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Gas, Oil, and Burning Fluid.

The Lawrence (Mass.) *Courier* contains a table which embraces the results of several experiments, by a scientific gentleman, to determine which was the most economical illuminating agent. Of coal gas equal to the light of five wax candles, 1.75 cubic feet were consumed per hour; kerosene oil, five eighths of an ounce; sperm oil, one and one-eighth of an ounce; common burning fluid (alcohol and camphene), two and a half ounces; lard oil, one and three-eigths of an ounce. The cost per hour for each, in fractions of a cent, is stated to be: Coal gas, 0.762 (at $3 50 per thousand feet, one dollar higher than in New York); kerosene oil, 0.883; sperm oil, 1.000; burning fluid, 1.350; lard oil, 1.420; coal gas being made out to be the cheapest of these agents for artificial illumination. But the *Courier* states that there is a substance called naphthaloyd, made in Boston, which is cheaper than gas, and in regard to which information is solicited. We cannot tell what it is, but infer from its name that it is naphtha mixed with alcohol. So far from common coal gas being cheaper than kerosene or burning fluid, it is held to be much more expensive. Were burning fluid not so dangerous it would be used in preference to all the oils, because it is more cleanly and can be burned in common lamps.

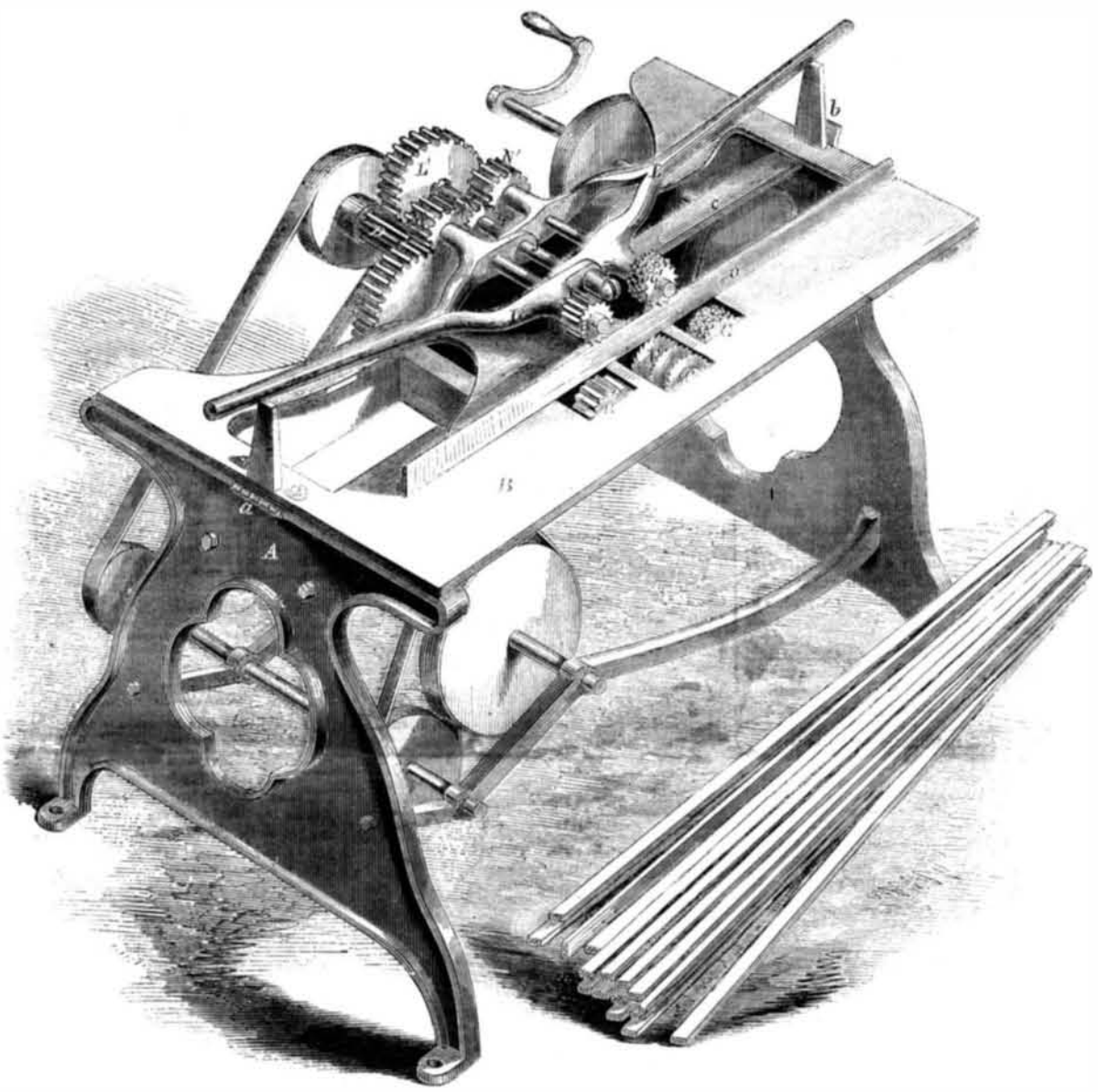
The General Admiral.

