

of pure dry chloride of platinum, twenty-five of oil of lavender, and thirty of varnish. The chloride of platinum is warmed in a porcelain capsule until perfectly dry, the oil of lavender then added, and the mixture warmed until it ceases to give off any more gas. To the black tarry mass thus obtained is added lampblack and varnish in small portions. When paper printed with this ink is ignited the platinum salt is reduced to the metallic state and remains as a brownish-black coating.

A free-flowing ink for writing on fireproof paper with an ordinary metallic pen can be made from five parts of dry chloride of platinum, fifteen parts oil of lavender, fifteen parts of Chinese ink, one part of gum arabic, and sixty-four parts of water. The platinum imparts to the writing the property of appearing transparent on igniting, so that any writing or printing that has become black or otherwise illegible will easily become legible during the heating.

Fireproof colors can be made by mixing the commercial metallic colors used on porcelain with chloride of platinum and printer's or lithographer's varnish. An ordinary aquarelle pigment can be added to strengthen its covering power. The use of a mixture of dry chloride of platinum with printer's varnish here also furnishes the basis of gay colors which are fireproof. As an example the blue color is made of forty-five parts cobalt blue, fourteen parts aquarelle ultramarine, two parts of dry chloride of platinum, and thirty-nine parts of printer's varnish.

Fireproof aquarelle colors can be prepared in a similar manner for making designs and plane tables. For this use take sixty-eight parts of the mineral color, twenty-five parts of aquarelle pigment, two parts of dry chloride of platinum, and five parts of gum arabic, or other binding material soluble in water. In preparing fireproof aquarelle colors the metallic pigments are first elutriated and then boiled with the corresponding aquarelle colors; the boiling mixture is poured into a solution of the platinum salt, and the whole evaporated, after adding the gum or other soluble adhesive material, to dryness. The pigment thus obtained is employed in the same manner as the common water colors.

P. N.

**A Trestle in Deep Water.**

A notable piece of trestle work was completed near Warm Springs, N. C., December 16. It crosses the French Broad River at Deep Water, where the water is from forty to forty-five feet deep, and runs in the main channel with a current between four and five miles an hour. Many of the timbers of the trestle are over sixty feet long. The structure is intended for construction trains and for use in building a fine (single span) iron bridge two hundred and sixty feet long, for the W. N. C. R. R. Mr. J. M. Patton, who furnishes these particulars, expresses the belief that this trestle is in deeper and swifter water than any ever constructed before. Its successful execution is due to the skill and boldness of Captain John A. Ramsay, resident engineer, and Capt. Joseph E. Frey, builder. The work has been tested by trains heavily loaded with iron, drawn by a twenty-six ton engine.

**FINGER-SUPPORTING AND EXERCISING DEVICE.**

The engraving shows a device which will assist the pupil in efforts to hold the fingers in correct position according to the American or improved system of instruction, in which the hand and fingers are held horizontally as far as the second joint.

This improvement consists in an instrument capable of ready attachment to the hand, and having suspended from as many springs overhanging the fingers five rings, which, receiving the wearer's fingers, oppose a resistance to the muscular action in the act of playing, so as to compel the user to put forth unwonted strength with the result of imparting a superior decision of touch with greater flexibility and rapidity of motion, while the fingers as far as the second joint are supported from above in horizontal position.

This invention was recently patented by Mr. Benjamin Atkins, of Cincinnati, Ohio.

**A Forty Thousand Ton Blast.**

A great blast, which has been preparing for nearly a year at the limestone quarry of the Glendon Iron Company, near Easton, Pa., was fired recently, and forty thousand tons of rock were dislodged. Four tunnels, each fifty feet long, were run into the hillside, and at their end two chambers were built at right angles, each eight feet long. Ten tons of powder were used, and when the electric current was sent along the wire, the face of the rock, for a distance of 150 feet and a height of 25 feet, was blown out like a high wave, and the rock above this excavation sank into the space with a roar.

