements for a long time and is greatly pleased with them. All kinds of ship and other timber have been cut by the aid of these improvements.

A patent is now pending on this invention through the Scientific American Patent Agency. Further particulars may be obtained by addressing the inventor, E. B. Requa, care of C. Barnum, 11 Dey street, N. Y.

Philosophy of Exercise.

All know that the less we exercise the less health we have, and the more certain are we to die before our time. But comparatively few persons are able to explain how exercise does promote health. Both beast and bird, in a state of nature, are exempt from disease, except in rare cases; it is because the unappeasable instinct of searching for their necessary food, impels them to ceaseless activities. Children, when left to themselves, eat a great deal and have excellent health, because they will be doing something all the time, until they become so tired they fall asleep; and as soon as they wake, they begin right away to run about again; thus their whole existence is spent in alternate eating and sleeping, and exercise, which is interesting and pleasurable. The health of childhood would be enjoyed by those of maturer years, if, like children, they would eat only when they are hungry, stop when they have done, take rest in sleep as soon as they are tired, and when not eating or resting, would spend the time diligently in such muscular activities as would be interesting, agreeable, and profitable. Exercise without mental elasticity, without an enlivenment of the feelings and the mind, is of comparatively little value.

1. Exercise is health-producing, because it works off and out of the system its waste, dead, and effete matters; these are all converted into a liquid form, called by some "humors," which have exit from the body through the "pores" of the skin, in the shape of perspiration, which all have seen, and which all know is the result of exercise, when the body is in a state of health. Thus it is, that persons who do not perspire, who have a dry skin, are always either feverish or chilly, and are never well, and never can be as long as that condition exists. So exercise, by working out of the system its waste, decayed, and useless matters, keeps the human machine "free;" otherwise it would soon clog up, and the wheels of life would stop forever!

2. Exercise improves the health, because every step a man takes tends to impart motion to the bowels; a proper amount of exercise keeps them acting once in every twenty-four hours; if they have not motion enough, there is constipation, which brings on very many fatal diseases; hence exercise, especially that of walking, wards off innumerable diseases, when it is kept up to an extent equal to inducing one action of the bowels daily.

3. Exercise is healthful, because the more we exercise the faster we breathe. If we breathe faster, we take that much more air into the lungs; but it is the air we breathe which purifies the blood, and the more air we take in, the more perfectly is that process performed; the purer the blood is, as everybody knows, the better the health must be. Hence, when a person's lungs are impaired, he does not take in enough air for the wants of the system; that being the case, the air he does breathe should be the purest possible, which is out-door air. Hence, the more a consumptive stays in the house, the more certain and more speedy is his death.—*Hall's Journal of Health.*

Hunting for Cedar Timber.

In New Jersey there are men who make it a business to dig up the cedar trees buried for centuries in the swamps, and cut them into shingles of, it is said, extraordinary excellence. A correspondent of the *New York Post* thus describes the timber, and the process of "getting it out":—

"These swamps are very valuable, an acre of such timber commanding from five hundred to a thousand dollars. A peculiar feature of the swamps is that the soil is of purely vegetable growth, often twenty feet or more in depth. This peaty earth is constantly accumulating, from the fall of leaves and boughs, and trees are found buried in it at all depths, quite down to solid ground. The timber so buried retains its buoyancy and color, and it is considered so valuable, that large numbers of workmen are constantly employed in raising and splitting the logs into rails and shingles. In searching for these logs the workman uses an iron rod, which he thrusts into the soil, and by repeated trials ascertains the size and length of the wood he strikes, and then by digging down obtains a chip, by the smell of which he can determine whether it is worth removal. The

number of shingles produced from the wood of these submerged forests is very great; from the little town of Dennisville, in this county, as many as eight hundred thousand, valued at twelve thousand dollars, have been sent to market in a year. From the same place thousands of dollars' worth of white cedar rails are annually sent out. The deposit of timber at this point extends to an indefinite depth, and although, from the growth above it, believed to be two thousand years old, is all entirely sound, and will supply, for years to come, the draft upon it."

The Monitors at Sea.

The following incidents are collated from a letter written on board the *Lehigh* to the *New York Times*:—

"On Wednesday night, the 26th, after a cloudy afternoon, the wind from the northeast began to blow hard about 7 P. M., with a sea rapidly rising. The storm increased hourly until 11 P. M., the wind blowing a perfect gale, changing from northeast to southeast, then to west-northwest.

"During this time the *Lehigh* had been straining and bumping her overhang upon the seas at a fearful rate, making sleep impossible. So rapid was the motion, so heavy and continuous the shocks of the projecting snout and overhang, that all became alarmed for the safety of the ship. The solid shot beneath her berth deck were rolling about adrift, efforts to check them being of no avail. Officers and men thronged the upper turret-deck; anxious glances were cast upon the rubber-raft, which was inflated in readiness for use; life-preservers and bread and water were sought for, and the fate of the gallant crew of the first *Monitor* canvassed.

"About this time a heavy sea, which covered the deck from the bow to the turret with a solid mass of water, lifted our ship's bell bodily out of its socket, some six inches deep, and bore it off like a chip overboard. The bell and fittings must have weighed about three hundred pounds, and were fastened to the turret, seven feet above the deck.

