

IMPROVEMENT IN SAW GUMMING.

The work of gumming a saw properly and quickly without injury to the saw plate requires the use of appliances perfectly adapted to the purpose. Improvements in this class of mechanism, which facilitate the process and give more satisfactory results, will be examined with interest by those engaged in this branch of industry.

The leading peculiarity of the saw gummer, represented in the accompanying engraving, is an arrangement by which the punch, when struck by the hammer, is driven entirely through the perforation in the saw plate and out of the machine. This is effected by means of a flaring hole in the die and also in the die support. In this way the liability of springing the plate, by backing out the tightly fitting punch from the perforation, is avoided.

In connection with the punch, there is a tubular guide, with a vertical bore corresponding to it so that the punch is accurately guided, and supported at all points against lateral deflection. The different punches are accompanied by sleeves of uniform external diameter, but accurately fitted internally to its punch. The saw is held firmly on the arm by suitable devices which slide on the horizontal arm, and are easily adjusted to different diameters.

The gummer is the invention of Mr. Wm. Tucker, East Brookfield, Mass. Mr. C. A. Sibley, of same place, is general agent, to whom all communications should be addressed.

A New Great Gun.

Trial was lately made at Woolwich, England, of the new 100 ton gun. The shot with which it was loaded weighed 2,010 lb. The gun was fitted with a gas check. Its diameter was very little less than that of the bore, which has a caliber of $17\frac{3}{4}$ inches, increasing to $19\frac{3}{4}$ inches in the powder chamber. The thickness of the metal at the muzzle is about 5 inches only, but at the breech end the chamber is surrounded with a wall of iron 2 feet 5 inches through, making the maximum diameter 6 feet 6 inches. The gun is 36 feet in length, of which the bore occupies 33 feet, and the total length of gun and carriage when run out for firing is 44 feet. The cartridge, consisting of 440 lb. of cube powder, strongly bound in canvas and stiffened by wooden bands, was rammed home, occupying 5 feet of the bore, and then followed the projectile, the length of which was 2 feet 8 inches. The gun was fired by electricity from the instrument room, and recoiled a considerable way up the platform, but suffered no damage either to itself or the carriage. The screens registered a velocity of 1,500 feet per second, but the projectile was found to have broken up, which may have affected the result.

IMPROVED NUT LOCK.

The annexed engraving represents an improved nut lock recently patented by Mr. Moses H. Grubb, of Vincent, Pa. It is designed especially for connecting the rails of railroads, but it may be used for other purposes. The engraving represents a rail joint formed by the meeting of two rails. The usual fishplates, B, are placed upon opposite sides of the rails and fastened by the bolts, C. The lock is formed of two plates of metal, E and F, which are hinged together at G. Before the nuts are placed on the bolts the part E of the lock is put in place, the nuts are then turned on. The part F is then made to engage the opposite part of the hinge at G, and is placed parallel with the plate, E, so that the holes formed in it receive the nuts on the bolts. At one end of the plate, E, there is a staple which projects through a slot in the plate, F, and receives the key, K, which holds the plate, F, securely in place. The key, K, has a feather which passes through a slot in the staple and is turned to prevent it from jarring loose; its looped and swiveled handle is then turned down against its lower end, preventing it from turning or being accidentally thrown out of place.

In some cases the inventor employs a ring like that shown in Fig. 4, instead of the key. The advantage of locking or unlocking all of the nuts at once will be apparent, and it will also be admitted that this form of nut lock has the advantages of simplicity and security.

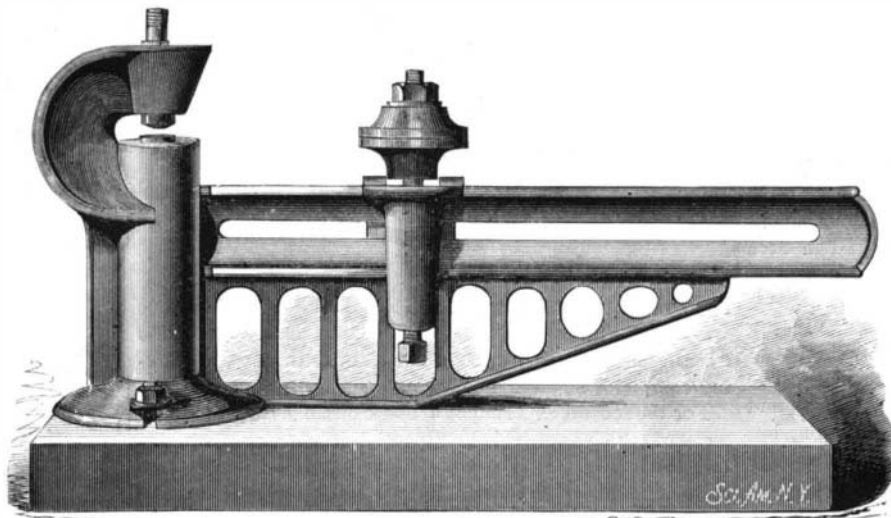
A Meteorite in Iowa.

