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Pyroligneous Acid or Wood Vinegar.

When wood is subjected to destructive distillation or is greatly heated in close vessels, an acid liquor oozes over with the tar and gaseous products. This acid liquor is the pyroligneous acid. It is really an impure vinegar, from which acetic acid can be obtained, and the method employed is as follows: The pyroligneous acid freed from the tar, naptha, &c., is saturated with chalk or powdered slacked lime, filtered, and evaporated in suitable vessels. By this means an impure acetate of lime is obtained. This is gently heated to destroy the oily matter without injuring the acid, and then mixed with sulphate of soda or salt cake as the manufacturers call it; this affords a beautiful acetate of soda, in solution, which is then drawn off from the remaining sulphate of lime. The solution is heated, evaporated to dryness, re-dissolved and crystallized, and by these means the acetate of soda is procured in crystals. These crystals are then placed in a retort with oil of vitriol and heated, when acetic acid distils over, which being the active principle of vinegar, this useful acidifier can easily be made from it, and of the very best quality. The charcoal which remains in the retort in which the wood is distilled is excellent, and is largely used for the manufacture of gunpowder.

Saw Teeth.

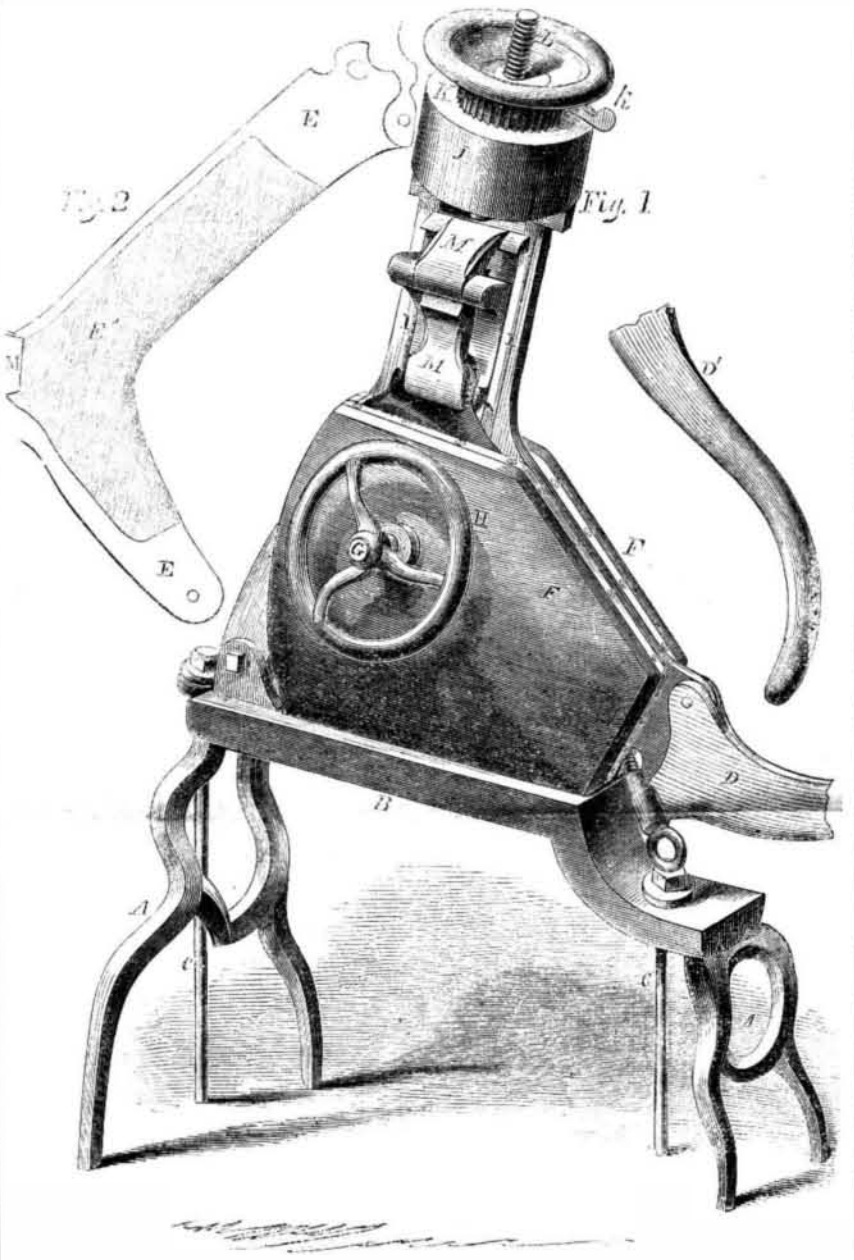
A Tennessee correspondent, after informing us that we are indebted to an article on this subject by Hoe & Co., in the second number of our present volume, for many subscribers in his locality, proceeds to give the following practical information:—

"As well as the number of teeth being proportioned to the hardness of the timber to be sawed, their number should also be proportioned to the power used. Each tooth of a saw can only cut advantageously a certain distance forward in passing through the log, which distance depends on the hardness of the wood; but if a saw has a great many teeth, and is driven by a weak power, each tooth will not cut so far forward as it should do, and there is a loss of power. If the power is great, and the number of teeth few, then each tooth will have to cut too far forward."

