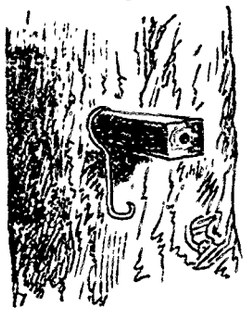
tapped, the spouts fixed, and the troughs set. The common method of tapping is by making two gashes in the body of the tree, near the ground, in the form of the letter V. Just below the angle formed by these cuts, the tapping iron is driven in to make an entrance for the sharpened end of the spout before described, and the trough is placed so as to catch the sap as it flows from the spout. A simple open barrel on an ox-sled, answers well for collecting the sap. A circular board, an inch or two less in diameter than the inside of the barrel will be useful to float on the sap, and prevent it from splashing out. Before proceeding to describe the boiling and sugaring off processes, it will be well to point out some of the improved methods of performing the work already referred to. We have described the simplest and most primitive arrangements—such as any beginner in the bush may make with scarcely any outlay except for the kettles. That a good article of sugar may be made even with such rude and imperfect facilities, there can be no doubt; but the best quality cannot be produced without better conveniences. Sugar-making, like everything else, must be pursued under difficulties by the new settler, and it is only by unremitting care and attention in the way of regulating troughs, straining sap, skimming and clarifying syrup, &c., that good sugar can be made with such rough and ready contrivances as we have been describing. Pails of wood or sheet tin are greatly preferable to troughs. Troughs are clumsy things, heavy to lift, liable to get out of place and waste the sap, and are very much exposed to leaves, dirt, and rubbish. Wooden pails are the cheapest, tin ones the best. If made of wood the pails should be rather smallest at top to prevent the hoops falling off. It is a great improvement to paint them both outside and inside. They will cost from $10 to $15 per 100, according to size and finish. Tin pails are easily kept clean and are less likely to impart sourness. They should be made largest at top so as to pack away in nests when not in use. They will cost from $20 to $30 per 100, according to size, make, and quality of tin. There is also a better mode of tapping the trees, than the common one to which reference has been made. The V shaped cut inflicts a serious and unnecessary wound upon the tree. It has been found by repeated experiments that a small auger hole will yield as much sap as a large gash, the flow being in all cases in proportion to the depth of the hole. It does not take many years to girdle and destroy a maple tree on the old plan, whereas the auger hole will grow over, and leave the tree uninjured. Spouts may be made as already described only shorter, or of tinned sheet-iron, which are considered better. Some adopt the plan of hanging the pail on the tree by an iron spike or old horse-shoe nail, the tin pails having a hole just below the wire rim and the wooden ones a small wire loop for this purpose. The nails are however objectionable especially if the tree should ultimately be chopped into firewood or sawn into lumber. Altogether, the best arrangement of spout and pail that we have met with, is that represented below.



On this plan a single auger-hole say seven-eighths of an inch, is bored into the tree to the distance of about three-quarters of an inch. The spouts are made out of thick inch board about four inches long. They are shaved at one end just large enough to fit the auger-hole in the tree. To get them the right size, bore a hole in a board and shave each until it will exactly fit it. A hole is bored lengthwise through the spouts for the passage of the sap. The hook for the pail is made of very stout iron wire, and is of the shape figured in the accompanying cut. The small end of the spout is passed through the loop of the hook before it is driven into the tree. The lower part of the hook passes through a hole near the top of the pail and the curve secures its hold. The hook is held against the tree by the slight shoulder of the spout, and is capable of sustaining a heavy weight. The subjoined cut represents the arrangement complete.

Kettles are not good boilers for maple sugar-making. From their shape they become unevenly heated, and a portion of their contents is liable to become burnt. Shallow sheet-iron pans are much better. They may be kept cleaner, they evaporate more rapidly, make finer sugar and economize heat. A good form for them is described by a correspondent of the *Country Gentleman*. A convenient size is 3 by 6 feet. The following is his description:—

"Having bought your iron, get it cut the proper size by the tinsmith, or if you have shears large enough to cut it, you can do it yourself. Turn over three-quarters of an inch of each inside edge, and lock them closely together with a hammer. Place it on

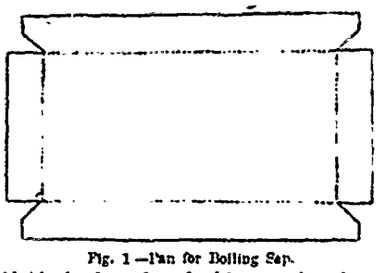


Fig. 1.—Pan for Boiling Sap.

a solid block of wood, and with a punch make a row of holes, half an inch apart, the whole length of the seam. Then put in your rivets, and clinch them tight'y. Now with a straight edge mark off 7 inches all around the edge of your iron, then cut it in the shape shown in fig. 1.

"Turn up the ends first, next the sides, which will project beyond the ends; these must be bent over and riveted with two rows of rivets to the ends. Scrape the inside lower corners with a file till they are bright—then apply with a brush a few drops of muriatic acid, diluted with as much zinc as it will dissolve. It can then be soldered the same as tin. The bale should be an iron rod ¼ inch in diameter. Get the blacksmith to bend the corners and weld it. To put it on, cut down each corner one inch and bend the iron round the bale. The last thing is the handles, four in number, which the blacksmith will also make, and you have a finished pan, warranted not to leak, at a cost of say:

30 lbs. iron, at 7 cents	$2 10
Punch	12
Rivets, acid, solder, etc	25
Iron for bale and handles, and making same	75—$3 22

"Such a pan, he says, will last 12 to 16 years, and be large enough for 200 trees, without much night work. The rivets may be bought at hardware stores for 25 cents per 1,000. It should have ears or handles riveted on at the corners, for convenience in lifting.

