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OIL OF TURPENTINE AND RESIN.

This is an important industry in some of our Southern States, and the mode of gathering the materials and manufacturing them into a merchantable article is described below.

In the manufacture of oil of turpentine and resin, a convenient portion of pine land is taken, where the necessary homes are constructed, and early in January boxing the trees commences, which lasts until the last of March. All the pines over twelve inches diameter are boxed, namely, incisions are cut near the base of the tree, preferably in the south side, the boxes being about ten inches broad and made to hold from two to three pints, some trees of larger size having from three to five boxes, according to size of trunk. Oblique gutters are cut above the boxes, to convey the turpentine in as it exudes. They meet over the center of the box from each side, inclined downward. The boxes are divided into lots of 10,000 each, which is called a crop, and is placed under the supervision of a man.

The exudation commences immediately, and very soon the boxes are filled, when it is dipped by means of wooden shovels, emptied into pails, then into barrels placed in convenient places, each barrel containing 280 pounds. The boxes, when properly attended to, fill about seven times during the season, from March to October. As the exudation becomes slow new streaks are made, reaching through the bark and into the alburnum to the depth of about four concentric circles. The turpentine obtained during the first year is richer in oil, and produces the best qualities of resin; it is called "yellow dip" or "pure dip." That which congeals on the faces of the trees is scraped off in October; it contains very little oil, having lost the greater part by evaporation. During the winter the stock of oil and resin which accumulates is disposed of, and arrangements made for commencing with warm weather of the following season. The same farms are seldom worked longer than three or four years, as the trees become badly exhausted in that time, and there are new trees to work upon near at hand. The still is made of copper, varying in capacity from eight to thirty barrels, some being larger even than this. It is inclosed in a brick furnace, so that heat may circulate around it. It is supplied with a movable top, through which the "gum," or crude turpentine, is put. At the base there is a large stopcock or gateway, through which the residue is drawn after the distilling process is completed; it is also supplied with a small stopcock at top, through which the water enters. The movable top is connected with a large coil of pipe for condensing, which is immersed in a tank filled with cool water; the end of the pipe is brought through the side of the tank near the base, so as to empty its contents into a barrel for that purpose. The barrel or receiver is furnished with two openings, one near the bottom, the other near the top.

A convenient quantity of turpentine is placed in the still, being very dirty, containing leaves, sticks, etc. Heat is applied, and very soon the vapor begins to rise, and is condensed while passing through the coil; it is emptied into the receivers. At first a greater part of it is water; the water immediately falls to the bottom, because of its greater specific gravity and incompatibility; as the receiver is filled, the water is drawn out through the stopcock at the base, while the lighter volatile oil is drawn from that at top and transferred to barrels. As the distillation progresses, the quantity of water becomes small, when more is added through the top of still. This process is continued until the distillate is largely water (one part of oil to twelve of water), when the fire is removed; the movable top is also taken away, and it is allowed to stand for a few minutes until most of the water passes away; then much of the straw and sticks are removed by means of strainers on long handles; after this is done, the large stopcock is opened, and the liquid resin conveyed to strainers to remove all dirt, etc. The first strainer is, of course, wire, to remove large pieces of trash; then it is passed through cotton batting made for that purpose, lastly through a strainer made of wire gauze of No. 40 to No. 60, No. 60 being used for best qualities of resin; it is then allowed to stand in large vats until it is partly cooled, when it is removed to barrels, each containing 280 pounds. The resin from turpentine of the first year is classed "window glass," then "virgin," which are the finest qualities; the lower grades are made from "gum" of succeeding years, and often by improper distilling. The oil is put in barrels, and after being allowed to stand for a short while deposits a sediment, mostly of suspended organic matter; this is removed, the barrels sealed up, when it is ready for market. To further purify the oil, it should be distilled from caustic potassa. When the manufacture is conducted economically, says the *Independent Record*, to which we are indebted for this article, a profit is realized when twenty-five cents per gallon is received for the oil, and from two dollars to four dollars per barrel for resin, according to grade. Large quantities of these are exported yearly, and their manufacture is one of the most paying industries of those of our States so abundantly supplied with suitable trees to operate upon.

