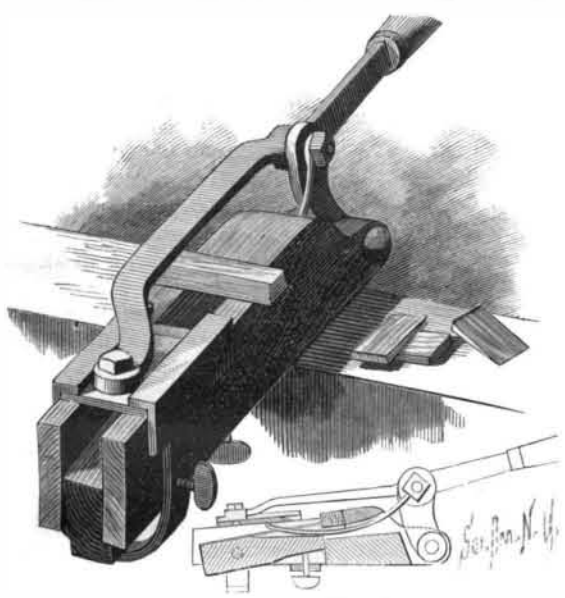
WEDGE CUTTER.

The engraving shows a simple contrivance for cutting wooden wedges rapidly and all of uniform size. A gauge block is placed between the prongs of a forked wooden or metal block, and adjusted in proper position for the wedges to be cut by means of screws, one of which passes through a cross piece on the bottom of the block, and the other through one shank of a stirrup extending under the forward end of the block. The thickness and taper of the wedge can thus be easily obtained by raising or lowering either end of the gauge. To the angle of the angle lever, which is pivoted to the rear end of the block, is pivoted one end of a curved bar whose forward end is secured to a cutting blade sliding in guides attached to the shanks of the block. Upon raising the handle, the piece of wood from which the wedge is to be cut may be placed upon the gauge and against a block held at the inner end of the prongs. The blade has its bottom slightly hollow ground at the cutting edge, and on its top it has a short steep bevel at the cutting end and a longer flat bevel behind. Upon pressing the handle down, the steep bevel splits a piece from the block of wood, which is then removed. The surface of the piece split from the block is then shaved off clean by the blade. The handle is then raised, whereby the blade is withdrawn and the wedge formed is thrown out at the back of the blade by a wire attached to the angle of the lever and passing through the main block and



JENKINS' LIGHTNING WEDGE CUTTER.

gauge, as shown in the sectional view. The connecting rod is curved so as not to interfere with placing the piece of wood upon the gauge.

This invention has been patented by Mr. James T. Jenkins, of Clements, Cal.

Influence of Magnetism upon the Embryo.

In the *Biologisches Centralblatt* we find a few interesting data relative to the influence of magnetism upon the embryo.

During the course of an artificial incubation Prof. Maggiorani submitted a certain number of hens' eggs to the influence of powerful magnets, taking care in doing so to keep at the same time an equal number of eggs away from all magnetic influence. The result was that, in the first group, four times more eggs were arrested in their development than in the second. After being hatched, three times more died out of the products of the first group than out of those of the second. Among the survivors, those of the second group all developed normally, while out of 114 of the first, 60 exhibited numerous imperfections or abnormal movements. Six chicks only of the same group reached maturity, and among these six two were cocks of remarkable size and appetite. Of the four hens, one never laid eggs, and the others laid very small ones, weighing about an ounce, and incapable of producing living beings.—*La Lumiere Electrique.*

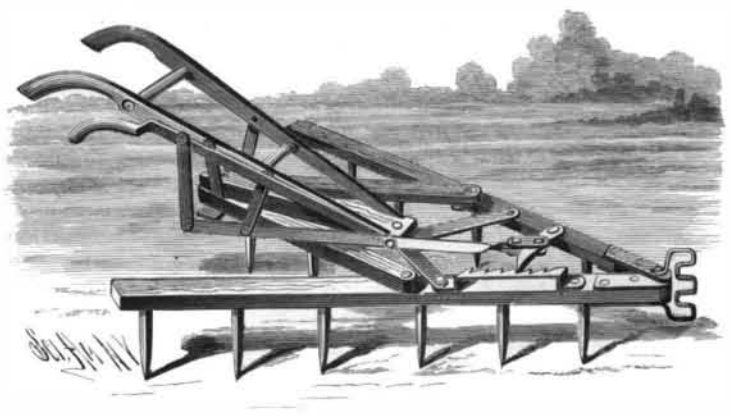
Mineral Wool.