This splendid steam-frigate, built for the Emperor of Russia, is receiving the last finishing touches, the machinery and boilers being all on board. The riggers, carpenters and decorators are busy in getting her ready or sea. Her engines and entire machinery are said to be the best finished as well as the most expensive ever put on board any vessel in the United States, costing some $300,000. Instead of white oak gun-carriages, which the contract called for, Mr. Webb, her builder, has substituted a more costly material—mahogany, of which all the frames are composed, the axles only being white oak, and the trucks lignumvitæ. She will be ready for the engineers' trial trip in a few weeks. After being carefully tested she will proceed to Cronstadt to take her position as the flagship of the Russian navy, where, we have no doubt, she will do honor to her American builders and engineers.

American Museum of Zoology.

The Legislature of Massachusetts has granted $100,000 in aid of the museum of comparative zoology which Professor Agassiz has founded at Cambridge. It is to be paid in instalments from the sale of State lands; but private subscriptions of equal amount to that of the State grant must be obtained before the latter will be paid.

HANCOCK'S LATH-SAWING MACHINE.



Our illustration is a perspective view of this machine, which possesses many advantages and peculiarities that will be seen as we proceed in our description.

A is the frame, having on its top the cast-iron table, B, well planed, and hung on hinges, *a*, which allow it to be raised so that the saws can be shipped from their mandrel. B is held down by a spring catch, *b*, and thrown up automatically by a flat spring, *c*, when *b* is withdrawn. The table is partly open. C is the saw-mandrel, carrying the saws, F, and a shifting-pulley (not seen). The saws are slipped upon the mandrel and kept at the proper distance apart by loose collars, being held firmly in place by a clamp nut on C. By having the saws secured in this manner they can be readily adjusted to cut any required thickness of laths, fencing slats, sash and blind stuff, or any other strips or slats required, by placing a greater or less number of collars between the saws; and a greater or less number of saws can be employed as desired. The saws, when on the mandrel, extend up through the table far enough to cut entirely through the lath bolt, and hence will be seen the necessity for having the table hinged as described, so that it may be raised clear of the sawswhen it is necessary to adjust them. G G′ H H′ are two sets of feed rollers placed before and behind the saws. The front set, G G′, are dressed circumferentially with teeth which run in spiral lines, the spirals of the upper one, G′, having to run in opposite directions to those on G, as the rollers turn in opposite direction. The effect of the spiral set of the teeth is to crowd the lath-bolt laterally at the same time that they feed it forward, thus slightly enlarging the kerf and preventing the heating of the saw. The rollers, H H′, are dressed with spur teeth in the ordinary manner, and they take hold of the bolt after its end passes beyond the saws and keep it in a straight line until the saws have made a cut from end to end. The upper roller of each piece is hung in a swinging-frame, L, which is hinged to a central shaft, J, that has a pinion, N, and a spur wheel, L′, on its outer end, the spur wheel gearing with the long barrel cog-wheel, D, and the pinion with pinions M and N′, of the shafts of the feed rollers, G′ H′. By this arrangement of the upper feed rollers, it will be seen that they can rise and fall to suit any desired thickness of lath, and yet remain always in gear. O is the stationary guide or gage against which the lath-bolt is fed forward, and by which the saws are compelled to cut the latter true and uniform. This gage projects up from the surface of the table and gradually recedes from the face of the saw from its front to its rear end, thus providing room for the lath to gradually move laterally from the bolt after its forward end has escaped by the rear saws, and thus enlarge the kerf sufficiently to allow the rear teeth of the saw to run in the kerf without being heated by the friction of contact. This recession cannot well be shown in so small a drawing as ours. The machine thus constructed is driven by the system of gearing, belts and pullies, or any other more suitable. The lath machines most commonly used at present consist simply of a frame and table, with a single saw on the mandrel, and with a gage running parallel with the face of the saw projecting from the table. This improved feed prevents any irregularity, which is too often the result of hand-feeding; and by keeping the stuff close to the gage, gives a regularity to the thickness of lath seldom attained by other methods. The waste of material is very small, and by increasing the number of saws, an immense number of laths can be cut with only one person attending. It is the invention of E. H. Hancock, of Augusta, Ga., and was patented January 4, 1859. The patent has been assigned to W. & R. Schley, of the same place, who should be addressed for further particulars.