Sorghum Molasses.

Dr. F. Stewart, of Philadelphia, has sent us a sample of molasses made from the Chinese sugar cane. The yield from which the sample was taken was equal to two hundred and forty gallons to the acre, and is very good, being quite as rich and sirupy as that from the ordinary cane. We are still of the opinion, however, that it is not capable of producing crystallizable sugar; but if any of our readers have succeeded in making it, we should like to see a specimen.

WILLMOTT'S "LITTLE GIANT" BOOT CRIMPING MACHINE.



This machine is intended for crimping or forming the fronts of boots. There are already several machines in the field for this purpose, while, to a great extent, "crimping" is performed by hand—that is, by stretching the leather over a wooden form, and rubbing it into shape, without the intervention of any machine. This process, however, is so tedious, that machines of some kind are fast coming into use, and the inventor of this crimper claims that it will not only accomplish more work, but that it performs the operation with greater perfection; all wrinkles are rubbed out, the corners are stretched, and the crimp is put into the boot with greater solidity and without injury to the leather; while the operation is performed with such rapidity that twenty pairs of boots can be crimped in an hour, and even this number has been exceeded by a skillful workman, hence its name—"The Little Giant."

Fig. 1 represents the whole machine, in which A A are the legs supporting the frame, B. C C are leg screws, by which means the machine is held firmly to the floor. D is the handle (broken in our engraving) attached to the "former," E, on which the leather is stretched. This "former" is shown in Fig. 2. F F are two jaws, made of iron, lined with wood, and faced with brass, fastened by sliding in a groove in the frame, B, and are separated at the bottom by screws (not seen in our engraving; the jaws are kept together, and the pressure upon the leather regulated by the hand wheel, H, which works a screw, G, passing through both jaws. The handle, D, is connected with E, and on the top of this are mounted two standards, I I, carrying on their top the drum, J, which contains a powerful coiled spring, by whose means the ratchet wheel, K, is turned upon the screw, L. M M are pincers, so arranged that when the ratchet wheel is turned in the proper direction, they are lowered, and open to receive the corners of the boot front; while, by the same movement the spring is wound up in the drum, J. This is held wound up by the pawl, *k*, until the leather is adjusted, when the pawl being tripped, the spring is left free to act.

Operation.—The leather being cut to shape, and wet in the usual manner, is laid over the jaws, F F, in a suitable position, the "former" being first thrown back, and the jaws graduated to the thickness of the leather to be crimped; the "former" is then brought down forcing the leather between the jaws for a short distance; the pincers are then lowered, and the corners secured within them. The process is continued by working the handle, D, up and down, which rubs out the wrinkles, while the spring exerting its force upon the ratchet wheel, keeps a constant strain upon the corners drawing them out to the proper shape; when finished, the leather will appear on E, as seen at Fig. 2, E′ being the leather without crease or wrinkle; all that now remains to be done is to loosen the pincers, remove the boot front, and tack it on a form to dry.

This machine is the invention of W. W. Willmott, and was patented Aug. 25, 1857. Further information and particulars may be obtained from the manufacturers and assignees, A. H. and C. H. Brainard, of 90 Utica street, Boston, Mass. A machine may be seen at the machinery warehouse of S. C. Hills, No. 12 Platt street, New York.

Progress of the Age.

The great deeds done by men of old, and the accumulated discoveries of the ancient sages, have all been surpassed in the last half century. Before the year 1800, there was not a single steamboat in existence, and the application of steam to machinery was unknown. Fulton launched the first steamboat in 1807; now there are three thousand steamboats traversing the waters of America, and the time saved in travel is equal to seventy per cent, and every river in the world is a highway for their encroachments. In 1800 the word "railroad" had not been coined, and to travel forty miles an hour was an impossibility. In the United States there are now some twenty-five thousand miles of railroad, costing in the neighborhood of seven hundred and fifty millions of dollars, and about thirty-seven thousand miles of railroad in England and America. The locomotive will now travel in as many hours a distance which in 1800 required as many days to accomplish. In 1800 it took two weeks to convey intelligence between Philadelphia and New Orleans, now it can be accomplished in minutes by the electric telegraph, which only had its beginning in 1843.

Trinidad.

This small island is situated off the coast of South America, not far from the mouth of the river Orinoco. It has long been noted for the production of a superior kind of coffee, but is now about to enter the commercial world in a far more important way. Beds of coal, sulphur and good ochre have recently been found there. Asphaltum, petroleum, gypsum, good lime, a compact sandstone, and clay suitable for bricks have been known for some time, and all that was wanted was the coal, to aid in their productive development. There is also every reason to believe that gold is to be found in some of the northern streams. An American firm has recently established itself at the famous Pitch Lake, and erected works, now nearly completed (they make the crude oil already), for the extraction and refining of oil from the asphalt—the supply of which is, no doubt, practically inexhaustible. With regard to the coal, there are seams of eighteen to forty feet, and one measuring horizontally the enormous width of one hundred and twenty-two feet—a veritable quarry.

The *Mining Chronicle* gives the above information, and, should it be true, this discovery will be a most valuable acquisition to the maritime world. A coaling station has long been wanted in that locality, and it would seem that Trinidad will be able to fill the vacancy.