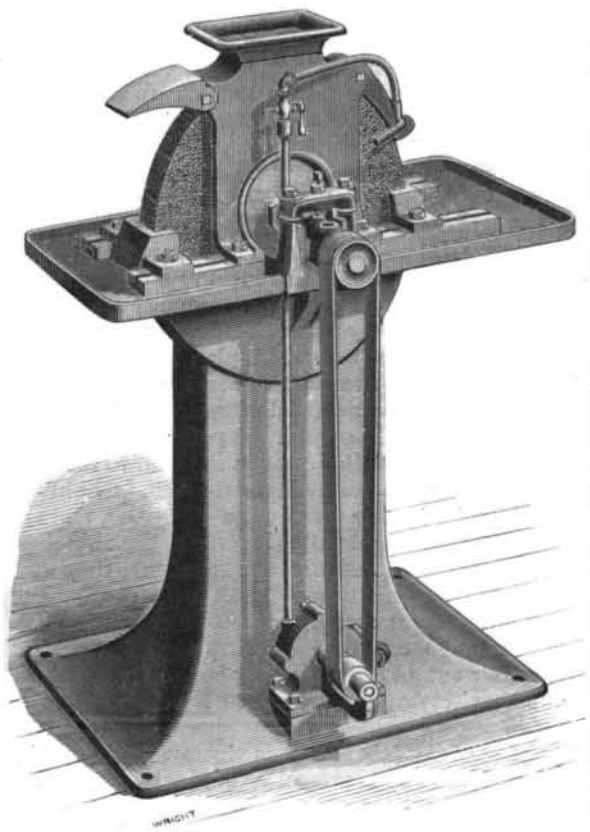

Fig. 1.—THE STILES MACHINIST'S TOOL GRINDER.

IMPROVED TOOL GRINDER AND PRESS.

By the use of corundum wheels running in water a cutting edge quite unattainable on the grindstone may be given to lathe, planer, and other tools, without affecting the temper of the steel. The frame of the tool grinder shown in the engraving is hollow, forming a reservoir for water, which is forced to the wheel by means of a self-acting pump bolted to one side of the base. Near the upper end of the tube is placed a faucet, by which the amount of water delivered to the wheel may be regulated. A flexible tube leads from the upper end of the pipe to the nozzle, which is divided and so arranged that the water may be delivered upon any desired point of the wheel or tool. The shaft is made of steel and runs in self-oiling boxes, and is accurately balanced together with the wheel, thus avoiding the necessity for a special foundation, and adapting it to use on an upper as well as lower floor. The fixture shown in Fig. 3 is made to receive a diamond tool, and is for truing up the wheel without removing it from the frame. The frame of the fixture is held in place by two bolts, the heads of which slide in grooves, as shown in Fig. 1. Journaled in two standards is a threaded shaft, eccentrically mounted upon which is a hub formed with the handle, C, at one end. The rear end of the cutting tool holder is journaled upon this hub, the set screw, A, serving to unite the two. The fixture, having been bolted to the grinder, the tool may be moved across the face of the wheel by turning the screw, and may be moved in or out by turning the eccentric hub.

For convenience in cleaning out the reservoir when necessary there is a hand hole—not shown in the cut—in the frame. These grinders are cheaper and will last longer than the ordinary grindstone, while the work they perform is of a better grade. The total weight of the tool is 700 pounds.

The press represented in Fig. 2 is a new design embodying many novel and admirable features. The pitman is wide, and fills the entire space between the bearings of the frame, thereby securing to itself a long bearing and adding strength and stiffness to the press. The device for ad-

(Continued on page 36.)