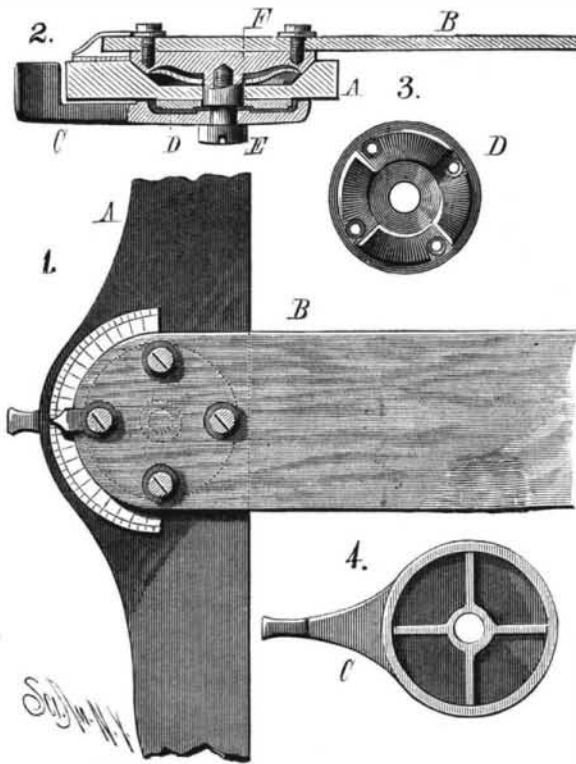
**Cornstalks as Fuel.**

An Iowa farmer, who has both coal and wood on his farm, warms his house with cornstalks, and claims that they make the best and cheapest fuel he can get. He uses a large stove, and burns the stalks in tightly-bound bundles, weighing about forty pounds each. A bundle burns three hours (without flame) in an air-tight stove. The large stove offers so much radiating surface that it does not need to be very hot. Five bundles a day, or 600 for the winter, suffice to keep the

stove going and the room warm. The farmer, Mr. Ruggles, says: "I can bind up six hundred bundles of corn stalks in two days alone. I couldn't chop the wood to warm this room in a week. Then in the spring I have a load of strong ashes for my wheat field, while my neighbors have to cut up the same cornstalks in the spring to get them away from the harrow. It makes me smile when I hear about these idiots up in Minnesota who have fifty-acre cornfields, and still go cold or buy coal. Why, I'd rather burn cornstalks than cut maple wood within sight of the house."

**IMPROVED T-SQUARE.**

The engraving shows an improved T-square, the blade of which can be adjusted to any desired angle by a simple

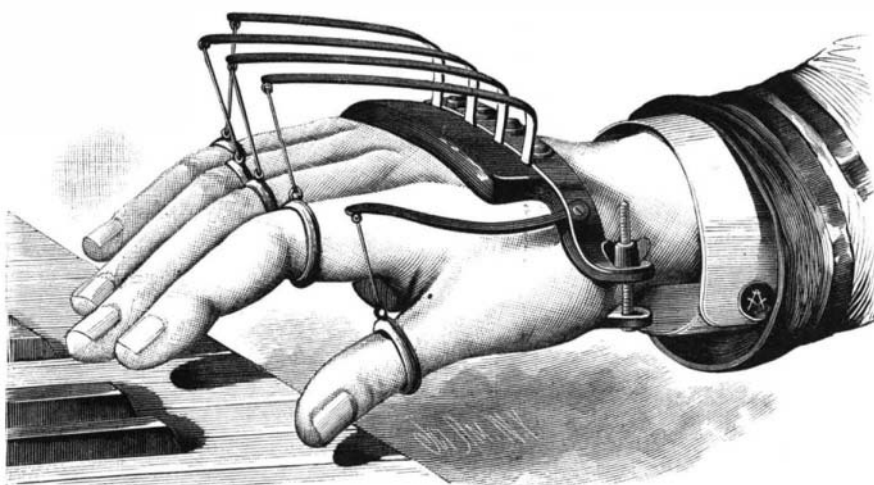


**HOERMANN'S T-SQUARE.**

mechanism without the use of a clamping screw. The blade of the square is fitted by a conically-tapering pivot plate into a correspondingly tapering recess of the head, and tightly secured in position by means of a clamping lever plate, which engages, by interior radial ribs, inclined cheeks of a plate secured to the under side of the head.

Fig. 1 is a plan view, Fig. 2 a transverse section, and Figs. 3 and 4 are views of the bottom plate of the head of the T-square and of the clamping lever plate respectively.

