

IMPROVED STUMP EXTRACTOR.

There is many an acre of land now lying barren and unprofitable, which, if the stumps and rocks were extracted and the ground tilled, would become fertile and productive, and savage wilderness rejoice with ripening corn. If this be the case, any one of common sense will ask why are these stumps not extracted? and we can only reply we cannot tell. There are many machines to perform the work, an excellent one being the subject of our engraving.

We have shown it in operation; A, being a frame mounted on wheels, B, and C, D, E, are three parallel shafts placed in bearings on the frame. A. The shaft C is the driving shaft, and has a pulley, F, on one end at

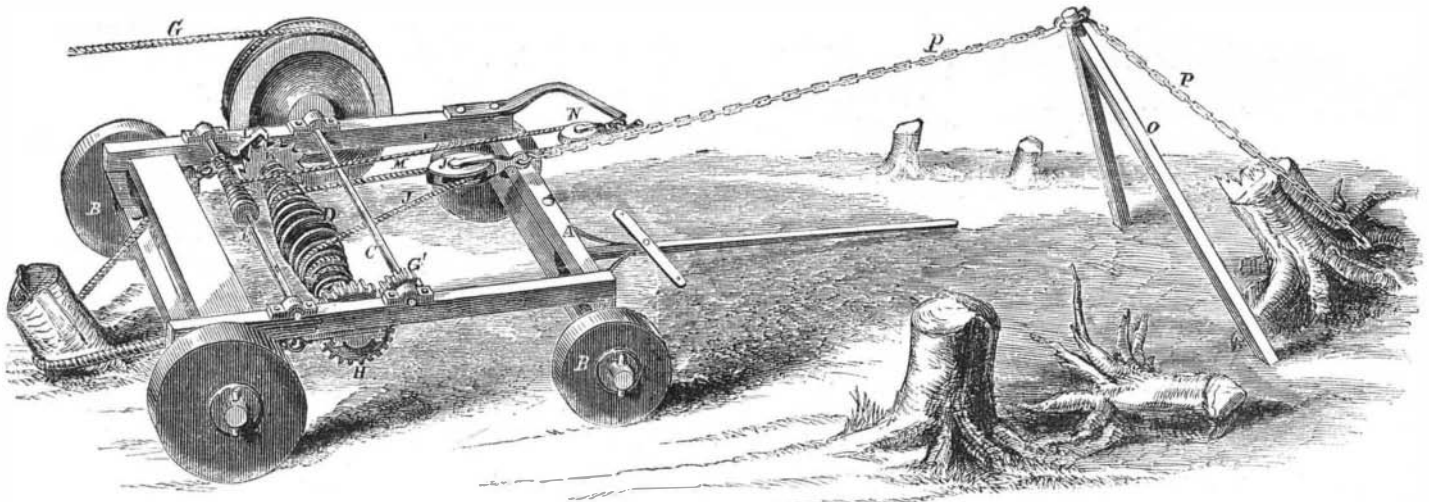
windows. I believe that slat instead of solid doors at the entrance, and a good ventilator behind the pulpit, would render our churches more comfortable in the summer. I also believe that the ceilings under the galleries, toward the walls, could be much improved by raising them a trifle towards the center of the building to allow the heat in winter, and foul air in summer, to escape from under them.

On one winter morning I found the thermometer at 62° in the center of the Sixth-street Baptist church, and 74° under the galleries near the walls—the heat decreasing gradually towards the center.

A. JENNY.

New York, August 29, 1859.

NEW PATENT STUMP EXTRACTOR.



the outer side of the frame, which receives a rope or chain, G, to which the animal is attached to operate the machine. On the other end of the shaft a pinion, G', is placed that gears into a wheel, H, on D; H also gears into a pinion on E.

The shaft D, is a double cone, grooved spirally from its ends to its center, one being a left and the other a right handed groove. J is a rope or chain, the ends of which are attached to the ends of D, so that as D is rotated in one direction the two ends of the chain or rope will be unwound off D, and *vice versa*. A ratchet, K, is also placed on D, provided with a holding pawl, L, that prevents D turning backwards when not required.

The shaft E at one end is also made conical and grooved, and a rope M, is attached to it, the other end passing around a pulley, N, is attached to the pulley J, through which J runs.

O is a strut, the lower end of which rests on the ground, near the stump, and a chain, P, passes over it, one end being attached to the stump, and the other end to J'.

When the machine is placed in a proper position, and the back part of the machine secured by a rope or chain, A' the animal is made to pull the rope or chain, G, and the chain, J, will be wound round D, with great power, but as the stump becomes loosened the power diminishes and the speed increases. The rope M, and shaft E, are left off the machine for a stump extractor, but when it is used as a press they are used, so that the animal backs after the follower has done its work, on the pulley, F, being turned, the rope, M, takes up the slack of J, and prevents it dragging or getting into kinks or other annoyances.