In constructing fine houses builders now pretty generally use mineral wool between the floors and ceilings. This fibrous metallic substance is produced by sending a blast of air or steam through a jet of molten slag when it flows from the furnace. Having sustained the heat of fused iron, it is non-combustible and free from organic matter, so that it cannot rot or harbor any vermin. It is completety soundproof, and may be termed an absolute non-conductor of heat, for a layer of one inch thickness, says our informant, may fuse on one side while the other will remain cool. These properties, combined with its extreme lightness, have since its introduction a few years ago as a new building material made it a great favorite with architects and builders, and it is now largely used as a sound and fire proof filling between floor and partitions, and in attics to keep out heat and cold.

AN ADJUSTABLE HARROW.

A form of construction which permits the adjustment of harrows narrower or wider, as the work to be done may require, is shown in the accompanying illustration. The harrow has outer and inner toothed bars, with a center bar and its braces hinged to each other, so the harrow can be contracted and expanded. The hinged parts are supported against the resistance of the soil by a ratchet bar attached to one of the outer toothed bars and a pawl pivoted to the other outer toothed bar, the pawl being raised from the ratchet bar by a lever pivoted to the center bar of the harrow, to allow the harrow to be contracted by the resistance of the soil when the horse is started forward. The harrow can be expanded by raising its rear end by the handles, and then pushing the center bar forward with the foot until the desired width is obtained. In the case of large harrows the center bar affords a convenient place for a driver's seat, when the handles may be omitted if desired. This harrow can also be used as a cultivator, and can be quickly adjusted or changed without removing the hands from the handles.

This invention has been patented by Mr. W. Boatner, of Woodville, Miss.



BOATNER'S ADJUSTABLE HARROW.

MACHINE FOR CUTTING SCRUB, CANE, ETC.

The machine shown in the accompanying engraving is adapted for trimming hedges, and for cutting any kind of scrub, rushes, cane, etc., and it may also be used for cutting hard wood up to three inches in diameter and soft wood up to four inches. It is particularly applicable for mowing on rough ground, as it easily accommodates itself to the inequalities and is not liable to become clogged. The cutter is very simple in construction, and the knives, which form the weakest part, can be quickly replaced when damaged. The axle of the drive wheels, which are 4½ feet in diameter, revolves in bearings attached to a frame from whose forward part the tongue extends. To one end of the axle is secured a large beveled gear wheel that meshes with a beveled pinion attached to the forward end of a shaft revolving in bearings attached to the side bar of the frame. Upon the other or rear end of this shaft is a beveled gear wheel, meshing with a pinion upon a shaft revolving in bearings formed in the outwardly bent arms of a bar which is mounted, and turns upon the rear part of the first shaft. One arm of the bar has holes in it to receive bolts by which it is secured to the frame and thus held in position on the shaft. The cutter is mounted upon one end of the second shaft. When scrub, sugar cane, etc., are to be cut, the cutter is adjusted in a horizontal position, as shown in the engraving, the perforated arm of the bracket being bolted to the rear cross bars of the frame. When the machine is used as a hedge trimmer, the bracket is turned and bolted to the frame in such a position as to hold the cutter vertically. The machine is light draught, two horses being sufficient in light scrub.

This invention has been patented by Mr. William McLaughlin, P. O. Box 26, Auckland, New Zealand; the machines have been most successfully used in both New Zealand and Australia.

THE "FAUGH-A-BALLAGH" SCRUB CUTTER.

Casehardening Steel.

When the peculiar shape of a cast steel tool or other piece is such that the ordinary processes of hardening and drawing may distort and spring it out of shape, casehardening is employed instead. This, as practiced with prussiate of potash (ferrocyanide of potassium), hardens merely the surface or "skin" of the steel, and does not affect the interior. Cast iron and wrought iron articles are frequently so treated to give their surfaces a hardness impossible otherwise to obtain; but this treatment is restricted in its employment on steel, to articles and tools where grindings and resharpenings are not required. If a rotary cutter for a milling machine, or a planer or lathe cutter, was so treated it would require to be recasehardened every time it was ground, as the steel coating given by casehardening is only superficial. Yet for temporary purposes a casehardened tool will do effectual work; the writer once did a considerable job in screw threading with a large tap made of wrought iron and casehardened, no steel of the proper size being available.

A Fast Illustrated Paper Press.

How to print large editions of finely illustrated newspapers quickly has been troubling the publishers of all such papers the world over. It is rather surprising that a Russian paper, issued in St. Petersburg, is the first to try a new press specially designed to do such work.

The press has been built by Denier, of Paris, and the idea is to have the printing of the illustrations done either before or after the reading matter, but during the same run of the sheet through the press. Thus the reading matter is made up in forms with blank spaces where the pictures go, while in the picture forms the reading space is left blank. There is an arrangement whereby the illustrations are inked by rollers separate from those used in inking the reading matter, so that fine ink can be used for the cuts and ordinary ink for the text. The making-ready is done as in all book presses.

The sheets are cut as they are printed, collected five at a time, and deposited on a receiving table without any tape touching the impression, and the copies when delivered in this manner are said to be as clean as when they leave the press.—*The Paper Mill.*