The blade, B, is pivoted to a central perforation of the head, A, by means of a pivot plate, which is secured to the under side of the blade. The circumference of the pivot plate is conically beveled and fitted into a correspondingly beveled recess in the head, A. To the under side of this head



**ATKINS' FINGER-SUPPORTING DEVICE.**

is secured a plate, D, having inclined cheeks, along which the interior radial ribs of a clamping lever plate, C, are moved when the plate is turned on the center pivot. The lever plate, C, turns loosely on the shank of the fastening screw, E, which is screwed into the pivot, a spiral or flat friction-spring being preferably interposed between the pivot plate and the recess of the head of the T-square for preventing any rattling. By turning the lever plate, C, in one direction its interior ribs move upon the inclines of the bottom plate, D, and draw the blade, B, into frictional contact with the conical recess of the head, 'so as to secure it tightly in any desired position. By moving the lever plate in the opposite direction the blade is released for adjustment on the head. In the better classes of T-squares a graduated scale may be arranged on the head, so as to set off any desired angle by means of a pointer secured to the end of the blade.

This invention was recently patented by Mr. Arnold Hoermann, of Hoboken, N. J.

**RECENT INVENTIONS.**

An improved trunk or valise, which can be increased or decreased in size as circumstances may require, has been patented by Mr. Franz Protzen, of Stargardt, Prussia, Germany. The invention consists of a valise or trunk constructed with stiffening frames, to the outer edges of which strips are pivoted which can be swung outward and locked in this position to form extensions of the frames and for stiffening the flexible or folding part of the covering of the valise or trunk, whereby the size of the trunk or valise can be decreased or increased by folding these pivoted strips inward or outward.

An improved meat hanger, patented by Mr. John Lawson White, of Wakefield, Va., consists in a rod provided with a straight part, having a pointed end and upwardly bent end pivoted at one end to the end of a hook adapted to lock with the straight pointed portion which receives the meat.

An improved device for stopping horses has been patented by Mr. Gumbersindo Villar, of Santander, Spain. This invention consists in the application of a device for closing the nostrils of the animal more or less when required, the device used being a curtain, fitted to be drawn down over the nostrils by a cord running parallel with the reins.

An improvement in oil stoves has been patented by Mr. Hubert S. Goffee, of Brockport, N. Y. The invention consists in combining two circular rotary plates with wick tubes arranged eccentrically therein. When it is desired to use the wicks at two different points—as, for instance, to heat two different vessels at a time—or when only one flame is needed, the disks are arranged so as to place the tubes of one disk at the greatest distance from those of the other. By rotating the disks in their seats the tubes of one disk are placed in close proximity to those of the other, so as to concentrate the flame from all the wicks at one point or under one vessel.

Mr. Cyrus R. Howard, of Huntingdon, Pa., has patented an improved draughting instrument which consists in the combination of a marking arm, a post carrying numerous figure plates, and an adjustable finger carried by the marking arm for engagement with either figure plate.

An improvement in fences has been patented by Mr. Rivers Donaldson, of Tiptonville, Tenn. In constructing this improved fence short posts are set in the ground, and to the opposite sides of their upper ends are bolted the lower ends of two uprights. Fence panels are then placed upon the upper ends of the short posts with their overlapped ends between the uprights and secured in place by bolts passing through their corner and the upper ends of the said uprights. To the upper ends of the short posts is secured a barbed wire to fill the space between the lower edge of the panels and the ground.

**Chewing Gum.**

Forty thousand dollars' worth of chewing gum is gathered in the State of Maine every year. In Oxford county is a man who makes it his business to collect spruce gum. Every year he buys from seven to nine tons. The gum is found chiefly in the region about Umbagog Lake and about the Rangely lakes. A number of men do nothing else in the winter season except collect gum. With snowshoes, ax, and a sheboygan, on which is packed the gum, they spend days and nights in the woods. The clear, pure lumps of gum are sold in their native state, the best bringing one dollar per pound. Gum not immediately merchantable is refined by a peculiar process. Sieve-like boxes are covered with spruce boughs, on which is placed the gum. Steam is introduced underneath. The gum is melted, strained by the boughs, and then passes into warm water, where it is kept from hardening until the packer takes it out, draws it into sticks, and wraps it in tissue paper, when it is ready for market.