"The waves were sharp-topped combers, and repeatedly broke over the top of the elevator, twelve feet high. They broke over the turret-top, flooding the engine-room beneath.

"Several times a large wave would roll over the deck, strike against the front of the massive turret, with furious shock, its top striking officers in the back, and sweeping them across the turret deck to its other side.

"We were now heading the sea, our officers on the front part of the turret deck holding on to stanchions to prevent being washed overboard, the men occupying the after part. Our good ship would seemingly crawl up the face of a big sea, like a cat crawling (the sensation of crawling or creeping upward was prominent) up the steep roof of a house to the ridge-pole, and reaching its summit, look below, and hesitate whether to descend on the other side or fall back, and descending would appear to be diving to the bottom. With bated breath we waited, saw the ship's iron snout thrust into the second wave, take on deck much water, but yet rise up as before, and again descending, take the greater part of the third and greatest wave upon its deck, not being able to rise quick enough to surmount it: and thus at every moment gaining greater confidence in our noble, though heavy and uncouth, iron-clad vessel; though still fearing that some of the powerful seas, as we fell upon them, would force up our overhang, and once starting it, sweep in a moment our whole iron deck from the hull.

"While this scene was passing above, the beak below was more provoking; all night long, innumerable little streams of sea water, yellow with iron rust, poured down upon everything in cabin, ward-room, dispensary and birthdeck, wetting beds and bedding, wardrobes, mess stores, tools, &c. Numerous were the contrivances to meet and accord a reception to the unwelcome visitor, in the shape of paymasters' mess pans, doctors' sponges, and empty meat cans, fastened up to catch the water. Vain was the effort to sit in some spot in the officers' wardroom where the water did not drip a constant shower upon you.

"The gale, the high sea, and the night, passed away together. Not so our leaking deck, however; and, to add to our comfort, the necessity of having hatches and deck-lights down and shut, causing a re-

sort to candlelights, daylight being of course excluded, and the heated, foul air (ventilation being very imperfect when the hatches are down) causing very headache, and a feeling of faintness, loss of appetite, &c.

"The temperature on the berth deck at the ward-room door ranges between 95° and 101° day after day."

The Oil Wells.

During the past year a number of the most valuable wells in the oil region have either ceased flowing altogether, or produce so little of the oleaginous fluid now as to yield but small profits to their owners. This singular change is accounted for on the ground that, owing to the manner in which the oil producing district has been honey-combed, as it were, with wells, the gas, which forces the oil to the surface, finding a free vent, has, in most cases, lost its strength, and escapes without forcing the oil up as before. Besides this, countless water-courses have been let down into the oil beds, effectually stopping or drowning them out. The *Oil City Register* says:—"We have no remarkable change to note in the oil market during the past and present week. Crude has ruled steady, and closes with a slight improvement in the views of producers. The season for the fall business to commence is close at hand. We give as the ruling quotation for the week \$6 00 to \$6 50 at the wells. We have heard of one sale at the Tarr Farm at \$7 00. Producers are now asking \$6 50 to \$7 00 per barrel, according to locality. Boatmen are asking \$1 50 to \$1 65 per barrel freight to Pittsburgh."

The oil region presents many of the peculiar characteristics of a productive gold locality. New houses spring up in a day. The population increases rapidly. Villages have grown into towns. Money is abundant and is lavishly spent. Titusville, the principal town in the valley, has increased its population from 400 to 2,501. It has its newspaper, numerous stores and workshops, a bank, with a capital of \$500,000, and all the other adjuncts of a thriving business. Corry is quite a village at the junction of the Oil Creek and Great Western Railroad, the site of which was last year a wilderness. Oil City has also been built up to the proportions of a town by the oil business, and Franklin has largely increased in population.

Tunnel Through the Alps.

The greatest single engineering work ever undertaken is the tunnel for a railroad through Mont Cenis. A report on this subject has lately been presented to the Lower House of the Italian Parliament by the Minister of Public Works. This tunnel was begun in 1857, and that year and the two following were spent in preliminary operations, such as the construction of houses, workshops, &c. When completed it will be nearly 8 miles in length. Mr. Bartlett, an English engineer, set in operation a steam boring machine, soon after operations were commenced, and about eight times the quantity of work was done by it that had been done by hand. But steam could not be used for boring in the interior of the tunnel, on account of a want of air. The Italian engineers then proposed to substitute compressed air instead of steam; and their method is now in full operation.

This tunnel, when completed, will unite France with Italy, by rail, and it is to be a joint work between the Governments of the two countries, France paying a large portion of the cost. It is calculated that this tunnel will be completed in twelve and a half years from the period of its commencement; but with ordinary hand drilling it would have required twenty-five years' labor. The work proceeds now at the rate of 2,600 feet per annum. The use of compressed air to operate the drilling machines, not only affords the power for this purpose, but also supplies air for respiration to the miners. At one end, 720 men are employed; at the other, 900. The cost thus far has been about \$2,545,400.

In publishing a Cambridge edition of Shakespeare, McMillan & Co., of London, acknowledge their indebtedness to John Bullock, brass finisher, of Aberdeen, for valuable notes. He is said to be one of the best students of English literature in the kingdom.