Professor S. F. Peckham says, in a letter to the *American Journal of Science*, dated Minneapolis, May 29, 1879: I have the pleasure of informing you that, on the 10th of May, a meteor exploded and fell in full daylight at 5 P. M., at Ester-ville, Emmet County, Iowa. One of the fragments, weighing about 500 lb., fell on railroad land and was dug up from

a depth of fourteen feet in a stiff clay soil. Another smaller portion, weighing about 170 lb., fell on the farm of A. A. Pingrey at a distance of two miles from the first. Many smaller pieces of a few ounces or pounds weight, were scattered in the vicinity. The smaller mass fell upon a dry knoll and penetrated the earth vertically to a depth of $4\frac{1}{2}$ feet. The fall was accompanied by a noise described as a continuous roll of thunder accompanied by a crackling sound.

Through the efforts of Professor E. J. Thompson of our Faculty the smaller mass has been obtained for the university cabinet. It is irregularly square in form, about 15x18 inches and of an average thickness of 6 inches.

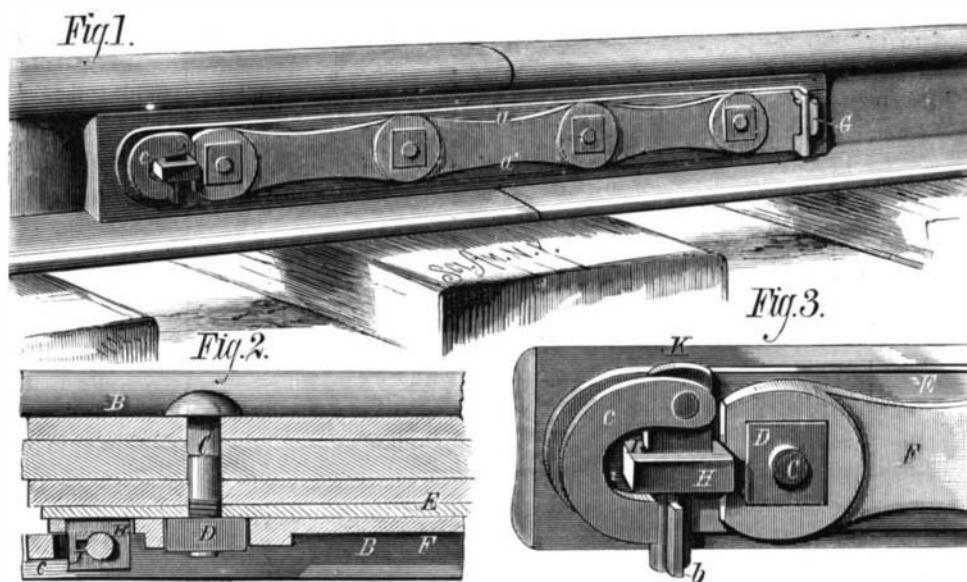
A preliminary chemical examination shows the metallic portion to consist of an alloy of iron, nickel, and tin. Full half the mass consists of stony matter, which appears in dark green crystalline masses embedded in a light gray

**TUCKER'S SAW GUMMER.**

matrix. When the whole is powdered, a violent reaction ensues on the addition of hydrochloric acid, which is increased on boiling. The boiling acid appeared to dissolve all but the gray matrix, abundance of iron passing into solution. Some of the crystalline masses are two inches in thickness, and exhibit distinct monoclinic cleavage. Under the microscope in thin sections, olivine, and a triclinic feldspar appear to be embedded in a matrix of pyroxene. This work is in the hands of Professor C. W. Hall of the University, who intends to make a very thorough investigation of the optical properties of the minerals

**Fig. 4.—NUT LOCK.**

and matrix. The chemical examination was first attempted upon a very small quantity of material, but, now that we have an ample quantity, a complete analysis of the several minerals and the alloy will be made. A small piece of the

**GRUBB'S NUT LOCK.**

metal polished and etched exhibited the Widmanstätten figures very finely.