The gum meets with a ready sale. There is not a village, town, or city in Maine where it is not in demand. One dealer last year sold fourteen hundred dollars' worth. In the large mill cities gum has a free sale. In Biddeford, Lewiston, Lawrence, and Lowell, the factory girls consume large quantities. It is said that in the lumber camps gum is used as a means of extending hospitality. After meal time

the host fills his own black clay pipe, and hands it to his guest. Later, clear lumps of spruce gum are placed before the visitor, and he is asked to take a chew. Maine produces forty thousand dollars' worth of gum in a year, some of which finds its way to this market, from which it is distributed to the various outlying factory villages, where, as stated before, it is in good demand. Spruce gum is adulterated, and those who adulterate take the trouble to fashion the pieces of gum to appear like those taken in a pure state from the trees. The ingredient of adulteration is supposed to be the gum of the pine tree.—*Providence Journal.*

**New Tablet.**

The Albany (N. Y.) Perforated Wrapping Paper Company are making a new article of stationery, consisting of a writing tablet to which is attached a roll case containing a roll of paper, which is drawn out upon the face of the tablet ready for use as fast as wanted.

**A Patent Fertilizer which Anybody May Use.**

In December last the United States Circuit Court, Baltimore, in the case of Boykin and Carmen against R. J. Baker & Co., which was argued before the court several weeks ago, Judge Morris filed his opinion in favor of the defendants. The action was for alleged infringement of a patent for the manufacture of fertilizers held by the complainants, from the manufacture and sale of which they would have derived large profits, had not the defendants and others infringed upon their patent. The court held that the only difference between the formula patented by complainants from the old

phate of soda, and sulphate of ammonia, in proportions substantially as follows:

Dissolved bone, three bushels; ground plaster, three bushels; nitrate of soda, forty pounds, sulphate of soda, forty pounds; and sulphate of ammonia, thirty-three pounds. This mixture is incorporated with, say, twenty bushels of dry peat or muck, and three bushels of unleached ashes.

The manner of preparing a fertilizing compound from the above ingredients is as follows: The peat or muck and ashes, if such matter is used as the base of the mixture, are

at once, and to enable the operator to play the accompaniment with the tune. The invention consists of a violin provided with a sounding board extending over and supported on the violin belly, with its tongue engaged in a pocket of the finger board, of a number of auxiliary strings stretched between the usual strings, of a swinging link pivoted in the scroll for the attachment of the auxiliary strings, of a tail piece for holding the usual strings, and provided with tightening pins for holding and setting the auxiliary strings, and of the bridges set on the sounding board to support the strings.



*John M. Draper*

Liebig formula was the substitution of dissolved bone and ground plaster for ground bone and calcined plaster, and that the patent was invalid for want of novelty or any patentable discovery. A large interest was involved in the result of this suit.

The patent in question is No. 206,077, dated July 16, 1878, and it describes the making of the fertilizer as follows:

This invention relates to a combination of chemicals to be used in connection with dry peat or muck and unleached ashes, or with any refuse matter having fertilizing properties, to form a fertilizing compound; and it consists in combining dissolved bone, ground plaster, nitrate of soda, sul-

phate of soda, sulphate of ammonia, in proportions substantially as follows: Dissolved bone, three bushels; ground plaster, three bushels; nitrate of soda, forty pounds, sulphate of soda, forty pounds; and sulphate of ammonia, thirty-three pounds. This mixture is incorporated with, say, twenty bushels of dry peat or muck, and three bushels of unleached ashes. The manner of preparing a fertilizing compound from the above ingredients is as follows: The peat or muck and ashes, if such matter is used as the base of the mixture, are

**NEW INVENTIONS.**

An improvement in violins has been patented by Mr. Phineas Topham, of Newark, N. J. The object of this invention is to increase the volume of sound and the fullness of the notes of the violin, to facilitate the playing of two notes

at once, and to enable the operator to play the accompaniment with the tune. The invention consists of a violin provided with a sounding board extending over and supported on the violin belly, with its tongue engaged in a pocket of the finger board, of a number of auxiliary strings stretched between the usual strings, of a swinging link pivoted in the scroll for the attachment of the auxiliary strings, of a tail piece for holding the usual strings, and provided with tightening pins for holding and setting the auxiliary strings, and of the bridges set on the sounding board to support the strings.