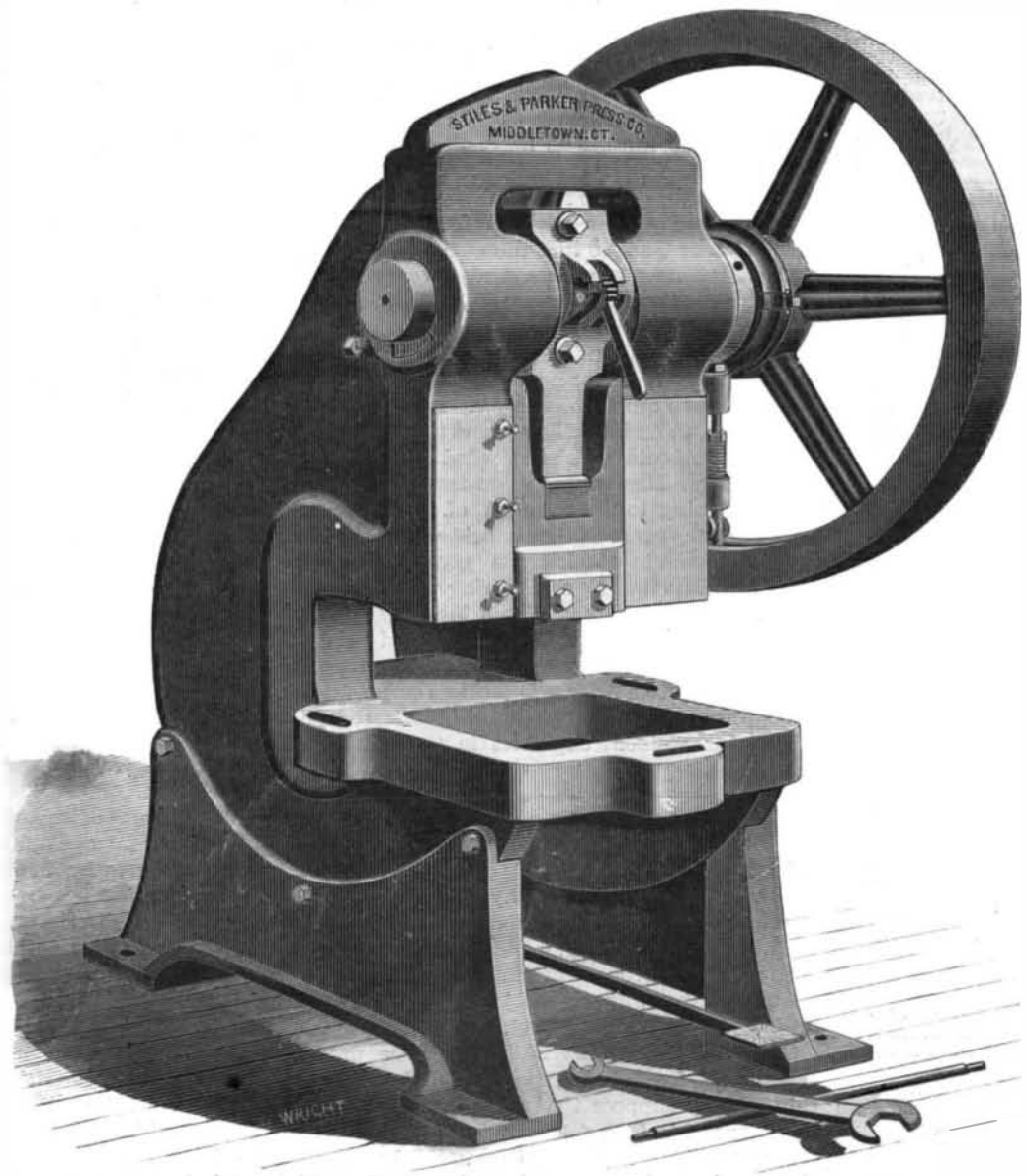

Fig. 2.—THE STILES IMPROVED PRESS.