The larger mass is still in the hands of those who dug it from the ground, although their ownership is contested by one who claims to have contracted for the land on which it fell. Their ideas regarding its value enlarged daily, the latest announcement being that they held it for \$5,000.

It seems now fairly established, says the *Chemical Review*, (on insufficient evidence, we are inclined to think), that *Botrytis infestans*, the parasite which occasions the potato disease, is the same which gives rise to diphtheria.

A Chinese Tile Factory.

A correspondent of the *Builder*, in a recent account of his visit to one of the mining districts of China, thus describes the Imperial Tile Manufactory at Lien-li-ku, about fifteen miles west of Peking: In this factory all the yellow tiles and bricks required for imperial buildings are made, as also large numbers of green, blue, and other colored tiles for various ornamental purposes. The material used is a hard blue shale, nearly as hard as slate, ground to powder by granite rollers, thirty or forty feet in diameter. The powder is then stored in heaps and taken to the works as required. For ordinary work the powder is mixed with a proper proportion of water and moulded into large bricks, which are laid out to dry for some hours, after which they are dealt with by the modelers. When bricks are to have a moulding on them, say for coping a wall, the plan of operation is as follows: Two pieces of wood, each cut to the shape of the moulding, are placed upright on a slab. The clay brick is placed between them, and two men run the mouldings roughly along with chisels. They then apply straight edges to test the accuracy of their work, and finally rub the edges with moulds somewhat in the same way as plasterers make mouldings at home. The brick is then passed to a third man, who cuts any necessary holes in it, and to the fourth, who trims it off and repairs any defect. The ornamental tiles and bricks, representing fabulous animals, etc., are first roughly moulded, and afterwards finished off with tools exactly similar to those used for modeling in clay in Europe. Some of this work has some pretensions to artistic merit. All the bricks and tiles are baked in ovens, and then, after having the glaze put on, are baked a second time. All the work done at this manufactory appears to be first rate, and the number of people employed when they are busy is about 500.

Breadth of the United States.

Few people are aware that the proud boast of Englishmen that the sun never sets on the British Empire is equally applicable to the United States. Instead of being the western limit of the Union, San Francisco is only about midway between the furthest Aleutian Isle, acquired by our purchase of Alaska, and Eastport, Me. Our territory extends through 197° of longitude, or 17° more than half way round the globe. The *Rocky Mountain Presbyterian*, in commenting on this fact, says: "When the sun is giving its good-night kiss to our westernmost isle, on the confines of Behring's Sea, it is already flooding the fields and forests of Maine with its morning light, and in the eastern part of that State is more than an hour high. At the very moment when the Aleutian fisherman, warned by the approaching shades of night, is pulling his canoe toward the shore, the wood-chopper of Maine is beginning to make the forest echo with the stirring music of his ax."

The Brooklyn Navy Yard.

The chief naval depot of the United States is widely known as the Brooklyn Navy Yard; but few have any adequate idea of its importance or the many objects of interest to be seen there. It is one of the most delightful as well as instructive spots in the vicinity of New York. Its huge workshops, its great dry dock, built at a cost of over \$2,000,000, and the enormous amount of machinery and material attract attention; while the ships lying at the wharves repairing, or anchored off the yard in commission, and the enormous guns on the ordnance wharf, give one an idea of the means by which Fort Fisher, New Orleans, and Mobile were taken. The museum in the building in which the commandant's office is situated contains curiosities from every part of the world where our vessels have cruised and our flag has floated, with historical relics of the Navy, and of itself is well worth a visit.

A Deaf-Mute Cow.

A Russian veterinary surgeon reports that a cow, twelve years old, of Algava breed, belonging to a Russian nobleman, never showed signs of hearing, nor bellowed. Seeing the other cattle bellow, she tried to imitate them by stretching her neck and head, and opening her mouth, but she could not produce any sound. The sense of vision of this cow was found to be unusually well developed.

FIREPROOF paper may be made, according to the *Pharmaceutische Zeitung*, from a pulp consisting one part of vegetable fiber, two parts of asbestos, 1-10 part of borax, 1-5 part of alum. The ink is made from 85 parts of graphite, 0-8 part of copal varnish, 7-5 parts of copperas, 30 parts of tincture of nutgalls, and a sufficient quantity of indigo carmine.