Portable Stump Boring Machine

IN the States of Michigan and Wisconsin, and also in several Southern States and on the Pacific Coast, there are large areas of undeveloped land, which at one time was covered by heavy forest growths, and which, after being "cut over" by the lumbermen, was abandoned as worthless, and eventually taken over by the State governments because of non-payment of taxes. Occasionally a small tract of such land is taken up by some energetic foreigner who, by extreme patience and much labor, manages to clear a small acreage. The land when once cleared is highly productive; in fact, some of the most fertile land in the United States is contained in the stump-ridden sections of the great lumber States.

Recently a machine has been devised for removing the tree stumps. This machine consists of a $1\frac{1}{2}$ horse-power gasoline engine mounted on two wheels fitted with a light frame. A countershaft is mounted on one end of this frame, and is operated by a belt from the engine. To the end of the countershaft is attached a universal joint, connected to a $\frac{1}{2}$ -inch shaft, 4 feet long, and key-seated on two sides within 6 inches of the end. This shaft slides in a hollow tube, $\frac{7}{8}$ inch inside diameter, and the tube and shaft are located by means of two keys which are fitted in the end of the hollow tube, and held in position by sleeves which screw to the tube.

An auger is fastened by a chuck to the hollow shaft, and is 2 inches in diameter, with a 3-inch shank, and 30-inch barrel. The shaft is fitted with a cross handle located about 18 inches from the auger, but which can be shifted to any desired position on the shaft. The purpose of this machine is to bore stumps, for burning, and the auger, when boring into sound wood, feeds itself, the operator having merely to steady it with the handles. After the hole is bored, the auger can easily be withdrawn while the engine is running. Under bad conditions, such as hollow and unsound stumps, the auger will sometimes need crowding by pressing the handles.

In order that the machine may be operated by one man, a hole is drilled in one end of the handle for a $\frac{5}{8}$ -inch sharpened pin to slip in and the bar is swung into position and the pin inserted in the ground to support the auger while the operator starts the engine. He then lifts the boring pin and applies it in any desired position to a 45-degree angle, and bores the hole.

The method of procedure is to dig a hole approximately 14 inches deep along the top root of the stump with an ordinary spade. When the stump is pitted the machine is wheeled into position on the opposite side and the auger applied to the top root as close to the ground as possible. Its course through the stump is downward at an angle of 45 degrees, and it emerges at the bottom of the pit. It is then withdrawn and shavings are placed in the pit surrounding the auger hole and set on fire. The flue created by the auger hole ascending from the pit at an angle of 45 degrees, draws the flame through the hole and thus fired, it burns outward and downward until the stump is entirely consumed.

In a recent test two men operated the machine, and only one gallon of gasoline was required to bore one hundred stumps. The machine weighs 350 pounds, and can be transported on a one-horse wagon or wheeled by hand by the two operators from stump to stump on any desired area.

A City on Piles

ONE of the strangest cities in the world is Brunei, capital of the State of the same name in Borneo. It has Venice completely outdone, for not only are its streets watercourses, but the entire city is built over the water. The city is located on the river Limbang, its houses being constructed on slender piles made from the Nibong palm, a wood that resists

Boring a stump with a portable machine preparatory to burning it.

A giant that will type news bulletins at the Panama-Pacific Exposition.

Artificial spider web as a lawn decoration.

A Borneo city built on piles.

the action of water for many years.

The inhabitants of Brunei are Malays, Kadayans, Orang-Buskits, and a few Muruts. They earn their living mostly by trading with other tribes in the interior of Sarawak and British North Borneo. Some of them are very skillful brass workers, and Brunei women make very beautiful cloth, interwoven and embroidered with gold thread. Sago is grown in the valleys nearby, and a small quantity of rice is also raised there. In the early part of the nineteenth century Brunei was the headquarters of the famous Borneo pirates, and a market for the slave trade.

The Largest Typewriter in the World

ONE of the exhibits at the Panama-Pacific Exposition which can hardly escape observation, is a typewriter of gigantic proportions. Lest their product be overlooked among the myriads of typewriters that are to be put on exhibition, an enterprising company has had a machine built 1,728 times larger than a standard typewriter. It is not merely a colossal image, but a working model that actually writes; and during the Exposition it will type news bulletins on a sheet of paper 9 feet wide, in letters 3 inches high and 2 inches apart. The monster machine will be operated by electrical connection with a typewriter of standard dimensions. For instance, on depressing a key of the small machine the corresponding key of the large machine will respond. A lever is used for the return of the carriage and for line spacing or rotating the cylinder. The big machine weighs 14 tons as against 30 pounds, which is the weight of a standard machine. It is 21 feet wide, in action, by 15 feet high, and requires for its operation a room measuring 25 by 30 by 25 feet. The platen, 9 feet 6 inches long by 21 inches in diameter, weighs 1,200 pounds, and the carriage 3,500 pounds. Each key cup, which is the part of a typewriter that is pressed by the fingers, is 7 inches in diameter, while each type bar is 52 inches long and weighs as much as a standard typewriter. This mammoth typewriter has been under construction for about two years and cost \$100,000.

The Largest Spider Web in the World

By Robert H. Moulton

THE largest spider web in the world was spun, not by a spider, but by human hands. It stands on the lawn of a Chicago man's country home, and is of such tremendous size as to startle the passerby when he first sees it.

The creator of this interesting oddity conceived the idea of attempting to see how closely an actual spider's web could be reproduced with rope. Selecting two immense trees on the lawn of his home, he spun between them this spider's web, forty by sixty feet, which is so strong that a boy or man may easily climb to the center or top of it.

The web faces the main thoroughfare, which passes the house, and is one of the most fascinating country ground decorations ever seen. The spinner could not attain the minuteness of the actual spider's work, but came so near to it that the illusion is almost perfect. The uniqueness of the undertaking catches and fascinates every eye.

Watch With One Hand.—While watches without hands, or with but a single hand, are by no means new, an ingenious watch of the latter class, of French make, is interesting. On a semicircle at the top of the dial plate is a scale graduated to indicate minutes. The lower part of the watch face has a raised plate, and projecting from under it is a wide pointer which passes along the scale of minutes, so as to point to the minute figure. Near the end of the pointer is a large figure indicating the hour, 6 for instance. When the pointer reaches 60 on the minute scale it disappears under the plate and a new marker (7) appears at the zero side of the scale.