"Pans may be likewise made as follows, of a single piece of Russia sheet iron, at considerably less expense, but they will be less durable. Make the sides of plank, six inches wide and about two inches thick, about a foot shorter than the sheet iron, so that the latter may turn up at the ends. The wood should be some tough sort, not easily split. The sheet-iron is secured to the plank by double rows of closely driven, broad-headed nails. The fireplace should be a few inches narrower than the pans, and a good draught secured, by means of a chimney of sufficient height.

"The same correspondent, already mentioned, describes the following good way for arranging the fireplace and pans:—

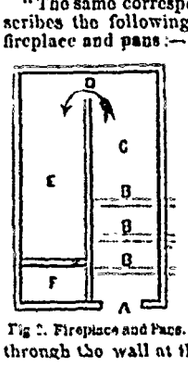


Fig 2. Fireplace and Pans.

"The annexed cut (fig. 2) illustrates an improved form of arch for boiling sap, which is very highly spoken of by every one who has used it. It is very simple, and any mason of ordinary ingenuity can easily make one.

"It consists of a double arch for two sheet-iron pans placed side by side. It is made wholly of brick, or can be built on the outside with flat stones.

"A is door for wood—B B B three hollow cast-iron tubes to lay the wood upon, extending through the wall at the right hand side. By having them cast hollow, the heat passes out into the open air, making them much more durable. They are three inches in diameter, and placed about six inches from the floor of the arch—C pan—D flue for passage of the fire—E pan—F chimney, or a wide stove-pipe will answer as well. The space under pan E need not be more than 12 inches deep, as no wood is placed under it. It should be raised about four inches higher, so that the sap, after it becomes heated, can be carried into the other pan by a syphon rigged with a faucet, so that the flow can be regulated.

"The pan C can be made longer than the other, but should not come quite out to the end of the arch, as the sap would be burned on the pan. A better way is to have the pans of the same size, so that they can be changed at the end of each boiling season, as the pan over the hottest fire will burn out much the soonest.

"The operation of boiling sap in one of these arches, rigged as I have described it, is as follows:—In the morning fill both pans, and then build the fire. The sap in the pan C will be boiling before that in the other; when it is, put your syphon in its place and guage it so that it will just keep the pan C full; then start the cold sap from the holder, (also fixed with a faucet,) so as to keep the pan E full also."

Along with these improvements it is desirable to have a comfortable boiling-house, entirely closed in from the weather, and covering in the fire-place and boilers. It must be well lighted, so that dirt and impurity may be readily seen. It is well to fix the sap reservoir in such a manner that the bottom of it will be a little higher than the boilers, so that the sap may easily run into them with a faucet.

A few brief hints about boiling and sugaring off will complete what we have to say on this subject. Cleanliness at every step of the process is the prime thing to be secured. Boil the sap as fresh as possible. It should never stand twenty-four hours if it can be avoided. Sap varies in quality and requires reducing by boiling to from one-twentieth to one-thirtieth of its bulk to make good syrup. Whatever dirt and scum arise on the surface of the sap while boiling, should be removed with a skimmer. On taking the syrup from the fire, it should be strained through one thickness of home-made flannel into a clean tub or barrel, and left to cool and settle from twelve to twenty-four hours. Sugaring off may be done either in one of the pans, or in a separate brass kettle. Pour off the portion of syrup that is clear into the pan or kettle, leaving the sediment in the tub. In sugaring off, the fire requires to be under control either by a damper in the flue, or by means of a crane for the kettle to hang upon. If it is thought needful to clarify the syrup, add a beaten egg and a gill of milk to every gallon, keeping it hot but not boiling until the scum has risen and been skimmed off. Some good sugar-makers think the milk and eggs unnecessary, and contend that if every vessel is kept clean, and the syrup is thoroughly strained and settled, it will be free from all impurities. The final boiling must be carefully and rapidly performed. There are various ways of telling when the sugar is boiled enough. If it is to be put into tubs and trained, it requires less boiling than if it is intended to be put up in cakes. When snow can be obtained, a good plan is to take a dishful, and when some of the hot sugar is put on the snow, if it cools in the form of wax on the surface of the snow, it is done enough to put in tubs to drain. But when it is to be caked, it should be boiled until, when it is cooled on the snow, it will break like ice or glass. On this point the *Register of Rural Affairs*, says.—

"When the bubbles rising to the surface burst with a slight, or just perceptible explosion, from the tenacity of the thickening liquid; or if a drop hot from the kettle into an inch of water forms a distinct solid globule slightly flattened when it strikes the bottom; or if a drop between the thumb and finger will draw out into a fine thread half an inch long, the process has gone far enough." Another mode is thus described by a correspondent of the *Country Gentleman*: "Take a short twig, dip it by dipping its end into the boiling sugar, and then form a loop with a hole half an inch in diameter. Dip the loop into the sugar, bring it up quickly and blow through the loop-hole. When it will go off into a ribbon eight or ten feet long, it is done. It will ribbon a few feet before it is done, but wait a few moments and try again till it will perform according to order."

When sufficiently boiled, it is poured into vessels to cake. It must not be allowed to cool too much