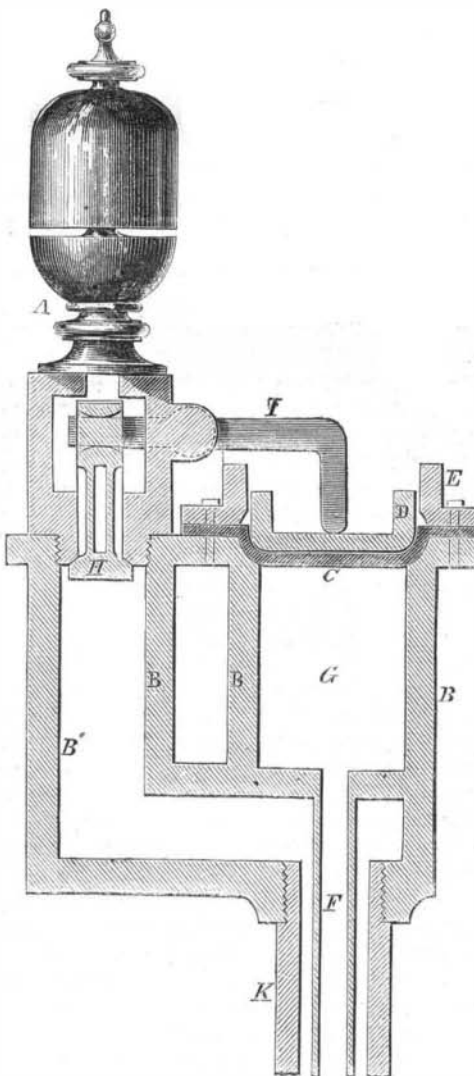
For elevating rocks the machine is mounted on higher wheels and placed directly over the rock to be lifted, which has two holes drilled in at opposite sides, and properly shaped callipers being placed in these holes and the chain J, being connected with them, the rock can be lifted from its bed and carried to the place it is intended to leave it. The machine is very strong, easy of transportation and cheap, and is a valuable addition to the agriculturist's and engineer's stock in trade. The inventor is G. D. Harris, of Fitchburg, Mass., and he obtained a patent April 5, 1859. He will be happy to furnish any more information that may be desired.

A HINT TO BUILDERS OF CHURCHES.

MESSRS. EDITORS:—The most of our churches are placed between other buildings, thus leaving very little room for the circulation of fresh air through the side

IMPROVED LOW WATER INDICATOR.

This indicator acts by the expansion of water in a closed vessel, when exposed to a much higher temperature than its normal one, so that its force is exerted to open



a valve, through which the steam can pass, and call attention to the state of the water in the boiler by a whistle. Our engraving, which is a section, will explain the construction.

B is a cast-iron outside case or box, on the top of one side of which is a valve that opens or closes the communication with the steam-whistle, A. This valve is operated by a lever, I, one end of which is bent over and rests in the inside of the cup, D, that lies in the flange, E, upon the diaphragm, C. Under this diaphragm is the chamber, G, and closed pipe, F, which extends some distance down the pipe, K, that connects the apparatus with the boiler. This pipe, K, passes into the boiler, its open end being placed in the water the required distance below which the water must not fall.

The operation is very simple. When the chamber, G, and pipe, F, are filled with water, and the pipe, K, is adjusted to the boiler, so long as there is plenty of water in

the boiler, no effect takes place; but the moment the water falls below its proper level the steam rushes up the pipe, K, and surrounds the pipe, F, and chamber, G, causing the wafer in them to be expanded, and so to raise the diaphragm, C, and elevate the followers or cups, D, and so, through the medium of the lever I, open the valve, H, and permit of the escape of the steam through the whistle, A.

There is not in this invention any metallic plug, which might, perchance, become corroded; but all parts are simple, and it is so easy of construction that the cost is very low. The inventors are J. W. Hoard and G. B. Wiggins, of Providence, R. I., who will be happy to furnish any further information, upon being addressed as above.

SUPER-PHOSPHATE OF LIME.—As bones are not soluble in water they require to be decomposed with an acid in order to make them give out their phosphates rapidly, when applied to the soil. A very simple method of rendering bones soluble is described in the *Rural Register*, (Baltimore, Md.) as follows:—The bones are first broken into small pieces with a hammer and are put in at the rate of three bushels to half a hogshead of water, then 75 lbs. of vitriol are added. In this they are suffered to remain from two to four weeks, being stirred up occasionally with a stick, then the contents of the hogshead are placed in a large iron cauldron to which a moderate fire is applied, when the whole becomes a perfect jelly. This is now mixed with a cartload of rich earth, or ashes, and half a barrel of plaster, and forms a rich compost for an acre of land, for any crop. The cost for an acre is, bones 75 cents, vitriol \$1.87, plaster 56 cts., total \$3.18. Bones in any form never fail to show their striking effects on clover or other grasses.

BONES AND WHEAT.—According to Sir Robert Kane, the distinguished chemist, one pound of bones contains the phosphoric acid of 28 pounds of wheat. A crop of wheat of 40 bushels per acre, and 60 pounds per bushel, weighs 2,400 pounds, and therefore requires about 86 pounds of bones to supply it with that essential material. The usual supply of bone-dust (3 to 4 cwt. per acre) supplies each of the crops for four years with a sufficiency of phosphoric acid, which is given out as the bones decompose. It may therefore be conceived what would be the effect of a double dressing of bones, renewed each year from time to time, by additional doses, all giving out the phosphoric acid by the slow process of decomposition.